CAFETT

Citizens **A**ttitudes and **F**eedback regarding **E**nergy **T**ransition **T**echnologies

A PROJECT PRESENTED AS PART OF THE PROGRAM

THE FUTURE OF ENERGY: LEADING THE CHANGE

Part I : State of the art

June 2018

PART I
ETT CONTROVERSY STATE OF THE ART

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A PART I: OBJECTIVES

Infrastructure projects involving energy transition TECHNOLOGYs (ETTs) are frequently opposed by parts of the civil society. This often results in delays and additional costs that hinder - assuming that these projects actually serve this purpose - the transition to a carbon-free energy system.

In this part, we propose a classification scheme for the arguments put forward to challenge ETT projects, with the aim of better understanding the reasons for opposition. We will also highlight rhetorical figures and fallacies appearing in the opponents' argumentation.

Finally, to complete this analysis, we will seek to identify the particular influence of individuals or organizations in the formation of public opinion.

B METHODOLOGICAL PRINCIPLES

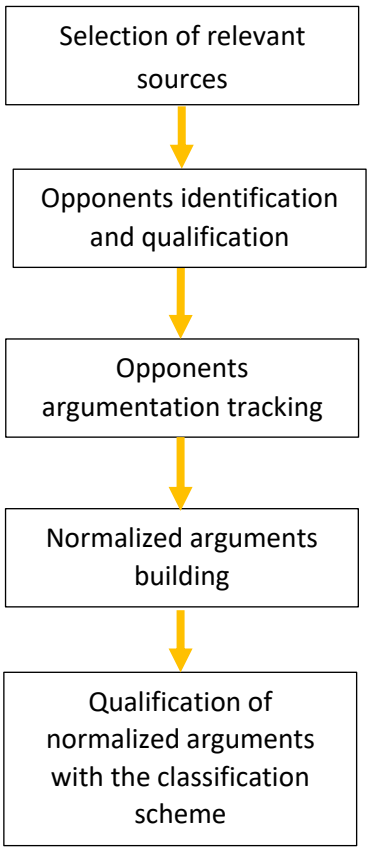
To conduct this study, we followed four stages :

1. Selection of ETT projects that have caused, and still cause, significant controversy,
2. Analysis of the arguments used by the opponents: identification and qualification of the arguments; identification and qualification of the sophisms and paralogisms present in the expression of the opponents,
3. Definition of a classification grid useful for understanding the bases of contestation,
4. Research about, and characterization of opinion influencers

Four projects were selected, representing different issues:

- An offshore wind farm in the bay of Saint-Brieuc (Britany, France),
- A biomass thermal power plant in Gardanne (Provence, France),
- The deployment of the Linky smart meter (France)
- A high voltage direct current overhead line : Rock Island Clean Line (Iowa, USA)

The process of analysis for a given project can be summarized in this way:



C PRELIMINARY DEFINITIONS

C.1 ARGUMENTATION

An argument is defined by the logical sequence that leads from a certain number of premises to a conclusion, by means of deductive or inductive reasoning[1]. In the framework of this study, by construction, we only consider arguments leading to the conclusion that the project should not be implemented. To remain consistent with the common language meaning , we will call "argument" a premise which justifies, for the person who expresses it, the rejection of the project.

C.2 IMPLICIT ARGUMENTATION

In everyday conversation, it is not unusual for one or more premises to be implied by the speaker, especially because he considers - consciously or not - his judgment reference framework as "common sense". This can lead to confusion between the premises of an argument and the evidence or the facts from which it flows (see figure 1).

Caveat:

- in the studying of arguments, we were only interested in their categorization and in their logical analysis. We did not take sides in the controversies (in other words, by tracking flawed or weak argumentation, we did not aim at checking the truthness of premisses or conclusions).
- the systematic tracking of implicit premises is beyond the scope of this study.

[1] deduction allows to move from premises to conclusion by application of a general rule, considered as always true, whereas induction is based on the generalization of observations to formulate the conclusion.

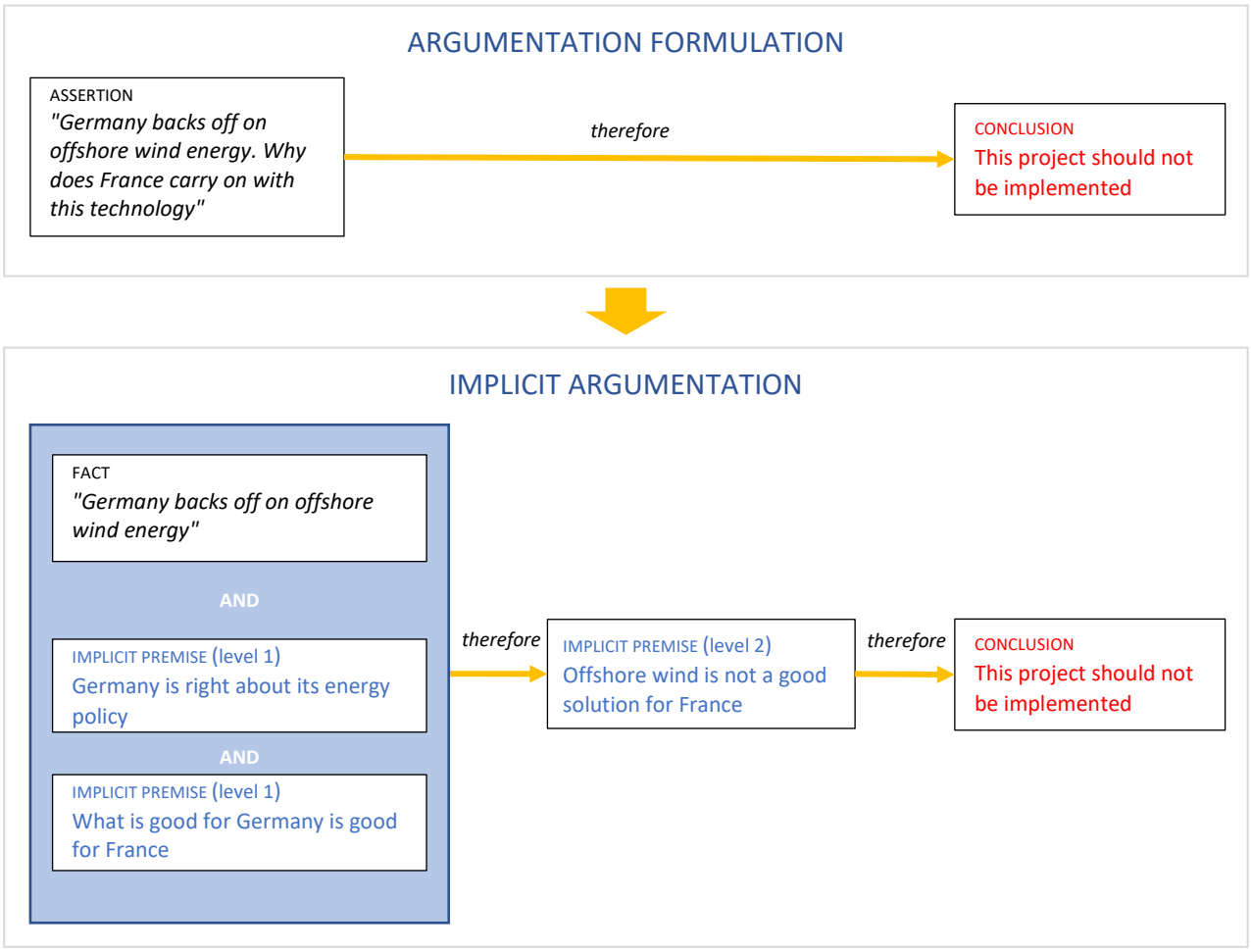


Figure 1 : argumentation formulation and implicit argumentation

C.3 NORMALIZED ARGUMENTS

To build our classification scheme we extracted the assertions justifying the opposition to each project as formulated by civil society stakeholders, from relevant sources. Then we converted these assertions into "normalized" arguments in order to reduce the disparity of expressions.

We define a normalized argument as the expression of the main idea common to a set of different assertions. A normalized argument is defined relatively to a specific project.

Figure 2 shows an example, taken from the public inquiry about the Saint-Brieuc windfarm project :

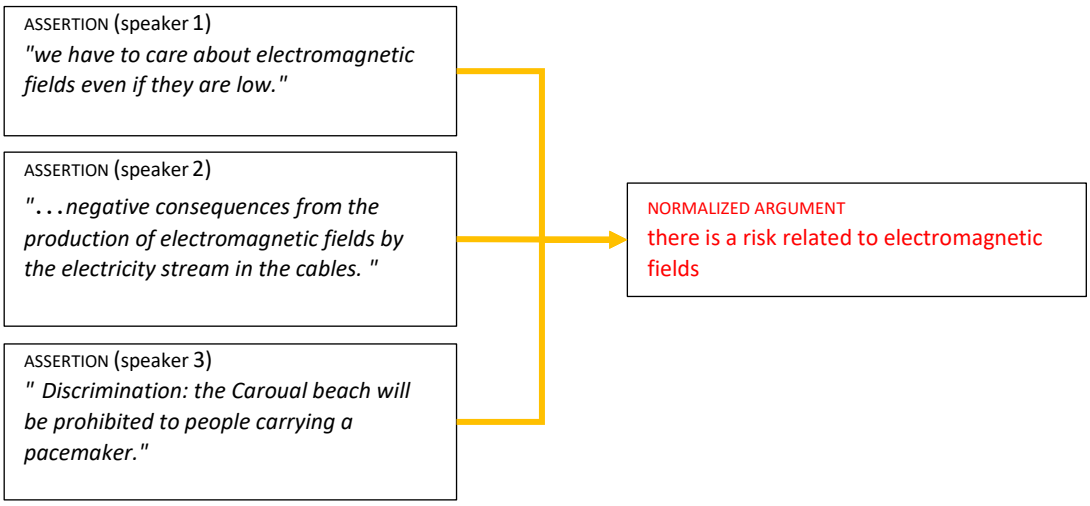


Figure 2 : normalized argument

C.4 CLASSIFICATION SCHEME

C.4.a Classification axes

Normalized arguments provide an overview of opponents' grievances against a particular project.

In order to be able to evaluate any argumentation against an ETT project according to a single scheme, we propose to rate these arguments according to four axes, presented in Figure 3:

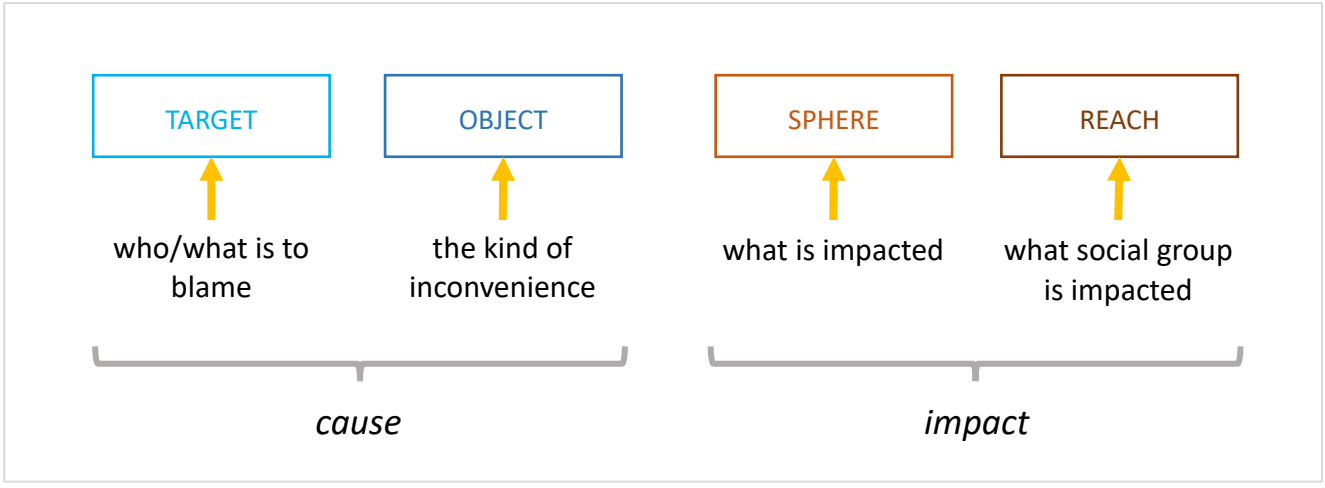


Figure 3 : argument classification axes

- the "target" represents the entity that bears the responsibility for what is criticized,
- the "object" represents the type of inconvenience attributed to a project, justifying a rejection,
- the "sphere" represents the domain of the real world impacted by the project, according to the argument,
- the "reach" defines the social group impacted by the project, according to the opponent.

Each axis allows a set of values, presented in Figure 4 below. Normalized arguments are qualified with a value assigned on each axis.

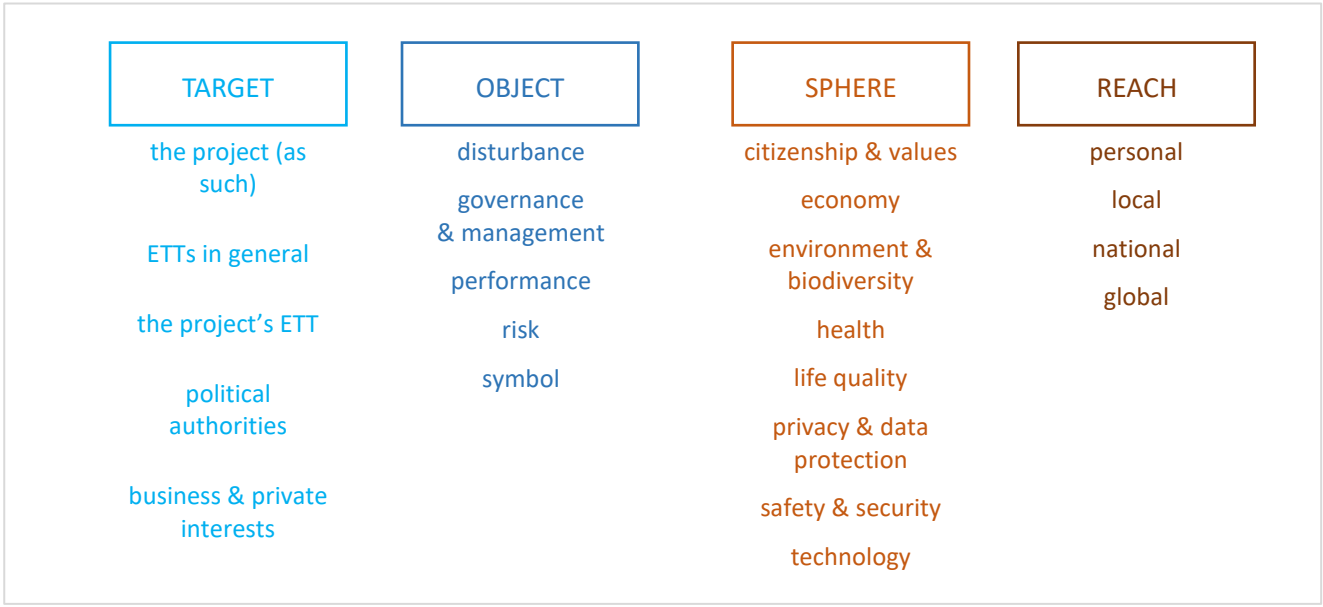


Figure 4 : classification axes values

This values are explained in the tables below.

Target

VALUE	EXPLANATION
the project (as such)	The criticism focuses on the project in the local context. A similar project in another location could be accepted.
ETTs in general	The criticism relates to all the ETTs, versus traditional energy sources like fossil fuels or nuclear energy.
the project's ETT	The criticism focuses on the specific ETT used in the project. The criticism would be the same for another project with the same ETT.
political authorities	The criticism focuses on the government or local authorities
business & private interests	The criticism focuses on private companies involved in the construction anr/or operation of the project (motivations, actions, characteristics)

Object

VALUE	EXPLANATION
Disturbance	The project is the cause of a permanent or frequent disturbance (the disturbance depends on the presence of the project and disappears with it)

Governance	Public policies, decision and consultation processes, project management methods… are considered as flawed, inadequate, inefficient…
Performance	the project does not achieve or poorly achieves its objectives, be it environmental (eg lower CO_2 emissions), economic or other.
Risk	the project increases the probability of accidents, health problems, harm to the person, the society or the environment.
Symbol	the project is rejected because of what it represents for the people concerned, regardless of its intrinsic characteristics.

Sphere

VALUE	EXPLANATION
Citizenship & values	the project questions the right or respect of the citizen as a member of the nation. The criticism highlights a divide between classes (elite / people, company / individual, expert / citizen etc ...).
Economy	the project causes direct or indirect damage to the economy.
Environment & Biodiversity	the project degrades or threatens to degrade fauna and flora, or more generally harms the environment.
Health	The projects can be the cause of serious health problems.
Life quality	The project degrades the life quality of nearby residents.
Privacy & data protection	the project threatens the confidentiality and control by each individual of the use of his personal data.
Safety & Security	the project entails an increased risk of material and/or human accidents, directly or indirectly.
Technology	the technological choice is questionable. Another technology would have done better (this value is chosen when criticism focuses on the technical aspects without mentioning the consequences, financial, sanitary or other).

Reach

VALUE	EXPLANATION
Personal	the negative impact personally affects the one who makes the criticism
Local	the negative impact personally affects the local community, county or region
National	the negative impact personally affects the whole nation
Global	the negative impact personally affects the world

D PROJECT ANALYSIS

D.1 ARGUMENTATION FIGURES USED BY OPPONENTS

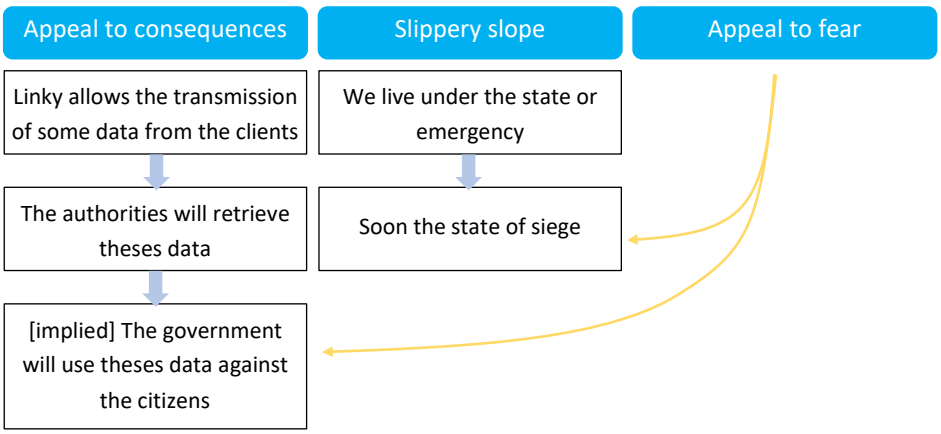
D.1.a Definition

We seek to highlight the psychological and rhetorical mechanisms used by some opponents in arguments that can appear as biased or misleading. Please, note that, depending on the case, the fallacious or inconsistent arguments can be used on purpose (the main purpose being to make the audience join the opposition, not to tell the truth) or simply because the speaker has a defective reasoning.

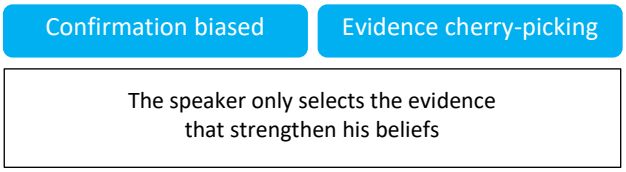
D.1.b Frequently used deceptive or weak argumentation figures

The examples given here come from our selected projects.

[Linky] *"these data will of course be retrieved by the authorities, without even obtaining the approval of a judicial authority, considering that we live under the state of emergency, and perhaps soon under the state of siege*"

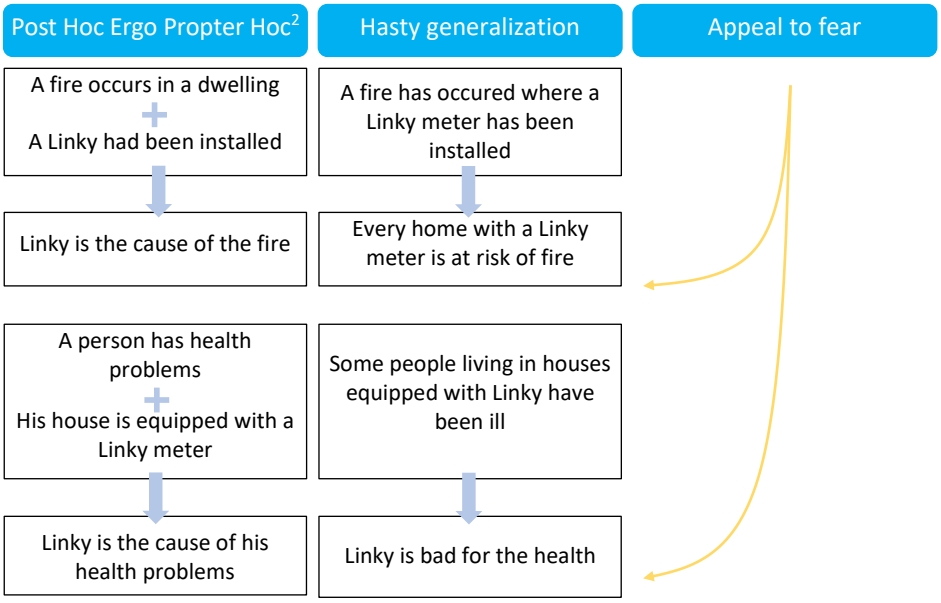


[Linky] *" contrary to what Enedis and other operators say, the effects of electromagnetic waves on health are extremely well documented."*

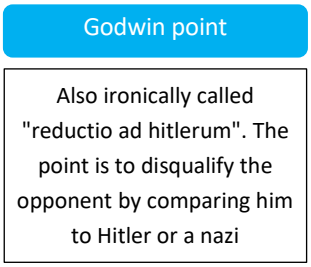


[Linky] *« Deadly fire in Saint-Julien-les-Villas. The owners had contacted Enedis for a problem with their Linky meter 15 days before the fire.»*

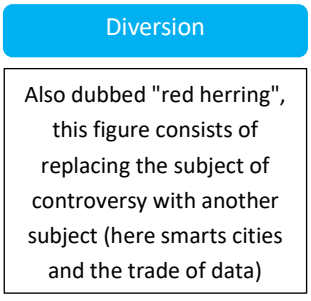
[Linky] *« Unfortunately I have a Linky meter at home. I do not know if it comes from there but I have recently undergone surgery twice.»*



[Linky] *« If Hitler had had the Linky, he would not have lost his war. »*



[Linky] *« We do not recognize to the state the right to impose us a connected object, to force us to live in dehumanized and automated "smart cities", to consider our personal data as commodities, to make our human life impossible... »*



[2] Which means "After this, therefore because of this"

[Windfarm] *« Industrial wind can do absolutely nothing against the greenhouse gas emissions, outrageously enriches the (private) developers, is very generously subsidized by the community (which amounts to racketeering), causes multiple nuisances (rampage of landscape and historical heritage, noise making residents sick, real estate value decrease, huge toll taken on natural areas and birdlife, disruption of television broadcasts. »*

« Wind energy is a "gigantic economic fraud" with hundreds of billions of euros taken from the electricity bills of French households; it is about to destroy France.»

Hyperbole/Exaggeration	Well poisoning
Words intended to mark minds such as "outrageously enriched", "racketeering", "absolutely nothing", "rampage", "huge toll", "gigantic fraud", "destroy France"	Such an accumulation of drawbacks makes it difficult to be in favor of wind energy even before any debate

[Windfarm] *« Yann Queffélec, writer, september 2016:" I remember the time when if we touched a single rock at low tide on an island or along the coast, we were severely punished, and it was considered an offense before the law because one had disturbed the environment if one did not put the pebble back in its original place. With wind turbines, we don't give a shit, we just find that it looks clean and it's all white in the landscape, whereas it is monstrously destructive of ecology. "(quoted on a Saint-Brieuc project opponents' website) »*

Appeal to authority	Appeal to sentiment
The point of view of a known personality recognized as a moral authority (in this case: cultural) is brought forward to influence the reader	Evocation of childhood, of happier "good old times", which it would be necessary to restore

[Linky] *« Regarding health, we note blatant similarities with dramatic issues such as asbestos, nuclear energy, tobacco, pesticides: many studies highlight the risks when others, often initiated or financed by the Business, "prove" the opposite. »*

Guilt by association		Appeal to fear	False analogy
Some studies funded by the industry about asbestos, nuclear, tobacco, pesticides were misleading + these techniques/products had dramatic consequences + Linky is similar	Studies concluding that Linky is harmless are misleading AND Linky will have dramatic consequences		Analogies are chosen for their scaring potential towards a certain kind of audience but without any real concern for relevance (in this case, we may wonder about the similarity between tobacco and a smart meter, for example).

D.2 PROJECT FOCUS: SAINT-BRIEUC BAY OFFSHORE WINDFARM

D.2.a Project fact sheet and history

The Saint-Brieuc offshore windfarm public tender was won in 2012 by Ailes Marines, a company which is now 70% owned by Iberdrola (Spain), 22.5% by RES (united kingdom) and 7.5% by Caisse des Dépots (France). These last two companies have coalesced in Avel Vor Energie Eolienne.

This infrastructure is part of the "Breton Electricity Pact", intended to secure the energy supply of Brittany, which currently produces only 15% of the electricity it consumes.

Originally scheduled for 2018, the construction is now expected to start in 2021 for a commissioning in 2023.

The main features of the park are[3] :

- 62 Siemens 8MW wind turbines, 216 meters high,
- the total installed power is 496 MW and the expected 1850 GWh annual production will meet the needs of 850,000 people, including heating,
- 80 km^2 maritime footprint,
- "jacket" type foundations (wire mesh),
- the electricity produced is centralized in an offshore electrical substation, connected to the terrestrial network by two 225,000 volts cables,
- the wind turbines will be built in Le Havre by Siemens-Gamesa, the foundations and the electric substation in Brest. Ailes Marines has entered a dialogue with local socio-economic organizations to work with local suppliers whenever possible,
- the wind turbines have an estimated lifesapn of 20 years,
- the planned investment is 2.5 billion €, excluding connection to the electricity grid,

According to Ailes Marines, the chosen location allows:

- the avoidance of areas used by professional fishermen (the fishing of scallop shells, is an essential activity for the economy of the bay). Furthermore, the minimum spacing between two wind turbines is 1,000 meters.
- to limit the impact on the coastal landscape: 77% of the machines will be located more than 20 km from the coast. The nearest wind turbine will be 16.3 km from Fréhel cape.
- the absence of any wind turbine in the "Natura 2000" zone (between Erquy and Fréhel capes),

[3] Source : http://www.eolienoffshoresaintbrieuc.com/

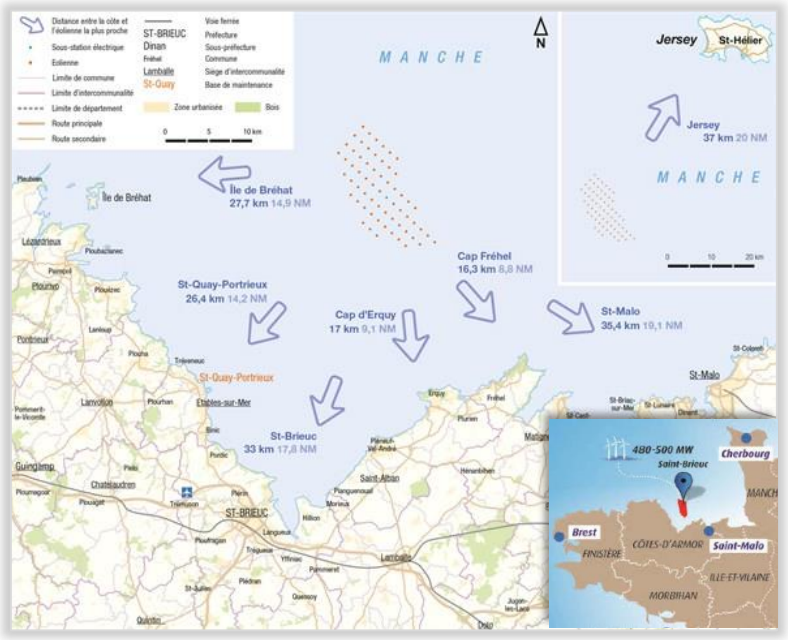


Figure 5 : location of the Saint-Brieuc bay windfarm project. Source : eolienoffshoresaintbrieuc.com

Below are some highlights of the project history:

- *October 2012:* Signature of an agreement between Ailes Marines, the Regional Committee for Fisheries and Marine Farms in Brittany and the Cotes d'Armor and Ille-et-Vilaine Departmental Committees for Fisheries and Marine Farms. This agreement provides for accompanying measures and financial compensation.
- *December 2012:* Signature of an agreement between Ailes Marines and the Cotes d'Armor Departmental Committee of Sailing for the development and promotion of sailing in the Saint-Brieuc bay area.
- *July 2014:* Ailes Marines decides the replacement of the 100 planned Areva 5 MW wind turbines with 62 Adwen 8MW wind turbines[4].
- *December 2015:* Rejection by the Rennes administrative court of a public tender annulment appeal filed by the company *Nass & Wind Offshore*, following the change of the wind turbine model.
- *August 2016:* Beginning of the public inquiry
- *September 2016:* The collective *Gardez Les Caps* issues a "public counter-inquiry", resulting from the consultation of 3,350 members of its nine constituting associations, showing that three quarters of the riparians feel that they are not being properly informed.
- *January 2017:* The Public Inquiry Committee delivers a favorable statement about the project
- *April 2017:* The Cotes d'Armor prefect grants the necessary administrative authorizations for the project to start[5]

[4] Adwen now belongs to Siemens Gamesa Renewable Energy

[5] Namely: "Concession d'utilisation du domaine public maritime", "AU IOTA" (Autorisation Unique pour les Installations Ouvrages Travaux et Activités), "Dérogation à l'interdiction de porter atteinte aux espèces et habitats protégés", "APO" (Approbation du Projet d'Ouvrage)

- *Juin 2017:* a group of associations lodges a complaint with the European Commission for infringement of the community legislation[6], with respect to 6 on-going windfarm projects on the Atlantic-Channel coast.
- *September 2017:* Siemens decides to stop the production of the turbine model planned for the windfarm and proposes to replace it with another one. This change is validated by the French Environmental Authority and the Cotes d'Armor prefect.
- *October 2017:* The Nantes administrative court of appeal rejects the request for annulment of the judgment of december 2015, presented by *Nass & Wind* and *Gardez Les Caps*.
- *January 2018:* The *Union du Penthièvre et de l'Emeraude pour l'Environnement et le Littoral (UPEEL)* submits an appeal to the Environmental Authority against the validation of the new wind turbines and requests new environmental studies. The appeal is dismissed[7].
- *Mars 2018:* Taking note of a considerable drop in electricity feed-in tariffs proposed in recent calls for tenders[8], the French government introduces an amendment to the bill "A State serving the society of trust" to allow a renegotiation of the tariff provided for already awarded tenders[9].
- *April 2018*: Siemens-Gamesa's communication director in France tells AFP that the project of building a wind turbine parts factory will be canceled or reduced if Iberdrola and Engie renegotiate prices following a possible change in the feed-in tariff by the government[10].
- *April 2018*: The Nantes administrative court of appeal cancels the authorization of occupation of the maritime domain because of a procedural defect. It does not jeopardise the project existence but delays it further.

D.2.b Organizations influencing the debate

In a study published in September 2014[11] it was found that, at the beginning, three main groups (meaning community of practices) considered that the Saint-Brieuc project had major negative impacts :

- local NGOs,
- commercial fishers and
- recreational activity organisations.

Being involved early in the project elaboration, the fishers signed an agreement with Ailes Marines in September 2012 (Figure 6) and then became more supportive.

[6] "Eolien en mer 1er et 2ème appels d'offres : 6 infractions au droit communautaire". http://gardezlescaps.org/eolien-en-mer-1er-et-2eme-appels-doffres-6-infractions-au-droit-communautaire/

[7] UPEEL letter : http://www.cgedd.developpement-durable.gouv.fr/IMG/pdf/recours_upeel_030118_decision_ste-brieuc_cle7bb371.pdf . Environmental Authority response : http://www.cgedd.developpement-durable.gouv.fr/IMG/pdf/reponse_recours_gracieux_modification_parc-eolien_st-brieuc_deliberee_cle066f1a.pdf

[8] Le tarif de rachat prévu est de l'ordre de 200 €/MWh, contre 80 €, voire moins pour d'autres parc européens.

[9] Amendment excerpt : "The Minister of energy may, prior to the conclusion of contracts pursuant to articles L. 311-12 to L. 311-13-3 and with the agreement of the successful candidate to the competitive bidding process, improve the latter's offer and, in particular, reduce the amount of the purchase price or the additional remuneration, in accordance with the terms and conditions defined by decree in the State Council". https://www.senat.fr/enseance/2017-2018/330/Amdt_53.html. This amendment has been rejected by the Senate but will be returned to the Parliament for second reading.

[10] Voir https://www.cbanque.com/actu/67928/le-projet-usines-eoliennes-au-havre-en-suspens, consulté le 30/04/2018

[11] "The Impact and Compensation of Offshore Wind Farm Development: Analysing the Institutional Discourse from a French Case Study", Kermagoret Charlene et al., published in Scottish Geographical Journal, September 2014, Volume 130, Issue 3.

An annual tax based on the electricity produced by offshore wind farms will be a source of 14,000 euros per year per megawatt. This fund will be used by the National Fund for Compensation of offshore wind energy, as follows: 50% of the amount will be given to the coastal towns where the turbines will be visible. To benefit from the fund, the maximum distance from the turbines is 12 nautical miles ; 35% will be allocated to the National Fisheries Committee to fund projects promoting sustainable exploitation of fishery resources ; 15% will finance projects contributing to the sustainable development of maritime activities.
The definition of this tax has been designed partially on negotiations between stakeholders and the French government. For example, because of the nature and the intensity of the impacts on their activity, professional fishers managed to increase the part of the tax which would return to them. An agreement has also been concluded to ensure that these funds benefit exclusively the projects carried out by the departmental fisheries committees directly affected by the planned offshore wind farms.

Figure 6 : Compensation obtained by Saint-Brieuc bay's fishermen. From "The Impact and Compensation of Offshore Wind Farm Development: Analysing the Institutional Discourse from a French Case Study", Kermagoret Charlene et al., 2014

Currently, the main remaining opponents are local grassroots associations.

Grassroots associations

- **Gardez les Caps**

Gardez les Caps was created in 2011 by residents of the Saint-Brieuc bay area with the objective of opposing the construction of the windfarm, which does not meet, according to the association, an ecological and economic need but rather seeks profit for the benefit of a few (Figure 7).

***We (…) realized that much information was, involuntarily or intentionally, unclear, incomplete, erroneous, partial or biased**. We found that the companies and public authorities did not tell us the truth about the actual production, nor about the costs, nor about the ecological impacts. (…) **Industrial wind power is only a financial arrangement for its shareholders** who are neither industrialists nor job creators (the price of electricity paid by the consumer is multiplied by 4, very few jobs are generated). It is a polluting industry because of the thermal power plants required to ensure power output when there is too little wind. In the end, it is **an unreliable, extremely expensive source of energy, which contributes to the increase in CO_2 emissions, and does not create new jobs**.*

Figure 7 : Snippet from the website gardezlescaps.org

At the beginning of May 2018, the Facebook page @gardezlescaps was showing 317 likes and 319 followers.

Gardez les Caps frequently gathers with other associations fighting against wind farms, onshore and offshore, in their region or at a national level[12].

[12] For example, an open letter asking for a moratorium on offshore wind was published in march 2015 to the address of the French prime minister by the association *Robin des Bois* and bore the signature of *Gardez les Caps*, along with the following organizations : *Comité Régional des Pêches Maritimes et des Elevages Marins de Corse, Association Contre Les Projets Eoliens En Mer (ACPEM), Collectif de Défense de la Mer, Fédération*

In april 2018, the president of *Gardez les Caps* was Katherine Poujols, who is also part of the executive committee of the *Fédération de l'Environnement Durable* (see below).

- **Union du Penthièvre et de l'Emeraude pour l'Environnement et le Littoral (UPEEL)**

UPEEL is a federation of local environmental associations from Pléneuf Val-André, Erquy, Plurien, Fréhel, Saint-Cast, le Guildo, Lanvieux, Saint-Briac, and the *Fédération des associations et du usagers du bassin versant du Pays de Rance et du Frémur*.

National organizations

An informal group and two national federations each grouping hundreds of grassroots associations (according to their own statements since no complete list is publicly available) mainly dominate the activity of global anti-wind protest.

- **Fédération Environnement Durable (FED) and European Platform Against Windfarms (EPAW)**

The FED is chaired by Jean-Louis Butré, the author of several books against wind energy who writes a blog on the Economie Matin website. He presents himself as "Physics engineer, energy expert and former CEO"[13].

On its website (environnementdurable.net), the FED claims to have 1,300 members, associations, regional federations and groups.

When it was created in 2008, the association had set up a strategic orientation committee made up inter alia of Valéry Giscard d'Estaing (former president of France, Philippe Marini (a rightwing senator, former executive of the French Atomic Energy Commission) and Marcel Boiteux (former director of EDF and one of the fathers of the French nuclear energy program), which gives the association a "nuclear" flavor[14]. Moreover, the FED appeared in the 2012 Greenpeace map "*Facenuke, women and men of nuclear power in France*"[15]. However, in a 2015 interview on *TV Libertés*[16] (a web TV set up by former members of the far right party *Front National*), Jean-Louis Butré declared that he did not like nuclear power very much. He also expressed doubts about global warming[17].

Environnement Durable, Collectif Stopéoliennes80, Association de Défense des pêcheurs à pied de la Côte d'Opale, Fédération Régionale Basse Normandie Environnement, Libre Horizon, NATTERRA, Non aux Eoliennes entre Noirmoutier et Yeu (NENY), Patrimoine et Environnement de Varengeville , Association de Protection du site des Petites Dalles, Collectif Pour Un Littoral Sans Eoliennes (PULSE), Sauvegarde des Côtes d'Opale Picarde et d'Albâtre (SCOPA), Société pour la Protection des Paysages et de l'Esthétique de la France, Délégation Vendée, SOS à l'Horizon, Vent de Travers. https://www.energiesdelamer.eu/publications/42gh-remporte-le-contrat-pour-le-projet-offshore-teesside.html

[13] http://www.economiematin.fr/auteur-1503-Jean-Louis-Butr%C3%A9

[14] "Vent de colère contre les éoliennes", Jean-Michel Bezat, Le Monde 09/10/2008, http://abonnes.lemonde.fr/planete/article/2008/10/09/vent-de-colere-contre-les-eoliennes_1104760_3244.html

[15] "« Facenuke », la cartographie du lobby nucléaire français", blog d'Audrey Garric, 16/04/2012. http://ecologie.blog.lemonde.fr/2012/04/16/facenuke-la-cartographie-du-lobby-nucleaire-francais/. L'accès à Facenuke a été suspendu, à la demande de certaines des personnes citées.

[16] "La COP21 est basée sur un mensonge général", TVLibertés, 05/11/2015. https://id-vid.com/video/zoom-jean-louis-butr%C3%A9-la-cop21-est-bas%C3%A9e-sur-un-mensonge-g%C3%A9n%C3%A9ral-05-11-2015-ZVj3l5q7ROQ.html

[17] Sans être ouvertement climato-sceptique, la FED apparait comme l'alliée objective de cette mouvance. Ainsi, les lettres ouvertes de la FED adressées au gouvernement contre la politique éolienne sont reprises sur le site de l'Association des "Climato-réalistes" (https://www.climato-realistes.fr/). Christian Gérondeau, membre du bureau de cette association et climato-sceptique reconnu faisait d'ailleurs partie du comité d'orientation stratégique de la FED à sa création.

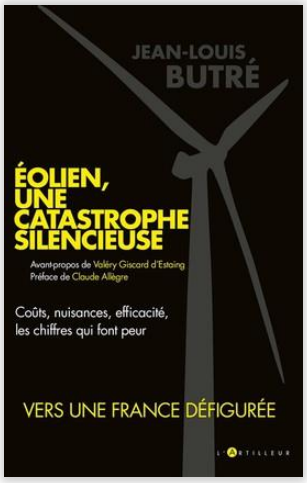


Figure 8 : Cover of a book by Jean-Louis Butré ("Wind energy, a silent tragedy"), published in March 2017 (L'artilleur ed.)

The FED acts at the political and legal levels. Below is for example a list of actions decided in january 2018 by its board of directors, in response to the proposals of the working group set up by Sébastien Lecornu, secretary of state to the French minister of ecological transition, to simplify and consolidate the administrative framework for onshore wind (from the FED website):

<u>On a national level</u>

- preparatory investigation for the filing of a complaint concerning French onshore wind energy before the european authorities,
- preparation of legal actions before all national and moral bodies, namely in the State Council, the constitution, human rights, etc…),
- letters to state leaders and national elected officials,
- national internet petition,
- proposal to create a "collective of anti-wind mayors",
- support of a complaint concerning the safety of wind turbines following the Bouin accident.

<u>On the local associations level</u>

- departmental and regional events,
- letters to all elected national and local,
- letters to the administrative authorities and in particular to the prefectoral authorities,
- use of all available internet means to inform and alert,
- mass mailing to MPs, senators, prefects etc…
- massive sending of tweets.

In a document published (probably by mistake) on his site in 2010, we find a short wording guide sent by the FED to its members advising them on how to write to MPs and ask them not to accept the wind energy section of the "Grenelle II" law. The terms used show a clear will for dramatization (see Figure 9 and facsimile of the complete document in [Saint-Brieuc] Wording recommendations from the "Fédération Environnement Durable" to its members (see Appendix 2).

Dear Representative XXX,
At the beginning of May, the Grenelle law will be reviewed in the Parliament. The wind section of this law can not be accepted. Giant wind turbines are invading our country. We thought at first that it was good but we became disappointed.
-we are the victims of these giant machines that ruin our lives,
-the prescription of 500m is scandalous and we will never accept it, the academy of medicine having recommended 1500m,
-we are disgusted, our life has been broken and our families are torn apart,
-discord is growing in our village,
Help us ! We urge you not to vote this unfair law.
…

Figure 9 : E-mail template provided by FED to its members in 2010 (Source : FED website)

Jean-Louis Butré has also set up a European anti-wind network: European Platform Against Windfarms (EPAW). Among its actions, there is an open letter to the european commission, published in May 2009, calling for a "moratorium immediately suspending all wind farm projects, including those that have received an authorization"[18], or a complaint filed in 2012 to the European Union's Ombudsman against the European renewable energy program[19].

The FED Facebook has 186 likes and 192 followers (https://www.facebook.com/F%C3%A9d%C3%A9ration-Environnement-Durable-724728034261757/)

- **Vent de Colère ! (Fédération Nationale)**

This federation gathers local associations fighting against wind projects.

Vent de Colère! is opposed to all windfarms: "*Thriving on many falsehoods, industrial wind in France, brings no economic neither energy nor ecological or social benefit. This is why, in view of its multiple nuisances, we oppose any industrial wind, which only justification is the guaranteed enrichment of developers, at the expense of French consumers and taxpayers and at the expense of energy savings , research and development of other renewable energies*". In an interview, Alain Bruguier, former president of *Vent de Colère!* boasted of having scuppered thirty three wind projects in fifteen years[20].

In 2009, *Vent de Colère!* filed a petition for annulment to the State Council, concerning the decree "*fixing the conditions of purchase of electricity produced by the installations using mechanical energy from wind*", which was accepted in May 2014 after favorable opinion of the European Union court of justice[21].

[18] http://www.epaw.org/documents/moratorium_fr.pdf

[19] http://www.epaw.org/documents/Attachment%201%20-%20EPAW%20letter%20to%20EU%20Commission%20seeking%20redress.pdf

[20] "Le Gard dit oui au solaire, non à l'éolien", Objectif Gard, 16/12/2017. http://www.objectifgard.com/2017/12/16/fait-du-jour-energie-le-gard-dit-oui-au-solaire-non-leolien/, consulté le 5/05/2018

[21] On this case, see the detailed argumentation of the association in this letter to the European Commission : https://www.ventdecolere.org/actualites/SA%2036511%20-%20Association%20Vent%20de%20colere%20-%2007%2001%202014.pdf , and the conclusions reached by Claire Legras, Maitre de requêtes of France State Council. http://www.revuegeneraledudroit.eu/blog/2015/06/28/le-dispositif-fixant-les-conditions-dachat-de-lelectricite-produite-par-les-eoliennes-est-il-illegal-conclusions-sur-ce-28-mai-2014-association-vent-de-colere-federati/ . Since the cancellation was only motivated by a failure to notify, the then minister of the environment, Mrs Royal, was able to rapidly take another tariff order.

The Facebook page of *Vent de Colère!* (https://www.facebook.com/ventdecolere/) has 453 likes and 471 followers

- **PULSE (Pour un Littoral Sans Eolien)**

This group about which little information is available (website is offline), is led by Catherine Boutin who is also vice-president of the FED. In press releases, it is defined as "*a national collective bringing together fishermen, elected officials, traders, associations for the protection of the environment, heritage and marine recreation*".

The PULSE collective heads a group of organizations having lodged, in July 2017, a complaint with the European Commission against the French State, for various breaches of the European law by the French offshore windfarms program (see press release in Appendix 3).

D.2.c Normalized arguments

The Saint-Brieuc offshore windfarm project has been subject to a public consultation process between August 4th and September 29th, 2016, the results of which are available on the website of the Cotes d'Armor prefecture[22].

The consultation report contains 2987 remarks made by the area dwellers. Among these, we identified the 1477 contributions opposed to the project[23], built and qualified normalized arguments from them.

These arguments are presented below, sorted by object and sphere of criticism (according to our classification axes).

Disturbance

ENVIRONMENT & BIODIVERSITY

- degradation of the marine natural environment (connecting cable, foundations, dismantling ...)
  Target: offshore wind energy – Reach: local
- degradation of natural environment related to terrestrial installations
  Target: offshore wind energy – Reach: local
- disturbance of marine fauna (noise, especially during construction, seabed disruption)
  Target: offshore wind energy – Reach: local

ECONOMY

- Real estate value loss
  Target: project – Reach: local
- negative impact on the fishing activity during construction and during operation
  Target: project – Reach: local

[22] Single public consultation : « Projet de construction d'un parc éolien en mer en baie de Saint Brieuc ». Ordonnance du Tribunal Administratif de Rennes du 28 juin 2016 - N° E16000187/35. http://www.cotes-darmor.gouv.fr/content/download/25109/178689/file/17%2005%2001%20AM-RAPPORT%20partie%201.pdf

[23] Multiple contributions from the same person expressing the same arguments were merged

LIFE QUALITY

- unpleasant visual impact (wind turbines, onshore facilities) / day and night
  Target: project – Reach: personal
- unpleasant ans disturbing noise during construction and operation (infrasounds, vibrations…)
  Target: project – Reach: personal

ECONOMY

- the visual impact can call labellings into question (Grand Site de France, Natura 2000, Unesco)
  Target: project – Reach: local
- wind energy requires the development of power transmission networks (meaning high investment, degraded landscapes...)
  Target: project – Reach: national
- the project will dissuade tourists to come and lower global revenues in the area
  Target: project – Reach: local

Governance & Management

CITIZENSHIP & VALUES

- democratic deficit of the debate on the energy transition / criticism of the national energy policy
  Target: authorities – Reach: national
- democratic deficit of the public debate about the project
  Target: authorities – Reach: local
- the main motivation for this type of project is not ecological but industrial or financial ("profiteers", favoritism, corruption ...)
  Target: private interests – Reach: national
- the studies and/or the communication made about the project seem misleading and/or insufficient
  Target: authorities – Reach: local
- we should apply the Constitution's precautionary principle
  Target: ETTS in general– Reach: local

ECONOMY

- the French offshore wind industry is non-existent and has no future (meaning offshore wind profits foreign countries)
  Target: offshore wind energy – Reach: national
- France produces enough electricity and does not need additional production capacity
  Target: ETTS in general– Reach: national
- Other countries abandon or no longer encourage this sector
  Target: offshore wind energy – Reach: national

ENVIRONMENT & BIODIVERSITY

- the location is not suitable for this type of project (classified site): contradiction with the policies of coastal preservation carried out locally
  Target: project – Reach: local

Performance

ECONOMY

- wind electricity increases consumer electricity bills
  Target: offshore wind energy – Reach: personal
- the cost of dismantling is high; dismantling is not taken into account in cost calculations
  Target: offshore wind energy – Reach: national
- wind energy is a waste of public money because it costs more than other energies and must be subsidized (the money would be better spent elsewhere: other ETT, energy savings, nuclear ...)
  Target: offshore wind energy – Reach: national
- the overall local economic impact is zero or negative
  Target: project – Reach: local
- the overall national economic impact is zero or negative
  Target: project – Reach: national
- maintenance and repair of offshore wind is very expensive
  Target: offshore wind energy – Reach: national

ENVIRONMENT & BIODIVERSITY

- wind energy does not reduce the share of nuclear energy in the energy mix
  Target: offshore wind energy – Reach: national
- wind energy does not reduce CO_2 emissions / does not have a positive impact on the environment
  Target: offshore wind energy – Reach: global
- construction requires a lot of raw materials (especially rare earths, produced abroad without environmental control) and contributes to the depletion of natural resources
  Target: offshore wind energy – Reach: global
- small decentralized facilities are the best solution for energy transition, not large projects
  Target: offshore wind energy – Reach: global

TECHNOLOGY

- wind energy is intermittent and requires the construction of additional thermal power plants (no solution for electricity storage)
  Target: offshore wind energy – Reach: global
- the wind turbines lifespan is too short
  Target: offshore wind energy – Reach: global

Risks

ECONOMY

- the selected operator is not reliable and risks going bankrupt
  Target: project – Reach: local

ENVIRONMENT & BIODIVERSITY

- risk of pollution or even of ecological disaster due to the many pollutants contained in the wind turbines
  Target: offshore wind energy – Reach: local
- environmental risks related to heat released from the buried HV line
  Target: offshore wind energy – Reach: local
- environmental risks related to electromagnetic fields stemming from the buried HV line
  Target: offshore wind energy – Reach: local
- collision hazard with blades for birds / bats
  Target: offshore wind energy – Reach: local

HEALTH

- Health risks related to electromagnetic fields stemming from the buried HV line
  Target: offshore wind energy – Reach: local
- General health risk (no detail)
  Target: offshore wind energy – Reach: local

TECHNOLOGY

- The selected turbine is not a proven technology
  Target: project – Reach: local

SAFETY & SECURITY

- wind turbines hinder navigation / there is a collision risk for ships and boaters / rescue operations at sea can be hindered
  Target: offshore wind energy – Reach: local
- wind turbine specific hazards (for example: collapsing, broken blades, etc… due to storms or bad quality of marine soils)
  Target: offshore wind energy – Reach: local

D.2.d Key learnings

In the case of Saint-Brieuc offshore windfarm, we conclude that local issues prevail compared with personal, national and global issues (Figure 12).

Most criticism are focused on wind energy (Figure 10) and the project is perceived as a factor of life quality deterioration and environmental risk. It is also considered as economically inefficient (Figure 11).

Globally, it does not appear that the opposition could stop the project, which also has supporters within the population. The project completion seems to be more threatened by the reconsideration of feed-in tariffs by the French government.

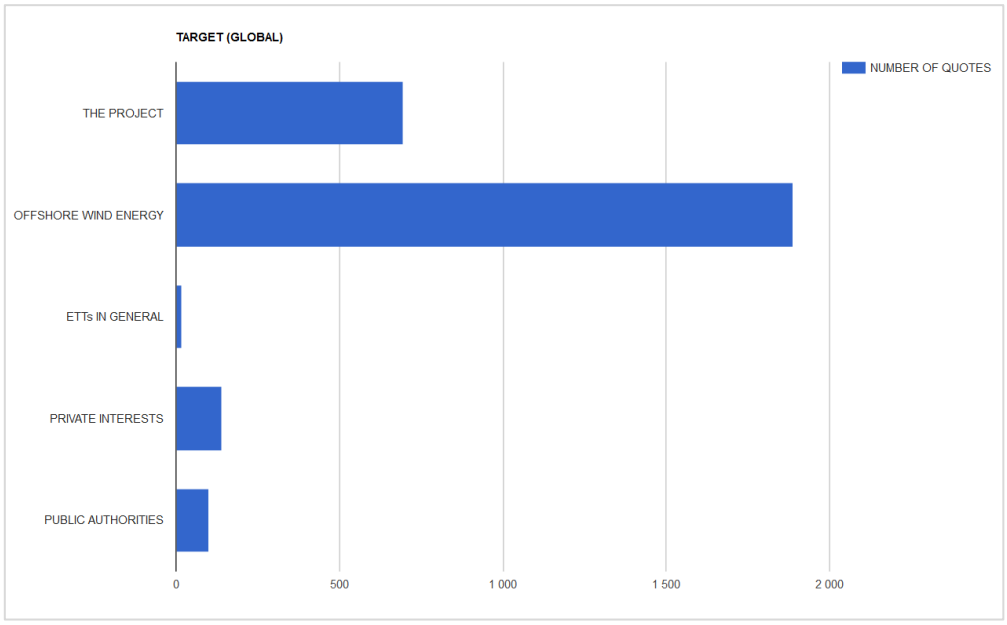


Figure 10 : argument breakdown by target (number of quotes in the public inquiry)

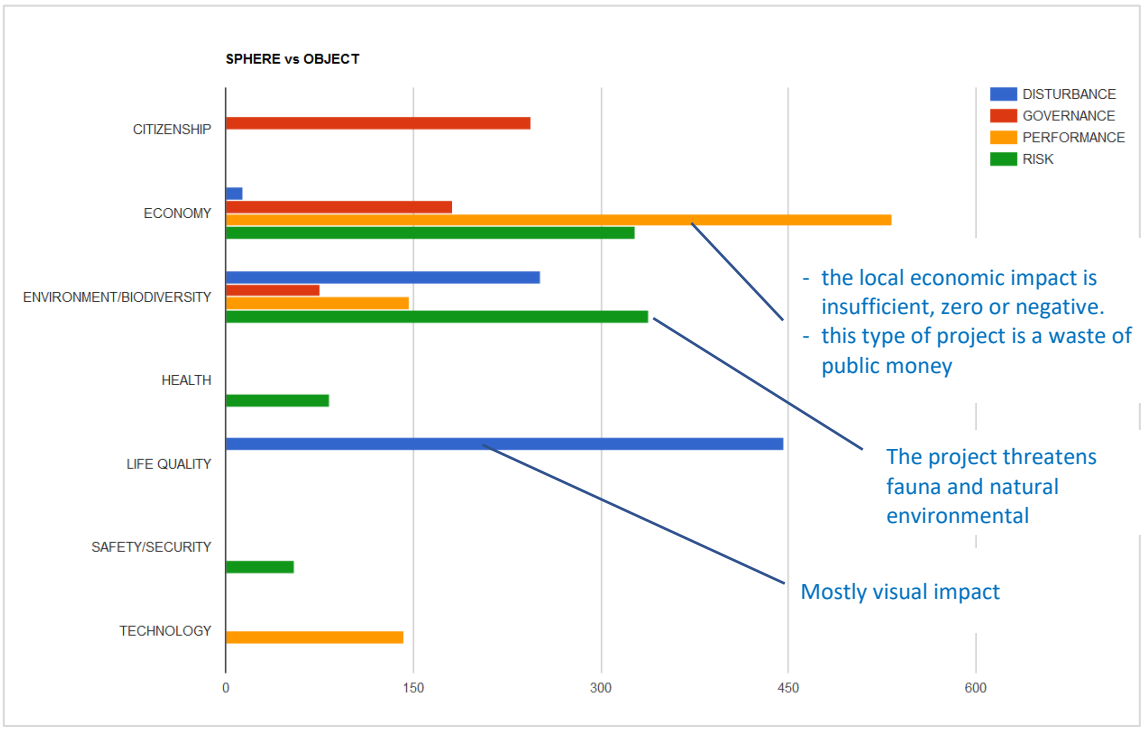


Figure 11 : argument breakdown by sphere/object (number of quotes in the public inquiry)

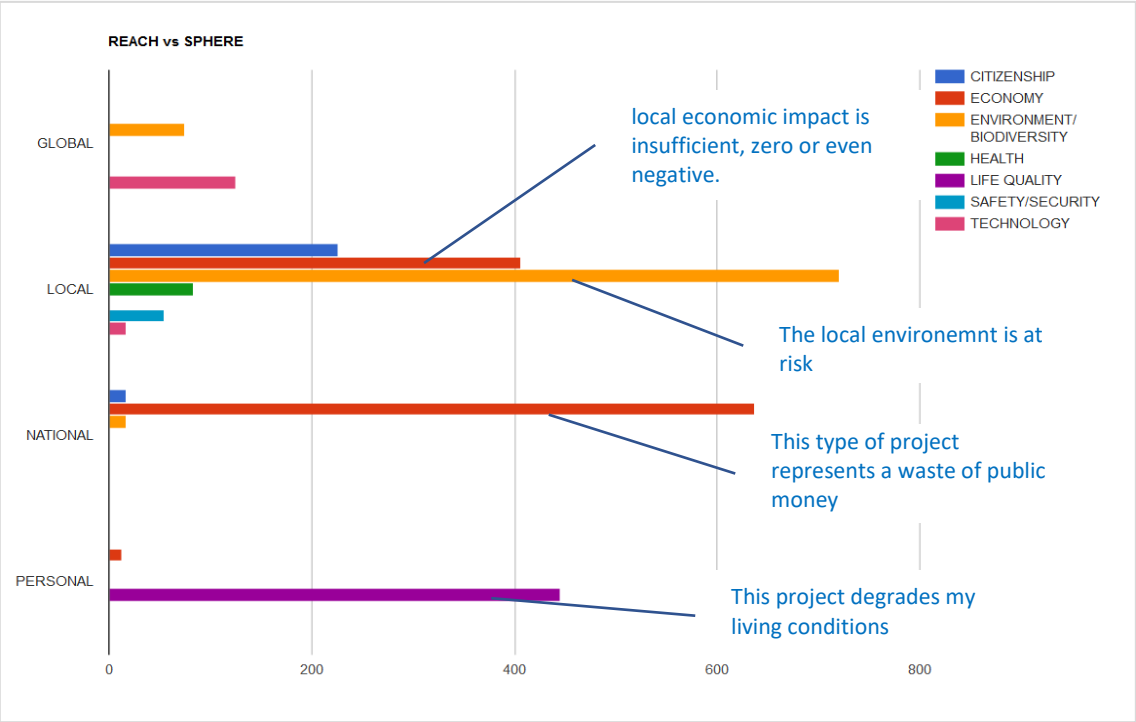


Figure 12 : argument breakdown by reach/sphere (number of quotes in the public inquiry)

D.3 PROJECT FOCUS: LINKY SMART METER

D.3.a Project fact sheet

Linky is a device for measuring electricity consumption dubbed "smart meter", a qualifier that reflects its ability to perform other functions than the mere recording of consumed kilowatt-hours.

The specifications provided during the development phase of this system included four main objectives (source Commission de Régulation de l'Energie - CRE):

1. for consumers: easy access, as often as possible, to information about their actual consumption,

2. for suppliers: to allow the invoicing of customers on the basis of diversified offers, in particular according to a time-of-use pricing,

3. for distribution system operators: to allow the use-of-network billing,

4. for managers of the power infrastructure: real-time access to the information needed to manage the balance between electricity supply and demand.

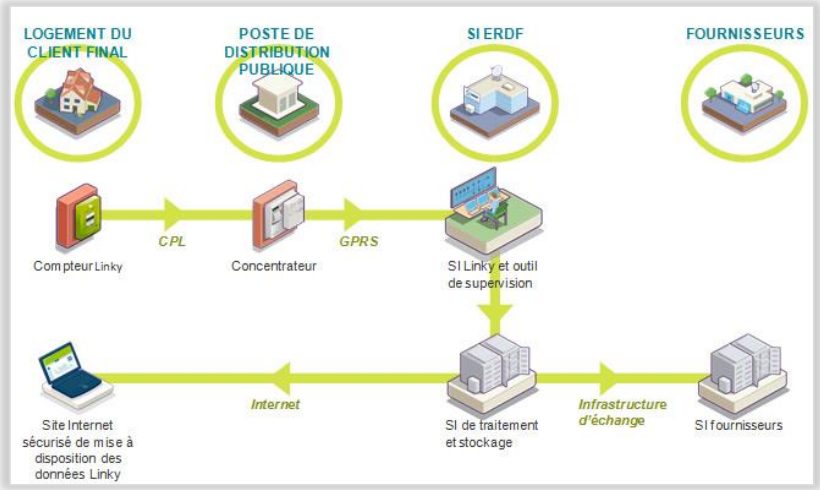


Figure 13: Linky architecture (Source CRE)

Linky also makes it possible to ease the installation in the case of "prosumers" where the consumer also plays the role of energy supplier: only one Linky is necessary instead of two meters before.

The deployment of Linky has its origin in two european directives of 2006 and 2009 (see Appendix 5). It is framed by various texts of the french law (see Appendix 6), of which the "Grenelle de l'Environnement" law n° 2009-967 of August 3rd, 2009 putting forward the additional objectives of energy efficiency and sobriety for combating climate change. After an experiment deemed favorable by the French Energy Regulating Authority (CRE), conducted in 2010 and 2011 with 250,000 customers[24], the deployment began in December 2015 and must continue until 2021, to reach 35 million installed meters.

D.3.b Linky: History of contestation

Linky is a project that spans the entire French territory. The controversy against Linky first developed in nationwide associations, focused on the dangers of electromagnetic fields. It is easy enough to capture the general public's attention with such a health risk, which is regularly raised, quite widely beyond the so-called "electrosensitive" populations.

The PLC technology (Power Line Communication) is the one indicted in the case of Linky. The rather reassuring conclusions of a notice published in December 2016 (and revised in June 2017 after new measurements) by ANSES (National Agency of Sanitary Security, Food, Environment, Work)[25] did not convince critics about the lack of danger. A video explaining how to protect yourself from Linky waves[26]

[24] See http://www.cre.fr/documents/deliberations/communication/resultats-de-l-experimentation-linky/dossier-sur-l-experiementation-linky-juin-2011, accessed 16/04/2018

[25] "*Although there is currently little information on the potential health effects of exposure to electromagnetic fields in the PLC frequency bands (approximately 50-150 kHz), the very low exposure levels (...) point to a very low probability that (…) it could generate short or long term health effects*". https://www.anses.fr/en/system/files/AP2015SA0210Ra.pdf

[26] "Découvrez comment neutraliser Linky". https://www.youtube.com/watch?v=Xmkr_HZUoyM, accessed 30/04/2018

posted by the Régénère association[27] on its YouTube channel in July 2016 was totaling close to 300,000 views at the end of April 2018. Another one, adopting an alarming tone, had reached 260,000 views as of the same date[28].

Societal (the "big brother syndrome") and political arguments then quickly appeared and added to the sanitary fears. The economic, technical and security aspects, although less important, are also regularly mentioned.

The first notable actions launched against Linky were four applications for annulment - on grounds of ultra vires - with the State Council, formed in 2011 and 2012 against the decision of September 28, 2011 and the order of January 4, 2012, taken by the Minister of Industry regarding the generalization and specifications of smart meters. Two of these requests came from the "*Robin des Toits*" grassroots association and the two others from the "*UFC Que Choisir*", a consumer organization. The Council rejected the four applications by a single decision on March 20, 2013[29].

Once the deployment began, a suspicion or even a mistrust on the part of some customers, convinced by the arguments developed by the "anti-Linky" organizations, could be observed. In its report "*The deployment of the Linky meter*", delivered in January 2017, the CGEDD (General Council of the Environment and Sustainable Development) noted that *"between December 2015 and May 11, 2016, Enedis has recorded 13,120 customer refusals for 509,058 installed meters, representing an average rate of 2.6%"*[30].

At the end of 2017, only 3% of the households that benefited from the Linky installation had agreed to share their load curve every 30 minutes with Enedis and their energy supplier[31], the CNIL having stated in an opinion delivered on November 30, 2015 that explicit consent was required for this data transmission[32].

It also turned out later that these 3% were, for the most part, customers of Direct Energie and that this company had not obtained the customers' consent in a "*free, enlightened and specific*" way, which was pointed out by a CNIL notice in March 2018[33].

Finally, according to a non-public survey conducted by Enedis in autumn 2017, and quoted by Les Echos[34], 38% of households equipped by Linky said they were "*not*" or "*not at all*" satisfied with the information delivered at the end of the installation.

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[27] An association focusing on well-being and dietetics. http://regenere.org/

[28] "Compteur Linky: La mort à domicile…" (*Linky: death at home…*), on Biotic TV, an esoteric website. https://youtu.be/QHkOdoDx-0c, accessed 30/04/2018. This video, bearing a most questionable title, is a montage of contents from the associations *Next-up* and *Robin des Toits*.

[29] See https://www.legifrance.gouv.fr/affichJuriAdmin.do?oldAction=rechJuriAdmin&idTexte=CETATEXT000027198463&fastReqId=1598074204&fastPos=1

[30] See http://cgedd.documentation.developpement-durable.gouv.fr/documents/cgedd/010655-01_rapport.pdf, accessed 12/04/208

[31] "Les compteurs Linky peinent à convaincre les ménages", Véronique Le Billon, in *Les Echos*, 13/12/2017.

[32] See https://www.cnil.fr/fr/compteurs-communicants-linky-la-position-de-la-cnil-sur-le-stockage-local-de-la-courbe-de-charge-0, accessed 16/04/2018

[33] Voir https://www.cnil.fr/fr/direct-energie-mise-en-demeure-pour-une-absence-de-consentement-concernant-les-donnees-issues-du, accessed 16/04/2017

[34] *Les Echos*, 13/12/2017, cited above

Figure 14 : a resident in Troyon (department of Meuse) showcases his opposition to Linky (Source : estrepublicain.fr)

As the deployment unfolded, local associations and refusal collectives multiplied, taking up the arguments of the few most active associations and opinion leaders. A national "Stop-Linky" gathering of groups and associations[35] from all over the territory was organized on March 22, 2017 in Paris to challenge the presidential election candidates[36].

Beyond the public health arguments, the opposition to Linky often appears as a confrontation between citizens feeling despised and the state technocracy considered autistic. This can be interpreted as the refusal of a too fast, dehumanizing progress which some French people do not endorse. This is reflected, for example, in the name of the collective *Touche pas à mon compteur* ("*Don't touch my meter*"), which implicitly confers on the old "blue meter" the status of a valuable object about which people care, as a symbol of the good old days.

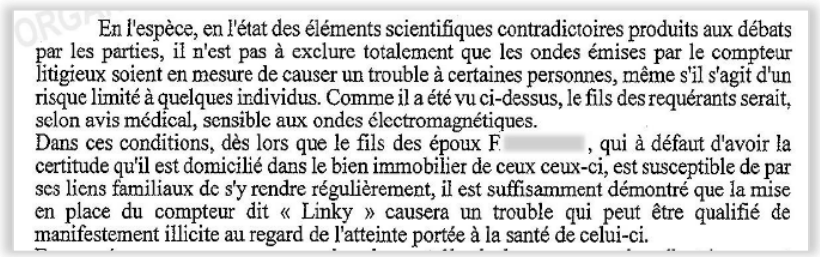
A few hundreds of municipal councils have expressed reservations or refused the installation of Linky (see cartography and example of deliberation of a city council in Appendix 7). At the beginning of April 2018, the website *refus.linky.gazpar.free.fr* counted nearly 600 municipalities in this case. However, according to the National Federation of Licensing and Regulating Communities (FNCCR), many of these communities are forced to reconsider their refusal, in most cases at the request of their department prefecture. In addition, administrative justice tends to deny the municipalities the necessary competence to refuse the replacement of existing meters[37] (see the facsimile of a judgment of Pau administrative court in Appendix 9).

On the other hand, it seems that Enedis is less well armed in the face of individual refusals. Thus, a summary judgment of the Grenoble high court, dated September 20, 2017, ruled in favor of complainants refusing the installation of Linky, on the grounds that their son was electrosensitive (see below Figure 15).

[35] Some of these associations owning a website are listed on this page: http://www.stop-linky.fr/stoplinky/index.php/sites-a-consulter, accessed 12/04/2018

[36] See http://refus.linky.gazpar.free.fr/rassemblement-stop-linky-paris.htm, accessed 12/04/2018. Another national action day was scheduled for May 5, 2018.

[37] "Compteurs Linky : la ville de Tarnos n'a pas le droit de refuser leur installation", *Sud-Ouest*, 20/07/2017. https://www.sudouest.fr/2017/07/20/compteurs-linky-la-ville-de-tarnos-n-a-pas-le-droit-de-refuser-leur-installation-3633473-3566.php



En l'espèce, en l'état des éléments scientifiques contradictoires produits aux débats par les parties, il n'est pas à exclure totalement que les ondes émises par le compteur litigieux soient en mesure de causer un trouble à certaines personnes, même s'il s'agit d'un risque limité à quelques individus. Comme il a été vu ci-dessus, le fils des requérants serait, selon avis médical, sensible aux ondes électromagnétiques.
Dans ces conditions, dès lors que le fils des époux F , qui à défaut d'avoir la certitude qu'il est domicilié dans le bien immobilier de ceux ceux-ci, est susceptible de par ses liens familiaux de s'y rendre régulièrement, il est suffisamment démontré que la mise en place du compteur dit « Linky » causera un trouble qui peut être qualifié de manifestement illicite au regard de l'atteinte portée à la santé de celui-ci.

Figure 15 : Excerpt from the summary judgment of Grenoble high court, delivered on 20/09/2017.
Source : http://www.next-up.org/pdf/TGI_Grenoble_Ordonnance_Refere_EHS_contre_Linky_ENEDIS_20_09_2017.pdf

Broadly speaking, the citizen's opposition to Linky takes place in a climate of confrontation, not conducive to discussion. Thus, during the series of "*Roundtables on Smart Meter Issues*" held in the French National Assembly on December 14, 2017, the deputy and chairman Cédric Villani noted that most of the anti-Linky associations had refused to participate to the debate (see excerpt from his intervention in Figure 16). As an example, we reproduce below (Figure 17) an extract of the open letter made public by the collective *Pièces et Main d'Oeuvre* explaining this refusal, which illustrates the virulent form that can take the opposition to Linky (See also the letter from *Robin des Toits*, Appendix 13)

We will also hear from Ms. Gaelle Vigouroux, Regional Councilor for Brittany, who will speak first and foremost as a member of the Stop Linky collective in Chateaulin-Porzay. We read in the press, in this regard, that we had trouble identifying interlocutors from associations and have them come here. However, we have, on the contrary identified quite a lot of interlocutors and many were informed of this hearing a long time ago. On the other hand, ***it is true that we have had many rejections, sometimes accompanied by open letters or even violent remarks.*** *Let it be clear that our approach is not intended to close the debate but rather to make it open. However, it is particularly difficult to manage a situation in which the interlocutors and the contradictors do not appear.* ***I am therefore all the more grateful to Mrs Gaëlle Vigouroux for being here today. I know she has been criticized and even coerced to try to dissuade her from participating in this hearing****…*

Figure 16: Excerpt of Cédric Villani's introducing speech at the roundtable "Smart meters: health effects and controversies" held in French National Assembly on December 14, 2017 (translation by the authors)

Of course, our reasons do not interest the National Assembly, as you write yourself. (...) The sociologists of acceptability, we know them as much as they know us. We know their axiom: "to involve and make accept". The "debate" trick, once decisions have already been made, (...) we only know it too well. We remember nuclear power, GMOs, nanotechnologies. Never elected officials and decision makers seek to meet us before upsetting our world and our living conditions.
Keep your sociologists, your "dialogue procedures with the people" and your contempt. We speak for ourselves without firewalls and our neighbors understand us quite well.
We do not want more of your experts and their expertise. Deciding what life we want is not a technical problem, but a political one. We do not care for your electromagnetic field exposure measurements, your data anonymization devices, your studies, your standards and your thresholds. We do not want a healthy connected meter or a discrete connected meter. We do not want more connected meters than connected hardware in our homes, "smart" cities or big data-driven lives. We are the experts of our own lives. We deny the state to impose us a connected object, to force us to live in dehumanized and automated "smart cities", to make our data a commodity - to make our human life impossible.

Figure 17: Excerpt from the open letter "Why we will not go to the National Assembly roundtable about the Linky meters, to which we are not invited" made public by “Pièces et Main d'œuvre” (translation by the authors)
Source : http://www.piecesetmaindoeuvre.com/spip.php?page=plan

In the same vein, the words of an ex-Linky installer, reported by far-left journalist *Jean-Pierre Anselme* on his blog, saying that he had the feeling of "*being a kind of SS or Gestapo in charge of imposing a poison on people*"[38].

This dramatization generates a tension between the customers and the installation technicians, which can unfortunately escalate (see testimony, Figure 18). Many of these altercations ended in justice. On June 20, 2017, a judgment of La Rochelle court of law disallowed a Linky installer accusing a client of "*violence with no incapacity for work*". The client had violently evicted the agent from his property while he was attempting to shear the protection bars installed to prevent the replacing of the meter (see facsimile in Appendix 16). Conversely, on February 2, 2018, it was the anti-Linky who were sentenced for “gang assault” with a weapon (a crossbow) against a technician.

[38] "Linky et son monde", Jean-Pierre Anselme, 21 mars 2017. https://blogs.mediapart.fr/jean-pierre-anselme/blog/210317/linky-et-son-monde

"I was attacked once in the city of Quiévrechain. I was replacing of an accessible meter, that is to say a meter located outside the house. [...] After 20 minutes, the person came out and began to insult me. [...] I had to call my boss who went on the spot with the municipal police. "
In Albi (Tarn), collectives meet regularly to scare Linky installers, and even go as far as forming gangs to "track down" the technicians. In Riom (Puy-de-Dôme), last July, two technicians from Oti France were welcomed by a sexagenarian with ... a shotgun, who threatened them with death by pointing the gun at them - before fleeing.Yet the installers were installing the new meters in the lobby of a building and not directly in the apartments .
"We did not expect such nervousness [from the inhabitants]," explains [a technician from Solutions 30]. "We do not force meters, we do not break the locks, we do not cross the barriers, but we are treated as thugs." According to him, if the situation is extreme today - and has been for some time now - it is because of the "incitement to violence" orchestrated by the anti-Linky revolt leaders, and especially by the most famous among them : Stéphane Lhomme.

Figure 18 : Excerpt from the article "Linky : les poseurs en première ligne", socialmag.news, 23/04/2018 (translation by the authors) http://www.socialmag.news/23/04/2018/linky-poseurs-desinformation/

We also notice that for some people, refusing Linky is a political act, on par with other social struggles (see the words of Dominique Humbert, founder of the association STOP LINKY 88, in Figure 19). More than a dozen anti-Linky events were planned on May 5, 2018, as part of the action "the Macron party" launched by France Insoumise's deputy Francois Ruffin.

ENEDIS, which is in charge of the installation of the meters, has institutionalized the lie to hide from local elected officials and users the real reasons for this program. (...) This is another step in the disappearance of the public service and its replacement by tariffed services, subject to competition and serving the interests of large companies and their shareholders.
In this respect, our fight joins that of railway workers, hospital agents and EHPAD, student youth. We'll be stronger together.

Figure 19 : Words of Dominique Humbert, president of grassroots association STOP LINKY 88, published on the website sortirdunucleaire.org (translation by the authors)
Source : http://www.sortirdunucleaire.org/Rassemblement-et-chaine-humaine-54216

During the Panorama 2018 seminar organized by IFPEN (IFP Energies Nouvelles) on February 8, 2018, Laurent Ferrari, Enedis sales director, announced that Linky's deployment were on normal track and in line with the roadmap: 8.5 million already installed out of 32 million by 2021 (representing 90% of the park). He also stated that the refusal rate from clients was very low, indicating however that the value of this rate was higher in areas with underprivileged populations[39].

Since the beginning of 2018, the news show, however, that the widespread installation of Linky is still far from being consensual:

[39] See the debate video: http://www.panorama-ifpen.fr/, accessed 12/04/2018

- in February 2018, the Court of Auditors regrets in its annual report an information deficit, a cost too high for the consumer (the installation is free but the cost is gradually passed on to the bill, in the TURPE[40]), and queries the interest of Linky for the control of global consumption as well as for the management of the network,
- Still in February 2018, the MPs of *La France Insoumise* submit an amendment (rejected) to the draft law on the protection of personal data, adding to Article L. 341-4 of the Energy Code the following paragraph: "*Smart meters ('Linky', 'Gazpar' and such devices), can not be installed without the express written consent of the people whose meters are used to collect and transmit data relating to their consumption. Any installation performed without this consent constitutes a crime of invasion of privacy as provided for in article 226-4 of the Criminal Code*"[41]. In April 2018, *France Insoumise* MP Alexis Corbière again demands the freedom of choice of Linky for customers and municipalities, in a written question to the Minister of Ecological and Solidary Transition[42].
- On March 8, 2018, *UFC-Que Choisir,* a consumer organization, launches an online petition entitled "*Linky - Refuse to pay for Enedis!*" [43] , signed by more than 200,000 people as of mid-April 2018,
- On March 20, 2018, *Les Républicains* senator Florence Lassarade tables an amendment to the draft law on the protection of personal data, as follows: "*These devices [Linky meters] can not be installed with users who expressly oppose it*"[44] . The amendment was finally withdrawn.
- In early April 2018, four lawyers appeal to the health minister, Agnès Buzyn, as well as to the minister of the ecological and solidary transition, Nicolas Hulot, asking them to suspend the deployment of Linky by Enedis. In the event of a status quo, the group threatens to bring a collective action for interim relief against Enedis on 5 June 2018. By mid-April 2018, nearly 4,000 people had registered to take part in this action[45]. At the same time, the lawyers' website announces that 20 local courts have been seized (see list in Appendix 11).

D.3.c Linky opponents

Press articles, blogs, press releases, specialized and non-specialized websites, reports from various organizations dealing with Linky are extremely numerous.
Some sources appear as the primary vectors of anti-Linky arguments. Their perceived legitimacy derives in particular from the precedence of their commitment and their constant activism. However, these entities have few resources (except *UFC Que Choisir*) and seem to act in a dispersed order.

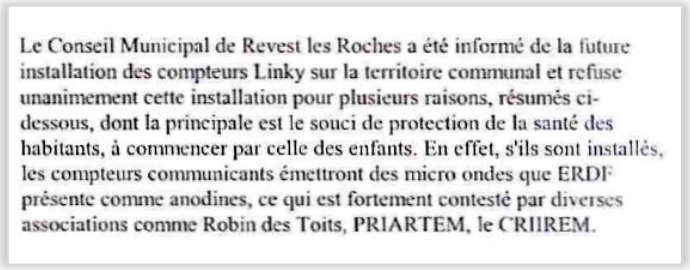
We categorize these sources into 5 categories:

Associations dedicated to the danger of electromagnetic fields and electrosensitivity

Sometimes referred to as "anti-waves lobby", these associations are not only devoted to the criticism of Linky but also to that of mobile phones, antennas, etc. Their argument is primarily focused on health issues.

