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Mathilde Tessier, Sandrine Selosse, Nadia Maïzi

► **To cite this version:**

Mathilde Tessier, Sandrine Selosse, Nadia Maïzi. Long-term assessment integrating social acceptance. IAEA 1st Digital Conference, Jun 2021, Virtual, France. hal-03513251

**HAL Id: hal-03513251**

**<https://hal.science/hal-03513251>**

Submitted on 5 Jan 2022

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# ***LONG-TERM ASSESSMENTS INTEGRATING SOCIAL ACCEPTANCE***

Mathilde Tessier, Centre de Mathématiques Appliquées, MINES ParisTech, PSL University, +33669766516, [mathilde.tessier@mines-paristech.fr](mailto:mathilde.tessier@mines-paristech.fr)

Sandrine Selosse, Centre de Mathématiques Appliquées, MINES ParisTech, PSL University, [sandrine.selosse@mines-paristech.fr](mailto:sandrine.selosse@mines-paristech.fr)

Nadia Maïzi, Centre de Mathématiques Appliquées, MINES ParisTech, PSL University, [nadia.maizi@mines-paristech.fr](mailto:nadia.maizi@mines-paristech.fr)

## **Overview**

Long-term assessments are needed by decision-makers and energy companies to help them determine the future of the energy system. Today, long-term scenarios are built to help build a path toward the decarbonation of our energy system.

These scenarios tend to be based on rational elements, whereas less rational elements can have a strong impact on the successful accomplishment of the energy transition. One crucial aspect is the way that stakeholders interact with energy projects. For example, on the one hand, local opposition can hinder or block some projects, while on the other hand, community-led energy projects can promote the energy transition. Although these interactions (generated by different stakeholders) move in opposite directions, they all contribute to the successful development of the energy transition. These reactions are called social acceptance.

As social acceptance is crucial for the possible evolution of our energy mix, and therefore for the scenarios we establish to represent these evolutions, it is vital to integrate this topic into long-term assessments. As a result, we can take this social factor into account when thinking about the energy transition and help build more reliable energy transition scenarios.

This study proposes several methods to include social acceptance in long-term energy system models, such as the TIMES/TIAM-FR, the TIMES / TIAM models.

## **Methods**

The goal of this article is to integrate the topic of social acceptance into long-term scenarios. To do so, we use long-term assessments to build energy transition scenarios at a global level.

We build social acceptance indicators from parameters we obtained from the literature and integrate these indicators into TIAM.

Our first indicators rely on features that we can easily change in TIAM-Fr and that reflect in a basic way social acceptance. For example, social acceptance can be reflected by the availability of technologies, their cost, and their lifetime. These three factors exist in our model and can be modified easily.

## **Results**

Our base energy transition scenario fulfills the constraint of a maximum increase in the global average temperature of 1.5°C.

The first integration of social acceptance was focused on Western Europe, mostly because it is the geographical zone where the literature on social acceptance is the most abundant<sup>1</sup>.

We built two alternative scenarios. The first one is a ban on new nuclear capacities in Western Europe, and the second sets an increasing maximum threshold for solar power capacities in Western Europe. These two scenarios are meant to reflect a lack of acceptance of both nuclear power<sup>11</sup> and the installation of significant solar power in a short time.

We compared both of these alternative scenarios to our base scenario and observed an important impact on the final energy mix. The nuclear scenario results in less nuclear power, less wind power and more solar power in Western Europe, whereas the solar scenario shows a decrease in the total installed capacities.

## Conclusions

In this study, we integrated social acceptance by changing the capacity available for specific technologies in a specific area (Western Europe), with either a fixed threshold or an evolving threshold. This produced very different scenarios, therefore proving that integrating social acceptance has an impact on our scenarios.

However, these first integrations of social acceptance are very basic because they are limited to one technology that is either totally unaccepted or partially blocked. The next step thus involves going further and including better indicators in more geographical zones for more technologies at the same time. These indicators will be based on geographical parameters and on specific parameters more linked to the projects themselves.

## References

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