

# Shaping social acceptance of energy projects

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# Introduction (1/3)

## Climate crisis

- Limiting GHG to limit the global rise in temperature to 1,5/2°C
- Need to design low-carbon solutions and rethink energy systems

## Energy modeling

- Long service lives of the technologies
- Design long-term scenarios
- Looking for robust and reliable scenarios (that could be actually used)

## Opposition to projects, social issues

- Energy projects have been hindered by local opposition
- Start research on the phenomenon and how public perception is formed
- Wide phenomenon studied mostly by social scientists

## Introduction (3/3)

### **Connecting the dots between energy modelling and social issues**

- Two very diverse fields
- No literature linking the two topics
- Lack of social aspects in current long-term scenarios -> less realistic scenarios

# Plan

- I. Concepts involved
- II. Analysis of the literature
- III. From the literature to the model

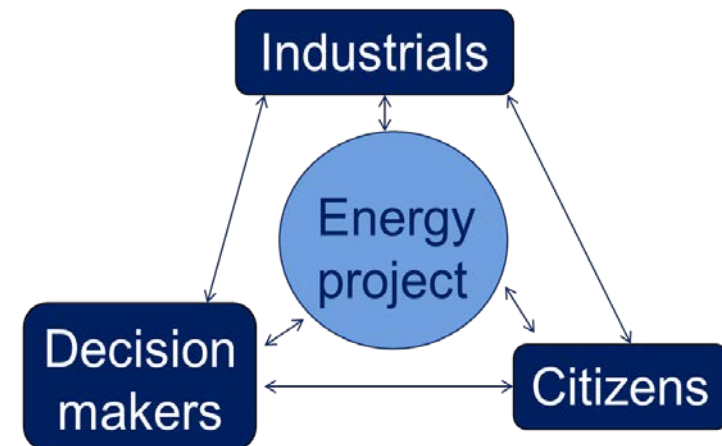
# Concepts at stake and points of view

- Acceptance : *a posteriori* evaluation of a project
- Acceptability : *a priori* evaluation of a project
- Support : active engagement **for** a project
- Opposition : active engagement **against** a project
- NIMBY (Not In My Back Yard) : Opposition between a general positive opinion and a local opposition

**Citizens:** people living near the project who might oppose or support it.

**Industrials:** companies locally or nationally involved in the design or the realization of the project.

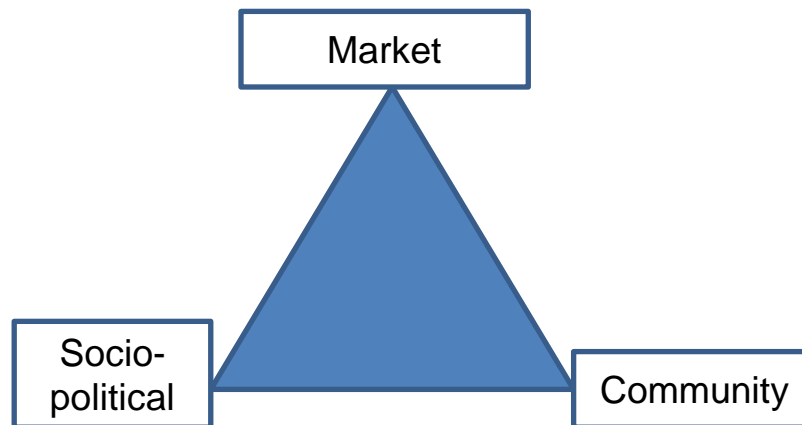
**Decision makers:** local and national politicians who have an impact on location decisions, public investments, etc.



# Three-dimensional assessment of social acceptance

Social acceptance as a three-dimensional assessment (Wüstenhagen et al, 2007):

- Community acceptance : Stakeholders concerned by a local project
- Socio-political acceptance : broad, policy making
- Market acceptance : adoption and diffusion of technologies