[40] Tarif d'Utilisation du Réseau Public d'Electricité (Use of Public Electricity Network Fee)
[41] See https://www.nosdeputes.fr/15/amendement/592/71, accessed 12/04/2018
[42] See http://questions.assemblee-nationale.fr/q15/15-7701QE.htm, accessed 30/04/2018
[43] See https://www.quechoisir.org/action-ufc-que-choisir-linky-refusons-de-payer-pour-enedis-n52364/, accessed 16/04/2018
[44] See https://www.senat.fr/amendements/2017-2018/351/Amdt_1.html, accessed 20/04/2018
[45] The lawyers are Mr Arnaud Durand (Lexprecia), Mrs Corinne Lepage, Mr Christophe Lèguevaques and Mrs Catherine Szleper. Anyone can participate in the action by registering on the website https://linky.mysmartcab.fr/ , for a 48 € fee.

They are often taken as a reference by other opponents (see for example the deliberation of a city council in Figure 20).



Le Conseil Municipal de Revest les Roches a été informé de la future installation des compteurs Linky sur la territoire communal et refuse unanimement cette installation pour plusieurs raisons, résumés ci-dessous, dont la principale est le souci de protection de la santé des habitants, à commencer par celle des enfants. En effet, s'ils sont installés, les compteurs communicants émettront des micro ondes que ERDF présente comme anodines, ce qui est fortement contesté par diverses associations comme Robin des Toits, PRIARTEM, le CRIIREM.

Figure 20: excerpt from Revest les Roches City Council minutes (department 06), January 29, 2016.
As in many similar cases, the associations Robin des Toits, Priartem and Criirem are cited

- **PRIIARTEM – Electrosensibles de France (Pour Rassembler, Informer et Agir sur les Risques liés aux Technologies ElectroMagnétiques)**

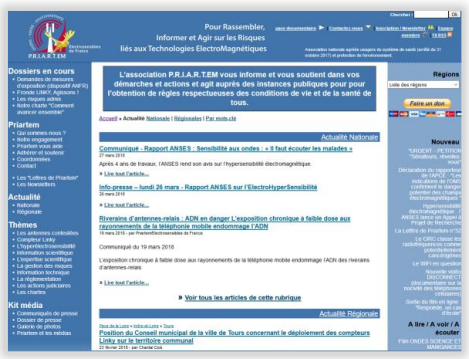


Figure 21: priartem.fr

Founded in 2000 and merged with the group "Electrosensibles de France" in 2014, PRIARTEM is primarily an NGO representing people suffering from electrohypersensitivity (EHS). Its co-founder and vice-president Janine Le Calvez is frequently interviewed as an expert in the press.

By a letter addressed to the health minister, dated 9 July 2015, PRIARTEM requested a moratorium on the deployment, the amendment of the bill on the energy transition and referral to the ANSES (National Security Agency sanitation of food, environment and work) to carry out additional health studies on Linky. According to PRIARTEM, this letter triggered the study which results the ANSES (National Agency for Food Safety, Food, Environment, Labor) published on December 15, 2016[46].
In February 2018, to answer the very numerous individual requests, Priartem put on line on its website a user manual giving guidelines to refuse Linky[47].

[46] Cited above

[47] "Linky : Agir pour préserver sa santé". http://wiki.priartem.fr/lib/exe/fetch.php/dossiers:compteurs:linky:kit_action:linky_-_agir.pdf

- **Robin des Toits**

Figure 22 : "Robin des Toits" website

Robin des Toits was founded in 2004 by Etienne Cendrier, a painter, worried about the implementation of a mobile phone antenna on his children's school roof. It was therefore a personal citizen approach.
In 2011, Robin des Toits unsuccessfully seized the State Council to cancel the decision to deploy the Linky meter. The association proposes on its site an "*ecological and responsible refusal kit*", including a set of documents and useful guides to refuse the installation of Linky[48].

- **CRIIREM (Centre de Recherche et d' Information Indépendant sur les Rayonnements Électro Magnétiques non ionisants)**

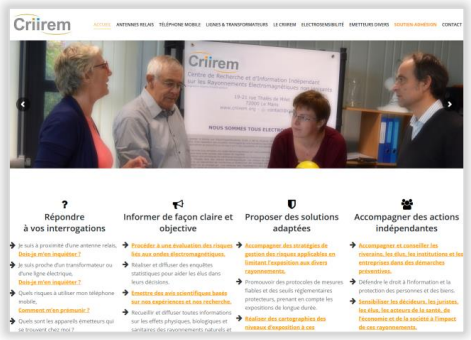


Figure 23: criirem.org

The Criirem was founded in 2007 by Pierre Le Ruz and Michèle Rivasi, currently MEP for *Europe Ecologie Les Verts*. Pierre le Ruz defines himself on the site as a "*Doctor in animal physiology, European expert in electromagnetic risks and radiation protection, author of books and publications on the biological effects of non-ionizing radiations*". It seems, according to research done by inquisitive Internet users, that this resume is questionable[49].
Criirem presents itself as an independent research and information center and a scientific expert bureau. The association provides diagnostic services and action plans to limit exposure to various types of radiations.
In 2016, the Criirem challenged the scientific validity of the opinion given by the National Frequency Agency

[48] See https://www.robindestoits.org/LINKY-kit-de-Refus-ecologique-et-responsable-mode-d-emploi-mars-2018_a2479.html, accessed 20/04/2018
[49] http://forums.futura-sciences.com/debats-scientifiques/232271-pierre-ruz-dr-google-page-ranking-biophysique-physiologie.html, accessed 21/04/2018

drawing the conclusion that Linky had no significant impact on the intensity of electromagnetic radiation in homes[50], and called for further testing. Same for the CSTB report, made on behalf of ANSES in July 2017[51]. Pierre Le Ruz, president of the association, declared in 2015 that Linky was a "*technological delirium*" that would only "*increase the electromagnetic fog*"[52].

- **next-up.org**

This association, originally created to oppose nuclear energy, has extended its action to the theme of electromagnetic waves[53] in the late 2000s. In 2009, it opened a "refuge zone" for hyper electrosensitive people in the Alps. Linky is now on the front page of its website and seems to have become its main target.

Figure 24: le next-up.org

Less "institutionalized" than the three previous organizations, probably because of its "conspiracy" tone, Next-up is often referenced as a trusted source by anti-Linky grassroots associations.

The video "Stop Linky, the tutorial, the solution"[54], posted by Next-up on YouTube in May 2016 had reached 50,000 views at the end of April 2018.

[50] Press release : "*Alerte Criirem : compteurs Linky et ANFR*". https://www.criirem.org/wp-content/uploads/2016/06/ALERTE-criirem-ANFR-linky-1.pdf, accessed 20/04/2017

[51] https://www.criirem.org/wp-content/uploads/2017/07/Avis-CRIIREM-rapport-CSTB.pdf, accessed 20/04/2018

[52] *L'age de faire* n°98, juillet 2015. http://criirem.org/wp-content/uploads/2015/10/adf_98-2%20compteurs.pdf, accessed 20/04/2018

[53] In August 2009, Serge Sargentini, president of Next-up, told the Sunday Star Times newspaper about electromagnetic fields: "*There will be a Nuremberg moment. All those who hid the truth from the people will have to account before justice*". https://www.pressreader.com/new-zealand/sunday-star-times/20090823/281874409428400, accessed 30/04/2018

[54] https://youtu.be/4v6QyMyk8S8, accessed 30/04/2018

Consumer organizations

The main assocation in this category is :

- **UFC Que Choisir**

Figure 25 : front page of Que Choisir monthly, October 2017 (« Linky: the black book")

UFC Que Choisir, a private consumer protection association, has a monthly magazine whose circulation is estimated at 590,000 copies. It made a very early stand against Linky unlike other national consumer associations (*Familles rurales, Familles de France, CLCV - Consommation, logement et cadre de vie* ...), which remained more neutral.
Over forty articles devoted to Linky, or mentioning it most often in a negative way, have appeared in *Que Choisir* monthly since 2010. For example (title translation by the authors) :

- Electricity: the looming scandals (24/08/2010)
- Linky meter: UFC-Que Choisir intends to bypass the smart meter (25/04/2012)
- Linky meter: Overheating on subscription fees (24/09/2013)
- Linky meter: the one-upmanship begins! (1/15/2014)
- Linky meter: Scrapping of the consumer's interests (02/12/2015)
- Linky Meter: The aggressive way of Enedis (06/04/2017)
- Linky meters: The scandalous impunity of Enedis (26/09/2017)
- Linky: Refuse paying for Enedis! (08.03.2018)

For the past few months, UFC's biggest fight against Linky has been the cost to the consumer, which has resulted in the petition "*Linky – Let's refuse to pay for Enedis!*" [55] .

Anti-Linky individual activists

We have selected here only the most visible personalities, appearing frequently in searches on the web, well referenced by other websites and having elected Linky as their fight of choice.

[55] Cited above

- **Refus.linky.gazpar.free.fr (Stéphane Lhomme)**

This site does not seem to be linked to any legal entity. The only visible identification is a phrase at the bottom of the main web page: "*This website is maintained by Stéphane Lhomme, municipal counsellor in Saint-Macaire (Gironde)*

Figure 26: refus.linky.gazpar.free.fr

Stéphane Lhomme is a long-time anti-nuclear activist, former employee and administrator of *Réseau Sortir du Nucléaire*, from which he was fired, and founder of the association *L'Observatoire du Nucléaire* ("*Nuclear Energy Monitoring Center*") in 2012. His website *refus.linky.gazpar. free.fr* is a chronicle of all the facts and events of the anti-Linky movement. Stéphane Lhomme extensively uses a sensational and controversial tone (See one of his tweets, Figure 27).

Figure 27 : a Stéphane Lhomme tweet, May 3, 2018
("Fires: why Linky has killed and will kill again. Enedis and the State have chosen to kill deliberately")

The video of a lecture by Stéphane Lhomme, organized by *Deux-Sèvres Refus Linky Gazpar* (a grassroots collective) posted on Youtube in December 2017 was viewed 75,000 times[56].

His Twitter account *@StephaneLHOMME* has almost 1,500 subscribers (as of 5/05/2018).

Stéphane Lhomme sometimes makes harsh judgments about other opponents. In 2017, he accused *UFC Que Choisir* of collusion with *Enedis*, corruption and treason towards consumers for publishing articles warning of the legal consequences of the refusal to install Linky. In response, *UFC Que Choisir* attacked him for defamation, but lost the case (December 2017)[57]. In April 2018, he indicted the Anti-Linky Operational Platform (POAL) by writing: "*I underline that the site POAL is a fake activist site set up by two crooks who, in reality, are only there to sell (very expensive) pseudo 'anti-PLC' filters that filter your wallet more surely than waves"* [58].

Stéphane Lhomme also condemns the group of lawyers who have launched collective legal actions against (see above, p. 36) :

"[regarding the legal actions mySMARTcab / Lexprecia] I do not need to go into detail about the reasons for my uncomfortable feeling (euphemism) with regard to these aggressive marketing approaches, with good old hooks like 'Sign up quickly before the deadline'. (...) For a few days, the lawyer and former minister Corine Lepage has suddenly tried all means against the Linky, which we should cheer. However it can be noted that she has teamed up with MySMARTCab / Lexprécia, inviting individuals, associations and municipalities to pay their contribution for forthcoming proceedings ..."[59]. MySMARTCab has reacted vigorously to these attacks on his Twitter feed (Figure 28):

Figure 28 : MySMARTcab response Tweet to Stéphane Lhomme's accusations (April 18, 2018).
It criticizes a "shabby smear campaign", relayed by the "Enedis' sounding board"
and denouncing useful idiots who defend their enemies[60]

[56] "Linky: la video pour tous". https://youtu.be/7W41yI5MMgg, consulté le 30/04/2018

[57] Voir l'article accusateur de S.Lhomme http://refus.linky.gazpar.free.fr/linky-ufc-que-trahir.htm, consulté le 20/04/2018 et la décision du tribunal http://refus.linky.gazpar.free.fr/UFC-deboutee-contre-SL-dec2017.pdf, consulté le 20/04/2018

[58] "Est-ce que le militant anti-linky Stéphane Lhomme a raison quand il dit que la Plateforme Opérationnelle Anti-Linky ne cherche qu'à vendre des filtres CPL", Emma, Donada, checknews.liberation.fr. http://checknews.liberation.fr/question/63051/est-ce-que-le-militant-anti-linky-stephane-lhomme-a-raison-quand-il-dit-que-la-plateforme-operationnelle-anti-linky-ne-cherche-qua-vendre-des-filtres-cpl

[59] https://www.stop-linky-68.com/single-post/2018/04/11/Communiqu%C3%A9-de-Stephane-Lhomme

[60] the "*Enedis sounding board*" is the Twitter thread *LinkyMonAmour* who makes fun of anti-Linky activisits. The "*useful idiot*" is Stéphane Lhomme, who in 2017 called for donations to finance his legal proceedings against *UFC Que Choisir*.

SantéPublique éditions (Annie Lobé)

Annie Lobé is the manager (and apparently single employee) of SantéPublique Editions Ltd.

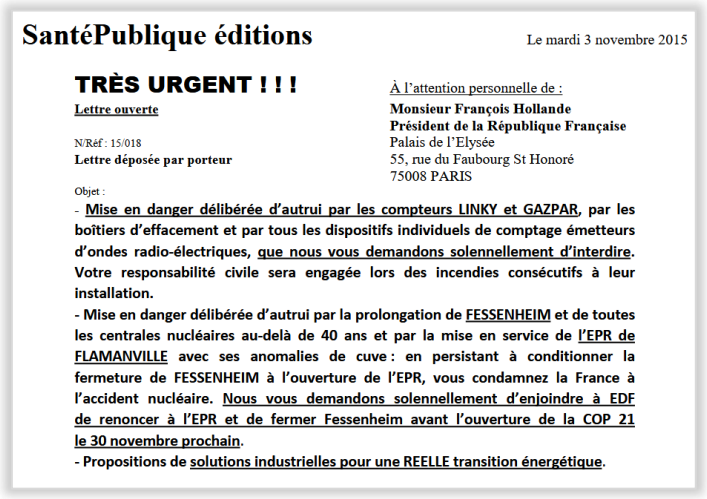
Figure 29 : santepublique-edition.fr

Annie Lobé introduces herself on her website: "*An investigative independent scientific journalist, she has made dozens of hours of interviews with scientific researchers in France and around the world, collected hundreds of testimonies, read thousands of studies, the results of which she has cross-checked and supplemented with electromagnetic fields measurements and in situ observations of life and family relations. Her articles have been published in Sciences et Avenir, Notre Temps, Questions de femmes, Pratiques de santé, Nature & Progrès... On her investigation subjects like mobile telephony, electricity, low consumption light bulbs, nuclear energy, food colourings and the new Linky meter, Annie Lobé reveals information that disturbs the lobbies and her work is therefore not relayed by the media, who live off their advertising budgets (...)".*

In the past, Annie Lobé has gained some visibility on the issue of low energy bulbs. His video "*The dangers of low-energy light bulbs*" has been viewed more than 10,000 times on YouTube[61]. She is one of the most vocal opponents in Linky. For example, she proposes on her website a "*Complete Kit to request that a co-owners general assembly vote against the installation of Linky*". She has written numerous articles[62], organized several petitions and sent open letters to French president Francois Hollande and his government (Figure 30).

[61] https://youtu.be/bGJ-fqBeDOA, accessed 25/04/2018

[62] For example "Pourquoi il faut refuser Linky, le nouveau compteur « communicant »", Alternative Santé, 24/10/2015. https://www.alternativesante.fr/ondes-electromagnetiques/pourquoi-il-faut-refuser-linky-le-nouveau-compteur-d-edf



SantéPublique éditions Le mardi 3 novembre 2015

TRÈS URGENT ! ! !

Lettre ouverte

N/Réf : 15/018

Lettre déposée par porteur

Objet :

À l'attention personnelle de :

Monsieur François Hollande
Président de la République Française
Palais de l'Elysée
55, rue du Faubourg St Honoré
75008 PARIS

- **Mise en danger délibérée d'autrui par les compteurs LINKY et GAZPAR, par les boîtiers d'effacement et par tous les dispositifs individuels de comptage émetteurs d'ondes radio-électriques, que nous vous demandons solennellement d'interdire. Votre responsabilité civile sera engagée lors des incendies consécutifs à leur installation.**
- **Mise en danger délibérée d'autrui par la prolongation de FESSENHEIM et de toutes les centrales nucléaires au-delà de 40 ans et par la mise en service de l'EPR de FLAMANVILLE avec ses anomalies de cuve : en persistant à conditionner la fermeture de FESSENHEIM à l'ouverture de l'EPR, vous condamnez la France à l'accident nucléaire. Nous vous demandons solennellement d'enjoindre à EDF de renoncer à l'EPR et de fermer Fessenheim avant l'ouverture de la COP 21 le 30 novembre prochain.**
- **Propositions de solutions industrielles pour une REELLE transition énergétique.**

Figure 30 : an open letter sent to François Hollande by Annie Lobé about Linky, Fessenheim and Flamanville nuclear power plants . Source : http://www.HEALTHpublique-editions.fr/lettre-a-envoyer-a-francois-hollande-pour-garantir-la-france-contre-l-accident-nucleaire.html

Before the 2017 French presidential election, Annie Lobé published a 20-page article in which she was sharply critical about the risks that Linky, according to her, would put on freedom in France, and analyzed the positions of candidates on the issue[63]. We reproduce below some significant excerpts (Figure 31). Her very detailed arguments and mail templates to Enedis or one's town mayor are popular within local anti-Linky collectives[64].

> *Linky is not only a small electric meter that causes breakdowns, fires, explosions, the increase of all bills ... Linky is also the "proof of concept" of future connected objects. If the next president-elect does not put an end to the deployment of this new fluorescent yellow meter, we will soon all be observed and constantly monitored by everyday objects, and the Internet will know everything about us. (...)*
> *Had Hitler had the Linky, he would not have lost his war. (...)*
> *With Linky, France shoots in the back of all its Foreign Intelligence agents (…) since each housing would become a snitch revealing the structure of the activity of its occupants, and in particular the periods of presence and absence, in real time. (…) It is precisely the lack of Internet connection and mobile phone in the house of Osama bin Laden that brought the attention of American analysts. (...)*

Figure 31 : Excerpt from #Liberté Ne pas être épiés 2.0 ("#Freedom not to be spied on 2.0") by Annie Lobé, published on April 19, 2017

[63] Nicolas Dupont-Aignan was the only candidate for 2017 presidential election committed to stopping the Linky program

[64] For example: http://44contrelinky.blogspot.fr/2017/02/linky-madame-annie-lobe-nous-envoie-une.html, https://www.facebook.com/StopLinkyCollectif45Loiret/posts/1350669801650019, http://stoplinky54.over-blog.com/2016/03/le-courrier-a-envoyer-a-erdf.html, http://transitioncollectiveduvalentinois.com/, etc…

- **stop-linky.fr**

This anonymous site is frequently updated with Linky news and puts forward plenty of guides and documents about how to refuse Linky.

Figure 32: stop-linky.fr

- **stop-linky.com (Gregory Henemann)**

This site is maintained by a passionate programmer, living in La Chapelle d'Armentières : Gregory Henemann. It is representative of a rational opposition, inspired by civic responsibility (read press article, Appendix 10)

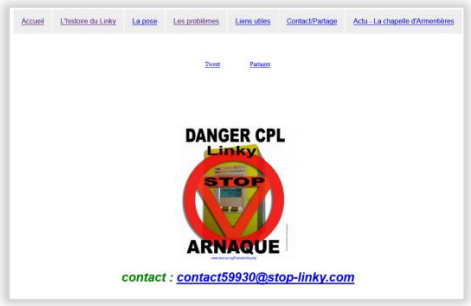


Figure 33 : stop-linky.com

Platforms, directories and website networks

These sites are intended as hubs towards the numerous anti-linky grassroots associations and give access to directories by department, as well as data bases and social network functionalities between the different collectives and associations. They originate from individual initiatives.

- **stoplinkynonmerci.org**

This site defines itself as "*a collective bringing together all Facebook groups and organizations focusing on the consequences of electromagnetic fog on our health and on the remote control of devices and equipment located inside homes*". It offers a directory of anti-linky Facebook groups, as well as a searchable database, and a "Linky incident" reporting form (Figure 34). The site has not been updated since april 2017.

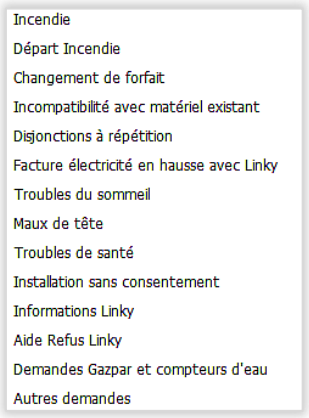


Figure 34 : Linky incident categories proposed by stoplinkynonmerci.org.
Source : http://incidents.stoplinkynonmerci.org/index.php?a=add

Although the site is anonymous, the domain name owner is revealed on the Whois database: Mr Pierre Lassalle, psychotherapist in Brest (Brittany, France). Mr Lassalle has a blog on the leftist news website *Mediapart,* on which is has written some articles about Linky[65]. He also launched an online petition against Linky on the *avaaz.org* citizen petitions website, which collected 1,126 signatories as of may 2, 2018 (Figure 35)

Pierre Lassalle is also a member of Next-up, Priartem and Robin des Toits.

Figure 35 : Pierre Lassalle's petition aginst Linky on avaaz.org
https://secure.avaaz.org/fr/petition/Maires_de_France_ErDF_Ministere_de_lEcologiedu_Developpement_durable_Stop_Compteurs_Linky_et_electricite_sale/

[65] See for example " Lettre ouverte aux collectifs Stop Linky", 26/03/2017. https://blogs.mediapart.fr/pierre-lassalle/blog/260317/lettre-ouverte-aux-collectifs-stop-linky

- **stoplinky88.fr**

This site, maintained by anti-linky collective of the Vosges department, gives access to a list of all anti-linky collectives in France[66]. As of may 2, 2018, there were 383 of such collectives in the database.

- **temoignage-linky-france.fr** (TLF - Témoignage Linky France)

This anonymous website, which can be connected with the Toulon area Stop Linky collective[67], collects testimonies from people suffering from health desorders attributable to Linky. As of april 23, 2018, 153 testimonies had been collected.

- **poal.com** (POAL, Plateforme Opérationnelle Anti-Linky)

This nicely designed website is a social nework dedicated to antiLinky associations. It has been indicted by Stéphane Lhomme for being a fraud intended to sell anti-CPL devices.

- **Other websites**
  - *Facebook page of Stop Linky collectives in France* : www.facebook.com/pg/Stop-linky-contact-des-collectifs-en-France-101989356853044. As of the end of april 2018, this page had 1773 likes et 1837 followers.
  - *stoplinky-france.webnode.fr* : another platform for grassroots associations

Backers and relays

- **Lawyers**

Group of lawyers against Linky

This group of lawyers (see above, p. 36) intends to launch a collective claim in summary proceedings against Enedis in june 2018 and brings together potential complainants on its website (Figure 36)

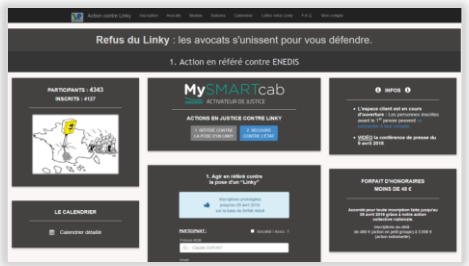


Figure 36 : linky.mysmartcab.fr

[66] See http://www.stoplinky88.fr/les-collectifs-anti-linky-en-france/, accessed 02/05/2018

[67] We find the mention of the name of Alain Vérignon, one of this group's members, in the testimony form. http://ekladata.com/d3y1hJz2sHACEOt6H3zq0Jq0uNA/Appel-a-Temoignage-sanitaire-compteurs-Linky.pdf, accessed 20/04/2018. About Alain Vérignon, see "Comment ce Varois a blindé sa maison pour se protéger des ondes", Guillaume Aubertin, Var-Matin, 09/02/2017. http://www.varmatin.com/conso-shopping/video-comment-ce-varois-a-blinde-sa-maison-pour-se-proteger-des-ondes-113072y

Figure 37 : Twitter account of the lawyers group launching legal collective proceedings against Enedis

Artemisia

This law office founded by Mrs Blanche Magarinos-Rey's seeks to "*promote access to law and justice for civil society actors committed to protecting the environment and safeguarding human rights, through counseling, legal support, assistance and legal representation, on the basis of symbolic or even pro bono fees, as often as possible.* "

Linky is one of the main issues this office deals with. It is written on its site (*artemisia-lawyers.com*): "*(...) because of a very large number of calls [concerning linky], we no longer answer the phone to provide individualized answers to your many questions. Please read carefully what is posted on this site, as most of the answers to your questions are available in our writings* ". The website contains a page giving free access to letter templates useful for the rejection of linky (see example Appendix 18).

- **Scientists**

Professeur Dominique Belpomme

Professor Belpomme is frequently cited as a leading scientific personality by electrosensitive people or those who mobilize against electromagnetic fields, including the anti-Linkys. He is in charge of an environmental medicine consultation at the Alleray-Labrouste clinic in Paris. He receives people who think they are victims of health problems due to electromagnetic fields, and issues medical certificates attesting to a "*syndrome of intolerance to electromagnetic fields*".

Pr Belpomme is currently prosecuted by the French National Medical Council, after an alert issued by the Enedis' director of department of medical studies. The latter had found that more than half of the medical certificates received concerning the contraindications for the installation of the Linky meter were issued by Pr Belpomme. This complaint is motivated by the lack of diagnosis individualization, because the certificates delivered are all identical, and because of the use of medical examinations which benefit is considered as questionable by the Council (the "ultrasound cerebral tomosphygmography")[68].

[68] http://sante.lefigaro.fr/article/electrosensibilite-le-pr-belpomme-vise-par-une-procedure-disciplinaire-de-l-ordre-des-medecins/, accessed 30/04/2018

- **Politicians**

Michèle Rivasi

Michèle Rivasi is an EELV (Europe Ecologie Les Vert) MP and municipal councilor of Valence (Drome department). She is a co-founder of the Criirem (see above p. 38).

She has often spoken out against Linky and Enedis, which she describes on her blog as the "*shame of public service*".

In february 2018, following the report of the French Court of Auditors criticizing the Linky program, she asked the State to set up a moratorium on the deployment of Linky[69].

D.3.d Normalized arguments

Disturbance

ECONOMY

- Linky will lead to job cuts in France
  Target: project – Reach: national

HEALTH

- Linky causes headaches, tinnitus and various physiological disturbances (especially for electrohypersensitive people)
  Target: LINKY technology – Reach: personal

LIFE QUALITY

- The operator can control as he wishes (and remotely) the supply of electricity to each customer
  Target: LINKY technology – Reach: personal
- Linky causes malfunctions and breakdowns on electrical appliances / with Linky, one will have to replace one's electrical appliances
  Target: LINKY technology – Reach: personal

PRIVACY & DATA PROTECTION

- Enedis will sell personal consumer information collected through Linky to business partners who will use them to sell their services
  Target: LINKY technology – Reach: personal

Governance

CITIZENSHIP

- Enedis is dishonest and / or incompetent
  Target: authorities – Reach: national

[69] Voir http://www.michele-rivasi.eu/a-la-une/linky-la-cour-des-comptes-revele-les-mensonges-denedis/, consulté le 30/04/2018

- Installers are dishonest and / or incompetent
  Target: private interests – Reach: national
- Experts are dishonest and / or incompetent
  Target: authorities – Reach: national
- reference health risk standards are undervalued / dictated by lobbies
  Target: authorities – Reach: global
- the information provided on the project is insufficient and / or misleading
  Target: project – Reach: personal
- Linky was not decided in the general interest but is above all a source of profit for private companies
  Target: project – Reach: national

ECONOMY

- In France, large-scale projects like Linky are poorly managed and always lead to failure (Concorde, Minitel, ...)
  Target: authorities – Reach: national

Performance

ECONOMY

- Linky will increase customers' electricity bills (when it is supposed to save them money)
  Target: project – Reach: personal
- Linky is too costly for the country considering the expected benefits
  Target: project – Reach: national

ENVIRONMENT & BIODIVERSITY

- Linky is useless for reducing electricity consumption (and thus for the energy transition), or even will increase this consumption
  Target: project – Reach: national
- Linky leads to a waste of raw materials (scrapping old meters without need)
  Target: project – Reach: global

TECHNOLOGY

- Linky's ergonomy is badly designed
  Target: LINKY technology – Reach: personal
- there are other more efficient technologies / Linky will be obsolete at the end of its deployment
  Target: LINKY technology – Reach: national

Risk

CITIZENSHIP

- the installation of Linky represents a legal risk for a mayor (he could be implicated in the event of an accident in his city)
  Target: project – Reach: personal

HEALTH

- Linky has a negative impact on human health and can cause serious diseases (electromagnetic fields)
  Target: LINKY technology – Reach: personal

PRIVACY & DATA PROTECTION

- LINKY represents a cyber-terrorism risk at a national level
  Target: LINKY technology – Reach: national
- LINKY represents a data theft risk (at the Enedis level)
  Target: LINKY technology – Reach: personal
- LINKY represents a data theft risk (at the customers' level)
  Target: LINKY technology – Reach: personal

SAFETY & SECURITY

- Linky can cause a fire
  Target: LINKY technology – Reach: personal

Symbol

CITIZENSHIP

- Linky mandatory installation undermines individual freedom
  Target: project – Reach: personal
- Linky linky leads us to a robotic, dehumanized, surveillance or even totalitarian society
  Target: authorities – Reach: national

D.3.e Key learnings

Linky is a textbook case, in which a project appearing rational, useful, harmless and well prepared to the technocracy and Enedis engineers becomes a bone of contention between a segment of the population and what is deemed an "autistic" and dominating elite.

The Linky case also demonstrates that a few purposeful activists can manage to make enough noise to create a national controversy, which media impact (sometimes locally enhanced by acts of violence) is disproportionate in regard to the actual number of people involved.

Linky is accused of all evils by its opponents : noxious electromagnetic fields, spying device paving the way for a totalitarian state, trojan horse for pushy sellers, juicy profits for unscrupulous industrialists, risk of fire, lack of dialogue with the population, etc… The anti-Linkys also complain that there is no benefit for the consumer.

In our opinion, this radical rejection is probably a medium used to express a more profound resentment towards the government and sometimes a fear in front of the evolution of our society. This a why no

rational argumentation could make the opponents change their minds. The only acceptable deal for them would be the project withdrawal, which would be celebrated as a victory over an enemy.

D.4 PROJECT FOCUS: GARDANNE BIOMASS POWER PLANT

D.4.a Project presentation

The project involves converting Unit 4 of the Gardanne Generating Station, operating on coal and petroleum coke for 250 megawatts (MW) of electrical power, into a biomass generation unit. Once operational, the electrical power of the plant will be 150 MW.

This project is the largest biomass energy project in France. Renamed "Provence 4 Biomass" the unit is intended to cover 6% of the electricity needs of the Paca region. It should be supplied with 87% of local or imported biomass and ash coal for the remaining 13%.

The Gardanne power plant is owned by Uniper, a multinational company split by the German group E-On, the world's third largest energy distributor. Since January 2018, the capital of Uniper has been 47% owned by the Finnish group Fortum following the sale by E.On of 46% of the shares and a takeover bid.

The main features of the project are:

- Conversion of the unit 4 of the coal-fired power plant
- Electrical capacity : 150 MWe
- Power generation : 1 125 GWh
- Efficiency : ≈ 30%
- Biomass : 850 000 tonnes of wood annually out of which 445 000 tonnes of local forest
- Annual operatinf time : 7 500 hours
- Water consumption : 12 000 000 m3
- Investment : around €250 millions
- State subsidy : around €70 millions per year for 20 years, a total of €1.4 billion

Key dates:

- *July 2010* : launch of a call for tenders by the Commission for Energy Regulation
- *28 February 2011* : E.On X files his bid for the CRE4 tender
- *Juin 2011* : E.On announces its intention to close four unprofitable coal-fired power plants and to convert Gardanne power plant to biomass as part of the restructuring of its thermal generation capacity
- *29 February 2012* : the project to convert one of the two boilers of the coal-fired power plant located in Meyreuil (near Gardanne) is officially selected by the Energy Department of the Ministry of Ecology
- *July 2012* : public inquiry in the municipalities of Gardanne, Meyreuil, Fuveau, Bouc-Bel-Air and Aix-en-Provence
- *29 November 2012* : prefectural decree allowing Provence power station Unit 4 exploitation continues with biomass
- *16 May 2013* : E.On announces the conversion "reaches its implementation phase" and work should be completed by mid-2014 for a series of tests planned for the autumn prior to the exploitation start-up at the beginning of 2015

- *29 November 2013* : associations - FNE (13), CEPG (Convergence Ecologique Pays de Gardanne) and Friends of the Earth (13) - lodge an appeal before the Marseille administrative court against the authorizations that were issued to E.On by the authorities
- *3 July 2014* : 6 other associations file an action at the administratif court of Marseille, requesting the power station operating license cancellation
- *5 October 2014* : demonstration in protest against the project organized by the grassroots organizations Vigilance gaz Gardanne (CVGG) and SOS Forêt du Sud, in Gardanne
- *24 March 2015* : the Luberon and Verdon regional parks and the Pays de Forcalquier - Montagne de Lure and Pays de Banon groupings of communes file an action at the administratif court of Marseille
- *January 2016* : start of the supply campaign (40,000 tonnes of woodchips from Brazil arrive at the port of Fos-sur-mer)
- *12 September 2016* : Uniper becomes independent, 46% of its capital remains held by E.On
- *5 February 2017* : second demonstration in Gardanne, lead by the grassroots organizations Vigilance gaz Gardanne (CVGG) and SOS Forêt du Sud, supported by some 30 other associations
- *8 June 2017* : the administrative court of Marseille cancels the operationg license of the Gardanne-Meyreuil biomass power station
- *9 June 2017* : the prefect of the Bouches-du-Rhône département issues an order putting Uniper France Power on formal notice to regularize the administrative situation of the power plant facilities, within a 9 months period, and enacting precautionary measures allowing the provisional continuation of their exploitation. Uniper announces its intention to appeal this decision
- *7 Juy 2017* : Nicolas Hulot, minister of ecological and sustainable transition decides to appeal against the court decision
- *29 September 2017* : the Luberon and Verdon regional parks, threatened with losing regional funding, sign an agreement with Uniper and decide to discontinue legal actions. FNE PACA also withdraws from the legal action, while its departemental branches (04 and 13) maintain their complaint
- *February 2018* : tests with RTE are still underway. The supply plan has been validated by the State (imported resources 55%, local biomass 20%, recovery waste 15% and end-of-life wood 10%). New impact studies carried out by Irstea revealed the availability of the required resources
- *22 March 2018* : Uniper management announces having submitted a new environmental authorization

D.4.b Information sources

Analysis of the controversies against the Gardanne biomass plant is based on the following documentary resources:

- Public inquiry process report and Conclusions and opinions of the investigating commissioner
- Articles published in national and regional newspapers : Le Monde, Les Echos, L'Humanité, La Provence, La Marseillaise, Var-matin, Marsactu…
- Articles published on online energy and environment medias : Reporterre, Actu Environnement…
- Articles and reports prepared by grassroots associations opposed to the project : collectif SOS Forêt du Sud, collectif national SOS Forêt France, collectif SOS Forêt Cévennes, collectif Climat Pays d'Aix, Les Amis de la Terre, Association Sauvons la forêt, réseaux Relier et RAF, Attac, France Nature Environnement (FNE)…

- Bogposts specialized or not : blog Resistance Inventerre, website of the inhabitants « du lotissement des Vergers et des Amandiers » at Bouc Bel Air, blog « Gaz de schiste Provence », blog « Groupe rêve et transition », blog « Ecologie et environnement », blog « Anor Environnement »
- Documents on biomass and fuelwood published par NGO and foreign think tanks : Global Forest Coalition, ThinkForest, Friends of Earth, FERN, Dogwood Alliance, Biofuelwatch, Carbon Trade Watch, Greenpeace, GDAE…
- Leaflets calling for protests against the project
- Interviews and radio programs : radio Alpes Sud, radio Zinzine
- TV programs and documentaries

Detailed links list is in Appendix 20.

D.4.c Normalized arguments

Disturbance

ENVIRONMENT & BIODIVERSITY

- Unpleasant visual impact (deforestation of large areas)
  Target : the project – Reach : personal

LIFE QUALITY

- Unpleasant and disturbing noise from vehicles, trucks, wood shredding
  Target : the project and the biomass – Reach : personal

ECONOMY

- The visual impact can call labellings into question
  Target : the project – Reach : local
- The project will dissuade tourists to come and lower global revenues in the area
  Target : le project – Reach : local

Governance & Management

CITIZENSHIP & VALUES

- Democratic deficit of the debate on the energy transition / criticism of the national energy policy
  Target: public authorities – Reach: national
- Democratic deficit of the public debate about the project
  target: public authorities – Reach: local
- The main motivation for this type of project is not ecological but industrial or financial
  Target: private interests – Reach: national
- The studies and/or the communication made about the project seem misleading and/or insufficient
  Target: public authorities – Reach: local

ECONOMY

- The main motivation for this type of project is not ecological but industrial or financial ("profiteers", favoritism, corruption ...)
  Target: private interests – Reach: national/local

- Disagreement with the choice of a centralized structure and a single private actor versus a territorial project
  Target: public authorities and private interests – Reach: local
- France produces enough electricity does not need additional production capacity
  Target: ETTs in general – Reach: national

ENVIRONMENT & BIODIVERSITY

- Criticism of the national energy policy
  Target: public authorities– Reach: national/global
- Project not compliant with the European renewable energy development policy
  Target: the project– Reach: global
- Increasing the phenomenon of large-scale land grabbing for the planting of very short rotation trees for the needs of biomass plants in Europe
  Target: biomass – Reach: global

Performance

ECONOMY

- Biomass energy increases consumer electricity bills
  Target: biomass – Reach: personal
- Biomass energy is a waste of public money because it costs more than other energies and must be subsidized (the money would be better spent elsewhere: other ETT, energy savings, nuclear ...)
  Target: the project/biomass – Reach: local/national
- The project is not sustainable in the long term
  Target: the project– Reach: national
- The overall local economic impact is zero or negative
  Target: the project– Reach: local
- Economic concentration of the forest-wood sector / Speculation on wood prices
  Target: the project– Reach: local
- Project supply costs are underestimated
  Target: the project– Reach: local
- Maintenance and repair is very expensive
  Target: biomass – Reach: national

ENVIRONMENT & BIODIVERSITY

- Conflict with the sustainable management of the forest (risk of overexploitation)
  Target: the project/biomass – Reach: local/national/global
- The carbon footprint of (maritime) transport is very negative over long distances
  Target: the project/biomass – Reach: global
- The project is an ecological disaster and contributes to global warming
  Target: the project– Reach: local

TECHNOLOGY

- The technological choice (without co-generation) is questionable
  Target: the project/biomass – Reach: local/global

- Project energy efficiency is too low (35%)
  Target: the project– Reach: local

Risks

CITIZENSHIP & VALUES

- The selected operator is not a trustworthy company
  Target: private interests – Reach: national

ECONOMY

- The selected operator has no proven record in the field of renewable energy
  Target: private interests – Reach:local

ENVIRONMENT & BIODIVERSITY

- Risk of massive deforestation / Depletion of natural resources
  Target: the project/biomass – Reach: local/national/global
- Volatile and radioactive waste treatment and storage are dangerous for the drinking water
  Target: the project– Reach: local
- Habitat loss for biodiversity
  Target: the project– Reach: local
- The wood supply plan is absurd
  Target: the project– Reach: local/national/global
- Biomass energy is not carbon neutral
  Target: biomass – Reach: global

HEALTH

- The project increases air pollution
  Target: the project/biomass – Reach: local/global
- Concern with the use of class B wood
  Target: the project– Reach: local

SAFETY & SECURITY

- Fire hazard
  Target: the project/biomass – Reach: local

D.4.d Expressed opinions

Citizens expressed their opinions during the public inquiry.

This was conducted between July 2 and August 2, 2012 in the town halls of Gardanne, Meyreuil, Aix-en-Provence, Bouc Bel Air and Fuveau. 303 observations were collected on the inquiry records and 134 letters were received in the town halls. 280 people came during the opening hours in the municipalities of Gardanne, Meyreuil, Bouc Bel Air and Fuveau.
The flow of people was significant in Gardanne and Meyreuil. However, as the investigating commissioner points out, it should be noted that *« The subject of this inquiry has not aroused any interest in the town of*

Aix-en-Provence (...) The register of Aix-en-Provence is empty, there is not any observation nor annexed note »[70]*. « Although the project related to this inquiry may have direct impact on the local economy of the Pays d'Aix, the investigating commissioner notes the lack of reaction from residents, elected officials and associations of the municipality of Aix-en-Provence »*[71] [72]*.*
The project file, E.On provided was complete, voluminous (2442 pages) and rather technical, but according to the investigating commissioner *«The non-technical summary is readable and allows a non-specialist public an easy understanding »* [73]*.*

The wood resource availability study included supply areas located in perimeters of 100, 250 and 400 km from the power plant location. However, *«The impact study contains inaccuracies, contradictions and some shortcomings, as both the investigating commissioner and the public noted »* [74].

Comments citizens made during the public inquiry are merely focused on the project itself and not on the biomass. Indeed, it seems that *«The use of biomass and its implications were generally a consensual subject for all concerned, while others expressed entreched positions based on biased and partisan considerations »* [75]*.*

Those who expressed an opinion were familiar with the project and seemed very concerned. They raised a lot of questions. Their comments were mostly relevant and accurate, even rather critical. *« The reading of the observations reveals a very critical general tone, but for sometimes off-topic reasons »* [76]*.*

The findings of the public inquiry are as follows:

« The emerging results of the registers recorded observations analysis show a mistrust of decision-makers from the residents of the neighbourhood and the associations representing them (…). They are suspicious on the promise of improved air quality that would come from the biomass cogeneration plant » [77]*.*

« Likewise, they consider the file as unfinished, specially regarding the biomass wood resources supply plan» [78].

« However, the investigating commissioner notes that the major point for the opponents of the project is at the operational level, namely the "capacities to be done" by the proper tools being implemented, and at the "societal" level by the local acceptability » [79]*.*

Despite the shortcomings in the file and the worrying extent of the supply plan, the investigating commissioner issued a favorable opinion on E.On's proposed application for authorization.

[70] Public inquiry report – page 69
[71] Public inquiry report – page 70
[72] The numbers of inhabitants in 2018 in the involved communes are respectively : Aix-en-Provence 142 352 ; Gardanne 19 201 ; Meyreuil 5 464 ; Bouc Bel Air 14 606 ; Fuveau 10 092 Source : https://ville-data.com/nombre-d-habitants/
[73] Findings and Opinion of the Investigating Commissioner – page 4
[74] Ibidem
[75] Ibidem
[76] Findings and Opinion of the Investigating Commissioner – page 7
[77] Public inquiry report – page 71
[78] Public inquiry report – page 72
[79] Ibidem

The opposition matters are numerous. More than 30 arguments were raised by the opponents. Nevertheless, the solgan « Biomascarade » (Biomasquerade), oftently waved during the demonstrations protests and repeatedly used in the petitions texts could, on its own, summarize the dispute.
What does it mean?
First, the prefix "Bio" of "bio-energy" or "biomass" alone will not convince citizens, associations and local grassroots organizations that it is renewable energy or that the power plant project itself will help ensure a smooth energy transition and help reduce CO^2 emissions any more.
Then, the term “masquerade”, whose definition *is « entertainment whose participants are disguised and masked or paltry situation, misleading staging (from the Italian maschera, the mask)»* [80] assumes that grey areas remained. Speeches and informations disseminated on one side and on the other hide conflicting interests and mainly aim to foster the private purposes of a single industrial actor, to the exclusion and detriment of all the others, inhabitants and local economic agents.
Lastly, the project meets short term views and policies but in the long run (when the masks will fall), it will be clear the project is an ecological and economic disaster for PACA area and for the whole planet.

The most frequently cited arguments concern:

- Impact studies perceived as insufficient or misleading, regarding the supply plan and the air and noise pollution issues. And generally, the overall communication on the project is not considered satisfactory.
- The gigantic supply plan, described as absurd, and its consequences on a structured forestry management locally and at country level. Many concerns about the future of the timber industry in PACA region raised, including the speculation risk leading to a wood price increase unbearable for the other actors of the sector, resulting in the closure of small local wood boilers and consequently many jobs losses.
- Environmental degradation due to massive deforestation, clearcutting, habitat loss, declining diversity, and global land grabbing for fast-growing plantations to meet the supply of these mega-power plants, at local, national and global levels.
- The transformation of an industrial project into a so-called energy transition project to meet the short-term objectives of the European Union
- Air and noise pollution related to the plant operations and supply activities seem underestimated
- The centralized political decision without consultation with local elected officials and citizens in favor of a single private actor and to the detriment territory project and local actors.

The tender awarding conditions, the selected technology (without co-generation) and therefore the plant performance are disputed. This project, as subsidized, wastes public money. The very role of a wood-fired power plant is to produce both heat and electricity. However, according to the elected officials of the Luberon and Pays de Lure biosphere reserves *«The E-ON electricity production process from biomass is only around 30% efficient, without recovering the heat produced, which constitutes an ecological aberration and a notorious waste of the resource»* [81].

[80] Source : http://www.cnrtl.fr/definition/mascarade

[81] Source : https://www.actu-environnement.com/ae/news/megacentrale-biomasse-gardanne-eon-fne-elus-importation-bois-21052.php4

The idea of "false neutrality of biomass" that pollutes more than coal, is often taken again. Criticism of wood energy as renewable energy comes from better informed associations and grassroots organizations. These organizations refer to similar experiences in other countries, including England and the United States.

D.4.e Influencers in the project opposition

In France, the protest is first led by grassroots organizations, such as the collective SOS Forêt du Sud, whose leader is Nicholas Bell. Its opinions and actions are echoed by other associations or local blogs but with restricted distribution. Thus, initially, just a small portion of the population is aware. It takes some time and the support of other agencies, serving as a relay, for the protest to spread among the population.

There is a discrepancy between the project size and its potential impact on the France southeast quarter forests and the initial low mobilization of the inhabitants at the start of the project. Arguably, the lack of information provided to the local populations may explain this phenomenon, as described in the arguments analysis.

The local populations react belatedly. As already noted, the 2012 public inquiry, carried out on a small area (only the bordering communes), was limited in scope whereas today the number of people informed, aware of the stakes and who express their fears and opposition to the project, notably by signing petitions, is growing.

However, the dispute seems less organized in France than in the United States or in England where more powerful associations such as Dogwood Alliance (USA) and Biofuelwatch (UK) have taken up the issue for a longer time. They regularly disseminate well-documented information and carry out opposition actions frequently. Biofuelwatch conducts frequent and very active campaigns against the Drax biomass plant in England (#AxeDrax Campaign). The collective SOS Forêt du Sud uses some of their articles or reports to give their fight an international dimension and raise awareness about Gardanne power plant conversion and biomass dangers.

Grassroots and national associations

- **Collectif SOS Forêt du Sud**

  This collective is a regional branch of the national collective SOS Forêt. The inter-regional coordination « SOS Forêt du Sud – Non à la biomas'carade », was created in December 2013 to fight against biomass power plants mega projects[82].
  The group is launching calls to sign petitions against the E.On project (2013 and October 2017).
  A selection of informative and relevant articles about the Gardanne power plant and the wood energy issue are published on its website. (**Erreur ! Source du renvoi introuvable.**).

[82] Source : https://sosforetdusud.wordpress.com/about/

Nicholas Bell was the initiator of the group and he is presently still very active. In addition to the website of the collective, he communicates and disseminates his opinions on radio Zinzine, for which he registered numerous interviews and programs on the E.On project in Gardanne.

- **Collectif national SOS Forêt France**

The SOS Forêt France collective was launched in 2011 in Lorraine. Since then, it gets a national dimension in 2013 with regional representations in Bourgogne, Franche Comté, Cévennes, Provence-Alpes-Côte d'Azur (PACA) region, Hauts de France and Ile-de-France. As of 2015, it gathers about 25 members, including SNUPFEN Solidaires, RELIER, RAF, Friends of the Earth France, Resistance Terre, CGT-Fôret, ADTC (Avis De Tempête Cévenole), CEPG (Convergence Ecologique du Pays de Gardanne)... The SOS Forêt France collective is committed to contributing to the development and adoption of another vision of forest management and wood sector. Vision that should optimize social, ecological and economic contributions of forests in the short and long term, for the sake of all, today and tomorrow.

An article of Reporterre (September 2013), an interview of Jean Ganzhorn (member of the collective "Vigilance Citoyenne collective sur le projet biomasse centrale de Provence"), a link to sign the 2013 petition, the call to demonstrate on February 5, 2017 in Gardanne and an article of the LPO PACA were available on its website[83].

- **Collectif SOS Forêt Cévennes**

Created in autumn 2013, the collective covers the departments of the Cevennes arc (Ardeche, Aveyron, Gard, Haute-Loire, Herault, Lozere). Its provide support to SOS Forêt France. The collective got involved against the Gardanne power plant project when the Cevennes chestnut forests became a preferred source of supply for E.On[84].

- **Collectif Vigilance Gaz à Gardanne (CVGG)**

Formed on February 15, 2011 when French State granted license for "unconventional gas" research in the previous coal basin territory in Gardanne area, the collective called for an immediate halt to gas exploration on this territory and the opening of a public debate on unconventional gases. The collective has also been involved in the protest movement against the Gardanne power plant through a short-lived collective called "Collectif Vigilance citoyenne sur la biomasse de Gardanne" which no longer exists today. In 2014, articles and calls to sign petitions were posted on its blog[85]. Since then, the collective CVGG whose representatives are Rémy Carrodano and Claude Calvet continues its activities (demonstrations, petitions, public meetings) but no longer posts any information on its blog.

- **Collectif Climat Pays d'Aix**

The collective is a combination of people individually engaged and associations concerned by climate issues. Its action is based on the Pays d'Aix and Gardanne territory in connection with regional, national

[83] Source : http://www.sosforet.org/gardanne/
[84] Source : https://sosforetcevennes.wordpress.com/
[85] Source : http://cvgg.over-blog.com/tag/dossier%20%22biomasse%22%20eon/

and international dynamics, such as Attac Aix, Alternatiba movement, and Climate 21 Coalition. On 16 June 16, 2016, the collective organized a meeting with the collective Vigilance Gaz Gardanne representatives for the screening of the film "Threats on French Forests", produced by Benoît Grimont in 2015. Objectives were informing about the dangers of the "all BIOMASS" policy and showing the disastrous example of the E.On/UNIPER Gardanne mega-power-plant. He also called to protest during the Regional Council meeting in Marseille on July 4, 2016 "*to denounce this ecological disaster and this hypocrisy*".

- **Les Amis de la Terre / Friends of Earth**

Created in 1970, "Friends of the Earth International", now present in 77 countries and gathering 2 million members on the five continents is the first global ecological network. In France, the Friends of the Earth brings together about thirty local or autonomous associated groups. The association advocates for a transition to sustainable societies and promotes renewable energy technologies. On its website are published articles on the risks induced by the wood-energy sector massive development, with the Gardanne power station as a symbol. Studies showing the pressure exerted on agricultural lands and forests to cover the needs of bio-energy are also available[86]. The association among others and with local elected officials and the regional nature parks lodged an appeal with the administrative court, resulting in the June 8, 2017 decision. Jean Reynaud is co-president of Friends of the Earth in the Bouches-du-Rhône department.

- **Association Sauvons la forêt (Rettet den Regenwald e.V.)**

It is a non-profit organization based in Hamburg, Germany, focused on any project or business and political decisions that may destroy the rainforest. It provides support to local organizations to prevent deforestation, land grabbing, animal abuse and tropical nature destruction. Founded in 1986 by Reinhard Behrend, it receives private funding and grants from the German State for some projects.

The association posted articles, call for the February 5, 2017 protest demonstration in Gardanne, as well as petitions in 7 languages (German, English, French, Spanish, Italian, Portuguese, Indonesian). The association has 33,000 French followers on Facebook.

- **Relier** (**R**éseau d'**e**xpérimentation et de **l**iaison des **i**nitiatives en **e**space **r**ural)

Public information meetings have been organized in Forcalquier (04) and Serres (05) in January 2014 by this national association for popular education, created in 1984. On its website, newspaper articles on the project, links to sing petition and Nicholas Bell's Zinzine radio shows "against EON's delirium" are posted.

- **Réseau pour les Alternatives Forestières (RAF)**

Réseau pour les Alternatives Forestières (Network for Forestry Alternatives) was created in 2008, within the popular education association RELIER. RAF seeks to improve knowledge and understanding

[86] Sources : http://www.amisdelaterre.org/Aspire-par-des-centrales-geantes.html; http://www.amisdelaterre.org/IMG/pdf/foee_brulerlaterre.pdf

of the issues related to the French forest evolution and advocates for a soft and sustainable forest management. Nicholas Bell is the RAF's director. The network broadcasts all the SOS Forêt du Sud publications as well as Zinzine radio programs, petitions and demonstrations against the project.

- **Attac Marseille and Attac Aix**

These Attac local branches organized public information meetings and broadcast the call for the march against the « Biomass'carade » and the E.On / Uniper plant in Gardanne on February 5, 2017.

National federations

- **France Nature Environnement (FNE) / FNE PACA**

FNE is the French federation of nature and environment conservation associations. It gathers 3500 associations, grouped in 80 organizations.

Since 2013, FNE PACA has taken legal action to suspend the plant operating license. It addressed letters to the Director General of the "Caisse des Dépôts et Consignations" contesting the plant public financing by the CDC to the detriment of small local biomass installations, as well as to the various ministers of ecology (to Phillipe Martin in February 2014 and to Nicolas Hulot in August 2017). Regularly, updates on the Gardanne project are published on its website.

As Renaud Muselier, PACA region president, threatened to suspend funding for both the nature parks and the federation, FNE PACA withdrew its complaint against Uniper, without signing a memorandum of understanding with Uniper. FNE departmental branches (in Alpes-de-Haute-Provence and Bouches du Rhône) pursue legal action.

Natural parks

The regional Verdon and Luberon nature parks opposed the project rather belatedly. In 2015, they filed an appeal with the Administrative Court of Marseille requesting the cancellation of the 2012 decree authorizing Uniper to operate an electricity production facility from biomass. They obtained it in first instance in June 2017, the justice having recognized that the supply plan impact study carried out by E.On/Uniper was insufficient. They gave up pursuing their legal action to avoid regional funding removal and finally signed in September 2017 a Memorandum of Understanding with Uniper and the region. This MOU aims to *« explore synergies between local forest development strategies and P4B supply issues »* [87].

NGO, international associations and scientists

NGOs and foreign associations, such as Global Forest Coalition (that brings together 80 NGOs in 53 countries), the FERN (European NGO based in Brussels), Dogwood Alliance (US organization engaged for 20 years in the forest protection in 14 southern states of the United States) and Biofuelwatch (an English association focused on biofuels and biomass issues), are actively fighting against biomass. They are information and inspiration sources for the Gardanne project opponents.

[87] Protocole de travail quadripartite Parcs naturels régionaux du Luberon et du Verdon, Région Provence-Alpes-Côte d'Azur et Sté UNIPER
Source : https://reporterre.net/IMG/pdf/3_protocole_regionpaca_uniper_pnrl_pnrv_version_finale.pdf

SOS Forêt du Sud collective, especially, collects and disseminates some of their publications in order to give added effect to its arguments. Partnering with NGOs who denounce similar projects in other countries helps giving its fight an international dimension. Therefore, the question is not to oppose a specific project but to denounce worldwide biomass use and its environmental impacts (massive deforestation, land grabbing ...).
These NGOs argue that biomass does not help reducing CO^2 emissions but rather that it would help increasing them. Some of them are questioning European Union policy which promotes fuelwood and encourages coal-fired power plants conversion into biomass plants while wood energy resources in the countries concerned are insufficient to supply these plants[88].

Indeed, SOS Forêt du Sud collective realized that Gardanne project was representative of a disturbing development at global level : the craze for bioenergy at industrial scale for electricity production. The European Union has decided renewable energies share in the global energy mix should reach 20% by 2020. Yet, bioenergy represents 65% of renewable energies. Such an objective would require to fell for energy purposes only, a quantity of wood equal to the total volume of timber harvested in the EU in 2013 ...
FERN has made a short film to warn about the dangers this craze may cause, illsutrated by Gardanne power station[89].

For some months, the global scientific community has responded and has been active. In September 2017, 190 scientists from around the world sent an open letter to various EU officials in which they expressed *« their grave concern and dismay about the scientific basis of recent EU policy (...). The chosen approach is likely to have adverse effects on climate, biodiversity and resilient ecosystems by emitting more gas (...) Bioenergy is not carbon neutral and can have very negative impacts on climate[90] ».*
In December 2017, 15 scientists published an article in The Guardian newspaper to alert to the forest biomass electricity production dangers[91].

In December 2017, 796 scientists (American and European) sent an open letter to the European Parliament about forest biomass, urging parliamentarians to review their policy *« We urge European*

[88] Source : http://biofuelwatch.org.uk/wp-content/uploads/Chain-of-Destruction-online.pdf
[89] Source : https://www.youtube.com/watch?v=EJ9thDgt3Aw&feature=youtu.be
[90] Source : https://blogs.mediapart.fr/nicholas-bell/blog/061217/gardanne-et-la-planete
[91] Source : https://sosforetdusud.files.wordpress.com/2018/04/guardian-14-12-17-franc3a7ais.pdf

legislators to amend this directive to restrict forest biomass to residues and properly defined waste, because the fate of forests around the world and the climate are literally at stake[92] *».*

Medias

- **Radio Zinzine**

Radio Zinzine is a self-managed, free radio, animated by a few employees and a lot of volunteers, since 1981. It operates without any advertising, 24 hours a day all over the year, in four departments Alpes de Haute Provence (04), Hautes-Alpes (05), Bouches du Rhône (13) and Vaucluse (84).
More than fifteen programs on the E.On project in Gardanne have been recorded between October 2013 and February 2017 (see details in **Erreur ! Source du renvoi introuvable.**).

- **Radio Alpes Sud**

Between December 2013 and June 2017, more than 10 articles were posted on the radio website, providing information about the petitions, marches and demonstrations protests against the project organized by local grassroots associations and local representations of the EELV party[93].

Petitions

- **« Uniper wants to burn the French forests in Gardanne! »**

This petition was addressed to Nicolas Hulot and to the E.On Excecutive Board. The first request is to *« withdraw the operating license given to Uniper and reallocate the significant public funds inexplicably granted to the project to support territorial energy projects launched after extensive consultation of citizens. »* And the second one addressed at Uniper's management is *"to abandon the damaging and expensive biomass plant project in Gardanne. »*
It was launched by the association « Sauvons la forêt » (Rainforest Rescue) in support of local collectives, such as CVGG. To date (May 22, 2018), 220,769 signatures are collected, target is 250,000[94].

[92] Source : http://ase.tufts.edu/gdae/Pubs/climate/LetterFromScientistsToEuParliament_ForestBiomass_January_2018.pdf
[93] Source : http://alpesdusud.alpes1.com/search/index
[94] Source : https://www.sauvonslaforet.org/petitions/959/uniper-veut-bruler-les-forets-francaises-a-gardanne

- **« Biomass'carade (Biomasquerade): Scorn and trampling of democracy for the Gardanne power plant »**

Launched by Jean Reynaud (University Doctor) on October 6, 2017, this petition addressed to Nicolas Hulot (Ecology Minister), Renaud Muselier (President of PACA Regional Council) and to the Prefect of Bouches du Rhône has 22,225 signatories to date (May 22, 2018). The author requests a public meeting-debate in order to obtain an answer to the following three questions: (a) why was the provisional authorization to pursue operating given while the plant is not yet operational and there is no energy emergency? (b) why will a minister in charge of environmental protection defend an industry that fits into the ICPE classification (polluting, toxic and/or dangerous industries)? (c) why did the regional elected officials now support the industrialist so fiercely, while they simultaneously are asking questions about biomass use and requesting a moratorium?[95]
This petition appears on a number of blogs or militant sites, which have no direct connection with the power plant, such as the association Yonne Lautre, member of Alternatiba collective[96].

- **« We ask you to withdraw the operating license given to E.ON for the harmful and expensive biomass plant project in Gardanne (Bouches du Rhône) »**

This petition was addressed to Ségolène Royal (Minister of Ecology and Sustainable Development), Arnaud Montebourg (Minister of Productive Recovery) and Michel Cadot (Prefect of Bouches du Rhône department). It was launched by SOS Forêt du Sud collective (in December 2013) in association with other organizations: Vigilance gaz de Gardanne Pays d'Aix (CVGG) ; Convergence écologique du Pays de Gardanne (CEPG) ; Cèze et Ganière ; CGT Forêt PACA ; SNUPFEN-Solidaire ; l'association de lutte contre les nuisances sonores et les pollutions (ANLP) / Association against noise and pollution ; France Nature

[95] Source : https://www.mesopinions.com/petition/nature-environnement/biomass-carade-mepris-pietinement-democratie-centrale/34736

[96] Source : https://yonnelautre.fr/spip.php?article7310

Environnement Bouches du Rhône (FNE 13) ; Les Amis de la Terre Bouches du Rhône (AT 13) / Friends of Earth; ATTAC Gardanne.
Closed today, it collected 4,984 signatures[97].

Demonstrations

- **Sunday October 5, 2014**

About 400 people joined a demonstration, organized to denounce the E.On misguidedly ecological project, qualified a « biomascarade » (Biomasquerade). Claude Calvet from Vigilance citoyenne sur la biomasse de Gardanne collective, Nicholas Bell from SOS forêt du sud collective, trade unionists from the National Forest Office (CGT) and regional elected officials : Hervé Guerrera (Occitan Party) et Christian Desplat (EELV) members of the regional council, Karine Berger, Hautes-Alpes socialist parlement member, Michèle Rivasi EELV european parlement member, François-Michel Lambert, EELV parlement member and vice-president of the committee for sustainable development and territorial planning in the National Assembly were involved in this demonstration.

Source : https://reporterre.net/Manifestation-contre-la-desastreuse-centrale-a-biomasse-de-Gardanne

- **Sunday February 5, 2017**

Rally in Gardanne and march to the power plant to denounce massive deforestation, increased pollution, public health concern, energy aberration, waste of public money ... The event was organized by Vigilance gaz Gardanne (CVGG) and SOS Forêt du Sud organizations, with the support and presence of SOS forêts des Cévennes ; Vigan Cévennes collective; SAPN (Société Alpine de Protection de la Nature) ; CGT Forêt PACA ; LPO PACA ; Snuffen ; ATTAC 13 ; ATTAC Alès Cévennes ; Climat Pays d'Aix collective ; Alternatiba ; Sauvons la Forêt ; Réseau environnement Santé ; Friends of Earth13 ; CEPG ; ADER ; Objectif Transition collective ; Littoral Marseille collective ; Santé Littoral Sud comittee ; Union Calanques du Littoral ; FERN ; ALNP de Meyreuil ; CIQ des clapiers ; ARPENT ; Appel de la Forêt ; Cèze et Ganière ; Anti Gaz de Schiste 30 collective ; FNE13 ; Forum Civique Européen ; FRAPNA Ardèche ; Oikos

[97] Source : https://www.change.org/p/s%C3%A9gol%C3%A8ne-royal-nous-vous-demandons-de-retirer-l-autorisation-d-exploitation-donn%C3%A9e-%C3%A0-e-on-pour-le-projet-n%C3%A9faste-et-dispendieux-de-centrale-%C3%A0-biomasse-de-gardanne-bouches-du-rh%C3%B4ne

Kai Bios ; RAF ; Soupes et Bobines ; Val d'Issole Environnement ; GreenPeace Marseille. 1000 people demonstrated.

Source : https://sosforetcevennes.files.wordpress.com/2017/01/gardanne-manifestation-5-fevrier-2017-tract-ogre.pdf

- **Sunday December 10, 2017**

In response to the call of the group "#pasuneurodeplus (not one more euro) for the energies of the past" about forty people gathered in Gardanne to denounce "the false solution of the Biomass power station and the acceleration of the ecological and social transition in Gardanne, including, Jean-Luc Bérard, "SOS Fôret du Sud" spokesman and Jérôme Freydier, CGT Forêt Paca spokeman[98].

D.4.f Key learnings

Gardanne power plant is the symbol of the centralized French political system in which decisions are often made away from concerned places and communities.

Local people and local elected officials felt ignored and even despised. Thus, the public inquiry was a mere lip service play after the decision to convert the plant to biomass had already been takein at the government level. Moreover, it is clear that such a choice responds more to political and industrial imperatives in the short term, than ecological ones. This is the ambiguity that reigns around the ecology and the energy transition in France. Gardanne is a cautionary case of how the government struggles to convince citizens that the country is truly committed to a sustainable energy transition.

Opponents of the project, initially, were only a handful and had difficulties to make their arguments heard. They were collectives created specifically to oppose this project and did not weigh much against a major industrial company, strengthened by the governement support. Their legal actions only brought them short-lived victories.

[98] Source : http://www.lamarseillaise.fr/bouches-du-rhone/developpement-durable/65887-ils-ont-manifeste-contre-la-biomass-carade

However, they have gained traction by coming together with national and international organizations, as well as scientists, on the subject of wood supply which could incur massive deforestation in France and abroad. Eventually, their persistence could make the lines shift.

D.5 PROJECT FOCUS: ROCK ISLAND CLEAN LINE (IOWA, ILLINOIS, USA)

D.5.a Project presentation

The Rock Island Clean Line (RICL)[99] is a 500-mile overhead high voltage direct current[100] (HVDC) transmission line that will deliver 3,500 megawatts[101] from northwest Iowa and the surrounding region to communities in Illinois and other states to the east. The project is one out of five run by Clean Line Energy (see below, Figure 38), a Texan company aiming at building infrastructure projects to bring power from renewable energy resources to consumers. On its website, Clean Line Energy says that it "*strives to establish and maintain close relationships with landowners, communities, local and state officials, customers and suppliers and deeply values stakeholder input and involvement*".

According to the project's official website (*rockislandcleanline.com*), the development and construction of the RICL is estimated to cost approximately $2 billion and will make possible the implementation of approximately $7 billion of new renewable energy projects. The line will allow more than 1.4 million homes in the Midwest to be powered by renewable energy, essentially from wind farms. Renewable energy producers and utilities will pay for usage of the Rock Island Clean Line, by purchasing transmission capacity.

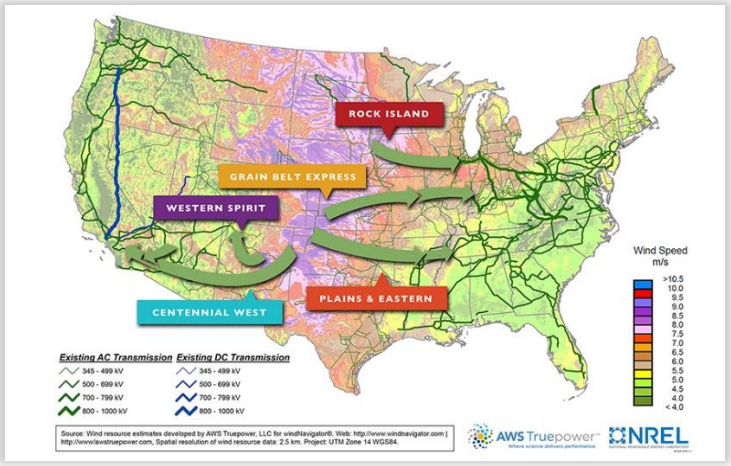


Figure 38 : Rock Island and other Clean Line Energy's HVDC lines projects.
Source : cleanlineenergy.com

The Rock Island Clean Line received approval from the Federal Energy Regulatory Commission in 2012. In the initial planning, the construction was due to start in 2014.

[99] The name of the project comes from the Rock Island Railroad, which stretches across the entire state of Iowa, through the city of Rock Island and into Illinois

[100] Above 600-800 km, an HVDC overhead line costs less than an alternative current (AC) one, has lower transmission losses and requires less space on the ground.

[101] In 2017, the project was apparently downsized to 1,600 MW, although the website still announces 3,500 MW

According to the Center for Rural Affairs[102], Clean Line Energy has made significant efforts to communicate and find arrangements with the local communities impacted by the project, meeting multiple stakeholders and organizing numerous information events (see below, Figure 39). In a January 2018 survey[103], this organization found that most Iowa local elected leaders were prepared to support transmission line projects, on the condition that it would include "*fair treatment by developers, preservation of agricultural land, and provision of local economic benefits*". They also found that landowners and managers who had been recently impacted by a transmission line project mostly had a positive experience with the transmission developer (although this latter result cannot be considered as fully representative, because of the low response rate).

> *Clean Line is making a significant effort to engage with and receive feedback from landowners and community leaders who could potentially be impacted by the new transmission line.* ***As of May 2012 Clean Line has conducted more than 600 one-on-one meetings with stakeholders, hosted 33 open-house meetings in which over 40,000 landowners were invited to submit feedback and held a number of additional meetings throughout Illinois to introduce this project to local businesses and contractors****. Many of these go far beyond the scope of what is legally required, such as speaking at economic development events and holding sessions with numerous local government officials.*
> *They are also embarking on a public information campaign designed to highlight the project's benefits. For example, Clean Line estimates that this line will reduce electricity costs in Illinois by $320 million over the first year. Clean Line also plans to invest over $600 million in Illinois during construction; most of this will go to workers to build the line and manufacturers to produce the materials necessary for project completion.*
> *Nonetheless, some landowners remain concerned about potential negative effects from the line. This opposition is most palpable throughout eastern Illinois, in Bureau and La Salle counties. Much of this concern revolves around Clean Line requesting utility status in Illinois, which would theoretically allow them to use eminent domain for this project. Clean Line is a private company, not public, leading some residents to wonder why they'd qualify for eminent domain status in the first place. Clean Line has since pledged to avoid eminent domain if at all possible.*

Figure 39 : Excerpt from an RICL case study published on the Center for Rural Affairs' website.
http://www.cfra.org/rock-island-clean-line

In 2013, Rock Island Clean Line LLC (Rock Island) and the Illinois Department of Agriculture reached an Agricultural Impact Mitigation Agreement (AIMA)[104] addressing some of the key concerns raised by landowners along the line route. In this AIMA, Rock Island was taking commitments to ensure that the line would run along fields as much as possible (opposed to *through* fields), to address impacts on drainage tiles and on irrigation systems, to assume soil decompaction after construction, to avoid the use of treated

[102] CFRA is a grassroot not-for-profit organization mainly operating in Nebraska and Iowa, which aims at "*establishing strong rural communities, social and economic justice, environmental stewardship, and genuine opportunity for all while engaging people in decisions that affect the quality of their lives and the future of their communities*". http://www.cfra.org

[103] "*Powering Iowa - RURAL PERSPECTIVES ON IOWA'S RENEWABLE ENERGY TRANSFORMATION*", Stéphanie Enloe & Katie Rock, Center for Rural Affairs. https://www.cfra.org/sites/www.cfra.org/files/publications/Powering%20Iowa.pdf

[104] See https://www.rockislandcleanline.com/sites/rock_island/media/Agricultural_Impact_Mitigation_Agreement.pdf

wood on the building sites and of herbicides and fertilizers if requested by a landowner, and to use "monopole" structures which have a smaller foundation. It also agreed to hire an independent agricultural inspector, directly available to the landowners and tenants, to check the compliance with the agreement.

According to an Iowa RICL manager, the financial compensation for a 145-foot-wide, half-mile-long permanent easement with two monopoles ranges from $93,780 to $121,145 (2014 figures)[105].

In 2014, Rock Island was granted a Certificate of Public Convenience and Necessity[106] by the Illinois Commerce Commission (ICC).

Despite these facts, as of April 2018, the project seemed to be completely stuck, because of legal actions conducted by the opponents.

In August 2016, following the demand filed by the Illinois Landowners Alliance (ILA), the Illinois Agricultural Association (a.k.a. Illinois Farm Bureau), and the local electric utility Commonwealth Edison (a.k.a. ComEd), the Illinois Appellate Court reversed the approval of the ICC on the basis that Rock Island did not possess the attributes of a public utility under the Illinois Public Utilities Act, and therefore was not eligible to receive regulatory approval for the line[107]. This judgment was confirmed by the Illinois Supreme Court in September 2017[108]. However, the company has not been denied the right to renew its application, and hence the project could theorically restart, even if the opponents have called the Appellate Court order a "death blow"[109]. Another possibility would be to develop the project as a private facility, which of course would make it more difficult, because of the necessity to make a negotiated deal with every landowner. As an example, only 11 percent of Iowa landowners (177 out of 1,540) had provided voluntary easements for the RICL project, in December 2015, after three years[110].

The Illinois Appellate Court decision forced Rock Island to stop the project in Iowa too, and to withdraw its application for franchise approval at the Iowa Utilities Board (IUB)[111] in December 2016. A few month later, the Iowa governor signed a bill, which had previously passed the Iowa Senate and the Iowa House, forbidding merchant high voltage transmission lines such as RICL from having condemnation power to take private property by eminent domain. This was seen by the Preservation of Rural Iowa Alliance (a landowner association) as the result of a 4 years' lobbying effort.

D.5.b RICL opponents

The most prominent opponents to RICL are :

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[105] "*Sparks Fly*", Lynn Betts, Farm Progress Magazine, April 2014. http://magissues.farmprogress.com/WAL/WF04Apr14/wal001.pdf

[106] Meaning that Rock Island was being considered as a public utility, having the right to control landowner easements through eminent domain.

[107] The decision was grounded on the fact that the company did not own, control, operate, or manage assets within the State, and that the proposed transmission line was not for public use without discrimination.
See http://www.illinoiscourts.gov/Opinions/AppellateCourt/2016/3rdDistrict/3150099.pdf

[108] See http://www.illinoiscourts.gov/Opinions/SupremeCourt/2017/121302.pdf

[109] In a similar decision, the same Illinois Appellate Court ruled that Grain Belt Express Clean Line LLC -the Clean Line Energy subsidiary formed to construct and manage a 4,000 megawatts HVDC line from western Kansas to Missouri, Illinois, Indiana and neighboring states (see map, Figure 38)- was also ineligible to the status of public utility. See http://www.blockricl.com/Order%20-%205th.pdf

[110] "*An open letter to Rock Island Clean Line from lawmakers*", Rep. Bobby Kaufmann, Des Moines Register, Dec. 17, 2015.
https://www.desmoinesregister.com/story/opinion/columnists/iowa-view/2015/12/17/open-letter-rock-island-clean-line-lawmakers/77492872/

[111] Clean Line press release : http://files.constantcontact.com/f5de4e77301/c33f98af-ad6f-4246-9785-6d583f66d128.pdf

- The **Illinois Landowner Alliance (ILA)**, a grassroots organization gathering more than 300 individuals with interests in over 100,000 acres of land in Illinois, and its communication sword arm, the Block RICL website (www.blockricl.com). ILA defines itself as *"a network of landowners and residents across Illinois and Iowa who are committed to blocking Rock Island "Clean" Line (RICL) and other unnecessary transmission projects that are being proposed, cutting through prime farmland and across our states!(…)*
  According to Block RICL, *"more than half of [the] members are not directly hit by a proposed path, but realize that this project represents a national trend in uncoordinated and unnecessary transmission development. Our rights as property owners are at stake. A private company using eminent domain for private gain is not acceptable".* The ILA also maintains :

  - a facebook page (www.facebook.com/Block-RICL-Rock-Island-Clean-Line-133050610203359) which is liked by 7,031 people and followed by 6,537 (on May 1, 2018)
  - 2 Twitter accounts - @BLOCKRICL and @BlockCLE - with respectively 484 and 121 followers (on May 1, 2018)
  - a blog named RidiculousRICL (ridiculousricl.blogspot.com)

Figure 40 : Mary Mauch, executive director of Illinois Landowner Alliance, in Dodgeville, Wisconsin, March 2, 2018.
Source : https://youtu.be/_T3YfxoSkqc

ILA's successful fight against RICL, mixing different techniques – digital communication, legal action, anti-RICL signs on premises (3,000), press interviews - has become a textbook case for other landowner associations opposed to power lines and "Big Wind". For instance, Mary Mauch, ILA's executive director was invited to make a presentation at a meeting against Cardinal Hickory Creek transmission line project, in Dodgeville, Wisconsin, in March 2018 (Figure 40).

- The **Preservation of Rural Iowa Alliance (PRIA).** The Alliance is a non profit organization, governed by a board of Iowa landowners, with about 250 members, and says it was formed "*to assist landowners, tenants, families, businesses, and community members in finding more information on how to stop unnecessary high voltage transmission lines in Iowa. Rock Island Clean Lines is currently in the process of moving forward with a 500 mile project which includes 375 miles of rural land in Iowa and 125 miles*

in Illinois. The Alliance is opposed to the use of eminent domain by RICL for the proposed line." The PRIA has a well documented website (www.iowastopricl.com) and a facebook page (www.facebook.com/iowastopricl) with is liked by 660 people and followed by 620 (on May 1, 2018). Some of the alliance members also belong to The Coalition for Rural Property Rights (http://www.coalitionforruralpropertyrights.com) which is a grassroots organization opposing the the installation of wind turbines on farmland.

- The **Illinois Farm Bureau (IFB)**[112], a 80,000 member non-profit association, which goals are to "*improve the economic well-being of agriculture and enrich the quality of farm family life*". IFB is a member of the American Farm Bureau Federation, a national organization of farmers and ranchers. Contrary to the two organizations cited above, IFB is a century-old association and is not dedicated to combating RICL. However, in his address to the 2017 annual meeting, its president touted the Illinois Supreme Court judgment against RICL as a major achievement[113].

