

FONDATION TUCK  
The Future of Energy



# Community power: why, how and what for?



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# Agenda

1. Context and objectives of the study
2. State of the art of community energy around developed countries
  - USA, Canada, Japan, Australia
  - Europe
3. In-depth analysis of the governance models and success factors in the 3 European leading countries
  - When?
  - Why, What for?
  - How?
4. Community Energy/power since 2018-2019

# Context and objectives of the study

- Decentralised methods of investing, generating, self-consuming, and /or supplying energy are introducing new opportunities and challenges to the energy systems and, more specifically to the electricity market and distribution grids.

Context

Objectives

- In this rapidly changing framework the study proposes to analyse and compare different community power models in Europe



# State of the art

Key points of community energy around developed countries

# CE in non-European countries

## In the US

- ① Shared renewable projects = Community solar gardens
- ② Municipality-owned, not-for-profit public power utilities

## In Canada and Japan

- ① Mainly community-owned renewable projects
- ② Dozens of municipalities with micro-grids (Japan)
- ③ More and more small solar communities of farmers (Japan)

## In Australia

- ① A “National” Community Energy Strategy (coalition of associations)...  
...but no dedicated policy at federal level and ~ 105 small solar community energy groups

# A farmer's life after the Fukushima nuclear disaster - Solar system in Akita



# Europe

Community power state of the art

# Figures, what are we talking about?

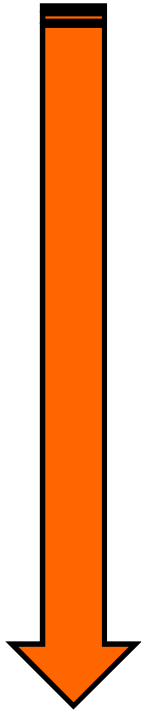
- 42 % of total RE capacity installed in Germany owned by citizens and collective citizens' energy initiatives
- 18% of total wind capacity estimated to be locally owned by citizen cooperatives, farmers and local landowners in Denmark
- In Scotland, 697 MW of community or locally owned RE capacity, amongst which 81 MW community owned
- In France, 312 citizens projects and 38,7 M€ collected in the end of 2018 by crowdfunding platforms to finance a total capacity of 1 131 MW of RE projects (= participative projects)

**Forget these figures !**

**“Community power” does have the same meaning  
from one country to another**



# Until 2018, no common approach



- 3 forward-looking countries with culture of cooperative movement
    - ☞ Denmark, Germany, UK
  - Scotland with targets related to Community energy development
  - Wales with local ownership targets
  - Netherlands with community ownership requirements
- 