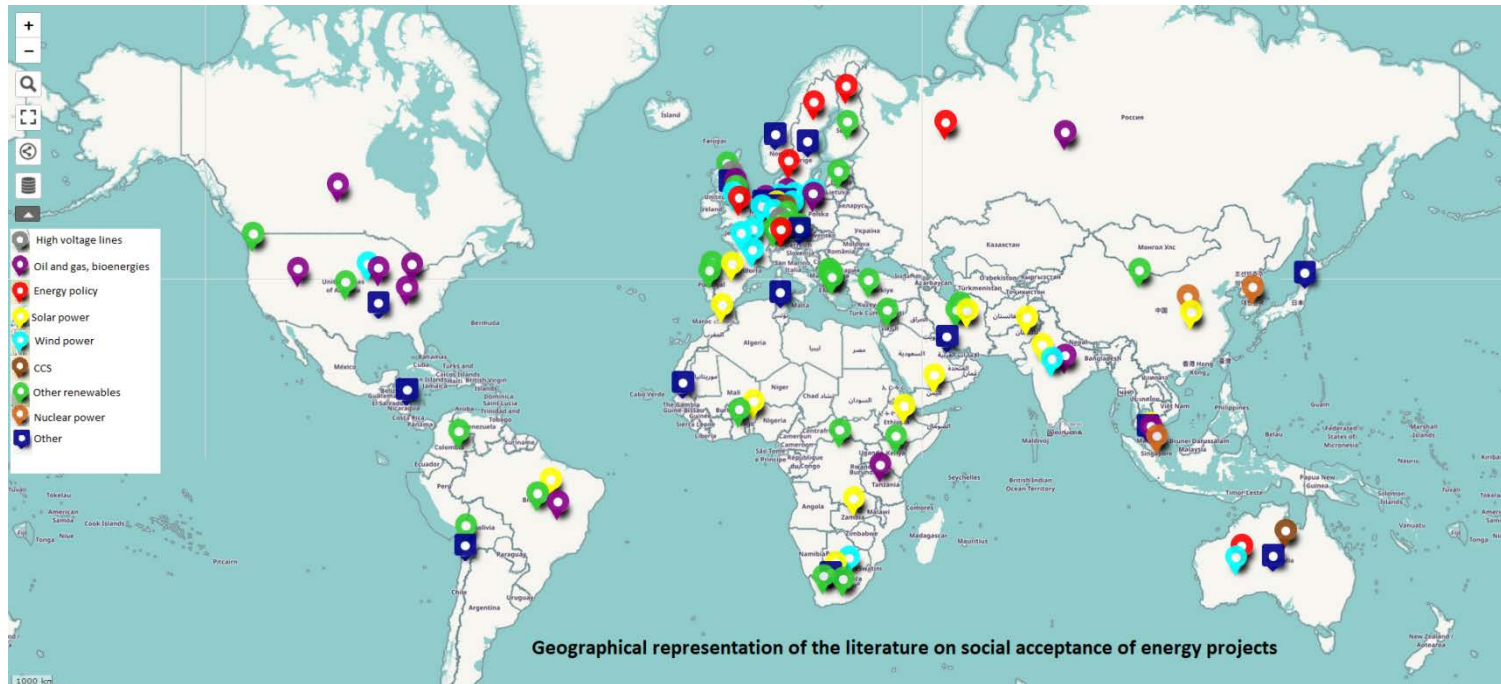


# Diversity of the literature / then interest for a map

- Differences in :
  - Aim of the articles
  - Geography studied
  - Technology / kind of project studied
- Are they technologies more studied in specific areas ? Need for a geographical representation



# Geographical focus



*Social acceptance of energy projects: A geographical focus based on literature (based on the analysis of 96 papers)*

## Map analysis – sorted by area

- **Most studied zones:** Western Europe, Middle East, North America.  
**Average studied zones:** South America and Oceania.
- **Least studied zones:** Africa, Asia, former USSR.

## Map analysis – sorted by technology / policy

- **Nuclear** mostly in **Asia**.
- **Wind power** in **Western Europe**.
- **Solar power** in developing countries.
- **Energy policy** in developed countries.
- **North America**: mostly oil & gas & bioenergies.