D.5.c Normalized arguments

Disturbance

ECONOMY

- RICL goes through the state without serving any local resident (output) or wind farm (input)
  Target: project – Reach: local
- RICL brings no benefit to local communities / will be in direct competition with locally produced power, in-state renewable energy economic development and permanent in-state jobs
  Target: project – Reach: local
- RICL will incur increased electricity rates locally
  Target: project – Reach: personal
- New rights-of-way will produce a drop in the property tax base for the communities and counties, as the land is reassessed
  Target: project – Reach: local
- The value of the parcels crossed by RICL will drop
  Target: project – Reach: personal
- The line towers will make the farming work lengthier, costlier (farm machine operation), and maybe impossible (aerial spraying, circle pivot irrigation), leading to lower yields
  Target: technology – Reach: personal
- The line will dissuade tourists from coming
  Target: project – Reach: local

[112] IFB's legal name is "Illinois Agricultural Association". http://www.ilfb.org

[113] "*Guebert highlights IFB's successes*", Deana Stroisch, farmweeknow.com, 12/12/2017. http://farmweeknow.com/story-guebert-highlights-ifbs-successes-0-168635

ENVIRONMENT & BIODIVERSITY

- The line will disturb the migratory path of birds and butterflies
  Target: project – Reach: local
- The line runs near a wildlife refuge and a prairie restoration site
  Target: project – Reach: local

LIFE QUALITY

- The line spoils the view and destroys the countryside
  Target: project – Reach: personal

TECHNOLOGY

- Electromagnetic fields will interfere with GPS systems (used for cropping)
  Target: technology – Reach: personal

Governance

CITIZENSHIP

- The project only serves the interests of Clean Line Energy and the wind lobby, not those of the people
  Target: project – Reach: national
- The granting of eminent domain for RICL would be a denial of democracy, because it would only serve private interests. It would also set a precedent.
  Target: autorites – Reach: national

ENVIRONMENT & BIODIVERSITY

- Alternative routes, with less environmental and social impact have not been considered
  Target: private interests – Reach: local

ECONOMY

- The project only serves the interests of Clean Line Energy and the wind lobby
  Target: private interests – Reach: national
- RICL's business plan is flawed / there is a risk that Clean Line does not find customers for the power (on the East Coast)
  Target: project – Reach: local
- Illinois is developing a smart grid on its own, another line is not needed
  Target: project – Reach: local

Performance

ECONOMY

- RICL will create only a few temporary jobs for local workers while the majority of the people hired for the construction will come from out of the state, and local economic development will be harmed in the long term.
  Target: project – Reach: local

- RICL will compromise the reliability of local electricity grid
  Target: project – Reach: local
- RICL will not result in any development of local infrastructure
  Target: project – Reach: local
- RICL will not result in lower electricity prices locally
  Target: project – Reach: local

ENVIRONMENT & BIODIVERSITY

- RICL will damage some of the best farmlands in the country which plays down the green performance of the project.
  Target: project – Reach: local

Risk

ECONOMY

- Construction works will damage the land by causing soil compaction and tile damage
  Target: technology – Reach: personal
- Farmers would be liable for accidental damage to the poles and subsequent damages caused by a power outage resulting from the farmer's actions
  Target: project – Reach: personal

HEALTH

- Electromagnetic fields have a negative impact on human and animal health
  Target: technology – Reach: personal

Symbol

- "The people of Iowa are looked upon as rather backward and ignorant by those who live in coastal states and large cities".
  Target: private interests – Reach: local
- Accepting the line would amount to give up the legacy and values of the traditional American way of life
  Target: project – Reach: personal

D.5.d Key learnings

The RICL controversy is the symbol of a divide between twin aspects of the United States. One is the bold entrepreneurship which has thrived in the wake of the renewable energy rise, convinced that "where there is a will, there is a way", and that every obstacle can be overcome with a good financial deal. The other is rural America, committed with traditional values, deeply attached to the soil they have inherited from their parents, defending hard work and feeling sometimes despised by the urban businessmen.

The RICL project developments, so far mostly positive for the opponents, show that an opposition stemming from the feeling that one's fundamental values are at stake, is very difficult to mitigate let alone to eliminate.

E GENERAL WRAP-UP

E.1.a Opponents typology

From an in-depth examination of our four sample projects, we classify the people opposing the ETT projects in 7 categories with respect of their main motivation (Figure 41).

		PROFILES						
		Anti-system activist	Concerned citizen	Active retiree	Specialized lawyer	Scientist	Journalist	Politician
PROFILE CHARACTERIZATION	FOCUS	Multiple commitments	Focus on one cause	Focus on one cause	Multiple commitments	Focus on one cause	Multiple commitments	Multiple commitments
	MOTIVATION	Political struggle, fighting the establishment	Protecting his family, living conditions and property	Staying active after retirement through commitment to a general interest cause	Build a positive professional identity by committing himself to a general interest cause	Making science useful for the people and the society. Acquiring visibility against other scientists by being « politically uncorrect » (Sometimes)	Be recognized as a skilled investigator. Informing the general public about sensitive issues	Defending his territory. Showing commitment to the voters.
	ACTION RANGE	national, global	personal, local	local, national	national	national, global	local, national	local national
	TYPICAL AFFILIATION	Individual	Grassroots association	Grassroots association	Law office	Individual	Media outlet	Individual
PROJECT OPPOSITION	SAINT-BRIEUC		X	X				
	LINKY	X	X	X	X	X	X	X
	GARDANNE		X	X		X	X	X
	RICL		X					X

Figure 41: Opponents profiles and motivations, and activity in our sample projects

We can notice that the "concerned citizen" category is present in every project.

This is consistent with the fact that, in all our sample projects, grassroots associations were key to the contestation[114]. We found no evidence that these local organizations could be manipulated by bigger ones,

[114] These associations may have been created specifically to stop the unwanted project, or pre-exist with a more general purpose

with more global objectives. However, national or international NGOs can occasionally provide legal assistance, technical knowledge and a communication platform to gain visibility.

Private companies can play a part in legal actions against a project, and team up with associations because their business interests are at stake. In the case of RICL, we found that the Iowan utility Commonwealth Edison had joined local associations to have the RICL eminent domain status repealed. In the Saint-Brieuc project, the companies which tenders had not been selected, seized every opportunity to dispute the result.

But in both cases, it does not appear that these companies have tried to manipulate local groups to generate artificial discontent.

E.1.b Global argument mapping

We built a set of "generic arguments" from the normalized opposing arguments found for all four projects. A generic argument is defined from the merging of several normalized arguments and does not refer to a specific project (example on Figure 42).

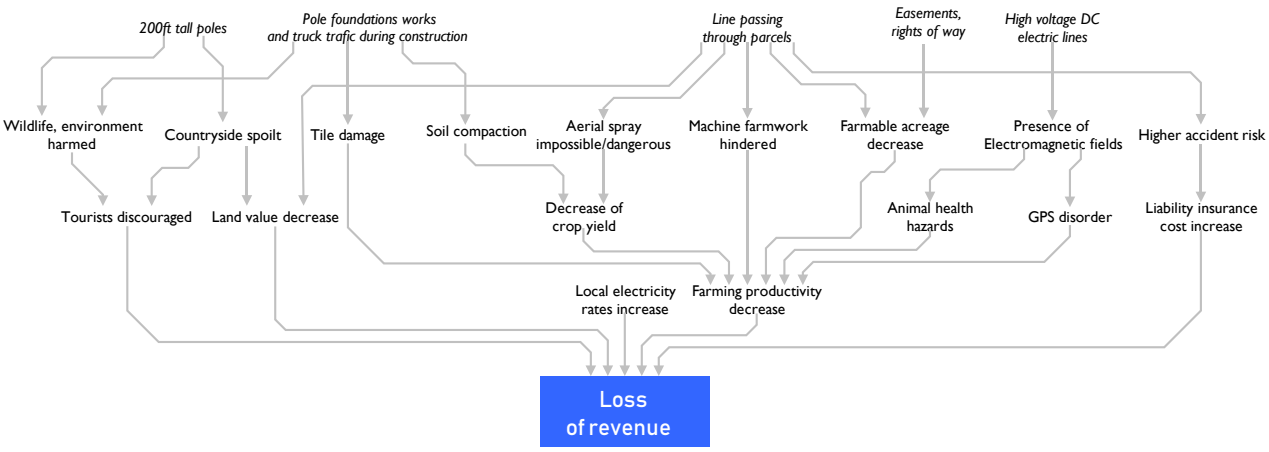


Figure 42: Example of the merging of RICL specific arguments into a generic argument

On Figure 43, we have mapped these arguments on our sample projects.

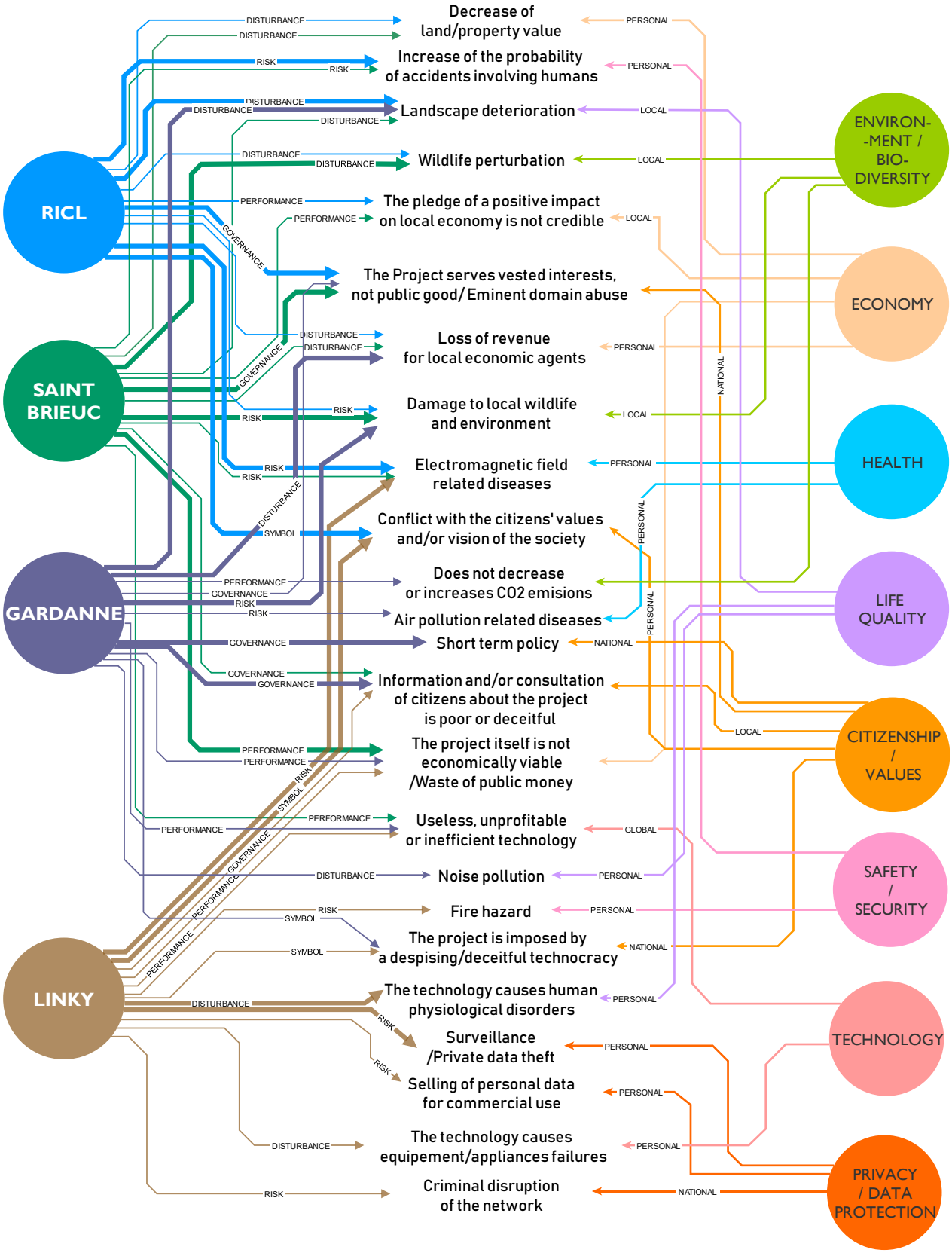
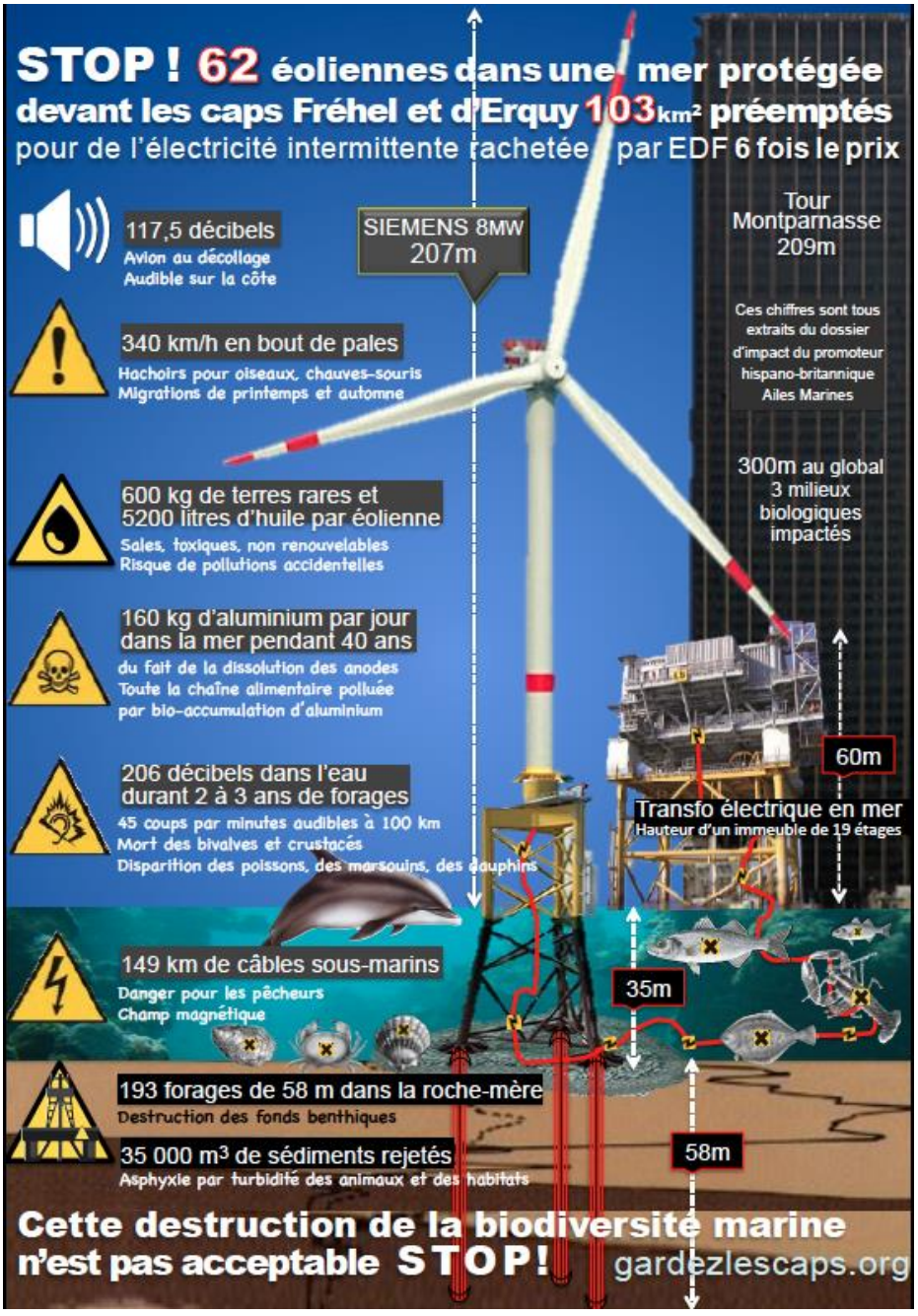


Figure 43: Mapping of generic opposing arguments with our four sample projects

F APPENDICES PART I

Appendix 1 **[Saint-Brieuc] Poster from the grassroots association "Gardez Les Caps"**



Appendix 2 [Saint-Brieuc] Wording recommendations from the "Fédération Environnement Durable" to its members

1

Appel national à tous les membres de la Fédération Environnement Durable et aux sympathisants de notre cause

« MAIL-MANIFESTATION»
J-14

EOLIEN : NON !

Les débats du Grenelle II vont commencer le 4 mai à l'assemblée nationale.

Le volet EOLIEN de ce projet de loi est **INACCEPTABLE**

NOUS DEVONS LE FAIRE SAVOIR MASSIVEMENT !

C'est le moment de montrer à nos députés notre détermination à tous, de voir stopper le développement de l'éolien.

IL EST IMPERATIF QUE NOUS REAGISSIONS EN MASSE.

Nous vous suggérons d'envoyer à vos députés un mail POUR LEUR DEMANDER DE NE PAS VOTER LA LOI DE GRENELLE II CONCERNANT L'EOLIEN

Il faut que tous nos députés constatent qu'ils ne peuvent pas ignorer la démocratie ou tromper leurs électeurs sans en payer ensuite les conséquences électorales.
Il n'est plus possible qu'ils ignorent le scandale éolien en cours et qu'ils acceptent de voter en connaissance de cause **une loi qui favorise les spéculateurs et les affairistes en spoliant les citoyens**

Comment peut-on procéder ?
Tout simplement en envoyant tous : - Fédérations, - Collectifs, - Associations, - adhérents, - sympathisants et relations, **des mails, aux députés de nos départements respectifs**

Concrètement : c'est simple
Envoyer à partir d'aujourd'hui des **mails personnalisés interpellant les députés de votre département**
Nous demandons à tous nos adhérents internautes et sympathisants d'en faire autant.

Vous avez reçu les adresses mail des députes classés par département **nous allons vous l'adresser à nouveau par mail séparé**

Pratiquement pour écrire aux députés de votre département :

- **Recopiez leur adresse mail prise sur la liste** et envoyer un mail à chaque député de votre département (vous pouvez bien sur si vous le souhaiter l'envoyer à d'autres personalités)

- N'oubliez pas de mettre un titre à votre mail

- Ecrivez 15 à 20 de **lignes comme vous les sentez et avec votre cœur**, pour dire ce que vous pensez de l'éolien et de demander de ne pas voter cette loi inadmissible.

En fonction des affinités de vos députes vis-à-vis de l'éolien vous pouvez soit leur dire que vous les soutenez ou au contraire les avertir par exemple :
- En écrivant quelques mots sur les raisons de votre opposition concernant votre région (projet, ZDE etc..)
- En mettant en avant le paragraphe concernant les 500 m, mesure particulièrement odieuse venant probablement du lobby des promoteurs (cette valeur avaient été retenue par ceux-ci quand les premières éoliennes ne mesuraient que 50 m de haut alors que les éoliennes actuelles peuvent maintenant atteindre 150 m de haut voir 200 m comme en Belgique.) Les riverains ne sont pas des cobayes et leurs élus ne peuvent pas ignorer les graves problèmes de santé mis en évidence en France et dans de nombreux pays du monde.

-Vous pouvez aussi leur dire que s'ils soutiennent cette loi ils votent pour l'affairisme et la spoliation des biens des particuliers

- Qu'ils assassinent tous les paysages de France

etc...

Cordialement
J.L. Butré

Voici 2 exemples de mail de riverains qui subissent des éoliennes

---

Monsieur xxxxxx .... Habitant à ..... (Département)
Le ... avril 2010

A l'attention de Mr le député .....

Bonjour, M. le Député

Début mai la loi du Grenelle doit être examinée à l'assemblée nationale
Le volet qui concerne l'éolien ne peut pas être accepté
Les éoliennes géantes envahissant notre pays
Nous pensions au début que c'était bien mais nous avons été trompés
Nous sommes victimes de ces machines géantes qui pourrissent notre vie
La recommandation de 500 m est scandaleuse et nous ne l'accepterons jamais, l'académie de médecine ayant recommandé 1500m
Nous sommes écœurés, notre vie a été brisée et nos familles se déchirent.
La zizanie se développe dans notre village
Aidez nous !
Nous vous demandons instamment de ne pas voter cette loi injuste

Veuillez agréer M. le Député l'expression de ma haute considération

----

Monsieur le Député,

Concerne : éoliennes en France

Ce début mai, la loi du Grenelle doit être examinée à l'assemblée nationale.

Le volet Eoliennes est inacceptable.

Les éoliennes géantes envahissant notre pays
Nous pensions au début qu'elles étaient positives mais nous avons été trompés
Nous sommes victimes de ces machines géantes qui pourrissent notre vie et qui altèrent la santé des proches riverains,

La recommandation de 500 m est scandaleuse irréaliste et nous ne l'accepterons jamais

En plus il s'agit d'une atteinte quasi irrémédiable de nos beaux paysages à l'intérieur des terres. Les budgets accordés sont majoritairement la cause de ces invasions. En effet, le rapport énergétique est clairement négatif.

En conséquence, nous vous demandons, comptant sur votre compréhension, de ne pas voter cette loi injuste. Merci pour nos générations futures.

Veuillez agréer M. le Député l'expression de ma haute considération,

----

Conseils pratiques

Il est important **d'éviter:**

- des mails trop longs (+ de 20 lignes.) et ne pas mettre de pièces jointes

- Si vous avez une adresse mail de vos deputés dans leur permanence départementale il faut la mettre en copie du mail (en général il la reçoivent plus facilement)

-des arguments impolis (c'est négatif) Plus les mails seront sans agressivité plus l'image des opposants à l'éolien sera forte.
Les insultes, ou attaques personnelles, les mots comme " corruption" **sont à bannir** et il vaut mieux ne pas mentionner les noms des promoteurs ou les marques des entreprises (cela ne servira à rien et en plus le "filtre " Cerbere de l'assemblée peut sans doute bloquer les mails)
Il faut simplement montrer que le système actuel est pourri
C'est beaucoup plus efficace car les députés vont voter une loi qui acterait ce système pourri
Par contre faire appel au soutien, à la raison d 'un député à son honnêteté est une démarche positive

Voici quelques phrases suggérées.

- l'opinion pensaient que c'était bien et ils ont été trompés, ils sont victimes, ils regrettent, ils sont furieux,
- les familles se déchirent...
- la zizanie se développe dans tous les villages de France.
- des gens sont malades, Ils ont peur de ces machines...
- tout se passe en secret, c'est une honte démocratique tout est concocté sans l'avis des citoyens dans fausses " concertations"
- des spéculateurs harcèlent les communes
- Les valeurs de la république sont atteintes : égalité des citoyens, c'est injuste!
- ils ne veulent pas être "Zonés" (c'est de sinistre mémoire)
- ils on subi des pressions morales
- leurs biens sont atteints
- ce sont des affaires d'argent et non d'écologie
- tout est opaque
- la campagne est ravagée etc....

Renseignements complémentaires

DERNIERE INFORMATION PUBLIEES PAR L'ASSEMBLEE NATIONALE AVANT LE VOTE SUITE AU RAPPORT DE L A COMISSION SUR L'EOLIEN
Dossier
http://www.assemblee-nationale.fr/13/dossiers/engagement_environnement.asp

EXTRAIT

C. — ÉNERGIE : VERS L'OBJECTIF 23 % D'ENR DANS LA CONSOMMATION FINALE

1. Un développement maîtrisé de l'éolien

Les propositions les plus remarquées sont celles de la mission d'information commune sur l'énergie éolienne, dont votre rapporteur pour l'énergie était le vice-président. Parfois caricaturées, elles poursuivent un but simple : ne pas compliquer l'atteinte de nos objectifs de production d'électricité renouvelable du fait d'un développement non maîtrisé des implantations qui rendrait leur multiplication inacceptée pour les riverains. Au nombre de cinq, ces propositions visent à :

– mettre en place des **schémas régionaux de l'éolien** opposables : aucune ZDE ne pourra être créée dans un département hors des parties du territoire délimitées par ce schéma ;

– prévoir des **unités de production au sein des ZDE** avec un seuil de puissance installée pour chacune (15 MW et 5 mâts minimum) afin d'éviter tout « mitage » au sein d'une même ZDE ;

– instaurer une distance minimale de 500 mètres entre les parcs de production éolienne et les lieux d'habitation ou les locaux d'activités préexistants ;

– appliquer le régime des installations classées pour la protection de l'environnement (ICPE) aux activités éoliennes terrestres ;

– renforcer l'obligation de constituer des provisions dès le début de l'exploitation, afin de pouvoir procéder au démantèlement des installations.

Cordialement
J.L. Butré

Points à ajouter le cas échéant : pas d'éoliennes industrielles dans les Parc Naturels Régionaux - Zones Natura 2000 - respecter le périmètre de protection des radars météorologiques (zones d'exclusion) ...

2

La liste des adresses e-mail des députés est annexée à cet envoi. Attention : certain députés sont décédés (dans les P.-O.)

3

PRECISION IMPORTANTE

Apres avoir adressé votre mail à un député vous pouvez envoyer ensuite si vous le souhaitez une copie separée à

eolien.non@gmail.com

Cela permet de totaliser les mails sans bloquer celle de la Fed qui risquerait d'être vite engloutie

(merci d'avance....)

JLButré

++

FRANCE **PROJET DE LOI GERNELLE 2**
arnaud gossement
18.04.2010

http://www.arnaudgossement.com/archive/2010/04/18/projet-de-loi-grenelle-2-ce-qui-va-vraiment-changer-pour-les.html

L'auteur des lignes qui suivent, Arnaud Gossement, est Avocat en droit de l'environnement et de l'énergie, Docteur en droit, Maître de conférences à Sciences Po Paris - dirigeant de France Nature Environnement - et avant tout un défenseur du tout éolien.

Appendix 3 **[Saint-Brieuc] Press release following the complaint filed by a group of organizations to the European Commission, regarding French offshore wind projects**

gardezlescaps.org ASSOCIATION GARDEZ LES CAPS

COMMUNIQUÉ 3 juillet 2017

PLAINTE
A LA COMMISSION EUROPEENNE

Les projets d'éolien en mer français autorisés sur la façade Manche-Atlantique sont tous en contradiction avec les politiques de protection de l'environnement marin.

Pêcheurs et Associations s'unissent pour dénoncer les incohérences de l'Etat français dans le développement de l'éolien en mer.

Une plainte a été déposée le 13 juin 2017 auprès de la Commission Européenne pour infractions au droit communautaire.

L'Etat français, depuis 2012, conduit à marche forcée des méga-projets d'éolien posé en mer au plus près des côtes et dans des sites protégés et préservés jusqu'à aujourd'hui.

Six projets ont déjà été autorisés par décision préfectorale au mépris de l'activité des pêcheurs côtiers, de l'économie touristique, de l'avis des populations riveraines, de la vie marine. Trois autres projets sont sur le point de l'être.

Ces projets sont attribués à des prix garantis exorbitants : 220€ à 227€ /MWh hors raccordement, c'est à dire deux à trois fois plus cher que des projets comparables en Allemagne ou au Danemark. De plus l'intermittence de l'éolien oblige à construire des centrales à gaz (par exemple à Landivisiau), ce qui augmente d'autant les émissions de gaz à effet de serre.

De Dunkerque à Oléron, chaque site prévoit de 62 à 83 éoliennes de 185 à 216 mètres de haut. Ces centaines d'éoliennes vont industrialiser un littoral dont le développement économique est basé sur la pêche et le tourisme. Des dizaines de milliers d'emplois sont menacés dans la pêche maritime côtière et l'activité touristique littorale.

La biodiversité marine est exceptionnelle sur cette façade maritime, générant des ressources halieutiques riches et diversifiées qui sont gérées durablement, une faune et une avifaune abondantes, dont de nombreuses espèces rares et d'intérêt international.

Qu'importe ! Le Ministère français de l'Environnement, de l'Energie, et de la Mer multiplie les dérogations à la destruction des habitats et espèces protégées.

Volontarisme politique et parodie de concertation démocratique rythment l'avancement de ces projets hautement subventionnés qui priment les activités économiques existantes et bafouent les règles de protection des écosystèmes marins.

Pourtant, la santé des écosystèmes marins est indispensable à celle de la planète. La préservation de ce patrimoine commun nous concerne tous.

La Plainte s'articule en six points concernant les infractions :

1. aux obligations relatives à l'évaluation environnementale préalable,
2. à la planification de l'espace maritime,
3. à l'information et à la participation du public au processus décisionnel,
4. à la protection de la faune et de son habitat,
5. à l'organisation du marché intérieur de l'énergie,
6. à l'interdiction des aides d'Etat.

Parties prenantes

Collectif Pour Un littoral Sans Eolienne (PULSE)
Comité Départemental des Pêches du Nord
Comité Régional des Pêches Maritimes et des Elevages Marins des Hauts de France
Les pêcheurs de Seine-Maritime
Fédération Environnement Durable (FED)
Vent de Colère
Robin des Bois
Sites et Monuments (SPPEF)
Belle Normandie Environnement
Associations du **Tréport** et des Côtes d'Opale Picarde et d'Albâtre
Associations de **Fécamp**
Associations de **Courseulles et d'Arromanches**
Associations des baies de **St-Malo et de St-Brieuc**
Collectif DLM de **St Nazaire-Guérande et de la baie de La Baule**
Association NENY de **Yeu-Noirmoutier**

CONTACT gardezlescaps@orange.fr

Appendix 4 [Linky] Reference list

Press and news website

Feature article about Linky published in Canard PC April-May 2016. https://www.cpchardware.com/download/hw28_linky.pdf

Analysis of litigations involving Linky published on lepetitjuriste.fr, December 2017. https://www.lepetitjuriste.fr/droit-de-lenvironnement/compteurs-intelligents-linky/

Analysis of "Abeille law" implementation decrees (February 2015) about 3G relays.Dominique Roumaneix, lawyer, Village de la Justice, 27/09/2016 . https://www.village-justice.com/articles/Les-decrets-application-loi-Abeille-fevrier-2016-par-Dominique-Roumaneix,23100.html

Miscellaneous reports and studies

"Smart meters, deployment issues", Congress of the FNCCR (National Federation of Licensing and Regulating Bodies), June 2016. http://fnccr.asso.fr/congres2016/doc/compte-rendu/energie-tr4.pdf

"Linky: Danger or asset for the energy transition", transcription of a debate organized by the Local Energy and Climate Agency of Plaine (department 93), 02/11/2016. http://www.alec-plaineco.org/wp-content/uploads/2016/10/CR-Sentinelles-du-Climat-Linky-v3.pdf

"La « mise en société » du compteur d'électricité communicant Linky. Enseignements sociologiques de la trajectoire d'innovation d'un outil de régulation économique", Aude Danieli, In *Pratiques sociales et usages de l'énergie*, coord. I. Moussaoui, M. Pierre, Editions Lavoisier, Paris, 2016, p. 123-136

Administration et assemblies

Evaluation of the Linky experimentation by CRE, 2011. http://www.cre.fr/documents/deliberations/communication/resultats-de-l-experimentation-linky/dossier-sur-l-experiementation-linky-juin-201

National Energy Ombudsman annual activity report 2016. http://www.energie-mediateur.fr/wp-content/uploads/2018/01/ra_mne_2016.pdf

National Energy Ombudsman's recommendation following a claim involving Linky (remote power reduction), March 22, 2018. http://www.energie-mediateur.fr/wp-content/uploads/2018/04/d2017-07315_recommandation_mne.pdf

Proceedings of debates about Linky in the French Senate, July 2015. https://www.senat.fr/seances/s201507/s20150709/s20150709022.html

National Frequency Agency Measurement Reports (May and September 2016) https://www.anfr.fr/controle-des-frequences/exposition-du-public-aux-ondes/compteurs-communicants/mesures-linky/#menu2

Report from the National Institute of Industrial Environment and Risks (Ineris): "Electromagnetic fields produced by the Linky remote read electric meters - Exploratory measures" (June 2016)

https://www.ineris.fr/sites/ineris.fr/files/contribution/Documents/drc-16-148901-04977a-linky-mesures-exploratoires-vf2-signee-av-couv-1484651371.pdf

CGEDD report: "The deployment of the Linky meter". Bernard FLÜRY-HÉRARD and Jean-Pierre DUFAY, January 2017. http://cgedd.documentation.developpement-durable.gouv.fr/documents/cgedd/010655-01_rapport.pdf

Economic Affairs Committee of the National Assembly and OPECST: Round Tables on Smart Meter Issues, December 2017 (video). http://videos.assemblee-nationale.fr/video.5339469_5a3234bbb7206.commission-des-affaires-economiques-et-opecst--tables-rondes-sur-les-enjeux-des-compteurs-intellige-14-decembre-2017

2018 Annual Public Report of the Court of Auditors, Volume 1, Chapter 4: "Linky smart meters: how to make consumers benefit from a costly investment".https://www.ccomptes.fr/sites/default/files/2018-01/07-compteurs-communicants-Linky-Tome-1.pdf

Documents often cited in support of opposition to Linky

"Take Back Your Power", a film by Josh Del Sol (2014). View on YouTube: https://www.youtube.com/watch?v=dgK14l7_cDw and associated website: takebackyourpower.net. More than 10,000 views on April 30, 2018.

Microwawes, Science & Lies ("Ondes Science&Manigance"). A film by Jean Hêches & Nancy Guion de Méritens (2017). View english version on YouTube: https://youtu.be/8qD2kmuNYY4

BioInititative 2012 : A report by 29 independent scientists and health experts from around the world about possible risks from wireless technologies and electromagnetic fields. http://www.bioinitiative.org/table-of-contents/

Appendix 5 [Linky] European directives

DIRECTIVE 2006/32/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC.

Article 13:

1. Member States shall ensure that, in so far as it is technically possible, financially reasonable and proportionate in relation to the potential energy savings, final customers for electricity, natural gas, district heating and/or cooling and domestic hot water are provided with competitively priced individual meters that accurately reflect the final customer's actual energy consumption and that provide information on actual time of use.

When an existing meter is replaced, such competitively priced individual meters shall always be provided, unless this is technically impossible or not cost-effective in relation to the estimated potential savings in the long term. When a new connection is made in a new building or a building undergoes major renovations, as set out in Directive 2002/91/EC, such competitively priced individual meters shall always be provided.

2. Member States shall ensure that, where appropriate, billing performed by energy distributors, distribution system operators and retail energy sales companies is based on actual energy consumption, and is presented in clear and understandable terms. Appropriate information shall be made available with the bill to provide final customers with a comprehensive account of current energy costs. Billing on the basis of actual consumption shall be performed frequently enough to enable customers to regulate their own energy consumption.

3. Member States shall ensure that, where appropriate, the following information is made available to final customers in clear and understandable terms by energy distributors, distribution system operators or retail energy sales companies in or with their bills, contracts, transactions, and/or receipts at distribution stations:
(a)current actual prices and actual consumption of energy;
(b)comparisons of the final customer's current energy consumption with consumption for the same period in the previous year, preferably in graphic form;
(c)wherever possible and useful, comparisons with an average normalised or benchmarked user of energy in the same user category;
(d)contact information for consumers' organisations, energy agencies or similar bodies, including website addresses, from which information may be obtained on available energy efficiency improvement measures, comparative end-user profiles and/or objective technical specifications for energy-using equipment.

DIRECTIVE 2009/72/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

Article 3, paragraph 3:

In order to promote energy efficiency, Member States or, where a Member State has so provided, the regulatory authority shall strongly recommend that electricity undertakings optimise the use of electricity, for example by providing energy management services, developing innovative pricing formulas, or introducing intelligent metering systems or smart grids, where appropriate.

Annex 1, paragraph 2:

Member States shall ensure the implementation of intelligent metering systems that shall assist the active participation of consumers in the electricity supply market. The implementation of those metering systems may be subject to an economic assessment of all the long-term costs and benefits to the market and the individual consumer or which form of intelligent metering is economically reasonable and cost-effective and which timeframe is feasible for their distribution.
Such assessment shall take place by 3 September 2012.
Subject to that assessment, Member States or any competent authority they designate shall prepare a timetable with a target of up to 10 years for the implementation of intelligent metering systems.
Where roll-out of smart meters is assessed positively, at least 80 % of consumers shall be equipped with intelligent metering systems by 2020.
The Member States, or any competent authority they designate, shall ensure the interoperability of those metering systems to be implemented within their territories and shall have due regard to the use of appropriate standards and best practice and the importance of the development of the internal market in electricity.

(Source: Eur-Lex)

Appendix 6 [Linky] The four legal texts relating to the modernization of electricity meters in France

Loi n°2000-108 du 10 février 2000 relative à la modernisation et au développement du service public de l'électricité

Le paragraphe IV de l'article 4 de la loi du 10 février 2000 prévoit que les *« gestionnaires des réseaux publics de transport et de distribution d'électricité mettent en œuvre des dispositifs permettant aux fournisseurs de proposer à leurs clients des prix différents suivant les périodes de l'année ou de la jour née et incitant les utilisateurs des réseaux à limiter leur consommation pendant les périodes où la consommation de l'ensemble des consommateurs est la plus élevée ».*

Le paragraphe IV de l'article 15 de la loi du 10 février 2000 dispose que le *« gestionnaire du réseau public de transport procède aux comptages nécessaires à l'exercice de ses missions ».*

Le paragraphe III de l'article 19 de la même loi dispose que *« chaque gestionnaire du réseau public de distribution procède aux comptages nécessaires à l'exercice de ses missions ».*

Loi n° 2004-803 du 9 août 2004 relative au service public de l'électricité et du gaz et aux entreprises électriques et gazières

Le paragraphe II de l'article 13 de la loi du 9 août 2004 dispose qu'*« un gestionnaire de réseau de distribution d'électricité [...] est notamment chargé [...] d'exercer les activités de comptage pour les utilisateurs raccordés à son réseau, en particulier la fourniture, la pose, le contrôle métrologique, l'entretien et le renouvellement des dispositifs de comptage et d'assurer la gestion des données et toutes missions afférentes à l'ensemble de ces activités ».*

Loi n° 2009-967 du 3 août 2009 de programmation relative à la mise en œuvre du Grenelle de l'environnement

L'article 18 de la loi du 3 août 2009 de programmation relative à la mise en œuvre du Grenelle de l'environnement prévoit que les *« objectifs d'efficacité et de sobriété énergétiques exigent la mise en place de mécanismes d'ajustement et d'effacement de consommation d'énergie de pointe. La mise en place de ces mécanismes passera notamment par la pose de compteurs intelligents pour les particuliers [...]. Cela implique également la généralisation des compteurs intelligents afin de permettre aux occupants de logements de mieux connaître leur consommation d'énergie en temps réel et ainsi de la maîtriser ».*

Décret n° 2010-1022 du 31 août 2010 relatif aux dispositifs de comptage sur les réseaux publics d'électricité en application du IV de l'article 4 de la loi n° 2000-108 du 10 février 2000 relative à la modernisation et au développement du service public de l'électricité , ainsi que la note d'information faisant une mise au point sur les compteurs électriques « Linky » publiée par le MEEDDM

(Source: CRE)

Appendix 7 [Linky] Example of a municipal council resolution (Premery) refusing Linky

N°2015-63 CONVENTION ENTRE LA COMMUNE ET GRDF POUR L'HEBERGEMENT DE CONCENTRATEURS SUR DES TOITS D'IMMEUBLES DANS LE CADRE DU PROJET COMPTEURS COMMUNICANTS GAZ DE GRDF.

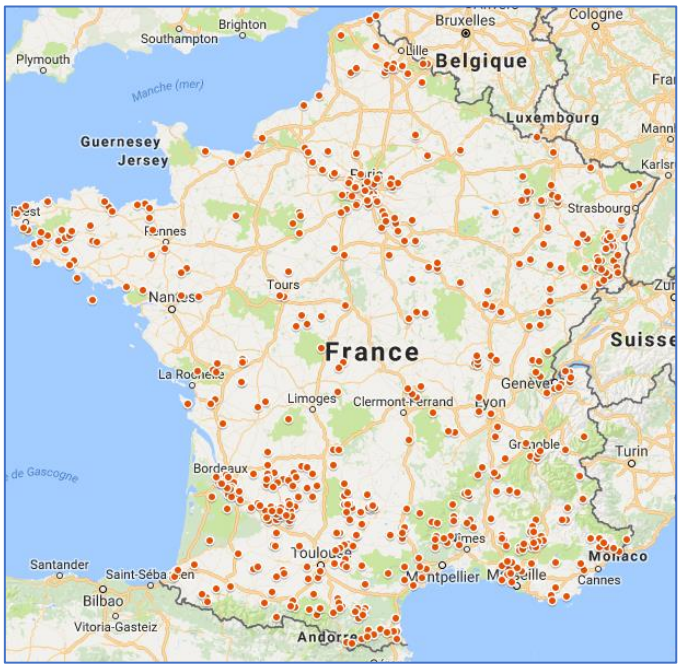
Considérant que ces « compteurs communicants » vont émettre des ondes radio,
Considérant les interrogations quant aux conditions de choix des sites susceptibles d'héberger ces compteurs,
Considérant que l'installation de ces compteurs, entrainera un coût pour GRDF qui sera inévitablement répercuté sur les factures des abonnés,
Considérant que l'installation de ces compteurs engendrera à long terme une baisse des effectifs du personnel de GRDF étant donné que la présence d'agents ne sera plus nécessaire pour effectuer les relevés des compteurs gaz,

Le Conseil Municipal, à la majorité REFUSE d'adhérer à cette convention pour héberger ces « compteurs communicants » sur la commune de Prémery.

Source : http://refus.linky.gazpar.free.fr/delib-PREMERY.doc

Appendix 8 [Linky] Map of municipalities having taken a decision of ban, moratorium or defiance vis-à-vis Linky

(Map by the authors from the information available on refus.linky.gazpar.free.fr, accessed on April 15, 2018)



Region	Number of municipalities
Auvergne-Rhône-Alpes	42
Bourgogne-Franche-Comté	37
Bretagne	36
Centre-Val de Loire	17
Grand-Est	59
Hauts-de-France	22
Ile-de-France	44
Normandie	12
Nouvelle-Aquitaine	109
Occitanie	117
Pays-de-la-Loire	10
Provence-Alpes-Côte d'Azur	57
Total	**562**

Appendix 9 [Linky] Copy of a judgment issued by Pau Administrative Court (Enedis against Tarnos)

TRIBUNAL ADMINISTRATIF
DE PAU

pu

N°1701268

RÉPUBLIQUE FRANÇAISE

PRÉFET DES LANDES

AU NOM DU PEUPLE FRANÇAIS

Mme Portal
Juge des référés

Le juge des référés

Ordonnance du 20 juillet 2017

68-03
C

Vu la procédure suivante :

Par une requête enregistrée le 30 juin 2017, le préfet des Landes demande au juge des référés d'ordonner, sur le fondement des dispositions de l'article L. 2131-6, 3ème alinéa du code général des collectivités territoriales, la suspension de l'exécution de la délibération du 18 mai 2017 par lequel le conseil municipal de la commune de Tarnos a refusé le déclassement des compteurs électriques existants et le déploiement des compteurs Linky sur son territoire.

Il soutient que :

- les compteurs électriques constituent des ouvrages du réseau public de distribution électrique qui appartient à la commune mais ils ont été mis à disposition du syndicat d'équipement des communes des Landes ;
- un doute sérieux existe sur la légalité de cette délibération au regard des dispositions de l'article L. 2141-1 du code général des collectivités territoriales, le déclassement impliquant une désaffectation préalable des compteurs électriques existants au service public ; la commune n'a pas compétence en matière de déclassement des compteurs existants, affectés au service public de distribution d'électricité.

Par un mémoire en défense, enregistré le 13 juillet 2017, présenté par Me Magarinos-Rey, la commune de Tarnos, représentée par son maire, conclut :
1°) au rejet de la requête ;

2°) à ce qu'il soit mis à la charge de l'Etat la somme de 2 000 euros au titre de l'article L. 761-1 du code de justice administrative ;

Elle soutient que :

- le moyen tiré de la méconnaissance des dispositions du code général des collectivités territoriales est inopérant dès lors que la délibération porte sur le refus de déclassement des compteurs existants ;
- les compteurs électriques demeurent la propriété de la commune nonobstant le transfert de compétence au syndicat d'équipement des communes des Landes ;
- la désaffectation du bien du domaine public relève de la seule compétence de la commune.

Par un mémoire en intervention, enregistrée le 12 juillet 2017, par Me Pather, la société anonyme Enedis, représentée par le président du directoire, demande au juge des référés de faire droit aux conclusions présentées par le préfet des Landes tendant à la suspension de la délibération du 18 mai 2017 litigieuse.

Elle fait valoir que :

- la délibération a été prise par une autorité incompétente au titre des dispositions combinées des articles L. 322-4 et L.2334-31 du code général des collectivités territoriales ;
- à titre subsidiaire, la décision a été rendue par une autorité incompétente eu égard au transfert de sa compétence d'autorité organisatrice de la distribution publique d'électricité au syndicat d'équipement des communes des Landes ;
- le conseil municipal était incompétent pour prendre une telle délibération au regard des dispositions des articles L. 341-4 du code de l'énergie ;
-le conseil municipal a commis une erreur manifeste d'appréciation en se fondant sur des craintes importantes de la population concernant l'impact sanitaire des compteurs Linky ;
-le conseil municipal a commis une erreur manifeste d'appréciation en se fondant sur le risque des compteurs Linky en matière de respect de la vie privée des personnes.

Vu :
- les autres pièces du dossier ;
- l'ordonnance n° 1601776 du 28 septembre 2016 du juge des référés du tribunal administratif de Pau.

Vu :
- la charte de l'environnement et notamment son article 5 ;
- la directive 2009/72/CE du Parlement européen et du Conseil du 13 juillet 2009 ;
- le code de l'environnement ;
- le code de l'énergie ;
- le code général des collectivités territoriales ;
- le code général de la propriété des personnes publiques ;
- le décret n° 2010-1022 du 31 août 2010 ;
- l'arrêté NOR: INDR1134076A du 4 janvier 2012 ;
- le code de justice administrative.

Le président du tribunal a désigné Mme Portal pour statuer sur les demandes de référé.

Les parties ont été régulièrement averties du jour de l'audience.

Ont été entendus au cours de l'audience publique du 18 juillet 2017 à 14 heures:
- le rapport de Mme Portal, juge des référés ;
- les observations de Mme Janin, représentant le préfet des Landes ;
- et celles de Me Lombardon, substituant Me Magarinos-Rey, représentant la commune de Tarnos, et de Me Teyrneyre, substituant Me Pather, pour la société Enedis.

1. Considérant que, par délibération du 18 mai 2017, le conseil municipal de la commune de Tarnos s'est opposé au déploiement des compteurs d'électricité communicants « Linky » et au déclassement des compteurs électriques existants ; que cette délibération a été transmise en préfecture le 22 mai 2017 ; que, par le présent déféré, le préfet des Landes demande la suspension de son exécution jusqu'à ce qu'il soit statué, au fond, sur sa légalité ;

Sur la recevabilité de l'intervention de la société Enedis :

2. Considérant que la société Enedis, qui est en charge du déploiement des compteurs Linky et se voit à ce titre fixer des objectifs, justifie d'un intérêt suffisant pour intervenir et s'associer aux conclusions à fin de suspension présentées par le préfet des Landes ; qu'il y a lieu d'admettre son intervention ;

Sur les conclusions à fin de suspension :

3. Considérant qu'en application de l'article L. 554-1 du code de justice administrative, les demandes de suspension assortissant les requêtes du représentant de l'Etat dirigées contre les actes des communes sont régies par le 3e alinéa de l'article L. 2131-6 du code général des collectivités territoriales qui dispose que : « *Le représentant de l'Etat peut assortir son recours d'une demande de suspension. Il est fait droit à cette demande si l'un des moyens invoqués paraît, en l'état de l'instruction, propre à créer un doute sérieux quant à la légalité de l'acte attaqué. Il est statué dans un délai d'un mois* » ;

4. Considérant que le principe du déploiement de dispositifs de comptage intelligents a été arrêté et le calendrier de ce déploiement fixé par la directive 2009/72/CE du Parlement européen et du Conseil du 13 juillet 2009 ;

5. Considérant qu'aux termes de l'article L. 341-4 du code de l'énergie : « *Les gestionnaires des réseaux publics de transport et de distribution d'électricité mettent en œuvre des dispositifs permettant aux fournisseurs de proposer à leurs clients des prix différents suivant les périodes de l'année ou de la journée et incitant les utilisateurs des réseaux à limiter leur consommation pendant les périodes où la consommation de l'ensemble des consommateurs est la plus élevée. / La structure et le niveau des tarifs d'utilisation des réseaux de transport et de distribution d'électricité sont fixés afin d'inciter les clients à limiter leur consommation aux périodes où la consommation de l'ensemble des consommateurs est la plus élevée. / Les cahiers*

des charges des concessions et les règlements de service des régies de distribution d'électricité doivent être en conformité avec les dispositions du présent article. » ;

6. Considérant qu'il résulte de cette disposition législative l'obligation, d'une part, pour les gestionnaires de réseaux de transport et de distribution d'électricité, de déployer les dispositifs de comptage dont les caractéristiques ont été arrêtées par l'arrêté ministériel du 4 janvier 2012 relatif aux dispositifs de comptage sur les réseaux publics d'électricité et, d'autre part, pour les autorités organisatrices de la distribution d'électricité de mettre en conformité les cahiers des charges des concessions et les règlements de service des régies de distribution d'électricité ;

7. Considérant que pour demander la suspension de l'exécution de la délibération attaquée du conseil municipal de Tarnos du 18 mai 2017, le préfet des Landes soulève, en premier lieu, le moyen tiré de l'incompétence de la commune pour prendre la délibération attaquée et agir en tant que collectivité organisatrice du réseau de distribution d'énergie électrique en raison du transfert de la compétence d'autorité concédante de la distribution publique d'électricité au syndicat d'équipement des communes des Landes ;

8. Considérant, en second lieu, que le préfet des Landes soutient que la commune de Tarnos n'est pas propriétaire des compteurs d'électricité et que le conseil municipal a méconnu l'article L.341-4 précité du code de l'énergie ;

9. Considérant que ces moyens sont propres à créer, en l'état de l'instruction, un doute sérieux quant à la légalité de la délibération ; qu'il y a lieu, dès lors, d'en suspendre l'exécution ;

Sur les conclusions présentées au titre de l'article L. 761-1 du code de justice administrative :

10. Considérant que les dispositions de l'article L. 761-1 du code de justice administrative font obstacle à ce que soit mise à la charge de l'Etat, qui n'est pas la partie perdante dans la présente instance en référé, une somme au titre des frais exposés par la commune de Tarnos et non compris dans les dépens ;

11. Considérant, par ailleurs, que la société Enedis, intervenante volontaire, ne peut être regardée comme une partie pour l'application de l'article L. 761-1 du code de justice administrative ; que, par suite, les conclusions présentées à ce titre par la société Enedis ne peuvent qu'être rejetées ;

ORDONNE :

Article 1- : L'intervention de la société Enedis est admise.

Article 2 : L'exécution de la délibération du conseil municipal de Tarnos du 18 mai 2017 est suspendue.

Article 3 : Les conclusions présentées par la société Enedis sur le fondement des dispositions de l'article L. 761-1 du code de justice administrative sont rejetées.

Article 4 : La présente ordonnance sera notifiée au préfet des Landes, à la commune de Tarnos et à la société Enedis.

Fait à Pau, le 20 juillet 2017 .

Appendix 10 **[Linky] Article about Linky opponent Grégory Heneman in La Voix du Nord 30/01/2018**

LA VOIX DU NORD

La Chapelle-d'Armentières

Comment Grégory Heneman, simple citoyen, est devenu militant anti-Linky

Grégory Heneman était il y a deux mois encore un citoyen lambda. Ce Chapellois, informaticien de formation, a vu sa vie changer avec l'arrivée des compteurs Linky. Il passe désormais son temps libre à distribuer des tracts et à informer sur les dangers de ces nouveaux compteurs connectés.

Anne-Charlotte Pannier | 30/01/2018

Grégory Heneman était il y a deux mois encore un citoyen lambda. Ce Chapellois, informaticien de formation, a vu sa vie changer avec l'arrivée des compteurs Linky.

Tout a commencé avec un mail. Celui reçu par Grégory Heneman dans lequel Enedis annonce le changement de son compteur électrique. Le Chapellois, informaticien de formation et du coup un peu « geek » – il a même été un peu « hacker » par le passé –, ne peut s'empêcher de vérifier. **Ces nouveaux compteurs connectés sont-ils piratables ?** Et ses recherches sur la toile confirment rapidement son pressentiment. « *Le même type de compteur devait être installé en Allemagne mais le gouvernement a refusé pour deux raisons.* » Le prix et le hacking justement. « *Le compteur a été confié à un groupe de hacker qui n'a mis qu'une semaine à le pirater.* »

Et puis, les quelques vérifications se sont transformées en près de cinquante heures de recherche. « *Mon propre compteur peut-être piraté. Et en plus j'ai trouvé de nouveaux motifs de m'inquiéter.* » Les ondes évidemment, mais aussi les risques d'incendie liés à ce compteur notamment. « *Changer 35 millions de compteurs qui fonctionnent ce n'est pas écologique en plus.* » Bref, Grégory Heneman, mari et père de famille, est devenu militant. **Il a imprimé et distribué sur le marché dominical de sa commune et dans son quartier près de deux cent cinquante tracts anti Linky.** Il fait aussi du porte-à-porte et a mis en ligne une pétition contre l'installation de ces compteurs à La Chapelle.

> ***« Ça a changé ma vie. (…) ces compteurs représentent pour moi l'amiante du XXIe siècle. »***

Il a aussi changé ses habitudes. Sensibilisé du coup au problème des ondes, le Chapellois ne s'est finalement jamais servi du casque bluetooth qu'il venait d'acquérir. Celui qui possède un téléphone portable précise qu'il le coupe la nuit. « *J'envisage aujourd'hui de faire de même avec le wi-fi.* »**Et précise aussi que contrairement au compteur Linky dont les ondes rayonnent dans tous les fils électriques d'une habitation, avec le téléphone ou le wi-fi il n'y a qu'une antenne.** Dans le cadre de ce nouveau combat, « *j'ai adhéré à une association nationale ARPP 91* », qui va m'apporter une aide juridique pour pouvoir informer la population.

Pour éviter que son compteur soit changé à son insu – il est situé à l'extérieur de son habitation –, Grégory Heneman a envoyé un recommandé indiquant qu'il refusait son emplacement.

Pour éviter que son compteur soit changé à son insu – il est situé à l'extérieur de son habitation –, Grégory Heneman a envoyé un recommandé indiquant qu'il refusait son remplacement.

« *J'ai affiché le courrier à côté de mon compteur.* » Il a également ajouté une sommation par huissier indiquant sa décision. Et enfin, **il a grillagé et sécurisé l'accès à son compteur par un cadenas.**

Le Chapellois a également prévu de poser congés quand les installations de compteurs commenceront dans le quartier. « *Ça a changé ma vie. (…) ces compteurs représentent pour moi l'amiante du XXIe siècle.* » Conscient de faire peur, Grégory précise d'emblée. « *Oui, je fais peur. Mais à la base, c'est Enedis qui me fait peur.* » Le Chapellois qui se dit prêt à informer tous ceux qui le souhaitent, « *j'ai d'ailleurs reçu des demandes dans d'autres communes de l'Armentiérois* », précise aussi que « *si quelqu'un veut son compteur, je ne m'y opposerai pas.* »

www.stop-linky.com

Les conseils du militant

Refuser le compteur

Deux cas de figure. **Votre compteur est situé à l'intérieur de votre habitation.** Dans ce cas, une fois indiqué par courrier à Enedis votre choix, il vous suffit de ne pas ouvrir la porte. « *Vous serez peut-être harcelé voire même menacé mais dans ce cas il faut tenir bon* », conseille le militant. **Si votre compteur est à l'extérieur**, en plus du recommandé et de la sommation par huissier, il vous faudra sécuriser l'accès à votre compteur via un cadenas ou un grillage comme l'a fait le militant.

Installer un filtre

Le Chapellois ne comprend pas pourquoi Enedis ne propose pas des filtres lorsqu'il installe les nouveaux compteurs. « *Il existe des filtres qui empêchent les ondes d'arriver dans votre habitation.* » **Mais ces filtres sont chers, 200 euros, selon notre interlocuteur.** Et il n'y a qu'un seul fournisseur et installateur en France qui est du coup débordé. « *Ces filtres permettent d'arrêter le courant porteur en ligne, c'est-à-dire ce qui donne les ondes hautes fréquence qui rayonnent dans tous les fils électriques de votre habitation.* » Il peut apparaître comme une solution si le compteur a été installé.

Regarder la télé

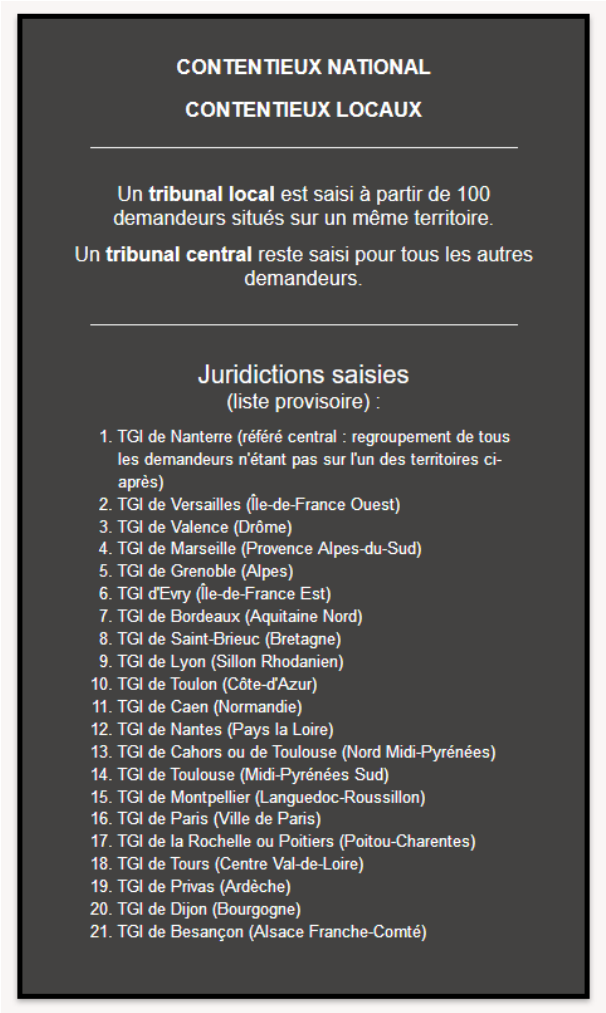
Le maire de Bovel, le premier à s'être opposé à l'installation des compteurs, était l'invité de l'émission *C politique* dimanche dernier sur France 5. « *Si vous l'avez raté, regardez-le.* »

Quid de l'arrêté municipal ?

Alors que 460 communes en France ont pris un arrêté municipal contre l'installation de ces compteurs, La Chapelle-d'Armentières, alertée en décembre par un autre riverain, ne l'a pas fait. Le maire avait alors expliqué que, selon les autorités, « ces compteurs ne sont pas considérés comme dangereux ». L'élu avait surtout indiqué que la commune ne s'opposerait pas à l'installation de ces compteurs parce **que les villes qui l'ont fait ont vu leur décision suspendue.** Pas tout à fait vrai selon le militant. « *La première commune à l'avoir fait, Bovel, a vu son arrêté suspendu par le tribunal administratif, mais la ville a fait appel. Et c'est bien ce premier jugement qui fera ou non jurisprudence* » selon lui. Sauf que la décision ne sera pas rendue avant quatre-vingt-dix jours.

Appendix 11 [Linky] List of courts seized for summary collective actions against Enedis

(source linky.mysmartcab.fr, 29/04/2018)



Appendix 12 [Linky] Anti-Linky events posters, May 5, 2018

Appendix 13 [Linky] Open letter from Robin des Toits declining the invitation to the December 2017 hearing in the National Assembly

Association régie par la loi du 1er juillet 1901

Membre du « **Rassemblement pour la Planète** »

Objet: assister et fédérer les personnes et les collectifs qui luttent pour la sécurité sanitaire des populations exposées aux nouvelles technologies de télécommunications sans fil
Siège social : 22 rue Descartes 78460 CHEVREUSE
Adresse de correspondance : 55 rue des Orteaux 75020 Paris
Téléphone : 01 47 00 96 33
e-mail : contact@robindestoits.org
Site : www.robindestoits.org

Paris, le 13 Décembre 2017

Communiqué de Presse

Réponse à l'invitation à participer à l'Audition ouverte à la presse sur les compteurs communicants le 14 décembre 2017 à l'Assemblée nationale

L'association Nationale Robin des Toits a décidé de ne pas répondre à cette invitation.

En effet, les 4 minutes qui lui sont généreusement imparties ne semblent concédées que pour éviter tout questionnement à l'image de ces *auditions*.

Les décisions sont déjà prises et le rapport de l'OPECST ne servira qu'à toiletter de soi-disant "démocratie" et d'un petit vernis scientifique (univoque comme toujours avec l'OPECST qui a des antécédents parlant dans le domaine des pollutions électromagnétiques) une technologie dangereuse pour la santé, attentatoire aux libertés publiques, et qui n'a pour but - sous couvert d'écologie, de *greenwashing* de fait - que de marchandiser ce qui était jusqu'à maintenant un service public.

Robin des Toits ne souhaite pas cautionner une procédure qui va à terme enchérir le prix d'une denrée nécessaire à tous : l'énergie. Ceci dans des conditions anti-démocratiques, anti-écologiques, inégalitaires au plan des fondements de la République et qui porteront atteinte à la santé publique.

En démocratie, le libre choix est incontournable.
Les décisions qui sont prises pour le profit de certains intérêts privés et non pour l'intérêt général ne sont pas acceptables. Robin des Toits continuera à les combattre.
Robin des Toits travaille pour l'humain et pour la santé publique. Ne parlant pas la même langue, Robin des Toits ne souhaite pas être instrumentalisé pas des sociologues de l'*acceptation*.

Si les députés désirent être "éclairés", il leur suffit de retourner dans leurs circonscriptions écouter - véritablement - les gens. Ils peuvent aussi consulter nos sites et nos différents communiqués si le temps ou le goût leur manquent pour rencontrer les simples citoyens. Étant censés incarner la Représentation Nationale, ils devraient éviter de travailler pour le Big Data et les GAFA mais plutôt pour l'intérêt de leurs concitoyens.
Si une association comme Robin des Toits existe, cela démontre que bon nombre d'élus ne font pas vraiment leur travail...

Si le libre choix d'accepter ou de refuser ces compteurs soi-disant intelligents est rendu au public, comme ce devrait être possible dans le cadre d'une démocratie, l'association nationale Robin des Toits pourrait reconsidérer sa position.

Cette réponse peut être versée dans votre rapport le cas échéant.

Vous en souhaitant bonne réception.

Etienne Cendrier
Porte-Parole national

Appendix 14 **[Linky] Exceprt from an article published on ladepeche.fr (La Dépêche du Midi), recounting an assault against a Linky installer by angry citizens, 1/05/2018**

Actualités > Faits divers

Publié le 01/05/2018 à 10:52, Mis à jour le 02/05/2018 à 07:57

Un installateur violemment agressé dans le Var : pourquoi tant de haine contre Linky?

Faits divers

Partager Partager Tweeter Partager Réagir 80 réactions Commenter S'ABONNER

La polémique suscitée par le nouveau compteur Linky ne faiblit pas.

Un technicien d' Insiema, société à laquelle Enedis a délégué la pose de ses compteurs Linky dans le Var, a été victime d'une violente agression ce lundi 30 avril à Bagnols-en-Forêt.

Coup de tête et points de suture

Les faits se sont produits alors que l'installateur procédait à un remplacement de compteur chez une cliente du fournisseur d'énergie dans cette ville dont le conseil municipal a voté un moratoire contre le nouvel équipement.

Il était aux alentours de 13h30 quand une voiture s'est arrêtée devant le technicien qui opérait sur la voie publique. Une femme est d'abord sortie du véhicule, prenant à partie l'installateur qu'elle a frappé au visage. Dans un second temps, le conducteur a participé à l'agression et administré un violent coup de tête à la victime. Le couple a ensuite pris la fuite.

Le technicien a été pris en charge par les secours et transporté à l'hôpital où sa blessure a nécessité la pose de points de suture.

Dans un communiqué, la société Enédis s'est dite choquée par cette agression et a sollicité une rencontre avec le maire de Bagnols-en-Forêt dans les meilleurs délais.

Bras de fer entre Enédis et le conseil municipal

Dans une délibération votée le 1er juin 2016, le conseil municipal a autorisé les habitants de la commune à s'opposer l'installation du compteur Linky. Cette décision a été attaquée devant le tribunal administratif de Toulon.

C'est donc sur fond de tensions entre les élus de varois et Enédis que s'est produite cette agression. Récemment, la mairie de Bagnols-en-Forêt a sollicité ses administrés. Elle souhaite recueillir en particulier des témoignages visant à démontrer que le fournisseur d'énergie impose le nouveau compteur par la force, en menaçant ou en intimidant ses clients.

Appendix 15 **[Linky] Excerpt from an article published on 20minutes.fr, about health trouble attributed to Linky, 23/03/2018**

ACCUEIL › SANTÉ

Rennes: Vertiges, maux de tête, insomnies... Un couple vit un enfer depuis que son compteur Linky est connecté

SANTE Patrick et Claude ont dû quitter leur appartement pour aller dormir à la campagne...

Camille Allain | Publié le 23/03/18 à 07h05 — Mis à jour le 23/03/18 à 09h24

57 COMMENTAIRES 17,3k PARTAGES

Patrick habite dans le quartier de la Poterie, à Rennes, depuis huit ans. Depuis un mois, il ne supporte plus son appartement où a été installé un compteur communiquant Linky. — *C. Allain / 20 Minutes*

- Un couple souffre de plusieurs maux depuis l'installation d'un compteur Linky.
- Habitant à Rennes, Patrick et Claude ont dû quitter leur appartement.
- Ils dorment à la campagne pour échapper aux ondes.

Mercredi soir, Patrick et Claude ont dormi dans leur voiture. Garé à quelques centaines de mètres de leur appartement, le Kangoo est devenu leur base de repli. Car depuis un mois, ce couple résidant à Rennes vit un véritable enfer. « On a d'abord eu l'impression d'avoir des sifflements dans la tête, comme des acouphènes. Au départ, on ne s'est pas vraiment inquiétés. Mais ça s'est aggravé. On a commencé à avoir des maux de tête, des vertiges, des insomnies », témoigne Patrick.

À LIRE AUSSI

07/02/18 | ÉPINGLAGE
Cinq dossiers épinglés par le rapport 2018 de la Cour des comptes

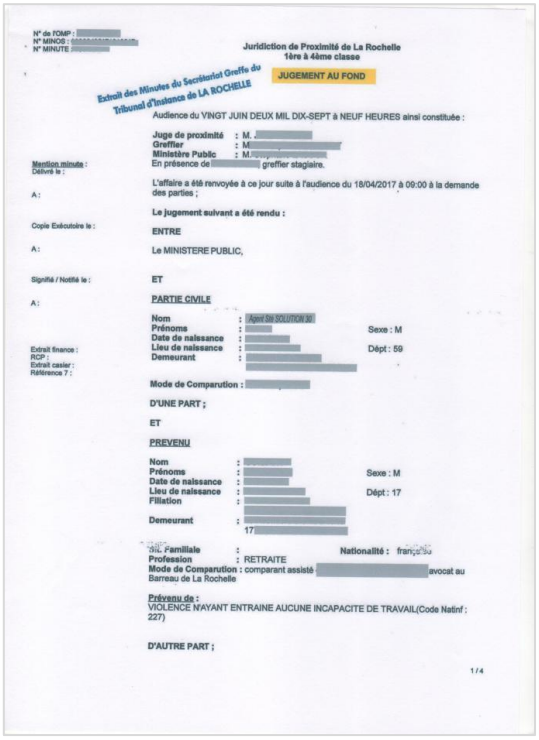
09/03/18 | CONSOMMATION
L'UFC-Que Choisir lance une pétition pour changer le financement de Linky

26/01/18 | FAITS DIVERS
Après le spectaculaire incendie de campings-cars, un homme condamné

D'ACTU 1 SUR 2

Appendix 16 [Linky] Judgment given by La Rochelle lower court (20/06/2017)

…dismissing a Linky installer who was evicted from a customer's home by force after attempting to remove client-installed protection bars protecting the old electricity meter. (source: Next-up)



Juridiction de Proximité de La Rochelle
1ère à 4ème classe

Extrait des Minutes du Secrétariat Greffe du Tribunal d'Instance de LA ROCHELLE

JUGEMENT AU FOND

Audience du VINGT JUIN DEUX MIL DIX-SEPT à NEUF HEURES ainsi constituée :

Juge de proximité : M.
Greffier : M.
Ministère Public : M.
En présence de greffier stagiaire.

L'affaire a été renvoyée à ce jour suite à l'audience du 18/04/2017 à 09:00 à la demande des parties ;

Le jugement suivant a été rendu :

ENTRE

Le MINISTERE PUBLIC,

ET

PARTIE CIVILE

Nom : Agent SH SOLUTION 30
Prénoms :
Date de naissance :
Lieu de naissance : Sexe : M
Demeurant : Dépt : 59

Mode de Comparution :

D'UNE PART ;

ET

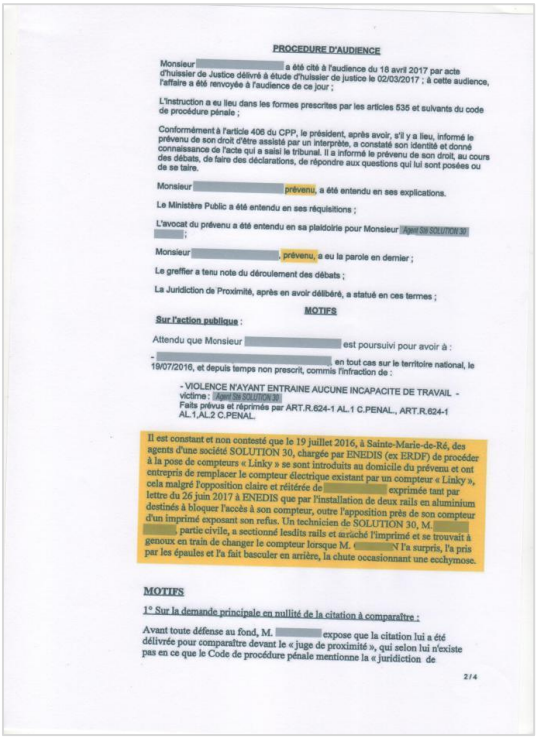
PREVENU

Nom :
Prénoms :
Date de naissance : Sexe : M
Lieu de naissance : Dépt : 17
Filiation :
Demeurant :
17
Situation familiale : Nationalité : française
Profession : RETRAITE
Mode de Comparution : comparant assisté avocat au Barreau de La Rochelle

Prévenu de :
VIOLENCE N'AYANT ENTRAINE AUCUNE INCAPACITE DE TRAVAIL(Code Natinf : 227)

D'AUTRE PART ;

1/4



PROCEDURE D'AUDIENCE

Monsieur a été cité à l'audience du 18 avril 2017 par acte d'huissier de Justice délivré à étude d'huissier de justice le 02/03/2017 ; à cette audience, l'affaire a été renvoyée à l'audience de ce jour ;

L'instruction a eu lieu dans les formes prescrites par les articles 535 et suivants du code de procédure pénale ;

Conformément à l'article 406 du CPP, le président, après avoir, s'il y a lieu, informé le prévenu de son droit d'être assisté par un interprète, a constaté son identité et donné connaissance de l'acte qui a saisi le tribunal. Il a informé le prévenu de son droit, au cours des débats, de faire des déclarations, de répondre aux questions qui lui sont posées ou de se taire.

Monsieur prévenu, a été entendu en ses explications.

Le Ministère Public a été entendu en ses réquisitions ;

L'avocat du prévenu a été entendu en sa plaidoirie pour Monsieur Agent SH SOLUTION 30 ;

Monsieur , prévenu, a eu la parole en dernier ;

Le greffier a tenu note du déroulement des débats ;

La Juridiction de Proximité, après en avoir délibéré, a statué en ces termes ;

MOTIFS

Sur l'action publique :

Attendu que Monsieur est poursuivi pour avoir à :

- en tout cas sur le territoire national, le 19/07/2016, et depuis temps non prescrit, commis l'infraction de :

- VIOLENCE N'AYANT ENTRAINE AUCUNE INCAPACITE DE TRAVAIL - victime : Agent SH SOLUTION 30
Faits prévus et réprimés par ART.R.624-1 AL.1 C.PENAL., ART.R.624-1 AL.1,AL.2 C.PENAL.

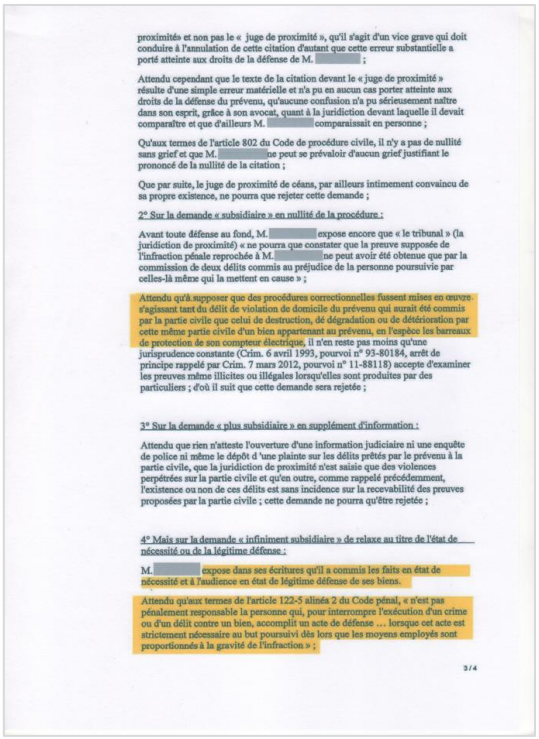
Il est constant et non contesté que le 19 juillet 2016, à Sainte-Marie-de-Ré, des agents d'une société SOLUTION 30, chargée par ENEDIS (ex ERDF) de procéder à la pose de compteurs « Linky » se sont introduits au domicile du prévenu et ont entrepris de remplacer le compteur électrique existant par un compteur « Linky », cela malgré l'opposition claire et réitérée de exprimée tant par lettre du 26 juin 2017 à ENEDIS que par l'installation de deux rails en aluminium destinés à bloquer l'accès à son compteur, outre l'apposition près de son compteur d'un imprimé exposant son refus. Un technicien de SOLUTION 30, M. partie civile, a sectionné lesdits rails et arraché l'imprimé et se trouvait à genoux en train de changer le compteur lorsque M. l'a surpris, l'a pris par les épaules et l'a fait basculer en arrière, la chute occasionnant une ecchymose.

MOTIFS

1° Sur la demande principale en nullité de la citation à comparaître :

Avant toute défense au fond, M. expose que la citation lui a été délivrée pour comparaître devant le « juge de proximité », qui selon lui n'existe pas en ce que le Code de procédure pénale mentionne la « juridiction de

2/4



proximité» et non pas le « juge de proximité », qu'il s'agit d'un vice grave qui doit conduire à l'annulation de cette citation d'autant que cette erreur substantielle a porté atteinte aux droits de la défense de M. ;

Attendu cependant que le texte de la citation devant le « juge de proximité » résulte d'une simple erreur matérielle et n'a pu en aucun cas porter atteinte aux droits de la défense du prévenu, qu'aucune confusion n'a pu sérieusement naître dans son esprit, grâce à son avocat, quant à la juridiction devant laquelle il devait comparaître et que d'ailleurs M. comparaissait en personne ;

Qu'aux termes de l'article 802 du Code de procédure civile, il n'y a pas de nullité sans grief et que M. ne peut se prévaloir d'aucun grief justifiant le prononcé de la nullité de la citation ;

Que par suite, le juge de proximité de céans, par ailleurs intimement convaincu de sa propre existence, ne pourra que rejeter cette demande ;

2° Sur la demande « subsidiaire » en nullité de la procédure :

Avant toute défense au fond, M. expose encore que « le tribunal » (la juridiction de proximité) « ne pourra que constater que la preuve supposée de l'infraction pénale reprochée à M. ne peut avoir été obtenue que par la commission de deux délits commis au préjudice de la personne poursuivie par celles-là même qui la mettent en cause » ;

Attendu qu'à supposer que des procédures correctionnelles fussent mises en œuvre s'agissant tant du délit de violation de domicile du prévenu qui aurait été commis par la partie civile que celui de destruction, dé dégradation ou de détérioration par cette même partie civile d'un bien appartenant au prévenu, en l'espèce les barreaux de protection de son compteur électrique, il n'en reste pas moins qu'une jurisprudence constante (Crim. 6 avril 1993, pourvoi n° 93-80184, arrêt de principe rappelé par Crim. 7 mars 2012, pourvoi n° 11-88118) accepte d'examiner les preuves même illicites ou illégales lorsqu'elles sont produites par des particuliers ; d'où il suit que cette demande sera rejetée ;

3° Sur la demande « plus subsidiaire » en supplément d'information :

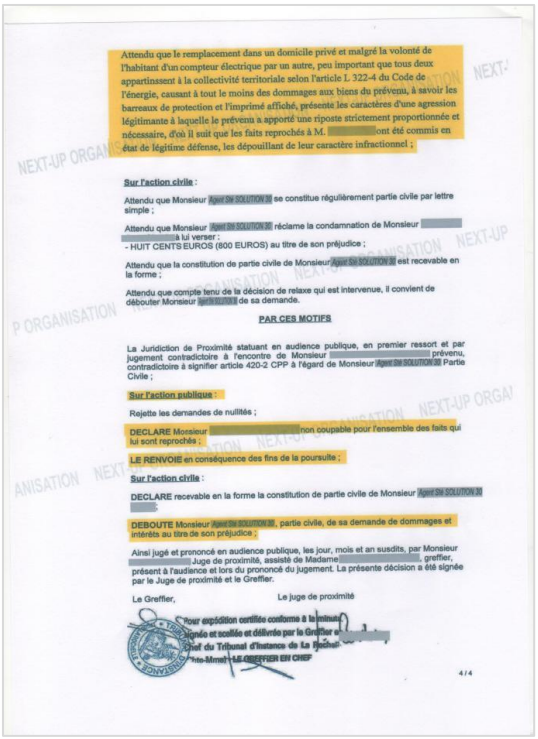
Attendu que rien n'atteste l'ouverture d'une information judiciaire ni une enquête de police ni même le dépôt d 'une plainte sur les délits prêtés par le prévenu à la partie civile, que la juridiction de proximité n'est saisie que des violences perpétrées sur la partie civile et qu'en outre, comme rappelé précédemment, l'existence ou non de ces délits est sans incidence sur la recevabilité des preuves proposées par la partie civile ; cette demande ne pourra qu'être rejetée ;

4° Mais sur la demande « infiniment subsidiaire » de relaxe au titre de l'état de nécessité ou de la légitime défense :

M. expose dans ses écritures qu'il a commis les faits en état de nécessité et à l'audience en état de légitime défense de ses biens.

Attendu qu'aux termes de l'article 122-5 alinéa 2 du Code pénal, « n'est pas pénalement responsable la personne qui, pour interrompre l'exécution d'un crime ou d'un délit contre un bien, accomplit un acte de défense … lorsque cet acte est strictement nécessaire au but poursuivi dès lors que les moyens employés sont proportionnés à la gravité de l'infraction » ;

3/4



Attendu que le remplacement dans un domicile privé et malgré la volonté de l'habitant d'un compteur électrique par un autre, peu important que tous deux appartinssent à la collectivité territoriale selon l'article L 322-4 du Code de l'énergie, causant à tout le moins des dommages aux biens du prévenu, à savoir les barreaux de protection et l'imprimé affiché, présente les caractères d'une agression légitimante à laquelle le prévenu a apporté une riposte strictement proportionnée et nécessaire, d'où il suit que les faits reprochés à M. ont été commis en état de légitime défense, les dépouillant de leur caractère infractionnel ;

Sur l'action civile :

Attendu que Monsieur Agent SH SOLUTION 30 se constitue régulièrement partie civile par lettre simple ;

Attendu que Monsieur Agent SH SOLUTION 30 réclame la condamnation de Monsieur à lui verser :
- HUIT CENTS EUROS (800 EUROS) au titre de son préjudice ;

Attendu que la constitution de partie civile de Monsieur Agent SH SOLUTION 30 est recevable en la forme ;

Attendu que compte tenu de la décision de relaxe qui est intervenue, il convient de débouter Monsieur Agent SH SOLUTION 30 de sa demande.

PAR CES MOTIFS

La Juridiction de Proximité statuant en audience publique, en premier ressort et par jugement contradictoire à l'encontre de Monsieur prévenu, contradictoire à signifier article 420-2 CPP à l'égard de Monsieur Agent SH SOLUTION 30 Partie Civile ;

Sur l'action publique :

Rejette les demandes de nullités ;

DECLARE Monsieur non coupable pour l'ensemble des faits qui lui sont reprochés ;

LE RENVOIE en conséquence des fins de la poursuite ;

Sur l'action civile :

DECLARE recevable en la forme la constitution de partie civile de Monsieur Agent SH SOLUTION 30

DEBOUTE Monsieur Agent SH SOLUTION 30, partie civile, de sa demande de dommages et intérêts au titre de son préjudice ;

Ainsi jugé et prononcé en audience publique, les jour, mois et an susdits, par Monsieur Juge de proximité, assisté de Madame greffier, présent à l'audience et lors du prononcé du jugement. La présente décision a été signée par le Juge de proximité et le Greffier.