**2019**

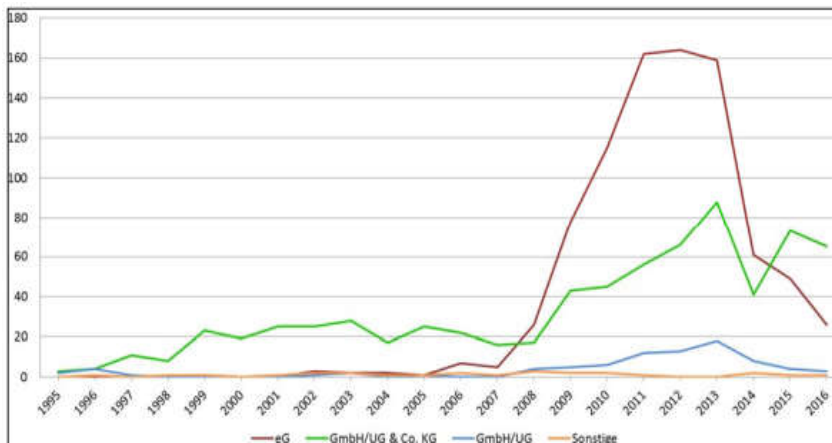
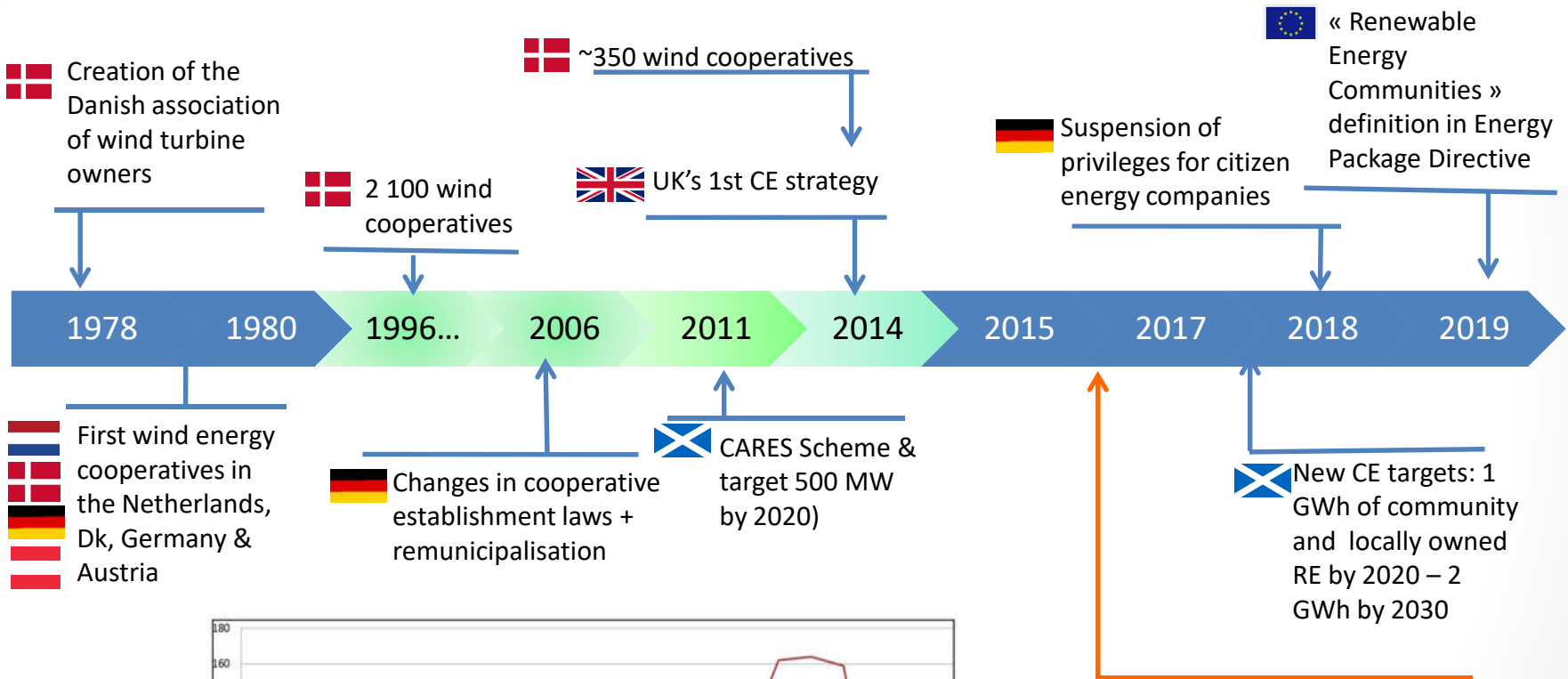
- No European guidelines, no common objective, no specific legislation and even no definition of “energy communities”

In-depth analysis of the  
governance models and  
success factors in the  
3 leading countries

# When?

In-depth analysis of the  
governance model and success factors in the leading countries

# History of CE in the leading countries



# What for?

In-depth analysis of the  
governance model and success factors in the leading countries

# Motives

	Denmark	Germany	UK	France
Generate a local and/or private return (FITs)	1	1	1	1
Promotion of regional development		2	2	2
Energy independence and climate action	2	1	2 / 3	2 / 3
Mistrust / disappointment with the performance of big utilities		3	3	
Reduce fuel poverty and building stronger communities			1	
Increasing the acceptance of renewable projects	1		2	1
Mistrust towards the Finance classical system				2

# How?

In-depth analysis of the governance model and success factors in the leading countries from 1970's until 2017

