



Integrating social acceptance of energy projects in global long-term energy transition scenarios

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Introduction

- Energy modelling to offer mitigation and adaptation solutions to the climate crisis
- Current scenarios non feasible due to lack of acceptance
- Need to find methods to include these questions into energy modelling





Plan



I. Social acceptance of energy projects - concept

II. Parameters that rule social acceptance

III. First scenarios and ideas

Concepts at stake and points of view

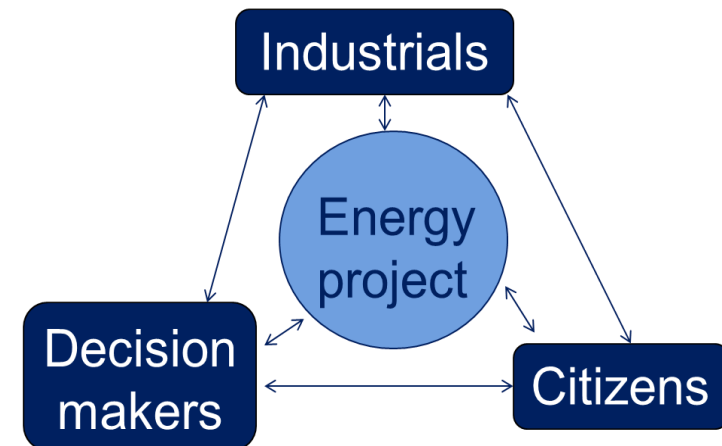


- Acceptance : *a posteriori* evaluation of a project
- Acceptability : *a priori* evaluation of a project
- Support : active engagement **for** a project
- Opposition : active engagement **against** a project
- NIMBY (Not In My Back Yard) : Opposition between a general positive opinion and a local opposition

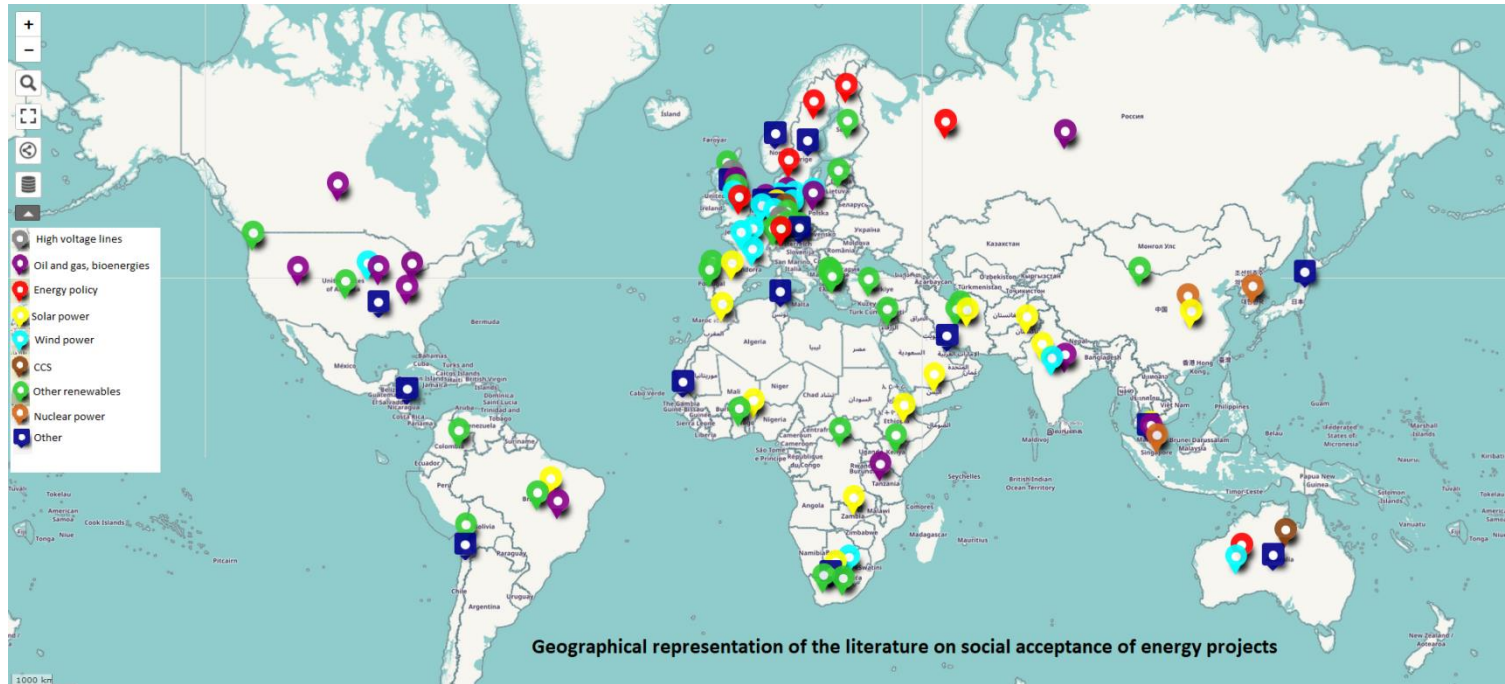
Citizens: people living near the project who might oppose or support it.