Le Greffier, Le juge de proximité

Pour expédition certifiée conforme à la minute
Signée et scellée et délivrée par le Greffier en
Chef du Tribunal d'Instance de La Rochelle
Le Greffier en Chef

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Appendix 17 [Linky] Article from Rue89 Bordeaux reporting on a collective judicial action launched by 200 people against Enedis

Une action collective contre Linky au tribunal de Bordeaux

Par Simon Barthélémy , publié le 26/04/2018 à 17h03 — 569 VISITES — 1 RÉACTION

actualisé le 27/04/2018 à 10h41

Elles refusent « linkysition » : près de 200 personnes vont saisir en référé le Tribunal de Grande instance de Bordeaux pour demander le retrait ou la suspension de la pose des compteurs électriques Linky à leurs domiciles. Cette action collective est en fait menée auprès de 20 tribunaux de France et fédère pour l'instant 4446 inscrits sur la plateforme Mysmartcab.fr (moyennant 48 euros).

Le fondateur de ce site, Maître Christophe Lèguevaques, est l'un des trois avocats parisiens à l'origine de cette initiative, avec l'ancienne ministre de l'environnement Corinne Lepage et Me Arnaud Durand. L'avocat et conseilleur municipal écologiste Pierre Hurmic qui défendra les requérants devant le TGI bordelais, au nom de la liberté de choisir, du droit au respect de la santé et de la protection de la vie privée.

Compteurs sans consentement

Motifs : « le déploiement de compteurs communiquant notamment par courant porteur en ligne (CPL) augmente les expositions chroniques aux champs électromagnétiques », alors que la loi du 9 février 2015 vise à réduire celles-ci. Et « le fournisseur ou distributeur d'électricité impose l'installation des compteurs dits « Linky » sans le consentement des personnes, voire dans certains cas en cas de violation d'un refus dument notifié ».

> « La mobilisation hostile ne s'étiole pas au fur et à mesure des poses, au contraire elle grandit. 1/3 des abonnés girondins sont déjà équipés des nouveaux compteurs (280 000 abonnés sur 946 000). Des Collectifs Stop Linky ont vu le jour un peu partout, notamment sur Bordeaux Métropole, Andernos, Libourne, La Teste… 10 communes refusent cette pose (500 en France) et 14 ont affiché un soutien aux opposants, notamment Talence, Pessac, Bègles, et Libourne. »

A Bordeaux, poursuit l'élu, les conseillers municipaux écologistes « sollicitent du Maire l'organisation de réunions d'information dans chaque quartier » et n'ont pas obtenu d'Alain Juppé le vote d'une motion demandant à Enedis de respecter le libre choix de chaque Bordelais.

Une manifestation nationale Stop Linky aura lieu Samedi 5 Mai à 15h Place de la Victoire

L'AUTEUR

Simon Barthélémy
Journaliste, rédacteur en chef de Rue89 Bordeaux

Plus d'articles

ABONNEZ-VOUS À NOTRE KIOSQUE
REPORTAGES, ENQUÊTES, ANALYSES…

EN BREF

10000 euros récoltés par Bienvenue au profit de SOS Méditerranée
par Walid Salem. Aucun commentaire pour l'instant.

Une action collective contre Linky au tribunal de Bordeaux
par Simon Barthélémy. 569 visites. 1 commentaire.

Appendix 18 [Linky] Formal notice template proposed by the law firm Artemisia

(source : artemisia-lawyers.com)

….

Par courrier recommandé avec accusé de réception

ENEDIS

A……., le…….

Objet : Mise en demeure – refus du compteur « Linky »

Monsieur le représentant légal,

Je me permets de vous solliciter au sujet de votre projet de remplacement du compteur électrique auquel mon installation électrique est raccordée (PDL n°……, tel que figurant sur ma facture) par un compteur communicant de type « Linky ».

Comme vous le savez, ce compteur communicant a vocation à enregistrer et traiter des données dont j'ai la libre disposition, en vertu de l'article R. 341-5 du code de l'énergie.

L'exercice de ce droit suppose que je puisse disposer d'une information exhaustive sur les fonctionnalités de ce compteur, les risques qu'il présente en matière d'atteinte à la vie privée et les droits dont je dispose pour les maîtriser, conformément aux recommandations de la commission nationale de l'informatique et des libertés (CNIL) formulées en la matière.

Or, l'installation de ce nouveau compteur comme les modalités d'exercice de mes droits n'apparaissent pas prévues par le contrat de distribution d'électricité qui nous lie, lequel doit nécessairement être amendé et approuvé par mes soins, et ce au moins un mois avant l'application des nouvelles conditions contractuelles, c'est-à-dire au moins un mois avant l'installation du nouveau compteur, conformément aux dispositions de l'article L.224-10 du code de la consommation.

Aussi, je vous serais reconnaissant de me communiquer, dans un délai de quinze jours :

- une présentation détaillée des fonctionnalités du compteur Linky ;
- une présentation détaillée des données personnelles susceptibles d'être recueillies par ce compteur ;
- l'étude d'impact sur la vie privée préalable à ce déploiement, telle que prévue par la CNIL et dûment notifiée à celle-ci ;
- un projet d'avenant au contrat de distribution d'électricité prévoyant l'installation d'un nouveau compteur et fixant les modalités me permettant d'autoriser ou de refuser l'enregistrement, la collecte, l'utilisation et/ou la transmission à des tiers de mes données personnelles de consommation telles qu'elles sont relevées par ce compteur, et ce dans les conditions préconisées par la CNIL.

L'implantation de ce compteur ne pouvant intervenir avant la conclusion de cet avenant, je vous remercie de renoncer à l'installation de ce compteur préalablement à la conclusion de cet avenant.

A défaut, je serais contraint d'engager toutes voies de droit propres à la défense de mes intérêts.

Vous devez de ce fait considérer la présente lettre comme valant mise en demeure, avec toutes les conséquences que la loi et les tribunaux accordent à ce type de lettre.

Dans l'attente de vous lire, je vous prie de recevoir, Monsieur le représentant légal, l'assurance de ma sincère considération.

Appendix 19 [Linky] A page against Linky on a "conspiracy theory" website

Adresse du site sites de secours	**http://filterman.comlu.com/gsm.htm**
Nom du site	**Prévention sur les risques professionnels sanitaires des micro-ondes**
Auteur du site	**Marc FILTERMAN**
Adresse e-mail	**marcfilterman@hotmail.com**
	TRANSLATE - TRADUIRE
	Retour au Sommaire du site
	Retour au chapitre sur la pollution électromagnétique des micro-ondes

339°) Linky= Dictature = surveillance électronique = Holocauste, atteinte à la vie privée, sabotage Manipulation de l'information, propagande, et insultes des journalistes.

Marc Filterman
Site : http://filterman.comlu.com/gsm.htm
Site : http://filterman.esy.es/gsm.htm
Date : 20/04/2016
Objet : Linky= Dictature = surveillance électronique = Holocauste, atteinte à la vie privée, sabotage
Manipulation de l'information, propagande, insultes des journalistes

Mesdames les sénatrices et députées
Messieurs les sénateurs et députées

Vous trouverez sur le sujet 339 en pièce jointe dès la première page, les raisons qui font que le niveau d'impopularité des politiques augmente, et que certains partis politiques comme le PS s'effondre dans les sondages. A force d'insulter les gens, de dissimuler les vérités, et **de pratiquer la discrimination** comme le fait le PS, en dénonçant l'islamophobie, la xénophobie **MAIS EN OUBLIANT de dénoncer la cathophobie, la francophobie et le racisme anti-français,** il ne faut pas s'étonner après de voir les sondages s'effondrer. Ce gouvernement vire le **Général Soubelet pour avoir dit la vérité lors d'une audition,** où il expliquait que les victimes sont plus mal traitées que les criminels. **Ce n'est pas le Général Soubelet qu'il faut virer, mais ce gouvernement**. Aujoursd'hui on est arrivé au stade ou même des gamines de 12 ans sont torturées par d'autres gamines, sans parler de la multiplication des agressions et tous les trafics, ce qui est la preuve d'une dérive de la France, avec au moins un assassinat par jour en prime.

Pour ce qui est **des compteurs fliqueurs, du Linky d'Itron France (voir aussi Itron Inc. USA), sujet**

Appendix 20 [Gardanne] Reference list

Public inquiry

Public inquiry process report
http://www.bouches-du-rhone.gouv.fr/content/download/10363/62460/file/Rapport.pdf
Conclusions and opinions of the investigating commissioner
http://www.bouches-du-rhone.gouv.fr/content/download/10367/62476/file/conclusions.pdf

Marseille administrative Court judgement (8 juin 2017)

https://reporterre.net/IMG/pdf/decision_du_tribunal_sur_l_autorisation_d_exploitation_de_la_centrale_uniper.pdf

Regional and national press

Regional
http://www.varmatin.com/environnement/la-centrale-biomasse-de-gardanne-effraie-le-var-26174
http://www.laprovence.com/article/politique/4530020/nicolas-hulot-fait-appel-pour-la-centrale-de-gardanne.html
http://m.lamarseillaise.fr/bouches-du-rhone/developpement-durable/65887-ils-ont-manifeste-contre-la-biomass-carade
http://m.lamarseillaise.fr/bouches-du-rhone/social/64651-la-colere-gronde-a-nouveau-a-la-centrale

National
http://www.lemonde.fr/pollution/article/2017/06/08/la-justice-annule-l-autorisation-d-exploitation-de-la-plus-grande-centrale-biomasse-de-france_5140715_1652666.html
http://www.lemonde.fr/planete/article/2014/05/28/la-biomasse-devoreuse-de-terres-agricoles-et-de-forets_4427191_3244.html
https://www.humanite.fr/energie-gardanne-la-centrale-de-la-discorde-631730
https://www.humanite.fr/gardanne-la-centrale-qui-voulait-se-faire-plus-grosse-que-la-foret-638539
https://blogs.mediapart.fr/nicholas-bell/blog/061217/gardanne-et-la-planete
https://www.lesechos.fr/thema/021973108373-comment-la-centrale-a-bois-de-gardanne-a-eteint-lincendie-allume-par-les-opposants-2001881.php

Specialized online medias

https://reporterre.net/IMG/pdf/e.on_information.pdf
https://reporterre.net/Manifestation-contre-la-desastreuse-centrale-a-biomasse-de-Gardanne
https://reporterre.net/IMG/pdf/decision_du_tribunal_sur_l_autorisation_d_exploitation_de_la_centrale_uniper.pdf
https://reporterre.net/La-centrale-a-biomasse-de-Gardanne
https://reporterre.net/Face-au-chantage-aux-subventions-les-parcs-regionaux-acceptent-la-centrale-de
https://reporterre.net/IMG/pdf/3_protocole_regionpaca_uniper_pnrl_pnrv_version_finale.pdf

https://www.actu-environnement.com/ae/news/centrale-biomasse-gardanne-approvisionnement-local-disponnibilite-18595.php4
https://www.actu-environnement.com/ae/news/megacentrale-biomasse-gardanne-eon-fne-elus-importation-bois-21052.php4

National TV and radios

France 2 : programs « cash investigation » January 24, 2017
France 5 : documentary of Benoît Grimont https://vimeo.com/142872558
France Culture : https://www.franceculture.fr/emissions/terre-terre/territoires-sans-menagement-8-la-mega-centrale-biomasse-de-gardanne

Local radios

Radio Zinzinne : http://www.zinzine.domainepublic.net/

- February 7, 2017 : « Manif à Gardanne » (75 mn)
- December 12, 2016 : « UNIPER l'ogre arbrivore de Gardanne » (70 mn)
- Octobre 26, 2015 : « Colère boréale » (60 mn)
- July 5, 2015 : « Halte à la biomascarade » 2 parties (60 mn chacune)
- April 6, 2015 : « Collectivités contre E.On » (60 mn)
- February 23, 2015 : « E.On - F.Off » (60 mn)
- January 5, 2015 : « Du déjà vu à Gardanne » (90 mn)
- December 8, 2014 : « EON et Tarascon : la guerre du bois est lancée » (60 mn)
- October 6, 2014 : « Du jamais vu à Gardanne » (90 mn)
- July 26, 2014 : « Bois - énergie à risque » (60 mn)
- July 3, 2014 : « A bas les grands projets inutiles, 2° partie » (60 mn)
- June 30, 2014 : « EON on n'en veut pas! Halte à la bio-mascarade ! » (60 mn)
- June 24, 2014 : « E-ON-Inova, On n'en veut pas » (60 mn)
- June 20, 2014 : « Cévenols contre grands projets inutiles » (60 mn)
- March 10, 2014 : « A la défense des forêts des Cevennes (Contre le délire d'Eon N°4) » (60 mn)
- November 17, 2013 : « Contre le délire d'E.On, 2ème partie » (60 mn)
- October 21, 2013 : « Contre le délire d'E.on » (60 mn)

Alpes Sud
http://alpesdusud.alpes1.com/news/locales/27292/alpes-du-sud-des-embryons-d-opposition-naissent-contre-la-centrale-a-biomasse-de-gardanne

Grassroots organizations and associations

SOS Forêt du Sud
https://sosforetdusud.wordpress.com/about/
https://sosforetdusud.files.wordpress.com/2014/11/dossier-gardanne-fc3a9vrier-2015-leger-def.pdf
http://www.sosforet.org/wp-content/uploads/2017/02/ARGUMENTS-LPO-E-ON.pdf
https://sosforetdusud.files.wordpress.com/2017/10/articles-annulation-uniper.pdf
https://sosforetdusud.files.wordpress.com/2014/10/biofuelwatch-executive-summary-final-oct-2013.pdf
https://sosforetdusud.files.wordpress.com/2014/10/wall-street-journal-biomass-forests-may-2013.pdf
https://sosforetdusud.files.wordpress.com/2014/05/rwe-tilbury-article-gfc.pdf
https://sosforetdusud.files.wordpress.com/2018/04/guardian-14-12-17-franc3a7ais.pdf

SOS Forêt France
http://www.sosforet.org/gardanne/

SOS Forêt Cévennes
https://sosforetcevennes.wordpress.com/

SOS Vigilance Gaz à Gardanne (CVGG)
http://cvgg.over-blog.com/tag/dossier%20%22biomasse%22%20eon/

Collectif Climat Pays d'Aix
https://collectifclimat-paysdaix.fr/2016/07/03/16-juin-soiree-mega-centrale-biomasse-produit-vraiment-de-lenergie-verte/

Les Amis de la Terre / Friends of Earth
http://www.amisdelaterre.org/Aspire-par-des-centrales-geantes.html
http://www.amisdelaterre.org/IMG/pdf/foee_brulerlaterre.pdf
https://friendsoftheearth.uk/sites/default/files/downloads/felled-fuel-46611.pdf

Association Sauvons la forêt (Rettet den Regenwald e.V.)
https://www.sauvonslaforet.org/petitions/959/uniper-veut-bruler-les-forets-francaises-a-gardanne

Relier (Réseau d'expérimentation et de liaison des initiatives en espace rural)
http://www.reseau-relier.org/Reunion-publique-sur-l-impact-de

Attac
https://france.attac.org/agenda/article/attac-marseille-centrale-biomasse-uniper-ex-e-on-de-gardanne-peut-on-faire

France Nature Environnement (FNE) / FNE PACA
http://www.fne-vaucluse.fr/images/imagesFCK/file/dossiers/energie/140315_lettreforetdusudacdc.pdf

LPO PACA
http://paca.lpo.fr/protection/engagements/actualite/2673-la-centrale-electrique-a-biomasse-de-l-entreprise-e-on-une-menace-pour-les-forets-mediterraneennes-du-canada-et-d-ukraine

Petitions
https://www.mesopinions.com/petition/nature-environnement/biomass-carade-mepris-pietinement-democratie-centrale/34736
https://www.sauvonslaforet.org/petitions/959/uniper-veut-bruler-les-forets-francaises-a-gardanne

NGOs

Coalition mondiale des forêts / Global Forest Coalition
http://globalforestcoalition.org/fr/biomyths-report-pr/
http://globalforestcoalition.org/wp-content/uploads/2015/12/bioenergy-report-Exec-FR.pdf

FERN
https://www.youtube.com/watch?v=EJ9thDgt3Aw&feature=youtu.be

Dogwood Alliance

https://www.dogwoodalliance.org/2015/06/uncovering-the-truth-investigating-the-destruction-of-precious-wetland-forests/
https://www.dogwoodalliance.org/our-work/our-forests-arent-fuel/

Biofuelwatch

http://biofuelwatch.org.uk/wp-content/uploads/Chain-of-Destruction-online.pdf

ONG Carbon Trade Watch

http://www.carbontradewatch.org/downloads/publications/NothingNeutralHere.pdf

Other sources

Think Tanks

https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-02-23-woody-biomass-global-climate-brack-final2.pdf
http://www.ase.tufts.edu/gdae/Pubs/climate/ClimatePolicyBrief7.pdf
http://www.ase.tufts.edu/gdae/Pubs/climate/ClimatePolicyBrief8.pdf
http://ase.tufts.edu/gdae/Pubs/climate/LetterFromScientistsToEuParliament_ForestBiomass_January_2018.pdf

Blogs

https://resistanceinventerre.wordpress.com/2014/01/08/megacentrale-biomasse-eon-a-gardanne-la-resistance-sorganise-pour-sauver-les-forets-regioanles/
https://resistanceinventerre.wordpress.com/2013/06/13/une-future-enorme-centrale-biomasse-a-gardanne-ou-comment-cramer-le-chataignier-des-cevennes/
http://cabrery.a.c.f.unblog.fr/files/2013/12/ca-brule-pour-la-foret.pdf
https://gazdeschistesprovence.wordpress.com/2014/03/17/les-grands-projets-inutiles-en-region-paca-les-centrales-electriques-au-bois-de-gardanne-eon-et-brignoles-imova/
http://ava.bba.free.fr/spip/IMG/pdf/1708002_N-_Hulot_FNE_FNE_Paca_UNIPER_signe.pdf
http://groupereve04jabrondurance.revolublog.com/amap-bois-collectif-non-a-e-on-ca-brule-pour-la-foret-a106336390
https://my-pages.net/2017/10/
https://anorenvironnement.wordpress.com/2017/12/08/sortir-du-charbon-oui-mais-bruler-des-arbres-a-la-place-non/

International Organization : The European Forest Institute

http://www2.efi.int/files/attachments/thinkforest/berndes__thinkforest_12_october.pdf

Uniper

https://france.uniper.energy/Provence4Biomasse/

Appendix 21 [RICL] Press and document review

Oral arguments before the Illinois Supreme Court on whether the Rock Island Clean Line can be considered a public utility. http://multimedia.illinois.gov/court/SupremeCourt/Video/2017/051717_121302.mp4 (17/05/2017)

Keryn Newman's *StopPath blog* http://stoppathwv.com/stoppath-wv-blog/category/illinois

Meeting Explains Specifics On Proposed Transmission Line Project - Rock Island Clean Line Project Facing Landowner opposition by Dan Voigt , Emmetsburg News, (27/08/2013). http://www.emmetsburgnews.com/page/content.detail/id/522100/Meeting-Explains-Specifics-On-Proposed-Transmission-Line-Project.html

Rock Island Clean Line Agricultural Impact Mitigation Policies (August 2012). https://www.rockislandcleanline.com/sites/rock_island/media/docs/Agricultural_Impact_Mitigation_Policies.pdf

Mary Mauch (executive director of Illinois Landowner Alliance) presentation about RICL fighting during the meeting "*Harnessing our Local Energy Future*", in Dodgeville, Wisconsin, Video (02/03/2018). https://youtu.be/_T3YfxoSkqc

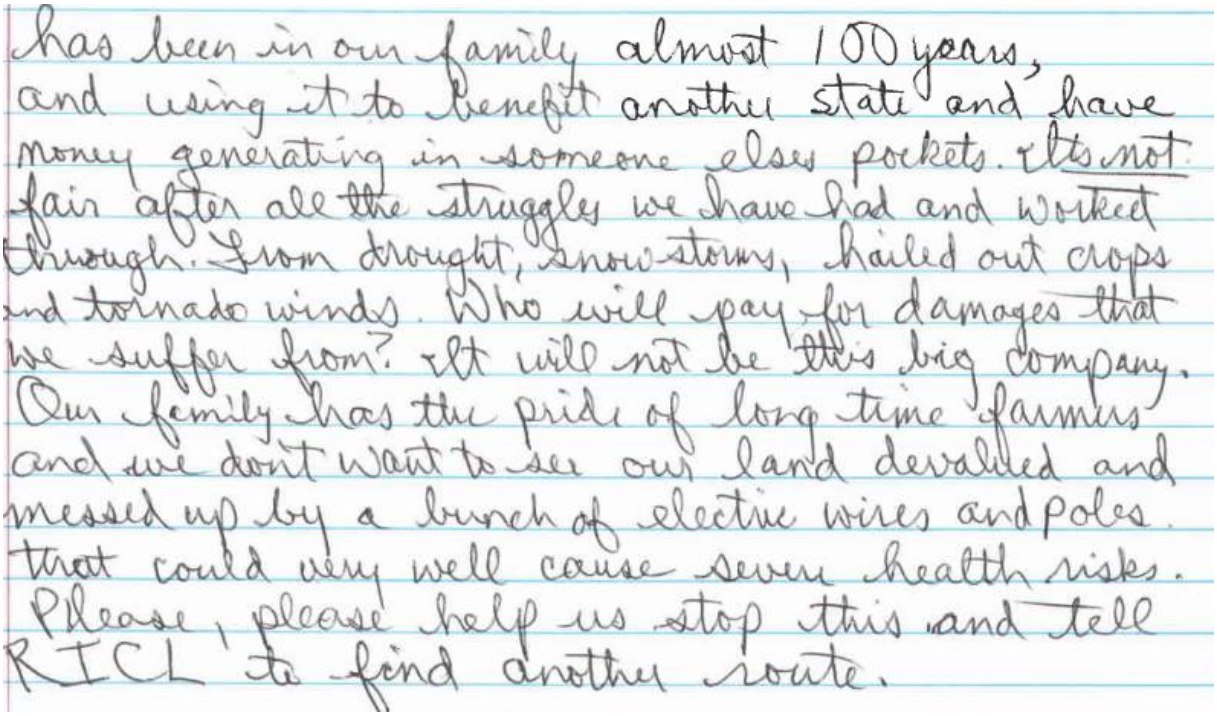
Appendix 22 [RICL] Sample letter snippets from landowners to the Iowa Utiliy Board

Everyone who is "in the way" would be a potential guinea pig. Who really understands what stray voltage from the electromagnetic fields could do? I well remember the question that we would ask each other as youngsters if we acted weird or strange..."What's wrong with you? Did you grow up under a high line or something?" At the time it seemed like a joke, but now it's just frightening.

The Rock Island Clean Line investors want to have access to Iowa farmer's land to build what? This group of billionaires are wanting to invest in a private venture to build a high-voltage transmission line. What is the need? Have they proven the necessity of building it? For whose advantage? How will this help Iowans? Again, why is this venture necessary? Are there not abandoned railroad lines that could be used? Or along highways? To take private property for an unproven investment imposes on the civil rights of farm owners.

The transmission lines are close enough to our land and almost yearly our crops are sprayed by crop dusters for insects and diseases. These lines would be a great interference and very dangerous to the pilots. There could also be the possibility the crop dusting company could refuse to do the spraying. If we could not get our crops sprayed, our yields would be greatly reduced.

I am not opposed to economic development. The greatest good for the greatest number is a rational consideration. However, this project would do nothing to cheapen Iowa's electrical costs or develop our infrastructure. Why should we allow placement of a transmission line developed by private investors, which would do nothing for our community other than offer temporary construction jobs? Even if *Clean Line's* original intentions are honorable, who is to say that any subsequent owners would maintain and be prudent in their treatment of granted easements and our environment? Privately developed projects of this kind are worrisome when one considers that their main concern is to create a profit.


has been in our family almost 100 years,
and using it to benefit another state and have
money generating in someone elses pockets. It's not
fair after all the struggles we have had and worked
through. From drought, snow storms, hailed out crops
and tornado winds. Who will pay for damages that
we suffer from? It will not be this big company.
Our family has the pride of long time farmers
and we don't want to see our land devalued and
messed up by a bunch of electric wires and poles.
that could very well cause seven health risks.
Please, please help us stop this and tell
RTCL to find another route.

problem: I oppose the Clean Lines transmission line through O'Brien County as the route currently lies. This line runs within 300 ft. of the largest great heron rookery west of the Mississippi River, as well as running through prairie restoration areas along the Waterman Creek watershed area. These areas have had extensive personal property restoration - at NO cost to the state of Iowa - and this would totally undermine the extensive personal resources involved to restore Iowa to a state prior to man's invasive involvement. I am specifically referring to the transmission line going between 400th and 410th street in Franklin township heading east from Vine Avenue, across the Waterman Creek and heading into Clay County. The O'Brien County Conservation Commission has been contacted regarding this route and the potential damage/harm to the rookery and prairie restoration involved with the constructin of these towers and resulting transmission lines. Reconsideration of line !
placement should be in order - for the good of O'Brien County and the State of Iowa!!

Appendix 23 [RICL] Poster of a conference against Cardinal Hickory Creek (CHC) transmission line project

… held in Dodgeville, Wisconwin, March 2, 2018, and featuring Mary Mauch, from Illinois Landowners Alliance

Program excerpt

Mary Mauch As Executive Director of the Illinois Landowner's Alliance and Co-founder of Block RICL, Mary will describe organizing and outreach techniques with citizens and elected officials which proved effective in stopping the Rock Island Clean Line in Illinois, and other merchant lines in Missouri and Iowa, that sought to use eminent domain to take private property for transmission expansion.

CAFETT

Citizens **A**ttitudes and **F**eedback
regarding **E**nergy **T**ransition **T**echnologies

A PROJECT PRESENTED AS PART OF THE PROGRAM

THE FUTURE OF ENERGY: LEADING THE CHANGE

Part II - Methodology for multi-stakeholder dialogue around ETTs

September 2018

PART II

METHODOLOGY FOR MULTI-STAKEHOLDER DIALOGUE AROUND ETTs

Table of Contents – Part II

CAFETT — TASK II REPORT

ESTABLISH METHODOLOGY FOR MULTI-STAKEHOLDER DIALOGUE AROUND ETT

Section §0 — Introduction

The purpose of **CAFETT TASK 2** is to place controversies around Energy Transition Technologies (henceforth ETT) within a robust social sciences framework of interpretation and, on this basis, to orient the use of the chosen deliberation support tools for the case study analyses to be carried out and reported under **TASK 3**.

This work, both theoretical and empirical, has led to a number recommendations, whose formulation is the preoccupation of **TASK 4**, on robust methods for deliberation support and permanent on-line documentation of ETT social acceptability information.

So, the present **CAFETT TASK II REPORT** will set out, on the basis of theoretical and methodological considerations, a state-of-the-art operational framework for analysis of, and real-time negotiation of, the social acceptability of ETTs. This operational framework, which will be presented with several variations, combines established considerations of multi-criteria and multi-actor comparative evaluation, with innovative proposals for the exploitation of the new generation of digital "social networking" tools and technologies. It draws notably on methodological work by O'Connor & Spangenberg (2007) for deliberative indicator-based CSR appraisal, and on experience with operational deliberation support tools (centred on the KerBabel Deliberation Matrix) available as functionalities of the 'ePLANETe' on-line collaborative learning and deliberation support platform.

Some of the proposed variations of ETT evaluation can be implemented, by expert teams, on the basis of data available from publications, printed documents and data on-line. However, our main purpose is to outline how ETT social acceptability can be addressed, and indeed be negotiated, through processes involving direct stakeholder dialogue. Such dialogue can take place in a variety of ways, including various procedures of mediation, public participation and on-line social networking — as in due course will be explained. We do not fully implement all the different variations with empirical case studies within CAFETT itself; but enough has been done (as is documented in the companion **CAFETT TASK III REPORT**) to demonstrate the technical feasibility and the potential interest of the different opportunities.

The plan of the present **CAFETT TASK II REPORT** is as follows. **Section §1** introduces the concept of "social choice" as it informs our review of methods and our proposals for deliberative approaches to ETT social acceptability. **Section §2** discusses typology for the two principal axes of comparison: the considerations of quality and acceptability; and the considerations of stakeholder diversity. **Section §3** returns to the question of deliberation support technology (DST), looking closely at the design and implementation of tools for deliberation support on-line. On this basis, it sets out operational procedures for KerDST multi-criteria multi-actor comparative evaluation that might appropriately be adopted at different points along the "life cycle" of ETT social acceptability investigation. This leads directly into our **TASK 3**.

The KerDST deliberative approach is fully operational and has been applied successfully in a variety of territorial development and project assessments. Nonetheless, important questions are still unresolved when we pose the question of "upscaling" to a systematic sector-wide ETT application. In closing, we mention some of these challenges in methodological terms; however, the question of their full resolution is left to the *Recommendations* developed in our complementary **TASK 4**.

Section §1 — Methodology: From Social Choice Theory to Operational DDST

§1.1 ETT, Sustainability & Social Choice

Energy Transition Technologies (henceforth ETT) are a component — a very vital component — of the wider vision of Ecological Transition which, in its turn, is the ecological and technological dimension of Sustainable Development (henceforth SD). We consider sustainable development here as a paradigm of collective social choice, and we recapitulate very briefly the key features of this paradigm as it informs our vision of the needs and purposes of deliberative evaluation.

Sustainable development is, in general terms, the challenge of collective engagement to invest in the creation and maintenance of durable reciprocally linked social, economic and ecological systems. As a model or paradigm of societal opportunities, the vision of a SD responds to declared risks of futures with degraded conditions of ecological services and a worsening of ecological (as well as economic) inequalities, with a systemic and normative orientation marked by two originalities:

(1) **Constructing ecological solidarities**, via eco-innovations engaging the shift from a 'predatory' to a more 'circular' model of economic value creation and transmission; and

(2) **Constructing social solidarities**, engaging the shift from unequal 'dual' societal structures (e.g., formal/informal; capitalist/proletariat; high wage North/low wage South) to more reciprocal models of partnership in value creation and transmission.

This vision of "sustainability" as culture and governance for an inclusive and durable green economy is somewhat of a utopia. Yet for many, as a cognitive and normative framework, it orients action, provides reference points for evaluation, and (without necessarily mistaking desire for reality) inspires hope.

In correlation with this utopian vision, the three decades since the 1990s have been marked by a new societal demand for measuring the performance of the business sector relative to sustainable development goals. Discourses around ***Corporate Social Responsibility*** (CSR) since the 1990s insist, in this context, on the obligations of business to address a ***Triple Bottom Line*** of economic, social and environmental performance. This may encompass a vast diversity of societal and environmental considerations, but in a particular way: CSR can be framed as a call for, and acceptance of, a business performance obligation for ***multiple dimensions of solidarity***.

We see also, in this context, an emphasis on new forms of stakeholder participation and social dialogue as contributions to company reporting, strategy definition and decision-making. This call for dialogue reflects the perceived need to integrate a diversity of partners and types of information responding to the triple bottom line — often as a form of conflict management, or as a commitment to inclusive sustainability ideals. Most deeply, the social demand for "dialogue" and "participation" relates to ideals of community and associated challenges of trust and legitimacy (cf., De Marchi, Funtowicz & Pereira 2001; Guimaraes Pereira & O'Connor 1999).

This theme of confidence or trust shows up in the insistence on CSR as engaging a reciprocally negotiated 'social contract' — between 'business' and (the rest of) the wider societies that are hosting them (e.g., Nicolaï, O'Connor & Faucheux (2009); Gendron, Vaillancourt & Audet (eds.), 2010). Any such "new social contract" cannot be established unilaterally. Rather, it may emerge, or be negotiated, at the interface between a business "offer" of responsibility and ***a wider societal debate on conditions for acceptability***. The methodological considerations of this TASK II REPORT are grounded in this vision of a "social contract" — implicit or explicit — needing to be articulated and renewed. In particular:

- As the term itself suggests, the question of Energy Transition Technologies is, in part, a question of technology assessment. But, assessment relative to what considerations of quality and performance? This will lead us straight back (in Section §2) to the wider question of sustainable development values and goals, and thus to the question of business (and public sector) responsibilities in partnerships for sustainability across research, technology choices, and terrains of innovation.
- Stakeholder dialogue is a ***necessary*** (though not sufficient) condition for constructing and maintaining the societal and ecological solidarities wanted for a green economy. But what, realistically, can be hoped for or expected from different forms of stakeholder dialogue? This will be our underlying concern in Sections §3 and §4, addressing the design and implementation of tools for deliberation support around ETT.
- Information Technology (IT), considered as a radical new innovation wave, brings novel cognitive, communicational, learning and partnership opportunities that, under certain conditions, might be mobilised in support of sustainability (Cf. Faucheux, Nicolaï & Hue 2010). In CAFETT we exploit and demonstrate through case study applications (as documented in the **TASK III REPORT**), the opportunity and effectiveness of novel "on-line" Internet based tools for building and maintaining stakeholder dialogues in support of energy transition and wider sustainability.

§1.2 The Structure of Social Choice

Following fundamental conventions of economics analysis, we consider evaluation methods, including social acceptability, in terms of the comparison of one thing or action with another. Economists speak of the 'opportunity costs' of an action, this being defined as the value of the most attractive alternative foregone. If an action A is contemplated, the questions may be asked: What is obtained (or gained) by action A? What is lost or excluded by choosing A rather than B (or 'not-A'). The question then is: In what ways might the 'values' and the 'trade-offs' be represented and (perhaps) quantified.

We exploit, in this regard, the distinction made by Frame & O'Connor (2010), between 'mono-metrical' and 'poly-phonic' valuation perspectives.[1] A 'mono-metrical' approach to decision support, favoured by many (but not all) economists, is to seek to establish a 'rational' justification for a choice between A, B, C, etc., on the basis of relations of preference along a single scale. If C is preferred over B, and B is preferred over A (etc.), then C is the highest-valued action. However, this seemingly simple principle of establishing preferences, or a ranking of situations or of options, is not always easy to apply.

In the paragraphs that follow, we recapitulate schematically, the ways that the well-known system complexity and social conflict considerations get in the way of 'mono-metrical' approaches to evaluation and can motivate an alternative 'poly-phonic' valuation perspective.

Resource management choices usually relate to complex entities, processes or outcomes, each option (A, B, C, etc.) being characterised by a range of attributes. Comparison of options means comparing a vector of attributes with a variety of concepts, units of measure and criteria. It is not always easy to pass from a multiple criteria appraisal to a ranking of alternatives along a single scale.

Consequences of choices are distributed in time and, often, different aspects of outcomes (good and bad, as perceived by different constituencies) will have distinctive time profiles, e.g., financial costs and returns; but also natural system features such as climate change, radioactive waste decay, fish population dynamics, dilution of chemical pollution by natural processes, coastal erosion…. For all actions whose consequences

[1] The terminology 'mono-metrical' and 'poly-phonic', was articulated in an earlier unpublished project report by O'Connor (SRDTOOLS, 2006d), and is an elaboration of epistemological and methodological arguments on « valuation from the point of view of complexity » proposed in O'Connor (2000) in the context of the VALSE Project. See also the recent paper by Munda (2016) that sets out different types of comparability and (in)commensurability.

will be revealed through time, there is uncertainty — due partly to natural system complexity and partly to 'social' indeterminacies such as other decisions not yet made or whose consequences are not yet known.

Many different reasons or principles can be put forward as justifications for the acceptability, or not, of different outcomes (including perceived uncertainties and risks, distribution of benefits and costs across different constituencies within society, or across generations through time, etc.). The different principles may be irreducible (that is, incomparable in the sense of being grounded in qualitatively different considerations).

The significance for evaluation of a plurality of justification principles, considered as irreducible, can be highlighted by a well-known decision theory construct, the notion of a "conflict matrix".

*The table (i) on the right portrays the 'classic' **multi-criteria situation** where no one option dominates all the others on all criteria.*

(i) Evaluation Multi-Criteria	*Option A*	*Option B*	*Option C*
Principle 1	Not Applicable	SATISFACTORY	INACCEPTABLE
Principle 2	SATISFACTORY	INACCEPTABLE	Not Applicable
Principle 3	INACCEPTABLE	Not Applicable	SATISFACTORY

This is, indeed, the typical situation of multi-criteria analysis (see Munda 1995, 2004). It is also the case of multi-stakeholder negotiations. Because, of course, the primary reason for valuation difficulties — one which is relevant for almost all public finance and policy problems of any significance — is that whenever the choices (A or B or C, etc.) involve or will have consequences for more than one person, judgements may differ fundamentally as to what is preferable. Typically, the different options (A, B, C) will produce differing distributions of benefits, risks and costs for the individuals or sectors of society concerned.

We can illustrate this with a second 'conflict matrix'. Suppose that each of three stakeholder groups of a society, *Alpha, Beta* and *Gamma*, put forward their preferred policy, A, B and C respectively.

We obtain a 'poly-phonic' profile of judgements such as in the table (ii), where, as in the cyclic case presented, no overall ranking emerges.

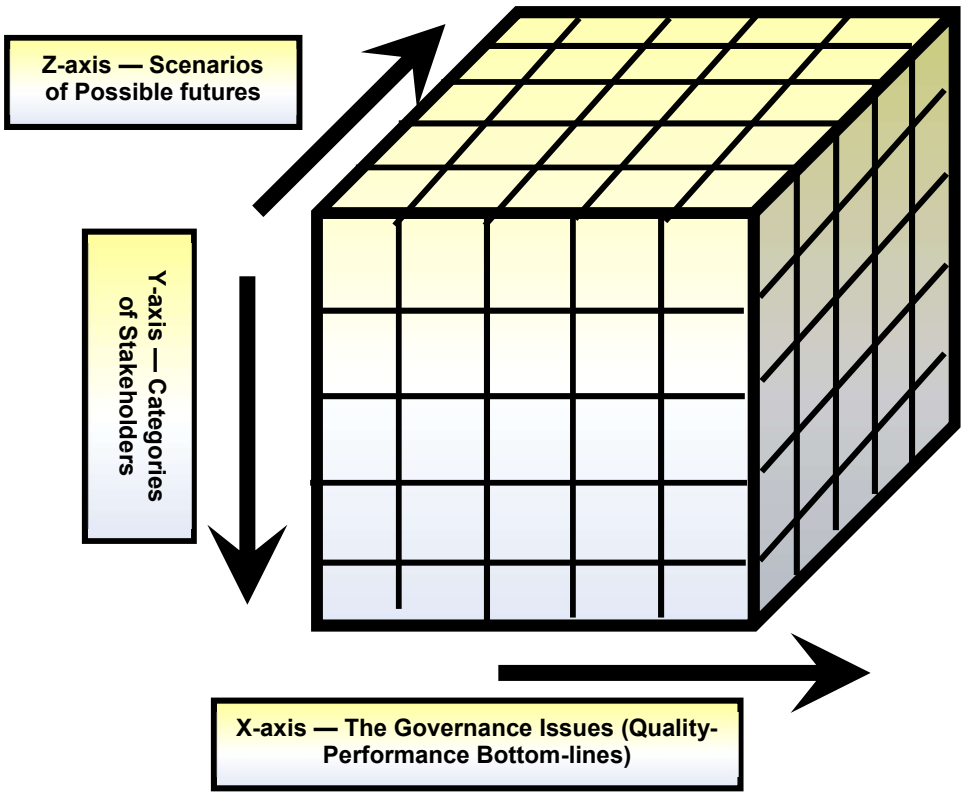
Selecting between options therefore requires some sort of 'arbitrage' or ruling over the "weights" accorded to different criteria or to different stakeholder claims. But, of course, this question of appropriate weights for different criteria is precisely what divides the stakeholders. The different protagonists may not only have divergent interests (about, notably, the distribution of benefits, opportunities, risks and costs, meaning problems of fairness, justice, equity); they may also propose quite different principles of fairness and of performance quality for resolving this "problem of social choice".

(ii) Evaluation Multi-Actor	*Option A*	*Option B*	*Option C*
Alpha	GOOD	VERY BAD	MEDIOCRE
Beta	MEDIOCRE	GOOD	VERY BAD
Gamma	VERY BAD	MEDIOCRE	GOOD

In sum, it can easily be admitted that, most often, distinct stakeholder groups will have their distinctive attachments to principles of quality, performance and acceptability; and also, they will project their own distinctive 'content' for each of the principles (e.g., justice, equity, nature conservation, profitability). This leads us to frame the generic problem of 'social choice' as requiring a ***multi-criteria multi-stakeholder deliberation*** about the merits and demerits of the options for action that present themselves to the society.

The core methodological frame needed for our **CAFETT** case studies, is thus to build or represent stakeholder dialogues around ETT social acceptability as a form of deliberative multi-criteria evaluation.

By bringing together the two 'conflict matrices' introduced above, we obtain a three–dimensional array (*see below)* which has been made the basis of the **KerBabel™ Deliberation Matrix** (see O'Connor 2006d, 2007). This is the structure that we exploit for the CAFETT Case Study terrains.



In this didactic way, we expose the main methodological considerations for structuring a multi-criteria multi-stakeholder evaluation of ETT. These elements of methodology will be exploited systematically for organising our substantive, technical and procedural considerations in later sections of our report.

The topics we are addressing are quite vast. While we do attempt to provide, in a synthetic way, an overview of the state of the art, we can reference, explicitly, only a small selection of this vast literature. We have preferred, logically, to cite works that offer didactic expositions and justifications for the conceptual framing and analysis tools adopted in our study. These cited works provide abundant opportunities to the reader wishing to look further into the literature.[2]

§1.3 Design Considerations for Deliberative ETT Evaluation

The logic of the 3-dimensional **Deliberation Matrix** as developed by the KerBabel research team, is to transform the theoretical structure of social choice as just outlined, into a framework of multi-stakeholder

[2] For example, since the 1970s many thousands of books, reports and articles have been written, from many different standpoints, seeking to characterise this « paradigm » of sustainability as a principled social choice. Many recent works, both books and journal articles, are available in electronic forms and can be found (officially or otherwise) on the Internet. This is increasingly true also for books published long before the Internet age. We have chosen to privilege printed publication data, restricting our referencing of electronic sources to items whose primary publication is electronic (e.g., current events, Blogs) or that we have accessed uniquely in electronic format (typically from an institutional website). A limited but potentially useful "webliography" is nonetheless provided as an Appendix at the end of this report.

multi-criteria deliberation support.[3] The generic social choice problem is, as already signalled, structured along three main axes:

(1) the **OBJECTS** of comparative evaluation attention (these can be, depending on the problem, scenarios, alternative sites, investment strategies, public policy options, and so on.);

(2) the spectrum of the **PERFORMANCE GOALS AND CHALLENGES**;

(3) the different **"ACTORS" OR STAKEHOLDERS** involved in, or potentially affected by the social choice problem.

The spectrum of quality-performance issues, the categories of stakeholders, and the list of objects to be evaluated and compared, must be determined by a KerDST user or team who, as the designated ***problem holder***, will "build the problem" within the on-line deliberation support tool. KerDST then provides for the declaration by (or on behalf of) *each* category of stakeholders, of ***judgements*** about *each* of the options or scenarios under evaluation, with reference to each consideration in the *spectrum* of governance or quality-performance issues.

In **Section §2** of this report, we address substantive considerations for the composition of each axis of comparative evaluation of ETT social acceptability. Then, in **Section §3**, we will look in detail at design considerations for operational deliberation support tools.

In the 2006 version of KerDST, it is required to specify a *"small number"* of elements along each of these three axes. The limitation to a "small number" (typically between 3 and 8) was motivated partly for ergonomic reasons of on-screen visualisation. It is justified also on cognitive terms: individuals typically can "hold" up to 5 or 7 objects as separate items in their minds. Building a deliberation with more than 6-8 elements along a single axis becomes unwieldy not just on-screen but also in cognitive terms. However, this constraint to "small numbers" along each of the structuring axes for "building the problem" can be relaxed by introducing internal structure along each axis. For example, one might propose a hierarchical structure of "top goals" and "sub-goals" for organising the quality-performance criteria.[4]

Within this 3-dimensional framework, the question then arises of the conventions for expressing judgements within each of the "cells" of the Deliberation Matrix. In technical terms, this is the question of what types of **INDICATORS OR "SIGNALS" OF PERFORMANCE** and, and, by extension, the procedures for their selection, mobilisation and eventual synthesis into aggregate indices or scores — moving where (and to the extent) desired, from disaggregated stakeholder opinions towards aggregate indices or social acceptability scores.

We will return in due course to these technical questions. It is useful, however, to conclude this methodology introduction with a brief discussion of the identification and roles of the different "actors" or stakeholders in ETT evaluation.

There is now a very vast literature on "public participation" and on the benefits to be hoped from the "concertation" of stakeholders in technology assessment, public policy or other class of social choice problem.[5] As argued in diverse contexts since the 1970s, better integrated knowledge of coupled ecological-socio-economic systems can, in principle, assist policy development and planning in moving towards

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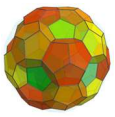
[3] The **Deliberation Matrix** concept was crystallized, and given a prototype multi-media implementation, in the EC-funded multi-partner **GOUVERNe** project on interactive tools for integrated management of ground water resources (*Guidelines for the Organisation, Use and Validation of information systems for Evaluating aquifer Resources and Needs*: Contract No. EVK1-CT-1999-00043, European Commission 5th Framework Programme, Thematic Programme: Environment and Sustainable Development, 2000-2003, coordinated by Martin O'Connor, C3ED, France). A comprehensive exposition of the GOUVERNe prototype and its use is provided by Amorsi (2013). The version best known as KerDST, available on line after 2006, is presented in O'Connor (2006a, 2006b) and in O'Connor, Bureau & Reichel (2007); full methodological references are found therein. Detailed guidance to users is provided in English (Reichel et al., 2007) and in French (Bureau et al., 2007). A catalogue of the principal exploitations of KerDST during the years 2006-2010 is provided by Raharinirina, Douguet & O'Connor (2010).

[4] The fully reengineered 2015 version of kerDST, incorporated within the ePLANETe platform, permits a hierarchical structure of assessment criteria, and also provides for several different ways of organising the evaluation objects and the "actors" engaging in the evaluation process. We will come back to these features in Section §3 of this Report.

[5] Some useful entrées to this literature as it has developed since the 1990s are provided by Simos (1990); Dryzek (1994), Holland (1997); Jacobs (1997); Bulkeley & Mol (2003); De Marchi et alii (2000); Procter & Drechsler (2006); O'Neill (2007).



sustainable development by permitting the assessment of the viability and potentialities of those systems relative to the needs and performance goals (well beings) of current and future generations. However, the fulfilment of these hopes for integrated assessment depends not only on effective and pragmatic systems analyses as the science base, but also on the embedding of systems science in collective learning. This is dependent on the sourcing of knowledge in many forms from a range of people, and on the acceptability of proposals for action being deliberated by affected stakeholders before final decisions are implemented.

In this context, the traditional concept of expertise and extension — that is, top-down policy supplemented by a largely one-way flow of information from experts to the public — has proven insufficient. In a variety of ways, the authoritarian technocratic vision of top-down governance for the public good is contested, with arguments for it to be countermanded — or at least complemented — with procedures for reciprocal partnerships among those involved in the knowledge-action process (Funtowicz, Ravetz & O'Connor 1998). Such partnerships are necessarily constructed through active dialogue and co-operation of scientists and technical experts with policy makers, implementers and stakeholders, including the full participation of those carrying local knowledge in relevant communities, districts, regions or countries.

CONCERTATIVE GOVERNANCE IN THE EUROPEAN INSTITUTIONAL CONTEXT

Concertative practices are here understood to entail bringing together technical and scientific expertise with the knowledge held by stakeholder groups and the public at large, in a context where wider social dimensions of quality assurance and legitimacy can be aired. In this way, the technical and economic issues of risk governance and investment choices may be opened up to, and reconciled with, the full dimensions of social demand. In this context, the following definition of governance will be retained:

« Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and a co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest » (European Commission, 1995).

Governance in this definition does not refer exclusively to the intervention of the State, but covers all sets of rules, decision-making procedures, and programmatic activities that serve to define social practices, guide the interactions and manage the conflicts that may arise among those participating in these practices.

In many countries in Europe, the requirement for this re-insertion of expertise within a wider social process for quality assurance, has come as something as a surprise to the established authorities. Yet, for a variety of reasons, a progressive shift to more concertative modes of nuclear policy evaluation and governance now seems unavoidable. In other fields of technology, health and environmental risk evaluation and management, European legislation has, during the 1990s, evolved from a principle that the public has "the right to be informed" about immediate dangers, through to the "right to participate" actively in planning, emergency preparation and investment decision situations (see **ANNEX A**).

In this sense, the active agency of the general public — that is, their roles and their rights to take action in certain political domains as citizens, as representatives of certain interests and as consumers — is being progressively enhanced.

Source: O'Connor & van den Hove (2001)

In this perspective, as synthesised by O'Connor & van den Hove (2001), concertative procedures that bring together the contributions of technical expertise, stakeholder preoccupations and lay public concerns, have several attractive features:

- Through reciprocal communication between different groups, they permit the emergence of good understanding of the origins and nature of public concerns about different performance features of a project or programme:
- They allow to focus in a structured way on the various types of uncertainties involved;

- They are transparent, leading potential to judgements and recommendations that are defensible and capable of gaining public trust and confidence.

The argument here, which pervades the literature on "deliberative democracy", is that the integration of stakeholders within a process of reasoned argumentation and deliberation can have a decisive influence on the subsequent acceptability of proposed courses of action. Prospects for socially satisfactory choices may be explored through bringing stakeholder perspectives into constructive dialogue with each other, in order to search for common ground. That is, efforts at deliberate concertation of stakeholders can permit the emergence of domains of pragmatic and principled compromise which respect the sensibilities of the different protagonists.

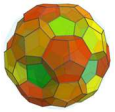
This multi-stakeholder deliberation process is thus characterised by a change of emphasis. Moving beyond sole expert concern with (technical) quality of inputs for a decision problem and for communication to the public, it focuses on communication quality, negotiation and reciprocal exchanges of stakeholder experience within the evaluation and decision process itself. Such approaches aim to achieve quality goals along the following axes:

- Scientific quality assurance in a context of complexity, high systems uncertainties and social indeterminacy;
- The credibility of economic, scientific and technical inputs to decision-making;
- Socially, economically and technically robust choices, particularly with reference to territorial, local economic and environmental quality considerations;
- Wide social legitimacy of the decisions taken.

As will be discussed in Section §2, the stakeholders in ETT typically extend across: government agencies and regulatory bodies; concerned citizens and the wider public; the scientific community; industrial and commercial interests; NGOs and "public interest" activist groups. Apart from concern for technical and scientific quality control, some of the key social science dimensions of communication and consultative procedures therefore include:

- Identification and development of elements of common problem definition and common language;
- Understanding of the assumptions underlying expert evaluation techniques, of the terms in which these techniques can contribute to reasoned decisions, and limitations to their application;
- Sharing of the reasons and justifications brought by the different social groups to the deliberation process;
- High status to participation by professionals and lay people in the consultative processes;
- Skill development and professionalisation of the participants in new deliberative processes;
- Search for novel and compromise solutions based on respect of divergent criteria and the need for a coexistence.

To achieve these quality goals, consultative process design is critical. The general performance considerations must be translated into specific procedures and outcomes, judgements about which are differentiated according to the types of group or agent in society. Knowledge-sharing, deliberative processes and stakeholder negotiation procedures need to be developed that are adapted to the full diversity of social actors involved.



Section §2 — The Actors and Issues in ETT Social Acceptability Evaluation

§2.0 Sustaining What, Why and for Whom?

CAFETT has sought to produce insights permitting to recommend concrete solutions at two levels, namely, with regard to (i) specific ETT controversies that are the object of our pilot studies, and (ii) suitable methods for upscaling the enquiry into ETT controversies building and social acceptability process, with the view to establish a more permanent observatory capacity.

For both levels of this question of approaches to ETT acceptability, we exploit variations of the generic "social choice" matrix structure for multi-criteria multi-stakeholder evaluations, along the lines already set out in Section §1 — that is, with stakeholder categories along one axis and quality-performance considerations along the other axis, as a framework for documenting the spectrum of stakeholders' opinions. So, we need to determine appropriate typologies of actors (stakeholders) and of acceptability issues permitting to structure the deliberations.

In this section, we present and discuss different considerations for composition of these actor and quality performance axes. This is undertaken through a synthetic literature review, in a strategic way that (1) takes account of the initial CAFETT orientations that inform the work in TASK I, (2) anticipates on the operational needs for our **TASK III** case study analyses, and (3) prepares the ground for answering the question of robust typologies that will contribute to developing our upscaling recommendations as a part of **TASK IV**.

The **CAFETT** Work Programme has signaled, as a starting point for the **TASK I** work of mapping ETT controversies, that elements of typology will be established with respect to losses and benefits that citizens/consumers generally perceive and claim. Three themes were set out as a working hypothesis, being the consideration of:

- Impacts on surroundings (landscape, urban environment, visual or other perception);
- Impacts on behavior (changes in habits, perceived life quality, lifestyle, culture,..);
- Impacts on integrity (privacy, health, autonomy/power, revenues,..).

From these initial starting points, it is then necessary to test, amend or extend and validate the pertinence of such classification, on the basis of results from the ETT controversy mapping (in **TASK I**) and the experimental deliberation case studies (**TASK III**). Among other points, we need to discuss and resolve the articulation across scales, between (a) people's individual concerns for their life conditions and capacities, and (b) the wider system dimensions of sustainability.

In **Sub-sections §2.1** and **§2.2**, we consider energy services provision and use as a broad sector of business activity and pose the question, how to organise the appraisal of performance — ex ante in terms of objectives and criteria, and ex post in terms of results. We exploit the CSR theme to clarify key considerations of Stakeholder typology and related perspectives on responsibility and performance. That is, we pose the question of the "**corporate social responsibility**" (CSR) of an energy transition project (or sector) and, we situate this challenge of corporate responsibility as a project-level expression of multi-stakeholder considerations of "sustaining what, why and for whom?"

The question of **SOCIAL ACCEPTABILITY OF AN ETT**, or of a particular ETT deployment in a given territorial context, can then be understood in a mirror relation with **SOCIAL RESPONSIBILITY** of the public and private sector carriers of ETT solutions.

In **Sub-section §2.3** we deepen this investigation through a review of the recent literature **on responsible innovation**.

In **Sub-sections §2.4** and **§2.5** we look more closely at, respectively, the "environmental dimension" and the "social dimension" of well-being and sustainability.

In **Sub-sections §2.6** and **§2.7**, we bring these different considerations together, identifying ways that ETT social acceptability can be approached through multi-dimensional concepts of wealth, vulnerability, deprivation and justice at appropriate scales.

This discussion at the level of typology, provides the necessary background for structuring the multi-criteria and multi-stakeholder evaluation frameworks applied in our case studies. In addition, it prepares the way for our discussions, in **Section §3**, on the conventions and procedures for engaging stakeholders as Actors in deliberation exercises around ETT, and for classification and exploitation of the discursive "*Arguments*" that are mobilised as normative signals at the cell level of each Deliberation Matrix in our deliberation exercises in the subsequent **CAFETT TASK III**.

§2.1 Lessons from CSR (1): Towards Stakeholder Typology

The literature on **Corporate Social Responsibility** (CSR) since the 1990s insists, as we have already signaled in our Introduction, on the obligations of business to address a ***Triple Bottom Line*** of economic, social and environmental performance (cf., Faucheux, Gowdy & Nicolaï (eds.) 1998; De Marchi (1997); WBCSB (2000); ECC Kohtes Klewes GmbH, Fishburn Hedges (2003); Capron & Quairel-Lanoizelée 2007; Gendron & Girard 2013). We see also, in this context, an emphasis on new forms of stakeholder participation and social dialogue as contributions to company reporting, strategy definition and decision-making. This need for dialogue can be motivated on many grounds, but most deeply the social demand for "dialogue" and "participation" relates to ideals of community and associated challenges of trust and legitimacy.

This shows up in the insistence on CSR as seeking a reciprocally negotiated 'social contract' — between 'business' and (the rest of) the wider societies that are hosting them. More than 250 years after the *Contrat Social* published by Jean-Jacques Rousseau (1762) and more than a century after the "utopian socialist" movement of the 19th century, we thus see a renewed insistence on a reciprocally negotiated 'social contract' — this time between 'business' and (the rest of) the wider societies that are hosting them.[6] This challenge of a "new social contract" can be expressed simply in the language of supply and demand:

We can consider the question of the relationship, or the social link, as one of establishing a « deal » (in French, *un « marché » à entretenir ou a établir***) between:**	
THE « OFFER » TO BE DEVELOPED (on the part of the company or other business entity) of commitments established in terms of declared principles of quality and responsibility; **AND,**	**THE « SOCIAL DEMAND »** (on the part of the host communities) which takes the form of an array of requirements imposed on (or asserted towards) the business entity or sector, as conditions for acceptance or acceptance by citizens as a legitimate part of their society.

For any business or sector, in a situation of controversy, this "deal" or social contract cannot be established abstractly. Rather, it might emerge at the interface between a business "offer" of responsibility and ***a wider societal debate on conditions for acceptability***. The possibilities can plausibly be explored by various sorts of dialogue and negotiation. As in the experience of a "peace process", dialogue can — and often does — work to allow antagonistic parties to discover and formulate conditions for coexistence, for managing antagonisms and even for establishing alliances based on mutual respect. Dialogue process can provide the

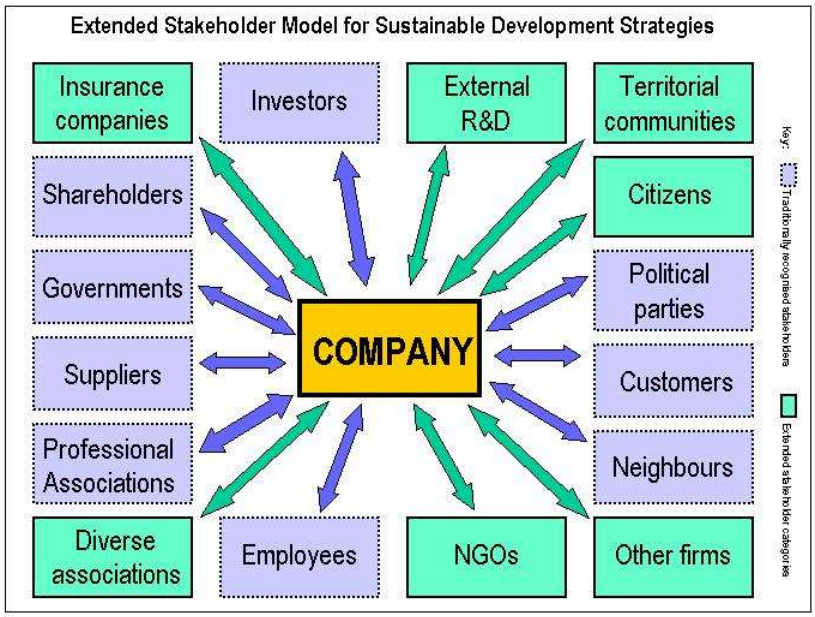
[6] The theme of a social contract is explicitly introduced by Nicolaï, O'Connor & Faucheux (2009); Gendron, Vaillancourt & Audet (eds.), 2010), among others.

conditions for the emergence of new solidarities — sometimes expressed in terms of 'win-win' opportunities, sometimes expressed as agreements for concessions and compromises seeking to avoid sterile and destructive conflicts.

Who, then, are the stakeholders in a question of ETT social acceptability? Following Faucheux & Nicolaï (2003, 2004a, 2004b), the stakeholders in a typical CSR appraisal situation will include:

- The internal stakeholders (including employees, company management and non-staff shareholders, all having direct economic interests in the company);
- The 'external' stakeholders as **TRADITIONALLY** identified business partners (suppliers, customers, banks, etc., all having direct commercial importance to the company);
- The broader external stakeholders as discourse partners (NGOs, associations, partner companies, local authorities, all having an interest in, or claims about business performance, and therefore having an indirect significance for commercial success).

The above distinction between 'traditional' external stakeholders and the 'extended' or 'broader' stakeholder set is correlated with the two sides of the "social contract" requirement. In the CAFETT context, we confront the interests and preoccupations of (a) those stakeholders who are of interest to the ETT carrier (which may be a private or public sector entity, or a mixed consortium), as distinct from (b) those who, from the outside (including civil society at large), assert a moral claim on the ETT carrier. In any specific situation, there will be a need for a finer grain of stakeholder classification (cf. the schema below, from Faucheux & Nicolaï):



Governance agencies may be included as a distinct stakeholder category, in view of their specific responsibilities for "setting the rules" for technology adoption. But of course, in many cases the governance agencies may themselves be ETT carriers. They are then in a classic situation of risk of a "principal-agent conflict". This is an ambiguity that can bear significantly on trust and acceptability in the eyes of some stakeholders.

This vision of the potential of stakeholder dialogue as a mechanism for CSR partnership building, is the primary justification — both theoretical and empirical — for the deliberative approach to ETT social acceptability being explored in our study. Nonetheless, our hypothesis of the usefulness of this approach must be tempered by recognition that absence of trust is often grounded in real historical conflicts, divergences of interests and power asymmetries and violence. Many examples may be found of situations where the invitation by powerful corporate or state actors to local communities for their "participation" in dialogue for the identification of impacts, performance issues, opportunities and conditions of societal acceptability of projects and programmes, finishes by being denounced as "window-dressing", manipulation, fraud and deceit.

We do not wish to gloss over the real difficulties that stand in the way of achieving ideals of a socially inclusive and durable green economy. But, we want to make suggestions to characterise the opportunity, and to frame ETT assessment and reporting in support of this opportunity.

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§2.2 Lessons from CSR (2): Issues of ETT Acceptability

What are the preoccupations that influence ETT Acceptability in the eyes of different stakeholders? The multiple facets of ETT performance (and hence, judgements about responsibility / acceptability) can be articulated in a great number of different ways. In the pages that follow we will present several different approaches to typology that have been developed in the contexts of sustainability and "transition" politics. These different evaluation frames are not exclusive, and often are best seen as complementary. Their employment for any particular analysis is largely a matter of "fitness for purpose" and, as we will see (in Section §4 below), the question of ETT social acceptability is associated with a variety of purposes.

As a starting point, in a CSR perspective drawing on different strands of management science, economics and political science, we may focus on the different layers and types of effects of a technology. Looking at any scenario of future economic activity, we can move out from

(i) the goods and services that are/would be the objects of commercial transactions; to

(ii) a vision of the wider life cycle with its "external" social, territorial and environmental impacts; and

(iii) the wider tissue of society whose dynamics — including the interplay of beliefs, ideologies and social values — will determine the ETT's societal acceptability.

Dimensions of Technology Quality	***Status of Stakeholder Groups***
• QUALITY OF THE PRODUCTS & SERVICES of the sector. This refers to the outputs intentionally produced with a view to supply and sale (the sphere of exchange value) and, by corollary, to the quality of relations with the actors directly engaged by the creation and use of these products/services.	*The actors directly engaged by the creation and use of the products/services are, first of all the "INTERNAL" stakeholders (workers & management, shareholders…); and, then the "TRADITIONAL" EXTERNAL stakeholders (e.g., suppliers, transport operators); and the customers, buyers, users and consumers of the goods/services).*
• THE EXTERNAL EFFECTS of the production-supply- consumption activities in the environmental and wider social spheres. These "environmental and social impacts" can be seen, from biophysical and social sciences standpoints, as the more-or-less necessary conditions of the defined production/supply activities. They may have a pronounced territorial profile (local – regional – global…).	*Judgements as to the "acceptability" or not of the "external" environmental and social impacts of production/supply activity, engage the category of "EXTENDED" EXTERNAL STAKEHOLDERS and, in consequence, the category of "GOVERNANCE" STAKEHOLDERS with responsibilities for regulation and conflict management. There may also be "external" economic impacts of relevance to "INTERNAL" and "TRADITIONAL" EXTERNAL stakeholders.*
• THE COMPATIBILITY, OR NOT, IN TERMS OF SOCIAL VALUES, between the strategy and vision communicated by the business activity and, the "values" and visions of society expressed by people as actors in society around and "outside" the business itself.	*The question of the "legitimacy" or not of such and such a business activity (characterised by, its production/supply activity and the associated "external effects") can be raised by INTERNAL and "TRADITIONAL" EXTERNAL STAKEHOLDERS. It is, by presumption, raised by the "EXTENDED" EXTERNAL STAKEHOLDERS to the extent that they do not declare "shared value(s)" with the business. Questions of compromise or conflict management (arbitration over "values") are then the preoccupation of "GOVERNANCE" agencies.*

For appraisal of ETT social acceptability, it is necessary to factor in these 3 dimensions of technology and economic activity. But there are many ways of doing this.

§2.3 Quality considerations for Responsible Innovation

Consider the problem of external effects, corresponding to the middle row the above table: *Dimensions of Technological Quality*. Technology assessment, territorial planning and economic analysis literatures now refer almost universally to "externalities" of resource use, production and consumption decisions.

Science and technological advances, seen widely as motors of competitiveness and as the cornerstones of the new "knowledge society", bring benefits and attractive novelty to many sectors of our lives. But, new knowledge with its innovation potential also contributes new sources of bother, inconvenience and risks.

Progress in science and technology is associated not only with greater productivity but also with a deepening and widening of our interventions in nature — in geophysical process, in ecosystem functioning and in the components of life itself. We are now capable of intervening in organisation at the scale of atoms (nuclear fission and fusion), of molecular and cellular structures (notably in genetic heritage, e.g., gene spicing and cloning technologies), and of planetary atmosphere and ocean current circulation systems. Sometimes, the unintended "side-effects" come to be far more significant than the original purposes (e.g., radioactive wastes whose management has a much longer time horizon than the power generation itself).

In short, knowledge advances permit more and more sophisticated interventions; yet our scientific understanding of the physical environment and of the impacts of human activity on life process and ecosystems remains very incomplete and, in many cases, lags far behind our interventions.[7] Moreover, as highlighted in situations of involuntary exposure to risks, accidents and damages, there is emergent social complexity: the social circumstances (e.g., the relations between *those associated with the causes* and *those bearing the brunt of adverse consequences*) can dominate considerations of acceptability and, hence, political and economic evaluations.

Summing up, with the concept of **responsible innovation**, we admit that even if there are beneficiaries or recipients of the added-value due to research, innovation and knowledge exploitation, there may also be various disadvantaged or injured parties; these latter may be located inside or outside of the research/innovation process itself. How, then, should we judge the performance, the likely yield, the value to society or the societal acceptability of an R&D project, if social benefit and acceptability are not intrinsic to research itself?

Translated into economic and managerial terms, R&D processes are not necessarily creating "responsible value" in the sense of results in compliance with declared societal considerations of (for example) individual and collective wellbeing, justice, or environmental sustainability. For van den Hoven (2015), the innovation process is responsible if (and only if) "risks, potential harms, wellbeing, values, needs, rights and interests of relevant parties … are … taken into consideration" — which, in his view, means that there exist effective mechanisms

Although the terminology of responsible innovation is currently in vogue, institutional (as well as wider public) expression of concern for social responsibility in science is not entirely new. For example:

- Following on the heels of the Nurenburg Code, the Declaration of Helsinki signed in 1964 was a response developed by the World Medical Association to repudiate the sorts of atrocities committed by physicians during the 2nd World War. This Declaration is a public statement of ethical principles to be adhered to in research, notably in relation to other human beings as research subjects.
- The British Society for Social Responsibility in Science (BSSRS) was a radical science movement most active in the 1970s. It was formed in 1968 in opposition to university research on chemical and biological weapons, and was supported by nearly 100 distinguished scientists. The declared aims of the BSSRS were to raise awareness of the social responsibilities of scientists, the political aspect of science and technology, and to create an informed public.
- In 1999, the UNESCO in collaboration with the International Council for Science (ICSU) organised a "World Conference on Science for the 21st century", the focus of which was to (re)link science with society and human values (ERotblat 2000).

What is perhaps distinctive about the contemporary responsible innovation theme is the accent placed on longer term economic and environmental considerations. The seminal work by Ravetz (1971) *on Scientific Knowledge and its Social Problems*, had placed issues of uncertainty and ethics at the centre of the social practice of science, and was an early attempt to reflect on the challenges of "industrialised science". Such themes have penetrated gradually into public policy and governance discourses, notably in correlation with sustainability concerns.

[7] Although there is still a significant discourse that supports scientific knowledge and discovery as a "good in itself", increasingly it is admitted that scientific discovery that opens the way to significant technological advance, is not necessarily an unambiguous social good. New technologies, whether deployed in private or public sector contexts, may have significant negative impacts on the environment, on health, or on the economic or social situation of a population, and may contribute to new situations of risk and vulnerability (in the short or long terms). For some entry points, see: Wilsdon, Stilgoe & Wynne (2005); Faucheux & Hue (2000, 2001); Faucheux & O'Connor (2000, 2005); Gallopin et al. (2001).

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permitting different stakeholders to share information and knowledge, and to participate in the evaluation ex ante and ex post of research projects and their outcomes. For Taebi et alii (2014), Owen and Goldberg (2010), Von Schomberg (2011, 2013), and others, **responsible innovation** is an engagement for public values, and carries with it a requirement for interdisciplinary research — the confrontation of diverse perspectives including value considerations.

Thus, "external" societal risk and responsibility considerations now take centre stage both in business formulations of CSR and in public policy. The norm of "responsible innovation" is increasingly present, not just in "ethically" targeted fields such as health and social policy, but more generally as a corollary of perceptions of the inherent risks of powerful technology. That is:

- In the private sector, CSR principles are articulated in application to innovation strategy and thus concomitantly to R&D. This can be a pro-active strategy of positioning in new or changing markets; or it can be a reactive positioning in response to legal obligations, or of course a circular causation (where businesses may seek to anticipate and also to influence legislation). Either way, businesses active in R&D are confronted with the emergence of new legislative or normative frameworks that require the declaration — or even demonstration — of compliance with an increasingly comprehensive array of ethical, public health, safety, risk management and environmental conditions. [8]
- In the public sector, the various government agencies, publicly funded research entities, and public-private partnerships benefiting from public monies are, analogously, required to include ethical and "societal" considerations in their workflows, and to justify the hoped for or expected results not only in scientific quality terms but also in terms of their profile of societal and environmental impacts. Multi-year R&D investment programmes are negotiated at a high political level (for example in ministries or at the European Commission), often with consultation processes engaging both business and civil society, defining "public good" priorities considerably wider than simple consumer satisfaction and productivity gains.

Yet this is still only part of the story. The question of a technology's social acceptability (or not) engages not only institutionalised framings of societal purpose, but also the more informal expressions of dissent and dissatisfaction across civil society, coming from the "external" stakeholders.

Faucheux et alii (2018) in an extended discussion about responsible innovation, develop a variation of the multi-stakeholder multi-criteria framework that we have already introduced. Their focus is on the "knowledge sector" with its role of providing resources for responsible innovation (for example, eco-innovations). The "research life cycle" is characterised, they say, by activities taking place "*inside*" the knowledge sector (such as proposing, performing, reviewing and reporting research), and, on the other hand, by activities "outside" the knowledge sector itself. These "outside" activities can be split into two sub-categories, by making a distinction between:

- Decision-making and resource allocation activities "*upstream*", including public policy and private sector strategic engagements, that provide for the material, human, and financial resources that feed into research activities; and,
- Domains of activity "*downstream*" including innovation, technology deployment, decision support and educational uses of knowledge.

In a direct corollary, they then distinguish different broad classes of stakeholders around the knowledge sector. In addition to the "internal" knowledge producers themselves, two sub-categories of "external" stakeholders are specified:

- Those entities or institutions having a well-defined *"contractual" engagement* with the research activity — e.g., as a funding agency, a private sector investor, an actor in the exploitation of R&D, a consumer or other sort of client of the knowledge, product or derivative services; and

[8] The word "business" etymologically originates from the Northumbrian old English *bisignes,* which also means "care", not only occupation in commercial activity.

- Those persons within *civil society "at large"*, who are not directly engaged with the knowledge production process but perceive their interests "at stake" along any dimension of the environmental, health or societal implications of the research taking place.

This typology of "internal" and "external" stakeholders (the latter then broken into institutional partners and wider civil society) clearly relates back to the multi-stakeholder typology developed in earlier work on CSR themes. In effect, the knowledge sector is treated as analogous to other productive sectors in society.[9]

This leads naturally, for these authors, to the question of the quality and performance considerations appropriate to characterise "responsible innovation. R&D activities in both private and public sectors are subjected to multiple expectations and pressures. These performance imperatives include, first of all, the "intrinsic" research integrity considerations — norms that, by conventions set in place progressively since the 19th century, are supposed to be assured by, on the one hand the "scientific spirt" of individual researchers and teams, and, on the other hand, by various "peer review" processes conducted within the research community (notably, but not only, with a view to scientific publication). But they also include "extrinsic" quality considerations which are expressed across multiple institutions, notably:

(a) legislative frameworks that require research entities to address, over and above pure scientific outputs, their "ethical" status and their potential impacts in terms of environmental protection, employment, health benefits or other social progress;

(b) funding conditionality that, in public as well as in private sector domains, incites researchers to focus on fields and forms of analysis that correspond not only to knowledge production criteria but more particularly to politically determined priorities in environmental, employment, health, technology or other domains; and

(c) the pressures, codified for example in business reporting and performance rating procedures, of demonstrable commercial value and market success.

And finally, these "extrinsic" quality considerations may also include value statements expressed, individually and collectively, by people as participants in "civil society" — for example about the acceptability of a project, product or innovation. Such value statements may have their roots in diverse moral, religious, cultural, political or existential concerns, and may be quite disparate relative to the legislative, contractual and financial considerations evoked in (a), (b) and (c) just above.

In this way, these authors establish a schematic 3x3 typology, as summarised in the Table below.

WHO?	WHAT?	WHY?
The Classes of Actors around Science	*Categories of Actions or Events*	*Criteria of Quality & Responsibility*
Policy and Funding institutions	"Upstream" Activities providing for R&D capacity	"Extrinsic" Institutional Performance imperatives
Researchers & immediate associates	"Inside" the Research Sector (proposing, performing, reviewing, reporting)	"Intrinsic" considerations of Scientific Integrity
Civil Society "at large"	"Downstream" actions (Uses of knowledge in society)	"Extrinsic" considerations of Societal Acceptability

Framework for Analysis of Responsibility in Research & Innovation (source: Faucheux et alii 2018)

For its originators (Faucheux et al., 2018), in the context of responsible innovation, this 3x3x3 framework has several functions. First, it may be used for the classification of events or situations of alleged research

9 See also Betz (2011); Barré (2011) and Kuszla (2019).

misconduct or other contention about knowledge quality and responsibility. Second, it may be used as a framework for the attribution of costs associated with controversial events or situations. The questions to be answered in this case are:

- On the one hand, **COSTS BORNE**: that is, costs to WHOM (across the stakeholder categories), relative to WHAT type of event or action (located at one or more of the stages upstream, inside or downstream of the R&D life cycle), and WHY (that is, relative to the various performance and quality considerations)? [10]
- On the other hand, **COSTS CAUSED**: WHO (across the stakeholder categories) has caused the damages, relative to WHAT type of event or action (located at one or more of the stages upstream, inside or downstream of the R&D life cycle), and WHY (that is, relative to the various performance and quality considerations)?

Third, it may be used as a framework for posing (and answering) the multi-facetted question of responsibility. In particular, it can help organise responses to the following two questions:

- Societal conventions about **KNOWLEDGE QUALITY ASSURANCE RESPONSIBILITIES**: WHO holds responsibility (across the stakeholder categories), relative to WHAT facets of the event or action (located at one or more of the stages upstream, inside or downstream of the R&D life cycle), and WHY (that is, in relation to which performance and quality considerations)?
- Societal conventions about **LIABILITY**: WHO (across the stakeholder categories) is considered to have an obligation to submit to a punishment, pay, or otherwise provide compensation, relative to WHAT facets of the event or action (located at one or more of the stages upstream, inside or downstream of the R&D life cycle), and WHY (that is, in relation to which performance and quality considerations)?

Different classes of prejudice may, as a function of societal conventions, engage very different forms of liability, penalty and compensation.

For any given situation under analysis, there may well be correlations between these four considerations of **Costs Borne**, **Costs Caused**, **KQA Responsibilities**, and **Liability**. Nonetheless, these are four conceptually distinct dimensions or layers of information that can be built up for any given research misconduct or other knowledge quality controversy — and, by extension, for a composite picture of questions of research misconduct and irresponsibility for a country or other reference domain.

Clearly, this same 3x3x3 schema, can be applied as a framework for structuring multi-stakeholder deliberation — that is, for the presentation of **multiple views** in confrontation or dialogue. In a controversy about allegedly irresponsible — or unacceptable — innovation, coexisting multiple views may arise in several ways, including (a) in a situation of uncertainty about the facts of Costs Caused and Costs Borne; and (b) as controversial or counterfactual opinions about what "should" be the Responsibilities and/or Liabilities of the different parties involved. The articulation and confrontation of multiple views can then be envisaged as the basis for a deliberative multi-stakeholder approach to **Hot Spot Evaluation**,[11], as will shortly be our theme in Section §2.6 below.

§2.4 — Eco-innovation and Maintenance of "Common Heritage"

Recognising the planetary scope of induced and often unplanned ecosystem change, interfering with the 'life support' capacities of the Biosphere, requires us to broaden our vision of the perimeter of innovation.

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[10] We should here include, by extension, the question of stakeholders in sustainability who are without a voice but are given standing by present generations declaring some sort of duty of care — notably future generations and communities of non-human life. This opens onto domains of ethics, equity and sustainability, plainly relevant to the question of responsible innovation (as discussed further on) but whose complexities will not be reviewed here.

[11] The terminology "**Knowledge Hot Topic**" is introduced and exploited by Douguet & O'Connor (2019) making an analogy with the term "Hot Spot" used earlier by Douguet et alii (2017) to characterize a situation of economic, social and environmental injustice controversy.

In today's sustainability context, the performance challenges of "responsible innovation" may be formulated as a question: What forms of partnership (at different scales) can plausibly contribute to the creation of new "virtuous circles" of inclusive and sustainable value creation?

Such questions of societies' economic and environmental governance choices, are not entirely new discoveries of the early 21st century. They were already formulated in the literatures of the 1970s around, for example, "soft energy paths" (Lovins 1977) and the limits to capitalist growth (Gorz 1975). They show up in contemporary controversies about "energy futures" (O'Connor & van den Hove 2001). They had been articulated with elegance by John-Stuart Mill in his *Principles of Political Economy* (1848) in the middle of the 19th century. In his discussions of the forms of wealth and its governance, Mill (1948) wrote:

> *"… No man made the land. It is the original inheritance of the whole species. When private property in land is not expedient, it is unjust. It is no hardship to any one to be excluded from what others have produced: they were not bound to produce it for his use, and he loses nothing by not sharing in what otherwise would not have existed at all. But it is some hardship to be born into the world and to find all nature's gifts previously engrossed, and no place left for the newcomer...." (PPE, pp.229-230).*
>
> *"It may be imagined, perhaps, that the law has only to declare and protect the right of every one to what he has himself produced, or acquired by the voluntary consent, fairly obtained, of those who produced it. But is there nothing recognized as property except what has been produced? Is there not the earth itself, its forests and waters, and all other natural riches, above and below the surface? These are the inheritance of the human race, and there must be regulations for the common enjoyment of it.* ***What rights, and under what conditions, a person shall be allowed to exercise over any portion of this common inheritance cannot be left undecided. No function of government is less optional than the regulation of these things, or more completely involved in the idea of civilized society****." (PPE, p.797, emphasis added).*

Mill refers thus to the entire environmental sphere as an *opportunity space* upon which the drama of *"the idea of civilized society"* will be played out. Within this space, several distinct facets of the environmental sphere must be distinguished and, the opportunities and purposes of eco-innovation may then be situated relative to these different components and their various roles for human society.