# Extracting social acceptance characteristics to feed the energy model

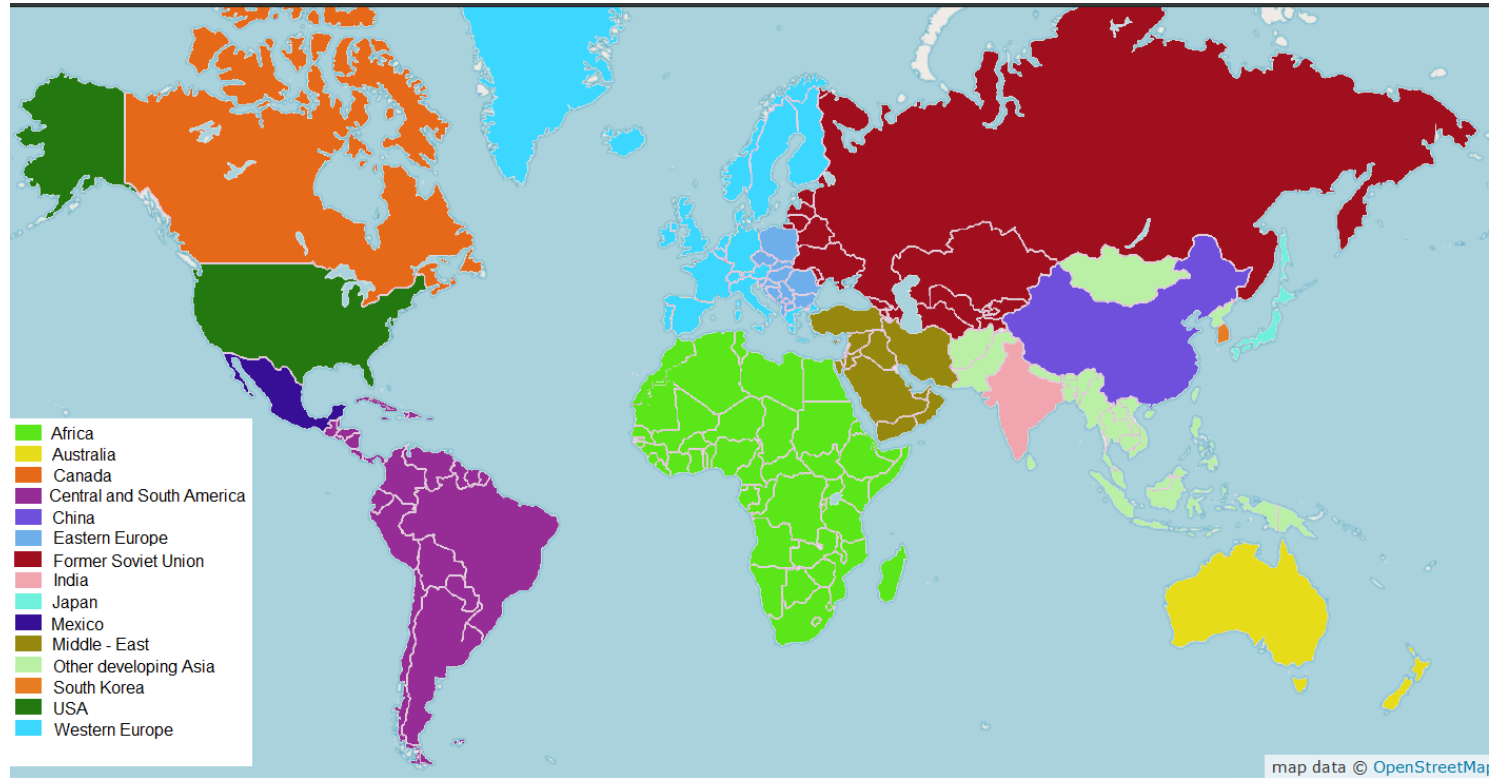
## **Goal :**

Extracting key parameters (and data) that explain social acceptance to feed the energy model

## **Method :**

- Identification of « measure » articles
- Spot parameters put forward in the articles
- Ideally, extract some data from the articles

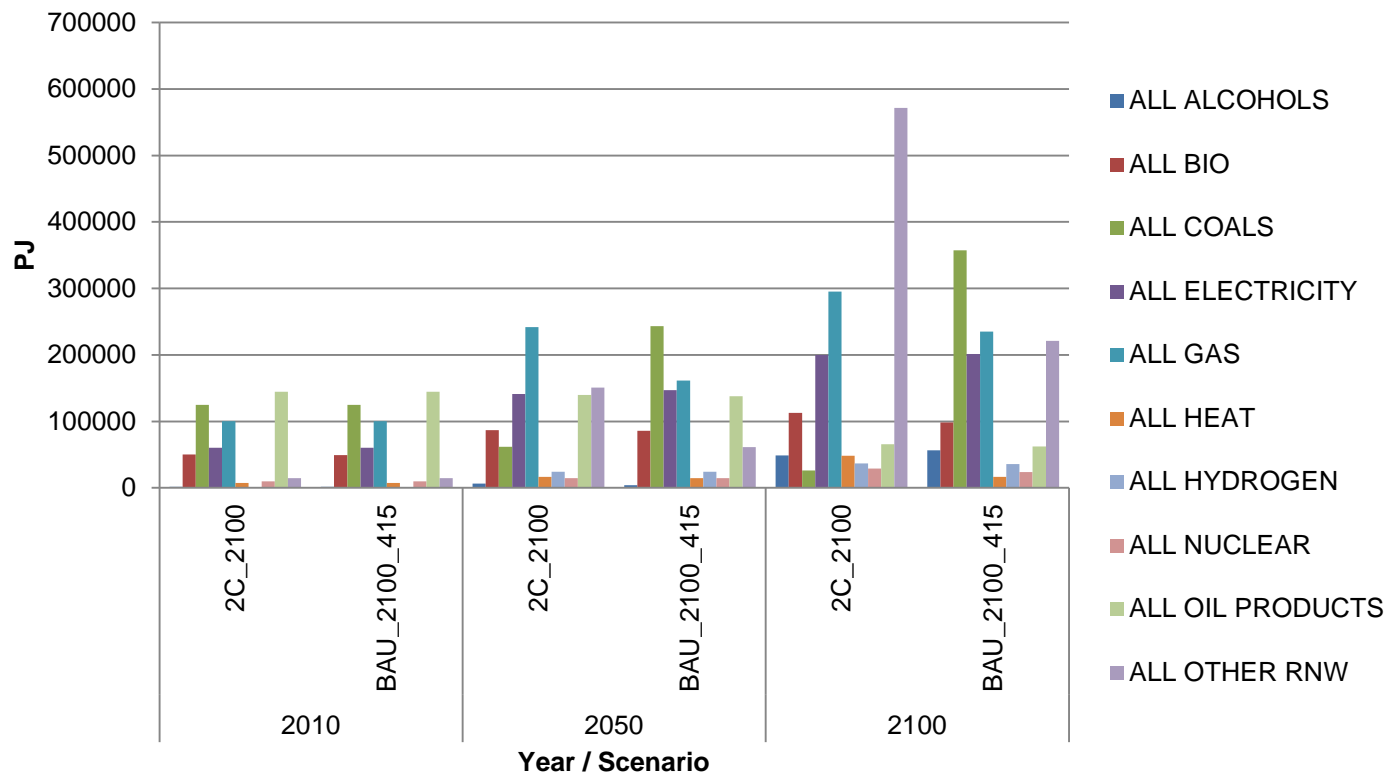
# From the map to TIAM FR (1/2)