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.



Geographical focus



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

Most important parameters

Geography :

- Continents and countries are not equally studied
- Absence of article doesn't imply Absence of the topic in the country

Democracy :

- Law and projects design process
- Trust and transparency

Projects :

- Distributive and procedural justice
- Risks
- Benefits

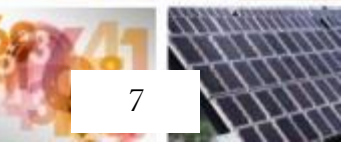
People :

- Gender, age
- Educational background



Modelling approach

Slide courtesy of Sandrine Selosse



TIAM-FR: *French version of the TIMES Integrated Assessment Model*

$$NPV = \sum_{r=1}^R \sum_{y \in YEARS} (1 + d_{r,y})^{REFYR-y} * ANNCOST(r,y)$$

Where

NPV is the net present value of the total cost for all regions over the projected period;

ANNCOST (r,y) is the total annual cost in region r and year y;

d_{r,y} is the discount rate;

REFYR is the reference year for discounting; YEARS is the set of years and R is the set of regions (15 regions)

Optimization, linear programming

Minimization of the total discounted cost of the system

Bottom-up

Long-term: 2010-2100

Multi-regional: 15 regions (+T-ALyC)

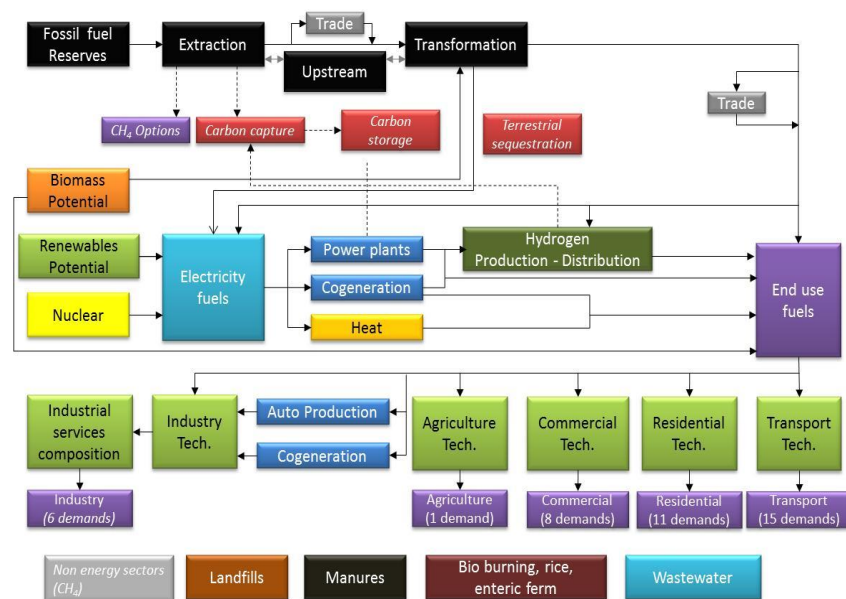
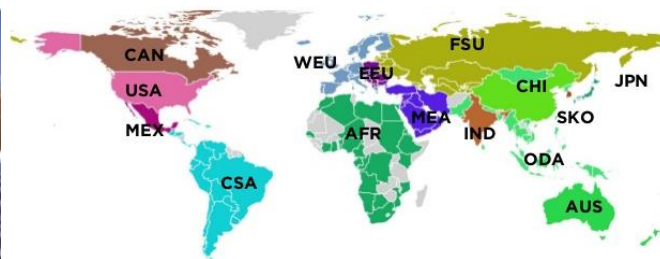
Multi-sectors: 6 sectors

42 demands

585 729 data

11 646 commodities (about 770/region)

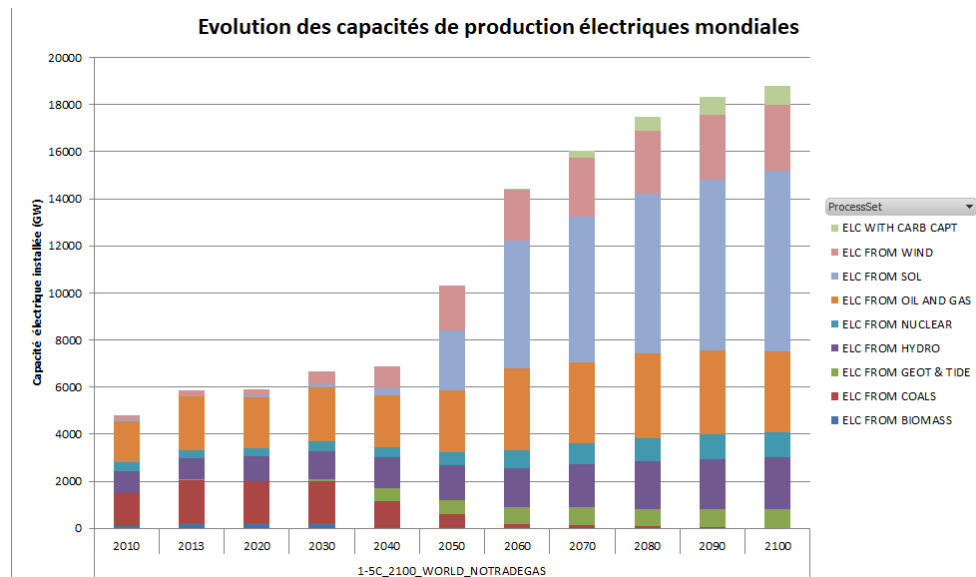
39 817 technologies (about 2 500/region)