The surface of the earth is conventionally divided up into four inter-connected "geo-spheres" — the ***biosphere, lithosphere, hydrosphere, & atmosphere***. These "four geo-spheres" acts as a backdrop for classifications of environmental assets in contemporary environmental information systems. In the UN *System of integrated Environmental and Economic Accounts* (SEEA 2003), for example, classifications proceed along the lines of the Table below. The distinct components of the environment can be considered as *"sectors"* that are interdependent with each other in a dynamic way, just as sectors of economic activity are represented as interdependent through input-output tables and so on.

GEO-SPHERES	CLASSIFICATION OF ENVIRONMENTAL ASSETS BY 'SECTOR'
BIOSPHERE	Terrestrial, Freshwater, Marine and Airborne biodiversity
LITHOSPHERE	Productive Soil Assets (Soil Types, Quality, etc)
	Underground/Sub-Soil assets [including minerals, energy resources in stock forms, etc.]
HYDROSPHERE	Fresh Water [including surface water and major ground-water bodies]
	Marine water resources [quantitatively inexhaustible but qualitatively variable]
ATMOSPHERE	Climate system
	Habitat air quality (from the point of view of human health and wider life)
'ANTHROPO-SPHERE'	Zoning — Governance / Institutional Classifications *(Classes of Ownership, Occupation, Human Uses)*

Source: Adapted from O'Connor & Schoer (2009).

Sub-divisions can be introduced according to need. With regard to Biodiversity, one can envisage sub-divisions relative to the different host milieu (air, ocean, freshwater, land), and also for distinguishing 'domesticated' and 'wild' nature, or for separating 'cultivated' biological resources and 'non-cultivated' biodiversity. It is a matter of analysis purpose, communication and coherence, as to whether "cultivated" or "husbanded" biological resources are placed in the Economic sphere or in the Biosphere compartment of the Environment sphere.

To frame the environmental challenges of responsible innovation, we must give attention above all to the 'interactions' between the Economic and Environmental spheres. As stated in the SEEA (2003 [paragraph 3.80]), *"…The environmental sphere provides resources to, and receives residuals from, one or more national economies…"*. The SEEA (2003 [paragraph 1.1]) thus defines ***Environmental services*** to include *"the provision of raw materials and energy used to produce goods and services, the absorption of waste from human activities, and the basic roles in life support and the provision of other amenities such as landscape"*. The **Table** below gives a classification of four types of interaction.

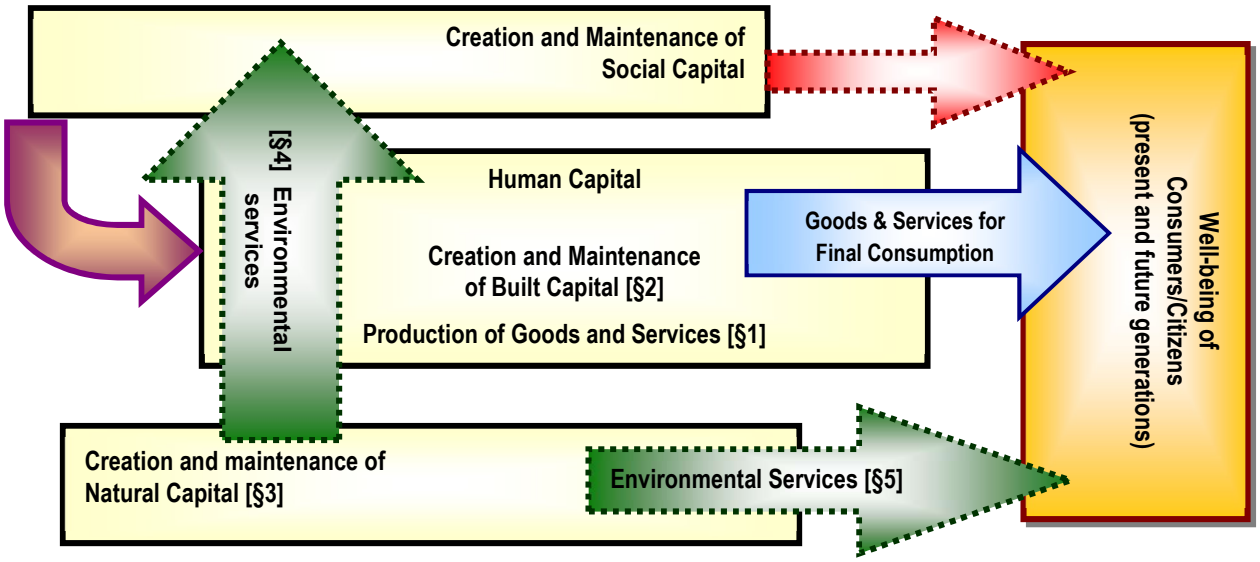
Service Type	Examples of the Classification of Environmental Services/Functions
Environment as SOURCE (Inflows to Economy)	Appropriation/drawdown of Stocks of non-renewable natural resources; in-flows of renewable non-biological resources (solar radiation, terrestrial heat, hydrological cycle, etc.); Exploitation of biological resources (e.g., biomass as raw materials and food inputs to Economic activities).
Environment as SINK (Outflows from Economy)	Reception of Pollution/Wastes into natural processes (followed by various transformations, sometimes called Disruption and Damage, sometimes filtration, purification and detoxification of air, water and soils…) Dissipation of heat from industrial plants, home and other building heating, etc.
Environment as SUPPORT (Holding up, Hosting or Accompanying the Economy)	Life-support functions including, in a general way, hospitable Habitat Provision (for humans in society), such as stable ground for buildings, air at a tolerable pressure and temperature. These life support services (for human societies and other life) depend, in turn, on complex environmental processes, such as … nutrient cycling, nitrogen fixation, carbon sequestration, soil and rock formation… with effects such as pest and disease control, climate regulation, rainfall and water supply…
Environment as OBJECT OF APPRECIATION (Human cognition: 5 Senses)	The environment in situ as an object of cognition and appreciation, via the 5 Senses (Sight, Sound, Hearing, Taste, Touch) which provide data that is interpreted and given meaning — e.g., Landscape; Wilderness experience, Birdsongs, Place of learning (including formal education and research), Life-fulfilling (aesthetic, recreational, cultural and spiritual roles).

Building on these systemic classifications, it is straightforward to characterize the richness of opportunity inherent in the concept of eco-innovation. The challenge of a green economy is to develop patterns of economic production and consumption activity that (1) are less destructive of our "natural capital"; and (2) are symbiotic with or synergistic with the environmental processes that give rise to environmental services. In other words, it is necessary not just to "protect" the environment but to "invest in" its sustainability as — in the words of J.S. Mill (op. cit.) — a "*common inheritance*"; or in French as a *patrimoine de l'humanité*. We thus distinguish several distinct (but often interdependent) domains of eco-innovation:

- In the domain of production of economic goods and services : [*point §1* in the diagram, for example the production biocarburants] ;
- In the formation and maintenance of the built economic capital and infrastructures that contribute to the quality and comfort of our living conditions : [point §2 of the diagram, such as roads, residential buildings, reticulated water supply systems] ;
- Through environmental management and engineering actions, that enhance the quality of environmental assets systems [point §3 in the diagram, for example productive soils, fresh water resources and forests] and, through this, enhance the sustainability of various environmental services that contribute as inputs to economic production [point §4 in the diagram, for example various types of biomass energy] and as direct contributions to people's wellbeing and

comfort [point §5 of the diagram, for example air quality, stable and hospitable weather conditions, landscape qualities] ;

- And, in the various reverse movements, in the domain of waste management and transformation including reuse and recycling [point §1 of the diagram] prior to, or in the course of their release into natural systems [the points §3, §4 and §5 of the diagram, such as the « capture of CO2 by growing forests].



Eco-innovation processes relax some environment (and economic) constraints, create new opportunities for employment and for value creation, and also may break down existing solidarities and partnerships. The social and environmental benefits, and burdens, of eco-innovation processes are unevenly distributed. Under pressures of commercial survival, firms may be expected, "rationally", to seek lower input costs (including labour costs) and to seek to off-load environmental and social performance burdens onto other social partners – e.g., onto the state and taxpayers, onto workers (in terms of bad working conditions, commuting costs, etc.) onto future generations and non-human nature. This is a theme of the "new global political economy" literatures. It is also a theme of ecological economics and political ecology literatures about environmental justice.

§2.5 — Injustice & Vulnerability: Zoom on the Social Dimension

The term **ecological distribution** refers to the patterns of access – the social, spatial, and temporal asymmetries – in the use by human societies of environmental services.[12] For example, much attention in recent years has been given to 'international externalities', cases of environmental (and economic) cost-shifting by economic players separated by very large distances. Many of these involve multinational firms, such as mining companies – increasingly coming under attack in the courts and in the boardrooms for the adverse social and ecological impact of their operations.[13]

A business operation, an industrial sector or an entire nation may appear to have a low environmental impact because it imports primary materials and energy and has succeeded in "delocalising" the sectors of production that cause the worst pollution. Thus, a society or a nation may be the cause of environmental

[12] Entry points include: Kapp (1983); Beckenbach (1989/1994); Martinez-Alier (1995); Martinez-Alier & O'Connor (1996); O'Connor (ed., 1996); Salleh (1997).

[13] The European Commission funded collaborative project on environmental justice, with acronym EJOLT (website: http://www.ejolt.org/) has engaged a systematic on-line documentation of such cases, recently made open to the public as the Environmental Justice Atlas, at: http://www.ejatlas.org/.

damage outside its own territorial borders, or it may bear damage due to actions (including consumption) outside its borders. This motivates the distinction between damage 'borne' on a nation's territory and the damage 'caused by' the nation's economic activity. For national welfare, the damages borne by the nation can seem a rational reference point. However, this can lead to policies deliberately aiming to off-load or export environmental pressures onto other countries (e.g., relocation of 'dirty' industries, dumping of toxic wastes offshore…). In terms of participation in an international community, the damages caused – viz., a nation's contribution to total environmental pressures – will be an unavoidable reference point.

Analyses of these and other sorts of experiences, have contributed since the 1990s, to a growing literature on 'unequal ecological exchange' between the North and South countries (Gedicks 1993; Faber 1993; Sachs (ed.) 1993; Levy 2005). Starting from the distinction between environmental ***costs caused*** and ***costs borne*** by a nation, a variety of indicators of environmental load displacement through trade have been developed in the literature. In addition to environmental statistics for nationally registered environmental pressures (such as energy resource exploitation, forest cutting, fish catch, pollutant emissions and land use changes), cross-boundary effects are calculated that are linked with imports and exports of raw materials and goods.[14]

The notion of **environmental justice** follows directly from the attribution of a normative significance to asymmetries in access to ecosystem services and in ecological exchange. The identification of injustices in the distribution of opportunities and burdens across territories or communities (and also through time) will evidently impact on judgements about social acceptability. A notable example since the 1950s is that of intergenerational inequalities between the enjoyment of nuclear energy and the burdens of accident risk and of the management of radioactive waste. Equally controversial are the asymmetries of temporal (as well as spatial) distribution of, on the one hand, the enjoyment of services from fossil fuels (with concomitant emissions of CO2) and, on the other hand, the consequences of climate change-induced by global warming. The limits to the 'sink' capacity of the planet for greenhouse gas emissions have become the object of international discussion and, in this context, it is argued (e.g., (Azar & Holmberg 1995; Agarwal & Narain 1991) that industrialised countries have appropriated the environmental services in an historically inequitable way — imposing an unfair cost burden on future generations including global 'South' countries who cannot exploit fossil fuels with the same impunity. The notion of an "**ecological debt**" arises if the question is raised of liability (legal or moral) for unequal imposition of penury and costs. The concept of an ecological debt can apply between two or many parties across any lapse of time, as for example the factory owner who is held liable to make some sort of recompense for the fact that effluent from the factory poisons the fish upon which a population downstream depends for its livelihood.

Of course, these preoccupations at international scales, may equally be matters of contention at local and territorial scales. No company today can hope to escape from criticism, whether from within the country of operations or from international observers, relating to alleged unfair, cynical, opportunistic ecological burdens. The terms of unequal ecological distribution and environmental justice thus contribute to debates about responsibility and acceptability at all scales, and enter simultaneously into the realms of extended national accounting, project evaluation, and business responsibility to wider society.

The key question here, as already suggested, is to characterise the forms and incidence of alleged injustice: ***what, why and for whom****?* This returns us to the realm of sustainability indicators and, more particularly, the necessity of interfacing the social dimension with the environmental dimension. We will address this question, in a very synthetic way, through considerations of vulnerability, poverty and capabilities as developed in the development literature since the 1970s. For convenience, we make reference to the high-

[14] For a review, see Muridian & O'Connor (2001). The territorial asymmetries between SO_2 emissions and the burdens of acid rain, which reduce the quality or availability of environmental services, were a famous case of spatial ecological distribution of international importance in North America and Europe during the 1980s and 1990s. Intense negotiations took place over the distribution of burden for reductions in CFCs identified as provoking a weakening of the protective stratospheric ozone layer.

profile report prepared in 2009 by the *Commission on the Measurement of Economic Performance and Social Progress* (CMEPSP 2009), notably the *Draft Summary* (henceforth *DS*)[15]

The *CMEPSP* report seeks to address ecological sustainability and societal well-being in an integrated way. It highlights at many points, the fundamental tension between:

- The search for indices of an aggregate level of, or change of, economic performance, of national wellbeing, of social progress (including, by extension, the prospects of sustaining the level of some such index through time); and,
- Attention to the diversity of facets or dimensions of performance and quality felt to be in various degrees irreducible, non-comparable, difficult to aggregate together, and thus complementary for purposes of assessment.

In its discussions of different facets of Quality of Life, the *CMEPSP DS* formulates a set of 8 so-called objective features (section 4), positioning these as a formulation of the 'capability' and 'fair allocation' approaches (cf., *DS* chapter 2: section 3 paras §70, §72; and then throughout section 4, para §80 et infra). This typology is based on work by Amartya Sen who was one of the *CMEPSP* report's principal authors. We can compare Sen's typology with another well-known classification scheme, the nine facets of well-being and poverty (or 'basic needs') proposed by Max-Neef (1991.

Sen's Typology of Capabilities

i. **Income, consumption and wealth**
ii. **Health & comfort**
iii. **Education**
iv. **Personal activities (including work)**
v. **Political voice and governance**
vi. **Social connections**
vii. **Environmental conditions (present and future)**
viii. **Personal & economic security.**

Source: CMEPSP (2009)

Inadequacy in relation to any one of these basic need categories constitutes a type of poverty. Setting the Max-Neef typology of nine different basic human needs, by comparison with the *CMEPSP* list of eight factors in Quality of Life, we can bring out the following points:

- The first two needs in the Max-Neef list — *subsistence* and *protection* — relate to survival and comfort of the biological organism, and might thus be attributed to HUMAN CAPITAL. By comparison in the Sen-inspired CMEPSP list, we can identify access to services vital for Health and comfort, including *Income*, but also Environmental conditions, and Personal & economic insecurity).
- The rest of Max-Neef's categories are strongly relational in character (notably: *affection, understanding, participation, identity*) and, in this sense, more characterise SOCIAL CAPITAL. By comparison in the CMEPSP list we have Political voice and governance, and Social connections.
- The remaining CMEPSP categories of Education and Personal activities have both collective and individual facets.

Nine Dimensions of Well-Being and Poverty

Subsistence
Protection
Affection
Understanding
Participation
Idleness
Creation
Identity
Freedom

Source: Max-Neef (1991)

The terms "Well-being" and "Quality of Life" are open to many different formulations and usages. Our concern in making this interfacing of the Sen and Max-Neef typologies is not to argue about which list should be retained for evaluation purposes. Many variations exist in the literature since the 1997s and, as the CMEPSP itself states (*DS* chapter 2, section 4, para §81), this depends on context and purpose. Rather, our

[15] Unless otherwise specified, reference in this sub-section is to: CMEPSP (2009), *Draft Summary (June 2009)*, which was in fact the principal report of the Commission on the Measurement of Economic Performance and Social Progress (Commission sur la Mesure de la Performance Économique et du Progrès Social, website: http://www.stiglitz-sen-fitoussi.fr), 92 pages, PDF in English, dated 2 June 2009. Subsequently, a set of reports is available also in French, including the ***Rapport intégral CMPEPS*** (324 pages) and a ***Synthèse***. These reports are available (June 2018) at:
http://www.ladocumentationfrancaise.fr/rapports-publics/094000427/index.shtml

purpose is to bring out the features of these typologies of well-being and deprivation that can be useful for our analysis of ETT social acceptability.

Intuitively, it would seem evident that many (if not most) reasons given for ETT non-acceptability relate to perception of exclusion, lack or respect or deprivation of individuals or groups, relative to their rights or needs. Recall, in **Sub-section §2.0**, the three themes set out for the mapping ETT controversies:

- Impacts on surroundings (landscape, urban environment, visual or other perception);
- Impacts on behavior (changes in habits, perceived life quality, lifestyle, culture,..);
- Impacts on integrity (privacy, health, autonomy/power, revenues,..).

We have already highlighted (in **Sub-section §2.4**) considerations of unequal distribution, hence possible injustice, in access to environmental wealth and services. Looking now at the social dimension, what the Sen/Max-Neef typologies bring out is the extent to which "Quality of Life" relates not just to individuals' access to property and services, but also to collective dimensions — a sense of belonging and of inclusion (in collective identities) — and hence to relational features (notions of status, respect, prestige, shame, fairness, reciprocity, etc.).[16] In other words, Quality of Life (and, correspondingly, its absence as deprivation, poverty or misery) depends on, among other things, social links and relative capacities of, within and between distinct stakeholder groups, communities and societies.

This collective and relational, as well as individual character means that it is not easy to quantify or compare different facets of quality of life on a single scale. In practice, for addressing the social dimension in an assessment of Quality of Life, it is not a question of averaging or aggregating across 'individuals', but necessary to characterise — the distinct communities, collective identities, sectors or components of societies — whose interests are arguably to be respected and sustained. For each class or component of society, a separate appraisal is required. To the extent that each community or stakeholder category is given moral standing in the assessment process, an unambiguous improvement or maintenance of Quality of Life overall would require the simultaneous satisfaction (hence coexistence or reconciliation) of the needs of all identified communities.

These are considerations that the *CMEPSP* report identifies and discusses. For example, in the *DS* sub-section 5.2, para §120 it is insisted that there are many types of inequalities *"… and each of them is significant in itself"*, then in para §121 it is affirmed that:

> *"It is critical that these [various] inequalities be assessed in a comprehensive way, by looking at differences in quality of life across people, groups and generations. Further, as people can be classified according to different criteria, each with some relevance for people's life, inequalities should be measured and documented for a plurality of groups…"*

The CMEPSP further affirms (*DS*, para §124), that *"Several aggregate measures of quality of life are possible, depending on the philosophical perspective taken".* This is tantamount to admitting that an irreducible plurality of perspectives on quality of life (within and across societies) is somehow intrinsic to the phenomenon being addressed. And this leads on (ibid.) to the recommendation that:

> *"Rather than focusing on constructing a single summary measure of quality of life, statistical systems should provide the data required for computing various aggregate measures according to the philosophic perspective of each user."*

This seems like common sense. But there are some difficulties with this recommendation. In an open society there may well be clamouring from a wide spectrum of stakeholders, each affirming their preferred

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[16] For example, 'social capital' refers to the variety of cultural forms, symbolic bonds and community infrastructures of the social sphere that underpin economic capacity as well as direct societal well-being. Such capacities and competencies are strongly associated with affective and symbolic dimensions of people's identification with or belonging to communities (or exclusion from networks, groups and communities) and participation in collective endeavours. Therefore, the most interesting indicators of *changes in social capital* are likely to be qualitative rather than quantitative, starting with identification of forms of collective identity and frontiers between communities.

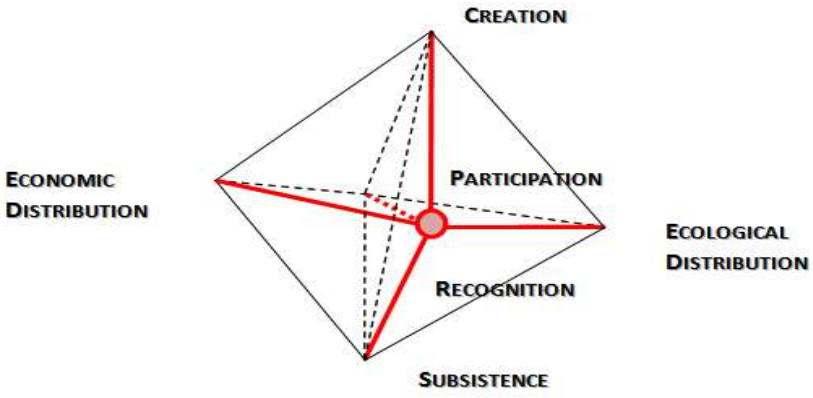
"**philosophical perspective**". No national (or other) statistical office will have the means to provide high quality data support for the plethora of possibilities. The question thus arises, what solutions might be envisaged for a clear and parsimonious framing of multiple perspectives on quality of life and its 'distribution' within and across societies.

§2.6 Non-Acceptability as Perceived Injustice

Our question in the context of CAFETT, is whether and to what extent ETT social acceptability issues can usefully be framed as considerations of injustice and deprivation. Douguet et alii (2017) in recent work contributing to the EJOLT Project (op cit.), have exploited a six-dimensional framework of impact assessment (see schema below) which draws in a synthetic way on the preceding considerations of environmental justice, poverty and vulnerability.

Their purpose is to address situations of perceived environmental injustice — that is, of societal conflict over the appropriation and use of environmental assets and services. They propose to structure deliberative evaluation by bringing together the perspectives of different Stakeholders expressing their views as to different dimensions of benefit, risk, loss or damage provoked by a controversial action or project proposal, referred to as ***Hot Spots*** or ***Hot Topics***.

A 6-fold Typology of Wealth and Vulnerability
(Source: Douguet et alii., 2017)



As the descriptive axis of ***Hot Spot Evaluation***, they focus directly on the impacts (perceived, feared, observed...) of the action or options that are the topic of controversy. Their 6-way typology (as above) is exploited to provide a matrix framework for mapping the 6 different dimensions of wealth/vulnerability across the different communities/constituencies in the situation of conflict or controversy.

In effect, the ***Hot Spot*** is described in a "**distributed**" way, by looking at *each class* of stakeholder interests through the lenses of *each facet* of wealth-capacity-vulnerability. In operational terms, this "mapping" is achieved through the mobilisation of qualitative or quantitative indicators on a cell-by-cell basis, to characterise each facet of a stakeholder class's situation.[17]

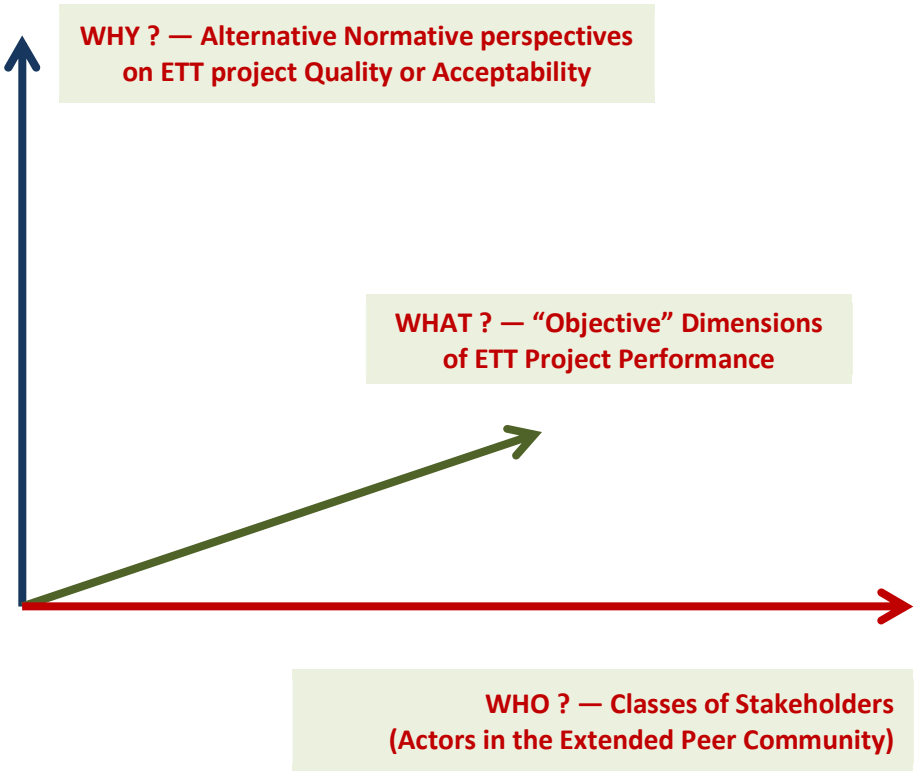
This 6-way typology highlights, in a parsimonious way, the material needs (**SUBSISTENCE**) of an individual or group within their wider ecological, economic, social and political context, and also the question of agency (**CREATION**), that is, the capacity of an individual or group to contribute to their wider ecology, politics, economy and society. The individual or group's needs and capacities — to contribute as well as to take or

[17] We will return in Section §3 to the question of where and how these indicators are sourced and mobilized.

receive — are characterised across the four system dimensions of sustainability. In this way, a project or development programme can be appraised in terms of the ways that it impacts (or is feared to impact on) the conditions of access (or exclusion of access) of the individual or stakeholder group to resources (capacities for action and expression) in each of the **ECONOMIC**, **ECOLOGICAL**, political (**PARTICIPATION**) and social (**RECOGNITION**) domains.

In the work reported by Douguet et alii (ibid.), these descriptive elements then function as a support for explicit normative judgements, by or on behalf of each of the stakeholder classes, about the injustices (and hence non-acceptability) of their situation. A situation of controversy will typically be characterised by not one but many different claims about what constitutes justice and injustice, and why. So, according to Douguet et alii (ibid.), in a sociological analysis it is necessary to document the various principles or precepts of justice, and to exploit these as alternative (but not necessarily exclusive) normative perspectives that can be engaged as "filters" to judge the acceptability of the ***Hot Spot*** situation.

The description in terms of the 6 facets of wealth/vulnerability (the *WHAT?* Axis), across all stakeholder classes (the *WHO?* Axis), is thus made into an evaluation by introducing overtly normative dimensions of judgement (the *WHY?* Axis).[18] We show this below, with a view to application to ETT controversy analysis.



This three-pronged deliberative approach to environmental justice has some similarities with the methodological considerations for stakeholder-based CSR evaluation set out by O'Connor & Spangenberg (2007). These latter authors suggested that information on "*what is to be sustained, for whom and why*" can usefully be set out at three main levels (see *Table*, below), which are then articulated by moving "upwards"

[18] This structuring along three axes is analogous, but not identical to the formulation in **Sub-section §1.2** of the classic "problem of social choice". Whereas in "social choice" the *WHAT?* axis is used to delineate alternatives for action (technologies, investment strategies, siting, etc.) as the objects to be compared, here we are setting out the different facets of wealth/vulnerability for a single situation along the *WHAT?* Axis. This simply means that, if we want to compare different situations (e.g. different sites of controversy over a marine wind farm), we would need to exploit a fourth axis.

and "downwards" relative to a deliberatively derived set of qualitative criteria that they call SQPMBLs (*Sustainability Quality-Performance Multiple Bottom Lines*).

INFORMATION LEVEL	OUTCOME OF DELIBERATION PROCESS
Characterising "Sustainability"	**Agreement about vision of "Sustainable Development" or "Governance for Sustainability" as the pursuit or achievement of a coevolution of interdependent systems respecting simultaneously multiple "bottom lines".**
Articulating relevant "Bottom Lines": Sustaining of What, Why and for Whom?"	**Agreement by Stakeholders on the set of Performance/Quality considerations that are affirmed as "Bottom Lines" for the specific policy situation or class of management challenges being addressed.**
Proposing and Mobilising Baskets of Indicators of CSR Performance	**Consensus about baskets of appropriate indicators to be mobilised in each category of SA, as a function of issues, stakeholder diversity and the range of sites, scales and options under discussion.**

Source: O'Connor and Spangenberg (2007), Journal of Cleaner Production.

Whereas the O'Connor & Spangenberg (2007) approach is to consider the SQPMBLs as expressing — or translating — a collective engagement for sustainability into a particular business, territorial and cultural context, the Douguet et alii (2017) approach is to highlight the different paradigms or precepts of justice as competing moral claims about "*what should be sustained, why and for whom*". Both approaches envisage sustainability goal specification and the associated indicator mobilisation as a deeply social process, within which a diversity of normative viewpoints are brought together — whether in conflict, partnership or negotiation — in a structured way.

The purpose here is not to provide a unique answer to the quality or an ETT project. Rather, as systems analyst Rittel (1982) has remarked, an analyst in this sort of situation becomes like a "*midwife of problems*". Evaluation is understood not as the production of a number or a single aggregate indicator, but rather as an argumentative or deliberative process,

> *"… one of raising questions and issues towards which you can assume different positions, and with the evidence gathered and arguments built for and against these different positions."*

In situations of ETT controversy there is typically a clamouring from a wide spectrum of stakeholders, each affirming their own interests, rights, needs and vulnerability, and also their principles, precepts and "values" for the respect 'or not) that should be accorded to the claims of others (including, as we have already signalled, those of "future generations" and of non-human life that do not have human voices of their own). This clamouring, which quite often (as in public meetings) becomes a cacophony, cannot be reduced to an angelic harmony. But we can try to provide a synthetic representation of this clamouring.

The question becomes, for characterising ETT social acceptability, if we seek to exploit the framework proposed by Douguet et alii (2017), what might be good uses to make of the *WHY?* Axis? If we want to set out alternative normative perspectives on ETT project quality or acceptability, how much complication do we need? The short answer, of course, is "*That depends*".

- In many situations, it may be interesting to consider an ETT project proposal in terms of its legality (or illegality) under prevailing national law. This may constitute a pertinent evaluation of acceptability from the point of view of a judge, or of the project holder; but it does not constitute social acceptability for those in civil society who do not accept that "justice" is automatically assured by the simple rule of law.
- It may be interesting to consider the commercial viability of an ETT project, or even to consider a "net present value" of the project taking into account specified externalities and with discounting of costs and benefits over time. But this will not satisfy people who see themselves as "losers" in the distribution of

costs and benefits, or who place themselves as spokespersons for other threatened interests not having a voice.

- It may be interesting to highlight distinct cultural perspectives on, for example, the significance of different regimes for wind farms, fisheries management and water use.

Each of these examples highlights an interfacing between the question *WHO*? is looking, and the question WHY? (for what reasons) they arrive at the judgement that they do. The question might be asked, is it possible, or useful, to reduce these two axes down to one? The general answer is no, it is not useful because it is important that the full diversity of *WHY?* perspectives be accessible to all stakeholders….

We can highlight the importance of this methodological point in a paradoxical way. Consider the well-known theory of justice put forward by John Rawls (1971), by which an action is considered to be 'just' if it improves the well-being of the worst-off individual or category of society, and 'unjust' if it worsens the well-being of the least well-off person or category in society. This precept of justice is intended to work in favour of an inclusive view of responsibility and solidarity.

To make it operational, stakeholders (or those acting to "represent" each stakeholder class) in the ***Hot Spot*** evaluation exercise) must form a view as to (1) the relative poverty/vulnerability of themselves and each other stakeholder class; and (2) the ways that the ETT project will or might modify capacities. These expected impacts are then placed as indicators for an appropriate cell of the grid (class of STAKEHOLDER x WEALTH-POVERTY category), with a normative weight and value that signals the significance in Rawlsian terms of this impact — e.g., as an improvement (justice) on a critical dimension, or as an aggravation of injustice, along one or more of the wealth/vulnerability scales.

In an empirical approach to social acceptability, we may adopt the convention that a person or group declaring the project to be unacceptable, must somewhere be declaring either **themselves** or another category of stakeholder for whom they claim to speak, as being **excluded from or deprived of some basic need or right**. In other words, they are being made unacceptably poor, in some way. And this may, indeed, be an efficient way of structuring a stakeholder consultation process or of building a synthesis of available data of stakeholders' attitudes around an ETT controversy. But although it helps to "build the problem" (in Rittel's terms), it does not make the divergences of opinion about the rights and wrongs of the situation go away….

§2.7 "Ethical Bottom Lines" for ETT Acceptability

We can now sum up our methodological considerations concerning the Actors and Acceptability Issues in ETT strategy as a problem of social choice.

Questions of quality and fairness in the distribution of ETT opportunities, benefits, costs and risks (etc.) must be addressed, at the relevant scale(s), with reference to ***the full spectrum of communities or sectors or "stakeholders"*** for the policy, project or programme under scrutiny, and also with reference to ***the full spectrum of "the stakes" (that is, the factors bearing on acceptability)***.

This cannot be achieved by an emphasis on collection of data alone. A distinction must be made between an informed and sincere judgement, and an exhaustive data base. It is inconceivable to obtain high quality quantitative data for every aspect of declared vulnerability, mistrust and contention. Moreover, it is impossible for any ordinary person (or even for recognised experts, except through patient listening, reflection and analysis) to assimilate the complexity of data and concepts across all perspectives and levels of observation. So, if we wish to address ETT social acceptability considerations in a useful and pragmatic way, it follows logically that we need to identify robust ways for ***structuring and making visible the multiple stakeholder perspectives and preoccupations*** (i) that are sincere and, where possible, evidence-based, (ii) that are seen as legitimate and credible by stakeholders, and (iii) that do not depend on detailed quantitative data and statistics that, very often, is neither available nor readily intelligible.

In order to make explicit the complex normative dimensions in ***Hot Spot*** evaluation, we will adopt a neologism, and refer to the **ETHICAL BOTTOM LINES** bearing — in our case — on ETT acceptability. The 'ethical' dimension of an energy transition strategy consists not of a simple or unique criterion of what is good and right, but rather of ***the articulation of the spectrum of normative principles*** that, one way and another, stakeholders bring to bear in their cacophony of judgements about the acceptability of a type of ETT or a proposed ETT deployment.

The table below gives a simple example of a typology of 'ethical bottom lines' (that is, of precepts of quality, duty etc.) that are frequently considered as pertinent for **responsible innovation** (as in **Sub-section §2.3** above), and hence pertinent for ETT assessments in a multi-stakeholder perspective on responsibility.

PR.1 — What is the PRODUCT QUALITY?

PR.2 — Is the ETT demonstratedto be ECONOMICALLY VIABLE?

PR.3 — Have the OPERATIONAL RESPONSIBILITIES of partners/stakeholders been appropriately defined and assigned?

PR.4— Have responsibilities 'towards other parties' in the LONG TERM been adequately addressed? (for example, a 'sustainability' principle of inter-generational responsibility (don't pass on problems to others that you cannot cope with yourself);

PR.5 — Has available TECHNICAL KNOWHOW & SYSTEMS SCIENCE been mobilised?

PR.6 — Does the ETT project enhance the prestige of the HOST COMMUNITIES and other territorial stakeholder groups?

PR.7 — Does the ETT project embody or enhance the SOLIDARITY PRECEPTS FOR SUSTAINABILITY? For example: Circular Economy and inclusive partnerships for implementing & governing the value loops?

It can be seen from this example that the notion of an "ethical" consideration is not set in opposition with traditional business considerations such as product quality or financial viability. Product quality may, for example, be seen as a duty of respect towards the buyer or user, whether or not this is enshrined in a code of business ethics or under law. But no ethical bottom line can be treated in isolation: wide social acceptability will require respect of the full spectrum of bottom lines.

The table on the following page (adapted from O'Connor 2009) proposes, again for illustration purposes, a compilation of 'ethical bottom lines' that has a similar structure to the preceding table, posing ethical bottom lines as questions, but then introduces a second tier of "sub-principles". It sets out considerations of responsibility typically suggested for the contemporary radioactivity site stewardship domain

This example may be seen as having a paradoxical pertinence for our problematic of ETT social acceptability. The inclusion — or not — of nuclear energy in the basket of ETT as a future source of electricity generation is, in itself, a matter of ongoing societal controversy. As such, the long list of acceptability considerations might be considered as, with appropriate adaptations, providing a benchmark for any less controversial ETT project or domain.

The above examples have a methodological role, showing how any proposed ETT is, de facto, a "candidate" put forward by project holders towards the rest of society, as an ***ethically principled action*** — that is, an action that is intended to satisfy or respond to particular criteria of good or sound practice that are suggested by at least some members of the society. But, just as *"one man's meat is another man's poison"*, we must allow that different ethical bottom lines enter in collision and cannot always be reconciled.

One of the purposes of the CAFETT study is to investigate whether and to what extent it is possible to provide generic frameworks for ETT controversy analysis and deliberation support. So, we leave this question open at this point, and will come back to it in our final recommendations in **TASK IV**.

RADIOACTIVITY STEWARDSHIP ETHICAL BOTTOM LINES

PR.1 Have the responsibilities of existing parties been appropriately assigned? For example:

- Application of a principle of national autonomy/responsibility ('take care of your own wastes' at national scale);
- Application of the principle that 'the polluter pays';
- Clear expression of, and respect for, local, national and international regulatory conditions.

PR.2 Have responsibilities 'towards other parties' in the short term been adequately addressed? For example:

- Health security to workers and the public on or close to the site;
- Security against attack in the face of external or internal sources of aggression.

PR.3 Have responsibilities 'towards other parties' in the longer term been adequately addressed? For example:

- A 'sustainability' principle of inter-generational responsibility (don't pass on problems to others that you cannot cope with yourself);
- A thorough characterisation of risks/uncertainties/future contingencies (with reference to: the dangerous substances, the engineering works, the living environment, and future societal evolutions);
- An application of some version of the principle of precaution;
- Is there likely long term stability of the necessary knowledge base (e.g., transmission of records, specialised know-how, local knowledge) for competent stewardship?

PR.4 Has available technical knowhow and systems science been mobilised? For example:

- Rigorous profiling (in technical, medical and sociological terms) of the exposure risks;
- Standards of best practice (technical reliability, simplicity…);
- Monitoring procedures attentive to the full spectrum of identified risks/uncertainties/future contingencies.

PR.5 Is the solution economically viable? For example:

- Are the immediate costs of stewardship affordable with the available resources?
- Clear picture of the trade-offs and relationship between clean-up and stewardship
- Are the solutions cost-effective for the identified risk reduction results?
- Are there major financial costs shifted into the future?
- Reasonable prospects of mobilising resources for the forecast stewardship costs in the longer term?

PR.6 Does the solution enhance the prestige of the host communities and other stakeholder groups closely associated with the residual/waste site? For example

- Viable partnership between local and national stakeholders (e.g., agreed distribution of responsibilities; legal mandate for stewardship activity; agreement on bases for financing of different cost components, etc.)
- Site specificities clearly in evidence?
- Local competencies clearly in evidence?
- Well defined framework for ongoing involvement of stakeholders in stewardship oversight and review;
- Links to educational and training activities at local and wider scales.

Sources: O'Connor (2009). The initial 'Ethical Bottom Lines' checklist concept for radioactivity site stewardship was developed in O'Connor (2003), drawing on Fleming (2003). The full 'checklist' as it appears here was presented in a conference paper by Chamaret & O'Connor (2005); a slightly abridged version of the checklist is also found in Falck (ed., 2006), pp.48-49; and a French translation can be found in Faucheux & O'Connor (2015).

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Section §3 — Designing DST for multi-stakeholder dialogue around ETT

3.0 Building Deliberations around ETT: Structure & Process

In the preceding section we have explained how the appraisal of ETT social acceptability can be organised as a confrontation of different stakeholders' perspectives on the different actions, solutions or 'scenarios' under consideration, within a multiple criteria framework that covers a full range of acceptability issues.

We have argued, furthermore, that this confrontation process — if well structured — may in some situations provide a platform for negotiation in real time of the acceptability of an ETT strategy, policy or project. This implies that the deliberative evaluation process can, one way or another, bring about change — to the ETT project, or to stakeholders' perceptions of the project, or to both.

Importantly, the methodological precept of a confrontation of stakeholder perspectives, does not eliminate conflicts. Rather, what is being suggested by advocates of deliberative evaluation processes, is:

- First, that the confrontation in a synthetic way of different perspectives, is potentially an efficient mechanism to ***build up a clear picture about the merits and demerits, in the eyes of the different stakeholders,*** of resource management alternatives that present themselves; and
- Second, that this confrontation process, if well structured, may furthermore — ***in some situations*** — provide a platform for negotiation of strategy, policy or project modifications and compromises deemed fairer, more reasonable or more equitable by the parties concerned.

This vision of a **dynamic process**, during which acceptability may evolve through the interactions of stakeholders, is fundamental to our understanding of the state of the art. Implementing a robust stakeholder-based evaluation procedure is not only a question of data management and analytical expertise. There are not only the requirements of methods, tools and data, but, above all, those of mobilising and organising the interactions of stakeholders so as to achieve a meaningful result.

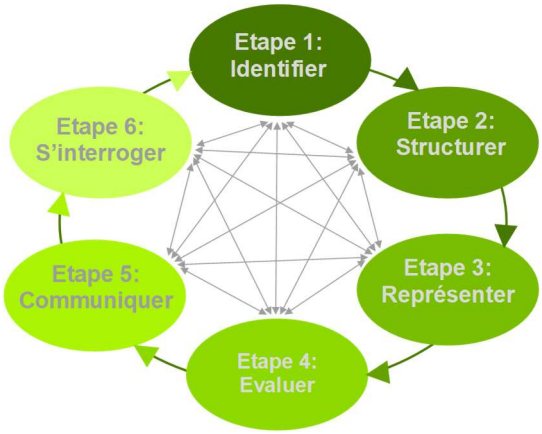
Recognition of this has led researchers and activists to highlight participatory evaluation as a multi-step process and to put the accent as much on process design requirements as on tool selection for each step. Formal tools of system representation and evaluation are employed not merely to elicit stakeholders' preferences but, more fundamentally, to structure the interaction of stakeholders in processes of collaborative learning.[19]

For the ambitions of deliberation processes to be realized, a necessary condition is that the ETT appraisal framework be accessible, intelligible to and legitimate in the eyes of all interested stakeholders. At the very least, it must permit each stakeholder class to ***recognize themselves as adequately "represented"*** (in terms of acceptability issues and signals) ***alongside the other stakeholders***. Thereafter, it must visibly accord to each stakeholder an "equitable" status relative to other stakeholders. Equitable in this context means that sincere arguments and reasons furnished by one stakeholder, are made visible to, and accorded standing, by other stakeholders. As to the outcomes of this confrontation process as a sort of collaborative learning and negotiation opportunity, clearly that is a matter for each situation to reveal.

[19] Advocacy for participatory processes in the elaboration and/or evaluation of local and national scale development programmes dates back to the 1970s, with precursors well before. The exploration of hybrid methods allying formal evaluation tools with participatory and deliberative processes became particularly important during the 1990s, notably in the preoccupation with integrated environmental assessment (IEA). There is now a very disparate literature; for some entry points see: Simos (1990); Jacobs (1997); Callon (1998); De Marchi et al. (2000); Munda (2004); Procter & Drechsler (2006); Blackstock, Kelly & Horsey (2007); Merino-Saum (2015). The approaches that we adopt as state-of-the-art in CAFETT are among the fruits of this ongoing IEA current of work.

Here we wish to characterise deliberative evaluation as an "integrative" process, accessible to the stakeholders, centred on problems of social choice. To this end, we exploit the following six-step schema known as the *INTEGRAAL* procedure.[20] The general sequence is as follows:

- Step ONE — Identification by the stakeholder community of "our common problem". This step may itself engage stakeholder consultation and deliberation; and it delivers the context, the scale, and the dynamics of the formal deliberation process to come.
- Step TWO — Organise "our common problem" in terms of the categories of actors concerned, the situation(s) or options being assessed, and the value criteria. This means developing in a pragmatic way, typologies or classifications of (1) the stakeholders who are impacted by the problem or by the impact of the means of addressing it; (2) the projects, policies, strategy options, and scenarios to be appraised; and (3) the values or principles of performance, quality and acceptability that the stakeholders hold. The KerBabel Deliberation Matrix (already introduced in **Section §1**; and see further below) is used as a framework to organise the interfacing of the object(s) for evaluation relative to the stakeholders and relative to the performance criteria.
- Step THREE — Identify and mobilise tools for system representation (e.g., maps, data sets, models of processes and systems) that can help to 'ground' the deliberations in a robust knowledge base and, more particularly, that will assist in populating catalogues of indicators representing the stakeholders' reference points when working to evaluate situations and scenarios.



- Step FOUR — Mobilise actors for tasks of deliberation. This step depends on the frameworks and information developed in steps 1-3 above. Using (or mimicking on paper) the spectrum of functionalities of the kerDST Deliberation Matrix on-line, it produces outcomes in the formal sense of a multi-actor multi-criteria evaluation. It also provides insights and learning opportunities to participants via the discussions that take place and observation of the respective positions adopted and of how these evolve through the collective learning that occurs.
- Step FIVE — Communication of Results & Recommendations. This step includes, but is not limited to, the final reporting stages of an evaluation exercise. It also includes all tasks "along the way" of information sharing relating to the design and preparations of deliberations, documentation of discussions and intermediate results.
- Step SIX — Reflection on the outcomes obtained and, in an iterative sense, a return to Step ONE of the process in order to review the entire evaluation sequence or, as seems fit, to formulate new specific evaluation problems.

Although presented here as a sequence of steps, *INTÉGRAAL* is not a linear process. The principle is to constitute a "deliberation forum" that offers opportunities to participants to explore progressively, or in parallel, different aspects of the agreed problem. Deliberation exercises can be iterative, with cyclical movements allowing participants to go deeper and to gain or exploit more detailed information (e.g., in the choice and mobilisation of different indicators). It can be expected, as collective learning continues, that new policies for addressing the issue or sub-issues will be identified, new issues, stakeholders and values may be declared, and new information or analysis requirements may be highlighted.

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20 This six-step schema was formulated by researchers in the C3ED and FONDaTERRA during 2006 as a way to situate the use of the kerDST multi-criteria multi-stakeholder evaluation tool within a wider social process of problem framing, stakeholder participation and communication. In methodological terms, it has direct roots in the VALSE project vision of environmental valuation as a collective social process in which formal tools are 'embedded' in wider contexts for negotiating meaning and purpose (see O'Connor 2000)). As already mentioned, the approach we adopt draws on experience since the 1990s with participatory integrated environmental assessment (see O'Connnor 2002a which employed the term "Theatre of Sustainability" for an analogous vision of a cyclic iterature process; also O'Connor 2006b; Douguet et al. 2009), and with participatory indicator-based approaches to CSR reporting (Faucheux & Nicolaï 2004a, 2004b, leading to O'Connor & Spangenberg 2008). Expositions of the *INTÉGRAAL* procedure for territorial applications are found in numerous French language reports including Chamaret, Reichel & O'Connor (2009); Reichel, Chamaret & O'Connor (2010). The name reflects the objective of an "integrative" process seeking the virtuous but utopian (Holy Grail) status of consensus solutions to 'impossible' social choice problems.

3.1 What Roles for the 'Actors' in Deliberative Evaluation?

We now turn attention to the generic methodological questions of the ***roles of the actors*** in the deliberation process. Taking the INTEGRAAL problem building process as conceived by the KerBabel team, we can identify several phases of participation by real persons as "actors" in a deliberative evaluation. [21]

- The first phase of stakeholder participation is to "build the problem". This corresponds to INTEGRAAL Step ONE and Step TWO, a process that, one way and another, culminates in the definition of a 3-D array: (1) the key stakeholder or social actor classes, (2) the relevant spectrum of performance issues and (3) the range of evaluation objects (e.g., ETT projects, business strategies, industrial sites, territorial development scenarios, technologies, investment options…) to be appraised. It might often be the case that only a few people (e.g., a project team, or sometimes only one person) will act in a process leadership role, many people can be involved, in one way or another, in formal or informal discussions before or during the formal process of "building the problem" on paper or with an on-line deliberation support tool.[22]
- The second phase of participation is for stakeholders to contribute to producing outcomes of the formal multi-criteria multi-stakeholder evaluation. This corresponds to INTEGRAAL Step THREE and Step FOUR. Formally, the requirement is for individuals, acting as representatives of a class of stakeholder, to declare a judgement for *each* evaluation option (e.g., ETT project, site or scenario), relative to *each* criterion or performance issue — that is, each ethical bottom line. However, there are many variations in the ways that this process can be structured, and in the roles that stakeholders might play. These include, but are by no means limited to, the selection and mobilisation of indicators as signals to compose the elements of the formal multi-criteria multi-stakeholder evaluation.
- The third phase of participation (beyond the formal problem-building and evaluation steps) is stakeholder deliberation that may take place ***about the deliberation process itself***, that is, about the purposes of the process, about the results of the evaluation process, and about the uses of these results, and the real effects and effectiveness of the process. This corresponds roughly to INTEGRAAL Step FIVE and Step SIX; but precisely how this deliberation takes place depends less on the formal structure of the deliberation support tools, and more on the social context and purposes.

We now need to look more closely at this interaction of evaluation structure and actor contributions, as a problem of tool and process design. Some of the formal considerations are summarised, in a synthetic way, in the methodological typology provided in tabular format on the following page. This typology is organised with reference to the four structuring axes of multi-criterial multi-stakeholder evaluation, namely:

(1) WHAT? — The objects of evaluation attention (the ETT actions or opportunities)

(2) WHY? — Framing the quality-performance goals and challenges (the ethical bottom lines)

(3) HOW? — The type of indicators or other "signals" mobilized in appraisal of the ETT actions or opportunities

(4) WHO? — The different "actors" or stakeholders and their roles

The right-hand column of this table specifies, for each of these dimensions of structure, the main alternatives for direct stakeholder participation. In this way, we highlight the question of deliberative evaluation not just as a formal method that produces an evaluation outcome, but as ***a collaborative process that, partly by design but partly as an emergent effect, generates a specific social and political dynamism***.

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[21] These various facets of the evaluation process with kerDST are documented in several published papers and unpublished theses and reports, including: Chamaret (2007); Chamaret, O'Connor & Récoché (2007); Chamaret, Reichel & O'Connor (2008); Maxim & O'Connor (2009). An inventory of the range of C3ED deployments of the Deliberation Matrix during 2006-2009 is found in Raharinirina, Douguet & O'Connor (2010). The doctoral theses by Merino Saum (2015) and Aydin (2017) add to the state-of-the-art.

[22] Individual interviews or focus groups may provide for inputs; and there may be iterations whereby members of the project team verify the intelligibility and acceptance of proposed problem structure with persons in the wider stakeholder community. If an on-line deliberation support tool is employed, such as the KerDST Deliberation Matrix, it may be technically possible to revise the problem structure by modifying the elements specified along each of the constitutive axes. But for practical reasons such revisions should be carried out with care. For participants in a deliberation process this can become confusing. On a more technical plane, there can be consequences for the visibility and coherence of other deliberation data, notably the indicators mobilised at cell level.

Dimension of Structure	Typology for Multi-criteria Evaluation Procedures	Checklist of Roles of "Actors"
(1) WHAT? **The objects of evaluation attention**	**WHAT, WHERE and WHEN**: Depending on the domain, the evaluation objects can have widely differing character: (institutions, strategies, actions….). ● The evaluation objects may be classified in various ways, for example "options" (scenarios) for a given decision problem; or the "sites" of different institutions ● Appraisal might be conducted of the same topic at multiple scales, for example European, national and local scales of "circular economy" strategy ● Where evaluation is forward looking or periodic, the evaluation objects may be situated along a time line (e.g., annual performance appraisal). ● The evaluation objects may be considered as composed *** of many elements.	● [YES / NO] Contributing at a conceptual or component level*** to description of the evaluation objects. ● [YES / NO] Contributing empirical data for description of the evaluation objects. *** For example, a business or public sector strategy might be considered as composed of many distinct Actions. And, some or all of the Actions might be composed of many individual items (e.g., Scientific Production at a university, might be composed as an ensemble of individual publications and products.
(2) WHY? **Framing the performance goals and challenges**	**WHY:** The framing of performance criteria is intrinsically linked to the ways in which results are to be expressed or reported. Most often a hierarchy can be envisaged, engaging some or all of: ● A single aggregate performance concept; ● A small number of "high level" performance criteria or concepts; ● The "composition" (bottom-up), or "decomposition" (top-down) of each high-level performance concept, into sub-goals or component performance considerations.	● [YES / NO] Contribution to defining the performance goals, sub-goals? Note: most often, the mapping from "top-goals" to "sub-goals" is unique, in a "tree structure". It can be permitted for a given "sub-goal" inform two or more top-goals; however this sort of many-to-many mapping is more commonly permitted at the level of operational indicators
(3) HOW? **The type of indicators or other "signals" mobilised**	**HOW:** For the purposes of typology with a view to on-line "digital" deliberation support tools, it is useful to distinguish: ● Indicators in the 'classical' sense of system attributes (or 'variables') lending themselves to measurement or data… ● Any other sorts of "objects" that are catalogued specifically with a view to exploitation in an evaluation process; ● Any sort of "object" whatsoever that can be identified on the Internet, up to the scale of "all URLs on the internet".*** Examples of quasi-universal systems of objects that could plausibly be mobilised in participatory evaluation are (1) the pages in the Wikipedia; and (2) the videos in YouTube.	● [YES / NO] Identifying indicators potentially exploited? ● [YES / NO] Selecting indicators relative to performance goals? ● [YES / NO] Contributing empirical data for calibration of indicators and reference values? ● [YES / NO] Judgements contributing to formal evaluation outcomes? NOTE: The judgements themselves can be expressed in different ways and with varying degrees of sophistication, including (i) qualitative signals such as a colour or score; (ii) textual comments; (iii) procedures of 'weighting' and aggregation of several signals into higher level judgements or scores.
(4) WHO? **The different "actors" or stakeholders and their roles**	**WHO and by/for WHOM**: There are, on the one hand, the "stakeholders" in the decision or other evaluation problem; and, on the other hand, the "participants" in the evaluation process itself. The mapping between the two may be explicit or fuzzy. As regards the participants, the variations can be situated along a continuum from one to all: ● One expert or analysis team conducting the evaluation; ● A small number of "representatives", one for each stakeholder class; ● A small number of members/representatives of each stakeholder class; ● An unlimited open community of participants, grouped by categories….	● [YES / NO] Contribution to defining the classes of Stakeholders around the evaluation objects? ● [YES / NO] Contribution to choosing representatives and/or defining the perimeter of the User Community? ● [YES / NO] Participating in wider discussion and debate around the formal evaluation?

To explain the importance of these process design considerations and, more particularly, to motivate the tool and process choices that inform the CAFETT deliberation exercises reported in **TASK III**, we now discuss the KerDST on-line deliberation support tool in a reflexive way. That is,

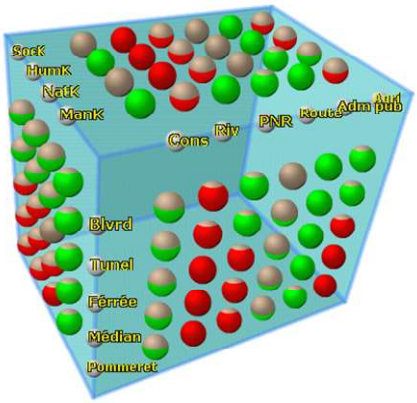
- We present the design and ambition of the KerDST tool as it exists on-line (**Sub-sections §3.2, §3.3** and **§3.4**);
- We discuss the limits imposed by specific design features of this tool, relative to other conventions that might be envisaged or that can be found in other multi-criteria evaluation tools (**Sub-sections §3.5 and §3.6**).

3.2 The 'KerDST' on-line Deliberation Support Tool

The neologism DST (**DELIBERATION SUPPORT TOOL**), as opposed to the more established DSS (decision support system) itself makes clear that the accent here is on ***deliberation support*** and not 'decision'. As was outlined in **Section §1**, a multi-criteria multi-actor evaluation of a problem of social choice will not, as a general rule, produce a clear conclusion about the 'best' option. It might, at best, permit partial rankings, for example with reference to one of the ethical bottom lines, or from a single stakeholder's point of view. So the role of the 3-D Deliberation Matrix array is not to signal a 'best' decision; rather it is to act as a ***deliberation support tool*** providing participants in the process with a common framework, with an opportunity of "collaborative learning," and with an opportunity for obtaining new insights into the tensions and dilemmas associated with decisions that cannot be justified as "simply the best" — neither along all the recognised performance criteria nor for all classes of stakeholders.[23]

At the same time, for those engaged in "deliberation support", several important design questions must be resolved. What conventions are to be adopted (1) in relation to quantitative data and analytical conventions (models, maps, etc.) that aid the representation of the objects being appraised; (2) as regards the frameworks and algorithms for quantitative or qualitative "scoring" of an outcome (including comparison or different objects, institutions, scenarios or strategies, etc.); and (3) as regards procedures that may help structure a process of collaborative learning and public deliberation about the "complex" evaluation situations? These are the questions to which we now turn.

KERDST — AN ON-LINE DELIBERATION SUPPORT TOOL FOR MULTI-STAKEHOLDER MULTI-CRITERIA EVALUATION



Evaluation exercises or tasks are organised with a "grid" or array in three dimensions, built up by specifying, for a chosen problem:

- ***The Evaluation/Governance Issues:***
  A small number of distinct Quality/Performance concerns
- ***The Major Types of Actors or Stakeholders***
  A pragmatic demarcation of "interests" and collective identities
- ***The Policy Options or Possible Futures:***
  A small number of Options for Action and/or Decision Scenarios

If the task is to evaluate a specific activity or to compare several situations, then the user can specify a site or sites rather than scenarios.

[23] In other words, most important social problems, in ETT as in other public policy domains, are "wicked problems". Sustainability challenges involve the search for solidarities that, very often, will entail dilemmas in the sense of confrontation of different normative positions and require difficult or delicate compromises.

The **KerBabel Deliberation Matrix** permits a didactic presentation of the process and outcomes of ***judgements*** offered by *each* category of stakeholders, for *each* of the options or scenarios under evaluation, with reference to a *spectrum* of governance or quality-performance issues.

- The principle is that that *each* stakeholder class should offer a judgement (e.g., *satisfactory, poor, intolerable*, etc.) of *each* option/scenario in relation to *each* of the key governance or decision issues.
- One obtains in this way, for each stakeholder (or actor class), a rectangular array of cells, being a layer of the Matrix, within which each row represents (issue by issue) the evaluations furnished by the given class of stakeholders for successive options/scenarios.
- Or, looked at from another angle, one obtains the evaluations by each stakeholder, of a given option/scenario.

As already explained, this framework can be used, on the one hand, to document an observed pattern of judgements in a situation of controversy and, on the other hand, to orient participants in exchanges of perspectives aimed at building confidence and common ground (that is, as a real-time *deliberation support tool*).

Within the basic multi-stakeholder multi-criteria comparative evaluation framework just outlined, the 2006 **KERDST** on-line deliberation support tool integrated two major design features:

- The first is the **mobilisation of indicators** as a basis for the cell-by-cell judgements. These indicators are required to be catalogued — in a corresponding "KerBabel™ Indicator Kiosk" (**KIK**) — which can be accessed through on-line interfaces with the Deliberation Matrix. Users of the Deliberation Matrix can contribute to the definition of indicators, thus adding elements to the catalogue, in the course of a participatory evaluation.
- The second is the accommodation of **multiple participants as members of the on-line deliberation community**, each participant being associated with one of the stakeholder categories defined in the Deliberation Matrix for the social choice problem being addressed. Individual participants contribute, through the selection of indicators, to the building up of composite judgements for the cells of the **DM** corresponding to their particular stakeholder category.

By combination of these two features, we identify four types of exploitation of the 2006 **KERDST** system's possibilities. These are summarised in the tabular presentation on the following page. [24]

The simplest procedure is that of "Colouring in the Cells" by single representatives of each stakeholder category (or by a single expert acting "on behalf" of all stakeholder categories) for a qualitative multi-stakeholder multi-criteria assessment of a situation or of options for action (this is Variation 'A' in the tabular schema below).[25] This opens up naturally:

- On the one hand, towards Variation 'B' where several participants within each stakeholder category contribute to a "composite" judgement per issue (that is, per cell); and,
- On the other hand, towards Variation 'C' where a single representative of each stakeholder category (or a single expert acting "on behalf" of all stakeholder categories) works to produce a "non-participatory evaluation supported by indicators", thus linking indicators to each of the societal performance-quality issues.

The engagement simultaneously of these two features then gives rise to the Variation 'D' of **KERDST**. It provides for individual users as members of each stakeholder category to express their judgements, via indicator baskets, on the different sites, scenarios or other evaluation objects to be assessed.

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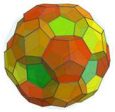
[24] This 2x2 typology is set out in various KerDST reference documents (O'Connor 2006b, 2006c; O'Connor, Bureau & Reichel 2007; Reichel et al. 2007abcd).

[25] The "default option" suggested for colour codes is RED for bad, YELLOW for moderate, and GREEN for good; but KerDST users can define their own list of judgements and corresponding colours. This method of "scoring" or signalling by colour to build up a three-dimensional array of qualitative judgements, is preserved for the more complicated variations, but with conventions for the "composition" of the cell-level signals.



KERDST© Typology of Deliberation Processes with the "KERDST" Deliberation Support Tool © KerBabel™ C3ED (2006)		ROLE OF INDICATORS IN THE EVALUATION	
		NO INDICATORS "Colouring in the Cells" (with or without commentary *For each Cell, a single judgement (by colour) is registered for each stakeholder category (via discussion or expertise)*	**WITH INDICATORS** The judgement for each Cell of the Matrix is informed by a "Basket of Indicators". *The colour of the Cell depends on the signification and relative weighting attributed to each indicator in the 'basket'*
USER COMMUNITY	**CLOSED** The deliberation is not open to an extended community. *A single (synthetic) judgement is registered for each actor/stakeholder category*	A. QUALITATIVE MULTI-STAKEHOLDER MULTI-CRITERIA ASSESSMENT	C. NON-PARTICIPATORY INDICATOR-BASED ASSESSMENT
	OPEN An extended user community. *Multiple participants within each stakeholder category may contribute to the evaluation*	B. QUALITATIVE MULTI-ACTOR PARTICIPATORY ASSESSMENT (WITHOUT INDICATORS)	D. MULTI-ACTOR PARTICIPATORY INDICATOR-BASED ASSESSMENT

The Four Variations of kerDST. Source: **kerDST Users' Manual** available in French and English (Reichel, Bureau, Legrand, O'Connor & Sunde 2007).

For the Variation 'B', **PARTICIPATORY ASSESSMENT WITHOUT INDICATORS**, the cell-level judgement is a composite of the colour signals from each of the individual participants in a stakeholder class. The convention of the 2006 on-line version of KerDST , is that the cell itself takes the colour that has the highest proportion of signals by users within the stakeholder class.

For **KERDST WITH INDICATORS** (Variation 'C'), a user, representing a stakeholder class, must incorporate a descriptive basis for the judgement (colour) proposed in each cell of the Deliberation Matrix, through the selection of a **'BASKET' OF INDICATORS** taken to characterise relevant attributes of the evaluation object (scenario/choice or activity/site/territory) under scrutiny. In the 2006 KerDST,

- It is permitted to choose UP TO 5 DISTINCT INDICATORS for each "basket" corresponding to a Cell.
- For each indicator placed in a basket, the user must specify the JUDGEMENT [by choice of colour code] and the relative WEIGHT compared with other indicators.

In this Variation 'C', the judgement at the cell level in the Matrix is thus obtained not by a simple choice of colour for the cell, but as a weighted "amalgam" of the qualitative judgements assigned to each indicator in the "basket". The colour (or composite) of each Matrix cell is a function of the relative weight and significance attributed to each indicator in the corresponding basket. The convention of the 2006 on-line version of KerDST, is that the cell itself takes the colour that has the highest percentage within in the "basket of indicators".[26]

Variation 'D' of **KERDST** was the most ambitious in methodological terms, as it provides for individual users as members of each stakeholder category to express their judgements, via indicator baskets, on the different

[26] This convention was adopted, after some experimentation during 2004-2006, because it tends to produce clear visual contrasts between cells and, at the next level up, between rows or columns of cells in the Deliberation Matrix, or again, between entire layers (or "slices" of the Matrix. This illustrates an important more general point, to which we will return, of the accessibility (in cognitive as well as technical terms) and appropriation by users of the results of a participatory evaluation process

sites, scenarios or other evaluation objects to be assessed. However, in the 2006 version of KerDST on-line, this Variation 'D' was a rather cumbersome procedure and not very user-friendly, and so has been relatively little used.[27]

§3.3 The Status and Sourcing of Indicators used in KerDST

One of the innovative features of KerDST, at the time of its development, was the priority that it gave to the interaction of people as participants in a « virtual » user community — more particularly, as members of a purposeful evaluation team linked by the Internet. [28] This purpose was translated into corresponding design principles that included:

- Ease of independent multiple user accessibility on-line;[29]
- The opportunity, as in a videogame, to act/contribute immediately – not required to search elsewhere for data, not blocked by expertise requirements that are outside the user's competence…
- The visibility of the user's status as contributing members of a public deliberation process.

The second and third precepts were, in the 2006 version of KerDST, expressed through several conventions. Most directly, there is the mechanism for a KerDST user, in Variation 'A', to select and communicate judgements at the 'cell' level by simple choice of a colour code. Thus, an experienced KerDST user, or a novice piloted by an advanced user, can contribute as a "stakeholder" in an evaluation in a matter of just minutes. The cell-level colour signals are immediately visible to other users engaged in the deliberation.

The principle of immediacy is equally strongly expressed in the procedure for compiling and communicating a "basket of indicators" (in Variations 'C' and 'D'). Here, the KerDST users are in fact invited to signal the inclusion of **indicator concepts** within each Deliberation Matrix cell or "basket". That is, they are invited to signal the selection of "objects" from collections that are presented with succinct meta-information profiles (the Indicator's Identity Card, as it were) in catalogues that are available as satellites to the Deliberation Matrix itself.[30]

This means, importantly, that the KerDST user is not required immediately to search for data corresponding to an indicator, nor to verify/validate others' data. Rather, the contribution at the cell level the KerDST evaluation process is situated at the level of mobilising objects described with ***meta-data***. As already specified,

- It is permitted to choose UP TO 5 DISTINCT INDICATOR CONCEPTS for each "basket" corresponding to a KerDST Cell.

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[27] The Variation 'D' has proven to be effective for use by a research team for registering the indicator suggestions and judgements of members of a well-defined stakeholder community. But it was not easy for individual stakeholders themselves, as KerDST users, to access and interpret the data at disaggregated levels. For example, mechanisms were not provided for direct on-screen visibility and comparison of different individuals' contributions. The experimentation with Variation 'D' has thus been most useful within the ongoing KerBabel R&D programme, for stimulating reflexion on conventions for social networking approaches to participatory evaluation — that is, allowing members of a user community on-line (1) to see the judgements offered by other users and (2) to contribute their own judgement on different aspects of a scenario or other evaluation object.

[28] The first on-line prototype of the Deliberation Matrix dates from 2002 (see Amorsi 2013), well before the emergence and stabilisation of today's universal social network systems (FaceBook, Wikipedia, ResearchGate and so on).

[29] We do not further discuss this point, whose 2006 solutions are now obsolete and which is resolved in the 2015 ePLANETe platform by a secured SSO (Single Sign On) process that privileges contemporary universal social network identification such as Gmail and Facebook. There are, also, important matters of data integrity and of limiting 'ePLANETe' platform access to real persons as members of a user community, that we do not discuss here (and, in this respect, we note in passing the recent furors surrounding imperfect security of network user information in both Facebook and Google+ …).

[30] These KerBabel Indicator Kiosks (KIK for short) are, since 2004, composed and managed by a Content Management System (successive versions of the CMS Drupal), now integrated within the vaster 'ePLANETe' platform. The KIK functionality in KerDST (and now embedded within 'EPLANETe' actually provides for comprehensive profiling of an Indicator concept and of sources and uses of empirical data in empirical applications. But, the emphasis being on ease in the definition and mobilization of a system attribute deemed of descriptive and normative pertinence, only a very limited number of meta-information fields are obligatory for the creation of an "Indicator" profile in a KIK.

- For each indicator concept placed in a basket, the user must specify their JUDGEMENT [by choice of colour code] and the relative WEIGHT compared with other indicators.

At the heart of the KerDST process, is thus the opportunity for reflection and deliberation in the course of building each cell-level judgement as expressed by a "basket" of Indicators, these latter being mobilised at the level of meta-information. The intention is that, in reflecting on the pattern of judgements being built up, the user is encouraged to appreciate, in a comparative way, the relative merits and deficiencies of each scenario or situation being appraised.

We refer to any concept put forward for describing or judging normatively a situation or scenario, as a "**CANDIDATE INDICATOR**". Rather obviously, this procedure leaves open several questions: first, the question of empirical data relating to a proposed indicator concept; second, the cogency and limits of each indicator concept or category of information (or speculation) mobilised as an indicator; and, third, the sources of these concepts or categories of information. We address these considerations progressively.

1/. The KerDST users are invited to signal the inclusion of **indicator concepts** within each Deliberation Matrix cell or "basket, and to attach a qualitative value judgement; but they are not required to estimate a quantitative value for the indicator. This means that they do not have to search for data corresponding to a chosen indicator, nor to verify/validate others' data in declaring an empirical estimation. This is, clearly, a very strong methodological convention. Its most obvious merit is that it permits the KerDST participants to advance in the deliberation process. But at what cost?

Data quality does not in itself determine the pertinence of a candidate indicator. Whether or not empirical data is available for any "candidate indicator", and the quality of these data (for times past, in the present, or in the future) is an important consideration for the cogency of the indicator as a support in multi-stakeholder deliberation. But, it is a many-sided consideration. Selection of indicators on the basis of easy availability of high-quality data, can be an obvious source of bias.

- Especially in complex domains such as health, biodiversity loss, natural hazards and communication infrastructures, features of perceived risk may be deemed of very high importance by some stakeholders whose likelihood of occurrence (or even their very existence) is subject to considerable scientific uncertainty.
- Moreover, there may well be values and vulnerabilities — that is, perceived risks and fears — expressed by stakeholders on the basis of specific locality, history and cultural frame that, have not (for whatever reason) historically been the object of formal scientific enquiry and whose documentation outside of oral tradition and "local knowledge" is flimsy, folkloric or informal…

Both of these considerations have paramount importance for our concern with the social acceptability of an ETT project. This highlights the fundamental methodological point, underlying several typologies in the preceding table, that the need for quantitative empirical data for each indicator concept retained as a "signal", is not just a matter of stakeholders' epistemological predilections or prejudices, but also a function of the evaluation tools and the stakeholder concertation procedures engaged.

Recall, from our earlier discussions, that the primary need is for a **transparent structuring** of the appraisal framework, so as to make visible the multiple dimensions of project quality or performance, the plurality of stakeholders, and the plurality of "ethical bottom lines"" that are brought to bear on the ETT acceptability question by different constituencies across the stakeholder communities. This has led us to insist that:

- At the primary level of analysis, the representation of the problem of quality/acceptability of the ETT project should specify the obligations of respect for the stakeholder classes or communities given standing — in other words, identification of (1) the classes of community meriting respect ***and*** (2 the forms or norms for expression of that respect.[31]
- A second level of analysis should provide for **signals** concerning the fairness (or unfairness) and acceptability (or non-acceptability) in access to services, distribution of opportunities, collective capacity, vulnerability, stresses and risks (etc.,

[31] Given the 'monopoly' presence of the present generation, it is up to today's policymakers and citizens to affirm duties towards — or, by proxy, the 'entitlements' of — future generations, endangered species and ecosystems, vulnerable peoples and so on.

etc.,) for each stakeholder class *and* relative to each of the forms or norms for expression of that judgement (of fairness or acceptability) that are agreed as having pertinence across the stakeholder community.

Along the first level, demarcations will be essentially qualitative in nature. This is a matter of **the problem structure**, and the categories considered to have pertinence and standing may be quite different from one society to another, from one place to another, or even for different scales of assessment (cf. Aydin 2017).

At the second level, **the signals carrying the judgements** by or on behalf of stakeholders about fairness or acceptability, must relate to observable features (or hypothesised future features) of the situation or project. These observable features — or attributes — may well, in many cases (but not all), be amenable to measurement in quantitative terms. This will partly be a function of the notions of values, rights, capacities, vulnerability and poverty that are needing to be characterised (e.g., along the descriptive *WHAT?* Axis of the evaluation structure set out in Sub-section §2.6). But, for the reasons just discussed, the salience of the indicator concepts — that is, the pertinence and credibility in the eyes of stakeholders of the declared features — is logically prior to the question of quality of data or of simulation model results. This leads us to the second point.

2/. The judgement as to the salience or cogency of an Indicator concept is, by design, left in the hands of the KerDST user. An Indicator is salient if (and to the extent that) it is mobilised in a "basket" as a signal about the quality or acceptability of the object under evaluation. This is, indeed, a very strong methodological convention, which might be questioned on several grounds and whose justification requires further discussion. But it expresses, intuitively, the importance of ensuring the visibility of stakeholders' specific concerns in the signals incorporated in the formal deliberation process.

3/. In awarding agency to KerDST users in this way, the further question obviously arises as to the sourcing of the "candidate indicators" that are available to the KerDST user. At an operational level this question has a clear response:

- The Indicators mobilised in a Deliberation Matrix cell are catalogued in a KIK within the on-line DST; and
- Members of the KerDST user community can contributing to building up the lists or banks of indicators (defined by their "Identity Card" or meta-information profiles) considered as pertinent to the evaluation problem at hand.

Upstream from the on-line KIK catalogues themselves, the sourcing of Indicators can be an open question. Clearly, a very wide variety of indicators can and might be proposed as having pertinence in support of evaluation judgements, across the spectrum of quality criteria, performance or governance issues, scales and points of view, for any class of situation of collective action. [32]

O'Connor & Spangenberg (2008) in their proposals for structuring a "bottom-up/top-down" stakeholder dialogue process for CSR evaluation and communication, posed explicitly the question of the "**representative diversity**" of Indicators. What procedure for selection of indicators might, they asked, provide for a satisfactory appraisal of CSR performance at site-level, and across a sector of economic activities, relative to the diversity of performance issues and stakeholders? [33] This led them to highlight the importance of procedures permitting stakeholders themselves — or representatives from each category of stakeholder — to work together to propose candidate indicators; and, thereafter, to select, with reference to each CSR performance issue, a "basket" of indicators from amongst the candidate indicators.

Raw material as "candidate indicators" for CSR appraisal is usually not lacking. This is true whether we situate the question at the conceptual level, or at the level of empirical data. In any domain of business activity,

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[32] Miller (2005) and Norgaard (1988) are two authors who seek to define ways to navigate in the plethora of candidate indicators that arise from the intrinsic diversity of sustainability preoccupations across different places and at multiple scales.

[33] These authors motivated their suggestions by reference to a study carried out during 2002–2004 across sites in four different European countries for the European Aluminium Association This work led to proposals to the EAA for an information management framework and a set of guidelines that will permit the efficient identification of a CSR indicator system responding to a range of communication needs at site or sector-wide level. The analyses were carried out by researchers at the C3ED supported by the European Aluminium Association through the EAA "Aluminium for Future Generations" Programme, in two phases for which the principal reports are: Faucheux et al. (2002) and O'Connor et al. (2004), the respective "Phase One" and "Phase Two" Reports.

there is a considerable diversity of sources of information and expertise potentially of value for obtaining suggestions about salient concepts and observable features of the business situation as "candidate indicators" for deployment in a CSR reporting process. For O'Connor & Spangenberg (ibid.), the four most important sources are likely to be:

- Identification directly through a stakeholder consultation process;
- Indicator concepts provided by sector associations, international agencies, etc.;
- Information sets that a company (or business partner) already uses for purposes other than CSR reporting;
- Indicator concepts already identified or deployed in comparable situations elsewhere, e.g., at other sites.

This is a pragmatic approach to candidate indicator identification that has been proven in numerous studies with KerDST to be fully operational, and that can readily be applied for ETT assessment.[34]

§3.4 Situating Indicators in the KerDST 'Knowledge Economy'

Our concern in **CAFETT** is with the selection and mobilisation of indicators relating to the "social acceptability" of an Energy Transition Technology (ETT) or a specific territorial deployment. This will lead to a list of "Candidate Indicators", whose meta-information profiles will be managed in catalogue (here called a KIK, for KerBabel Indicator Kiosk). We suppose the mobilisation of indicators in a **multi-criteria comparative evaluation procedure**.

The candidate indicators that are catalogued in a KerBabel Indicator Kiosk as resources for a KerDST deliberation, may be classified in a number of ways, both ***ex ante*** and ***ex post*** relative to the evaluation process itself. These classification mechanisms are important in operational ways for undertaking and documenting the deliberation exercises. They also have considerable importance for expressing the notion of stakeholder participation de facto, but also by design in the "**knowledge economy**" and, more particularly, in "**knowledge partnerships for sustainability**".

A. **WHAT IS THE SOCIETAL DEMAND FOR INDICATORS?** As already discussed, a very wide variety of "candidate indicators" might be proposed as having a role in support of evaluation judgements, across the spectrum of quality criteria, performance or governance issues, scales and points of view, for any situation of collective action. Formally, a Candidate Indicator is defined as ***pertinent ex post*** by its mobilisation, in the manner already described, in one or more baskets of a Deliberation Matrix. This mobilisation links it, simultaneously, to the reference **Stakeholder category** and the reference Quality-Performance category (or **Ethical Bottom Line**), for the Matrix cell applied to the **ETT Project, Site or other situation** under evaluation.

We can refer to this, in economists' language, as a classification on the '*demand side*', that is, as a declaration of pertinence in a particular **context of use** — responding ***ex post*** to the question of the **aptness** or **usefulness** of the candidate indicator for a specific domain or terrain of application.

