A methodology for understanding social stakes of new energies

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HIPS-NET Workshop

Brussels, 24 June 2015

LAYOUT

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Introduction	Recap 1st HIPS-NET Workshop 2014 – Presentation of GRHYD project.
Issue	How to evaluate the social acceptance of new energies
Methodology	Crigen expertise - Sociotechnical controversy
Conclusion	Application to GRHYD – First results - Conclusion

01

Introduction

Demonstration Project

Grid Management by Hydrogen Injection for Reducing Carbon Energies

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2 pilots for production, distribution and local use of renewable H2 mixed with natural gas

Sources of Renewable or low carbon power

Injection into the power grid

Excess of Power = Production of H2 by electrolysis, storage and fuel distribution

Excess of Power = Production of H2 by electrolysis, storage and gas distribution

Different types of valorization

Hythane® (6% and 20%) in vehicles (bus, garbage trucks, etc)

Pre-industrial Pilot

From 6% to 20% H2 injected into distribution gas grid and NG uses in a new district

Research pilot *distribution grid*

- Complete assessment (technology, economy, environment, society)
- Preparation of the deployment and construction of global economic models

GRHYD Partners

GRHYD involves12 partners :

- **Crigen, R&T Division of ENGIE** (Project leader)
- **AREVA H2 & energy storage** (PEM electrolysers)
- **CETH2** (PEM electrolysers)
- **McPhy Energy** (H2 solid storage)
- **COFELY INEO** (mixing station)
- **GNVERT** (Hythane® fuelling station)
- **CEA** (coupling electricity/H2 production/storage, software, testing of materials),
- **CETIAT** (technical center for testing of appliances)
- **INERIS** (institute for safety)
- **GrDF** (distribution network operator)
- **STDE** (urban tranportation)
- **Dunkerque Grand Littoral** (community)

- Total budget : 15,3 M€


02
Issue
ENGIE

Issue

How to evaluate the social acceptance of new energies

Introducing **new energies** can lead to various **reactions**.

It is necessary to identify:

- what hinders their adoption and use,

-- how they can be integrated into daily practices.

-The various stakeholders,

- how they interact,

- how they view and perceive these new energies,

- the uncertainties and risks associated with these energies,

need to be modelized.

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Methodology

Crigen (Research & Innovation Center in Gas & New Energies) **expertise**
Energy & Society

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- Expertise in sociology is mobilized to help ENGIE integrate as best as possible social parameters for calibration and production of solutions.

- Energy & Society works mainly on 4 domains: a) cities and territories, b) houding), c) public affairs d) organisation of work; this with a user-oriented approach.

- Various sociological competencies are used to deal with the various needs voiced by the Group (sociology of science and technologies, urban sociology, sociology of public action, sociology of consumption, evaluation of social impacts, evaluation of representations/perceptions, design of user experience…)

- Some former landmark studies:

1/ Development of an Energy precariousness dashboard, which helped highlight conducted

2/ Analysis of social acceptance of non-conventional gas (Shale Gas), which helped map controversies

Methodology
Sociotechnical controversy: principles

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• Developer, in a photographic sense, of power relationships, of institutional positions or of social media.

• Sociotechnical controversy is a debate based on non stabilized scientifical or technical knowledge, which leads to confused/fuzzy issues bringing together legal, moral, economic and social considerations. It addresses what led to controversy, analyses the trajectories of actors involved and the resources they mobilised.

Although such controversies are not limited to a small circle of experts and must find echo in the public space, they always rely on debates around scientific knowledge.

• Scientifically, analysis of sociotechnical controversies is based on the work of the 'Centre de sociologie et de de l'innovation' (CSI) of Ecole des Mines de Paris, carried out by Michel Callon and Bruno Latour, with further work by Yannick Barthe and Pierre Lascoumes in their book 'Agir dans un monde incertain. Essai sur la démocratie technique'.

Methodology

Sociotechnical controversy : how it is carried out

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- Collection and analysis of data from numerous sources, with attention to their being diversified (interviews of stakeholders, discussion fora, blogs, web sites institutionnels ou associatifs, press and other media: mainstream, professional, trade or specialised);
- Identification of specific issues (controversial items) and actors which are mobilised;
- Description of the dynamics of controversy: how its definition develops, how stakes get transformed, how stakeholders evolve (in their argumentation, in their alliances, how new actors come up in the debate,…)

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Conclusion

Application to GRHYD

- For the GRHYD project, the **general objective** is the identification of **levers** and **obstacles** for the **social acceptance** of the **hydrogen and natural gas energy path** (residential and mobility).
- Sociological work is mainly structured around an upstream study on the perception by users/citizens of Dunkerque and Cappelle-la-Grande of hydrogen energy.
- Fiel work has been assigned to a local lab, le TVES.
- This laboratory has, up to now:
  - carried out a study with questionnaires answered by bus users,
  - organised focus groups with:
    - institutional actors,
    - industrial actors,
    - and citizens,

    so as to enable interactions between various stakeholders.

First results - Conclusion

First results

- The objective is no longer limited to choosing the technically optimal solution.
- Arbitrages are to be made within an array of possible solutions, anticipating the various kinds of reactions they may lead to, be they economic, organisational, social or even moral ones.
- For the GRHYD project: although not all expected results are available, it was already acknowledged that the siting of the electrolyser is of concern the the potential inhabitants of the area of Cappelle-la-Grande.

Conclusion

- Controversy analysis is a prerequisite for the identification of the actors' game: this game is often slighlty different from the scientific or economic ones.
- The social and societal dimension is key but still insufficient.
- On top of it, the local impacts need to be assessed and a local approcach is to be , as close as possible to the concerned inhabitants and stakeholders.