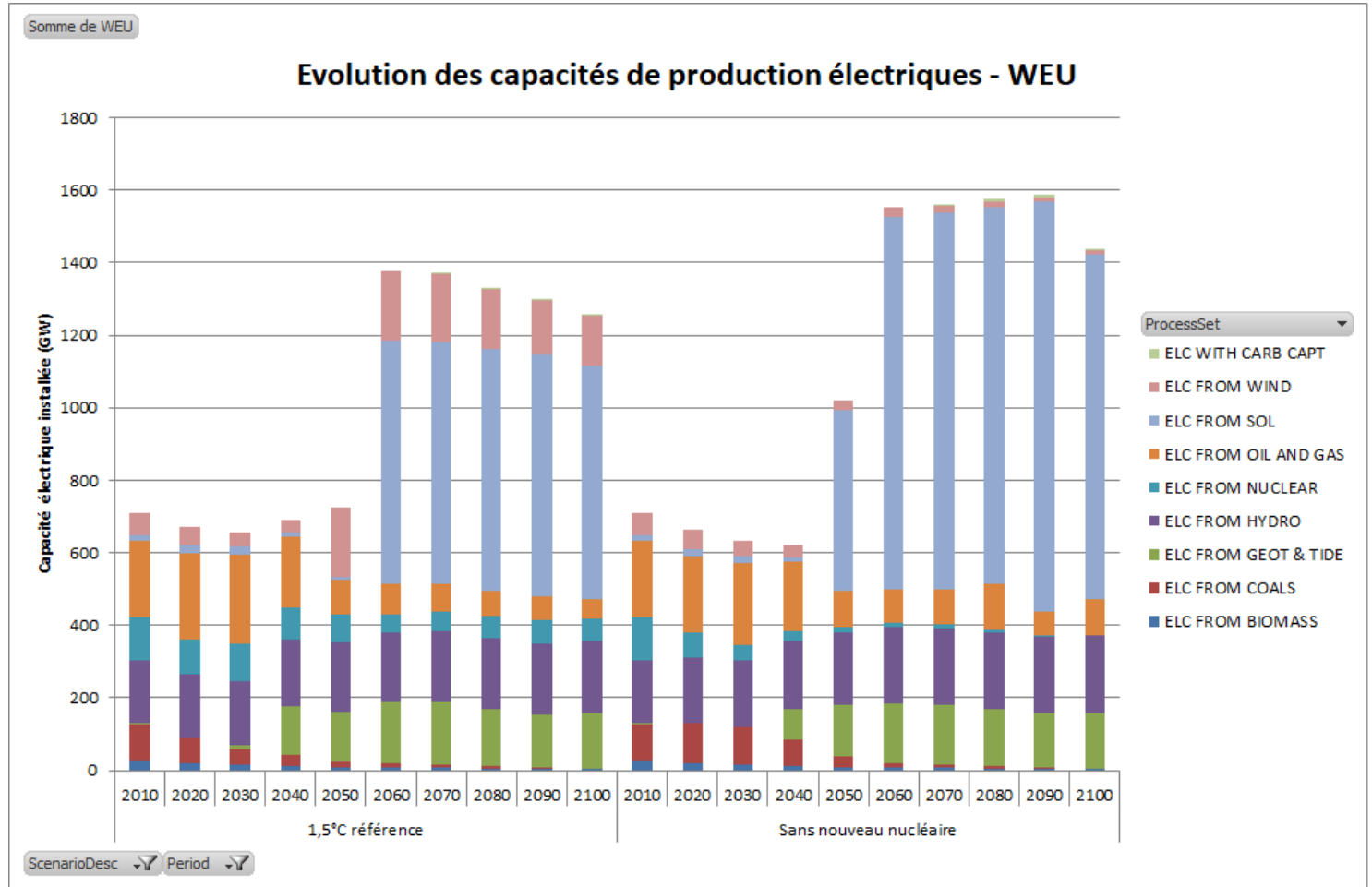
Integrating acceptance in long-term scenarios



- Based on 1,5°C scenario
- Add some constraints about technology availability
- First : focus on WEU and on a nuclear ban in WEU



Focus WEU – sans nouvelles capacités nucléaires



Conclusion

- Taking into account acceptance has an impact on the scenarios
- Some discussions at the COP to refine the parameters
- Next steps : creation of quantitative indicators representing social acceptance to add them in TIAM





THANK YOU FOR YOUR ATTENTION

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