B. What is the **SUPPLY OF CANDIDATE INDICATORS**? We have already mentioned, in Sub-section §3.3 above, the potential for sourcing of candidate indicators from a wide variety of scientific analyses, consultative processes, and institutional sources. In this context, we can envisage candidate indicator classification on the '*supply side*', that is, with reference ***ex ante*** to the domains of expertise (formal and informal) and the

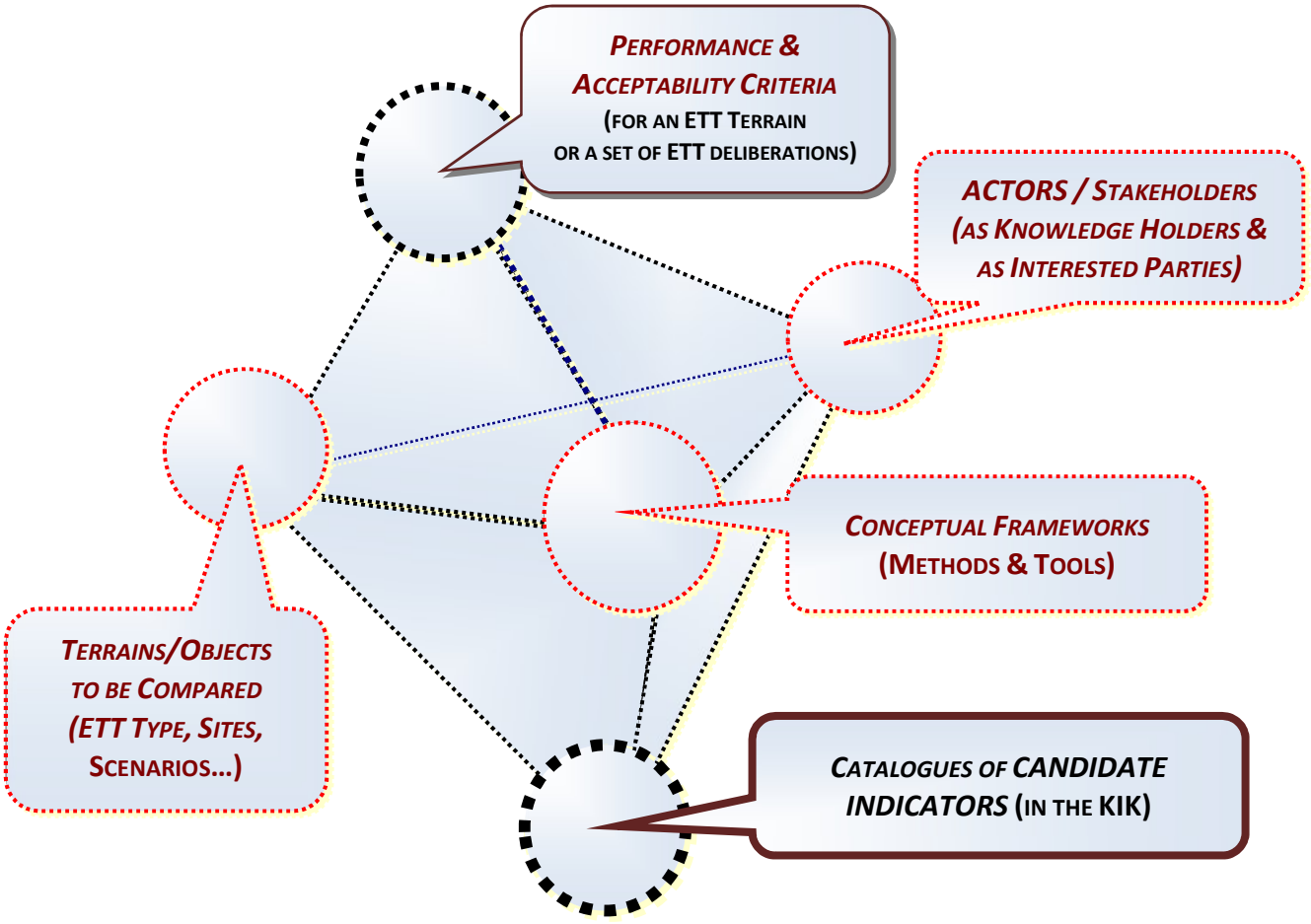
[34] In the CAFETT case studies (as reported in **TASK III**) we have demonstrated three main procedures of identification of "candidate indicators" catalogued so as to be exploitable as signals within the Deliberation Matrix framework. The first is the use of **DISCURSIVE "ARGUMENTS"** whose sources are data and documents available on-line and analysed in **TASK I** with the ETT controversy mapping procedures. The second is the use of quantitative or qualitative performance considerations suggested through direct stakeholder consultations carried out in the preliminary stages of **TASK III**. The third is the appropriation as **DISCURSIVE "ARGUMENTS"** of the lists of intentions and actions set out in key national policy documents, for example the *French Roadmap towards a Circular Economy*.

conceptual frameworks (including, but not limited to scientific theories and models, etc.), that characterise the source of the **indicator concept** and/or that underpin empirical estimations and data observations for a particular terrain or application.

In the schematic framework deployed by ePLANETe in support of KerDST, we deploy three principal axes for characterising the "supply" of candidate indicators that are made available as resources for informing deliberations.

- They may have their origins or grounding in different types of **Conceptual Frameworks, Analytical Methods and Observation Tools** proposed as pertinent for appraisal;
- They may have been selected on the basis of experience at or applications to specific terrains of application, that is, the **Sites, Actions, Scenarios or other Case Study options** under scrutiny;
- They may be proposed by specific individuals, stakeholder groups or institutions, who/which thus are to be considered as categories of **Knowledge Holders** relative to the appraisal problem in hand.

Within the 'ePLANETe' knowledge portal, these several dimensions of the "Knowledge Economy" are exploited as an integrated set of typology axes (see schema below), contributing to a framework for (1) situating Candidate Indicators in terms of their Pertinence or "Fitness for Purpose" in ETT assessment, and (2) structuring the multi-criteria, multi-stakeholder axes of comparison of judgements about the ETT's acceptability.



Overall, we identify, at the intersection of the "supply" and "demand" considerations, four distinct axes along which the question of the pertinence of an indicator might be appraised. With these elements of structure, we are now equipped to discuss the application of the INTEGRAAL method and the KerBabel tools to the selected **CAFETT** case study terrains.

§3.5 The INTEGRAAL method in CAFETT

In the *INTEGRAAL* schema outlined previously, we consider **STEP ONE** as the task of identifying collectively the policy or strategy challenge to be addressed. Although this can have a quite precise outcome at a moment in time (e.g., agreement to focus on town supply of drinking water quality at a regional scale), the agreement around "our common problem" is merely a pointer to the deeper challenge of building a collective learning process for the individuals and stakeholder groups concerned.

In the case of CAFETT, our immediate concern is for building deliberations around specific ETT projects or policy actions, in such as way as to highlight considerations of social acceptability (1) for the projects addressed, and (2) through reflection about the results and lessons learned, for the wider challenges of energy transition in France.

Given the iterative, distributed and sometimes parallel nature of the activities that make up the *INTEGRAAL* deliberation cycle, it is helpful to think of the process in terms of task types. The first Task Type is "Build a Collective Learning Process", which means to determine the key decision, evaluation & communication challenges and, more specifically, to plan, design, "construct" in social process terms, and maintain a multi-event "Deliberation Forum" facilitating learning & action. This, in a sense, corresponds to the whole of the CAFETT project, and so we do not report on it separately.

Within this overarching CAFETT concept, the various other (sub)tasks contribute to building up and maintaining the collective learning process. Following the *INTEGRAAL* schema, there are four main types of sub-tasks that can be sequenced, or woven together, as contributions to social learning. These are:

- **Task Type 2: Determine the Spectrum of Stakeholders, Values and Objects of evaluation.**
  The kerDST framework for appraisal of the situation and of options for action is organised as a multi-actor multi-criteria 'matrix' of judgements, and so requires that stakeholder categories and performance criteria be specified. This can be carried out through stakeholder deliberation and expert inputs to typologies. However, whatever the sources of intelligence, it is necessary to impose parsimony: comprehensive typologies with subclasses can be unwieldy. We adopt the position that relatively simple lists of stakeholder classes, performance concerns will be appropriate, as a function of each ETT case study context. We come back to this point in Sub-section §3.6 below.

- **Task Type 3 — Motivate and Prepare the Use of Indicators.**
  The kerDST framework for multi-actor multi-criteria evaluation defines roles for indicators to describe & assess performance and quality for any existing situation and for scenarios of policy or investment actions. This implies the need to build up and mobilise banks of indicators pertinent to the ETT appraisal needs. In reality, this may be a permanent and piecemeal process. However, there are high points where stakeholders or specific experts work, prior to or even during a collective deliberation exercise, to compile lists of indicators to be employed in a specific evaluation exercise. We have already mentioned, very briefly in Sub-section §3.4, the three main procedures of identification of discursive arguments and performance concepts as "candidate indicators" for the CAFETT Case Studies, and we will come back to this point in Sub-section §3.6 below. This leads to a highlighting of the needs for the management of the candidate indicators with a view to the multiple terrains (and multiple user groups) of their exploitation.

- **Task Type 4: Undertake Assessments or Evaluations:**
  Following the kerDST « Deliberation Matrix » [Actors-Issues-Options] format, deliberation exercises of current performance or future options, are undertaken in a multi-stakeholder multi-criteria perspective at appropriate scales, corresponding to defined contexts or "theatres" of collective debate and action. There may, in principle, be many discrete ETT evaluation exercises — hence our term "piecewise deliberation" (O'Connor, Small & Wedderburn 2010) — that can be more or less tightly coupled by engaging common typologies of stakeholders and performance values, or by considering the same or analogous ETT strategies. This is the experimental strategy that has informed our case study work in the **CAFETT TASK III**.[35]

[35] We discuss, in the **CAFETT TASK III** report, some of the design considerations for ensuring the intelligibility of results across case studies. This leads on to our suggestions for 'scaling up' in **CAFETT TASK IV**.

- **Task Type 5 — Communication.**
  Communication must and will take place around all aspects of the social learning process and its outcomes. This raises the question of the perimeter of "stakeholder dialogues" for a project such as **CAFETT** and, more specifically, of the ways in which different ETT actors in French society (or even beyond) are implicated in the activities of the project. So, the question of communication is inseparable from the methodology question set out in Sub-section §3.1 above, of the roles of different categories of persons, as ETT actors in French society, in each facet of the social learning process and its outcomes. We come back to this point also in Sub-section §3.6 below. Finally, it should not be forgotten that communication also covers a great number of technical tasks, often in the first instance "internal" to the project team (e.g., the framing of evaluation tasks, the selection of indicators (by whom, for whom?), the compilation of Candidate Indicator profiles and their integration in a KIK catalogue on-line; and the reporting of outcomes of multi-criteria evaluations). In the case of CAFETT, a great number of working documents have been produced, punctuated by the higher-profile products as intermediate and final reports. These "internal" tasks may nonetheless be significant resources for subsequent communication with ETT stakeholders "external" to the CAFETT Project itself.[36]

§3.6 Structure & Process for the CAFETT Case Studies

We now summarise the key methodological conventions adopted in the course of building the ETT deliberative evaluation case studies that are the subject matter of **CAFETT TASK III**. In Sub-section §3.4 above we provide a schematic representation of the structure of "knowledge partnership for sustainability" that we propose, via the vision of collaborative process expressed in INTEGRAAL and made operational with KerDST in 'ePLANETe', as a framework for exploration and negotiation on ETT social acceptability.

In particular, we have identified, at the intersection of the "supply" and "demand" considerations, four distinct axes along which the question of the "pertinence" of a Candidate Indicator for evaluation of ETT social acceptability might be appraised. We will restate these four axes and then, for each axis in turn, we discuss the conventions adopted in CAFETT for their composition.

- The spectrum of different **SITUATIONS/OPTIONS TO BE APPRAISED AND COMPARED**. For our problematic of ETT Social Acceptability, several axes or hierarchical levels of typology will be required. It is necessary to focus, on the one hand, on the **TYPE/CATEGORY OF ENERGY TRANSITION TECHNOLOGY** (or system or sector) and, on the other hand, on the individual specific **TERRAINS** — that is, the context of ETT deployment or scenarios of possible deployment.
- The **ACTORS** in a social choice problem — in this case ETT — who play fundamental roles on both the 'supply' side and the 'demand' side of the knowledge economy. On the 'supply side' they contribute as categories of **KNOWLEDGE HOLDERS** (disciplines, institutions…) around the ETT opportunity with suggestions of Candidate Indicators. They are engaged also as **STAKEHOLDERS** on the 'demand side' in the process of indicator-supported deliberation about the quality and acceptability of an ETT project.
- The various categories of **ANALYSIS TOOLS/METHODS/CONCEPTUAL FRAMEWORKS** that have been recognized as potentially useful for generating knowledge and/or as methodological options for defining indicators and for organizing evaluation.
- The **PERFORMANCE/QUALITY/ACCEPTABILITY CRITERIA**, covering both system performance and wider social acceptability issues, recognized as important for the ETT problem or problems under consideration.

1/. The ETT sectors, sites or technology options to be appraised. The problematic of energy transition for sustainability (and solidarity) is, as highlighted in our Introduction, a vast hydra that ramifies into all sectors

[36] Some (but not all) of these intermediate products are included as annexes in the CAFETT final reporting. As is well known, the management of these various products becomes a project sub-task in itself. The 'ePLANETe' platform incorporates state-of-the-art document management functionalities (referred to as the management of 'fruits' within the Babel Gardens) with CMS technologies on a website), but this remains largely invisible unless a supplementary effort is engaged to provide signposting for user community exploitation in teaching or up-scaling research/observation modes.

of economic activity and all dimensions of politics. Without going back into all that, we present, in the text-box below, the four themes retained at the proposition stage within **CAFETT**:

THE FOUR THEMATIC ETT DOMAINS IDENTIFIED FOR CONSIDERATION IN CAFETT

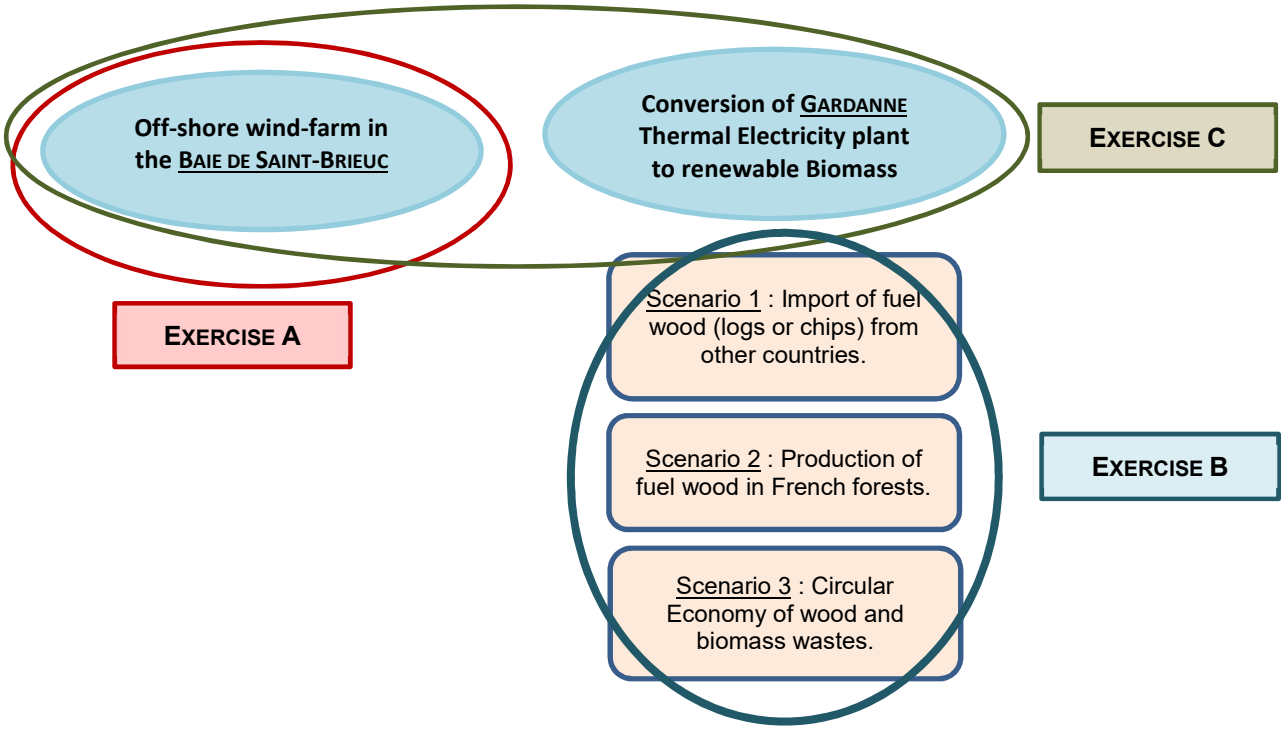
- OFFSHORE WIND FARMS & CARBON SEQUESTRATION TECHNOLOGIES in which main losses generally claimed are related to impacts on surroundings.
- ENERGY EFFICIENCY IN BUILDINGS in which impacts on behavior/habits are central as well as sometimes on integrity/privacy (e.g., the Linky controversy and other home automation),
- IT BASED SHARING INITIATIVES AND PRODUCTS, for which BlaBlaCar could be an interesting eco-energy case study, in which the potential losses of integrity/privacy generally claimed regarding the IT process has been bypass by crystallizing around the desire of conviviality (BlaBla...)
- BIOGAS / BIOFUELS / BIOENERGY, for which it could be interesting to appraise international cultural and sociological territorial differences with regard to the role of national policies and politics.

After some preliminary and quite wide-ranging investigations (which are summarized in the **CAFETT TASK III** Report), the choices were made to focus our experimental deliberation exercises on two specific domains, those of (1) the off-shore wind-farm in the **BAIE DE SAINT-BRIEUC** (northern Brittany); and (2) the reconversion of the **GARDANNE** thermal electricity generation factory (in southern France) to the use of renewable biomass energy sources. The specific deliberation exercises are presented in the schema below (taken directly from the **CAFETT TASK III** Report). Three distinct "piecewise" evaluation exercises were carried out. These are:

Exercise A — A multi-criteria multi-stakeholder evaluation of the Quality-Performance profile of the planned off-shore wind-farm in the **BAIE DE SAINT-BRIEUC** (northern Brittany), currently in the advanced planning, permission and technology deployment stages.

Exercise B — A multi-criteria multi-stakeholder comparative evaluation of the Quality-Performance profile of 3 contrasting scenarios for the mix of future biomass supply to the **GARDANNE** thermal electricity generation factory (in southern France).

Exercise C — A multi-criteria multi-stakeholder comparative evaluation of the Quality-Performance profile of the planned off-shore wind-farm in the **BAIE DE SAINT-BRIEUC** and the **GARDANNE** thermal electricity generation factory, as contributions to French national energy and ecological transition strategy.



The kerDST framework for appraisal of ETT projects or options for action is organised as a multi-actor multi-criteria 'matrix' of judgements, and so requires that both stakeholder categories and performance criteria be specified. The can, in principle, be carried out through expertise drawing on documentary sources and consultation with stakeholders, or directly through stakeholder deliberation about adequate typologies. In **CAFETT**, we have developed our typologies on the basis of extensive consultation with national and local stakeholders, complemented by documentary sources and our own methodological expertise.

We adopt the view that, whatever the sources of intelligence, it is necessary to impose parsimony. Comprehensive typologies (e.g., high level classes with subclasses) can improve intelligibility for general discussion purposes but can become confusing and unwieldy when it comes to mobilising indicators and interpreting results. So, we adopt the position that relatively simple lists of stakeholder classes and performance concerns will be appropriate, as a function of each ETT case study context.

Within the Knowledge Partnership framework set out in Sub-section §3.4, the **ACTOR** and **PERFORMANCE/QUALITY** classifications have important roles as "bridges" between descriptive and normative dimensions of evaluation — that is, between the 'supply side' and the 'demand side' of the knowledge economy. We discuss each of these axes in turn.

2/. Classifications of ETT Actors. A methodological question needing to be resolved (as for any KerDST application) is: Do we retain the same classification for Actors as Knowledge Holders as for Actors as Interested Parties in the Evaluation phase of the deliberation process?

In some contexts where priorities of public policy or corporate social responsibility (CSR) are well articulated, and where there are well defined axes of dialogue with stakeholders, it may be efficient to employ the same high-level categories on both sides of the knowledge economy. For example, the CSR classifications previously discussed such as **Governance/Regulatory Authorities / External Stakeholders / Internal stakeholders**. But this question must be answered as a function of the specific ETT evaluation terrains, where finer Stakeholder demarcations will in most cases be required.

In the case studies carried out and reported in **CAFETT TASK III**, we adopt a classification of Stakeholders as Interested Parties in the deliberation about the two ETT projects (Baie de Saint-Brieuc, Gardanne) that is based on the observed patterns of real controversy around the projects, and that closely reflects the positioning of recognised groups, networks and institutions around local territorial, sectoral interest, environmental and sustainability concerns.

- One reason for this methodological choice was to facilitate the comparative evaluation (in Exercise C) of the planned off-shore wind-farm in the **BAIE DE SAINT-BRIEUC** and the **GARDANNE** thermal electricity generation factory as contributions to French national energy and ecological transition strategy and, in this way, to investigate the prospects for a stakeholder typology that might be robust across a wider spectrum of ETT projects and programmes.
- A second reason for this choice was to keep open the opportunity to exploit independently the axis of typology of Actors as Knowledge Holders, in order to ensure the robustness of the typology of Candidate Indicator sources.

These considerations are all discussed in detail in the **CAFETT TASK III** Report.

3/. Typology of Quality/Performance issues. This axis is fundamental for structuring the 'demand side' of the knowledge economy — that is, for candidate indicators that will be mobilised to signal social acceptability. But it has a complex status because, as discussed, indicators have both descriptive and normative dimensions. Stakeholders engaged (professionally or in civil society) as suppliers of Candidate Indicators, that is, as Knowledge Holders, are likely to hold views as advocates for (or against) the 'pertinence' of an indicator not just for its descriptive quality but as a function of its saliency for judging the ETT project in normative terms. In other words, the "fitness for purpose" of a Candidate Indicator is its saliency in the

process of indicator-supported deliberation about the quality and acceptability of an ETT project. The meaningfulness of an indicator concept in scientific terms may itself be an important consideration (this, indeed, could be a theme on the Quality-Acceptability axis!), but fitness for purpose in our context is inseparable from the spectrum of normative considerations informing ETT quality and acceptability.

We can anticipate that, as a function of the scope and complexity of the deliberation process, several axes or hierarchical levels of typology may be required. **Section §2** above has given an example of multiple 'Ethical Bottom Lines' with two tiers of hierarchy, where each high-level principle being associated with a set of subsidiary questions or principles. We have also discussed a 6-fold classification of wealth-capacity-vulnerability, which allows for the impacts of an ETT project to be described in a "**distributed**" way, and whose six themes might equally be sub-divided into lower-level typologies (e.g., environmental distribution could be split into consideration of different sub-classes of ecosystem services, coming from distinct Biosphere sectors such as from fresh water, from air, from productive soil, and so on…). These are two formats that lend themselves as classification schemas (potentially complementary rather than exclusive) for defining the descriptive and normative pertinence of Candidate Indicators.

In our experimental KerDST deliberation exercises reported in **CAFETT TASK III**, we choose to employ relatively parsimonious typologies of 'Ethical Bottom Lines' with only one level of quality considerations. However, we show how other features of the 'ePLANETe' platform can be exploited in order to characterise indicator "fitness for purpose" in complementary ways, using typologies mobilised in the "back room" of the indicator cataloguing system.

4/. Typology of Candidate Indicators in terms of categories of Analysis Tools/Methods or broader Conceptual Frameworks that have been recognized by Actors as useful for generating knowledge and for defining indicators envisaged for use in multi-criteria evaluation. This axis does not directly contribute to the KerBabel Deliberation Matric structure, but it is important for characterizing the diversity of indicator sources. Many different conventions might be adopted for this classification, and this depends very strongly on the type of situation being addressed and the integration stakes.

In the **CAFETT** case studies (as reported in detail in **TASK III**) we have demonstrated three main procedures for the identification of "candidate indicators" that subsequently are catalogued so as to be exploitable as signals within the Deliberation Matrix framework. These are:

- First, the use of **DISCURSIVE "ARGUMENTS"** formulated by stakeholders around ETT controversies, whose sources are data and documents available on-line and analysed by the **Metamètis** team in **CAFETT TASK I**, as part of the ETT controversy mapping procedures.
- Second, the documentation of quantitative or qualitative performance considerations suggested through direct stakeholder consultations, as carried out by the **ePLANETe Blue** team in the preliminary stages of **CAFETT TASK III**. We engaged with a considerable diversity of stakeholders including (i) persons active in ETT project development and/or in public debate around these projects; (ii) persons with public policy and territorial administration responsibilities at national and regional levels; and (iii) a spectrum of professional, life-long and first-time higher education students, mostly at Master level, in programmes addressing a variety of sustainability, CSR, risk management and territorial development themes — these latter being considered as representatives of 'informed civil society'.[37]

[37] The solicitation of stakeholders' opinions has been carried out through direct discussions in several ways: via focus groups (small group discussions), and via individual interviews (sometimes by telephone but most often face-to-face). From a social sciences standpoint, the key methodological requirement is to ensure contact with a *representative diversity* of stakeholders around each chosen ETT theme. Experience with analogous exercises shows that it is typically necessary to consult with at least 25-30 persons of sufficient diversity in order to get a good feel for the main axes of opinion, and to grasp the lines of confrontation when they occur. In our **CAFETT TASK II** work, we have satisfied these base requirements for representative diversity. (Indeed, larger numbers of people have, in some cases, been engaged with, notably through multiple group discussions involving students; however this has not necessarily increased the overall diversity.)

- Third, the appropriation as **DISCURSIVE "ARGUMENTS"** or (in some cases) quantifiable performance considerations, of the lists of policy goals, intentions and actions set out in key territorial, national and European policy documents. In particular, for the purposes of an experimental comparative evaluation of different ETT projects, represented by **GARDANNE** and the **BAIE DE SAINT-BRIEUC**, we have incorporated (1) the official *EUROSTAT* set of circular economy indicators established during 2017-2018 as a framework for member country reporting; and (2) the set of "50 Mesures pour une économie 100% circulaire" set out in the *French 2018 Roadmap towards a Circular Economy*.

We have used the **Tools & Methods** classification axis within the ePLANETe platform to record these methodologically distinct origins. This allows us not only to highlight the specific contributions to a KerDST evaluation result provided by indicators having a specific origin, but also to modulate the composition of Candidate Indicator catalogues for future applications to ETT project or other transition project evaluations.

Finally, the question arises of the mix of persons engaged directly in the CAFETT TASK III deliberative evaluation process. The intention in **CAFETT** was not to engage a full diversity of ETT project, territorial and public policy directly in every step of a participatory deliberation process. This would be an onerous undertaking, with very substantial time, coordination and financial costs, as much for the stakeholders as for the **CAFETT** project team members. More particularly, it does not make sense to engage such a fully participative procedure unless there exists a specific context providing high motivation, and hence mobilisation, on the part of the stakeholders concerned.

Our purposes in **CAFETT** were to demonstrate the feasibility of indicator-based multi-criterial multi-actor evaluation of ETT projects and, on this basis, to demonstrate the potential benefits of such procedures for anticipating the main features of ETT controversies and for structuring processes of stakeholder dialogue as a contribution to constructive resolution of situations of controversy.

To this end, our strategy was to engage groups of students, at Master level,[38] to undertake demonstration exercises of indicator-based multi-criterial multi-actor evaluation of ETT projects. The several roles of the students were, in this context:

- To contribute through discussion with the **CAFETT TASK II** leaders, to decisions about the KerDST axes to be retained for structuring the ETT project evaluations;
- To contribute to the compilation and classification of the KIK (KerBabel Indicator Kiosk) catalogue of Candidate Indicators to be exploited for the Baie de Saint-Brieuc and Gardanne demonstration studies;
- To engage in a "role playing" exercise, with each student (or a small bunch of students) representing a specific category of stakeholder, for the selection of indicators to build up the cell-by-cell KerDST evaluation for each of the three demonstration exercises;
- To engage, again as a "role playing" exercise with each student (or a small bunch of students) representing a specific category of stakeholder, in the challenge of interpretation of the results of the evaluation exercise (for a specific stakeholder category, or for a specific performance consideration, or in a more transversal way), and of communication key points of these results to the other students in their roles as stakeholders for the spectrum of stakeholders;
- To reflect on the strengths and weaknesses of the deliberation exercise, on its potential usefulness, and also its limits, as a contribution to collaborative learning about the challenges of energy and ecological transition.

[38] The contributions to CAFETT were provided by the students in the 1st Year Master (M1) Programme GETEDELO at the University of Paris Saclay under the responsibility of Dr. Jean-Marc Douguet et Prof. Cécile BLATRIX, during the 2017-2018 teaching year. The acronym GETEDELO stands for *Gestion des Territoires et Local Développement* Local, which translated gives something like Territorial Resource Management and Local Development. This corresponded to their course requirement on topics of indicator systems for territorial development and the use of digital deliberation support technologies.

On this last point, the students were invited to step out of their "role play" and to carry out a reflexive appraisal of the usefulness, and eventual limits, of the deliberative evaluation tools and processes (1) as a component of their higher education programme; and (2) as a methodological resource in their own future, or others' professional practices.

§3.7 Scaling up? — Towards CAFETT Recommendations

Through the students' collective efforts, the results of each Case Study (the three deliberation exercises set out above) have been be documented within the Deliberation Matrix framework (of Actors x Performance Issues). In subsequent discussion and CAFETT reporting (both oral and written), these results and the lessons learned have been put in juxtaposition with the insights obtained via the **CAFETT TASK I**.

For the purposes of demonstration in **CAFETT TASK III**, and hence in the reporting on each Case Study, we have adopted typologies of stakeholders and performance/acceptability issues that seemed, on balance, to respect our own rule of parsimony while still providing cogent insights into the challenges of the specific ETT domain. Nonetheless, through the sequencing of the three Case Study presentations, we show the opportunities for exploiting different classification frameworks, and for enriching the systems of indicator classification and comparison of ETT controversies in a number of different ways. Several supplementary layers of analysis can be engaged, in the foreground and in the background for each Case Study terrain.

This reflection of applications to a wider spectrum of ETT projects and controversies has then been deepened through discussions in interface with the **CAFETT TASK I** analyses covering a wider cross-section of ETT controversies. This paves the way for our design recommendations in **CAFETT PART IV**.

Overall, several different ways of structuring the question of ETT performance and social acceptability have been exploited in an experimental process across the four case study domains. Although it is possible to identify robust generic frameworks at a high level of synthesis, no single typology of acceptability issues is wholly pertinent across the diversity of ETT terrains under consideration. Moreover, attempts to be sensitive to "local specificities" while retaining the ambition of wide (e.g., national or international) comparability, can easily end up very cumbersome.

This means that any design for an Observatory of ETT terrains and controversies will need to navigate deftly between high level 'generic' considerations and lower-level typologies that are closer to the language and preoccupations of stakeholders. We will come back to this consideration in **CAFETT PART IV**.

We should also, for completeness, reflect on possible blind spots and limitations of our chosen approach. Once again this can be left mostly to in **CAFETT PART IV**. However, some preliminary remarks in anticipation are in order.

Let us return for a moment to the specificities of KerDST Deliberation Matrix. Cell by cell, as the deliberation process is pursued, the Deliberation Matrix becomes more colourful, each cell's colour profile being generated by the participants and/or by the indicator baskets composed for it. As the cells are filled in by the participants — with simple colours or composite "baskets" of indicators, as the case may be — an overall impression of the evaluation outcome is obtained by appraising the colour patterns — from scenario to scenario, from actor to actor, from issue to issue.

Reflecting on the pattern of judgements built up, the users/participants in the deliberation are encouraged to appreciate the pros & cons of each option (or the relative merits and deficiencies of each situation) ***not only from their own point of view but also as signalled by the other participants/stakeholders in the system***. The qualitative scoring and visualisation features are to be understood in the light of the declared purpose of the deliberation support process. The main accent is not on the production of data nor on quantitative measurement, but rather on the process of organizing and structuring **qualitive information** in order to produce, negotiate and communicate a meaningful multi-stakeholder performance appraisal.

Our key design criteria therefore, are not so much what is methodologically coherent (which we can consider as necessary but not sufficient), but what is ergonomically feasible and socially powerful. By socially powerful we mean, following the sustainability precepts of respect for diversity and solidarity, the adoption of frameworks of evaluation that visibly give status to a wide diversity of stakeholders. It is thus inevitable to seek tools that, within a wider procedure, will make divergences visible but that will also facilitate "dialogues" and deliberation respectful of this diversity.

The design conventions adopted for **KerDST** in favour of the immediacy and visibility of user contributions — scoring by colour, and mobilisation of indicators as concepts — come at a cost. There is, for example, no possibility of "scoring" performance based on analytical algorithms calibrated by empirical data and agreed reference values. In this sense, there is a "trade-off" between immediacy and saliency of users' contributions, and the quantitative analytical/scientific anchoring of the evaluation.

Is this a high cost? It is well-known that many procedures for careful empirically grounded evaluations get terribly bogged down in onerous processes of model development and calibration, and of data collection, management and exploitation. It may be that this "trade-off" between certain considerations of empirical scientific rigour, and the immediacy and saliency sought for robust stakeholder dialogues, is an inevitable one. If it is, then the question needing to be asked is: ***What qualities of an ETT evaluation are most essential (and, what qualities might reasonably be sacrificed, and to what extent) as a function of the societal (and not purely scientific) purposes of the evaluation?***

This is the core DST design question that this report has sought to pose and to explore. In line with our general desideratum of **FITNESS FOR PURPOSE**, we can argue for the adequacy or pertinence — or fitness — of a deliberation support procedure, only with reference to a vision of its purposes and to the societally defined quality considerations. And, just as there are many steps along the life cycle of an ETT project, and there are many stakeholders positioned at different steps along the road, there is not one single vision of the purpose(s) of ETT social acceptability evaluation. Rather, there may co-exist several different purposes, with greater or lesser degrees of consensus….

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ANNEX A

This annex presents and interprets the evolving European legal landscape defining the scope and purposes of public involvement in decision-making and policy for technology, risk management and environmental issues. As such, it provides an institutional backdrop to the preoccupations with social acceptability, through discussing the status accorded — in moral, political philosophy and legal terms — for the engagement of stakeholders in the conception and appraisal of policies, projects and other actions that impact on their lives.[39]

Evolution of the European Community's Regulatory Environment towards Enhanced Public Involvement in Risk Management

Many of the European Community's programmes and policies are based on the principle that policies and projects should involve the communities and individuals affecting and affected by them through out the whole process of design or decision. This is a fundamental principle of democratic government. However the way in which it may be given effect evolves through time.

The past twenty years have been marked by a progressive movement from the notion of "information being supplied to the public" to concepts of active "public participation in" technological risk assessment and risk management. Over time, we see an incremental extension of rights from the right to be informed, through the right to know, and thus from access to information, to the right to participate in decision situations. In this sense, the active agency of the general public — that is, their roles and their rights to take action in certain political domains as citizens, as representatives of certain interests and as consumers — is being progressively enhanced.

In a general way, regulation about the involvement of the public in decision situations is based on the principles of subsidiarity and shared responsibility, dialogue and partnership as expressed in the Treaty on European Union. Indeed, principles and objectives defined by the action programmes of the European Communities on the environment of 1973, 1977, 1983 and in particular the action programme of 1987, call for devising *'ways of improving public access to information held by environmental authorities'*.

At the EU institutional level, the civil society may participate in the development and implementation of Community policies and laws through, for example, the Economic and Social Committee which represents

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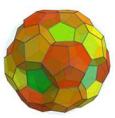
[39] The annex material is adapted from a section of the paper by O'Connor & van den Hove (2001). That exposition itself drew extensively from: De Marchi, B., Funtowicz, S. and Guimarães Pereira, Â. (2000) 'Communication to the Public About Accident Hazards: From the Right to be Informed to the Right to Participate', Int. J. Environment and Pollution, Vol.13. See also: Baram, M. (1991). Rights and duties concerning the availability of environmental risk information to the public. In R. E. K. &. P. J. M. Stallen (Ed.). Communicating Risks to the Public. Dordrecht, Kluwer; European Communities (1982). "Council Directive of 24 June 1982 on the major accident hazards of certain industrial activities (82/501/EEC)." Official Journal of the European Communities L 230, 5 August; European Communities (1989). "Council Resolution of 16 October 1989 on guidelines to reduce technological and natural hazards." Official Journal of the European Communities C273, 26.10.1989; European Communities (1993). "European Council Resolution 93/C 138/01 of the Council and the Representatives of the Governments of the Member States, meeting within the Council of 1 February 1993 on a Community programme of policy and action in relation to the environment and sustainable development." Official Journal of the European Communities C 138 of 15.05.1993, p.1.



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social institutions ranging from industry to trade unions, from consumer to environmental organisations. The Committee of Regions gives regional governments a formal role in European Union government. The Regulation that establishes the European Environment Agency (EEA) in 1990 — see Box 1 — considers in its Article 6 a specific mission of disseminating and making available environmental information to the public: *"Environmental data supplied to or emanating from the Agency may be published and shall be made accessible to the public, subject to compliance with the rules of the Commission and the Member States on the dissemination of information, particularly as regards confidentiality."*

Box 1 – European Framework

Type of Document	General Aim
Resolution of the Council and the Representatives of the Governments of the Member States, meeting within the Council of 1 February 1993 on a Community programme of policy and action in relation to the environment and sustainable development **(93/C 138/01).** Published on 17/05/1993.	A policy and strategy for the environment and sustainable development within the European Community. Point 7.3 relates specifically to public information and education.
Council Regulation (EEC) no 1210/90. *Official journal NO. L 120 , 11/05/1990 P. 0001 – 0006*	On the establishment of **the European Environment Agency** (EEA) and the European Environment Information and Observation Network.
UN ECE Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-Making. Sofia, October 1995	Guidelines on Access to Environmental **Information** and **Public Participation** in Environmental Decision-Making, Environment for Europe Ministerial Conference.

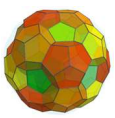
Referring to **Box 1**, the Community programme of *policy and action in relation to the environment and sustainable development* (implemented by Council resolution in 1993), establishes an action and policy programme on the environment. The Programme proposes the adoption of a mix of instruments, to be implemented with the contribution and the permanent support of the civil society. The level and quality of dialogue among the different actors are maintained to be key elements for success. The concluding statement reads as follows:

> "This Programme is not merely a task for the Community institutions: it will require the full partnership and full support of all the actors necessary to make it work. The Community can only provide the framework.... The Community and all its citizens must take their responsibilities in their own hands. It is above all a shared responsibility which requires collective action" (European Communities, 1993).

Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-Making were set in the *Environment for Europe Ministerial Conference* held in Sofia in October 1995. These guidelines are grounded in Principle 10 of the Rio Declaration on Environment and Development mentioned earlier. They not only address public access to environmental information but they also advocate the need for public participation in environmental decision making.

COM/98/0344 is a recent proposal by the European commission for a Council Decision on the signature by the European Community of the UN/ECE, concerning a Convention on access to information, public participation and access to justice in environmental matters.

Box 2 lists key EU legal documents that refer to obligatory provision of information to the public for environmental, health and consumer protection related issues.



Box 2 - Right to be informed

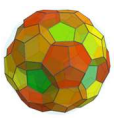
Type of Document	Summary
Council Directive 82/501/EEC. *Official Journal L 230 , 05/08/1982 p. 0001 – 0018.*[40]	On the **major-accident hazards of certain industrial activities**.
Council Directive 89/618 EURATOM. *Official journal NO. L 357 , 07/12/1989 P. 0031 – 0034.*	On **informing the general public** about health protection measures to be applied and steps to be taken in the **event of a radiological emergency**.
Council Directive 89/395/EEC, amending Directive 79/112/EEC. *Official Journal L 186 , 30/06/1989 p. 0017 – 0020.*	On the approximation of the laws of the Member States relating to **labelling, presentation and advertising of foodstuffs** for sale to the ultimate consumer.
Council Directive 90/496/EEC. *Official Journal L 276 , 06/10/1990 p. 0040 – 0044.*	On **nutrition labelling** for foodstuffs.
Regulation (EC) No 258/97 of the European Parliament and of the Council. *Official Journal NO. L 043 , 14/02/1997 P. 0001 – 0007.*	Concerning **novel foods and novel food ingredients**.
Commission Regulation (EC) No 1813/97. *Official Journal L 257 , 20/09/1997 p. 0007 – 0008.*	Concerning the compulsory indication on the **labelling of certain foodstuffs produced from genetically modified organisms** of particulars other than those provided for in **Directive 79/112/EEC**.
Council Regulation (EC) No 1139/98. *Official Journal L 159 , 03/06/1998 p. 0004 – 0007.*	Concerning the **compulsory indication of the labelling of certain foodstuffs produced from genetically modified organisms** of particulars other than those provided for in Directive 79/112/EEC (namely, genetically modified soya beans covered by Decision 96/281/EC and genetically modified maize covered by Decision 97/98/EC).

Box 3 lists key EU legal documents that refer to provision of access to information to the public for environmental and health related issues. Going beyond the previous framework, we note here that the public has the "right to know", meaning that they are entitled to have ready access to information on the risks, policy matters and governance processes in question.

Box 3 - Right to know

Type of Document	Summary
Council Directive 88/610/EEC, amending Directive 82/501/EEC. *Official journal NO. L 336 , 07/12/1988 P. 0014 – 0018.*	On the **major-accident hazards** of certain industrial activities.
Council Directive 90/313/EEC. *Official Journal L 158 , 23/06/1990 p. 0056 – 0058.*	On the freedom of **access to information on the environment**.

[40] Directive 82/501/EEC in its Article 8 stated that persons liable to be affected by a major accident should be informed. This directive was subsequently amended by Council Directive 88/610/EEC for the very same article, where it is stated that the information should be publicly available, therefore extending the right to be informed to the right to access the information. Labelling of food products is also considered here as one-way information flow. The legal documents in this table present specific articles regarding information to the public addressing specific labelling requirements. Furthermore, this directive will be definitely replaced in 1999 by Council Directive 96/82/EC (see Box 3).



Council Decision 93/731/EC. *Official journal NO. L 340 , 31/12/1993 P. 0043 – 0044.*	On **public access to Council documents**.
Council Regulation (EEC) No 1836/93. *Official journal NO. L 168 , 10/07/1993 P. 0001 – 0018.*	Allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme (EMAS).

Council Directive 88/610/EEC amended *Directive 82/501/EEC* concerning public information. Article 8 was modified to state that the information on safety measures and on the correct behaviour in the case of an accident should be publicly available, thus extending the right to be informed to an access right on the information.

The *Council Directive 90/313* is a key instrument by which environmental information held by public authorities should be disseminated and should be made available. All member States have provided legal documents within their own national legal systems.

Council regulation 1836/93 encourages companies to engage in the EMAS scheme, by which environmental performance of industrial activities are evaluated and relevant information to the public is made available.

Box 4 lists the EU legal documents that refer to actual public involvement in decision situations concerning environmental and health related issues.

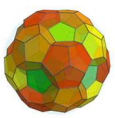
Box 4 - Right to participate

Type of Document	General scope
Council Directive 85/337/ EEC. *Official Journal L175, 05/07/1985 P. 0040-0048.*	On the **assessment of the effects of certain public and private projects on the environment**.
88/41/EEC: Commission Recommendation. *Official Journal NO. L 023, 28/01/1988 P. 0026 – 0026.*	On the involvement and improvement of consumer **participation** in standardisation
Council Directive 90/219/EEC. *Official Journal L 117 , 08/05/1990 p. 0001 – 0014.*	On the contained use of **genetically modified micro-organisms**.
Council Directive 90/220/EEC. *Official Journal L 117 , 08/05/1990 p. 0015 – 0027.*	On the deliberate release into the environment of **genetically modified organisms.**
Council Regulation (EEC) No 880/92. *Official journal NO. L 09, 11/04/1992 P. 0001 – 0007.*	On a Community Eco-label award scheme.
Council Directive 96/61/EC. *Official Journal L 257, 10/10/1996 p. 0026 – 0040.*	Concerning integrated pollution prevention and control.
Council Directive 96/82/EC. *Official Journal L 010 , 14/01/1997 p. 0013 – 0033.*	On the **control of major-accident hazards** involving dangerous substances.
Council Directive 97/11/EC amending Directive 85/337/ EEC. *Official Journal L 073, 14/03/1997 p. 0005 – 0015.*	On the **assessment of the effects of certain public and private projects on the environment**.

Referring to **Box 4**, we may illustrate how each specific legal documents serve to advance the principle of participation.

Council Directives 90/219/EEC and *90/220/EEC* consider that "*where a Member State considers it appropriate, it may provide that groups or the public shall be consulted on any aspect of the proposed deliberate release*".

Council Directive 96/61/EC enables the public to have access to information and public participation in the permit procedure of new industrial installations.



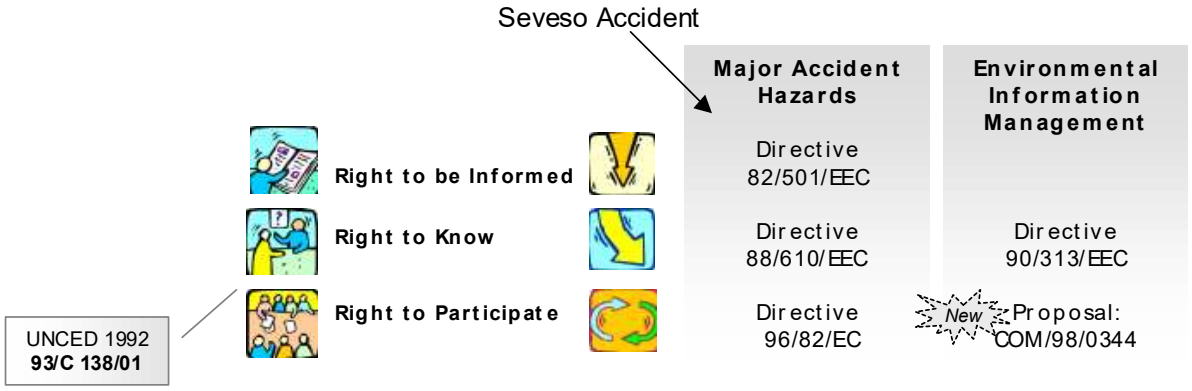
Council Directive 96/82/EC extends further the rights of public involvement and access to information, by introducing in Article 13, a provision for*: "ensuring that the public is able to give its opinion in some* cases" - planning for new establishments covered by Article 9, modifications to existing establishments, developments around such existing establishments.

The Council Regulation about eco-labelling considers in its article 6 the consultation of interest groups to define specific ecological criteria to award such labels.

Both *Council directives 85/337/EEC* and the newer *97/11/EC* consider that the public concerned with the projects undergoing assessment should express their opinions about them. However, a 'nuance' in what constitutes public involvement in the process makes the latter directive more effective in terms of actual possibilities for the public to influence the decision. In the former it states that opinion should be given 'before project initiates' whereas in the latter, 'before the development consent is granted'.

To gain an overview of this legislative evolution, consider **Figure 1** below, built up with reference to selected documents mentioned in boxes 2 through 4. The extension of rights of public involvement has taken place, chronologically speaking, through the directives on the Major Accident Hazards and Environmental Information Management.

Figure 1: The extension of rights illustrated for two directives.



The *Directive 96/82/EC*, on the Control of Major-Accident Hazards Involving Dangerous Substances, is the result of a long process of consultations between the Commission and the Competent Authorities of the Member States, and further subjected to the co-decision procedures established by the Maastricht Treaty. Article 13 of the new Directive designated as "information on safety measures", concerns public information. It reproduces article 8.1 of the previous directive in its amended version of 1988, but with some important additions. These concern the time limits defined for the revision of the information (three years), and its repetition (maximum five years). Also the adverb 'permanently' is added to specify the requirement for the availability of the information to the public.

The article refers to Annex V, as a minimal requirement, which is exactly the same as the previous Annex VII to the Directive 88/610/EEC. It also contains a very significant novelty, specifying that the safety report is to be made available to the public, though assuring confidentiality on certain parts, if so required by the operator.

This is a quite innovative feature showing how arguments about the 'incompetence' of the general public to consider such information have been put aside. The 'general public' is no longer defined (implicitly) as an undifferentiated mass of rather ignorant people, but as a community of diverse actors, individual and collective, having specific spheres of competence and interest.

Another novel feature is the recognition of the right of the public to provide an opinion in some special cases and under certain conditions, namely:

(1) planning for new establishments covered by the article 9 of the directive;

(2) modifications to existing establishments under the article 10;

(3) developments around such existing establishments.

Under item (1), the updated inventory of the dangerous substances used or stored in the establishment is to be made available to the public.

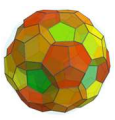
Through these comprehensive and permanent public access provisions, Article 13 goes beyond 'public information' and promotes 'public participation' in the sense of an active regard for and taking of responsibility about the satisfactory management of risks by the interested public. This gives rise to the permanent political requirement to manage the process of commentary, query, alarm and critical evaluations that may arise from this new information appraisal process. The establishment of adequate governance procedures, providing for exchange of views, consultation with stakeholders, and deliberation on appropriate responses to situations of urgency and gravity, is now a new challenge for all the Member States, both in legal and in practical terms.

In many parts of the Directive 96/82/EC, besides article 13, one can envisage principles and measures devoted to improve public safety and to favour extended collaboration in the prevention and management of industrial risk. A comprehensive declaration of the preference granted to extended collaboration can be found in point 20 of the Preamble to the new Directive, where it is stated that "(...) *the staff of an establishment must be consulted on the internal emergency plan and the public must be consulted on the external emergency plan*". Here, the legislator seems to recognise that the local knowledge, of a lay type and derived from everyday experience, ought to supplement technical, expert competencies.

* * * * * * * * * *

In sum, the recognition of the European citizens' "right" to taking part in policy decisions on risks and the environment is by now strongly established as a guiding principle of the European legislation and policy for risk governance, management and appraisal. Full realisation of this model of participative governance is, of course, yet to be accomplished, as it requires broad changes in terms of professional and institutional practices, and the implementation of new tools and procedures for information sharing, deliberation and concertation.[41]

[41] Some Selected References: De Marchi B. (1997) 'Seveso : From Pollution to Regulation', International Journal of Environment and Pollution 7(4), pp. 526-537. De Marchi, B. and S. O. Funtowicz (1994). General Guidelines for Content of Information to the Public. Directive 82/501/EEC Annex VII. Luxembourg, Office for Official Publications of the European Communities,. EUR 15946 EN. De Marchi, B., S. O. Funtowicz, et al. (1996). Seveso: a paradoxical classic disaster. In J. K. Mitchell (Ed.). The Long Road to Recovery: Community Responses to Industrial Disaster. Paris, United Nations University Press: 86-120. De Marchi, B. & Ravetz, J. (1999), "Risk Management and Governance: A post-normal science approach", Futures 31(7), pp.743-757. Fishhoff, B. (1995). "Risk perception and risk communication unplugged: Twenty years of process." Risk Analysis 15(2): 137-145. Gow, H. B. F. and H. Otway, Eds. (1990). Communicating with the Public about Major Accident Hazards. London, Elsevier Applied Science. Horlick-Jones, T. & De Marchi, B. (eds., 1995), Special Issue on Scientific Expertise in Europe, Science and Public Policy 22(3). Lascoumes, P. (1998) 'La scène publique, nouveau passage obligé des décisions ?', Annales des Mines, avril 1998, 51-62. Theys, J. (1995), "Decision-making on a European Scale: what has changed in the relation between science, politics and expertise?", Science and Public Policy 22(3), pp.169-174. Vignon, J. (1996). "Gouvernance Environmentale." Carrefours Européens des Sciences et de la Culture 4(2-4).



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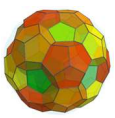

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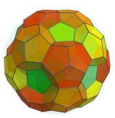

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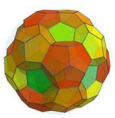

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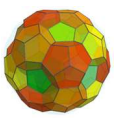

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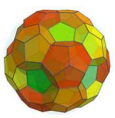

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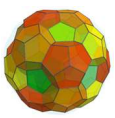

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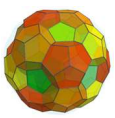

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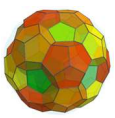

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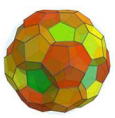


THE CAFETT TASK II STUDY TEAM

The **CAFETT** work program has been conducted on a project basis by a dedicated team of experts from MétaMètis, ePLANETe Blue and K2bPetroleum.

- **MétaMètis,** in Economic Intelligence and Data Mining
- **ePLANETe** in Collaborative Learning, Technology Evaluation Tools and Social Sciences
- **K2bPetroleum** in Energy Technologies and Strategic Consultancy

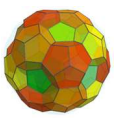
Joining forces in the CAFETT initiative, the three partners demonstrate the potential of Internet-based data resourcing and participatory evaluation process, exploiting state-of-the-art data analysis tools (MétaMètis), stakeholder deliberation concepts, and contemporary social networking tools (ePLANETe Blue), as a robust framework for analysis and negotiation of the social acceptability of energy transition technologies .

This interdisciplinary project shall engage a spectrum of social sciences action-research, data analysis and communication skills, that relies on a robust background competence in energy, economics and environmental domains (K2bPetroleum). The technical and scientific competences must be closely woven together and, this indeed is one of the specific features that the consortium brings.

The CAFETT TASK II has been carried out principally by the team from L'Association ePLANETe Blue, although in frequent consultation with other members of the consortium.

ePLANETe Blue (a non-profit NGO) was constituted in France in 2015 (under the law of 1901) *"to promote reciprocity relations at all levels and anywhere, between persons and organisations active in the domains of environmental education and knowledge partnerships for sustainability."* The organization has as a specific mission to assure the development, maintenance and good uses of the multimedia platform '*ePLANETe*' for collaborative learning and deliberation by its members and their partners. For the needs of CAFETT, the key participants were as set out in the box below.

- **Professor Martin O'CONNOR** is a Professor of Economics (Université Paris-Saclay) who specialises in interdisciplinary social sciences analysis at the "interface" between society and nature. He has published more than 150 articles and chapters in such fields as ecological economics, multi-criteria evaluation and scenario assessment, indicators for sustainable development, deliberative methods, social acceptability of risk, and environmental knowledge mediation, and since 2002 has led the KerBabel programme (now within L'Association ePLANETe Blue) for exploration of the potential of ICT for sustainability research, decision support and teaching.
- **Dr. Jean-Marc DOUGUET** is a senior lecturer in ecological economics (Université Paris-Saclay), and a specialist in fields of multi-criteria evaluation, risk analysis, local territorial development and sustainable agriculture. He has a long experience in applied social science research and with the use of KerBabel's deliberation support tools, notably the Deliberation Matrix that provides a framework for multi-actor dialogues around situations of risk and controversy.
- **Mr. Philippe LANCELEUR** is an education information technology specialist. The Kerbabel technical universe arose from his collaboration since 2002 with Martin O'Connor in coordinating multimedia projects at the C3ED research laboratory at the UVSQ. He contributes to the development of the KerBabel/ePLANETe tools, to their "tuning" for particular applications and to the support and documentation of stakeholder dialogues.
- **ePLANETe in the Cloud** is the association's worldwide network of International Scientific & Professional Associates. It includes Professor Sylvie FAUCHEUX (France), Prof. Isabelle NICOLAÏ (France), Dr. Aurélie CHAMARET (France), and Dr. Joachim SPANGENBERG (Germany). The scientific network also includes doctoral students (e.g., Borislav ANTONOV, Mariana BITTENCOURT) and others who have recently finished their doctoral theses (e.g., Clément MORLAT), who have exploited in various ways the KerBabel deliberation support tools for stakeholder-based appraisal of technologies and local development projects.



CAFETT

Citizens **A**ttitudes and **F**eedback
regarding **E**nergy **T**ransition **T**echnologies

A PROJECT PRESENTED AS PART OF THE PROGRAM

THE FUTURE OF ENERGY: LEADING THE CHANGE

Part III : Demonstration of the deliberation framework on selected ETT case studies

Part IV : Conclusion and recommendations

September 2018

PART III

DEMONSTRATION OF THE DELIBERATION FRAMEWORK ON SELECTED ETT CASE STUDIES

Table of contents – Part III

A NATURE AND PURPOSES OF THE DELIBERATION EXERCISES

The objectives of the deliberation exercises were to move from the methodology state-of-the-art to operational procedures by mobilising users communities, to demonstrate the KerDST method and tools as a proof of concept for ETT social acceptability applications and to test the opportunity to engage students in collaborative learning as they may be potential resources in support of territorial actions.

B STEPS AND TASKS IN THE KERBABEL DELIBERATION PROCESS EXERCISES

B.1 PROCESS

The KerBabel Deliberation process is an iterative and collaborative process, based on the 'INTEGRAAL' meta-method. This approach aims to engage experts and stakeholders in an integrated assessment process. Generally, this method is divided into six steps:

- Building the ETT evaluation problem
- Compiling the arguments catalogue
- Preparing the arguments and indicators classification
- Mobilising the arguments to compose the multi-actors/multi-criteria evaluation
- Sharing and communicating the results
- Discussing the findings and lessons of the deliberation exercise

Details of the INTEGRAAL method have already been described in Section §3 of Task II report.

For the CAFETT project, the six steps we have followed were:

Step 1: Identification of fields, objectives and scenarios (at regional and local levels), appropriate for energy transition technologies implementation, which can simultaneously satisfy technical feasibility criteria, economic profitability, environmental quality and societal acceptability.

Step 2: Structuration of the "social choice" issue, in terms of actors (stakeholders), categories of performance issues (eg sustainability of environmental services, economic viability, institutional feasibility, etc.) and technological options. This step is based both on an in-depth study of the field (including interviews) and literature.

Step 3: Mobilisation of the situation representation tools. For the CAFETT project, the knowledge mobilized come from the literature study, the interviews carried out with actors but also, from the statistical office of the European Union (EUROSTAT) and the French national circular economy roadmap.

Step 4: Mobilisation of the stakeholders identified on step 2 for a multicriteria evaluation of different case studies regarding the energy transition technologies implementation, from a more or less wide range of previously obtained indicators. These indicators will be transferred and analysed through a deliberation matrix called KERDST.

Step 5: Communication of the study results to the participants and also to a wider public. At this stage, we are moving from research to decision making.

Step 6: Feedback on the progress of the evaluation process.

B.2 PEOPLE INVOLVED

The people involved in the deliberation exercise were the CAFETT Partners, eg. MétaMètis and ePLANET Blue, and the students from M1 and M2 Master GETEDELO (UPSay) – "Gestion du Territoire & Développement Local".

B.3 TOOLS AND DATA

The realtime experimentation was made possible by means of the The 'ePLANETe' Deliberation Support Tools – KIK, Representation Rack, KerBabel Deliberation Matrix and The DIGISCOPE "MIRE" (Mur Interactif Research Enseignement) at the OVSQ-UVSQ.

The experimental ETT deliberations were structured along the four main axes of the representation grid, that is:

- The objects of evaluation attention (e.g., ETT solutions, sites, strategies, public/ private sector actions);
- The framing of the performance goals and challenges;
- The identification and roles of the different "actors" or stakeholders in the evaluation process;
- The types of indicators or "signals" of performance.

Attention to these four axes allowed us to define specific procedures for indicator selection, mobilisation and synthesis, moving where — and to the extent — desired from disaggregated stakeholder opinions towards aggregate indices or social acceptability scores.

The selection and composition of the indicators' basket is described in the Section §2 of Task III report Appendix A.

Sources of the Arguments mobilised in the Deliberation Exercises

For the CAFETT experimentations, three sources of 'Arguments' have been selected:

- The arguments provided by MétaMètis,
- The set of 2018 'Circular Economy Indicators' compiled and managed by Eurostat,
- The set of 50 Actions of the French "Feuille de Route vers l'Economie Circulaire" (Circular economy roadmap).

The exhaustive list of indicators and arguments selected is presented in the Task III report Appendix C.

The way how a relevance criterion is attributed for each of them is described in the Section §2 of Task III report Appendix A.

C EXPERIMENTAL EVALUATION EXERCISES

C.1 SITUATIONS TO COMPARE

Three situations have been chosen and compared to provide different opportunities of the ETT acceptability evaluation.

- Evaluation exercise number 1: characterise the Baie de Saint Brieuc offshore windfarm
- Evaluation exercise number 2: compare the acceptability of the Baie de Saint Brieuc offshore windfarm and the Gardanne biomass power station.
- Evaluation exercise number 3: Compare three scenarios for the wood fuels supply of the Gardanne biomass plant (Import of wood fuels; Supply of wood fuels from the French forest and supply from circular economy by-products).

C.2 SELECTED ISSUES

For the first experimentation, the issues selected were:

- Environmental performance (technical, know-how)
- Financial performance (best value for money and revenue/cost)
- Institutional framework for collective and heritage management of environmental resources
- Financial process needed for a sustainable green economy
- Operational and solidarity partnership (know-how along value chains)
- Societal backers (acceptability, prestige and enthusiasm factors)

The ETT acceptability issues were the same for the exercises 2 and 3, namely :

- Energy transition (Renewable energy, GHG, sustainability)
- Territory natural heritage (pollution, biodiversity, landscape ...)
- Territorial development
- Rural economy (including agriculture)
- Energy autonomy (proximity, national)
- Circular economy (waste recovery)
- Technical and financial performance
- Partnership and social cohesion

C.3 ACTORS INVOLVED

For the Baie de Saint Brieuc offshore windfarm experimentation, the stakeholders involved were:

- French State
- Territorial communities (sub-national)
- Rural and maritime economy actors
- Private companies located in the territories (excluding agriculture)
- Nearby residents
- NGOs / Associations (environment, quality of life, sustainable development)

- World of knowledge production actors
- Representative of the working world (unions ...)
- Project initiators
- Project sponsors

For the second and the third experimentations, the stakeholders involved were:

- French state
- Territorial communities (sub-national)
- Private companies located in the territories (excluding agriculture)
- Agricultural world actors
- Gardanne power plant executives (shareholders and management)
- Employees (and unions)
- NGOs / Associations (environment, quality of life, sustainable development)
- Local inhabitants (including various nearby residents)
- Researchers, teachers and students

The different scenarios results are presented in Section §3 of Task III report Appendix A, in tables showing each a specific point of view (eg. by situation, issues or actors).

D MAIN LEARNINGS

The exercises conducted with students have demonstrated that the multi-stakeholders and multicriteria framework for building deliberations is robust across ETT controversies. Major benefits of the framework can be hightlighted. The 3-dimensional matrix (Issue x Actor x Scenario), informed by « signals » that are the indicators and the arguments, is an accessible, efficient and effective framework for building up a « common ground ». Then, this deliberation framework gives a public and objective status and recognition to stakeholders and their concerns, at several levels. And specially, these are potentially useful starting points in real-life processes for « Building Trust » in public debate.

The substantial asset to be considered is that the multi-stakeholders and multicriteria framework used for building deliberations can be exploited, in appropriate ways, at several distinct stages along the ETT life cycle. During the early « scoping » or pre-feasibility studies of an ETT project, by providing insight into the issues likely to be critical for the prospects - or not - of building trust and for exploring the conditions for co-construction of project viability. Using a deliberation support tool (DST) at the design phase engages the project promoters, experts and stakeholders in a joint process to provide insight into the key points of confrontation and prospects of compromise. At any time during the project preparation and deployment stages, the framework may be used as a deliberation support tool (DST) for multi-stakeholders evaluation of decision options. Later on, this framework may be also useful for monitoring and review of project implementation

Along the stages of the ETT life cycle, the multi-stakeholders and multicriteria framework can also be exploited in several different but non exclusive ways. First, as a didactic tool to support learning and thinking about ETT controversies. By engaging all the stakeholders in a structured way on an ETT topic, an understanding is built up of the nature of the challenges and opportunities of the project. This understanding and knowledge of the project is the cornerstone for co-construction of confidence and acceptability. Then, the DST could also be a framework for experts' analysis, seeking to provide reliable in-depth insights into the key points of confrontation. They can provide their reasons and points of view and lay the foundations for the prospects (or not) of compromise. Lastly, the framework is a tool for structuring in-depth stakeholders deliberation and negotiation in a real project design, for supporting decisions and implementation processes.

At any time along the ETT or project life cycle, the deliberation tool may provide support regarding the specific topic of ETT social acceptability :

- On the one hand, as a scoping and didactic tool, either in-house or by stakeholder consultation, to support learning and thinking at the conception stages about of the nature of and perceptions of the project risks, namely by providing inputs to process design for building confidence and co-construction.
- On the other hand, as a permanent knowledge resources database gathering many case studies and indicator catalogues by and so contributing to reinforce societal capacity building (*Observatoire de Controverses*).

E LIST OF ANNEXES FOR PART III

ANNEX A	REPORT ON KERDST DEMONSTRATION DELIBERATIONS (*in French*)
ANNEX B	KIK FIELDS FOR INDICATOR PROFILES (KerBabel Indicator Kiosk)
ANNEX C	CONSOLIDATED LIST OF KIK CANDIDATE INDICATORS (A-Z by acronym) for the Gardanne and Baie de Saint Brieuc Case Studies
ANNEX D	THE MÉTAMÈTIS CLASSIFICATIONS OF ARGUMENTS IN CAFETT
ANNEX E	EXAMPLES OF PERFORMANCE ISSUES & ETHICAL BOTTOM LINES
	E/1 Aluminium CSR
	E/2 Performance Assessment Structure in the EURBANLAB 'B4U'
	E/3 Ethical Bottom Lines for Quality in Higher Education & Research
	E/4 Enjeux d'une Economie Verte
	E/5 Purposes and Principles of the NZ Resource Management Act 1991
ANNEX F	SLIDES – PRESENTATION CAFETT — TASK III (MAY 2018)
ANNEX G	THE CAFETT TASK III STUDY TEAM

ANNEXE A

Retours sur les expériences pédagogiques d'évaluation de l'acceptabilité des Technologies de Transition Energétique

Exemples de la Centrale Biomasse de Gardanne et des Eoliennes en baie de Saint-Brieuc

Cette annexe présente, en français, les expériences d'évaluation de l'acceptabilité des Technologies de Transition Energétique menées dans le cadre pédagogique des formations Master de la mention « Gestion des Territoires et Développement Local » (GETEDELO), de la School Biodiversité, Agriculture et Alimentation, Société et Environnement (BASE) de l'Université Paris Saclay.

Cette annexe s'insère dans la **Tâche T3** du projet CAFETT, qui vise à démontrer le cadre de délibération pour un petit nombre d'études de cas de controverses sur les Technologies de Transition Energétique. Cette preuve de concept pourra permettre d'envisager des applications participatives impliquant une diversité de groupes de parties prenantes.

The CAFETT project's work breakdown was as follows:

T1. Provide an international state-of-the-art mapping of ETTs controversies, with identification of key literature, providers of expertise and opinions, and performance-acceptability questions.

T2. Establish, in relation to the state-of-the-art, a methodological framework for interfacing inter-disciplinary ETT expertise with the views of consumers and citizens, in a multi-criteria multi-stakeholder dialogue around the potentials and conditions for societal acceptability of ETTs.

T3. Demonstrate this deliberation framework for a small number of selected ETT controversies case studies. This laboratory "proof of concept" will open the way to fully participatory applications involving a diversity of stakeholder groups.

T4. Recommend concrete solutions with regard to (i) specific ETT controversies that are the object of our pilot studies, and (ii) suitable methods for up scaling the enquiry into ETT controversies building and social acceptability process, with the view to establish a more permanent observatory capacity.

Deux situations ont été étudiées : le projet de parc éolien en baie de Saint-Brieuc et la Centrale Biomasse de Gardanne. Trois expériences d'évaluation ont été réalisées (voir Figure 0) : Expérience (1) Projet de parc éolien en baie de Saint-Brieuc ; Expérience (2) Comparaison des deux études de cas (Saint-Brieuc et Gardanne) et Expérience (3) Comparaison des scénarios d'approvisionnement en combustibles bois pour la centrale biomasse de Gardanne.

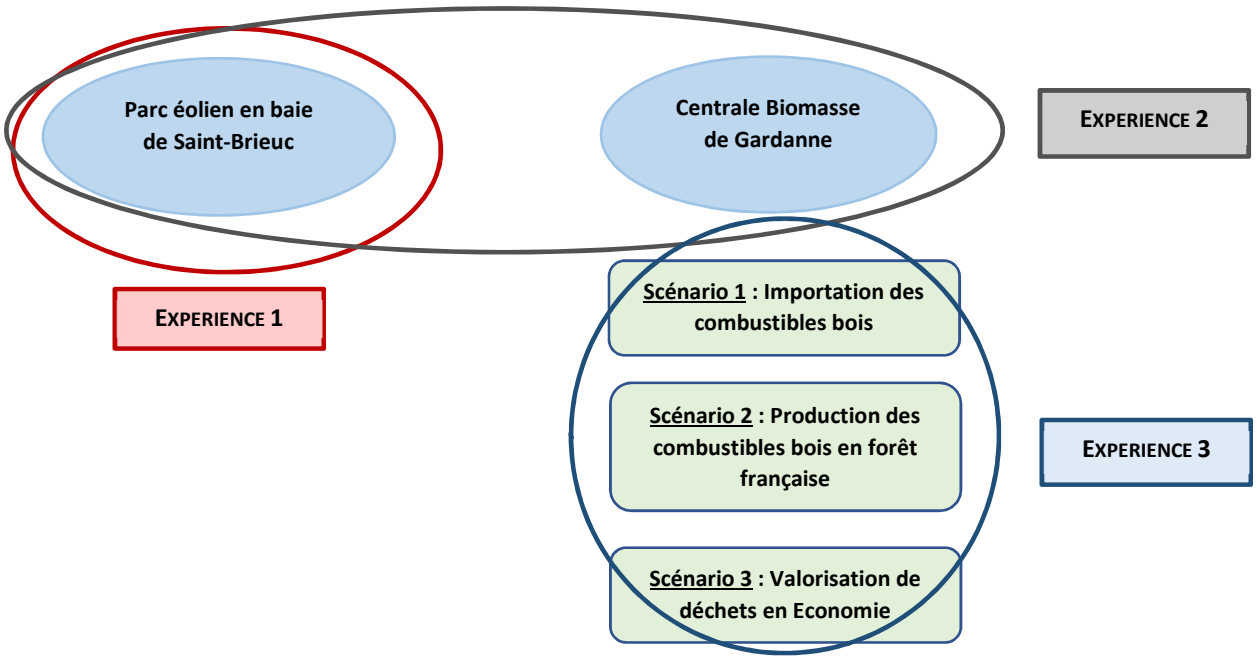


Figure 0 : Les trois expériences d'évaluation de l'acceptabilité des technologies de transition énergétique

Table des matières de l'ANNEXE A

1. EVALUATION DE L'ACCEPTABILITÉ DES TECHNOLOGIES DE TRANSITION ENERGÉTIQUE DANS UNE PERSPECTIVE PÉDAGOGIQUE

1.1 – Présentation de la méthode d'évaluation intégrée de l'acceptabilité

Diverses sessions d'évaluation de l'acceptabilité des technologies de transition énergétique (TTE) ont été réalisées au sein du Master « Gestion des Territoires et Développement Local » de la School « Biodiversité, Agriculture et Alimentation, Société et Environnement » de l'Université Paris Saclay.

Dans le cadre des unités d'enseignement « Initiation à l'Observation, à l'Analyse et à la Gouvernance des risques » (6 mars 2018, l'après-midi) et de « NTIC et Apprentissage » (20 et27 mars 2018, toute la journée) pour le Master 1 « Gouvernance des territoires, des risques et de l'environnement » (22 étudiants), et de l'unité d'enseignement « Atelier des risques » (19 et 27 avril 2018, toute la journée) pour le Master 2 « Analyse économique et Gouvernance des risques » (21 étudiants), l'évaluation de l'acceptabilité des technologies de transition énergétique a été structurée à l'aide de la méta-méthode INTEGRAAL. Il s'agit d'une démarche qui, à travers 6 étapes principales dont la réalisation n'est pas forcément linéaire), vise à engager experts et parties prenantes dans un processus d'évaluation intégrée (voir Figure 1). La déclinaison d'INTEGRAAL pour la problématique de CAFETT se présente comme suit :

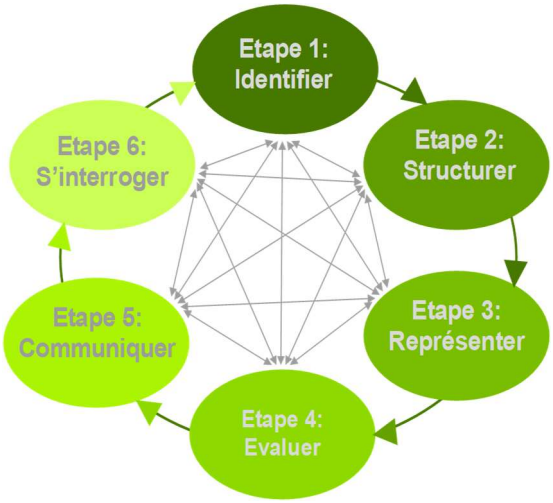


Figure 1 : La méta-méthode INTEGRAAL

- Etape 1 : Identification des terrains, des objectifs et des scénarios (aux échelles régionale et locale) de mise en œuvre des technologies de transition énergétique, qui peuvent satisfaire simultanément des critères de faisabilité technique, rentabilité économique, qualité environnementale et acceptabilité sociétale
- Etape 2 : Structuration du problème de « choix social », en termes d'acteurs (les parties prenantes), de catégories d'enjeux de performance (ex : pérennité de services environnementaux, viabilité économique, faisabilité institutionnelle, etc.) et d'options technologiques. Cette étape repose à la fois sur une étude approfondie du terrain (dont des entretiens) et de la littérature.
- Etape 3 : Mobilisation des outils pour la représentation de la situation : dans le cadre du projet CAFETT, les formes de connaissances mobilisées viennent d'une part, de l'étude de la littérature, des entretiens réalisés auprès d'acteurs mais aussi, des cadres des systèmes de comptabilité européennes (EUROSTAT) et de la feuille de route au niveau national pour traiter des questionnements de circularité.
- Etape 4 : Mobilisation des acteurs de l'étape 2 pour une évaluation multicritère des cas d'étude de mise en œuvre des technologies de transition énergétique à partir d'une gamme plus ou moins large des indicateurs obtenus précédemment. Ces indicateurs seront transférés et analysés au travers d'une matrice de délibération appelée KERDST
- Etape 5 : Communication des résultats de l'étude auprès des participants mais aussi du public de façon plus large. On passe ici de la recherche au processus de décision.
- Etape 6 : Retours sur expériences sur le déroulement de la démarche d'évaluation.

Dans le cadre du projet CAFETT, le Portail de Médiation des Connaissances Environnementales ePLANETe (www.eplanete.blue) a été mobilisé comme élément structurant dans la mise en place de la méta-méthode *INTEGRAAL*. Le développement d'ePLANETe comme un Portail de Connaissances Environnementales s'inscrit dans un mouvement de création de *web* herméneutique permettant la découverte et la délibération des problématiques

du développement soutenable. Il peut être considéré, d'une manière plus technique, comme une approche novatrice et expérimentale de la modélisation intégrative participative des systèmes écolo-socio-économiques.

1.2 – Présentation de la Matrice KerBabel™ de Délibération

Pour permettre de comparer différentes technologies de transition énergétique, nous avons retenu l'outil « Matrice de Délibération », un outil en ligne d'évaluation multi-acteurs et multicritères issu d'ePLANETe. Conçu sur l'idée du Rubik's Cube(TM), la Matrice de Délibération constitue une méthode et un outil informatique qui permet de structurer la démarche d'évaluation. Elle s'articule autour de 3 axes d'évaluation multicritère et multi-acteurs (Figure 2) : (1) un axe catégories d'acteurs, ceux qui vont porter un jugement, (2) un axe enjeux d'acceptabilité et (3) un axe technologies de transition énergétique.

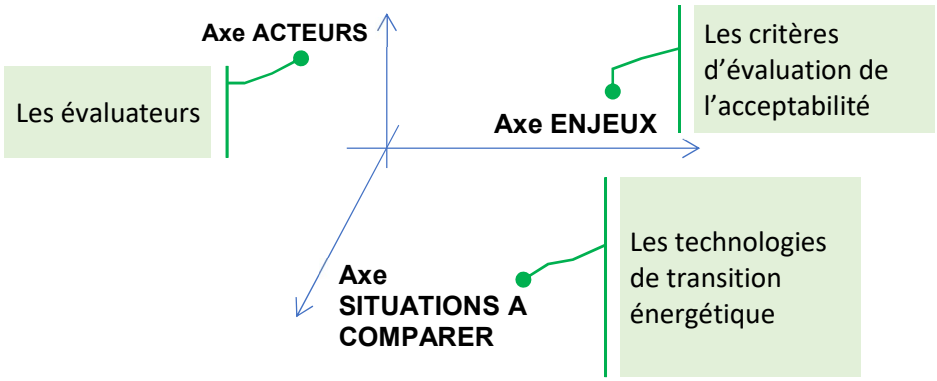


Figure 2 : Résumé des axes impliqués dans l'évaluation

Le remplissage de cette matrice se déroule en deux étapes. La première étape est celle de la définition des éléments situés sur les différents axes, avec les questionnements suivants :

- **Axe Situations à Comparer : quelles sont les TTE à comparer ?**
- **Axe Enjeux : quels sont les critères utilisés pour traiter de l'acceptabilité ?**
- **Axe Acteurs : quels sont les parties prenantes (*Stakeholders*) ?**

La deuxième étape du remplissage est le jugement en lui-même. Le jugement des acteurs correspond au croisement des trois axes (acteur, enjeu d'acceptabilité, TTE). Pour chacun des différentes situations à comparer étudiées, le jugement se fait par la composition d'une « tranche de la matrice » qui présenté au niveau de chacun des croisements de ces trois axes, les risques et les opportunités, telles qu'exprimés par une catégorie d'acteurs (Figure 3). La matrice est composée de différentes tranches représentant les jugements émis par les différentes catégories d'acteurs.

Figure 3 : Tranche d'une Matrice de Délibération – Exemple du projet ANR de recherche AGREGA

Le jugement est composé d'un panier d'indicateurs composé de 1 à 5 indicateurs qui proviennent, soit d'indicateurs présélectionnés, de manière ex-ante, soit des indicateurs proposés directement par les acteurs eux-mêmes. Pour chacun des indicateurs retenus, un jugement sera exprimé. Il est composé d'un jugement de valeur, qui s'effectue à partir du choix d'une couleur : Le "vert" pour "Favorable", Le "rouge" pour "Mauvais", Le "jaune" pour "Incertain", Le "blanc" pour "Ne sais pas" Le "bleue" pour "Ne souhaite pas s'exprimer sur ce point".

Pour effectuer un jugement, il est demandé à un individu ou à un groupe d'individus de se prononcer sur l'intérêt de l'ensemble des scénarios pour l'ensemble des enjeux. Il n'existe aucune pondération au niveau des TTE, des enjeux ou des catégories d'acteurs. L'idée est d'avoir une base commune de connaissances concernant le jugement que différentes catégories d'acteurs peuvent avoir concernant les scénarios.

Pour chacun des indicateurs, il est possible de fournir un commentaire pour justifier le choix de couleur et d'attribuer un poids subjectif pour pondérer l'importance de l'argument dans le jugement global. Le poids de chaque indicateur dans l'argumentaire peut être relativisé en utilisant un poids subjectif (défini par l'acteur). Une zone « commentaire » permet de préciser le choix de son jugement.

1.3 – Composer un jugement pour le croisement Acteur/Scenario/Enjeu

Pour effectuer un jugement concernant sur un trio ACTEUR 1/SCENARIO 1/ENJEU 1, il faut sélectionner de 1 à 5 indicateurs, lui attribuer une valeur et un poids subjectif et si possible, un commentaire (Voir Tableau 1).

Les indicateurs utilisés pour exprimer son jugement peuvent être des indicateurs quantitatifs ou qualitatifs. L'indicateur est pris dans son sens large, c'est-à-dire tout bout de connaissance que l'acteur considère être d'un intérêt pour exprimer son jugement. Ici, ce n'est pas la quantification ou la qualification de l'indicateur qui importe, mais c'est le sens que l'acteur permet de fournir au jugement émis.