# Political will

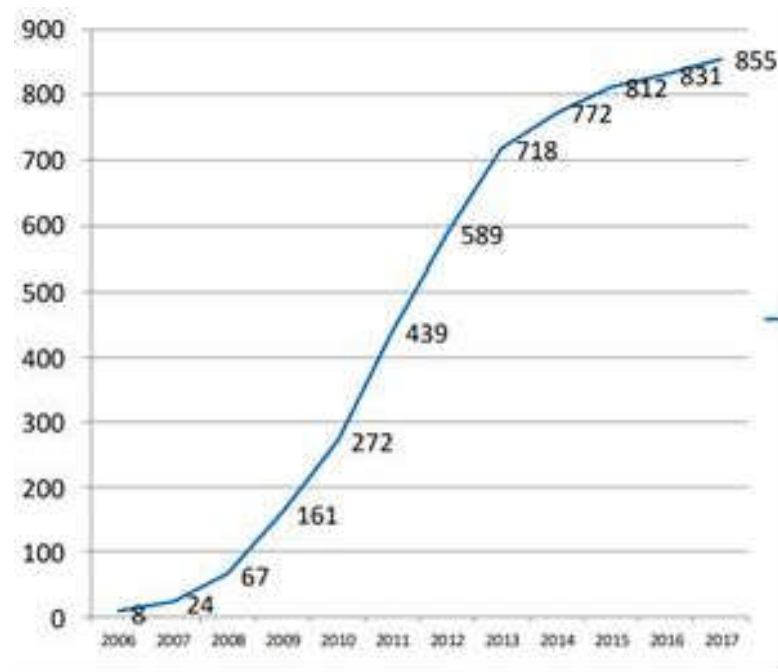
- In 2011, adoption of the Scottish Renewables Action Plan with a target of 500 MW of community and locally-owned renewable energy by 2020
- January 2014, the UK government's "Community Energy Strategy" is published
- Public Community Benefit Registers to assess the progress of community energy projects in Scotland (2012) and in England (2014)
- In 2017:
  - Scotland: target increased to 1 GW of community and locally owned renewable energy capacity by 2020, and 2 GW by 2030
  - Wales: targets for renewable electricity generation capacity to be locally owned and launch of the Welsh Government Energy Service in 2018



# Favourable context

- 1 The cooperative movement (Denmark, Germany, UK)
- 2 Remunicipalisation in the energy sector & Tradition of “Stadtwerk” (Germany)
- 3 The promotion of renewable energies / FiTs (Denmark, Germany, UK)

Evolution of energy citizens cooperatives in Germany



Source: Ergebnisse der DGRV - 2018

# Addressing financial risk

- Stability of the mechanisms support, in the form of guaranteed purchase tariffs
- Guarantees for loans provided by Energinet (Denmark)
- Long-term and low interest loans from Germany's State-owned development bank (KfW) and local cooperative banks
- Tax reliefs and exemptions (UK/Denmark)
- Establishment of support schemes & dedicated funds:
  - 👉 CARES, Ynni'r Fro and Ynni Lleol (Scotland/Wales)
  - 👉 the Rural Communities Energy Fund, the Islington Community Energy Fund, the Community and Environment Fund, the industrial Strategy Challenge Fund, etc (UK)

# Other support to CP

- Simplified procedures for small local projects (Dk, UK)
- Inclusion in Local Development Plans of clauses offering particular support to community projects
- Development of 'Community Energy Toolkit' and guidelines
- Improving grid access for community projects

# Dominant business structures

- Wind energy cooperatives in Denmark
- Limited partnerships with a limited liability company as a general partner (GmbH & Co. KG) and energy cooperatives (eG), in Germany
- Community Benefit Societies (BenComs) and Co-operatives (Co-ops) in UK

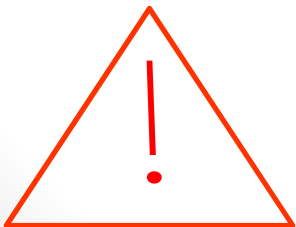


## Common strengths of these structures

Democratic Governance	("one partner = one vote") regardless of the share in the share capital
Flexibility, simplicity	No minimum for capital entry, fundraising possible, limited liability, etc.
Economic viability	No constraint for benefits sharing, no need for a statutory auditor