**Geographical zones of TIAM**

# From the map to TIAM FR (2/2)

## Energy mix evolution - BAU and 2°C scenarios



# Most important parameters (1/2)

## Community parameters :

- Individual parameters : gender, age, level of education, political ideology or lack of knowledge and pre-conceived ideas on the project ;
- Projects parameters (projects' characteristics) : technology chosen, stakeholders involved, and communication on the project
- Local parameters : type of landscape, history of the region, power sources already in operation, etc.

## Socio political parameters :

- General context :
  - Paris Agreement -> non-fossil energies
- Specific events :
  - Fukushima-Daishi nuclear disaster -> specific technologies

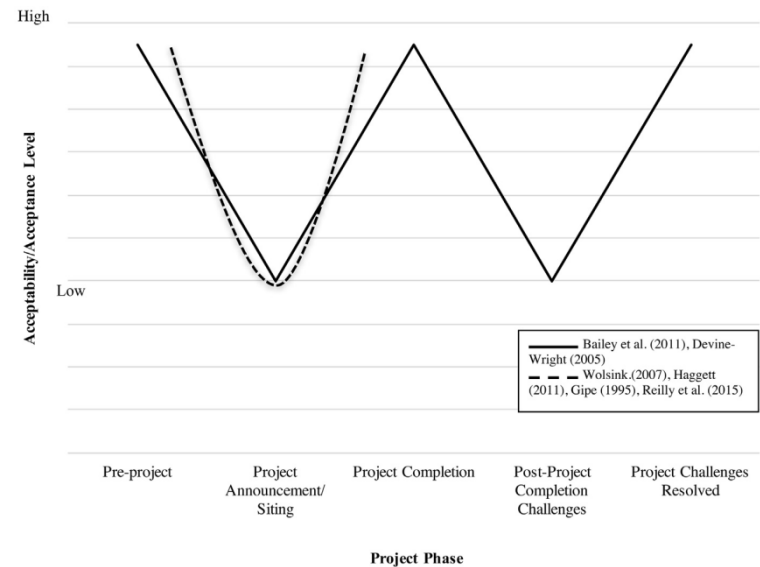
# Most important parameters (2/2)

## Market acceptance (technology):

- will of industrials to diffuse a technology
- will of customers to use it
- Opposition between :
  - envy for green power offers and
  - reluctance to local projects (NIMBY).

- > lack in green power
- intra-firm acceptance.

## Dynamics of the acceptance :



*Dreyer et al, 2017 – Temporal change in acceptability and acceptance*



## Difficulties / lack of quantified data

- Qualitative parameters, but TIMES model is quantitative
  - Few data in the literature
  - Very diverse literature and methodology
- > non coherent set of data

## Key issues (1/2)

- **A risk to forget developing countries in our analysis:**
  - In developed countries: the transition is mainly electric, from big thermal power plants toward small renewable installations.
  - In developing countries: the transition is mostly from firewood toward off-grid renewable power.

## Key issues (2/2)

- **Focus on reducing of opposition:**

Most articles focus on the ways to reduce opposition to a project. Our goal is to think of how to include this reluctance in our model.

- **Focus on citizens:**

Articles often focus on citizens and not on the other stakeholders shaping projects, which can elude some of the important parameters.

## Next steps / conclusion

- We have a understanding of the phenomenon
- Get familiar with the TIMES-TIAM model
- Create a model