Tableau 1 : Composer un jugement pour le croisement Acteur/Scénario/Enjeu – Exemple du projet AGREGA

Acteur1/Scénario 1 / Enjeu 1				
Nom de l'indicateur	**Valeur**	**Poids subjectif**	**Commentaire**	**Jugement synthétique**
Émissions de CO^2		15%	Lié au transport routier	
Qualité des eaux		15%	DCO < 125 mg/l	
Qualité de biodiversité		15%	Diversité des espèces	
Quantité de bois consommée		20%	Baisse 10%	
Qualité Paysage		35%		

1.4 – Composition du panier d'indicateurs pour l'attribution d'un jugement synthétique

L'attribution des couleurs dans la matrice se déroule comme suit :

- Lorsque que les valeurs retenues dans les indicateurs ne sont pas les mêmes, comme dans l'exemple du Tableau 1, le jugement synthétique se remplit proportionnellement avec la couleur dominante (ici, au 4/5 avec VERT) ;
- Lorsqu'on est dans une situation avec 2 indicateurs, l'un avec une valeur Verte et l'autre avec une valeur Rouge, c'est la valeur Rouge qui apparaitra (la valeur la moins favorable est retenue dans le jugement synthétique, ce qui favorise le dialogue entre les acteurs) ;
- Lorsqu'on est dans une situation avec 3 indicateurs et tous de valeur différente, c'est le Jaune qui apparaîtra comme jugement synthétique (l'incertitude).

Dans l'exemple de la Figure 4, trois indicateurs ont été retenus dans l'optique de la diversité représentative des indicateurs pour composer un jugement sur l'acceptabilité des TTE. Plus précisément, il s'agit de sélectionner un petit nombre d'indicateurs mais qui expriment la diversité des points de vue concernant le croisement des axes de la Matrice de Délibération en question.

Figure 4 : Panier d'indicateurs à la croisée des trois axes

Il ne s'agit donc pas de chercher l'exhaustivité, mais bien de sélectionner les indicateurs qui serviront d'argument dans le jugement exprimé à travers ce panier d'indicateurs. Chacun des arguments peut avoir un poids subjectif relatif différent (tous les arguments ont le même poids relatif 100% dans le cas présent).

1.5 – Les trois niveaux d'affichage des résultats de l'évaluation

Pour une catégorie d'ACTEURS, les résultats de l'évaluation pour l'ensemble des TTE et des enjeux (ou « tranche » de la matrice) vont se présenter, au premier niveau d'affichage des résultats, sous la forme montrée par le Tableau 2. D'autres catégories d'acteurs auront aussi leur « tranche » de matrice.

Tableau 2 : Analyse des jugements, pour un acteur donné, dans la Matrice de Délibération

	TTE 1	TTE 2	TTE 3	TTE 4	TTE 5
Enjeu 1					
Enjeu 2					
Enjeu 3					
….					

Au deuxième niveau d'affichage des résultats, on pourra identifier, pour l'ensemble des croisements ACTEUR/TTE/ENJEU, les indicateurs et les arguments retenus pour effectuer les jugements (cf. le Tableau 1 sur comment composer un jugement).

L'analyse des résultats pourra s'effectuer comme suit. Pour le TTE 1, on obtient des jugements à un premier niveau d'interprétation, comme montré dans le Tableau 3.

Tableau 3 : Analyse des jugements pour le TTE 1 dans la Matrice de Délibération

	Acteur 1	Acteur 2	Acteur 3	Acteur 4	Acteur 5
Enjeu 1					
Enjeu 2					
Enjeu 3					
….					

Un troisième niveau d'affichage des résultats existe. Il se situera au niveau de l'indicateur. Il s'agit d'analyser les utilisations d'un indicateur donné, dans le cadre de la Matrice de Délibération. Cela permet ainsi de savoir qui a mobilisé cet indicateur, pour parler de quel(s) enjeu(x) et pour quelle(s) TTE(s).

Dans les deux prochaines parties, les deux étapes clés de la démarche d'évaluation qui ont été abordées par les étudiants. La première traitent des indicateurs, de leur pertinence pour représenter les défis des technologies de transition énergétique. La deuxième partie présente les résultats de l'évaluation de l'acceptabilité des TTE à l'aide de la Matrice de Délibération d'ePLANETE.Blue. Une troisième partie présente le défi d'un apprentissage collaboratif pour mener cet exercice d'évaluation de l'acceptabilité des TTE.

2. INDICATEURS, PERTINENCE ET REPRÉSENTATION

Lors de la première session avec les groupes d'étudiants de Master 1 « Gouvernance des territoires, des risques et de l'environnement », et du pour le Master 2 « Analyse économique et Gouvernance des risques », un travail sur l'identification des indicateurs a été mené et leur insertion dans le Kiosque aux indicateurs (KIK) et la Grille de représentation (KRR) au sein d'ePLANETe.blue.

2.1 – Identification et documentation des indicateurs dans le Kiosque aux Indicateurs

Le Kiosque aux Indicateurs est une galerie constitutive d'ePLANETe.Blue. Elle présente le Catalogue des Indicateurs des différentes "Communautés d'utilisateurs". Elle permet la description est composée des Types d'Objets suivants (Voir Annexe B pour une présentation détaillée).

Trois formes de connaissances ont été identifiées.

- Les arguments analysés par METAMETIS (Introduits dans le KIK et le KRR par les étudiants du Master 1)
- Les indicateurs de l'économie de l'économie circulaire EUROSTAT (introduits dans le KIK et le KRR par les par les étudiants du Master 2)
- Les indicateurs de la feuille de route de l'économie circulaire au niveau national (introduits dans le KIK et le KRR par les par les étudiants du Master 2)

La liste complète des indicateurs/Arguments retenus se situe dans l'Annexe C. La présentation d'un indicateur dans le Kiosque aux Indicateurs se divise en quatre zones ayant des fonctionnalités et des informations bien distinctes (voir Figure 5).

- Un bandeau haut : Fil d'Ariane pour la navigation dans le KIK, création de nouvel indicateur
- Une colonne de gauche : Les filtres pour sélectionner les indicateurs pertinents
- Une colonne centrale : présentation courte ou détaillée de l'indicateur
- Une colonne de droite : pour accéder à d'autres éléments du KIK, d'ePLANETe ou sur le web.

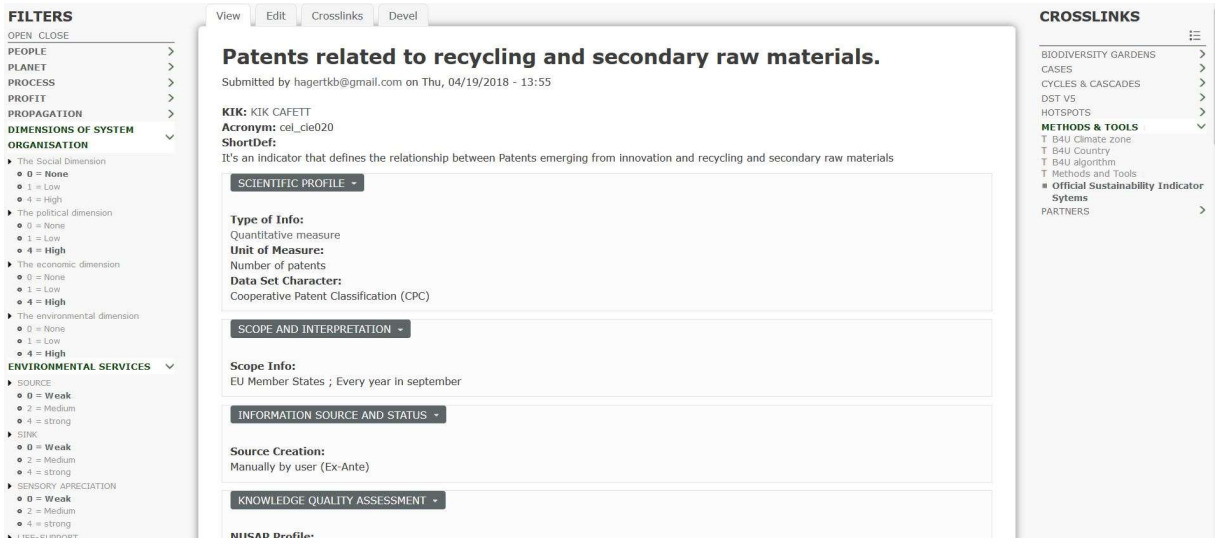


Figure 5 : Présentation d'un indicateur dans le Kiosque aux Indicateurs

2.2 – Vision des indicateurs

Avant de présenter les résultats, il est nécessaire de revenir sur le caractère des signaux proposées dans le cadre de l'évaluation. Dans le cadre de ce processus d'évaluation, ce sont les concepts de mesure qui sont mobilisés et non les données en elles-mêmes. Trois types de signaux ont été mobilisés dans le cadre du projet CAFETT : (1) les indicateurs, généralement quantitatifs, issus d'une démarche analytique, (2) les arguments, qualitatifs, d'origine discursive (ici, issus de l'analyse fournie par METAMETIS) et (3) les préoccupations (sous forme d'objectifs, de cible…) qui existent au niveau institutionnel et sont souvent qualitatifs (ici, EUROSTAT et Feuille de Route en France).

Dans le cadre du processus d'évaluation proposés, il s'agit de comparer des objets (sites, scénarios…) en mobilisant ces différents signaux. La grille de représentation permet d'établir un lien entre les signaux et les objets à comparer. La Matrice de Délibération nécessite de mobiliser les signaux auxquels une valeur et un point subjectif sont fournis.

2.3 – Evaluation de la pertinence des signaux à l'aide de la Grille de Représentation

La Grille de Représentation est une galerie constitutive d'ePLANETe.Blue. Elle rend explicite la question de l'adéquation des connaissances pour représenter le système. On parle de *Fitness for Purpose*.

Elle propose aux porteurs de connaissances (modélisateurs, scientifiques, experts, non experts) de fournir un indice de pertinence (O - Pas de pertinence ; 1 -Pertinence faible ; 4 - Pertinence forte) à chacun des indicateurs retenus dans le KIK afin d'évaluer son adéquation pour représenter le système (Figure 6). Cette pertinence signifie la pertinence de l'indicateur selon les quatre axes de pertinence retenus : (1) les porteurs de connaissances, (2) les enjeux d'acceptabilité (ceux issus de l'Etape 2 de la méthode INTEGRAAL), (3) des situations à comparer (TTE) et (4) les approches conceptuelles qui sont à la base de leur production.

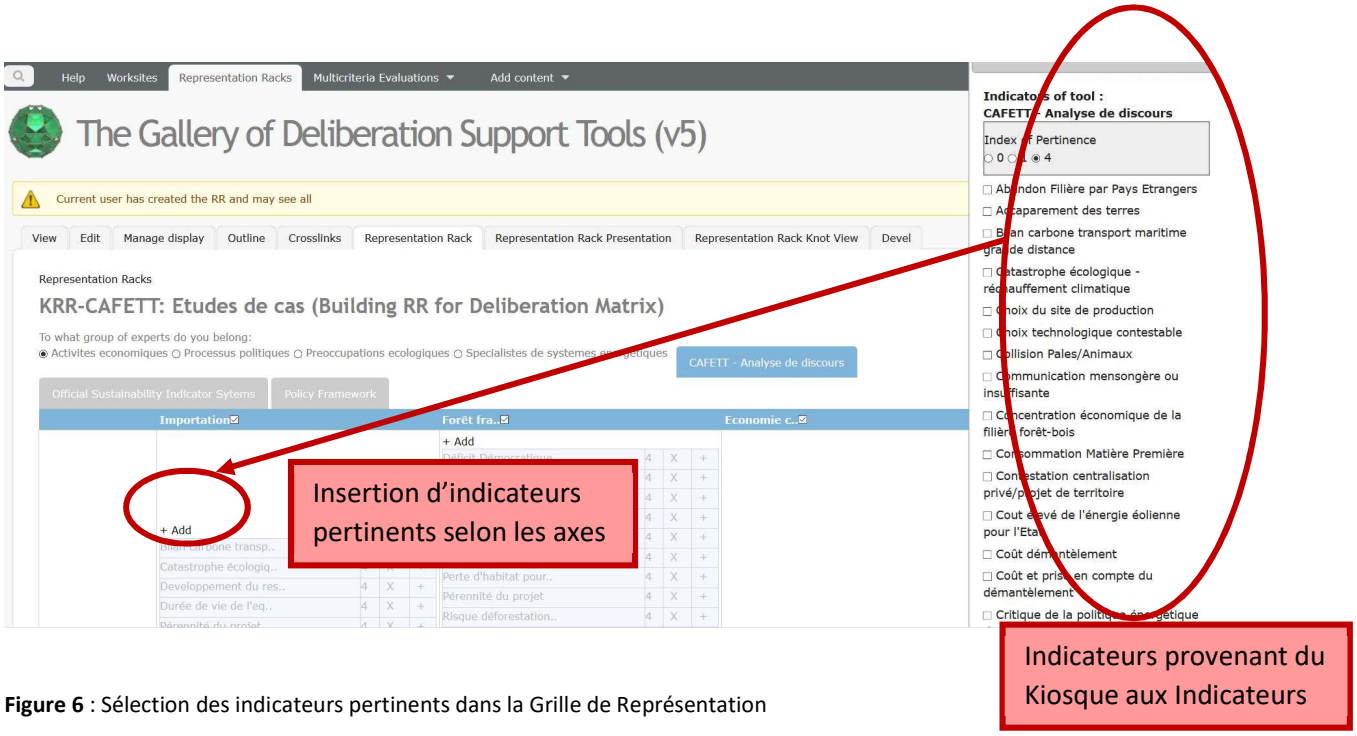


Figure 6 : Sélection des indicateurs pertinents dans la Grille de Représentation

Dans le cadre de CAFETT, les quatre axes de la Grille de Représentation ont été :

- **Les porteurs de connaissances (Représentants des activités économiques, des processus politiques, des préoccupations écologiques et des spécialistes des systèmes énergétiques).**
- **Les approches conceptuelles : Connaissances issues de l'analyse de METAMETIS, issus des indicateurs d'économie circulaire d'EUROSTAT (*Official Sustainability Indicator System*) et de la feuille de route nationale d'économie circulaire (*Policy Framework*).**

- **Les enjeux d'acceptabilité (différents selon les trois sessions d'évaluation) – enjeux développés par l'équipe ePLANETe.blue à partir des entretiens et de la revue de la littérature.**
- **Les situations à comparer (différentes selon les trois sessions d'évaluation) – Situations à comparer des TTE développées par l'équipe ePLANETe.blue à partir des entretiens et de la revue de la littérature.**

Trois situations de situations à comparer ont été identifiées pour fournir un éventail des opportunités d'évaluation de l'acceptabilité des TTE.

- **Evaluation des éoliennes en mer dans la Baie de Saint-Brieuc.**
- **Comparaison de l'acceptabilité des éoliennes en mer dans la Baie de Saint-Brieuc et de la Centrale Biomasse de Gardanne.**
- **Comparaison de scénarios d'approvisionnement en combustibles bois pour la Centrale Biomasse de Gardanne : Importation des combustibles bois ; Approvisionnement en combustibles bois à partir de la forêt française et Approvisionnement par des sous-produits (issus de l'économie circulaire).**

Les enjeux d'acceptabilité des TTE ont été différents selon les trois sessions d'évaluation des situations à comparer :

- Pour l'évaluation des éoliennes en mer dans la Baie de Saint-Brieuc, les enjeux retenus sont :
    - **Cadre politique et juridique (national, international...)**
    - **Performance environnementale (technique, savoir-faire)**
    - **Performance financière (rapport qualité-prix et revenus-coûts)**
    - **Cadre institutionnelle de gestion collective et patrimoniale de ressources environnementales**
    - **Boucle financière nécessaires pour une économie verte durable**
    - **Partenariat opérationnel et solidaire (savoir faire le long des boucles de valeur)**
    - **Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme)**
- Pour les deux autres études de cas, à savoir (1) les scénarios d'approvisionnement en combustibles bois de la Centrale Biomasse de Gardanne et (2) Comparaison de l'acceptabilité des éoliennes en mer dans la Baie de Saint-Brieuc et de la Centrale Biomasse de Gardanne, les enjeux retenus sont :
    - **Transition énergétique (ENR, GHG, durabilité)**
    - **Patrimoine naturel du territoire (pollutions, biodiversité, paysage…)**
    - **Développement territorial**
    - **Economie rurale (dont agricole)**
    - **Autonomie énergétique (proximité, nationale)**
    - **Economie circulaire (valorisation de déchets)**
    - **Performance technique et financière**
    - **Partenariat & Cohésion sociale**

2.4 – Etablir les relations entre les signaux et les objets à comparer

Les étudiants, ayant endossés un des rôles de Porteurs de Connaissances, ont attribué, à partir de leurs connaissances, une pertinence aux indicateurs identifiés dans le Kiosque aux Indicateurs. Pour chaque Situation à Comparer et pour chaque Enjeu d'acceptabilité, ils proposent des indicateurs pertinents pour représenter la situation, à partir d'une approche conceptuelle donnée (Analyse MétaMétis, EUROSTAT ou la Feuille de Route de l'économie circulaire en France), de leur point de vue.

On obtient ainsi, comme le montre la Figure 7, un ensemble de connaissances (indicateurs/Arguments) pertinents, pour une approche conceptuelle, un enjeu et une situation, selon les points de vue des porteurs de connaissances. Dans la liste d'indicateurs/Arguments, dans la situation actuelle, réalisée dans le cadre d'un processus collaboratif au sein duquel l'ensemble des porteurs de connaissance peuvent voir affichés les indicateurs/Arguments retenus par les autres porteurs de connaissances, on peut avoir :

- Des connaissances retenues par différents porteurs de connaissances
- Des connaissances spécifiques à une catégorie de porteurs de connaissances

Avec

- La même pertinence
- Des pertinences différentes

Pour

- Les mêmes croisements entre les deux axes (enjeux d'acceptabilité, situations à comparer ; les deux autres étant définis)
- Pour des croisements différents entre les deux axes

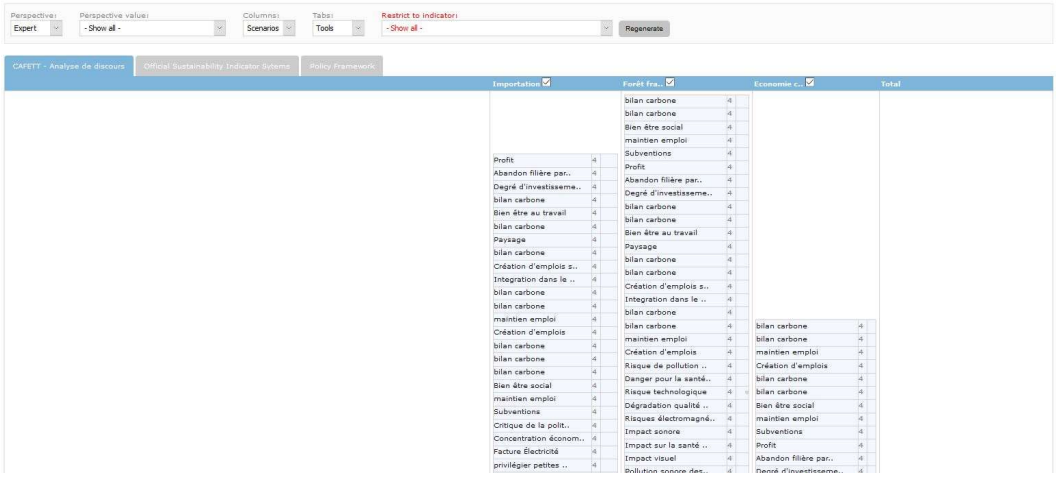


Figure 7 : Liste des Indicateurs pour un objet à comparer pour un enjeu selon différents porteurs de connaissance

Les résultats de cette Grille de Représentation étant fait dans le cadre pédagogique, les résultats de l'évaluation de la pertinence des Indicateurs/Arguments ne sont pas analysés de manière détaillée. Seule la méthode est présentée ici.

2.5 – Mobilisation des signaux selon les quatre axes de la Grille de Représentation

Une restitution des indicateurs retenue est possible au sein de la Grille de Représentation d'ePLANETe.blue (voir Figure 8). Elle permet d'identifier, pour chacun des indicateurs/Arguments, les croisements des quatre axes pour lesquels une pertinence, 1 ou 4, a été fournie, et donc pas déduction, ceux pour lesquels il n'est pas pertinent.

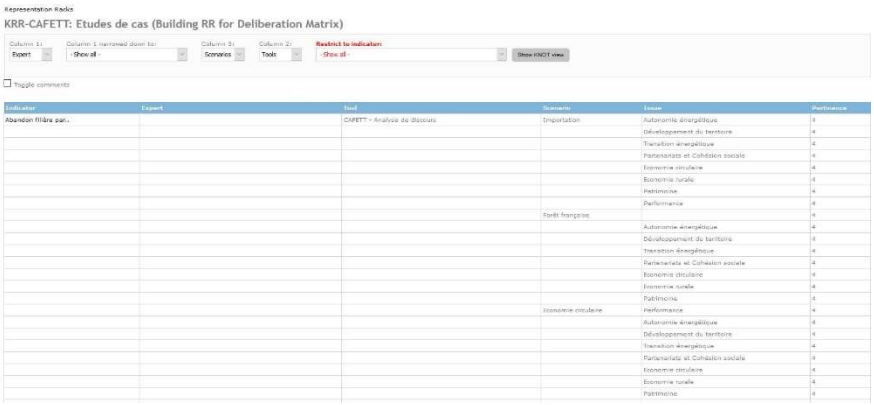


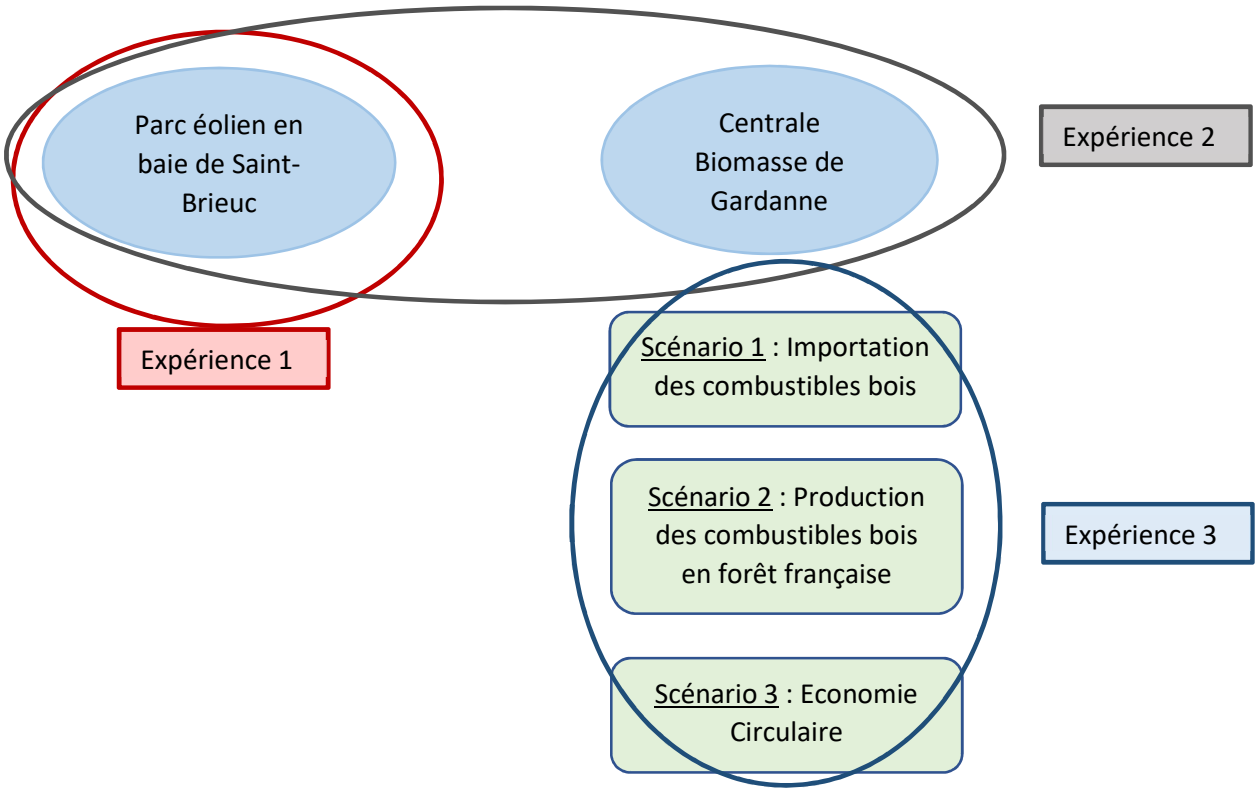
Figure 8 : Présentation des pertinence d'un indicateur selon les quatre axes de la Grille de Représentation

3. EVALUATION DE L'ACCEPTABILITÉ : UTILISATION DE LA MATRICE DE DÉLIBÉRATION

Lors de la deuxième session avec les groupes d'étudiants de Master 1 « Gouvernance des territoires, des risques et de l'environnement », et du pour le Master 2 « Analyse économique et Gouvernance des risques », l'évaluation de l'acceptabilité des technologies de transition énergétique a été réalisée à l'aide de la Matrice de Délibération au sein d'ePLANETe.blue. Trois sessions d'évaluation ont été menées (voir Figure 9) :

- **Expérience (1) : Evaluation du parc éolien en baie de Saint-Brieuc ;**
- **Expérience (2) : Comparaison de scénarios d'approvisionnement en combustibles bois pour la Centrale Biomasse de Gardanne et**
- **Expérience (3) : Comparaison de l'acceptabilité du parc éolien en mer en Baie de Saint-Brieuc et de la Centrale Biomasse de Gardanne.**

Figure 9 : Les trois expériences d'évaluation de l'acceptabilité des technologies de transition énergétique



3.1 – Première expérience : Projet de parc éolien en baie de Saint-Brieuc

L'évaluation de l'acceptabilité du parc éolien en baie Saint-Brieuc par les étudiants du Master 1 « Gouvernance des territoires, des risques et de l'environnement ». La Matrice de Délibération est structurée autour de 3 axes :

- Les catégories d'acteurs / Parties prenantes (*Stakeholders*) :
  - L'état français
  - Collectivités territoriales (sous-nationales)
  - Acteurs de l'économie rurale et maritime
  - Entreprises privées des territoires (hors agriculture)
  - Riverains
  - Des ONG/Associations (environnement, qualité de vie, développement durable)
  - Acteurs du monde de la production de connaissance

  - Représentant du monde de l'emploi (syndicats…)
  - Porteurs du projet.
- Les enjeux d'acceptabilité :
  - Cadre politique et juridique (national, international...)
  - Performance environnementale (technique, savoir-faire)
  - Performance financière (rapport qualité-prix et revenus-coûts)
  - Cadre institutionnelle de gestion collective et patrimoniale de ressources environnementales
  - Boucle financière nécessaires pour une économie verte durable
  - Partenariat opérationnel et solidaire (savoir faire le long des boucles de valeur)
  - Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme)
- Les situations à comparer :
  - Parc éolien en baie de Saint-Brieuc

Il est à noter que dans la Grille de Représentation, les acteurs sont des porteurs de connaissances, qui peuvent ou non être intégrés dans le Matrice de Délibération en tant que parties prenantes. Dans le cas présent, les catégories de porteurs de connaissances et de parties prenantes sont différentes. Les étudiants ont donc joué des rôles différents, lors de l'utilisation de la Grille de Représentation et la Matrice de Délibération.

Les résultats de la Matrice de Délibération sont présentés dans la Figure 10. Les résultats de cette Matrice de Délibération étant fait dans le cadre pédagogique, les résultats de l'évaluation ne sont pas analysés de manière détaillée. Seule la méthode est présentée à partir des trois applications retenues dans le cadre pédagogique. Pour le cas de Saint-Brieuc, les jugements de chacun des acteurs sont présentés en colonne, pour l'ensemble des enjeux, présentés en ligne.

Figure 10 : Résultats d'évaluation d'acceptabilité du parc éolien en baie de Saint-Brieuc

Dans la figure 11, la présentation des résultats est faite du point de vue d'un enjeu « Cadre politique et juridique ». La situation à comparer est en colonne et les acteurs sont en ligne.

Les valeurs pour établir les jugements sont simples, car établis dans le cadre pédagogique : Le "vert" pour "Favorable", Le "rouge" pour "Mauvais", Le "jaune" pour "Incertain", Le "blanc" pour "Ne sais pas".

Figure 11 : Résultats d'évaluation pour un enjeu d'acceptabilité du parc éolien en baie de Saint-Brieuc

Dans la figure 12, la présentation des résultats est faite du point de vue d'un acteur « Etat ». La situation à comparer est en colonne et les enjeux d'acceptabilité sont en ligne.

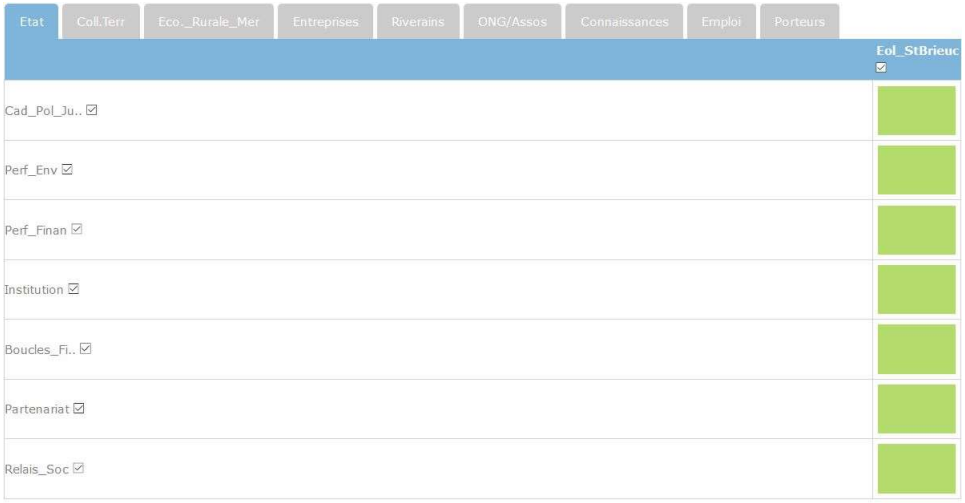


Figure 12 : Résultats d'évaluation de l'acceptabilité du parc éolien en baie de Saint-Brieuc selon une catégorie d'acteur

La figure 13 présente un panier d'indicateurs retenu pour exprimer le jugement de la catégorie d'acteur « Collectivité Territoriale », pour l'enjeu « Performance environnementale » pour le parc éolien en baie de Saint-Brieuc. Les arguments utilisés, qui peuvent être des indicateurs ou des arguments, sont :

- *Durée de vie de l'équipement*, valeur du jugement : Incertain, Poids subjectif : 58/100
- *Dégradation du milieu marin*, valeur du jugement : Défavorable, Poids subjectif : 55/100
- *Impact sur la faune marine*, valeur du jugement : Défavorable, Poids subjectif : 55/100
- *Perte d'habitat pour la biodiversité*, valeur du jugement : Défavorable, Poids subjectif : 55/100
- *Diminution CO2*, valeur du jugement : Favorable, Poids subjectif : 100/100

Le jugement synthétique pour le jugement de la catégorie d'acteur « Collectivité Territoriale », pour l'enjeu « Performance environnementale » pour le parc éolien en baie de Saint-Brieuc est majoritairement défavorable (couleur rouge) : Trois arguments ont une valeur de jugement 'Défavorable' avec un poids de 55/100 pour chacun d'entre eux soit 165/500 (par rapport au jugement 'Incertain' de 58/500 ou 'Favorable' de 100/500).

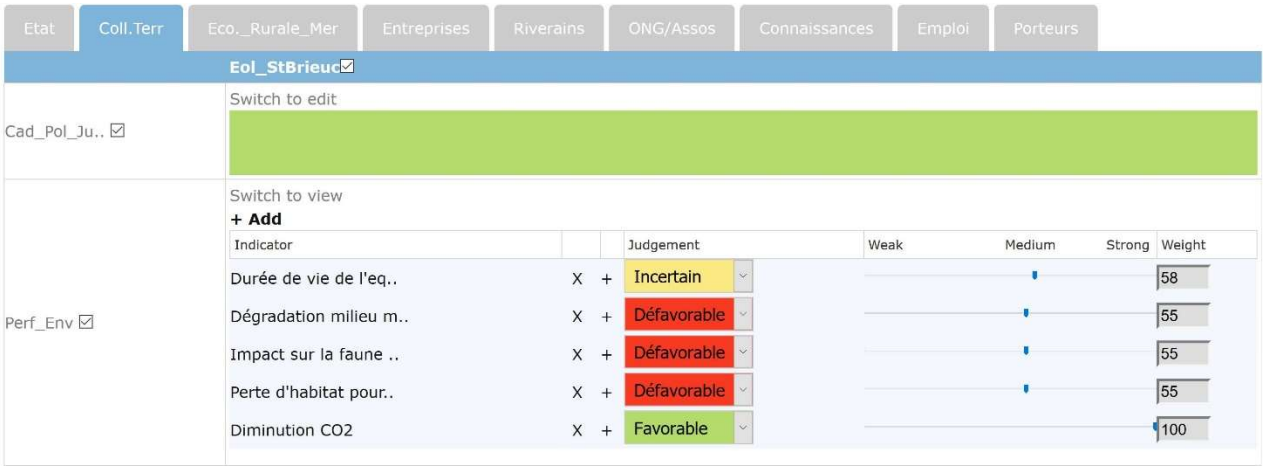


Figure 13 : Exemple d'un panier d'indicateur pour l'acteur Etat.

La figure 14 reprend, pour chacun des indicateurs mobilisés dans les jugements réalisés par les différentes catégories d'acteurs, les valeurs de jugement utilisés, selon les catégories d'acteurs (parties prenantes), les enjeux d'acceptabilité et les situations à comparer.

Indicator	Usage	Stakeholder	Object To Compare	Issue
Abandon Filière par ..				
	Défavorable (1x)	ONG/Assos	Centrale Biomasse de Gardanne	Partenariats et Cohésion sociale
	Défavorable (1x)	ONG/Assos	Eoliennes de Saint-Brieuc	Autonomie énergétique
	Défavorable (1x)	ONG/Assos	Eoliennes de Saint-Brieuc	Partenariats et Cohésion sociale
	Favorable (1x)	Eco._Rurale_Mer	Eoliennes de Saint-Brieuc	Autonomie énergétique
	Favorable (1x)	Coll.Terr	Centrale Biomasse de Gardanne	Développement du territoire
	Défavorable (1x)	Coll.Terr	Eoliennes de Saint-Brieuc	Autonomie énergétique
	Favorable (1x)	Porteurs	Centrale Biomasse de Gardanne	Développement du territoire
	Défavorable (1x)	Connaissances	Centrale Biomasse de Gardanne	Partenariats et Cohésion sociale
	Défavorable (1x)	Connaissances	Eoliennes de Saint-Brieuc	Partenariats et Cohésion sociale
	Défavorable (1x)	Emploi	Eoliennes de Saint-Brieuc	Autonomie énergétique
	Favorable (1x)	Etat	Centrale Biomasse de Gardanne	Partenariats et Cohésion sociale
	Défavorable (1x)	Entreprises	Eoliennes de Saint-Brieuc	Partenariats et Cohésion sociale
	Défavorable (1x)	Entreprises	Centrale Biomasse de Gardanne	Partenariats et Cohésion sociale
Totals	36% Défavorable (9x), 34% Favorable (4x)	ONG/Assos (2x), Eco._Rurale_Mer (1x), Coll.Terr (2x), Porteurs (1x), Connaissances (2x), Emploi (1x), Etat (1x), Entreprises (2x)	Centrale Biomasse de Gardanne (6x), Eoliennes de Saint-Brieuc (7x)	Partenariats et Cohésion sociale (7x), Autonomie énergétique (4x), Développement du territoire (2x)
Accaparement des ter..				
	Défavorable (1x)	Riverains	Centrale Biomasse de Gardanne	Patrimoine
	Défavorable (1x)	Riverains	Centrale Biomasse de Gardanne	Développement du territoire
	Défavorable (1x)	Coll.Terr	Centrale Biomasse de Gardanne	Patrimoine
	Incertain (1x)	Connaissances	Centrale Biomasse de Gardanne	Patrimoine
	Défavorable (1x)	ONG/Assos	Centrale Biomasse de Gardanne	Patrimoine
	Défavorable (1x)	ONG/Assos	Centrale Biomasse de Gardanne	Développement du territoire
	Défavorable (1x)	Entreprises	Centrale Biomasse de Gardanne	Développement du territoire
	Défavorable (1x)	Entreprises	Eoliennes de Saint-Brieuc	Développement du territoire
Totals	56% Défavorable (7x), 58% Incertain (1x)	Riverains (2x), Coll.Terr (1x), Connaissances (1x), ONG/Assos (2x), Entreprises (2x)	Centrale Biomasse de Gardanne (7x), Eoliennes de Saint-Brieuc (1x)	Patrimoine (4x), Développement du territoire (4x)

Figure 14 : Mobilisation d'un indicateur par différents acteurs, dans différentes enjeux d'acceptabilité et pour différentes TTE pour exprimer différents jugements

3.2 – Deuxième expérience : Comparaison des cas d'étude (1) Parc éolien en baie de Saint-Brieuc et (2) Centrale Biomasse de Gardanne

L'évaluation de l'acceptabilité des modes d'approvisionnement en combustibles bois de la Centrale Biomasse de Gardanne par les étudiants du Master 2 « Analyse économique et Gouvernance des risques ». La Matrice de Délibération est structurée autour de 3 axes :

- Les catégories d'acteurs parties prenantes (*Stakeholders*) :
  - L'état français
  - Collectivités territoriales (sous-nationales)
  - Entreprises privées des territoires (hors agriculture)
  - Les acteurs du monde agricole
  - Les patrons de la centrale Gardanne (actionnaires, direction)
  - Les employés (et leurs syndicats)
  - Des ONG/Associations (environnement, qualité de vie, développement durable)
  - Des habitants des territoires (dont divers 'riverains')
  - Chercheurs, enseignants et étudiants
- Les enjeux d'acceptabilité :
  - Cadre politique et juridique (national, international...)
  - Performance environnementale (technique, savoir-faire)
  - Performance financière (rapport qualité-prix et revenus-coûts)
  - Cadre institutionnelle de gestion collective et patrimoniale de ressources environnementales
  - Boucle financière nécessaires pour une économie verte durable
  - Partenariat opérationnel et solidaire (savoir faire le long des boucles de valeur)
  - Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme)
- Les situations à comparer :
  - Centrale Biomasse de Gardanne
  - Parc éolien en baie de Saint-Brieuc

La Figure 15 présente les résultats de comparaison du scénario 1 « Centrale Biomasse de Gardanne » et du scénario 2 « Parc éolien en baie de Saint-Brieuc » du point de vue de l'acteur « Etat », selon l'ensemble des enjeux d'acceptabilité en ligne.

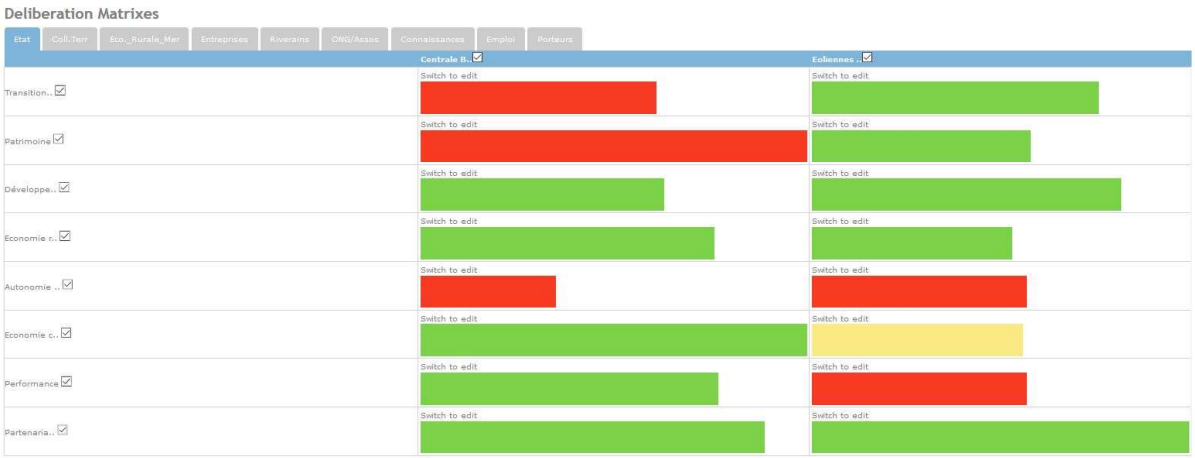


Figure 15 : Résultats d'évaluation de la comparaison Centrale Biomasse de Gardanne/Parc éolien en baie de Saint-Brieuc selo l'acteur Etat

La Figure 16 présente les résultats du scénario 1 « Centrale Biomasse de Gardanne ». Les acteurs sont présentés en colonne et les enjeux en ligne.

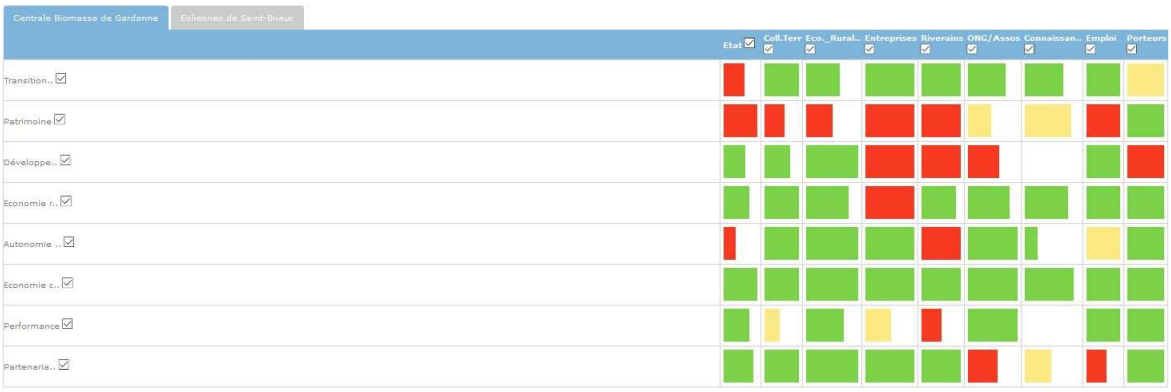


Figure 16 : Résultats d'évaluation de la Centrale Biomasse de Gardanne

La Figure 17 présente les résultats du scénario 2 « Parc éolien en baie de Saint-Brieuc ». Les acteurs sont présentés en colonne et les enjeux en ligne.

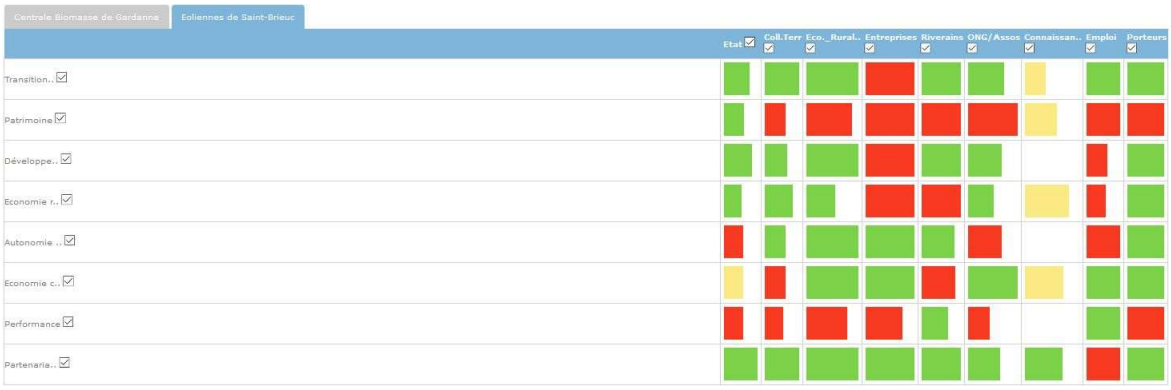


Figure 17 : Résultats d'évaluation du parc éolien en baie de Saint-Brieuc

3.3 – Troisième expérience : Les modes d'approvisionnement en combustibles bois de la Centrale Biomasse de Gardanne

L'évaluation de l'acceptabilité des modes d'approvisionnement en combustibles bois de la Centrale Biomasse de Gardanne par les étudiants du Master 2 « Analyse économique et Gouvernance des risques ». La Matrice de Délibération est structurée autour de 3 axes :

- Les catégories d'acteurs / Parties prenantes (*Stakeholders*) :
  - L'état français
  - Collectivités territoriales (sous-nationales)
  - Entreprises privées des territoires (hors agriculture)
  - Les acteurs du monde agricole
  - Les patrons de la centrale Gardanne (actionnaires, direction)
  - Les employés (et leurs syndicats)
  - Des ONG/Associations (environnement, qualité de vie, développement durable)
  - Des habitants des territoires (dont divers 'riverains')

  - Chercheurs, enseignants et étudiants
- Les enjeux d'acceptabilité :
  - Cadre politique et juridique (national, international...)
  - Performance environnementale (technique, savoir-faire)
  - Performance financière (rapport qualité-prix et revenus-coûts)
  - Cadre institutionnelle de gestion collective et patrimoniale de ressources environnementales
  - Boucle financière nécessaires pour une économie verte durable
  - Partenariat opérationnel et solidaire (savoir faire le long des boucles de valeur)
  - Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme)
- Les situations à comparer :
  - Importation des combustibles bois
  - Approvisionnement en combustibles bois à partir de la forêt française
  - Approvisionnement par des sous-produits (issus de l'économie circulaire)

La Figure 18 présente les résultats du scénario 1 « Importation des combustibles bois pour l'approvisionnement de la Centrale Biomasse de Gardanne ». Les acteurs sont présentés en colonne et les enjeux en ligne.

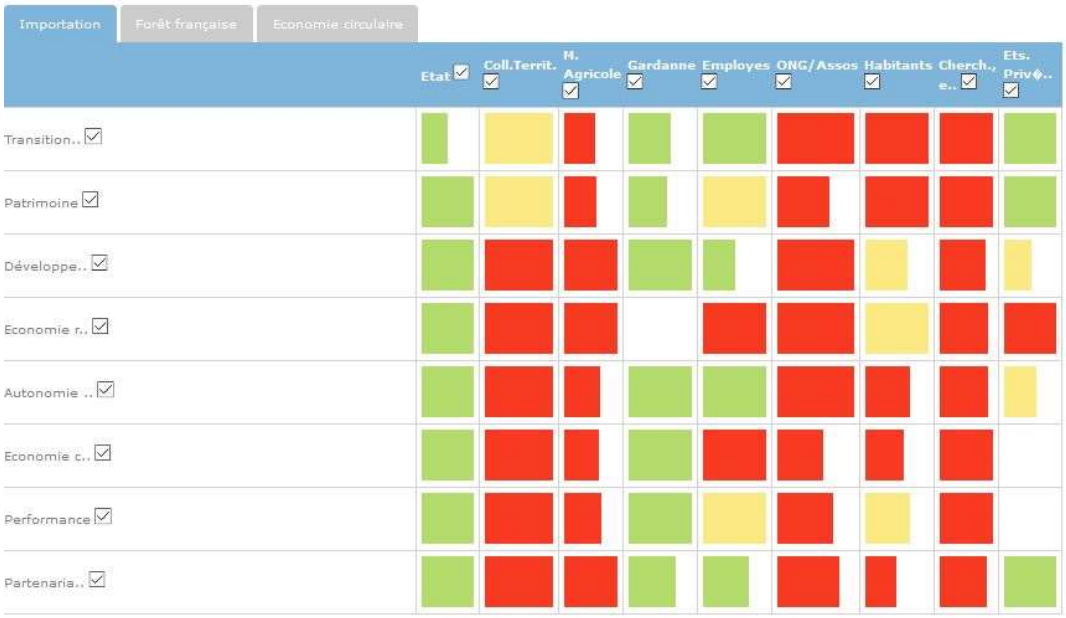


Figure 18 : Résultats d'évaluation du scénario « Importation massive de combustible bois pour la Centrale Biomasse de Gardanne »

La Figure 19 présente les résultats du scénario 2 « Approvisionnement en combustibles bois issus des forêts françaises pour la Centrale Biomasse de Gardanne ». Les acteurs sont présentés en colonne et les enjeux en ligne.

Figure 19 : Résultats d'évaluation du scénario « Approvisionnement par la forêt française du combustible bois de la Centrale Biomasse de Gardanne »

La Figure 20 présente les résultats du scénario 3 « Approvisionnement en combustibles bois issus des sous-produits (optique de l'économie circulaire) de la Centrale Biomasse de Gardanne ». Les acteurs sont présentés en colonne et les enjeux en ligne.

Figure 20 : Résultats d'évaluation du scénario « Economie circulaire pour l'approvisionnement en sous-produits pour de la Centrale Biomasse de Gardanne »

4. TÂTONNEMENTS VERS UN APPRENTISSAGE COLLABORATIF

L'ensemble des sessions d'évaluation de l'acceptabilité des technologies de transition énergétique a été réalisée au sein de la salle MIRE (Mur Immersif pour la Recherche et l'Enseignement) du DIGISCOPE (www.digiscope.fr) au sein de l'Observatoire de Versailles Saint-Quentin-en-Yvelines. MIRE est un grand mur d'image stéréoscopique avec un système de suivi de mouvements, caractérisé par une configuration incurvée favorisant l'immersion

DIGISCOPE est un réseau de plateformes pour la visualisation interactive de grandes quantités de données et de calculs complexes. Installées au sein de l'Université Paris-Saclay, les dix salles de DIGISCOPE sont interconnectées par un réseau de téléprésence permettant la collaboration distante. Les applications visées sont la recherche scientifique, la conception industrielle, l'aide à la décision et la formation.

Chacun des écrans de MIRE est piloté de manière indépendante, à partir d'un ordinateur fixe, d'un ordinateur portable, d'une tablette ou d'un smartphone. L'ensemble des connaissances mobilisés et des résultats sont réunis au sein du Portail de Médiation des Connaissances ePLANETe.blue accessible en ligne (www.ePLANETe.blue).

4.1 - Exposition

Afin de fournir un ensemble d'informations aux étudiants, une présentation des cas d'étude soumis au processus d'évaluation a été réalisée (voir Figure 21). Cette présentation leur permet de comprendre les enjeux et les objets à comparer. Un travail d'identification du positionnement des catégories d'acteurs est en partie exposé. Un travail de recherche documentaire, dans le temps réduit imparti, a été réalisé par les étudiants pour pouvoir endosser le rôle qu'ils ont choisi de jouer.

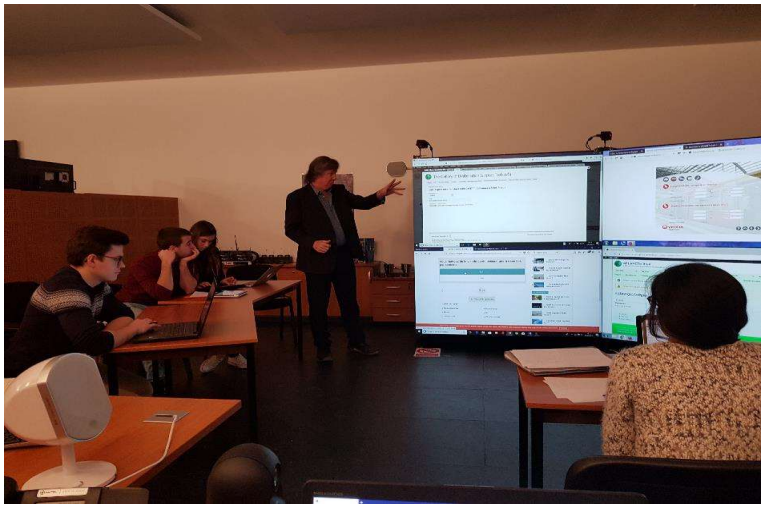


Figure 21 : Exposition des études de cas soumis au processus d'évaluation

4.2 - Concertation

Le premier travail demandé aux étudiants a été d'identifier, à partir des analyses menées par METAMETIS, d'identifier les arguments pour les deux cas d'étude (Saint-Brieuc et Gardanne) afin de les introduire, dans un deuxième temps dans le Kiosque aux Indicateurs. Une démarche similaire a été menée à partir des indicateurs EUROSTAT et associés à la Feuille de Route de l'économie circulaire.

Dans le cadre de la construction de la Grille de Représentation, l'utilisation de MIRE a permis aux différents groupes de porteurs de connaissances d'attribuer et de juger de la pertinence des Indicateurs/Arguments des autres catégories de porteurs de connaissances. L'utilisation du portail ePLANETe.blue permet d'engager les étudiants et les enseignants dans un apprentissage collaboratif. En effet, la collaboration repose sur un but commun, chaque membre réalisant une part de la tâche globale, en puisant dans les ressources de l'environnement (ici, dans ePLANETe.blue), dans ses ressources propres (projet CAFETT) et dans celles du groupe. Des groupes de discussion se sont constitués de manière autonome, pour délibérer autour de la pertinence des Indicateurs/Arguments par

rapport aux quatre axes de la Grille de Représentation (Figure 22). Ces groupes se sont constitués entre étudiants jouant un même rôle de Porteur de Connaissances, entre des étudiants de groupes différents de porteurs de connaissances, avec ou entre les enseignants. Des ajustements ont été ainsi réalisés suite à ces délibérations.

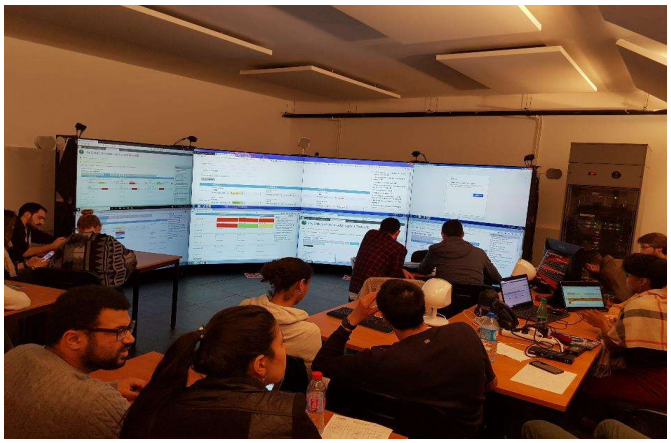


Figure 22 : Constitution de groupes de concertation dans le cadre du processus d'évaluation

A la différence de la Grille de représentation, où les étudiants jouent le rôle de porteur de connaissance, dans le cadre de la Matrice de Délibération, les étudiants endossent le rôle d'une partie prenante (*stakeholder*). De nouveaux groupes d'étudiants ont ainsi été constitués et de nouvelles concertations ont été réalisées.

4.3 - Appréciation

La Figure 23 présente les opportunités offertes par l'utilisation de MIRE pour observer, échanger et faire évoluer les positionnements des différents acteurs dans le cadre de la construction des jugements dans l'évaluation à l'aide de la Matrice de Délibération. Le double écran au centre de MIRE présente les résultats de l'évaluation, chacun des autres écrans permet aux différents catégories d'acteurs / Parties prenantes, de fournir des jugements sur l'acceptation des Technologies de Transition Energétique.

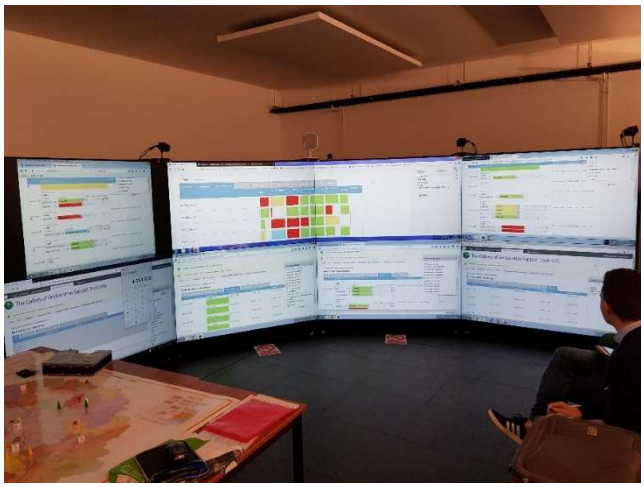


Figure 23 : Utilisation collaborative pour la construction des jugements dans la Matrice de Délibération à l'aide de MIRE

4.4 - Restitution

La restitution des résultats de l'évaluation de l'acceptabilité des TTE peut également être réalisée à partir d'un écran interactif (voir Figure 24). Elle permet aux étudiants et aux enseignants d'appuyer la présentation ou la discussion autour des résultats de la Matrice de Délibération en interagissant directement à l'aide d'un écran interactif. Plusieurs niveaux de restitution ont été mobilisés au niveau de la Grille de Représentation et de la Matrice de Délibération :

Au niveau de la Grille de Représentation :

- Restitution en utilisant une tranche de la Grille de Représentation permettant de présenter soit le positionnement d'un porteur de connaissances pour l'ensemble des objets à comparer pour l'ensemble des enjeux pour l'ensemble des approches conceptuelles, soit l'analyse, du point de vue d'un enjeu, de l'ensemble des objets à comparer pour l'ensemble des acteurs pour l'ensemble des approches conceptuelles, soit l'analyse, du point de vue d'un objet à comparer, de l'ensemble des enjeux pour l'ensemble des acteurs pour l'ensemble des approches conceptuelles ou soit, pour une approche conceptuelle, l'analyse de l'ensemble des objets à comparer, pour l'ensemble des enjeux et pour l'ensemble des acteurs.
- Restitution en utilisant les informations concernant la pertinence des indicateurs pour le croisement des 4 axes constitutifs de la Grille de Représentation
- Restitution en utilisant les informations concernant la mobilisation des indicateurs

Au niveau de la Matrice de Délibération :

- Restitution en utilisant une tranche de Matrice de Délibération permettant de présenter soit le positionnement d'un acteur pour l'ensemble des objets à comparer pour l'ensemble des enjeux, soit l'analyse, du point de vue d'un enjeu, de l'ensemble des objets à comparer pour l'ensemble des acteurs ou, soit l'analyse, du point de vue d'un objet à comparer, de l'ensemble des enjeux pour l'ensemble des acteurs.
- Restitution en utilisant les informations contenues dans un panier d'indicateurs
- Restitution en utilisant les informations sur les mobilisations des indicateurs dans les différents paniers de jugement dans la Matrice de Délibération

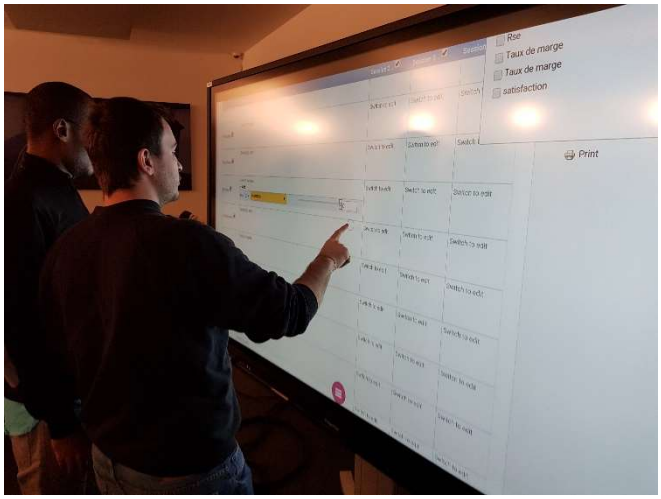


Figure 24 : Utilisation collaborative pour la délibération autour des résultats de l'évaluation de la Matrice de Délibération à l'aide de MIRE

ANNEX B

Les catégories de méta-informations pour décrire un *INDICATEUR CANDIDAT* dans le Kiosque aux Indicateurs

Le **KIOSQUE AUX INDICATEURS** est une galerie constitutive d'ePLANETe.Blue. Elle présente les Catalogues des ***« Indicateurs Candidats »*** des différentes Communautés d'utilisateurs. Chaque indicateur est décrit à l'aide du gabarit suivant. Seul le champs 'Name' dans la **CARTE D'IDENTITE** est obligatoire ; les autres champs sont facultatifs.

IDENTITY CARD

[*] = Obligatory Field

FIELD NAME	TYPE	FIELD EXPLANATION
Name [*]	Alphanumeric [max. 250 characters]	
Acronym	Alphanumeric [max. 250 characters]	An intuitive and convenient acronym
ShortDef	Alphanumeric [max. 250 characters]	Non-technical explanation of the object/attribute

SCIENTIFIC PROFILE

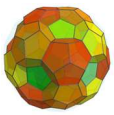
FIELD NAME	TYPE	FIELD EXPLANATION
Type of Info	List	Select one choice from the list proposed ☐ Existence or not of something ☐ Qualitative ordering ☐ Quantitative measure ☐ Set of Attributes
Unit of Measure	Alphanumeric [max. 25 characters]	Specifies the units of measure (actual or proposed) in the case of a quantitative indicatoR
Qualitative Convention	Alphanumeric [max. 250 characters]	Specifies, in the case of a qualitative indicator, the conventions of description (e.g., high/medium/low, Red/Green, Present/Absent
Data Set Character	Alphanumeric [max. 250 characters]	Specifies whether the information consists of, for example, a unique object/value or a data set and, if the latter, the character of this data set (e.g. measures at several points, or for components of a territory, etc.

SCOPE AND INTERPRETATION

FIELD NAME	TYPE	FIELD EXPLANATION
Scope Info	Alphanumeric [max. 1000 characters]	States the coverage of the information, e.g., the geographical or systems range, or the population covered of the information, etc.
Interpretation	Alphanumeric [max. 1000 characters]	Explains the relevant range of measurement (and limits to scope) and/or the meaning attached to qualitative descriptive conventions

INFORMATION SOURCE AND STATUS

FIELD NAME	TYPE	FIELD EXPLANATION
Availability	List	Select <u>one choice</u> from the list proposed: ☐ None ☐ Independent Source, verified ☐ Independent Source, unverified ☐ Product of the current programme, unvalidated ☐ Suggestion for current work, unproven
Institutional Sources	Alphanumeric [max. 250 characters]	It may be completed with Cross-links to Profiles in the PEOPLE & PARTNERS Gallery
Scientific Sources	Alphanumeric [max. 250 characters]	It may be completed with Cross-links to Profiles in the TOOLS & METHODS Gallery
Reference Terrains	Alphanumeric [max. 250 characters]	Territorial sources (TERRAINS or CASES). It may be completed with Cross-links to Profiles in the TERRAINS Gallery
Other Source Types	Alphanumeric [max. 250 characters]	[Specify ... e.g., Regulatory and Coordination authorities]. It may be completed with Cross-links to any sorts of Objects in other ePLANETe Galleries
Contact Info	Alphanumeric [max. 250 characters]	
Ownership IPR	Alphanumeric [max. 250 characters]	
Format Of Data	Alphanumeric [max. 250 characters]	
Source Analytical Conv	Alphanumeric [max. 250 characters]	
Existing Visualisation	Alphanumeric [max. 250 characters]	

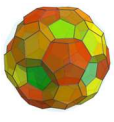


INDEPENDANT USE OF PRE-EXISTING INFORMATION

FIELD NAME	TYPE	FIELD EXPLANATION
Source Analytical Conventions	Alphanumeric [max. 250 characters]	Specifies the pre-existing situation(s) in which the indicator appears as an input or output of analytical systems (e.g., data sets, variables in algorithms and models) in analysis and representation.
Exploitation For Evaluation Operations	Alphanumeric [max. 250 characters]	Specifies the pre-existing situation(s) in which the indicator is mobilised as a component in a normative evaluation procedure (multi-criteria or other).
Existing Visualisation	Alphanumeric [max. 250 characters]	Specifies the way(s) that the indicator (object/attribute) is portrayed in a graph, on a map, or within a 2D or 3D virtual reality (etc.) of a pre-existing representation

KNOWLEDGE QUALITY ASSESSMENT

FIELD NAME	TYPE	FIELD EXPLANATION
K Status	Alphanumeric [max. 250 characters]	Specifies whether the information is primarily empirical (e.g., observation) or conceptual (e.g., theoretical model, simulation) in character.
KQA Issues	Alphanumeric [max. 250 characters]	Specifies in general terms the knowledge quality (KQA) issues associated with the indicator
NUSAP Profile	Alphanumeric [max. 250 characters]	Give a number between 0 to 9. Specifies whether or not a NUSAP profile is provided to characterise the knowledge quality issues associated with the indicator
NUSAP FRUIT	Alphanumeric [max. 128 characters]	
NUSAP URL	Alphanumeric [max. 250 characters]	The automatic procedure to link document from repository is under construction. Please follow one of this procedure: This field allows to link to "Fruit" content that are stored in the Babel²Gardens Documentation Space (Alfresco repository). • Browse the repository to find the document targeted. • Copy/paste document's name to the Title field or enter any other text • Copy/paste the document's URL in the URL field: right click on the file name, choose "Copy shortcut address". Paste in the URL field. *WARNING: The Fruit must have "GUEST" access right in Alfresco to be accessible for non-authenticated (anonymous) users.* *To remove a Fruitlink just clear the Title&URL fields*



Fondation Tuck

SCALE OF THE DESCRIPTION

FIELD NAME	TYPE	FIELD EXPLANATION
Observation Scale	Alphanumeric [max. 250 characters]	Specifies the organisational scale at which the object or attribute is described (or proposed, for a 'suggestion'

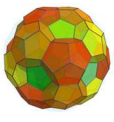
COMPONENT LEVELS

These fields should signal relevant 'inferior' organisational levels allowing a multi-scale interpretation

FIELD NAME	TYPE	FIELD EXPLANATION
Social/Cultural	Alphanumeric [max. 250 characters]	'Downward' changes-of-scale in societal and political organisation (e.g., individual, family, tribal group identity, club membership)
Governance/Political	Alphanumeric [max. 250 characters]	'Downward' changes-of-scale in governance systems or other regulatory/institutional organisation (village council, regional parliament, etc.…)
Economic	Alphanumeric [max. 1000 characters]	'Downward' changes-of-scale along the economic dimension (units of production, transport, consumption…)
Spatial/Environmental	Alphanumeric [max. 1000 characters]	'Downward' changes-of-scale primarily along ecological, territorial, spatial or other physical dimensions

HIGHER LEVELS

FIELD NAME	TYPE	FIELD EXPLANATION
Social/Cultural	Alphanumeric [max. 250 characters]	Upwards changes-of-scale in societal and political organisation e.g., from individual, family towards wider tribal, linguistic, religious or ethnic affiliations
Governance/Political	Alphanumeric [max. 250 characters]	Upwards changes-of-scale in governance systems or other regulatory/institutional organisation (UN, WTO, European Parliament, etc.)
Economic	Alphanumeric [max. 1000 characters]	Upward changes-of-scale along the economic dimension (e.g., sectors of production, aggregate consumption…)
Spatial/Environmental	Alphanumeric [max. 1000 characters]	Upward changes-of-scale primarily along ecological, territorial, spatial or other physical dimensions



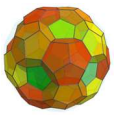
FILTERS

The 'Filters' within an 'ePLANETe' gallery provide for classifications of objects within that gallery. Some classifications are 'generic' in the sense of being 'standard' or even 'default options' for the usual applications of 'ePLANETe'. However it is possible to incorporate filters intended to be used only for a sub-type of object (that is, a specific sub-population of the objects in the gallery). Below we present the principal filters that have generic status in the 'KIK' gallery, in the context of applications in ecological economics, integrated environmental assessment and sustainability analyses.

FIELD NAME	FIELD SUBNAME	FIELD EXPLANATION
DIMENSION OF SYSTEM ORGANISATION	☐ The Social Dimension ☐ -0 = None ☐ -1 = Low ☐ -4 = Hight ☐ The political dimension ☐ -0 = None ☐ -1 = Low ☐ -4 = Hight ☐ The economic dimension ☐ -0 = None ☐ -1 = Low ☐ -4 = Hight ☐ The environmental dimension ☐ -0 = None ☐ -1 = Low ☐ -4 = Hight	Select one or more categories from the list.
ENVIRONMENTAL SERVICES	☐ Source ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Sink ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Sensory appreciation ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Life-Support ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong	Select one or more categories from the list.
ENVIRONMENTAL ASSETS	☐ Biodiversity ☐ -0 = Weak	Select one or more categories from the list.

FIELD NAME	FIELD SUBNAME	FIELD EXPLANATION
	☐ -2 = Medium ☐ -4 = Strong ☐ Lithosphere – Surface of the Earth ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Lithosphere – Productive Soils ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Hydrosphere – Fresh Water ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Hydrosphere – Marine Water Ressources ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Atmosphere – Climate system ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Atmosphere – Air quality ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong	
ECOSYSTEM TYPES	☐ Desert ☐ Mountains (alpine) ☐ Polar (including Tundra) ☐ Wetlands ☐ Forests (all types) ☐ Grasslands ☐ Moorlands ☐ Agroecosystem ☐ Urban ☐ Inland waters ☐ Coastal (including Mangroves) ☐ Coral reefs ☐ Marine	Select one or more categories from the list.

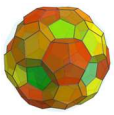
FIELD NAME	FIELD SUBNAME	FIELD EXPLANATION
SECTORS OF ECONOMIC ACTIVITIES	☐ Agriculture and Forestry ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Transport and Mobility ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Energy ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Industry and Manufacturing ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Waste and Pollution ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Services (Health, R&D, Administration, Education, etc.) ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Water Resources Management ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Natural Heritage (Biodiversity, Landscape, etc.) ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Fishing and Aquaculture ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Building and Construction ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong	



Fondation Tuck

FIELD NAME	FIELD SUBNAME	FIELD EXPLANATION
	☐ Urban Infrastructure ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Household Consumption ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong ☐ Other ☐ -0 = Weak ☐ -2 = Medium ☐ -4 = Strong	
UNITS OF ACCOUNTING	☐ 1st Law Energy Accounting ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ 2nd Law Units ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Mass or mass-derived units ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Water accounts (H2O) ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Carbon content ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Nitrogen ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Sulphur ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Other chemically based units of account	The table below gives a first sketch of a typology, to be applied with a view to 'ecological footprint' and 'circular economy' type analyses.

FIELD NAME	FIELD SUBNAME	FIELD EXPLANATION
	☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Diverse quantitative ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Monetary units of measure ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts ☐ Qualitative description ☐ -0 = Not Applicable ☐ -1 = Isolated Measure ☐ -4 = Basis for Accounts	



ANNEXE C

Liste des Indicateurs Candidats retenus dans le cadre des exercices KerDST d'évaluation des TTE dans CAFETT

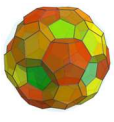
Ci-dessous, la liste complète des Indicateurs et des Arguments retenus lors des exercices, réalisés dans le cadre pédagogique avec les étudiants M1 GETEDELO (2017-2018), d'évaluation de l'acceptabilité du projet de parc éolien en baie de Saint-Brieuc et de la Centrale Biomasse de Gardanne.

La liste présent les Acronymes (colonne à gauche) et les Courtes Descriptions (colonne à droite) pour chacun des Indicateurs/Arguments candidats tels enregistrés dans le KIK (KerBabel Indicator Kiosk) de la plateforme ePLANETe.

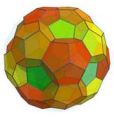
- En ce qui concerne les Arguments en provenance de l'analyse **MétaMètis** pour les terrains TTE de Gardanne et de la Baie de Saint Brieuc (voir le Rapport principal, Section §2), les acronymes/descriptifs **en français** ont été composés par les étudiants de manière décentralisée, à partir des descriptifs fournis par MM. Un travail d'homogénéisation s'impose mais, cela n'est pas essentiel pour les besoins de démonstration dans CAFETT.
- On trouve, dans deux blocs encastrés dans cette liste, d'une part les indicateurs Eurostat pour l'économie circulaire (en anglais, avec des acronymes **cei**) et, d'autre part, les 50 mesures pour une économie circulaire de la Feuille de Route Française (version française, avec des acronymes **Eco_Circ**).

Acronyme	Courte Description de l'Indicateur ou de l'Argument
	Bilan carbone
	Bien être au travail
	Bien être social
	Abandon filière par les pays étrangers
	Intégration dans le paysage
	Maintien emploi
	Paysage
	Degré d'investissement
	Profit
	Subventions
	Couverture énergétique
	Création d'emplois sur le territoire national
Aban_Fil	Abandon Filière par Pays Etrangers
Accap_terre	Accaparement des terres
Bilan_C_boat	Bilan carbone transport maritime grande distance
C -S- P	Choix du site de production
Cata_Ecolo	Catastrophe écologique - réchauffement climatique
cei_cie010	Private investments, jobs and gross value added related to circular economy sectors
cei_cie020	Patents related to recycling and secondary raw materials.
cei_pc010	EU self-sufficiency for raw materials
cei_pc031	Generation of municipal waste per capita
cei_pc032	Generation of waste excluding major mineral wastes per GDP unit
cei_pc033	Generation of waste excluding major mineral wastes per domestic material consumption
cei_srm010	Contribution of recycled materials to raw materials demand- End-of-life recycling input rates (EOL-RIR)
cei_srm020	Trade in recyclable raw materials
cei_srm030	Circular material use rate

Acronyme	Courte Description de l'Indicateur ou de l'Argument
cei_wm010	Recycling rate of all waste excluding major mineral waste
cei_wm011	Recycling rate of municipal waste
cei_wm020	Recycling rate of packaging waste by type of packaging
cei_wm030	Recycling of biowaste
cei_wm040	Recovery rate of construction and demolition mineral waste
cei_wm050	Recycling rate of e-waste
Choixtech	Choix technologique contestable
Col_Pal	Collision Pales/Animaux
Comm_Men_Insuff	Communication mensongère ou insuffisante
Conso_Mat_P	Consommation Matière Première
Contestation	Contestation centralisation privé/projet de territoire
Cout	Cout élevé de l'énergie éolienne pour l'Etat
crédib_études	Crédibilité études et communication
Crit PE	Critique de la politique énergétique du pays
Cri_Pol_Energ	Critique politique énergétique
D-V-E	Durée de vie de l'équipement
Dechets_nappephréat	Traitement/stockage déchets dangereux pour nappe phréatique
DefDemPol	Déficit Démocratique Politique
Déficit démocratique du débat sur la transition	Déficit démocratique du débat sur la transition énergétique / Critique de la politique énergétique du pays
dégrad_inst_terre	Dégradation installations à terre
dégrad_marin	Dégradation milieu marin
dég_eau	Dégradation qualité eau
Démant	Coût et prise en compte du démantèlement
dem_cout	Coût démantèlement
Dev res elec	Développement du réseau électrique
Dim_CO2	Diminution CO2
Dim_Nuc	Diminution Nucléaire
Economie_foret/bois	Concentration économique de la filière forêt-bois
Eco_Circ01	Incorporer davantage de matières premières issues du recyclage dans les produits
Eco_Circ10	Afficher de manière obligatoire à partir du 1 er janvier 2020 pour les équipements électriques, électroniques une information simple sur leur réparabilité
Eco_Circ11	Renforcer la mise en œuvre effective de la garantie légale de conformité et porter au niveau européen une extension de sa durée
Eco_Circ12	Généraliser la mise en place de critères d'éco- modulation à toutes les filières REP et faire de l'éco-modulation un outil réellement incitatif
Eco_Circ13	Améliorer l'information du consommateur
Eco_Circ14	Intensifier la lutte contre le gaspillage alimentaire
Eco_Circ15	Faire valoir d'ici 2019 pour la filière textile les grands principes de la lutte contre le gaspillage alimentaire
Eco_Circ16	Renforcer la lutte contre la publicité incitant à la mise au rebut prématurée des produits et au gaspillage des ressources
Eco_Circ17	Enclencher une dynamique de « mobilisation générale » pour accélérer la collecte des emballages recyclables, les bouteilles plastique et les canettes grâce à la consigne solidaire
Eco_Circ17	Simplifier le geste de tri pour les citoyens et harmoniser la couleur des contenants dans toute la France
Eco_Circ18	Étendre le champ de la filière REP « emballages » aux emballages professionnels et se donner pour objectif d'augmenter le % de bouteilles & canettes collectées dans le secteur cafés, hôtels et restaurants
Eco_Circ02	Accompagner l'investissement productif
Eco_Circ20	Améliorer le dispositif de pictogramme appelé « Triman » en simplifiant sa définition



Acronyme	Courte Description de l'Indicateur ou de l'Argument
Eco_Circ20	Faciliter le déploiement de la tarification incitative de la collecte des déchets
Eco_Circ21	Adapter la fiscalité pour rendre la valorisation des déchets moins chère que leur élimination
Eco_Circ23	Faciliter le déploiement du tri à la source des biodéche ts par les collectivités, en assouplissant les contraintes
Eco_Circ24	Valoriser tous les biodéchets de qualité et permettre au secteur agricole d'être moteur de l'économie circulaire
Eco_Circ25	Porter au niveau européen l'interdiction de l'usage des plastiques fragmentables, les contenants en polystyrène expansé et les microbilles de plastique
Eco_Circ26	Imposer d'ici 2020 l'installation de filtres de récupération des particules de plastiques sur les sites où celles -ci sont produites ou utilisées
Eco_Circ27	Élaborer début 20 19 un référentiel de bonnes pratiques et d'outils destiné aux collectivités pour lutter contre les dépôts sauvages de déchets
Eco_Circ28	Refonder le pacte de confiance des filières REP afin de redonner des marges de manœuvre aux éco-organismes tout en renforçant les moyens de contrôle de l'État et les sanctions
Eco_Circ29	Instruire avec les acteurs concernés la création de nouvelles filières REP ou l'extension de filières existantes pour étendre le principe de pollueur-payeur à de nouveaux produits
Eco_Circ03	Accompagner d'ici 2020, via le dispositif de l'Ademe « TPE & PME gagnantes sur tous les coups », 2 000 entreprises volontaires
Eco_Circ30	Faire évoluer certaines filières REP pour en améliorer le fonctionnement
Eco_Circ31	Etudier d'ici 2019 le déploiement d'un dispositif financier favorisant la reprise des anciens téléphones portables
Eco_Circ32	Donner plus de liberté aux producteurs pour l'exercice de leur responsabilité dans le cadre des filières REP
Eco_Circ33	Revoir le fonctionnement de la gestion déchets du bâtiment en rendant la collecte plus efficace
Eco_Circ34	Revoir en profondeur d'ici mai 2019 le dispositif réglementaire actuel du " diagnostique déchets avant démolition"
Eco_Circ35	Développer d'ici 2020 des guides techniques permettant la reconnaissance des performances des matériaux réutilisés ou réemployés
Eco_Circ36	Adapter la réglementation relative aux déchets pour favoriser l'économie circulaire
Eco_Circ37	Faciliter la sortie du statut de déchet
Eco_Circ38	Revoir à partir de 2019 les règles d'acceptation en décharge et en incinérateur des déchets de personnes morales
Eco_Circ39	Garantir le respect des règles du jeu
Eco_Circ04	Permettre aux filières REP de sécuriser les investissements des filières industrielles du recyclage et des producteurs de produits recyclés
Eco_Circ40	Lutter contre le trafic de véhicules hors d'usage
Eco_Circ41	Mener un effort de communication inédit pour mobiliser les citoyens et les entreprises
Eco_Circ42	Sensibiliser et éduquer
Eco_Circ43	Généraliser et pérenniser l'action territoriale autour de l'économie circulaire
Eco_Circ44	Faire de la commande publique et du dispositif "administration exemplaire" un levier pour déployer l'économie circulaire
Eco_Circ45	Soutenir l'économie circulaire via des financement dédiés
Eco_Circ46	Renforcer les synergies entre entreprises (écologie industrielle et territoriale _ EIT)
Eco_Circ47	Mobiliser la communauté scientifique et technique avec une approche pluridisciplinaire
Eco_Circ48	Renforcer la gouvernance nationale et le pilotage, en faisant évoluer le Conseils national de l'économie circulaire
Eco_Circ49	Intégrer les enjeux particuliers aux outre-mer
Eco_Circ05	Gérer les ressources de façon plus soutenable
Eco_Circ50	Poursuivre l'action de la France en faveur de l'économie circulaire à l'échelle européenne et internationale
Eco_Circ06	Adapter à partir de 2019 les compétences professionnelles pour mieux produire au niveau national et dans les territoires



Acronyme	Courte Description de l'Indicateur ou de l'Argument
Eco_Circ07	Déployer l'affichage environnemental volontaire des produits et des services dans les cinq secteurs pilotes et étendre ce dispositif volontaire à d'autres secteurs courant 2018
Eco_Circ08	Renforcer l'offre des acteurs du réemploi, de la réparation et de l'économie de la fonctionnalité
Eco_Circ09	Renforcer les obligations des fabricants et des distributeurs en matière d'information sur la disponibilité des pièces détachées pour les équipements électriques, électroniques et les éléments d'ameublement
Entrav_sauv	Entrave au sauvetage
Entr_Maint_Oné	Entretien & maintenance onéreux
Ep_Ress_Nat	Epuisement ressources naturelles
F-O	Fiabilité de l'opérateur
Fact_Elec	Facture Électricité
fréq_tour	Fréquentation touristique
Gaspi_Arg_Pu	Gaspillage Argent Public
gêne_nav_plaisance	Gêne à la navigation de plaisance
Impact_éco_loc_0	Pas d'impact économique local
Impact_éco_nat	Pas d'impact économique France
Impact_FM	Impact sur la faune marine
impact_vis	Impact visuel
imp_fact_conso	Impacts sur facture consommateur
imp_lab	Impacts sur labellisations
Imp_pêche	Impact sur la pêche
imp_sonore	Impact sonore
Baisse_CO²	Le projet ne permet pas de diminuer les émissions de CO2
marché_fr	Etat du marché français
mauv_site	Mauvais choix du site et protection du littoral
Motiv-Proj	Motivation Projet
Pertehab_biodiv	Perte d'habitat pour la biodiversité
petite_insta	Privilégier petites installations décentralisées
Pollution_air	Danger pour la santé liée à la pollution de l'air
Pol_sonore_camion	Pollution sonore des engins et camions
Préco_Cons	Précaution Constitutionnelle
Prj_pérenne	Pérennité du projet
prodsup_inutile	Production d'énergie supplémentaire inutile
REC_Gest_Forêt	Remise en Cause Gestion Forêt
Risk_Defor_Mass	Risque déforestation massive
Risk_Elec	Risques électromagnétique
risk_éol	Risques sur éoliennes
Risk_Heat_HT	Risque chaleur HT
Risk_nav	Risques à la navigation
Risk_techno	Risque technologique
Risque_incendie	Risque d'incendie
Risque_poll	Risque de pollution sur l'environnement
Santé_H	Impact sur la santé humaine
stock_elec	Intermittence et stockage de l'électricité
V B IMM	Valeur biens immobiliers

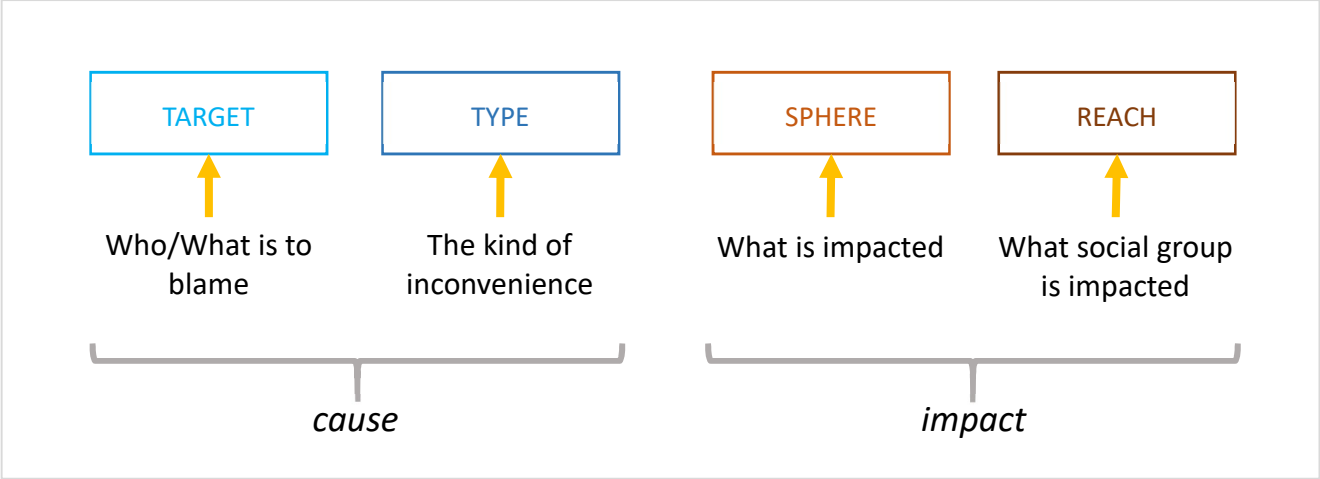
ANNEX D

THE MÉTAMÈTIS CLASSIFICATION SCHEMES FOR ANALYSIS OF ARGUMENTS (IN CAFETT TASK I)

Source: This ANNEX D is directly adapted from the CAFETT Report on TASK I compiled by the © MétaMètis team.

CLASSIFICATION AXES

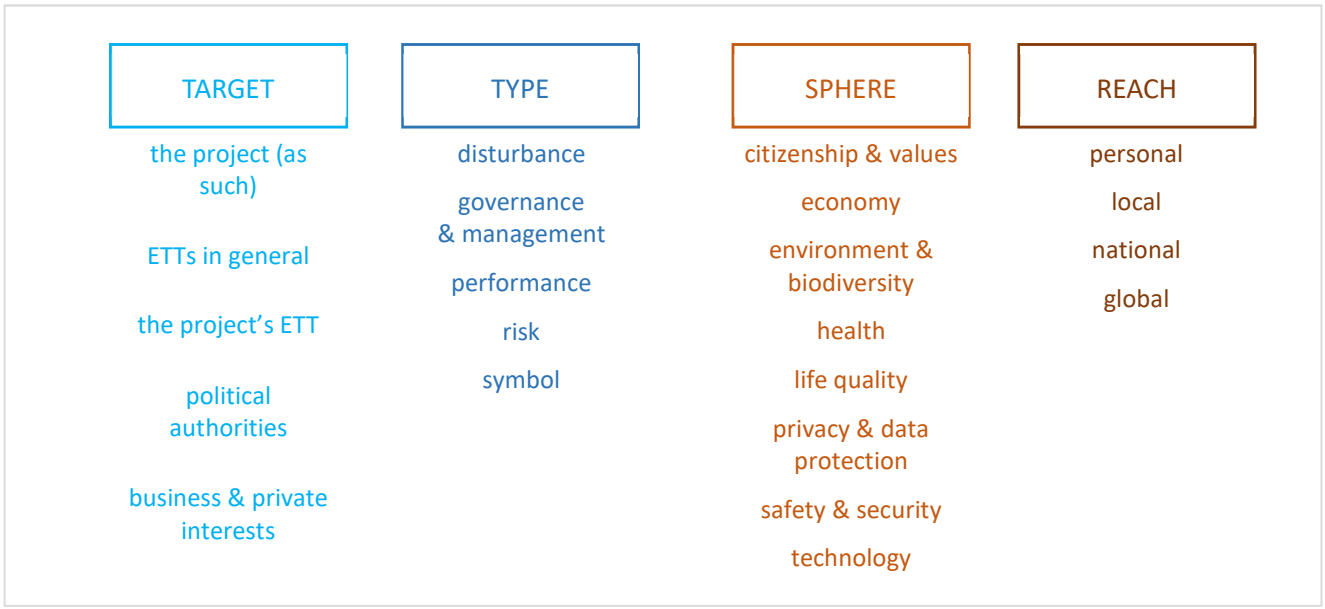
Normalized arguments provide an overview of opponents' grievances against a particular project. In order to be able to evaluate any argumentation against an ETT project according to a single scheme, we propose to rate these arguments according to four axes, presented in ANNEX D / Figure 1:



ANNEX D / Figure 1 : Argument classification axes (MétaMètis)

- The "target" represents the entity that bears the responsibility for what is criticized,
- The "type" represents the type of inconvenience attributed to a project, justifying a rejection,
- The "sphere" represents the domain of the real world impacted by the project, according to the argument,
- The "reach" defines the social group impacted by the project, according to the opponent.

Each axis allows a set of values, presented in ANNEX D / Figure 2 below. Normalized arguments are qualified with a value assigned on each axis.



ANNEX D / Figure 2 : The classification axes values (MétaMètis)

These values are explained in the tables below.

Target

VALUE	EXPLANATION
The Project (as such)	The criticism focuses on the project in the local context. A similar project in another location could be accepted.
ETTs in general	The criticism relates to all the ETTs, versus traditional energy sources like fossil fuels or nuclear energy.
The project's ETT	The criticism focuses on the specific ETT used in the project. The criticism would be the same for another project with the same ETT.
Political authorities	The criticism focuses on the government or local authorities
Business & private interests	The criticism focuses on private companies involved in the construction and/or operation of the project (motivations, actions, characteristics).

Type

VALUE	EXPLANATION
Disturbance	The project is the cause of a permanent or frequent disturbance (the disturbance depends on the presence of the project and disappears with it).
Governance	Public policies, decision and consultation processes, project management methods… are considered as flawed, inadequate, inefficient…

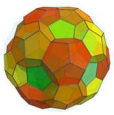
Performance	The project does not achieve or poorly achieves its objectives, be it environmental (e.g., lower CO_2 emissions), economic or other.
Risk	The project increases the probability of accidents, health problems, harm to the person, the society or the environment.
Symbol	The project is rejected because of what it represents for the people concerned, regardless of its intrinsic characteristics.

Sphere

VALUE	EXPLANATION
Citizenship & values	The project questions the right or respect of the citizen as a member of the nation. The criticism highlights a divide between classes (elite / people, company / individual, expert / citizen etc ...).
Economy	The project causes direct or indirect damage to the economy.
Environment & Biodiversity	The project degrades or threatens to degrade fauna and flora, or more generally harms the environment.
Health	The projects can be the cause of serious health problems.
Life quality	The project degrades the life quality of nearby residents.
Privacy & data protection	The project threatens the confidentiality and control by each individual of the use of his/her personal data.
Safety & Security	The project entails an increased risk of material and/or human accidents, directly or indirectly.
Technology	The technological choice is questionable. Another technology would have done better (this value is chosen when criticism focuses on the technical aspects without mentioning the consequences, financial, sanitary or other).

Reach

VALUE	EXPLANATION
Personal	The negative impact personally affects the one who makes the criticism
Local	The negative impact personally affects the local community, county or region
National	The negative impact personally affects the whole nation
Global	The negative impact personally affects the world



ANNEXE 'E'

Examples of Performance Issues and "Ethical Bottom Lines" for ETT Acceptability

This **Annex 'E'** presents a series of examples of sets of quality-performance considerations proposed, in different contexts, for application in assessments of system sustainability and social acceptability. Following the terminology introduced in Section §2.7 of the CAFETT Report on TASK II, we refer to these as "**ETHICAL BOTTOM LINES**". The examples provided are set out in the table below.

ANNEX	Short Description	Page
E/1	**Aluminium CSR – Corporate Social Responsibility Issues and Indicators at site and sector levels for the European Aluminium sector**	
E/2	**The Performance Assessment Structure in the EURBANLAB 'B4U' system of multi-criteria evaluation of urban eco-innovation**	
E/3	**A set of Ethical Bottom Lines for the multi-criteria multi-actor assessment of Quality in Higher Education & Research establishments (HERE).**	
E/4	**Short Checklist (in French) of 7 "Enjeux d'une Economie Verte"**	
E/5	**The Purposes and Principles of the NZ Resource Management Act 1991**	

Questions of perceived quality and fairness in the distribution of ETT opportunities, benefits, costs and risks (etc.) must be addressed, at the relevant scale(s), with reference to the full spectrum of communities or sectors or "stakeholders" for the policy, project or programme under scrutiny, and also with reference to the full spectrum of "the stakes" (that is, the factors bearing on acceptability). In this regard, a distinction must be made between an informed and sincere judgement, and an exhaustive data base. It is inconceivable to obtain high quality quantitative data for every aspect of declared vulnerability, mistrust and contention. So, if we wish to address ETT social acceptability considerations in a useful and pragmatic way, we need to identify robust ways for structuring and making visible the multiple stakeholder perspectives and preoccupations.

To make explicit the complex normative dimensions of ETT social acceptability, we adopted (in the **TASK II** Report) adopted the neologism of **ETHICAL BOTTOM LINES**. The 'ethical' dimension of an energy transition strategy consists not of a simple or unique criterion of what is good and right, but rather of ***the articulation of the spectrum of normative principles*** that, one way and another, stakeholders bring to bear in their cacophony of judgements about the acceptability of a type of ETT or a proposed ETT deployment. The notion of an "ethical" consideration is not set in opposition with traditional business considerations such as product quality or financial viability. Product quality may, for example, be seen as a duty of respect towards the buyer or user, whether or not this is enshrined in a code of business ethics or under law.

The examples brought together in this ANNEX 'E, together with those already exploited in the **TASK II** report, have a methodological role. They are lenses or prisms that help to show how any proposed ETT is, de facto, a "candidate" put forward by project holders towards the rest of society, as an ***ethically principled action*** — that is, an action that is intended to satisfy or respond to particular criteria of good or sound practice that are suggested by at least some members of the society. But, just as *"one man's meat is another man's poison"*, we must allow that different ethical bottom lines enter in collision and cannot always be reconciled. As such, these sets of "Ethical Bottom Lines" have, in different ways, informed our ETT case study analyses — as is explicit at several points in the short presentations of the **TASK III** terrains in **Section §1.2** of the main report, above).

ANNEX E/1

PERFORMANCE ISSUES & INDICATORS FOR CORPORATE SOCIAL RESPONSIBILITY REPORTING IN THE ALUMINIUM SECTOR

An innovative action-research project conducted for the European Aluminium Association (EAA) during 2001-2004 explored the potential of participatory methods that bring a range of stakeholders together to build CSR indicator systems that account of the full diversity of society's values.

Source: O'CONNOR M., BOOTH L., DE MARCHI B., HUE C., SPANGENBERG J., VALENTIN A. (2004), *Implementation of a System of Indicators for Social responsibility Reporting, Full Final Report (Phase Two),* Research Report prepared by the C3ED for a study supported by the European Aluminium Association through the EAA "Aluminium for Future Generations" Programme, France, June 2004.

THE GENERAL CONTEXT OF CSR REPORTING

Among the factors most widely cited as justifying a company's or sector's engagement in a **CSR** programme, are the perspectives of benefits in terms of:

- ✓ **Competitiveness**
- ✓ **Economic viability**
- ✓ **Technological innovation**
- ✓ **Reputation**
- ✓ **Influence of societal demand (viz., society's expectations along community and environmental dimensions)**
- ✓ **Work productivity**
- ✓ **Evolution of legislation (viz., the regulatory and wider institutional context) at the international, European and national level.**
- ✓ **Multiplication of international discussions about codes of conduct**
- ✓ **Attractiveness for investors**
- ✓ **Financial profitability**

Each of these factors may be seen as positive (pull) or negative (push). Company reporting is expected now to address the **Triple Bottom Line** of financial, social and environmental performance responsibilities.

Distinct concepts of corporate social responsibility coexist in the business world. One purpose of the study was to document stakeholders' views about what **CSR** is or should be. The majority of stakeholders on the industrial sites consulted nonetheless expressed arguments in favour of a broad process of consultation for setting social responsibility goals, strategies and performance measures. This fits with the then-emerging European governance model of a "multi-stakeholder partnership for sustainable development".

Corporate responsibility and practice are then defined in a social partnership engaging all stakeholders including business, citizens as workers and as consumers, the State and subsidiary territorial authorities, and civil society at large (including NGOs and community associations).

"... Corporate Social Responsibility is the concept that an enterprise is accountable for its impact on all relevant stakeholders. It is the continuing commitment by business to behave fairly and responsibly and contribute to economic development while improving the quality of life of the work force and their families as well as of the local community and society at large. By expressing their Social Responsibility, companies are affirming their role in social and territorial cohesion, quality and environment...."

— from the CEC: **EU CSR Green Paper: Promoting a European Framework for Corporate Social Responsibility**.

THE BOTTOM-UP TOP-DOWN APPROACH TO CSR INDICATOR IDENTIFICATION

To explore the basis for reconciling site-specific with generic reporting concerns, a "bottom-up-top-down" research approach was adopted. The suggestions of various stakeholders, participating in working groups at selected pilot sites, were documented and analysed in relation to **CSR** reporting frameworks established at international levels.

On this basis, a practical design was established for procedures for development of fully operational indicator systems at the site scale, based on selection from local suggestions and the adoption of pertinent indicator concepts from other sites including sector wide indicator requirements.

The central focus of the study has been to identify procedures that permit "generic" **CSR** reporting procedures for the aluminium sector at national and European levels, to be reconciled with attention to "site specific" character of indicators. It is important to pay attention to all the different functions of CSR evaluation and their respective organisational scales. Several distinct communication contexts are relevant:

- Exchange of perspectives **between sites**, e.g., comparisons and sharing of experience within a company;
- Communicating **from plant site to higher levels**, e.g., reporting to parent company; industrial association; territorial regulatory authority;
- Stakeholder dialogue processes **engaging "internal" and "external" stakeholders** making up the wider community, including suppliers, customers and civil society.

The C3ED study team proposed an integrated framework for CSR reporting that can respond to each of these needs. This framework is based on three main principles:

(1) **Recognition of Site Specificities:** What are the social, geographical, technological (etc.) factors that can have a bearing on the range of sites at which a proposed CSR indicator can meaningfully be applied?

(2) **Stakeholder Diversity**: CSR reporting must include procedures for stakeholder dialogues that build up a shared understanding of the different stakeholders' concerns, permitting an appropriate balance of site-specific as well as generic indicators.

(3) **Full Spectrum of CSR Performance Issues**: A common ground for stakeholder dialogues and for CSR reporting at site and industry levels, is assured through use of a standardised set of CSR indicator categories based on sustainability considerations.

A STANDARD FRAMEWORK FOR CLASSIFICATION OF CSR INDICATORS

The selection and deployment of indicators at each step of a site-level, company or sector-wide CSR evaluation process, can be facilitated through making systematic reference to standardised categories of CSR indicators.

During both phases of the C3ED team's work, site-level indicator suggestions have been classified and analysed in relation to typologies and frameworks for **CSR** reporting established at international levels. The EAA and the C3ED study teams met during 2003 to agree on a common set of indicator categories based on a convergence of international expertise and the experience of the pilot site group discussions (see **TABLE** at bottom of this page). The classification is made with reference to the "4 dimensions of sustainability" and reflects the emerging view of sustainable development as built on four pillars: economic opportunity, social development, environmental safeguards and effective transparent and participative management systems.

THE 15 STANDARD INDICATOR CATEGORIES FOR CSR REPORTING, FOLLOWING THE "FOUR DIMENSIONS OF SUSTAINABILITY"

ECONOMIC	SOCIAL	ENVIRONMENTAL	INSTITUTIONAL
Competitiveness	Working Conditions / Health and Safety	Resource Use (National/European)	Environmental Management System
Pay & Benefits	Employee Opportunities and Relations	Resource Use – Global (International exchange)	Company CSR Strategy/Policy
Revenues and Payments	Internal Communications	Emissions and Impacts	Supply Chain Relationships
Production (physical)	Community Relationships	Product Use (Life Cycle)	*(Source: EAA / C3ED, June 2003)*

THE SIX ALUMINIUM PILOT SITES IN EUROPE

In the first phase of the study, during 2002, three pilot sites were selected in France. The sites were:

- The Pechiney smelter and primary production plant at Saint Jean de Maurienne (Savoie), producing machine wire, slabs and ingots;
- The Alcoa Europe plant at Merxheim (Alsace), producing coil coated sheets, multi-coats composite aluminium panels for building & construction systems;
- The Corepa SNC, CFF Recycling plant at Bruyères sur Oise (Ile de France), engaged in the sorting & processing of scrap.

The second phase of the study, in 2003, centred on 3 pilot case studies in other parts of Europe. These were:

- The Hydro Aluminium rolled products plant at Grevenbroich (in the north-west of Germany);
- The Metra plant located at Rodengo Saiano in northern Italy, producing a variety of extrusion products;
- The Alcan smelter at Lochaber (western Scotland, UK).

At each of the 6 pilot sites, groups of stakeholders were constituted on the basis of prior agreements with the company management. The goal was to ensure coverage, at each site, of a broad spectrum of stakeholders, namely:

- **the internal stakeholders** (employees);
- the **'traditional external' stakeholders** identified on the basis of business relations and interests (suppliers, customers, banks, insurance...); and
- the **'broader external' stakeholders** reflecting the enlarged sphere of social responsibility (NGOs, environmental and community associations, other firms, territorial institutions).

The discussion groups provided a broad span of local knowledge and opinions about companies' social responsibilities. The groups varied in size, containing between 4 and 25 persons. With three or four groups per site, the whole process across the 6 pilot sites engaged nearly 200 persons in and around the aluminium industry.

Every industrial site has its own particular features. Specificities in the selection of indicators for a site-level CSR reporting can be considered in terms of the four dimensions of sustainability:

- **The economic dimension** (specificity of the type of industrial activity). Supply chain relations, workforce characteristics and environmental preoccupations are all specific to each type of manufacturing or other activity.
- **The institutional dimension** (specificities in group ownership and the regulatory context). This covers both internal and external aspects of governance, including ownership history and corporate management traditions.
- **The physical/environmental dimension** (geographical location, climate, etc.).
- **The social dimension** (workforce relations, community concerns and expectations) defining a site's socio-economic profile.

These four aspects can interact. For example, some plants are the principal economic actor in their district, being relatively distant from large cities. Examples among the pilot sites are St Jean (Pechiney) and Merxheim (Alcoa) and Lochaber (Alcan). Other plants, being within major industrial districts or close to large cities, are less dependent on a local community insertion (e.g., the CFF Bruyère sur Oise installation is close to Paris, or the Metra extrusion plant and the Grevenbroich Hydro Aluminium rolled products plant which are located within major industrial districts). The ownership and history of each site also has a clear impact on the way in which local social responsibilities are addressed, e.g., the Lochaber smelter which, now owned by Alcan, retains influences of its 'British Aluminium' past; or the Germany Hydro Aluminium plant which, while being a major employer in the region, is in some cases still known to the residents by its old names. For site-level reporting, local preoccupations must be reflected in customised indicators. Such indicators might however be transferable in the sense of finding applications from site to site or in sector aggregation.

COMPLEMENTARY REFERENCES (publications based on the C3ED/EAA Study)

- **FAUCHEUX, S., & NICOLAÏ, I.** (2003). "From sustainable development to corporate social responsibility: an application to the European aluminium sector". *International Journal of Sustainable Development, 6*(2), 155-169.
- **FAUCHEUX, S., & NICOLAÏ, I.** (2004a), « La responsabilité sociétale dans la construction d'indicateurs : l'expérience de l'industrie européenne de l'aluminium ». *Natures Sciences Sociétés, 12*(1), pp.30-41.
- **FAUCHEUX, S., & NICOLAÏ, I.** (2004b). « Quels indicateurs pour la responsabilité sociale des entreprises ? Une application à l'industrie européenne de l'aluminium ». *Annales des Mines : Gérer & Comprendre* (76), pp.42-55.
- **O'CONNOR M. & SPANGENBERG J.H.** (2008), "A methodology for CSR reporting: assuring a representative diversity of indicators across stakeholders, scales, sites and performance issues", *Journal of Cleaner Production* 16(13): 1399-1415.

STAKEHOLDERS' INDICATOR SUGGESTIONS

ECONOMIC PERFORMANCE (CODE 'EC')

COMPETITIVENESS

EC 1-01 : Innovation investment
EC 1-02 : Dependence on customers, suppliers, markets, exchange rates
EC 1-03 : Average energy cost
EC 1-04 : Risk of failure: of customers, suppliers, machinery, paid labour
EC 1-05 : Level of wages in the aluminium companies
EC 1-06 : Aluminium use per capita (EAA)
EC 1-07 : Taxes paid (EAA)

PAY & BENEFITS

EC 2-01 : Fringe benefits, economic and others offered to the employees
EC 2-02 : Equity between employees for wages and profit shares

REVENUES AND PAYMENTS

EC 3-01 : Profitability
EC 3-02 : Productivity
EC 3-03 : Value added (EAA)
EC 3-04 : Total revenue (EAA)

PRODUCTION (PHYSICAL)

EC 4-01 : Total production (EAA)

SOCIAL PERFORMANCE (CODE 'S')

WORKING CONDITIONS / HEALTH AND SAFETY

S 1-01 : Occupational and lifestyle health programmes
S 1-02 : Records of accidents
S 1-03 : Means developed within the company to prevent exclusion
S 1-04 : Turnover and absenteeism rates
S 1-05 :Time/output lost in strikes
S 1-06 : Difficulty to recruit adequate people
S 1-07 : Ratio of workforce to yearly output tonnage. Labour productivity

EMPLOYEE OPPORTUNITIES AND RELATIONS

S 2-01 : Gender balance
S 2-02 : Equity between employees / anti-union bias
S 2-03 : Equity of wages between firms in the same region
S 2-04 : Training programmes for the employees
S 2-05 : Workers would like to have contacts with the other sites
S 2-06 : Problems related to cultural differences
S 2-07 : Responsibility of the firm towards the employees
S 2-08 : Professional development. Lack of career succession planning
S 2-09 : Staff number / Job security

INTERNAL COMMUNICATIONS

S 3-01 : Diffusion of information for employees
S 3-02 : Information is not communicated in the local language
S 3-03 : Dialogue with the management

COMMUNITY RELATIONSHIPS

S 4-01 : Contribution of the firm to the community
S 4-02 : Employee Involvement into the local community
S 4-03 : Employment of local population
S 4-04 : Communication / dialogue with the local actors
S 4-05 : Turnover of management
S 4-06 : Information exchange among aluminium companies
S 4-07 : Origins of workers
S 4-08 : Company involvement outside the region
S 4-09 : Number of mergers / acquisitions

This list was obtained through uniting suggestions from the 6 pilot sites, identifying common concepts and grouping the suggestions according to the CSR categories established by the C3ED/EAA.

We also show in red italics, those of the EAA's generic indicator concepts used in the 2003 EAA survey of European aluminium firms not having a close equivalent in suggestions made at the pilot site level.

ENVIRONMENTAL PERFORMANCE (CODE 'EV')

RESOURCE USE (NATIONAL / EUROPEAN)

EV 1-01 : Energy consumption
EV 1-02 : Water consumption
EV 1-03 : Energy production from renewable sources
EV 1-04 : Pure water consumption

RESOURCE USE – GLOBAL (INTERNATIONAL EXCHANGE)

EV 2-01 : Bauxite availability (EAA)
EV 2-02 : Mine rehabilitation (EAA)

EMISSIONS AND IMPACTS

EV 3-01 : Volume of treated wastes
EV 3-02 : Means devoted to handle wastes
EV 3-03 : Fluorine emissions
EV 3-04 : Fluoride emissions harming local population
EV 3-05 : Carbon dioxide emissions
EV 3-06 : Noise levels
EV 3-07 : Road traffic, number of trucks per day
EV 3-08 : Dust emissions
EV 3-09 : Local community complaints about bad smells
EV 3-10 : NO_2 emissions
EV 3-11 : Level of $S0_2$ emissions in the area
EV 3-12 : Waste water emissions
EV 3-13 : Reduction of heavy metal emissions
EV 3-14 : Disposal of solvents contained in paints
EV 3-15 : Level of dioxin emissions
EV 3-16 : Polychlorinated biphenyls (PCBs) emissions
EV 3-17 : Subsidies paid to the affected populations
EV 3-18 : Type of fuel used
EV 3-19 : Storage of hazardous substances
EV 3-20 : Accidents linked to handling of hazardous substances
EV 3-21 : Expenditure in insurance
EV 3-22 : Land use
EV 3-23 : Recultivation of area used
EV 3-24 : Recycling quota
EV 3-25 : Material consumption wood
EV 3-26 : Benz (a) pyrene (BaP) emissions (EAA)
EV 3-27 : Bauxite residue deposited (EAA)
EV 3-28 : Spent pot line (SPL) deposited (EAA)

PRODUCT USE (LIFE CYCLE)

EV 4-01 : Use phase (EAA)
EV 4-02 : End of life phase (EAA)
EV 4-03 : Life cycle aspects

INSTITUTIONAL ASPECTS (CODE 'IN')

ENVIRONMENTAL MANAGEMENT SYSTEM

IN 1-01 : Objectives anticipating the regulations
IN 1-02 : Means devoted to handle environmental problems
IN 1-03 : Environmental impact of the firm. Historical liability
IN 1-04 : Infractions to regulations
IN 1-05 : Plant certification
IN 1-06 : Road-rail transport / Adequate rail infrastructure
IN 1-07 : Incentives for compensating initiatives and innovations
IN 1-08 : Link between innovation and incident reduction

COMPANY CSR STRATEGY / POLICY

IN 1-01 : "Voluntary" objectives fixed by the site or the company
IN 2-02 : Formalization of corporate social responsibility
IN 2-03 : Observance to statutory obligations
IN 2-04 : Tools used for measuring performances
IN 2-05 : Number of hierarchical levels
IN 2-06 : Installations must be designed to increase safety
IN 2-07 : Investment in environment and H&S
IN 2-08 : Sustainability mission statement (EAA)

SUPPLY CHAIN RELATIONSHIPS

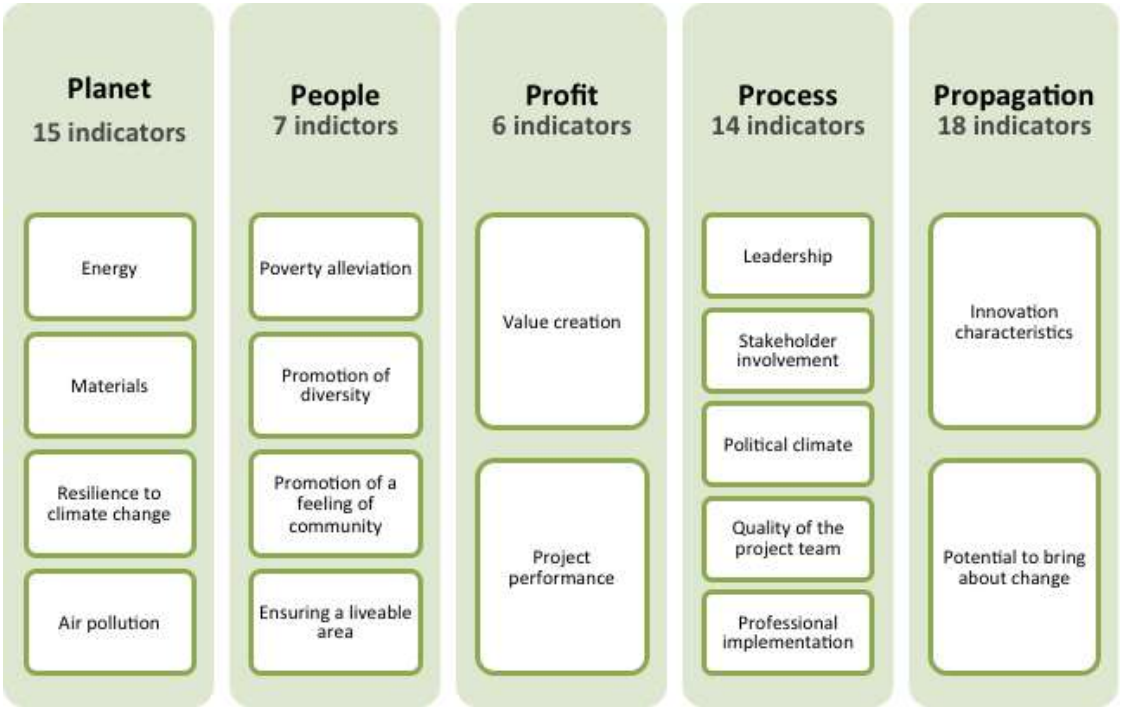
IN 3-01 : Dialogue with suppliers and members of the supply chain
IN 3-02 : Equitable treatment of employees of the firm and of suppliers
IN 3-03 : Selection criteria for choosing suppliers

ANNEXE E/2

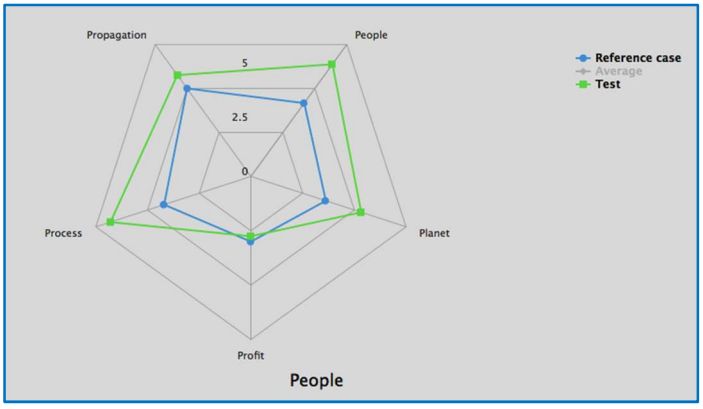
The EURBANLAB 'B4U' Top-goal & Sub-goal Structure

The EURBANLAB Project (funded during 2011-2014 by the EC "Climate KIC"), invested in the use of multi-criteria frameworks for analysis and evaluation that enable project proponents or other stakeholders to compare, qualitatively and quantitatively, how their respective territorial eco-innovation projects may perform. Evaluation in the **EURBANLAB** context can be focussed on a single technology or investment action, or it can be comparative across different options, sites or technologies.

The chosen approach was the application of multi-criteria assessment, through development of a web-based tool called 'B4U' (Benchmarking for You) providing a framework of indicator-based appraisal relative to sustainability criteria. Climate innovation solutions are considered qualitatively against high-level sustainability criteria. These "top-goals" are the **5P's, People, Planet, Profit, Propagation Potential, Process (Governance)**. For each of the top-goals, a set of specific performance concepts are articulated as "intermediate" multiple bottom lines: the "sub-goals". We present in the figure below, a 2014 specification of the Top-goals and their respective Sub-goals.



An anchoring in empirical measurement is provided through a set of (one or more) indicators relating to each sub-goal "bottom line". Each indicator is calibrated with reference values, so that a score between 0 and 10 is obtained relative to the WORST and the BEST and cases registered as reference values. A process of aggregation then obtains the average score at the sub-goal level, then at the top-level. The top-goal scores (for the 5P's) are shown in a five-spiked kite or radar diagram.



Source : http://eurbanlab.eu/assessments/.

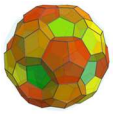
Several variants of 'B4U' exist for the sub-goals retained for each of the 5Ps. This diagram above (dating from 2014), presents the top-goal/sub-goal framework and terminology applied for a " B4U Self-Assessment" then available on-line.

A detailed application, adapted to construction and building quality with application to the "Sustainable Campus" problematic, is provided in the PhD thesis by Mariana Bettincourt (2017). The Top Goal/ Sub-Goal structure is set out in the table below. Then, a further table on the following two pages sets out the Indicators retained for each of the Sub-Goals.

For the purposes of CAFETT, the 'B4U' Indicators, and also (at a higher level of abstraction) the 'Sub-Goals', could be considered as "Candidate Indicators" for incorporation into a KerBabel Indicator Kiosk (KIK) for exploitation in a multi-criteria multi-actor evaluation. This would be particularly pertinent for in-depth examination of ETT programmes and projects in the building sector, as was addressed (though only in an exploratory way) in the course of the CAFETT TASK III Scoping Studies.

The B4U Top Goals	Subgoals in B4U-Construction
PEOPLE	Promotion of a feeling of community/home
	Ensuring a liveable area
	Interior environmental quality
	Work conditions
PLANET	Energy
	Materials
	Water
	Waste
	Resilience to Climate Change
PROFIT	Waste management
	Value creation
	Project Performance
PROCESS (GOVERNANCE)	Leadership
	Stakeholder involvement
	Political climate
	Project Team
	Project management
	Professional Implementation
PROPAGATION (UPTAKE POTENTIAL)	Professional Implementation
	Innovation characteristics
	Ability to bring about change

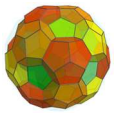
Source: BITTENCOURT, Mariana (2017), *Sustainability assessment of university buildings: Application of a multi-criteria and participative tool to help the decision-making process,* Thèse de doctorat en sciences économiques (dir. Dr. Jean-Marc Douguet). Soutenance : Guyancourt, 27 November 2017, Université Paris Saclay, France.



(suite) ANNEXE E/2

The Tree structure of Top-Goals, Sub-Goals and Indicators for the B4U evaluation tool adaptation for sustainable construction issues

Top Goals	Subgoals	Indicators — *B4U-Construction*	Reference
PEOPLE	Promotion of a feeling of community/home	*Connection to the existing cultural heritage*	B4U
PEOPLE	Promotion of a feeling of community/home	*Design for a sense of place*	B4U
PEOPLE	Promotion of a feeling of community/home	*Ensuring the Comfort & Image of Public Spaces*	B4U
PEOPLE	Ensuring a liveable area	*Availability multi-modal mobility options*	B4U
PEOPLE	Ensuring a liveable area	*Availability of public amenities*	B4U
PEOPLE	Ensuring a liveable area	*Availability of commercial amenities*	B4U
PEOPLE	Interior environmental quality	*Indoor Air Quality*	USGBC, 2013
PEOPLE	Interior environmental quality	*Thermal comfort*	USGBC, 2013
PEOPLE	Interior environmental quality	*Materials with low toxic emissions*	USGBC, 2013
PEOPLE	Work conditions	*Health*	USGBC, 2013
PEOPLE	Work conditions	*Security*	USGBC, 2013
PLANET	Energy	*Annual primary energy consumption of buildings*	B4U
PLANET	Energy	*Annual final energy consumption of buildings*	B4U
PLANET	Materials	*Reduction of materials used*	B4U
PLANET	Materials	*Share of recycled input materials*	B4U
PLANET	Materials	*Share of recyclable materials*	B4U
PLANET	Materials	*Share of renewable materials*	B4U
PLANET	Water	*Water use reduction inside the building*	USGBC, 2013
PLANET	Water	*Water use reduction outside the building*	USGBC, 2013
PLANET	Water	*Rain water reuse*	USGBC, 2013

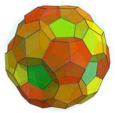


Fondation Tuck

Top Goals	Subgoals	Indicators — *B4U-Construction*	Reference	
PLANET	Waste	*Projet design changing*	Yuan, H., (2013)	
PLANET	Waste	*Strategies to avoid waste in the design phase*	Yuan, H., (2013)	
PLANET	Waste	*Construction and demolition waste management*	USGBC, 2013	
PLANET	Waste	*Storage and collection of recyclable materials*	USGBC, 2013	
PLANET	Resilience to Climate Change	*Climate resilient design building*	B4U	
PROFIT	Waste management	*Waste management cost*	Yuan, 2013	
PROFIT	Waste management	*Economical advantage of waste management*	Yuan, 2013	
PROFIT	Value creation	*Use of Local workforce*	B4U	
PROFIT	Value creation	*Value addedd for the entreprises*	Yuan, 2013	
PROFIT	Value creation	*Total cost savings for end-user*	B4U	
PROFIT	Project Performance	*Total cost vs. subsidies*	B4U	
PROFIT	Project Performance	*CO_2 emission reduction cost efficiency*	B4U	
PROCESS	Leadership	*Framing*	B4U	
PROCESS	Leadership	*Bridging*	B4U	
PROCESS	Leadership	*Lobbying*	B4U	
PROCESS	Leadership	*Persistency*	B4U	
PROCESS	Stakeholder involvement	*Local community involvement*	B4U	
PROCESS	Stakeholder involvement	*Professional stakeholder involvement*	B4U	
PROCESS	Political climate	*Government vision*	B4U	
PROCESS	Project Team	*Training of the workforce*	B4U	
PROCESS	Project Team	*Clear division of responsibility*	B4U	
PROCESS	Project Team	*Prior experience with innovation*	B4U	5
PROCESS	Project Team	*Prior collaboration between team members*	B4U	5
PROCESS	Project management	*Water management*	Ghisi et al, 2014	

Top Goals	Subgoals	Indicators — *B4U-Construction*	Reference
PROCESS	**Project management**	*Energy management*	**USGBC, 2013**
PROCESS	**Project management**	*Construction site management*	**USGBC, 2013**
PROCESS	**Project management**	*Waste management*	**USGBC, 2013**
PROCESS	**Professional Implementation**	*Audit activities - Fines and Penalties*	**Vivian et al, 2006**
PROCESS	**Professional Implementation**	*Audit activities - non conforming reports*	**Vivian et al, 2006**
PROCESS	**Professional Implementation**	*Balanced team in design phase*	**B4U**
PROPAGATION	**Professional Implementation**	*User training*	**B4U**
PROPAGATION	**Professional Implementation**	*Continued monitoring/reporting*	**B4U**
PROPAGATION	**Innovation characteristics**	*Technical compatibility of Innovation*	**B4U**
PROPAGATION	**Innovation characteristics**	*Complexity for end users of the technology*	**B4U**
PROPAGATION	**Innovation characteristics**	*Complexity for professional stakeholders*	**B4U**
PROPAGATION	**Innovation characteristics**	*Trialability*	**B4U**
PROPAGATION	**Innovation characteristics**	*Advantages for end users*	**B4U**
PROPAGATION	**Innovation characteristics**	*Advantages for stakeholders*	**B4U**
PROPAGATION	**Innovation characteristics**	*Visibility of results*	**B4U**
PROPAGATION	**Innovation characteristics**	*Solution(s) to development issues*	**B4U**
PROPAGATION	**Innovation characteristics**	*Current market demand for the solution*	**B4U**
PROPAGATION	**Ability to bring about change**	*Diffusion of products, concepts and technologies to other locations*	**B4U**
PROPAGATION	**Ability to bring about change**	*Diffusion of products, concepts and technologies to other actors*	**B4U**
PROPAGATION	**Ability to bring about change**	*Change in rules and regulations*	**B4U**
PROPAGATION	**Ability to bring about change**	*Change public procurement*	**B4U**
PROPAGATION	Ability to bring about change	*New forms of financing*	**B4U**

Source: Reflexive Evaluation of/by the Eurbanlab 'B4U' Procedure by/of the UVSQ-BN — Case Study, draft REEDS Research Report by Mariana BITTENCOURT, with contributions from Borislav ANTONOV, Jean-Marc DOUGUET, Philippe LANCELEUR, Martin O'CONNOR & Kleber PINTO SILVA.



Fondation Tuck

E/3. — QUALITY/PERFORMANCE IN HIGHER EDUCATION & RESEARCH

[SET OF 7 ETHICAL BOTTOM LINES FOR HER ESTABLISHMENTS]

PR.1 — What is the HER establishment's PRODUCT QUALITY? For example:

- Teaching and training quality as assessed by competent authorities, through student and faculty auto-evaluation, and in the eyes of outside stakeholders?
- Academic research quality as assessed by competent authorities and through graduate student and faculty auto-evaluation (and, perhaps, in the eyes of outside stakeholders)?
- Contributions/impacts of the HER community to society (including via expertise, educational outreach…)?
- Strategy for maintaining and enhancing academic quality?

PR.2 Is the HER establishment ECONOMICALLY VIABLE? For example:

- Are the immediate costs of teaching and research programmes affordable with the available resources?
- Are the current/envisaged resource management strategies cost-effective?
- Are there major financial risks or costs being shifted into the future?
- Reasonable prospects of mobilising resources for the forecast operating and investment costs in the longer term?

PR.3 Have the OPERATIONAL RESPONSIBILITIES of partners/stakeholders been appropriately defined and assigned? For example:

- Quality assurance in research and teaching (cf., the UK QAA and REF procedures)?
- The funding base (including public, private and any other partnership) and financial management?
- Health and security for students and HERE staff, and also for workers and the public on or close to the site?
- Norms of equity (such as "*Equality and Diversity*") in student access and staff recruitment and retention?
- Well defined consultation, deliberation and decision procedures at internal, local and national levels?

PR.4 Have responsibilities towards other parties in the LONG TERM been addressed? For example:

- Application of the principle that 'the polluter pays'?
- A 'sustainability' principle of inter-generational responsibility (don't pass on problems to others that you cannot cope with yourself);
- A thorough characterisation of risks/uncertainties/future contingencies (with reference to: the dangerous substances, the engineering works, the living environment, and future societal evolutions);
- An application of some version of the principle of precaution in all facets of HER activity (dangerous substances, engineering works, biodiversity and the living environment…);
- Is there likely long term stability of the necessary knowledge base (e.g., transmission of records, specialised know-how, local knowledge) for competent stewardship?

PR.5 Has available TECHNICAL KNOWHOW & SYSTEMS SCIENCE been mobilised? For example:

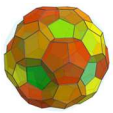
- Best practice (technical reliability, simplicity…) in building, operations and wider territorial infrastructures?
- Rigorous profiling (in scientific, health and sociological terms) of the direct and indirect environmental "footprint" of HERE activities and of associated risks?
- Monitoring procedures attentive to social inequalities, respect of diversity, risks and future contingencies?

PR.6 Does the HER establishment enhance the prestige of the HOST COMMUNITIES and other territorial stakeholder groups? For example:

- Viable partnership between local and national stakeholders (e.g., agreed distribution of responsibilities; legal mandate for HER development; agreement on bases for financing of different cost components, etc.)
- Site specificities clearly in evidence?
- Local knowledge, knowhow, and workforce competencies clearly in evidence?
- Well defined framework for ongoing involvement of stakeholders in HERE strategy oversight and review?
- Access of the members of local communities to educational and training opportunities?
- Societal relays for acceptability, enthusiasm, visibility and prestige?

PR.7 Does the HER establishment embody or enhance SOLIDARITY PRECEPTS FOR SUSTAINABILITY? E.g.

- Circular Economy & Environmental performance?
- Institutional framework for co-management of environmental and social 'common' wealth/infrastructures?
- Financial loops or cycles that, as monetary counterparts of an inclusive, green/circular economy, assure solidarity of markets-based transactions with maintenance of territories' environmental and social infrastructures?
- Operational and inclusive partnerships for implementing & governing the value loops?
- Communication/Sharing of experience across different institutional scales (e.g., the HER establishment itself, territorial development, national policy, international obligations and comparisons)?



Fondation Tuck

ANNEX E/4

Sustainable development is, in general terms, the challenge of collective engagement to invest in the creation and maintenance of durable reciprocally linked social, economic and ecological systems. As a model or paradigm of societal opportunities, the vision of a SD responds to declared risks of futures with degraded conditions of ecological services and a worsening of ecological (as well as economic) inequalities, with a systemic and normative orientation marked by two originalities:

(1) **Constructing ecological solidarities**, via eco-innovations engaging the shift from a 'predatory' to a more 'circular' model of economic value creation and transmission; and

(2) **Constructing social solidarities**, engaging the shift from unequal 'dual' societal structures (e.g., formal/informal; capitalist/proletariat; high wage North/low wage South) to more reciprocal models of partnership in value creation and transmission.

This vision of "sustainability" as culture and governance for an inclusive and durable green economy is somewhat of a utopia. Yet for many, as a cognitive and normative framework, it orients action, provides reference points for evaluation, and (without necessarily mistaking desire for reality) inspires hope.

7-point CHECKLIST for a GREEN ECONOMY

Un 'Checklist ' de conditions nécessaires à respecter pour admettre un projet comme contribution vers une croissance verte inclusive et durable.

§1. Cadre Politique et Juridique — Existe-t-il une signalisation claire pour le secteur ou terrain d'action, d'une gouvernance en faveur d'un entretien patrimonial des actifs environnementaux ?

§2. Performance Technique et Environnementale — Les partenaires de l'action, ont-ils ciblés la performance environnementale par design ? S'appuient-ils sur des connaissances techniques et environnementales suffisantes pour bien caractériser les potentialités et les risques environnementales ?

§3. Performance financière — Les partenaires de l'action, s'appuient-ils sur des connaissances commerciales, budgétaires et économiques pour bien caractériser la viabilité financière de leur projet ?

§4. Cadre institutionnel de Gestion 'Patrimoniale' de Ressources Environnementales — Existe-t-il, par rapport aux ressources environnementales exploitées ou à exploiter, une organisation d'acteurs efficace qui permet (i) une identification cohérente de la gamme de demandes sur les actifs ou les services environnementaux ; et (ii) un arbitrage efficace et légitime concernant les conflits d'usage ?

§5. Des boucles financières pour une « économie verte » durable — Peut-on identifier des cadres institutionnels ainsi que des mécanismes opérationnels qui assurent la mobilisation des moyens financiers (dont force de travail, revenus) pour l'entretien durable de l'actif environnemental ?

§6. Partenariat opérationnel et solidaire — Les alliances des acteurs en relation commerciale ou en partenariat territorial, sont-elles respectueuses des principes d'un développement durable et solidaire ?

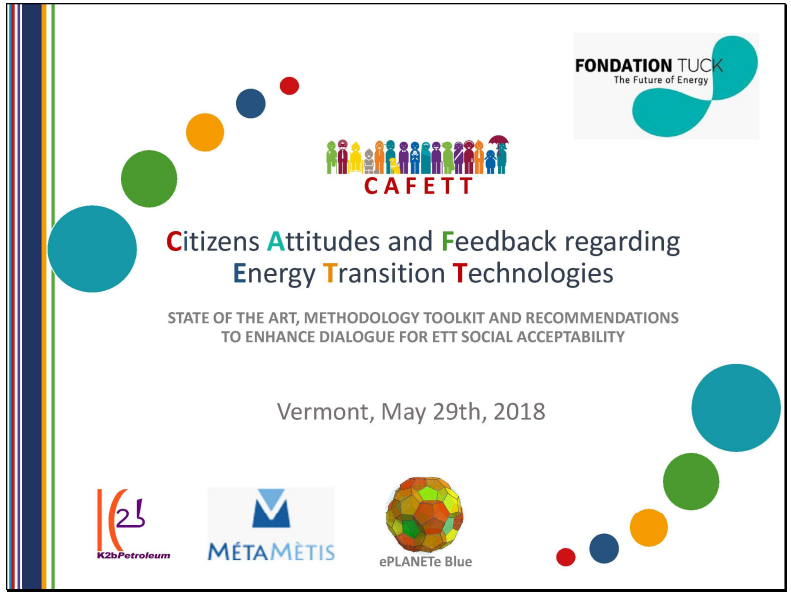
§7. Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme…) — Le projet, bénéficie-t-il d'une visibilité ou d'une notoriété aux yeux des populations ou parties-prenantes externes (au niveau territorial, national ou international) qui augmente les perspectives de succès de l'action ?

ANNEX E/5 — NEW ZEALAND RESOURCE MANAGEMENT ACT

The New Zealand RMA Part 2 — Sustainability Purpose and Principles
5 Purpose
(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
(2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—
(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.
6 Matters of national importance
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:
(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
(d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.
[(f) the protection of historic heritage from inappropriate subdivision, use, and development.] — in 2003
[(g) the protection of protected [formerly 'recognised'] customary activities.] — *in 2004; amended 2011.*
[(h) the management of significant risks from natural hazards] — *in 2017.*
7 Other matters
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—
(a) Kaitiakitanga:
[(aa) The ethic of stewardship:] — *in 1997*
(b) The efficient use and development of natural and physical resources:
[(ba) The efficiency of the end use of energy**] — *in 2004***
(c) The maintenance and enhancement of amenity values:
(d) Intrinsic values of ecosystems:
(e) Repealed [supplanted in 2003 by §6 (f), and later also §6 (g) at a higher status].
(f) Maintenance and enhancement of the quality of the environment:
(g) Any finite characteristics of natural and physical resources:
(h) The protection of the habitat of trout and salmon:
[(i) the effects of climate change:] — *in 2004*
[(j) the benefits to be derived from the use and development of renewable energy.] — *in 2004*
8 Treaty of Waitangi
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

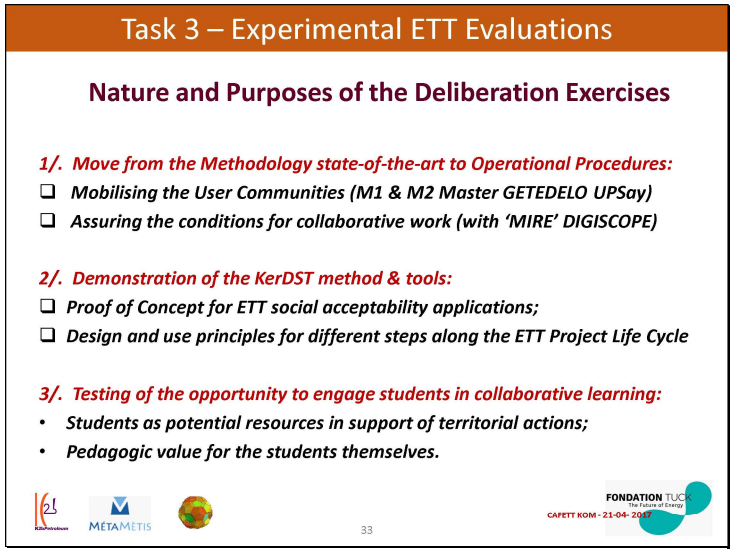
Source: *The Resource Management Act: An Act to restate and reform the law relating to the use of land, air, and water*, 1991. No.69, 22 July 1991. Wellington, NZ House of Representatives. I*tems within **[...]** are amendments after 1991.*

ANNEXE F
PPTx Presentation of Results for TASK III (May 2018)



Task III / Diapositive 01

Task III / Diapositive 02



Task III / Diapositive 03

Task 3 – Experimental ETT Evaluations

Steps and Tasks in the KerBabel Deliberation Process

STEPS IN THE PROCESS

- *Build the ETT Evaluation Problem*
- *Compile Catalogue of Arguments*
- *Prepare Argument/Indicator Classification*
- *Mobilise the Arguments to compose the Multi-Actor Multi-Criteria Evaluation*
- *Share/Communicate Results*
- *Discussion/Findings/Lessons*

PEOPLE & TOOLS

- *The CAFETT Partners - MM and ePLANETe Blue*
- *Students from M1 and M2 Master GETEDELO (UPSay) – Gestion du Territoire & Développement Local*
- *The 'ePLANETe' Deliberation Support Tools – KIK, Representation Rack, KerBabel Deliberation Matrix*
- The DIGISCOPE "MIRE" (Mur Interactif Research Enseignement) at the OVSQ-UVSQ

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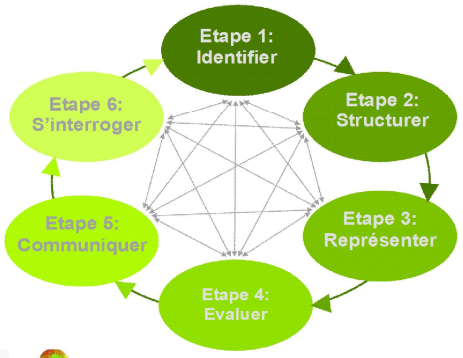
Task III / Diapositive 04

Task 3 – Experimental ETT Evaluations

An Iterative & Collaborative Process – The 'INTEGRAAL' Cycle



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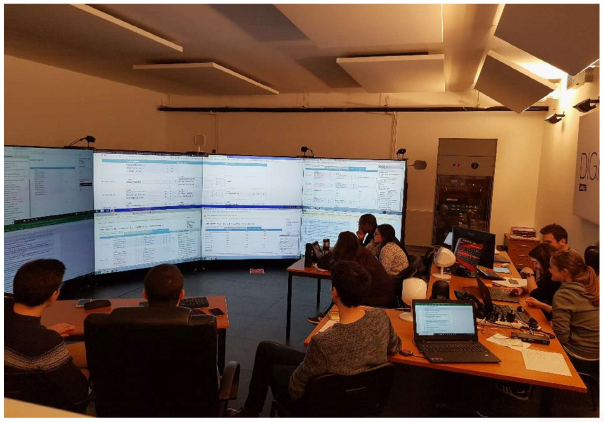
Task III / Diapositive 05

Task 3 – Experimental ETT Evaluations



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Task III / Diapositive 06

Task 3 – Experimental ETT Evaluations

Experimental Evaluation Exercises

PARC D'ÉOLIENNES BAIE DE ST BRIEUC

RECONVERSION CENTRALE GARDANNE

Evaluation Exercise No.1: Characterise the BStB Windfarm

Evaluation Exercise No.2: Compare Gardanne with the BStB Windfarm

Evaluation Exercise No.3: Compare 3 scenarios for supplying Gardanne

IMPORTATION DE BOIS

FORÊT FRANÇAISE

VALORISATION DE DÉCHETS

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Task III / Diapositive 07

Task 3 – Experimental ETT Evaluations

The experimental ETT deliberations are structured along four main axes:

(1) the OBJECTS of evaluation attention (e.g., ETT solutions, sites, strategies, public/ private sector actions);

(2) the framing of the PERFORMANCE GOALS AND CHALLENGES;

(3) the identification and roles of the different "ACTORS" OR STAKEHOLDERS in the evaluation process;

(4) the types of INDICATORS OR "SIGNALS" OF PERFORMANCE.

Attention to these four axes allows us to define specific PROCEDURES for indicator selection, mobilisation and synthesis, moving where — and to the extent — desired from disaggregated stakeholder opinions towards aggregate indices or social acceptability scores.

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Task III / Diapositive 08

Task 3 – Experimental ETT Evaluations

"Building Knowledge Partnerships" - Sources of the Arguments mobilised in the Deliberation Exercises

3 SOURCES OF 'ARGUMENTS'

- ❑ *The Arguments provided from MétaMètis.*
- ❑ *The set of 2018 'Circular Economy Indicators compiled and managed by Eurostat.*
- ❑ *The set of 50 Actions of the French Feuille de Route vers l'Economie Circulaire*

[NOTE: We have chosen NOT to add arguments from our own analyses and interviews]

CLASSIFICATION OF ARGUMENTS (KERBABEL REPRESENTATION RACK)

SOURCING KNOWLEDGE:

- Types of Knowledge Holders *(= dimensions of sustainability system analysis & organisation)*
- Types of Knowledge Tools *(= the 3 different sourcing processes used in CAFETT)*

MOBILISING KNOWLEDGE:

- Concerns for Energy Transition Performance or Acceptability (Multiple Criteria)
- The spectrum of ETT Sites and/or Scenarios

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Task III / Diapositive 09

Task 3 – Experimental ETT Evaluations

Multi-Actor Multi-Criteria Appraisal – Baie de St Brieuc Windfarm
(I) CATEGORIES OF ACTORS (STAKEHOLDERS)

- ❖ L'état français
- ❖ Collectivités territoriales (sous-nationales)
- ❖ Acteurs de l'économie rurale et maritime
- ❖ Entreprises privées des territoires (hors agriculture)
- ❖ Riverains
- ❖ Des ONG/Associations (environnement, qualité de vie, développement durable)
- ❖ Acteurs du monde de la production de connaissance
- ❖ Représentant du monde de l'emploi (syndicats…)
- ❖ Porteurs du projet.

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Task III / Diapositive 10

Task 3 – Experimental ETT Evaluations

Multi-Actor Multi-Criteria Appraisal – Baie de St Brieuc Windfarm
(II) PERFORMANCE / QUALITY ISSUES BEARING ON ACCEPTABILITY

- ❑ Cadre politique et juridique (national, international…)
- ❑ Performance environnementale (technique, savoir-faire)
- ❑ Performance financière (rapport qualité-prix et revenus-coûts)
- ❑ Cadre institutionnelle de gestion collective et patrimoniale de ressources environnementales
- ❑ Boucle financière nécessaires pour une économie verte durable
- ❑ Partenariat opérationnel et solidaire (savoir faire le long des boucles de valeur)
- ❑ Des relais sociétaux (facteurs d'acceptabilité, de prestige, d'enthousiasme)

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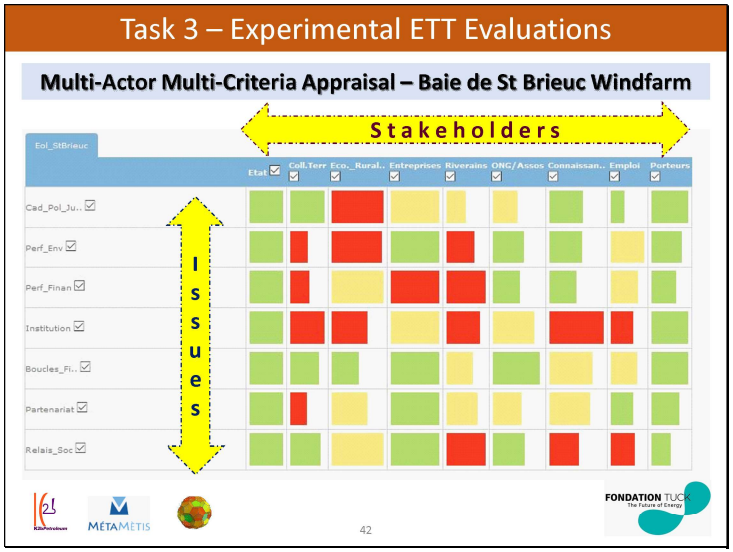
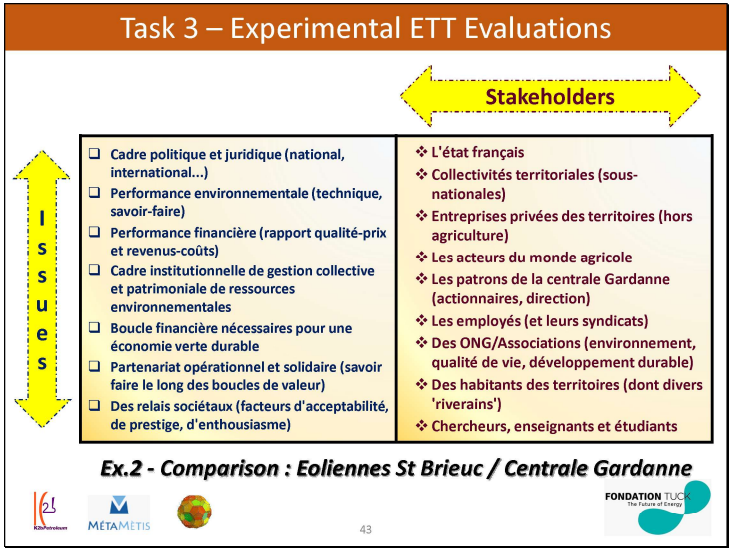
Task III / Diapositive 11



Task III / Diapositive 12



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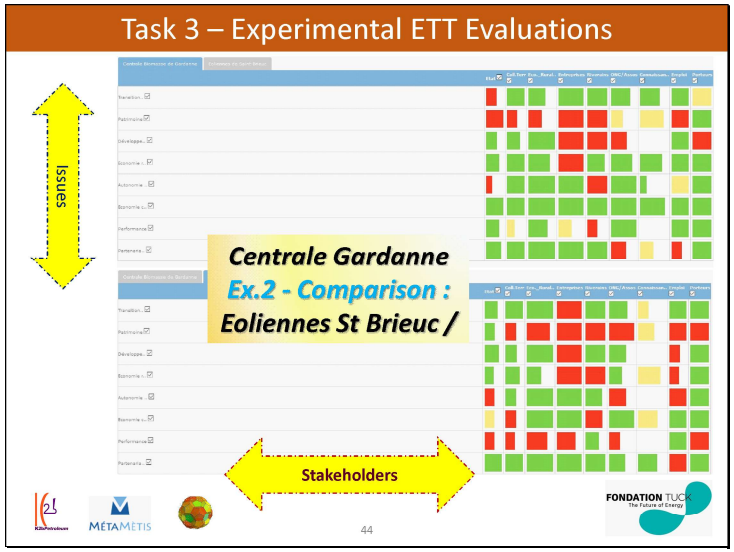
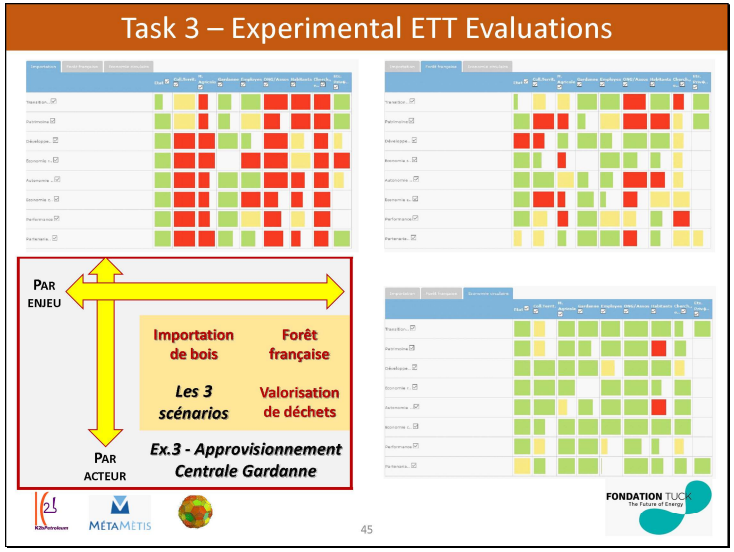


Task III / Diapositive 14



Task III / Diapositive 15

Task 3 – Experimental ETT Evaluations

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Task III / Diapositive 16

Conclusions Task §3 - Deliberative Process (1/4)

The Multi-Stakeholder / Multicriteria Framework for building deliberations is robust across ETT controversies. ☑ ☑ ☑

- ❑ The Issue x Actor x Scenario framework, informed by « signals » (that is, Indicators & Arguments), is accessible, efficient and effective for building up a « common ground ».
- ❑ This deliberation framework, at several levels, gives a public and « objective » status (recognition) to stakeholders and their concerns.
- ❑ …. These are potentially useful starting points in real-life processes for **Building Trust**.

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Task III / Diapositive 17

Task 3 – Experimental ETT Evaluations

Conclusions Task §3 - Deliberative Process (2/4)

The Multi-Stakeholder / Multicriteria Framework for building deliberations can be exploited, in appropriate ways, *at several distinct stages along the ETT life cycle*.

- ❑ **Early « Scoping » or Pre-feasibility studies**, providing insight into the issues likely to be critical for the prospects (or not) of building trust and for exploring the conditions for co-construction of project viability.
- ❑ **A deliberation support tool (DST) at the design phase** engaging projet promoters, experts and stakeholders in a joint process to provide insight into key points of confrontation and prospects (or not) of compromise.
- ❑ **As a DST for multi-stakeholder evaluation of decision options.**
- ❑ As a framework for **monitoring and review of project implementation**.

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Task III / Diapositive 18

Task 3 – Experimental ETT Evaluations

Conclusions Task §3 - Deliberative Process (3/4)

Our Multi-Stakeholder / Multicriteria Framework can be exploited in several different (non exclusive) ways, with variations along the stages of the ETT life cycle:

- ❑ **As a didactic tool** to support learning and thinking about ETT controversies. By engaging in a structured way on an ETT topic, an understanding is built up of the nature of the challenges & opportunities for co-construction of confidence and acceptability.
- ❑ **As a framework for experts' analysis**, seeking to provide reliable in-depth insights into the key points of confrontation, their reasons and the prospects (or not) of compromise.
- ❑ **As a tool for structuring in-depth stakeholder deliberation and negociation** in a real project design, decision support and implementation processes.

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Task III / Diapositive 19

Task 3 – Experimental ETT Evaluations

Conclusions Task §3 - Deliberative Process (4/4)

We distinguish several different types of deliberation support roles for engagement with ETT Social Acceptability.

- **Diagnostic risk analysis - As a scoping/didactic tool, either in-house or by stakeholder consultation,** to support learning and thinking at the conception stages about of the nature of and perceptions of the project risks = inputs to process design for building confidence/co-construction.
- **Decision support,** as a framework for **experts' analysis to provide reliable in-depth insights** into the key points of confrontation, their reasons and the prospects (or not) of compromise **(e.g., *Débat Public*)** .
- **Structuring in-depth stakeholder deliberation and negociation** in a real ETT project design, decision and implementation process.
- Contributing to permanent knowledge resources (case studies, indicator catalogues) as societal capacity building (***Observatoire de Controverses***).

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Task IV / Diapositive 01

Task §4

Conclusions & Recommendations

Task IV / Diapositive 02

Titre (task 4)

Recommendations – ETT Capacity Building (1/2)

Controversy about ETT Projects will remain a permanent feature of the political and territorial landscape. Engaging Stakeholders is not a guarantee of success, but is a necessary condition (co-construction, building trust).

- Priority should be given to **public & private sector capacity building** for efficient and meaningful stakeholder engagement = collaborative learning, negociation….
- Consultation and co-construction process must advance in visible ways, stepwise with **tangible outcomes for all key stakeholders**.
- The state should not « delegate » political judgements onto agencies providing knowledge and procedural expertise. The role of governance (setting goals, conflict resolution) is **irreducible**.
- The state, at all levels, must guarantee the rules, and must commit at appropriate levels to timely stepwise outcomes (including decisions).

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Task IV / Diapositive 03

Titre (task 4)

Recommendations – ETT Capacity Building

Uses of collaborative on-line deliberation support tools facilitating sharing of experience and engagement on ETT Social Acceptability topics.

Via an *Observatoire de Controverses* around ETT, users could access information & contribution functions on a permanent platform, including:

- Consulting « Debates » / Contributing (or updating) new Debates…
- Contributing resources into the platform (in the context of contributing to one or more ETT Debates), e.g.
  1/. Contributing Arguments or Indicator Concepts into a KIK;
  2/. Mobilisation of Arguments/Indicators in a Debate;
  3/. Making a Comment relative to an ongoing Open Debate….

These functionalities exist in Alpha and Beta prototype forms within the 'ePLANETe' platform; this could be a design base for full implementation.

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ANNEX G
THE CAFETT TASK III STUDY TEAM

The **CAFETT** work program has been conducted on a project basis by a dedicated team of experts from MétaMètis, ePLANETe Blue and K2bPetroleum.

- **MétaMètis,** in Economic Intelligence and Data Mining
- **ePLANETe** in Collaborative Learning, Technology Evaluation Tools and Social Sciences
- **K2bPetroleum** in Energy Technologies and Strategic Consultancy

Joining forces in the CAFETT initiative, the three partners demonstrate the potential of Internet-based data resourcing and participatory evaluation process, exploiting state-of-the-art data analysis tools (MétaMètis), stakeholder deliberation concepts, and contemporary social networking tools (ePLANETe Blue), as a robust framework for analysis and negotiation of the social acceptability of energy transition technologies .

This interdisciplinary project shall engage a spectrum of social sciences action-research, data analysis and communication skills, that relies on a robust background competence in energy, economics and environmental domains (K2bPetroleum). The technical and scientific competences must be closely woven together and, this indeed is one of the specific features that the consortium brings.

The CAFETT TASK III has been carried out principally by the team from L'Association ePLANETe Blue, although in frequent consultation with other members of the consortium.

ePLANETe Blue (a non-profit NGO) was constituted in France in 2015 (under the law of 1901) *"to promote reciprocity relations at all levels and anywhere, between persons and organisations active in the domains of environmental education and knowledge partnerships for sustainability."* The organization has as a specific mission to assure the development, maintenance and good uses of the multimedia platform '*ePLANETe*' for collaborative learning and deliberation by its members and their partners. For the needs of CAFETT, the key participants were as set out in the box below.

- **Professor Martin O'CONNOR** is a Professor of Economics (Université Paris-Saclay) who specialises in interdisciplinary social sciences analysis at the "interface" between society and nature. He has published more than 150 articles and chapters in such fields as ecological economics, multi-criteria evaluation and scenario assessment, indicators for sustainable development, deliberative methods, social acceptability of risk, and environmental knowledge mediation, and since 2002 has led the KerBabel programme (now within L'Association ePLANETe Blue) for exploration of the potential of ICT for sustainability research, decision support and teaching.
- **Dr. Jean-Marc DOUGUET** is a senior lecturer in ecological economics (Université Paris-Saclay), and a specialist in fields of multi-criteria evaluation, risk analysis, local territorial development and sustainable agriculture. He has a long experience in applied social science research and with the use of KerBabel's deliberation support tools, notably the Deliberation Matrix that provides a framework for multi-actor dialogues around situations of risk and controversy.
- **Mr. Philippe LANCELEUR** is an education information technology specialist. The Kerbabel technical universe arose from his collaboration since 2002 with Martin O'Connor in coordinating multimedia projects at the C3ED research laboratory at the UVSQ. He contributes to the development of the KerBabel/ePLANETe tools, to their "tuning" for applications and to the support and documentation of stakeholder dialogues.
- **ePLANETe in the Cloud** is the association's worldwide network of International Scientific & Professional Associates. It includes Professor Sylvie FAUCHEUX (France), Prof. Isabelle NICOLAÏ (France), Dr. Aurélie CHAMARET (France), and Dr. Joachim SPANGENBERG (Germany). The scientific network also includes doctoral students (e.g., Borislav ANTONOV, Mariana BITTENCOURT) and others who have recently finished their doctoral theses (e.g., Clément MORLAT), who have exploited in various ways the KerBabel deliberation support tools for stakeholder-based appraisal of technologies and local development projects.

PART IV

GENERAL CONCLUSION AND RECOMMENDATIONS

Controversy about ETT Projects will remain a permanent feature of the political and territorial landscape. So, engaging the stakeholders is not a guarantee of success, but is a necessary condition.
The state-of-the-art analysis coupled with the real deliberation exercises experimentation tends to demonstrate the risk of launching a new ETT project without first taking into account the views of all relevant stakeholders. Openness to civil society is essential; understanding and integration of citizens' needs and fears are essential.

The state-of-the art controversies analysis made it clear that all the projects face many counter-arguments, matching numerous axis value combinations in the MétaMètis classification scheme. The most prominent arguments were concerning the personal and local spheres. It seems consistent to consider that an opponent's claim is triggered by one or two perceived drawbacks of a project, but that he will use other arguments to reinforce his point against the project. We noticed that the most committed opponents often resort to deceptive rhetorical figures or argumentation fallacies to gain support from the general public such as « Appeal to fear », « Hasty generalization », « Well poisoning », « False analogy » or « Guilt by association » … An opposition to a project can also be triggered or amplified by an already existing social discontent or resentment.

We conclude our arguments analysis by providing a set of "generic arguments". A generic argument is the synthesis of several normalized arguments found in different projects and does not refer to a specific project. Some examples of generic arguments are : landscape deterioration ; the project serves vested interests, not for public good ; damage to local wildlife and environment ; information and/or consultation of citizens about the project is poor or deceitful ; the project is not economically viable but waste of public money ; useless or inefficient technology…

It seems relevant and useful to gather all those generic arguments in a database in order to follow the evolution of controversies for the ETT projects and to share them with future ETT project owners.

Regarding the opponents analysis, we found that the "concerned citizen" category was present in every project. These concerned citizens expressed their opposition either directly in their own name or via collectives or grassroots organizations. National and international organizations have also a key role as visibility enhancers, expertise providers, legal advisers and backers and connectivity enablers between different projects.
As for the arguments, the opponents categories could be stored in the database, related with the arguments and the projects.

The arguments analysis, qualification and classification and opponents identification methodology developped by MétaMètis was then used to feed the deliberation support tool with pertinent arguments and indicators. Nevertheless such an analysis could be done by itself independently. Particularly, during the pre-feasibility phase for identifying the future organizations and persons who may reject the project. Or even later, when the development stage of an ETT has already started, but the communication between the stakeholders is broken or the opponents are carrying out blocking actions that hinder normal execution of project implementation. Detailed and precise understanding of each other positions and opinions could bring the conflicting parties at the negotiating table.

The availability of the existing arguments could also be a resource used to build and deliver training or role-playing game sessions for the new ETT projects owners. Simulations of the real life deliberation would make them aware of forthcoming difficulties.

Based on the lessons learned from the positive experience of the real-time deliberation exercises conducted with students, we propose to go even further and to build an “Observatoire des controverses” around ETT. This observatory would be a permanent platform accessible to all stakeholders on which the users could find on-line documentation and provide contributions.

With such a tool, the users would consult the ongoing debates and contribute or update them and would also be allowed to create new debates by adding topics. As different projects would be managed at the same time on the platform, the users could provide contribution or resources to as many projects as they wish.

More specifically, any user would be able to submit arguments for or against a project and suggest appropriate indicators to evaluate it. Further, the user would be able to mobilise his or any others existing arguments and indicators when participating in a debate or simply make a comment on an ongoing open debate.

As long as the project is going on, using the deliberation support tool will keep the communication open between all the parties involved and support stakeholders dialogues. A dedicated consultant team will be in charge of running and managing the deliberation tool. One of its specific mission could be to detect « fire outbreaks » between the stakeholders and to alert the project owners to get them intervene before any catastrophic scenario or definitive blocking occurs.

After a project completion, all the arguments (pro or con), discussions, delibrations and decisions issued during the project life cycle would be saved in the delibaration tool. The “Observatoire des controverses”, based on the ‘ePLANETe’ platform, would then become a knowledge base, accessible and searchable by anyone interested in ETT projects. For new ETT projects owners, the availability of all archived elements of a previous or similar controversial ETT project would be of major interest. Being aware of the potential opponents’ arguments would help them significantly and enable them to deliver appropriate communication and pertinent actions to anticipate or avoid difficulties and roadblocks. It would save tremendous amounts of time in the ETT project implementation and maybe contribute to improve the general perception of ETT projects management and citizens acceptability.
The ‘ePLANETe’ platform could be a design base for further and full development and implementation.

Priorities for the coming years should be given to public and private sectors capacity building for efficient and meaningful stakeholder engagement. That means developing or improving their capabilities in collaborative learning, concertation and negotiation.
In any project, consultation and co-construction process must advance in visible ways; stepwise approaches should be preferred to overly top-down approaches based on hidden decisions. Tangible outcomes should be shown and shared with all key stakeholders.

Anywhere, the role of the State is crucial. It should not « delegate » political judgements onto agencies providing knowledge and procedural expertise. Indeed, the role of governance by setting clear goals and solving potential conflicts is irreducible for building trust.
The State, at all levels, must guarantee the rules, and must commit at appropriate levels to timely stepwise decisions and outcomes.

Recommendations

1. Identify all the stakehoders and the potential oppenents prior to the ETT project start.

2. Understand the potential opponents' arguments and reactions by analysing, qualifying opponents speechs and expression to avoid potential blocking situation, loss of time, money and credibility.

3. Develop ETT projects stakeholders in collaborative leraning, concertation and negotiation through training and role-playing game sessions.

4. Improve transparency and build robust communication in response to all stakholders requests and needs in order to build trust.

5. Extend the use of deliberation tool to increase stakeholders participation and engagement.

6. Capitalize on previous experiences via a permanent on-line knowledge platform, the « Observatoire des controverses », gathering all the discussions, delibrations and decisions made on ETT projects by all stakeholders.