# A myriad of community models

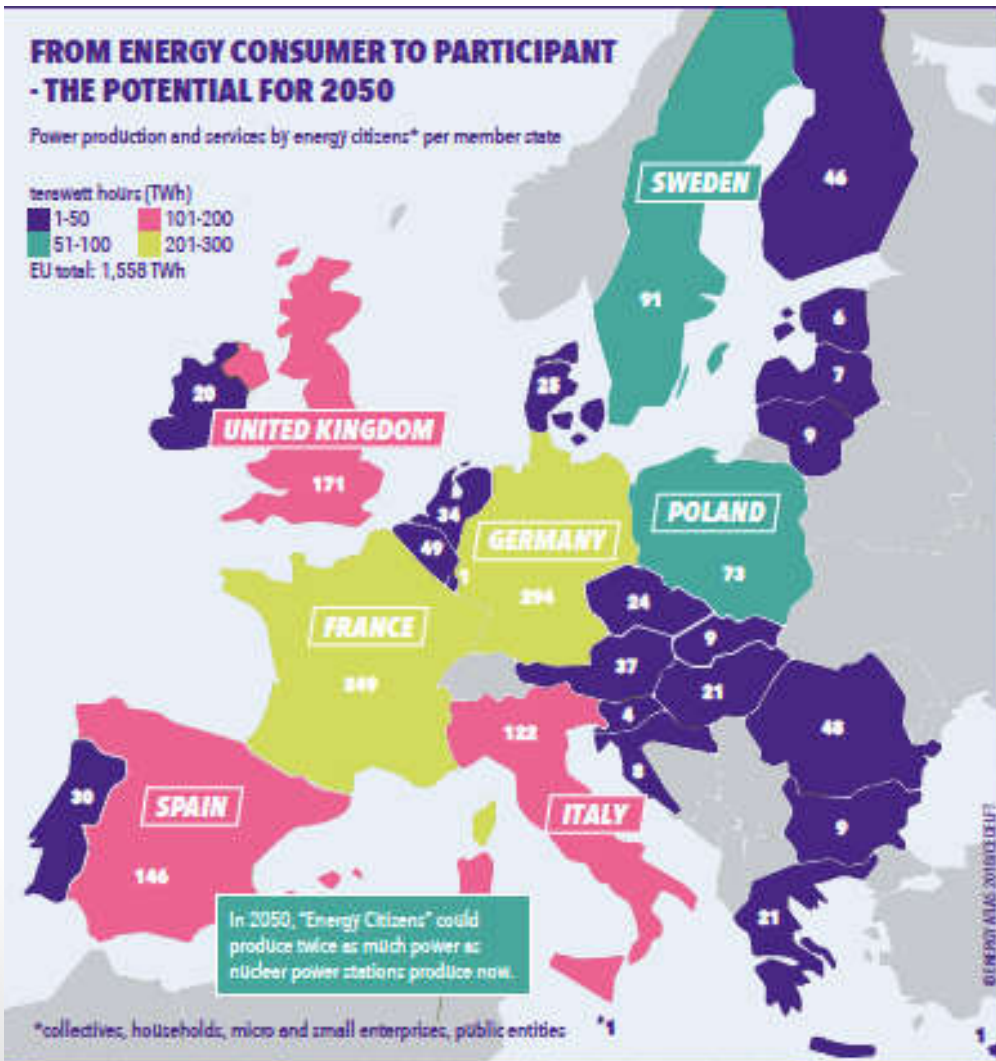
- Generation/production cooperatives
- Distribution/transmission cooperatives
- Trading cooperatives
- Bioenergy villages and Stadtwerke in Germany
- Non-for-profit fully licensed supplier owned by a local authority in the UK
- Innovative models such as the Trent Basin community initiative
- European citizens and municipalities strongly involved in energy efficiency, communal storage, etc.



Community power does not restrict to ownership  
in the production of renewable electricity

# Conclusion

# A huge potential, but...



*In 2050, “Energy citizens” could produce twice as much power as nuclear power stations produce NOW. Source: Unleashing the power of community energy power -RESCoop)*

*When demand response, energy storage and energy efficiency are included, 83% of Europe’s citizens could participate in the energy sector by 2050*

*Source: “The potential of energy citizens in the European Union” -Delft institute*

# ...What's new today?



## But now...

- FiTs decrease
  - High risks during the development phase
  - Lack of security for investors
  - Complicated permissions process
  - Grid connection costs
  - General profitability difficulties ...
- ...are typical challenges community projects have been used to coping with and adapt to

☹️ They have to face the removed of FiTs in 2019-2020 and the obligation to participate in auction prior to building permissions

😊 Citizen participation has become a governing principle of Europe's energy market **and Member States will have to enable this principle**

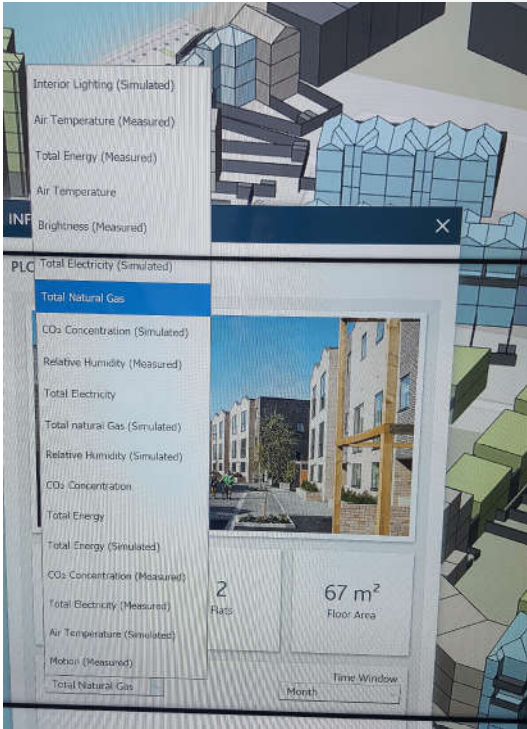


# Recommendations to consider

- Adopt and share a clear definition of “Renewable Energy Community”
- Set national objectives and targets to boost the uptake of community
- Create a specific tranche for community energy generation projects in the Contract for Differences (CfD) mechanism/ guaranteed direct contracting system (guichets ouverts).
- Better inform common citizens about their potential role in the field of energy and electricity
- Create a regulatory framework conducive to innovation

# Appendices

# The Trent Basin



# General objective & expectancies

- Minimize the use of fossil fuel, lower energy costs, smoothing out the load curve, reduce energy consumption and carbon emissions while increasing community resilience and social cohesion
- Expected results
  - ⇒ learning and improving the community energy consumption habits thanks to the monitoring equipments...and saving money
  - ⇒ improving the electricity management thanks to the community storage battery, in order to smooth the curve of consumption and reduce the peak load (keep the UK power networks more robust and stable)
  - ⇒ developing social bonds within the Trent Basin future inhabitants by involving them in the energetic choices for their local area and, more widely by letting them decide how they want the money of their Community Fund to be spent
  - ⇒ testing of a new business model and demonstration of how to make a return for developers to encourage them to invest in other similar projects for replication at the national level

# 4 key stakeholders

- > The University of Nottingham, owns all the assets and lent them to the ESCo
- > In charge of the monitoring /sharing of the energetic data collected thanks to sensors-monitoring appliances in houses
- > Has developed an on-site Community Hub facility with a giant interactive screen-wall

- > **Igloo Regeneration - Blueprint** , a “UK’s leading responsible real estate business”, is managing the Trent Basin development and is selling energy efficient homes (double or triple glazed windows, fully equipped rated A+ or more appliances, LED downlighters)
- > Designed a “Guide to your new home”, to optimize NRJ consumptions...

- SmartKlub Ltd**, is developing the new business model and created a viable Energy Service Company (ESCo)
- > Decides whether to sell the electricity generated by PV, to the grid or to the residents based on financial and carbon saving objectives in real time
- > Was granted by Ofgem an exceptional authorization for supplying electricity directly to the local customers

- The new **Trent Basin residents**, future co-owners of the ESCo.
- > Involved with project decision-making > Entitled to an agreed share of any surplus income.
- > Will sign a hassle free roof lease for the PV panels that will be installed by experts and maintained free of charge
- > Accept to share their energy data



# Evolutionary business model

University of Nottingham & private ESCo led by SmartKlub Ltd

Transitional ESCo

Public/private ESCo or 100 % Citizens ESCo

## Early stage

The start situation is that the University of Nottingham owns all the assets (solar panels, battery, sensors and display for monitoring) and lends them to the ESCo that 50/50 owned by the university and SmartKlub.

## Intermediary stage

Then, in a medium term, the responsible for the project hope to flip this to a community ESCo of some sort depending on project outcomes.

## When completed

In the full commercial model, once assets are operational and returns are established, the community will incrementally be offered either to buy equity to 49 % so that the foundation investor remains in control, or buy it all so the foundation investor can revolve its original capital to another project.

Video: <https://www.youtube.com/watch?v=SI1IRAsph3Y>

*“Community Energy” is found in diverse legal, organizational and financial forms and may involve participation in project development (process), and/or sharing collective benefits (outcomes). Though often considered to be sustainable, democratic, decentralized, grassroots, cooperative and local, many CE projects may address only one of these aspects.*

*In fact, engaging with a complex emerging phenomenon is a non-trivial task, which the energy research community is just beginning to address”.* (Source: Social innovation in Community Energy – James Hutton Institute).

**There is still a lot to do...**

# Thank you for your attention !

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# Definitions

## **Renewable energy community”, legal entity:**

☞ (a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;

☞ (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;

☞ (c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits;

## **“Citizen Energy Community”, legal entity that :**

☞ (a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises;

(b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits; and

(c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders.