Abstracts

In order alphabetical of the first name author

Designing Active Demand in electricity systems: co-constructing users and technologies in the home

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Active demand (AD) technologies and principles are one of the main strategies for achieving higher efficiency in electricity systems and maintaining security of supply. Innovations in this field posit a transition pathway that envisages electricity consumers as "active participants in electricity markets and in the provision of services to the other electricity system participants" (Belhomme *et al*., 2011). Taking the case of a research and development project for AD currently ongoing in Europe, this paper reports on early findings involving the design of AD principles and technologies and their trial in households at two different European sites. The project involves collaboration between different types of actors (energy suppliers and distributors, universities, manufacturers, etc.) and includes the design and development of technological solutions to facilitate consumer participation in power system markets. Given the central role of consumers in this imagined socio-technical landscape, this paper uses data from interviews with the project's scientists and engineers to delineate the role of the electricity user as conceived through the design of AD. In doing so, we explore the concepts and technologies of AD, and their envisaged role in electricity systems. The paper highlights how different configurations of the user in the context of household electricity consumption construct and constrain transitions towards low-carbon electricity supply and demand.

Keywords: Active Demand, electricity consumption, users, science and technology studies

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For a sociology of local political and administrative governance of energy and climate issues.

ANGOT Sylvère, GABILLET Pauline, LATTS, France

We propose to study the institutional, political and administrative inner workings of decision-making on energy in urban local authorities. This issue is significant when the climate-energy issue is put on the (political) agenda, notably since local climate-energy plans have been imposed on local authorities of over 50,000 inhabitants.

Energy policies have long existed in some local authorities, this theme growing on in different ways: as a technical and sectoral subject (demand-side management programmes in Montpellier, relationship to the local distribution company in Metz, geothermal power in Chelles) or according to a cross-sector recognition of energy in public policies (Grenoble, Rennes). These approaches have durably shaped structures and local political and administrative governance: set up of delegations and political backing, dedicated services with more or less leeway, presence of a local energy agency…

The transversal and territorial coordination dimension of energy and climate conveyed by the local climate and energy plans may conflict with these local structuring of energy stakes and sometimes struggles to prevail. Thus, what we intend to draw is a sociology of the ways in which local authorities seize the energy issue.

Keywords: local climate and energy plan, political and administrative governance, cross-sector approach, urban local authorities, historical structuring of energy issue

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Recherche collaborative Université/Industrie : simple addition ou véritable coconstruction de points de vue ?

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Les questions en lien avec l'énergie suscitent de nouveaux partenariats entre laboratoires universitaires et structures de R&D, entre chercheurs en sciences humaines et ingénieurs en sciences et techniques, enfin entre disciplines peu habituées à coopérer. La sociologie est amenée à jouer un rôle structurant dans certains de ces projets, ce qui conduit la discipline à réinterroger ces propres cadres théoriques et méthodologiques tout en réfléchissant aux moyens de convaincre de sa capacité à énoncer des problématiques appropriables par d'autres champs d'activité. La recherche collaborative en cours1 à partir de laquelle nous souhaitons communiquer, associe des chercheurs en sciences humaines, des chercheurs en sciences dures, un centre de Ressources Technologiques et des entreprises privées2. Cette expérience met en évidence les enjeux scientifiques et industriels ainsi que les opportunités théoriques et méthodologiques qu'offre une telle approche.

Partant d'un état de l'art réalisé en 2008/20093 et de constats simples, les partenaires se sont rapidement mis d'accord sur une base méthodologique et un objectif communs : une expérimentation permettant d'évaluer qualitativement et si possible quantitativement l'impact de l'affichage des consommations sur le comportement des ménages. Les ambitions de chacun des acteurs du projet, les finalités restent néanmoins différentes.

La recherche, largement structurée autour d'enquêtes sociologiques répétées auprès d'une trentaine de foyers équipés d'afficheurs locaux suscite donc un véritable travail de coopération mais aussi parfois de « confrontation » entre chercheurs en sciences sociales et chercheurs en sciences dures, entre universitaires et industriels. Les premières enquêtes de terrain (essentiellement un inventaire exhaustif des appareils consommateurs d'énergie et des pratiques associées ainsi qu'une enquête sur les modes de vie du foyer), les obstacles rencontrés dans le développement technique de l'afficheur et de son application puis dans le déploiement du dispositif technique, ont largement contribué à faire émerger et alimenter une réflexion collective autour des méthodologies de recueil et d'analyse. Comment isoler l'impact de l'affichage par rapport aux autres paramètres susceptibles d'avoir un effet sur les comportements en matière de consommations énergétiques ? Comment évaluer qualitativement les actions pour en déduire un potentiel d'économie d'énergie à court, moyen et long terme ? Comment mettre en perspective les profils de consommation issus du traitement statistique des données et les discours sur les pratiques ? L'expérimentation, et ce qu'elle comporte d'imprévus mais aussi d'interactions entre partenaires nous amène à une réévaluation permanente de la démarche de recherche et nous maintient dans une logique d'innovation méthodologique. C'est ce processus d'acculturation mutuelle et ses effets sur le positionnement du sociologue que nous souhaiterions mettre en débat.

Mots-clefs : Méthodologie qualitative, recherche collaborative, Maitrise de la Demande en Energie (MDE), affichage des consommations, leviers comportementaux.

The MDE to the everyday… : a sociological approach to understand the relation between technical dimension and human dimension.

ASSEGOND Christèle, FOUQUET Jean Philippe, Sociologues, Ingénieurs de recherche, CETU ETIcS, Université François Rabelais de Tours

Our paper deals with research carried out on a very specific energy efficiency project in an office block. The company that was chosen for the research specialises in innovative solutions for energy efficiency in homes and offices. In 2009, this company designed its new headquarters with the objective of using it for a "real life" experiment of energy efficiency devices. The office block is a positive energy building, and it was fitted with the energy efficiency devices that the company already sold on the market, or that it was developing. Through this experiment, the management team wanted to gather technical data on the building as well as improve their energy efficiency products thanks to the feedback from the real life settings.

The research focuses on the way people working in the building perceive it and use it in their day-to-day professional life. The researchers interviewed around 30 people. They were essentially workers, but also members of the management team that were highly involved in designing the building. The analysis of the workers' discourses shows that they have uneven perceptions of the building. They are happy with their new headquarters and with the principle of using innovative technologies, in particular with regards to energy efficiency. However, they point out various small inconveniences and annoyances. These can be interpreted as clues of how difficult it is to adapt on a day-to-day basis to the spatial constraints induced by energy efficiency features and the steering tools that make energy efficiency possible. As its deals with the support, the rejection or simply the interrogations that users have about technical solutions, this research questions the way people relate to technology and the part the designers of the building allow other people to play. It fundamentally questions the role that the workers have to play : are they mere users of the technology, or should they be granted a central role in the technical system ?

Keywords: MDE technologies, workspaces, behaviour lever, implication of employees, acceptability, inform, control.

Making sense of the deregulated electricity market in Norway – economics meets user practices

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The liberalization of the energy market in the early 1990s changed energy supply and the role of the user. From being a good that was delivered to a reasonable and stable price, energy became a market object and users became consumers in a market. Consequently users were expected to develop an interest for energy efficiency and saving because it gave economic benefits.

In this paper we investigate how household consumers understand the Norwegian electricity market, and how they account for and interpret their own practices as actors in this market. In dialog with theories of public understanding of science and technology (PUST) and domestication, the analysis demonstrates that the mechanisms of the market are neither cognitively, symbolically nor practically, domesticated. People are skeptical to this market and do not fully understand how it works. This is surprising due to the fact that the deregulated marked has existed for 20 years and is by economists and most politicians reckoned a success. The paper argues that a user-centered focus is necessary to provide an understanding of the processes by which knowledge and expertise is reshaped, transformed and put to use in people´s everyday lives.

Keywords: energy policy, consumption, energy market, deregulation, public understanding

The Models of Europeanisation and the issue of energy between the EU, it's members, and neighbours.

François Bafoil (DR CNRS – CERI, Sciences Po), Kamila Waciega (Ph.D. candidate, CERI, Sciences Po), Bernd Weber (Ph.D. candiate, CERI, Sciences Po)

The purpose of the paper is to address energy, as an issue of tension between the EU, accession candidates, member states and neighbouring countries that evolves during different historical processes that are: the period before the enlargement, during the enlargement, the EU-27 *a posteriori*, and the European Neighbourhood Policy (ENP).

Each process can be conceived as a particular framework proper to the undergoing play, characterized by a set of constraints that are globalisation, the regional dimension of the EU, and beyond the EU. These constraints entail the question of the capacities that actors have at their disposal to adjust to the conditions to which they are exposed. Furthermore, the temporal dimension of each sequence implies a number of transformations of the play, modifying the initial preferences and choices of actors. The analytical purpose of the paper is to develop a combined approach that considers both territorial and temporal constraints that are pressing on the actors, enabling us to comprehend their disposable resources and resourcefulness, to resort to other references and cooperation in this context. This provides us with a better understanding of how systems of action are being gradually transformed, recomposed, or are losing their coherence during their evolvement.

A first objective is to describe the development of the different systems of action that evolve around the issue of energy, involving EU and state actors. A second objective is to inform the Europeanisation approach that forms the basis of our reflection, by concepts derived from the sociology of collective action. Based on the conceptions and interests that guide the EU or state actors and their strategies to deal with the incorporation and implementation of directives and the stabilisation of interactions in the field of energy, a specific rule- and institution-based approach emerges to ease conflicts and to stabilise the play.

Keywords: Europeanisation, globalisation, uncertainty, EU, member states, European Neighbourhood Policy

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Energy production and local coalitions of elites: explaining what the territory does to solar PV production.

Vincent Baggioni, doctorant en sociologie sous la direction de Pierre Fournier, Université d'Aix-Marseille

PV solar farms development in France takes place in the wider context of energy market liberalisation and feed-in tariffs policies. In the case of windmills, social studies have raised the question of adapting technologies to the territory1[1], and underlined the local elite function in this territorialisation2. In the PACA region (South of France), the State offices at the County level have had the responsibility for PV solar farms instruction. Depending on the territory, they have diversely associated institutional local partners interested in these projects (State, local business, local authority and elected representatives). The gathering together of the local elites of the Counties in singular configurations reveals the local system in front of this type of energy production project. Our research is based on a regional inventory of projects and on interviews with stakeholders.It shows that the organisation of the local elites within a 'development coalition' partly shapes the way PV solar farms projects are integrated or not within the territory. In particular, the degree of cohesion within the coalition, and the fact that its members share (or not) common representations have an impact on the adaptation of projects to their 'social milieu'. This can explain why in some territories actors put in place effective planning processes for PV solar farms while local conflicts arise in others.

Reducing household energy use: The challenge of the human factor

Laura Banks, Social Science Policy and Research Centre, University of Brighton

This paper will discuss some of the challenges of projects seeking to reduce the energy consumption of households, with particular reference to the IFORE (Innovation for Renewal) project. IFORE is working (from 2010 to 2014) in two housing developments (one in Kent, England and the other in Pas de Calais, France). The primary aim of IFORE is to reduce the energy consumption of households through a combination of technological changes and social projects aimed at changing the consumption patterns of residents. The retrofit measures to the houses are expected to increase their energy efficiency by 60%. However, the project hopes to improve on this figure by 10-20% through behaviour change. The social arm of the project, led by the housing associations responsible for the properties includes: firstly the work of a 'Green Doctor' or 'Ambassadeur de l'energie' who advises, encourages and supports residents towards making energy saving choices; secondly, educational and social activities with children and young people (including work in schools, local clubs etc.); and thirdly, various community engagement activities aimed at raising awareness of energy related issues. The paper will draw on early findings from questionnaire and interview data gathered to date on the English side of the project. It will focus on the challenges and achievements highlighted around seeking to influence the behaviour and attitudes of residents from low income households, and will offer any early indications of tensions concerning human interaction with energy technologies. It will also refer to relevant literature on the role of the occupant in retrofit projects and learning from different approaches to behaviour change.

Keywords: behaviour change, households, energy saving.

Acceptability and social appropriation of energy flexibility by customers.

Jean-François Barthe (Université de Toulouse-le Mirail), Christophe Beslay, Romain Gournet (BESCB), Maud Minoustchin (GDF-SUEZ)

The principle of flexibility assumes that it is possible and efficient to call and use the decentralised energy production capacities or erase some energy consumption at times considered to be convenient for technical and/or financial reasons, in order to manage and balance the electrical network.

The EU-DEEP project tests the feasibility and the profitability of the Distributed Energy Resources (DER) using several decentralised energy aggregation models based on a flexibility principle of energy production and consumption. These models where tested in real situations, in England, Greece and Germany, considering the technical (insertion of technologies and management modes), economical, financial, legal (development of an offer and of a sale contract) and sociological aspects of the question. The experiments made it possible to identify a certain number of social elements to be taken into account in the exploitation and in the flexibility management in order to optimise its development.

Keywords: energy flexibility, social acceptability and appropriation

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Sustainable urban districts in Europe: towards a typology of their energy systems ?

Odile Blanchard, Philippe Menanteau, LEPII – EDDEN (Université de Grenoble – CNRS)

The paper aims at comparing the energy systems of sustainable urban district projects completed in several European cities over the last 20 years, in order to draw a typology based both on technical criteria (technologies and energy sources adopted) and governance ones (decision process and role played by the future residents).

The selected criteria are built to differentiate the energy systems along the type of actors, the decision process, the stringency of the energy targets, the type of technical options, the energy sources used, the integration rate of the districts' energy supply, as well as the role of the residents in the decision process and in reaching the energy performance targets (behavior parameter).

In the end, the question is about the existence of a typology that would conclude for example that the energy systems of sustainable urban districts have changed along a specific path over the period, that they differ along the European countries under study, or that some of them are more efficient than others. The link between the target stringency, the actual efficiency and the residents' behavior is also under scrutiny.

Keywords: sustainable urban districts, energy systems, typology, governance, behavior

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Nonknowledge as an approach to a Sociology of Energy

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To meet future energy demands of modern societies different renewable energy resources have been explored and respective technologies have been developed. Some of these technologies have been developed over many decades others are at an early stage of development. Some of the questions that have been raised as regards this situation point to the expected potential of any respective energy resource. Others point to risks through the exploitation of new energy resources, or how different types of energy can be reasonably combined and merged into a sustainable energy mix on different regional and national scales In general any knowledge base for decision making and strategies as regards these issues in many cases is limited.

The fact that decision making appears to be increasingly confronted with uncertainties of scientific knowledge has been an important topic in many quarters, but particularly in environmental sociology and the sociology of science by using the terminology of ignorance and nonknowledge. Going beyond notions of risk and uncertainty, recent findings shows that a clear communication of what is not known in decision making processes can increase mutual trust among stakeholders and may lead to reliable decisions.

In this presentation we will introduce a dynamic typology of ignorance which conceptualizes dealing with the unknown as an active part in decision making. Using examples ranging from geothermal energy to bioenergy we will sketch how the typology can be applied to these fields of renewable energy. Some preliminary suggestions will be made on how decision making under ignorance can be analyzed to better understand strategies used by multiple actors to cope with situations when knowledge is incomplete.

Keywords: Nonknowledge, communication, geothermal energy

Politisation des enjeux énergétiques et pratiques discursives : un exemple de dispositif de suivi en ligne de la campagne présidentielle

BOUILLET Jérémy, UMR PACTE, EDF R&D (GRETS), BRUGIDOU Mathieu, EDF R&D (GRETS), UMR PACTE, MOINE Michèle, UMR PACTE, UPMF,

The 2012 French presidential elections are the first since the 70s to have tried to challenge energy questions in the public debate. This challenge, without being central, is indeed present in the candidates' programs and in the media. It constitutes one of the themes of a campaign, which, unlike that of the 2002, seems to approach a very large number of questions. In particular, the question of nuclear energy, having constituted a significant episode of socialist primaries (in September 2011) then a point of an agreement between the Greens and the Socialist Party (PS), a controversy between the PS and the UMP reappears occasionally in the campaign. The questions of energy, although far from constituting a priority in the hierarchy of the voters' concerns measured by polls, are unmistakably the object of an attempt of politicisation by the political actors. They are both on the game frame and the issue frame as the candidates, especially the two main candidates, try to propose clearly identified and structured solutions in terms of policies.

How much those attempts of politisation match the voters' problems? This article tackles again a discussion on politisation already opened by Duchesnes and Haegel (2004) both on theoretical and methodological plans. However it proposes some new developments on those two fronts, concerning both the subject and the context (energy challenges within the framework of a presidential election campaign).

Keywords: Presidential campaign – energy challenge – politisation – deliberation – political competence

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La précarité énergétique : Une enquête ethnographique1[1]

Florence Bouillon, Johanna Lees, Sandrine Musso, Suzanne de Cheveigné2[2]Centre Norbert Elias (UMR 8562)

La notion de « précarité énergétique » est apparue il y a seulement quelques années dans le champ de l'action publique, même si de nombreux acteurs (travailleurs sociaux, membres d'associations de terrain ou encore employés de fournisseurs d'énergie) étaient de longue date confrontés à des situations qui en relevaient. Nous proposons de présenter ici les résultats d'une recherche issue de la rencontre d'associations actives dans la lutte sur le terrain contre la précarité énergétique depuis de nombreuses années et de chercheurs spécialistes du logement précaire et de questions environnementales et qui avait pour objectif de mieux comprendre les dynamiques sociales et les enjeux sociétaux relatifs aux processus d'institutionnalisation de cette nouvelle catégorie d'action publique.

Nous rendrons compte d'une part de l'enquête que nous avons menée auprès d'acteurs dits « de première ligne » (travailleurs sociaux, médecins, agents des fournisseurs d'énergie etc.), c'est-à-dire de professionnels qui, au delà de la diversité de leurs statuts, leurs formations et leurs structures d'appartenance, travaillent à l'interface et dans une grande proximité avec les « publics » de la précarité énergétique. Comment le travail social se saisit-il d'une thématique à forte dimension technique et environnementale ? Quelles sont les pratiques de ces professionnels ? Quelles sont les tensions et difficultés actuellement à l'œuvre dans le champ du travail social dans ce domaine ?

La seconde partie de notre enquête a consisté en une l'ethnographie des familles en situation de précarité énergétique (principalement l'objet de la thèse de Johanna Lees). Des terrains, tous d'accès difficile, ont été engagés en copropriété dégradée, dans le centre-ville de Marseille et dans une usine désaffectée « squattée ». Se dessinent alors des conditions de vie d'un grand inconfort, mais au sein desquelles naissent et se donnent à voir une multiplicité de tactiques de survie. Que signifie pour les familles rencontrées être confronté à la « précarité énergétique » ? Quels liens avec les notions de confort et d'inconfort peut-on effectuer dans une perspective anthropologique, c'est-à-dire qui tienne compte des normes énoncées par les personnes concernées et de leurs conditions concrètes d'existence ?

1[1] Recherche financée par le Programme PREBAT (ADEME, PUCA, ANAH), et par l'ANR, programme « Vulnérabilités à l'articulation du sanitaire et du social », projet Vitalis - Vulnérabilités en contexte : expérimentations dans le champ des actions sanitaires et sociales et reconfiguration des politiques de prévention et de protection, responsable scientifique Claire Lévy-Vroélant, Université Paris VIII. Johanna Lees bénéficie d'une bourse doctorale de la Région Provence, Alpes, Côte d'Azur.

2[2] Auteur correspondent : suzanne.de-cheveigne@univmed.fr. Les autres auteurs paraissent par ordre alphabétique.

Cette recherche a permis de mieux connaître le travail des professionnels qui interviennent autour du problème et surtout de mieux comprendre la manière dont il est vécu par les personnes concernées. Les perspectives ouvertes par ces travaux divers seront évoquées.

Basse-Normandie territorial collectivities' mobilization for offshore wind power.

Bourdier Laure, Doctorante en sociologie, Cerrev, Université de Caen,

Within the context of European energetic transition, driven by the EU climate and energy package (2008), the French State issued an invitation to tender aiming to the erection of offshore wind plants off the French coast, and to the implementation of a French offshore wind industry. Basse-Normandie region, one of the most nuclearized French regions, was chosen to host one of the five windplants (Courseulles sur mer) and factories (Cherbourg). 2011 saw the different actors of territorial policies come together around consortiums to try to elaborate common strategies and to understand one another's concerns.

This is about understanding what kind of power and influence relationships are carried out, focusing on territorial collectivities (Basse-Normandie regional council, Chamber of commerce and industry, House of employment and training, Ports Normands Associés…), the consortiums and the State. In this context, this study will also allow to highlight offshore wind power specificities as an energy production mode and as an industry. Do these actors, who have for decades favored nuclear power as a way of increasing economic development and employment, have actual environmental concerns? Are they just trying to be attractive to companies willing to conquer a new market? Does the shift toward marine renewable energies made by Basse Normandie reveal a break from nuclear power or a continuity?

Keywords: wind power, offshore, nuclear power, territorial collectivities, energetic transition

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Is being smart enough? A cross-cultural analysis of the case of electricity 'smart meters'

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As part of its sustainability policy, the EC has proposed that 80% of European households have access to smart information systems before 2012. The goal of such system is to better manage electricity savings, through more precise citizen information, varying rates according to consumption, and facilitation of competition. In this context, advanced metering technologies are currently being introduced in many European countries to provide improved feedback on household energy consumption. In France, after an experimental phase with 250.000 households, a national program is set to equip 35 million households with a new meter (Linky). In Spain, there is an increasing interest among local administrations and companies in the installation of smart meters to homes and small businesses.

Some benefits of this new technology are clear for both the citizens and the electricity operator, such as the ability to initiate service, change subscription, or make a remote meter reading. Some questions arise however about the policy assumptions regarding citizen engagement: are economic incentives and disincentives the essential determinants of action? Is factual information enough to induce the expected energy consumption changes? Are there specific consumer perceptions, demands or concerns which have been overlooked or ignored? There is limited qualitative evidence on how individuals interact with smart energy monitors.

To answer these questions, in the context of the Pachelbel Project, a specific engagement and ethnographic process (STAVE) was applied in France and Spain. Three reconvened focus groups composed of persons whose households were recently equipped with a new smart meter during the experimental phase were carried out in France. In Spain, in the context of a participatory energy plan in Barcelona, the STAVE tool was applied to analyse and compare energy saving behaviours and attitudes in two groups: one of them that had and another one that had not installed a smart meter in their households.

Results of the structured group process show the importance of everyday life considerations in the actual use of the smart meter. Our findings suggest that, under certain conditions, smart meters have a significant impact on energy knowledge, attention, behavioral commitment and low cost behavioral changes and investments. Pragmatic constraints on improving sustainable consumption are identified, such as citizens' attitudes and motivations, effects of group deliberation, the way information is provided by the smart meter and the way the smart meter is introduced in the community.

Keywords: Energy; sustainability; household energy consumption.

BIOFUEL IN THE NORTH, FAMINE IN THE SOUTH: A PARADOX OF SUSTAINABLE DEVELOPMENT?

Sofiane Bouhdiba, Professeur de Démographie à l'Université de Tunis

In the framework of sustainable development strategies, many countries of the global North developed the industry of biofuel, based on the exclusive use of vegetal oil. This was positive in itself, as it made it possible to pursuit the development process, preserving in the same time the possible development of next generations (which is the main principle of sustainable development). Nevertheless, the massive use of cereals in some countries in the North caused the destabilisation of cereal prices on the international markets, leading sometimes to cereal shortages and famine among the poorest populations in the South.

To what extent did the production of biofuel cause famine riots in Dakar? Can the United States continue to produce soja-fuel without jeopardizing the social peace in the more vulnerable societies on the South? How can we conciliate « nutritive cereals » and « power cereals »? These are some of the questions to which I will try to find answers in the study.

The research is organised into three sections. The first one tries to show how the production of biofuel matches effectively the basic principles of sustainable development. In the second part I will examine to what extent the industry of biofuel in the North has been a major cause of malnutrition and even famine in the South. The last part of the paper is a prospective one and proposes a series of realistic recommendations on order to pursuit the production of biofuel without disrupting the food equilibrium of the planet.

Keywords : biofuel, Norts, South, Energy

How to decide a thermal renovation in co-ownership? New organizational, conditions for innovation

BRISEPIERRE Gaëtan, Bureau d'études GBS

This paper, through case studies of thermal renovation in co-ownership (Paris region), aims at showing that energy transition in collective housing means a metamorphosis of its organization. In this habitat sector, decisions to undertake works have to be voted by the majority of owners of the building, an argument usually used to explain its delay compared to HLM. Through a field survey of 22 pioneer condominiums, we have highlighted that this decision goes together with the establishment of a new model of participatory democracy, which complements the official one, based on representative democracy.

In co-ownership, the professional manager has a role of "guardian" towards the owners. However, it is more the initiative of a co-owner, evading the professional manager's power of decision, which makes possible the realization of a renovation. The innovation represented by the renovation works is based on profit sharing among co-owners, and the constitution of a network composed by professional actors. Technical choices are no longer only dependent on a theoretical techno-economic rationality but also based on transformation of situational constraints into opportunities to promote a positive vote for undertaking the renovation works.

Keywords: co-ownership, renovation, décision, organisation, innovation

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Households do they choose their heating temperature? Of the order of 19 ° C the system of thermal action

BRISEPIERRE Gaëtan, Bureau d'études GBS

Choosing a heating temperature by households has emerged in recent years as a grain of sand into the subtle mechanics of energy performance in housing. This question of temperature is usually approached from a normative perspective, the injunction of 19°C taking the triple form of behavioral prescription, rule of law, and technical standards. The objective of this paper is to propose a more descriptive approach of behaviors associated with heating, which is based on the concept of "thermal practices". From interviews conducted with tenants in an apartment, we will demonstrate that the approach of 19 ° C based on three assumptions that do not stand up to examination of the facts.

First, the idea that households choose freely temperature while heating uses appear to be limited by technical devices, individual dispositions and social dynamics. In reality, the temperature is less a choice than the result of constraints associated with a particular socio-technical conditions. Then, the normative view of 19°C assumes that the thermal requirements are uniform while observation reveals a great variability depending on the individual and social processes, but also pieces from the apartment as confirmed by the statistical. Finally, the focus on the heating temperature obscures all other resources of thermal comfort within the energy restraint. The inclusion of these thermal practices related to body, movement of air, and hijack of heat, is essential as they form a system with the use of heating and question the ideology of "central heating "legacy of the postwar boom.

Keywords: heating, temperature, social practices, collective housing, central heating

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Individual forms of resistances to injunctions to transportation mode change in metropolitan Lyon. Habits in action.

Thomas Buhler, INSA de Lyon, laboratoire EVS - équipe ITUS

A growing body of empirical evidence has been gathered by social psychologists to support the idea that habits may play a major role in daily life, and more specifically in transportation behaviour. Habits can be understood as a « total anthropological fact » [Heran, 1987] as well as an essential modality of human behaviour. Having said that it is noteworthy that the role of habits on modal behaviour remains weakly questioned in the transportation research literature, comparing to the occurrence of 'choice-theory' or 'methodological collectivism'. This paper aims at showing the major role played by habits on resistances to injunction to modal change (be it modal shift or changes towards intermodal transport) by examining the development of 'thinking habits', 'in-travel habits' and 'territorial habits'. To this end, a questionnaire-based survey has been led among car users in Villeurbanne (a dense and central city in metropolitan Lyon, well-connected to public transports). Two groups of car users have been distinguished and compared, that differ with respect to their car use frequency. Results show the importance of this "tri-shaped" habit on individual forms of "automobile resistance". These outcomes pave the way for a new research agenda and new forms of transport public policies.

Keywords: daily mobility, car, habits, resistance to change, qualitative-quantitative method

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What policy of "energy transition" for an ex-coal town: Between imperative and opportunism.

Joseph Cacciari, Pierre Fournier, Aix-Marseille Université, Laboratoire Méditerranée de Sociologie

If there is today an "imperative" of energy transition, this communication purpose to show that its implications are not mechanically and homogeneously territories in all respects. Local energy political policies must be in a closed relation with economic and politic history of the place that they come from. Those local energy policies are also likely to be in relation with social property and trajectory of the actors who have participated to advance them and finally impose them. The Commune of Gardanne (13) is a perfect example to expose those points: this old mining territory have seen energy transition issues been impacted in dimensions group that order their pressing characters, including economic territory restructuring and coal alternative energy sources. This presentation will be based on an investigation about a comparison between communal action schedules and national press around this theme, on interviews with local officials and on observations of implementation public action of energy transition on this territory.

Keywords: energy, territory, public action, energy transition, restructuring

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Stakeholders behaviour in smart grids projects: sociology serving a study held in an industrial chair

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Abstract: This paper aims to show the place a researcher with sociological theoretical frameworks and methodologies can take in a project led by industrial partners. It also wants to show how sociological approach, in sociology of energy, helps to understand the interface between technical and social aspects, and how this understanding can become a social issue.

It is rooted in an industrial chair's project, where a sociologist's mission is to study the appropriation of new smart grids solutions for users and the impact on changing human behaviour. The first step is to achieve a synthesis and an analysis of the first experimental projects conducted round the world. Then a survey is conducting of users to assist them in implementing innovative solutions and study their behaviour in terms of acceptance, ownership and potential change of their attitude toward change. Following this research, the partners want to get recommendations to refine the technical solutions deployed and survey methodologies, through extrapolation of solutions across the green neighbourhood.

This study aims at highlighting the contribution of sociology of energy in interfacing social and engineering sciences, and in building dialogue between scientists and industry partners – both being core issue of current social transformation.

Keywords: sociology, behaviours, stakeholders, smart grids, and industrial chair.

La démarche négaWatt : changer de paradigme socio-technique pour engager la transition énergétique

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La politique énergétique a longtemps été l'apanage des ingénieurs. Cela n'en fait pas pour autant une « science exacte ». Le secteur de l'énergie obéit tout d'abord à des systèmes de représentation et des codes, qu'il convient de décrypter. Le « taux d'indépendance » énergétique de la France par exemple est une notion sujette à controverse, tout comme la place du nucléaire dans l'approvisionnement en énergie de notre pays. On a vu s'opposer sur ce chiffre structurant de notre imaginaire collectif dans le domaine, deux candidats de second tour lors d'une précédente élection présidentielle.

Longtemps également a prévalu l'idée que l'offre devait suivre la demande, admise comme une variable autonome sur laquelle la volonté politique ne pouvait avoir prise. Jusqu'à une date toute récente, au plus haut niveau de l'État, croissance de la consommation d'énergie et progrès allaient de pair. Ce n'est qu'en 2005 que pour la première fois, un objectif ambitieux de réduction des émissions de gaz à effet de serre a été inscrite dans une loi française de politique énergétique, objectif renforcé et détaillé ensuite par un ensemble de lois nationales et européennes. Les « économies d'énergies », plus précisément la problématique de la demande, sont passées progressivement de la périphérie au cœur des politiques de l'énergie, au même titre que la question de l'offre.

Mais il ne s'agit pas d'un simple changement d'angle de visée. Il existe une différence de nature technique entre l'offre et la demande. La première, au moins en ce qui concerne l'offre classique, appartient à l'univers des gigawatts : quelques raffineries de pétrole, quelques terminaux méthaniers, quelques dizaines de centrales électriques, des réseaux centralisés « gravitaires », du plus puissant au plus faible, qui structurent les espaces géographique et mental. La seconde, celle qui relève du monde des « négawatts », est nécessairement constituée de très nombreux actes de portée variable, sur des échelles de puissance inférieures de plusieurs ordres de grandeur, du watt au mégawatt. C'est en effet toute la société qui est appelée à se mobiliser si l'on veut réduire significativement nos consommations d'énergie. Le champs d'investigation est vaste, de nombreuses initiatives fleurissent, comme en témoigne les concours organisés par l'association négaWatt ciblés sur la « sobriété énergétique » ou sur les « négawatts créatifs ».

La transition énergétique ne peut pas se limiter à promouvoir l'efficacité énergétique et à intégrer les énergies renouvelables et décentralisées dans le système énergétique. Elle nécessite une évolution en profondeur du contexte sociotechnique, auquel se heurtent dans leurs pratiques professionnelles les acteurs de terrain qui ont élaboré le scénario négaWatt. La première des barrières est celle de l'imaginaire collectif. Le scénario négaWatt permet de se projeter à un horizon visible en faisant appel à des pratiques et techniques crédibles, jugées

suffisamment mures aujourd'hui ou à moyen terme, intégrées dans un ensemble cohérent et qui a vocation à constituer un nouveau paysage sociotechnique. A partir de cette projection chacun, citoyen, expert, responsable économique ou politique, peut identifier les éléments clés : lignes de force, passages obligés, points critiques. Les aspects techniques ne sont pas gommés, bien au contraire, mais ils sont systématiquement articulés avec des aspects sociologiques, organisationnels, politiques, qui s'échelonnent du comportement individuel aux choix collectifs d'aménagement et d'urbanisme, à des politiques dans des domaines aussi variés que l'industrie, l'agriculture, la formation, la recherche.

Demande-side management in residential environment. Toward a socio-technical user-centered approach.

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DSM incentive programs built around smart metering are based on a socio-technical approach of innovation: old meters give way to a new device – communicating – which, through new forms of information display, aims to attract attention of the user on his own consumption and, thus, to induce a reduction in demand. But feedbacks on the uses of such tools highlight the limits of the display if not accompanied by a social tool of user's enrolment (Hargreaves, Nye, Bergess, 2010). If the display has a "reflexive" property leading the user to modify its normal practices, however it works in the mode of stimulus and its reflexive property fails to produce sustainable effects (PWC, 2010).

This paper aims to submit for discussion the methodology and initial results of a user-centered experiment of a DSM device combining a smart meter to a user's enrolment program. This experiment, during the past year in the city of Cannes, is conducted by a consortium of companies and research laboratories (social and engineering sciences).

Keywords: DSM, smart grid, smart meter, user-centered innovation

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Presentation on the PHEBUS survey: national, brand-new, quality data for sociology of energy.

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The department for monitoring and statistics of the Ministry for ecology, sustainable development, transport and housing (MEDDTL) will carry out an innovative survey on the Housing performance, equipments, needs and uses of energy (PHEBUS in French) during the fourth quarter of 2012. The survey is aimed at assessing France main homes stock's thermic performance . Objective measures will be linked to energy invoices and behavioural data, as well as analyzed considering the characteristics of the dwellings and their occupying households. The survey will collect complete data on 5 000 dwellings and their inhabitants. The survey is two-fold:

- PHEBUS-Clode (Characteristics of the dwelling, of its occupants and energy expenditures in French) is performed by an interviewer and should collect socio-demographic data on the households. It should also gather some information on their energy consumption and expenditures (electricity, renewable energies, fuels, etc.) and their related behaviours (temperature modulation, ventilation, vehicles or light uses, etc.), on owned equipments (durable goods, vehicles, etc.), on standards of accommodation (insulation, etc.), and carried out or planned building works.

- PHEBUS-DPE consists in producing an EPC (Energy Performance Certificate – DPE in French) performed by a qualified technician and is to get an objective, uniform evaluation of the performance of the dwellings occupied by the very same households (materials, equipments, insulation, energy production, etc.).

Keywords: Survey, Performance, Energy, Habitat, Ministry

La précarité énergétique, objet mouvant en cours d'identification

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Depuis 10 ans, le CSTB explore et analyse le phénomène de précarité énergétique qui a longtemps conjugué deux dimensions jusqu'alors peu conciliables : « maîtrise de l'énergie et lutte contre les exclusions » avant de devenir le champ de la prévention de la précarité énergétique et de voir l'émergence de dispositifs palliatifs et curatifs à toutes échelles.

Tour à tour, sujet de société, thématique écologique, objet sociotechnique ou dernièrement thème de campagne, la précarité énergétique est devenue un enjeu fort au moment où les prix de l'énergie et du carburant s'envolent. Né sous la pression des associations militantes qui revendiquaient un droit à l'énergie pour tous dans un logement décent, elle s'est inscrite dix années plus tard dans un vaste programme national de rénovation thermique des logements anciens pour des raisons environnementales, sociales et économiques sous la houlette du Grenelle de l'Environnement. L'ayant droit aux services essentiels3[3], l'éligible aux aides de la collectivité a été progressivement considéré comme acteur de son propre changement. Il doit apprendre à mieux ou à moins consommer et à maîtriser ainsi son énergie, son confort et son budget. C'était sans compter sur la crise économique qui a fait basculer les plus vulnérables dans un univers de contraintes et de restrictions. Pour les ménages dont le confort est devenu un luxe, ni les campagnes de sensibilisation à la sobriété ni les subventions à l'amélioration du confort ne peuvent trouver un écho favorable. La précarité énergétique est alors devenue un enjeu politique qui dépasse le règlement de factures, et relève de politiques liées à l'amélioration du bâti voire des réseaux de transports. Comment se sont succédées ces politiques publiques dans un contexte d'accroissement des inégalités sociales ? Comment les fournisseurs d'énergie se sont-ils positionnés auprès de cette clientèle démunie en période d'ouverture du marché4[4] ? Quels sont les stratégies des acteurs nationaux qui souhaitent désormais mutualiser leurs connaissances au service d'un dispositif d'observation national ? Les travaux menés au service des collectivités locales et des maîtres d'ouvrage pour mieux appréhender ce phénomène contrasté, mouvant et diffus apporteront un éclairage sur ses modes de traitement. En tant que responsable du pilotage scientifique de l'équipe chargée de construire le futur Observatoire national de la précarité énergétique, Isolde Devalière contribuera à dresser un panorama des stratégies d'acteurs autour de ces publics qui connaissent des difficultés croissantes à assurer chez eux confort et bien-être.

3[3] LOI no 2000-108 du 10 février 2000 relative à la modernisation et au développement du service public de l'électricité

4[4] •Devalière I. (2004), *Pratiques différenciées des agents EDF face aux impayés : Eléments d'analyse*, Revue Flux, no58, 2004, pp. 61-70

The central role of farmers in renewable energy projects : Contributions to a Socio-anthropology of renewable energies.

Dobigny Laure, CETCOPRA, Université Paris 1 Panthéon-Sorbonne

More than any other socio-professional group, farmers are among the first, and most numerous, to have implemented renewable energy (RE) in the last twenty years, either individually or collectively. A socio-anthropological study of rural towns having achieved full or partial renewable energy self-sufficiency in Germany, Austria and France, demonstrates that farmers also took a central place in local projects, as initiators or principal actors. What understanding can be draw from the farmers' precursor role in choosing renewable energy? How this choice inform us of representations, values and relationship to the World connected to the use of these techniques ?

In farming, there are material conditions conducive to RE, but alone they do not fully explain this technical choice. The choice appears closely linked to agricultural activity as such, which takes place in specific temporality, place and relationship to nature, and a particular relation to the risk, technology and innovation involved.

It enables us to explain the barriers that Western societies face when choosing renewable energy. Neither modern nor pre-modern, the choice of renewable energy should rather be understood as an « overtaking » of these two relationships to the world.

Keywords: Farmers, Renewable Energy, Socio-anthropology, Technical Choice, Relationship to the World.

Devices for energy efficiency in the service-sector companies. Place of automation and occupants in the innovation process.

DUJIN Anne (CREDOC), MOUSSAOUI Isabelle (EDF R&D), MARESCA Bruno (CREDOC)

Control of energy demand in tertiary buildings today is based on a teleological scheme whereby performance technologies, properly used, reconfigure the uses of energy and help reduce consumption. The analysis of the diffusion process of energy efficiency devices in buildings (standards, labels, technologies ...) shows in practice the complex translation of the concept of energy efficiency in enterprises.

This communication will be based on a combined analysis of the evolution of instruments to control energy demand in the tertiary sector, a quantitative survey on the distribution of devices for energy efficiency in French tertiary buildings, and a qualitative study in two companies. We will highlight a chain of translations, and in particular:

- What policy intentions drive the dissemination of automated systems;

- What are the profiles of firms that invest in energy efficiency

- How energy efficiency devices are appropriated by building's users (management, employees, etc...), challenging the only scheme of resistance to change.

Keywords: Service sector, Sociology, Energy efficiency, Public Policy, Automatio

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Electricity access and use in Nairobi: between a diversity of experiences and tensions on the network.

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Access to electricity is an essential element of current urban energy policies in cities in the South. It is, however, worth questioning the notion of access and how it relates to an analysis of electricity use. Based on fieldwork in Nairobi (Kenya), this paper highlights the diversity of situations of access to electricity, reflecting prevalent urban inequalities and socio-spatial fragmentation. It also studies the individual and collective, and formal and informal tactics deployed by users in four different neighbourhoods ('slum', middle income neighbourhood, high income neighbourhood, and the CBD) to overcome either disruptions to or the absence of the utility service, according to the varying capacities and resources (technical, economic, social and political) of users. By analysing these "experiences", we show how a "bottom-up", "customized" electricity service is produced, and can be distinguished from that of the incumbent operator through its technical make-up and financial modalities. The electricity service is, nevertheless, conceived as a network which implies a certain degree of interdependency and interaction between its users: by the infrastructures that link areas with different socio-economic and territorial characteristics, and also through the utility company's management model, which is financially dependent on high income households and large consumers, but where low-income households offer the most important possibility to extend its market. The paper analyses how the diverse "experiences" of users disrupt this networked service model and contribute to the emergence of an alternative urban electricity service.

Keywords: Electricity access in the city / Users / Inequalities / Interdependencies / Networks

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What if we definitely commit to eco-citizen behavior?

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The establishment of a engaging protocol in the heart of an information and sensitization environment respect organism. This study was made in frame of Master II of occupational and social psychology for the Aquitaine's eco-energetic regional center (CREAQ). The made objective of CREAQ was « How to make people commit to eco-citizen behaviors ? ».

To answer to this demand, we've realised a pre-servey in order to detect the brakes and motors of eco-citizen commitment. Therefor, we've been able to elaborate a commitmet protocol, with innovant tool : « the eco-citizen commitment list ». The commitment protocol was base on a free submission conset strategy. This approach consist in applied the protocol during workshop group on the energy and water savings, and to ask to the participants to choose in that list of behavior, eco-citizen behavior they would've adopt at home. To evaluate the tool's eficacity, we've applied the commitment protocol during a workshop made by CREAQ, during sustainable development and environment exhibition of Bordeaux. It appears that the tool has brought to a real benefice on participants eco-citizen behaviors subsequently.

Keywords: behavior, changes, commitment, free submission consent strategy, eco-citizen.

Transformative Governance in Energy Infrastructures: A Challenge for a Sociology of Energy

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The paper discusses the potential role and contribution of a sociology of energy in understanding transition processes. The main aim of the paper is to discuss to what extent a "new" sociology of energy can be built on the basis of general thinking in theoretical sociology. To demonstrate limits and possibilities the "Theory of Strategic Action Fields" (Neil Fligstein) will be used for an analysis of transformative governance in four technological developments, instrumental for fighting global climate change.

The energy sector in Germany and elsewhere is tightly regulated and dominated by a few powerful actors. It is also not one of the technologically most innovative sectors. Only a relatively small proportion of turnover is used by the incumbent actors for the purposes of research and development. A small number of powerful closely linked actors (energy providers, manufacturers etc.) are advancing innovation activities when they consider that frame conditions and incentives are stable and calculable. The most important actor for stimulating innovation is still the state or regulatory authorities on a national level. This has not changed after the liberalization of the energy sector. The number of regulations and the intensity of regulation, however, have increased significantly. This process of differentiation in the energy sector has led to the creation of different sub-markets. One common characteristic of these sub-markets is that they are dependent on regulations or sometimes even tiny bits of regulatory changes. These might allow for the creation of new sub markets and respective business models, e.g. in the market for reselling energy.

The proposed paper looks at the governance of new technologies in three countries that are being pushed as (more) climate friendly alternatives: photovoltaics (PV) in Japan and Germany, CCS (Carbon Capture and Storage) in Norway and Germany. The former is related to the development of a new climate friendly technology, the latter wants to improve the performance of coal fired power plants, in order to make them more climate friendly.

The development of the markets and technologies under discussion is embedded in specific (four) strategic action fields with governance configurations aiming in different ways at promoting innovation. By using the theoretical template of Strategic Action Fields the dynamic side of governance as well as the "who gets what" aspect is supposed to be strengthened in the analysis. At the centre are an analysis of the stability and change of power constellations dominating the four fields.

Keywords:: transformative governance, sociology of energy infrastructures, carbon caption & storage, photovoltaics, strategic action fields

L'hydrogène énergie : une filière en voie d'insertion sociale ?

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In a context marked by global warming, the depletion of fossil resources and the higher costs of energy prices, the challenge is to begin the transition from the present energy system towards low carbon energy systems. Hydrogen as energy carrier, is destined by its supporters (political, industrial and scientific research) to evolve into a large scale development in the short and medium term. However, hydrogen has emerged as a new energy technology (NET) in search of greater visibility and legitimacy in the process of social integration. The hydrogen sector is in fact facing many socio-technical locks. This includes lifting of blockades by administrative and legislative awareness of public authorities, to establish industrial partnerships so that concrete applications can value the resource, to make existing technologies successful and profitable, but also generate acceptability and social appropriation of hydrogen energy by final users (industrial, professional and individuals) who are, for promoters of hydrogen energy, the steps required for the social integration of this resource. Through this communication, and through the experience of the association PHyRENEES responsible for the promotion of hydrogen energy in Midi-Pyrenees, we will deal with the issue of hydrogen in its complexity, that means what it implies in terms of innovation and technological maturity (applications), belief and imagination (perception of risk and potential), eventually realizing that the social integration of technology hydrogen primarily involves games of governance.

Keywords : hydrogen energy, social acceptability, governance.

Comfort, Energy Consumption, and Dwelling Practices

Grandclément Catherine (EDF R&D - Research Group on Energy, Technology and Society - GRETS), Guy Simon (Manchester Architecture Research Centre, University of Manchester), Karvonen Andrew (Manchester Architecture Research Centre, University of Manchester)

Energy consumption is often framed in technical, economic, and behavioural terms. However, energy flows in the domestic sphere are bound up in complex daily activities of occupants to maintain optimal living standards. Comfort is a central objective of energy consumption practices and is shaped by building standards, local climatic conditions, and the expectations and habits of building occupants. With the increasing emphasis on energy efficiency, there is significant potential for comfort conditions to be disrupted through the introduction of energy saving technologies, increasingly stringent building standards, and new cultural perspectives on domestic energy use. The notion of 'comfort' provides a crosscutting perspective to study the linkages between the built environment, occupants, and their domestic energy practices.

In this paper, we present findings of comfort practices in a multi-family residence for seniors in a mid-sized city in France. The building has energy efficiency features including superinsulation, district heating, thermal solar for hot water, and green roofs that conform with Passivhaus building standards. Through interviews with the building occupants and managers as well as the owners and development team, we have identified tensions between the scripts of comfort embedded in the building design and the everyday habits and routines of the occupants. For example, the mechanical ventilation with heat recovery (MVHR) system is intended to enhance the air quality of the residence by delivering constant ventilation and more precise control of air movement with no heat loss. However, the system is designed to function without occupant input and does not provide operational feedback, in direct contrast with the familiar technique of controlling airflow by opening or closing a window. Likewise, the building design is informed by technical modelling that assumes an optimal temperature of 19C while the actual conditions of the building are determined by the daily needs and expectations of the occupants. These tensions result in discrepancies between the modelled and actual energy performance of the building as well as misunderstandings, confusion, and the inefficient use of energy by the occupants.

The research findings reveal a series of gaps between the actors who design, construct, market, and occupy energy-efficient buildings. A more integrated design process would address the notion of comfort holistically and intentionally by co-constructing energy efficiency strategies amongst all of the building actors. Such an approach has potential for simultaneously improving occupant comfort while reducing their energy consumption. This research is part of a larger project titled 'Conditioning Demand: Older People, Diversity, and Thermal Experience' that examines how energy efficiency interventions influence the thermal comfort and daily practices of older individuals in their residences in the UK and France.

Keywords : Comfort, residential, energy efficiency, Passivhaus, co-construction

Green jobs: a change in paradigm of the regional public action?

GUYET Rachel, CERI-Sciences Po

In the framework of the EU2020 strategy aiming at developing a sustainable, smart and inclusive growth, we will question the notion of "green jobs" that has recently emerged in order to evaluate if this represents a change in paradigm in the regional public employment and training policy in the framework of energy transition and based on a comparison between France and the UK. A first part will deal with the political, institutional, economic, industrial and financial controversies that tend to limit the scope of the change in paradigm. In a second part the theory of Europeanisation will help us analyse if the implementation of non binding conditionalities and incentives developed at EU level represents a relevant framework for regional actors to structure their employment and training actions to develop "green jobs" at regional level. Finally, the third part will resort to the sociology of collective action to analyse the extent to which the regional actors responsible for the implementation of European structural funds use the European recommendations of low carbon transition to organise their cooperation modes, networks and alliances in order to develop a renewed approach of public action dedicated to the development of green jobs on a territory.

Keywords : green jobs, Europeanisation, collective action, controversies, public action

Energy efficiency improvement in building, a local pilot to improve taking action.

Hamon Viviane (Viviane Hamon Conseil), Savanne Denis (DoMEnE, Bogotto, Gaël (GÉRÈS)

Marie is a strategic European project (Med prog.) which aims at identifying and testing measures to boost the EE refurbishment market of buildings, taking into consideration the existing characteristics and barriers of the Mediterranean market. The PACA Region and Regional Chamber of Crafts and Artisans are two of the French partners, the third one being Association Effinergie.

The initial Regional Benchmark Analysis has confirmed that the barriers to the development of the EE refurbishment market are mainly socioeconomic ones, whether looking at the offer side (poorly involved SMEs) or at the demand side (a supposedly huge market still to be awakened). This diagnosis has been made by a multidisciplinary team (marketing/anthropology, thermal and sustainable building engineering company, Energy Information Office), which has enriched its analysis and recommendations with findings from national and international research in sociology, anthropology, marketing and communication.

An experimentation focusing on individual dwellings and embedded in a local council, which is presently launching a Climate-Energy Territorial Initiative (PCET), is now being prepared. This experimentation will seek to implement and test some of the recommendations. On the offer side, a diversity of private and public stakeholders competing to offer B to B services to local SMEs and capture the best ones, will be associated to the experimentation. To boost the demand, the marketing approach will seek to exploit any motivation for refurbishing and renovation works, not focusing on EE only, and to use non-rational communication means.

Our communication aims at explaining the theoretical and practical origins of the experimentation and showing how the local stakeholders (politicians and their technicians, private) have taken ownership of the diagnosis to conceive and validate the plan of action, which will be described in all the details known when the colloquium takes place.

Keywords : energy efficiency, refurbishment, stakeholders interaction, marketing, demand, building SMEs

Energy transition to the test of energy uses: the case of low middle income households in Cape Town (South Africa)

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Since the end of the last decade, South Africa has been facing a crisis of its electrical system. A period of overproduction and low prices during the 1980s in the energy has now been followed by a period of underinvestment and tensions on infrastructure. In 2008, a crisis of supply ended in numerous power outages. In response, the national company Eskom, restarted a major investment program and obtained substantial tariff increases. In the meantime, Eskom promoted energy efficiency measures and demande-side management. These changes have had important implications at urban levels - price increases have been passed on to consumers while cities relay and possibly complement energy efficiency and demand-side management campaigns.

This paper proposes to observe the consequences of these changes in a South African city, Cape Town, by questioning their effects on households. Hit by a massive power outage in 2006, Cape Town has multiplied the initiatives in the energy field, and the question arises as to how they impact the various categories of residential consumers. Much attention is rightly paid to the poorest South Africans, given the urgency to supply poor neighborhoods with electricity and the implementation of free universal service. Today, the consequences of increases in electricity costs mobilize politicians, experts and researchers. The hypothesis of our study is that too little attention has been paid to urban low middle income households. Heavily in debt, highly dependent on electrical energy with a tendency to increasing consumption, equipped with low-quality appliances, living in poorly insulated homes often without solar water heaters, they are, at present, a small segment of the population barely acknowledged and studied, even though they are facing high increases in electricity prices (25% per year on average since 2008) that increase their social vulnerability.

This analysis is based on anthropological research and we intend to present, firstly, the findings of our research into the household use of electricity in a Cape Town neighborhood.. Secondly, we will expose the content of their practices facing institutional recommendations, even injunctions, of saving energy. Finally, we will examine the adaptation capacity of these witnesses and now designated actors of the so-called energy transition.

Keywords : energy transition, energy uses, low middle income households, socio-economic vulnerability, Cape Town (South Africa)

Fuel Poverty to the Test of Daily Mobility

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The notion of "fuel poverty" has emerged in order to describe some households, situations or processes in which home fuel expenses contribute to the economic, health and social difficulties of the households. This notion is already discussed especially in relationship with the public action tools that deal with this phenomenon. Gasoline expenses are now counted at the same time as electric or gas heating. The integration of daily mobility in fuel poverty provokes the perimeter and relevance of the latter notion to be questioned. En particular, several researchers and public actors advocate for its generalization in a global fuel vulnerability of households.

We propose to rebuild the notion of fuel poverty putting it to the test of daily mobility. We aim at characterizing the modalities of an inclusion of daily mobility in fuel poverty, as much in scientific terms of descriptive efficiency of the processes at work, as in operational terms of synergy of public action tools. We will rely on a review of the first works that have tested this inclusion, completed by a review of the literature on home fuel poverty and daily travel poverty. Especially, we will refer to our own studies of the daily mobility and housing of poor workers, in Paris (2005-2007) and Santiago, Chile (2008-2010). These qualitative analysis allow us to articulate housing and mobility from the individual practices and aspirations. Finally, the secondary analysis of a 2010-2011 survey of 120 French households mostly in situation of fuel poverty sheds a statistical light on the possible articulation of both fields of fuel poverty.

Keywords: fuel poverty, daily mobility, housing, review of literature, secondary analysis

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Citizen Participation and transformation of the energy regime.

Conrad Kunze, Chair of Environmental Issues in Social Science, Technical University of Cottbus, Germany

Many aspects of the shift towards a sustainable energy regime require both the acceptance and also the active participation of the wider population as consumers as well as citizen. Since Germany opted for a nuclear-bail-out, the need to accelerate this shift is also giving the social embedding of technology a push. Presently new modes are bargained to remodel established top-down politics of the nation-state institutions and industry with the sprouting NGO and grass-roots-initiatives. Might this reconcile conflicts of interest in a new modus vivendi? Which designs would allow for the desired results?

A review of literature and empirical findings shall provide an outlook on the topic.

Keywords : energy transition / citizen participation / democracy / civil society / renewable energy

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Geography of energy : milieu, access, actuality

Olivier Labussière, Maître de conférences en géographie et aménagement, Laboratoire PACTE (Grenoble)

The energy transition is driven by a diversity of scenarios (EREC-Greenpeace, IEA,...) structured by visions of the future and technological options (wind power, solar, CCS, …). These technological centered views of the energy transition keep at a distance the social and spatial recompositions which are part of their development. Thus, social sciences have a key role to play depending on their ability to study new fields of the energy transition and to look at the conceptual innovations and resurgences their analyses instigate.

Based on case-studies and on-going researches on the energy transition and the development of the renewable energies (onshore and offshore windpower, biomass, efficiency building,…)5[5], we propose to look at such disciplinary evolutions in the case of the geography of energy.

The geography of energy is rediscovered thanks to the contemporary issues, but it is still often based on monographic, descriptive and sectorial approaches at the nation state level. These ones are not sufficient to study the current energy transition and its technological developments regarding the importance of their socio-spatial recompositions in which the transnational, national and local levels are interwoven.

A brief retrospective of the geography of energy, especially in France, suggests that past approches, forgot today, are not without interest to look at the current issues. For instance, the influence of the ecological scheme on the French geography at the early XX century favored a global study of the energy sources, their transformations and their impacts on the environment (Brunhes, Sorre). We can also consider the ideas of Jean Gottmann, in political and economic geography, regarding his definition of the geographical space as the “space accessible to men”, underligning thus the ability of a society to adapt its norms in order to maintain an access to the resources needed by its development model, sometimes excessive.

This communication proposes three simple notions (geographical *milieu*, accessibility, actuality), opening a path through the history of geography and attempting to renew the way to look at the current energy issues. In so doing, we would like to open an interdisciplinary discussion too.

5[5] Project « Wind power energy and landscape » (A. Nadaï coord.), project ANR « Energy transition and socio-technical collectives » (O. Labussière et A. Nadaï coord.), Monthly seminar « Energy, socio-technical, territory » Paris and Grenoble (Labussière, Nadaï, Rutherford coord.)

The notion of geographical *milieu* focuses on the diversity of the renewable energies (the wind, the sun, the sea…) and the spaces (marine, submarine, underground,…) invested by the energy transition and the forms of life which are part of these milieu. It promotes an enlarged conception of what is the social and the space and makes the constitution of a "milieu associé" (Simondon) a central question to understand the development of the technological process of the energy transition. The notion of accessibility questions the way socio-technical configurations structure their development in a geographical *milieu* according to rules (social, economical, organisational,…) designing a technological potential sometimes unequal for local populations or keeping the public at a distance. The notion of actuality questions the sustainability of the socio-technical configurations developed, the way these ones ignore or take into account the inherited socio-spatial organisations, the way they anticipate or not the reversibility of the milieu they invest sometimes for a short period.

Keywords: energy transition, geography of energy, conceptual challenge (geographical *milieu*, accessibility, actuality)

Leaders of thermal renovation projects in condominiums. An example of energy transition spokespersons" ?

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One of the policies to reduce energy consumptions consists in encouraging housing thermal renovation. In condominiums, this policy comes up against special difficulties because these renovation projects depend on a collective decision taken by the co-owners general meeting. Recent researches have shown that the collective involvement of co-owners into thermal renovation process is brought about by the voluntary action of one of the co-owners who play the part of the "leader" of the renovation project (Brisepierre, 2011). These leaders thus become the "spokespersons" of energy transition (Callon, 1986), in a peculiar action context that deals with neighbourhood terms and personal relations with housing and property.

This paper is base on the analysis of hundred questionnaires and fifteen interviews realized with these "leaders". These investigations allow to know better the profile and the positions of these "spokespersons". This survey also permits to identify the resources they use and the motivation of their commitment to the condominium that is very different from militancy. At last, it aims at analysing how these leaders concretely "translate" energy transition issues to the very heterogeneous audience that compose the co-owners of the condominium.

Keywords : housing, thermal renovation, condominiums, co-owner, spokespersons.

UK Biofuel Innovation: Sustainability transition or infrastructural lock-in?

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UK government policy has been promoting bioenergy within a broader transition to renewable energy for a low-carbon economy. Technoscientific innovation is seen as essential for bioenergy to become environmentally and economically more sustainable. UK policy espouses a technology-neutral framework: rather than 'pick winners', the government will facilitate 'the market' to deliver the best options. Such passive language expresses limitations of a state which has relatively weak capacity to influence technological choices, especially after decades of liberalising the energy market and globalising its private ownership. Yet such policy language downplays how policy frameworks effectively favour some technological trajectories for bioenergy.

Through various targets and subsidies, UK policy incentivises more efficient ways of turning biomass into bioenergy, especially for biofuels. Although biofuel targets provoked great controversy, this was channelled into a policy framework for R&D stimulating novel, more 'sustainable' biofuels. As explicit advantages of such innovations, they will complement current transport-energy infrastructure, especially the internal combustion engine dependent on liquid fuel, alongside private motor vehicles offering consumer freedom. Future novel biofuels are envisaged as a long-term substitute fuel – rather than as a medium-term stop-gap, pending take-up of electric vehicles that could more greatly reduce GHG emissions.

These techno-fix assumptions for bioenergy have been internalised within specific incentives and R&D priorities. As an indirect subsidy, 2020 quotas for renewable energy effectively favour liquid fuel. As an explicit subsidy for energy production, Renewable Obligation Certificates favour novel technologies for converting bio-liquids (such as palm oil) more efficiently into liquid fuel. R&D programmes likewise favour novel inputs and conversion processes for liquid fuel. Although R&D on carbon capture & storage (CCS) is being promoted anyway to make coal more environmentally sustainable, UK policy emphasises such prospects as a way to do likewise for bioenergy.

Future visions of techno-fixes have been jointly elaborated through discursive interchanges among research managers, government departments and other state bodies. The UK government has greatly increased R&D funds for bioenergy, foreseen as a major contribution to a low-carbon economy. As main conduits for public-sector funds, Research Councils

elaborated on state expectations that future biofuels would be both necessary and feasible for expanding biofuel usage in environmentally sustainable ways. Research Councils echoed government's techno-optimistic expectations for specific domestic pathways to sustainable bioenergy, thus enhancing credibility of the policy framework.

In all those ways, the political-economic system anticipates that 'sustainable bioenergy' will benignly substitute for fossil fuels, thus circumventing the need (and demands) to 'power down' the economy. In all these ways, R&D priorities serve to lock in energy-intensive infrastructures. Despite the prevalent discourse of innovation, prospects for bioenergy innovation help to avoid fundamental change in and production-consumption-transport patterns. A potentially new accumulation regime within a low-carbon economy minimises the need for infrastructural investment.

Observing inhabiting modes in sustainable areas: methodology, concepts and tools.

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Our communication provides a presentation of the methodology adopted for our thesis which focuses on inhabiting modes in sustainable areas and how we handle in it the question of energy.

Local authorities have to ensure an optimal management of resources while preserving biodiversity. Starting from years 2000, they have started to rehabilitate or create areas following a sustainable approach. The project logic of those boroughs implies a feedback from the district "operators" upstream the decisional process and a partnership between the urban project actors including energy suppliers. Furthermore, the sustainable area is influenced by a transverse sustainable dimension which will mainly mark the inhabitants' life place. It provides an unusual habitat with the noticeable presence of renewable energies, local energy production, equipments inviting to new uses... In order to perceive the modes of inhabiting in areas we have chosen to carry out a socio-ethnographical study by crossing 3 different scales (the city, the district and the housing) and to call in the tools and concepts of urban sociology and ethnographical sociology so as to conduce 4 monographs of French and North-European sustainable areas.

Keywords : socio-ethnographical methods, habitat, sustainable districts, inhabiting modes, renewable energies

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Intentions fate: studying a council housing energy consumption renovation program.

Fabrice Marchal, Institut de l'Homme et de la Technologie, université de Nantes

A research is currently led in a council housing estate that was recently submitted to an energy consumption renovation program. The research is aimed at understanding social processes that determine appropriation of the technologies that have been installed in the accommodations. What is the fate of intentions that justify conception of a technical object? Do they survive their insertion in a domestic assemblage? The observations that have been pulled out of this study encourage us to consider the singularities of each assemblage. Therefore they invite us to think about social sciences uses, in the context of a request for energy consumption behavioural control.

Keywords : accommodation, energy consumption, technical objects, appropriation, social sciences utility.

Comment les facteurs énergétiques impactent-ils les arbitrages résidentiels ? L'intérêt d'une approche peu directive.

Joël Meissonnier, Cété N-P (ERA MOB)

One of the aims of research TransEnergy (ANR) is to understand the tactics of residential location of households through a Lille-Lyon comparison. In the current context of growing pressure over the price of energy and ambition to reduce CO2 emissions, the question is whether and how these locations reflect - or not - the energy transition. We want to show the relevance of a methodology using repeated semi-structured interviews to understand the evolution of arbitration while in the process of buying a new house. A review of the literature shows that it is common to interview households after the choice has been made. It then produces a reconstructed speech justifying the choice criteria and neglecting the discarded or sacrificed. Furthermore, the energy criterion is polymorphic and appears only when talking about distance, accessibility, isolation, diagnosis or proximity to public transport. How do buyers react to this new order? The investigation by repeated semi-structured interviews is an inductive exploratory tool which allows all household members discuss their recent visits to various stages of the housing search. This entails us to "see" what criteria will be shown or discarded with minimal input from the researcher. The talks include "full" but also "hollow" (subjects that are not covered) because they were considered futile (home insulation ...) or obvious (the need to use the car ...) by the buyers. This limit of the method is also its strength: we will manage to make sense of the absence.

Keywords : Home-ownership, Localization, Comprehensive semi-directive methodology, Processes of choice, Energy criteria.

Changing behavior of energy consumption: self-organization & support.

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Humans do not automatically change their behavior depending on their environment. They can even contribute to the "collapse" of their environment and society (Diamond, 2006). Nevertheless, people use strategies in order to acquire gestures, behaviors, knowledge, values, *etc*. Starting from two local actions, "Saving water and energy 2010" and "positive energy Families Contest", we propose to account for self-organization strategies, requests for individual and group support, team dynamics and mutual aid, as well as their effects. It is a question of reducing energy consumption of the habitat over a period of several months, and only through everyday activities and without significant financial investment. How are households encouraged to participate ? How are they accompanied in these situations ? What strategies are identified ? What are the methods used and their effects on behavior ? This presentation is situated within the paradigm of sustainable development. It explores the collective dynamics of interactive energy transition that leads users to become responsible consumer-citizen actors. What are the strategies which are able to combine individual and collective efforts and public policy ? What are the levers, barriers and limitations ? What place can we give them in technical projects ? What role does innovation play ?

Keywords : self-organization, behavior, energy saving, eco-responsibility, gamification

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Le développement de l'énergie renouvelable en Tunisie : Enjeu économique et social

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Dans un pays pauvre en ressources énergétiques conventionnelles, la Tunisie a essayer de mobiliser d'autre ressources d'énergie comme le photovoltaïque, la biomasse, l'hydraulique…, mais avec l'évolution scientifique et technique dans le domaine, le pays commence à explorer d'autres pistes.

Dans ce cadre, le projet NUR énergie se présente comme une nouvelle alternative. Le projet envisage à produire, à partir de ressources propres et durables, de l'électricité destinée essentiellement à être exportée vers l'Europe. Cependant, une partie de la production est destinée servir et à satisfaire la demande tunisienne en électricité à l'horizon 2015-2020. L'étude d'impact a permis de relever les impacts du projet et les mesures d'atténuation à prendre concernant les problèmes qui entravent l'exécution du projet. Une multinationale (NUR Energie) envisage de développer en Tunisie une centrale électrique solaire thermique à tour, d'une capacité de production d'électricité de 2 000 MW. Le projet est localisé dans le gouvernorat de Kébili, plus précisément à Régim Maâtoug (Sud ouest de la Tunisie).

Ainsi, cette étude d'impact sur l'environnement (EIE), sert de support à l'étude de faisabilité du projet en ce qui concerne son volet environnemental et elle permet notamment de :

1. Faire le point sur l'état actuel de la zone projetée pour cette centrale ;
2. Décrire les équipements de la centrale solaire ;
3. Identifier et évaluer les impacts directs et indirects susceptibles d'être engendrés par le projet sur le milieu naturel et humain ;

Les impacts négatifs pour un tel projet sont :

- Modification de l'affectation du terrain naturel

- Utilisation des eaux souterraines

- Consommation du gaz naturel
- Contamination des eaux pluviales par des polluants chimiques et des déchets solides
- Collecte, tri et stockage des produits potentiellement polluants dans des containers adaptés à leur nature et évacuation vers les filières de traitement spécifiques
- Emission du gaz à effet de serre

Deux facteurs ont entravés le projet. Tout d'abord le foncier : le choix technique de l'installation des équipements propose des terres de transhumance d'une des rares tribus nomade qui existe encore les « ouled Ghrib » ce tribus refuse catégoriquement que leur terres soit accaparée par le projet. Le deuxième problème, c'est les événements du 14 janvier 2011 : l'entrepreneur a quitté le pays pour des problèmes sécuritaires.

Place de la thématique énergie en éducation au développement durable.

Didier Mulnet, Université Blaise Pascal, laboratoire Acté, Clermont-Ferrand.

La thématique de l'énergie occupe une place particulière en éducation au développement durable par rapport aux autres champs. Le module de formation « Changements climatiques et énergie » du master de formation de formateur en éducation au développement durable servira de support à l'analyse des problèmes rencontrés.

Interconnecté à toutes les autres thématiques (enjeux énergétiques parfois opposés aux enjeux portant sur l'alimentation ou la consommation en général, les ressources en eau ou la biodiversité), voire couplée comme dans le cas de la formation présentée (changements climatiques) l'énergie mobilise en tensions différents secteurs de la sociologie. Seule un vision systémique couvrant l'ensemble des différents enjeux avec leurs complémentarités et oppositions peut être porteuse sur le plan pédagogique.

Le choix d'associer les changements climatiques à l'énergie polarise automatiquement les débats sur le carbone avec les dangers d'une certaine dérive idéologique. Réduire l'énergie à un phénomène causal des changements énergétiques amène à une vision réductionniste et déterministe, conduisant à la recherche de solutions parfois partielles ne prenant en compte que la production ou la consommation, que les aspects sociaux ou environnementaux, à des échelles spatio-temporelles discutables ou fortement induites par les préoccupations des pays du Nord.

Selon que l'approche de l'énergie est centrée sur la production ou la consommation, les visions scientistes ou technicistes peuvent s'imposer ou s'opposer aux visions psychologiques ou sociologiques. C'est alors tout le débat sur la postmodernité qui est sous-tendu.

En termes de formation, les situations et modalités choisies doivent permettre à la fois de respecter les « petits gestes » engageants tout en se méfiant des dérives comportementalistes, mais aussi d'entrer dans un vision plus globale des phénomènes énergétiques en terme de transition ou de mutation énergétique. L'articulation entre différentes formes de psychologie et de sociologie sous tendent des visons différentes de l'individu dans la société. La diversité des représentations sur la science, la société et l'environnement sont tendent des visions politiques différentes.

Entres pédagogies positives et visions cindyniques, dérives comportementalistes et utilitaristes, les modalités pédagogiques de formation associent donc une diversité d'approches mobilisant différents types de savoirs, d'approches sociologiques ou de mise en situation (débats ou jeux de rôles..).

Les démarches (classiques, technoscientifiques, critiques ou hybrides) sous tendent différents courants en éducation au développement durable et donc des positionnements différents en terme de formation. Par ailleurs les visées comportementalistes peuvent s'opposer aux visées éducatives.

Configuration, assemblage, agencement as candidate descriptors for a sociology of energy.

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Energy issues are currently casted within the perspective of carbon fossil resources depletion and the likely major impact of climate change. This perspective calls for a major change in the ways we produce and consume energy, a process often termed as "energy transition". For the present time, this transition is mostly embedded in socio technical proposals, assembling actors and technical artifacts around what could be termed the New Energy Technologies (NTE)6[6]. These proposals are more or less developed. They range from visions, narratives, demonstrations or demonstrators, to installed capacities and they raise a double issue. On the one hand, they are representational devices: they convey visions of energy futures, which diverge as regards to the modes of producing, transporting and consuming energy, as well as to the production and allocation of wealth and risks. On the other hand, they are performative devices: the concretization of these visions calls for framing processes (such as, norms, investments, allocation of institutional power …) which allocate and delineate our capacity to act and to contribute to the steering the energy transition. In other words, framing, individuation and the emergence of new actors or new agencies are to the core of the energy transition7[7].

Our paper questions the ability of a sociology of energy to develop a critical perspective on the energy transition by accounting for these processes. This leads us to discuss the content and the relevance of a set of potential descriptors for such processes. The notions of *configuration* (Elias), *assemblage* (Latour; De Landa) and *agencement* (Callon) are considered as candidates and discussed, because of the ways in which they each account for and encompass the articulation between individuals (and individual action) and the social dimension. Our analysis is undertaken by considering the content of these notions, their occurrences and variations beyond linguistic overlapping, and by confronting their reach and limits to issues raised by the energy transition in relation with several NTE (e.g. solar photovoltaic energy, onshore wind power, offshore wind power, Carbon Capture and Storage, smart grids).

Keywords : process, emergence, new technologies of energy (NTE), description

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6[6] We propose to use this term and acronym to encompass the technologies relating with renewable energies, Carbon Capture and Storage and the reduction of the energy demand.

7[7] See for instance : in the case of solar PV, Debourdeau, 2011, « *De la « solution » au « problème » - La problématisation de l'obligation d'achat de l'énergie solaire photovoltaïque en France et en Allemagne* », Politix, Volume 24 - n° 95/2011, p. 85-109, XX ; in the case of wind power, Nadaï A. (2011b forthcoming) "*Planning with the missing masses: innovative wind power planning in France*" in Learning from Wind Power: Governance, Societal and Policy Perspectives on Sustainable Energy, Joseph Szarka, Richard Cowell, Geraint Ellis, Peter Strachan and Charles Warren eds. , Palgrave, Mac Millan.

What are the positioning stakes of sociology beyond the social acceptability of energy saving policies? Lessons learnt from a multi-level approach to the rebound effects.

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Energy efficiency has become a major target for the international pursuance of reductions in carbon emissions. This technical stance based on economic and engineering sciences questions the behaviours of consumers at the end of the chain. Indeed, according to the concept of rebound effect, they could be responsible for a partial loss of the gains in efficiency from technological progress. In other words, as we use energy more efficiently we consume more. If this interpretation refers to the social acceptability of energy saving policies, our sociological approach to the sectors of home heating and mobility shows that the barriers are not limited at the level of households' behaviours. To better understand the positioning stakes of sociology in the field of energy, the talk will present the lessons learnt from this case study of take-backs. The focus of existing knowledge in energy economics and social sciences about these energy consuming practices is mainly on the role of individuals and how they take ownership of energy efficient technologies. The interest in a multi-level approach to rebound effects will show up against that background. The observation work conducted in Brussels will allow us to discuss the relevance of sociotechnical approaches and analyses of public policies and industrial strategies. To what extent do these sociological insights broaden the terms of scientific debates on this controversial issue?

Keywords: energy efficiency, social acceptability, rebound effect, scales of sociological observation, multi-level analysis.

The instruments of public policy-making as a reveal of the mobilizations and resistances about the energy politic of buildings in Brussels.

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In the Brussels-Capital Region, after 2015, all new constructions should comply with the "passive house" standard and all building renovations with the "very low energy". Whereas the first Brussels passive building is dated from 2008, the adaptation period for the actors is going to be really short although its pivotal role. Indeed, this standards implementation is accepted as shattering the building sector and, in particular, its stakeholders; their liabilities, skills and organizations.

Aware of the extend of the task before 2015, several stakeholders try to ease this transitional period by the production of various instruments of public policy-making, simultaneous technical and social operations. The study of this miscellaneous instrumental scene, with its composition, goals, process and appropriations, can afford to bring to light on two main facts; on the one hand, the sociological context of the energy efficient building transition project in Brussels, on the other hand, the emergence of some controversies about the requirements for sustainable construction.

Keywords: energy performance of buildings, sociology of public action, instruments, sustainable architecture, stakeholders analysis.

Sociologie de l'énergie : nécessité d'une discipline au service de l'écologie de l'énergie

NOUWADJRO Coffi Fiacre F., ABALOT Emile Jules, MENSANH Christelle,
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Less spectacular but more close to us, the energizing realities returned the man slave of his/her/its environment. Thus, the hold of conscience of an imminent danger for the survival ended up convincing on the necessity to concentrate on what erects itself in habitus. This struggle for the quality of life her we should not incite to raise the other big challenge of our society: the ''energizing blossoming''? As the man must adapt at the nature and no the inverse, that is the society that must adjust to the energizing resources and no the inverse. does It present himself/itself a risk of self-destruction of our societies then. But the essential doesn't rather consist in a reform of the daily behavior of each? In the same way, the energizing policy analysis, of the adopted reforms, and of the free credits notably in the countries of the West Africa should give an orientation positive of every actor's behaviors (citizen, decision-maker, etc). This proposition aims therefore to cause an ecological " orientation " of the energy while leaning on the strategic analysis model, so that every society can find in its environment the factors to bloom freely on the energizing plan.

Keywords: Energy, Ecology, Environment Actors, Strategies,

Thermal imaging as a tool to reduce energy consumption in households and raise public awareness.

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Nimes Métropole is one of the many Conurbation Authorities which has opted for aerial thermal imaging as a means to sensitize the inhabitants of its 27 communes both to their energy consumption and the thermal insulation of their homes. A survey was carried out in December 2011, one year after the inhabitants were presented with the first results of the operation in order to assess its impact. The analysis of the survey was assigned to the CAUE of the département du Gard, the body which employs the energy saving advisors who handed out the maps of heat wastage to the inhabitants and interpreted the results.

To this end, a questionnaire established with Nîmes Métropole was mailed to the inhabitants who approached the CAUE for advice following the thermal imaging campaign (1800 households or so). The return rate of 29% is a first index as to the interest of the local populations in the operation. Despite the absence of a number of social-demographic factors (gender, social and occupation group, education..) and a phrasing at times normative of some of the questions, the survey has made it nonetheless possible to approach social habits. In this respect, it has validated the hypothesis previously put forward that individuals do not so much think in terms of value as in terms of cost-benefit.

With the thermal imaging campaign, the aim of the department of sustainable development of Nîmes Métropole was to enhance the economic and social spheres which traditional approaches generally hold less important than the environmental sphere. In this respect, two points are worth noting:

- Although financial matters are a major concern for the inhabitants, the results of the study are quite clear as to the financial status of the people who, on the one hand, came to consult the energy saving advisors, and, on the other hand, embarked on insulation work. For the most part, they are above the upper limits for means-tested benefits and the financial tools at their disposal – zero interest eco-loans and tax credits notably- do not differ greatly from those obtained by populations of lesser means. The study highlights the latter group did not always benefit from the aids they were eligible to (Anah particularly), emphasizing the need for the Conurbation Authority to better inform a larger public about these subsidies and/or to simplify the formalities to benefit from them.

- As for the insulation work undertaken, it doesn't appear to have had an economic impact on local entrepreneurs so far. The guidelines for renovation and insulation issued to achieve that goal do not seem to meet the demand and need to be reviewed and given a new impetus.

Keywords: survey, aerial thermal imaging, thermal insulation of dwellings, social equity, building trade contractor

"When self-employed waterway run ": practices and collective representation related to the issue of fuel in the transport by inland waterway.

Paul, Charlotte, IFSTTAR /UVSQ

Within the framework of the Grenelle Environment, the objective of the French State is to develop the part of the non-road and non-air freight by boosting in particular the transport by inland waterway. Indeed, CO2 emissions of the sector are 2 to 4 less important than those of road transport. They are directly linked to fuel. For the major actors of this mode of transport, the owner boatmen, the fuel represents the first item of expenditure. To study the centrality of the use of fuel in the practice, we will rely on a field work conducted among owner boatmen and on a ministerial study on the level of fuel consumption of french river units. This work will first attempt to highlight, on one hand the strategies for lowering energy costs implemented by the type of navigation adopted depending on the environment, and on the other hand the increase of tasks generated by the weight of the new rules on the energy. It will also show that the issue of energy, recurrent for these mobile professionals, constitutes source of sociability, particularly during stops in the fuel stations or on social networks. The examination of these practices, related to energy consumption, raises questions about the representation they have of their activity this way. We will see that owner boatmen, for a long time marginalized, find in these new «green policies" and in the marketing recovery of this mode of transport by retail companies, the way to re-enchant their work.

Keywords: Transport by inland waterway – self employed waterway - professional practices - strategies for lowering energy costs.

Idéologies et savoir-faire technique : les règles sociales de distribution des réponses aux questions techniques et pratiques soulevées dans le cadre de la réhabilitation des logements sociaux en matière de consommation d'énergie

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An action research project dealing with the evaluation of a social housing rehabilitation program has shown that there was no real autonomy between technical and social logics. The intervention of social landlords has been designed as a chronological sequence of different actions : design and implementation of technical solutions, information for tenants, assessment of the effects of technical and social rehabilitation. Action research has shed a new light on whether and how a technical activity disconnected from any social intent, if to achieve comfort and energy savings. This activity could transform social practices about the consumption of this energy.

Keywords: energy consumption technical knowledge, social action, ideology, action research

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A passage to India. For a sociology of energy in architecture and urban planning.

Pellegrino Margot, PhD. LAVUE, Ecole d'Architecture Paris Val-de-Seine

This paper aims at highlighting the importance of a sociologic approach to energy studies in emerging countries, taking the Indian situation as a case study. In India, at the moment, residential buildings consume 24% of the energy produced and about 20 million of new apartments are planned to be built by 2020. They mostly are low-cost, low-quality and high-consuming buildings; their users will be members of the new Indian social class, the rising middle class. In Indian megacities (Calcutta, New Delhi, Mumbai) a voracious and uncontrolled desire of construction combines the financial resources of a growing economy with the impellent necessity of giving an apartment to the people who go beyond the threshold of poverty and become part of the middle class. These social dynamics have to be studied, to prevent and control some serious possible consequences. Two examples can be given, to highlight the links between society and energy issues.

Firstly, Air Conditioned systems in private houses (which already represent 28% of residential energy consumption) have become a real status symbol for the middle class. An A/C flat in India can consume, per year, about 3000 kWh more than a non A/C one.

Secondly, comfort studies concerning comfort subjective perception of people have to be encouraged. Local behavior and uses of houses have to be studied, to better understand how it could be possible to reduce energy consumption and to design better buildings. Sociology has to support institutions in the creation of local models. The Indian Energy Efficiency Building Code, for example, is modeled on the U.S. legislation: it accepts the use of air conditioning as a *fait accompli*, prescribing the same quantitative parameters as the one adopted in U.S. climate.

Keywords: India, architecture and urban planning, sociology of energy

Sociology of energy and search for new representations of the urban nature. Which tools for its designers (landscape architects)?

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The purpose of our contribution is to investigate the possible contribution of the sociology of energy to reflections on the necessity of a relevant shift in the representation system of the "urban nature". The viewpoint that we will adopt is the one of designers and planners of *green* urban public spaces: in general, the one of different practitioners engaged in the urban construction processes (architects, urban planners and designer) and, more particularly, the one of landscape architects. We will focus on the following key-question: to which kind of tools of the sociology of energy, landscape architects may refer to contribution to an energy transition centred more on the active role of individual rather then on the technique performances? We advance the hypothesis of the necessity for the constructors of urban nature forms to overcome the "nature-leisure coalition" (Sijmons, Hazendonk, Hendriks & Venema, 2008), in favour of a landscape practice founded on the synergistic interactions between urban communities and an *energy-producer* nature (Svirezhev, Steinborn, 2001). This perspective entails research on innovative tools, especially conceived in order to figure out different forms of aspiration to the design of energy-sustainable landscapes in the city (Stremke, 2010). We refer, for example, to research on innovative mapping tools, conceived *around* the *human* and the contemporary urban sensibilities, and intended to explore different ways of perceiving nature as energy-producer. Our purpose is then to question the tools of the sociology of energy about their potential to construct a new form of *scientific mediation* between constructors and *responsible* users of the contemporary urban landscapes of energy. Which kind of mapping tools do we need to outline new consensual scenarios for designing and constructing new energetic landscapes in the city? To which extend the sociology of energy may contribute to renewal of the *toolbox* of planners and designers of urban nature, suggesting new ways of representing the "unresolved complexity" (Roncken, Stremke, Paulissen, 2011), which characterises the urban landscapes of energy? How would be possible to analyse and mapping the social demand for energy sustainability with regards to public expectations for urban landscapes? To which extend the imaginaries of energy transition concerning urban landscapes refers back to social demand for urban nature?

Keywords: landscape design, urban nature, energetic *sustainability*, representations, mapping

Experts' representations divergences and agreements in fuel cells diffusion process Summary.

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Fuel cells (FC) technology knows limited diffusion despite its energetic sustainability. We aim to question this paradox which illustrated the complexity of new technological social acceptance, with an analysis of actors' representations and their socio-technical effects.

Our contribution focuses on experts' representations relying on two following questions: 1- do divergences within experts' representation exist and can they put a brake on industrial development of FC technology? 2- Can this development be slowed down by divergences between representations and underlying scientific paradigms of researchers or by the gap between researchers' representations and emerging models of uses? From methodological point of view we combines a survey of the literature relying actors' representations and technological change and a survey on researchers conducted at the international conference of PACS and ACTHYF GDR (june 2012).

Keywords: Fuel Cells, Energetic transition, Representations, Experts

Forecast Carbon Capture and Storage technologies' implementation on the Seine Waterway Axis: sketch from a technological system definition.

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Carbon, Capture and Storage technologies (CCS) enable the capture of CO2 emissions from industries and then transport and storage in suitable, geological reservoirs in order to reduce greenhouse gas emission and it effect on global warming. Worldwide these technologies are at the moment in a demonstration phase. However theses technologies development faces some economical social and political limits. We suppose that we could get over theses barriers if we consider the meanings of a technology in a social, temporal and spatial context. As far as we know, this question wasn't much studied in previous research works about social aspect involved in CCS technologies. But in our research it is a critical question to define a potential coming CCS technological system in Seine lower valley.

In our communication we will first focus on debate on the consideration of social aspects in CCS technologies researches. Then, according to the theoretical knowledge of social science studies we will propose research hypothesis which take in account social, temporal and spatial dimensions and enable us to illustrate a part of the meaning of CCS in a territory. Finally we will show in which way these dimensions could have an influence on CCS technological system definition and highlight it acceptance or not.

Keywords: Carbon Capture and Storage, Social Acceptance, Technological system, Sciences and Technical Studies.

The regularisation of energy supply in pacified favelas of Rio de Janeiro: a tool for constructing a « responsible consumer »?

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The slum electrification and loss reduction programs (regularisation of power-supply services in the slums of developing countries) in most cases resides in redefining a failing service relationship and standardising households' behaviours so they adjust their power consumption to their financial capacity. Within the framework of projects dedicated to the regularisation of service in the pacified favelas of Rio de Janeiro, these two instalments aim at turning these “clandestine consumers” into “responsible consumers”. In order to properly address these objectives, the modes of regularisation chosen by the electricity provider Light combine programs of energetic efficiency dealing with the replacement of ageing devices and a policy dedicated to the education of consumers. Also, the company uses well known instruments regarding information on « rational » use of energy (workshops, visits etc...), a progressive billing system intended to get consumers used to consume in accordance to their personal capacity to pay and a technical instalment aimed both at protecting installations and preventing theft.

This paper refers to fieldwork led in Rio de Janeiro in October 2010 and September/November 2011, in Santa Marta favela. Based on this empirical material, we will demonstrate, within the context of construction of a « responsible consumer », limits and paradoxes of tools that actually tend to inhibit the responsibility of new users, eventually encouraged to consume more rather than to reduce their own consumption.

Regularisation/responsible consumer/consumption/favelas/education

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Social acceptability criteria for energy renovation in condominium: case study of energy improvement works in Parisians courtyards

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This paper aims at presenting the results of a sociologic study led within the context of a call for proposals on energy renovation of condominium launched by the PUCA in 2011. This research analyzes the incentives and obstacles to the decision of energy renovation through a case study based on twenty interviews with homeowners and landlords.

The works project has two aspects: the mutualisation and improvement of the courtyard of two neighboring buildings - now split in two parts by a wall - and the thermal insulation of the outside front of both courts. The principle is to gather owners of both buildings around the courtyard's improvement and renovation and to accompany this project with an energy dimension, more expensive and less attractive at first sight.

The study reveals that the mutualisation of the two courtyards comes along with a change in social organization of space. A set of six driving elements and six brakes to the decision of energy renovation in this case study have been highlighted. The approach consists also in having a reflective analysis of the bias of this survey, which beyond a collection of different views on the decision of energy renovation, lead indirectly to a presentation of the project to the owners, which is favourable to the PUCA.

Keywords: condominiums, energy renovation, sharing, acceptance, social organization of space

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Mouvement sociologique de la relation à l'énergie

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A recent research, led for the MEDDTL and the ADEME and focused around the people's daily energy behaviours, has resulted in showing that their logics - which are not expensive most of the time - of energy consumption, came under two processes both distinct and combined. The first process has to do with *sources* use and management (sources of available materials and supply); the second one is connected with use and management of *resources* (supplements) that make up for the momentary depletion of the sources. The latter (sun, cold, daylight and shade, rain, brook, humidity, soil and biotope, biomass, etc) represent as many possibilities / contingencies with which people try to come to terms immediately. They will be used for people's own ends right up to their limits, *i.e.* when it becomes necessary - as they are insufficiently available - to resort to resources (literally : what becomes necessary when we have dipped into everything that was available and usable up to now). So, these resources (electricity, oil, etc) become as many adjustment entities.

On the basis of that (always occasional) tension / overlapping between source and resource, we must determine / assess the inner structure of the *sociological movement* from which usual behaviours proceed and follow. These usual behaviours *in fine* crystallize iterative orderings of the connection between sources and resources. At least, such is the main purpose of a *vitalist sociology* of energy.

Keywords: source, resource, usual behaviours, sociological movement, vitalist sociology

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Sociotechnical expert in Energy, a profession and methods in need of structure

Mathias Roche, expert indépendant

In the present context of Energy, clarification needs on actors relations matters are more and more important. The complexity of systems to study is fast growing as new actors join the decision processes and new technical objects are implemented or precised like new technologies or environmental issues. When they look up for professionals whom may accomplish these sociotechnical analysis, the seekers find themselves in front of a large range of people. The diversity of degrees added to a scientific world divided by debates around theoretical approaches tends to impede the likeness of a efficient cooperation. This atmosphere of confusion has favored a frequent ambiguity about the objectives of these analysis, which are often seen as only a way to validate already defined politics. It seems nowadays necessary to encourage large discussions between universities, professionals and associations. Such discussions should allowed an improvement of the structure of the sociotechnical expert profession and the promotion of efficient and adapted methods of analysis on the energy sector. This paper aims to feed a general scientific discussion about the job of a sociotechnical expert in Energy, questioning the objectives and also the methods and the theoretical backgrounds. Based on interviews of experimented professionals, this paper talks about important matters of methodology which also reflects ethical and epistemological matters. First it deals with the independence of the expert with the results he has to produce and the difficulty to analyze exhaustively a complex system with the constraint of time. Then it will make a focus on an innovative theoretical approach which consists to study information fluxes through the use of the graph theory. The concluding part will be on a larger epistemological level discussing the advantages of using both the two main theoretical background of Strategic Analysis (Crozier, Friedberg) and the Actor Network Theory (Latour, Callon, Akrich) in a multi-focal and systemic way.

Keywords: sociotechnical expert, sociotechnical analysis, graph theory, Strategic analysis, actor-network theory, epistemology

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Energy consumption in relation to people's practices and understanding of use

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In this paper we wish to examine energy consumption dynamics by focusing our analysis on how inhabitants mobilise their understanding of energy use. Our initial postulate is that people's relationships with energy develop at the intersection of a complex dwelling system which includes uses and practices within the home, the *habitus*, inherited cultural models and the structuring rationales which are: economic constraint, comfort norms and the relationship with technical and technological environment of the home - in such a way that the energy practices of inhabitants make it necessary to develop and deploy understanding of use.

In such a context, our challenge is to identify and analyse the mechanisms and modalities which express this understanding of use, as they are constructed and mobilised by the inhabitants. We put forward the hypothesis of the construction of a skill space located at the intersection of a desire to legitimise the knowledge at work within the intimate sphere of the home (underlining inhabitants' determination to maintain control of their personal environment) and of a defiance of institutional messages, areas of consumption, policies and expert knowledge calling for energy saving and efficiency (areas which lead to a symbolic dispossession of inhabitants' relationships with energy and the environment).

To achieve this, we will use the results of the qualitative element of our ANR research project: "Energy Consumption: from the Residence to the City. Social, Technical and Economic Aspects". This research makes use of a complex and experimental method involving a multidisciplinary team and combining different types of tool - qualitative (60 interviews, logbooks), quantitative (questionnaires) and technical (meter readings via captors).

Keywords: energy consumption, inhabitants, domestic practices, understanding of use, arbitrage.

Energy Transition and Agriculture. Farmers installed on the territory of the RNP Normandy-Maine

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This communication aims at understanding the nature of resistances to alternative ways to produce energy, as well as the propensity to accept them starting from the results of a sociological survey conducted with 80 farmers in the regional natural park (RNP) Normandy-Maine. Based on the assumption of a dual agricultural world between antagonistic representations of modernity and the tradition, where energy autonomy can appear as well as the symbol of a release or, to the exact opposite, as the demonstration of autarky, we analyze the nature of resistances which prevent certain farmers from changing their habits whereas others already made the choice of autonomy or, at least, of the control of energy consumptions. Eventually, this leads to reconsider recurring problems in sociology such as the one of the resistance of the farmers to the societal changes in the era of radical climate changes to come.

Keywords: energy transition, agriculture, tradition, modernity, resistance to societal changes

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Alternative forms of energy production and political reconfigurations. The sociology of alternative energy as study of the potentialities to reorganize the collective

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Energy choices that are made in a society are also political choices. The techniques developed and the infrastructure deployed materialize modes of collective organization. This sedimentation of more or less visible choices influences the living conditions, both for individuals and groups to which they belong, in part because they tend to be placed in a position of dependence in terms of their access to energy.

How then can new technological developments contribute to a redistribution of opportunities and correlatively to social reorganization? Compared to fossil fuels and forms of electricity generation that have accompanied the development of industrial capitalism, some forms of energy production related to alternative sources (wind, solar, etc.) indeed seem to have this potential. The reopening of the technical possibilities seems to allow contesting and displacing dominant logics. It gives opportunities to relativize constraints and to deploy new resources. Networks (which are hybrid as they are sociotechnical8[8]) reconfigure themselves out of certain logics to explore other logics.

Starting from the study of technological solutions currently being explored and organizational patterns associated to exploit renewable resources, this paper proposes to highlight these logics and the possibilities to displace them, while showing the usefulness of a sociology of networks and flows9[9]. Energy alternatives seem indeed to allow a series of changes: from centralization to decentralization (reconfiguration of polarizations); from distance to proximity (reconfiguration of scales); from dependence to self-sufficiency (reconfiguration of the relations to technical macro-systems10[10]).

8[8] If we take the vocabulary and perspective developed in the type of sociology of science and technology proposed by Michel Callon and Bruno Latour.

9[9] See Gert Spaargaren, Arthur P. J. Mol, and Frederick H. Buttel (eds), *Governing Environmental Flows: Global Challenges to Social Theory*, Cambridge, MIT Press, 2006.

10[10] See Erik Van der Vleuten et Anne Breteau, « Étude des conséquences sociétales des macro-systèmes techniques : une approche pluraliste », *Flux*, 1/2001 (n° 43), pp. 42-57 ; Alain Gras (avec la participation de

Could there, then, be opportunities for the installation of new social relations (which can also go through the confrontation of actors by technical intermediaries)? It is not here a question of returning to technological determinism. This communication will focus more on exploring what might be called a "technological potentialism", which will also mean thinking in terms of conditions of actualization (technical adaptability, acceptability by the people and possibilities of appropriation, etc.). In other words, this potentialism does not depend on an essence, an intrinsic nature or independent force of technics, but on how actors will also be able to open or find new opportunities in technological advances.

Sophie Poirot-Delpech), *Grandeur et dépendance. Sociologie des macro-systèmes techniques*, Paris, Presses universitaires de France, 1993 ; Alain Gras, *Les macro-systèmes techniques*, Paris, PUF / Que sais-je ?, 1997.

Interdisciplinarity and energy efficiency: technical difficulties, social benefits

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Several studies have been highlighting the complex nature of the relationship between people, energy consumption and energy conservation (Swackhamer, 2005; Schmidt, Prista e Correia, 2011; Stern, 1992; Carrico, Vandenbergh, Stern, Gardner, Dietz, and M.Gilligan, 2011). In order to address such complexity it is important to consider different disciplinary approaches and methods, especially if the objective is to induce results in the area of energy efficiency. Interdisciplinary work not only has the potential to improve project results, but is also an unique opportunity to improve awareness, among other disciplines, on the unique and central role social sciences can and should play whenever energy consumption is the central object of analysis.

The Net Zero Energy School project is an example of an interdisciplinary approach, combining the contributions from sociology, social psychology and several engineering fields, which taking the school as point of departure, is analyzing processes and dynamics underlying the energy use practices both at school and at home and, most specifically, the bridges that exist and can be explored between these two contexts in order to disseminate more efficient energy practices. Being a project with a clear intervention objective, the combination of different methodologies (some quantitative and some qualitative) is essential in order to adapt to changes that occur during the project and to add flexibility and monitor different actions and their multiplying effects.

On the first phase of the project a technical and social diagnose of the school population has been conducted that included: energy consumption, indoor air quality, thermo and visual comfort at school (most specifically in classrooms). Perceptions on energy and energy consumption were also surveyed and different groups of the school community were studied (students and their households, teachers, other school workers). On the second phase of the project meters where distributed among a sample of families divided according to age, gender and social class of students. The sample contained four groups and will allow us to know and monitor the impact different sets of measures with different degrees of technology intervention (activities in classrooms, in school, in the household – meters and advices) have on energy use practices. At the same time, in depth interviews are being conducted in the families of the sample in order to explore routines and practices of energy use and perceptions on the role of technology,.

This communication aims at presenting the main results so far, highlighting the potential of interdisciplinary work and the integration of different methodologies from different disciplines in order to improve results on energy efficiency. This context has raised problems between the different views, timings and disciplinary languages.

Keywords:: energy efficiency; interdisciplinary work; schools; families;

What can the sociology of controversies bring to the sociology of energy ? Proposal for a non-reductive analytical framework through the example of the climate controversy

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IRSA-CRI, Université Paul Valéry Montpellier III

The exploitation of shale gas, the dangers of nuclear power or the causes and consequences of global warming are major and controversial issues which entangle ideological, political, ethical, communicational and epistemic factors. Mobilizing a cross of argumentative dynamics, these energy controversies evolve in contexts of multiple crises and social change.

First I will present the two primary sociological currents rationalist and relativist for analyzing scientific controversies. By qualifying oppositions, I will distinguish the advantages and the disadvantages of the various relativist approaches, contribution and influence of the other sociologies. Second I will use the example of the climatic controversy to expose how my heuristic model of analyzing socio-scientific controversies avoids reductionism by combining the relativist and rationalist approaches. In discussing its limits, I will explain some early results.

Keywords:: Sociology Controversies Global Warming Science and society

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Energy sobriety: local practices and institutional perspectives.

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In French, "sobriety" enjoys a growing lexical success, but often with a strong semantic and programmatic disharmony among speakers. Our contribution is part of an interdisciplinary research program, *Sobriétés* (Ademe and regional council Nord-Pas-de-Calais, 2010-2013), which analyses the possibility of a political endorsement of sobriety, based on local representations and potential mobilisations within the regional territory. The aim is to seize the conditions to a regional institutionalisation of an energy sobriety public policy. The research is also based on an comparative approach, more especially with the "transition towns movement" practices.

Our communication will aim to analyse the capacity to negotiate a strong energy sobriety constraint (constrained sobriety / chosen sobriety) by proposing a formulation of sobriety adapted to the global context of energy resources depletion (peak oil). This way, we will question the capacity of local actors, first, to collectively elaborate a "political" conception of sobriety, and second, to question on this base the ability of local institutions to manage the material consequences of a strong energy constraint.

Keywords: sobriety, peak oil, local actors, institutionalisation, transition towns.

La question de l'énergie renouvelable et la redynamisation de l'économie rurale dans la relance du développement économique et social au Sénégal

Abdoulaye SENE, ISE-UCAD, Dakar

La croissance de la ville et du fait urbain nous confrontent à des problèmes particulièrement graves tels que la pauvreté, l'insécurité alimentaire, l'insécurité énergétique et l'insécurité foncière ; cet état de fait a conduit à une perte d'intérêt pour le rural. Cependant on se rend compte que la production agricole et rurale, au-delà de sa fonction agro-alimentaire, peut jouer un rôle de premier plan dans la sécurité énergétique. Les communautés villageoises ont besoin de solutions qui leur permettent de développer et d'investir dans de nouvelles formes durables d'accès à l'énergie, d'utilisation plus efficiente, d'améliorer leurs moyens de subsistance et de mener des activités génératrices de revenus basées sur la gestion intégrée et durable des terres et des ressources naturelles dont elles disposent.

La relance du développement économique et social au Sénégal réside dans un modèle novateur de développement écologique durable et participatif, solidaire et citoyen centré sur des villages redynamisés et autonomes au plan économique, énergétique et sanitaire.

La promotion des énergies renouvelables et l'efficacité énergétique permet d'asseoir les bases d'un développement durable et la conservation participative de l'environnement mondial. Pour atteindre la réduction des émissions de gaz à effet de serre, l'adaptation aux changements climatiques, la lutte contre la dégradation des terres et la conservation de la biodiversité, la promotion de l'utilisation des différentes formes d'énergie renouvelable: (l'énergie solaire ; l'énergie éolienne et la bioénergie) est indispensable et nécessaire. Si la promotion de la bioénergie met l'accent sur la production du biocarburant (culture de Jatropha) et la biomasse (bois énergie, charbon vert, biogaz, etc.), le recours aux agrocarburants ne doit pas masquer leurs effets sur l'environnement

La réduction des émissions de gaz à effet de serre et augmentation de l'utilisation d'énergies alternatives renouvelables et efficientes pilotes augmentent la séquestration du biocarbone dans les terroirs ruraux. La conservation de la biodiversité et du développement faiblement

émissif de carbone est la trame de la Stratégie nationale des Ecovillages au Sénégal, concept qui vise à asseoir les bases d'un développement local durable.

Mots-clés : énergies renouvelables, développement local durable, écovillages

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Using focus groups to explore social drivers of rebound effects

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This paper describes the exploration of sociological causes of rebound effects using lifestyle related focus groups. The theoretical approach, research method as well as results are presented.

The term rebound effect describes the behavioral response to efficiency improvements in the direction of a higher demand of resource-consuming products or services thereby partly (or completely) reducing the potential energy savings. So far, rebound effects have been mainly studied within economic research. However, some researchers already pointed out that in addition to price and income effects, psychological and sociological causes might be relevant as well.

Sociological lifestyle approaches can be a fruitful starting point for analyzing social causes of rebound effects. Ten focus groups with representatives of different lifestyles, who have implemented an energy efficiency measure, have been conducted in order to elaborate differences between these lifestyle groups. The findings will be included in the development of policy measures against rebound effects taking into account lifestyle related aspects.

Keywords: sobriety, peak oil, local actors, institutionalisation, transition towns.

energy consumption, rebound effects, lifestyles, focus groups, qualitative research design

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Tradable Energy Quotas: a public policy project to bring energy depletion into political existence.

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During the 20th century, on several occasions, energy shortages have triggered political measures aiming at framing and sharing energy consumption, in particular by the means of rationings, in order to protect civil peace. These energy shortages, however, were temporary, and often had an economic or political origin. The oil peak on the contrary would probably mean a durable energy shortage of an extra-social origin. The study of a contemporary public policy project of carbon rationing in the United Kingdom will allow us to develop the hypothesis that the oil peak announces an energy crisis of new form, an "energy transition" which could be very far from the pacificatory myth that this term often refers to. This political and energy situation gives a new topicality to the "environmental sociology" of William R. Catton and Riley E. Dunlap, a theoretical approach that was actually born from the 1973 oil crisis.

Keywords: shortages – environmental sociology – oil peak – rationing – public policies

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La socioéconomie d'un projet gazier en milieu urbain.

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Cet article a pour objectif majeur d'analyser les enjeux socio-économiques de l'implantation d'un projet énergétique gazier en milieu urbain. La question qui structure la problématique est la suivante : Dans quelles conditions sociales et pour quelles raisons certaines catégories sociales sont-elles amener à contester l'implantation projet gazier au point d'entraver sa réalisation alors que celui-ci est présenté comme important pour le développement de cette zone ? La méthodologie repose sur une approche qualitative qui valorise l'ethnographie de terrain. Dans une perspective compréhensive, elle traite à partir de l'analyse de contenu, des données à dominance qualitatives collectées à travers des sources documentaires et des entretiens semi-directifs réalisés auprès de 80 individus et de 5 entreprises concernés par le projet. Le cadre théorique combine à la fois constructivisme social et interactionnisme. Les résultats montrent que : la réalisation d'un projet énergétique génère un lien social de nature complexe qui peut être complémentaire, conflictuel, compétitif ou contradictoire. La réussite de l'implantation d'un projet énergétique est alors fonction des enjeux sociaux, économiques et politiques qu'il comporte. Les populations locales s'impliquent plus facilement dans la réalisation du projet lorsque leurs attentes sont prises en compte dans une logique participative. Lorsqu'elles sont écartées du processus, elles engagent des actions de résistance pouvant entraver la réalisation optimale du projet quand bien même celui-ci a une importance pour le développement de l'industrie locale. Les autres catégories sociales impliquées dans le projet que sont, les pouvoirs publics, les entreprises de forage et utilisatrices de la nouvelle source d'énergie privilégient au contraire une logique de rentabilité et font prévaloir la « raison d'Etat » souvent au détriment des attentes de la population locale.

Mots-clés : Sociologie économique –Projet gazier – Lien social- Ethnographie- Douala Cameroun.

Without any occupant, buildings don't use energy!

Françoise THELLIER, Mathieu BONTE, Bérangère LARTIGUE, Université Toulouse 3 - Paul Sabatier, Laboratoire PHASE - Physique de l'Homme Appliquée à Son Environnement

The successive thermal standards intend to reduce the energy consumption. They have been hardened over time to answer the energy crises and green house gaz emissions. Their efficiency is real and efforts in this way are gooing on especially for new buildings. However, during field's studies in real inhabited buildings in normal conditions, the energy performance is largely degraded compared to the simulation one. This phenomenon increases with the reduction of the energy demand. The differences come largely from the impact of the occupants, which becomes then the cornerstone of the success.

The presented work describes the phenomena and the tools implemented to characterize the coupling between the occupant and his thermal environment. This study takes into account physiological and thermal sensation responses of the human being and the way his behaviour can degrade or not the energy performance. Thanks to the simulation, we aim at analyzing two opposing objectives: determining the favourite conditions for the occupant, while limiting the energy consumptions.

Keywords: building simulation, occupants behaviour, thermal sensation

Smart meters and household energy conservation

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It is often claimed that smart meters will help households save energy up to 15%. This affirmation confuses smart meters (which are communicating meters) with energy consumption displays (which are readable in homes). Furthermore, the analysis of 6 recent and scientific studies on the actual use of smart meters (in the UK, Ireland and Germany) reveals that the actual energy savings are around 2-4% in the best cases when consumers have clearly opted for their use. This unexpected low result is explained by the diversity of consumers and the notion of appropriation, as it has been observed in an experiment led in Belgium.

The paper addresses the question of appropriation of an "immediate direct feedback" and how its use is related to different dimensions: comfort, values, knowledge, skills, material culture. On the basis of an original protocol that intends to interfere as little as possible with users, we installed electricity monitors in 21 Belgian households. Very different households' profiles have been included in the sample: households already involved in energy reduction, households already aware of their electric consumption and interested in reducing consumption for different reasons, low-income households, households not interested in their energy consumption. The protocol is thus qualitative; it relies on the competences of an interdisciplinary team (engineer, psycho-sociologist, economist, philosopher, designer).

Concepts at the crossroads of STS (Science Technology Society) theory and practice theory (Reckwitz, Warde, Shove) have been found particularly useful in interpreting and explaining the results. The main result of the study is that the monitor can change electricity perception, but that only households already interested or involved in energy savings are willing to use and learn with the monitor. I conclude that these devices will become 'smart' when consumers use them smartly and this implies that they actively participate in the creation and definition of functionalities, usages and meanings. New uses of meters could also become smarter if the energy issue becomes more urgent or is extended through innovative policy instruments.

Keywords:: smart meter, energy consumption monitor, appropriation, practice, household.

Community Energy and Social Innovation. The Case of Le Mené

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A growing number of local initiatives called "energy communities" are being developed in Anglo-Saxon countries (United-Kingdom, Germany, Austria, Luxembourg). A comparative analysis with France, where the energy policies, the culture of civic participation and the production means are rather different, allows us to examine the emergence, the development and the diffusion of local "citizen" initiatives related to energy. For this purpose :

- expert interviews with social scientists were conducted in order to understand the concept of community,

- a qualitative field survey has been carried out in the Community of Communes of Mené (Central Brittany), a French pioneer territory regarding local energy autonomy,

- Le Mené's experience has been put in perspective with other experiences at the local level (e.g. The Transition Towns Movement).

Our study demonstrates that the energy autonomy is a process that gathers diverse actors – elected officials, farmers, inhabitants…– around issues like self-sufficiency in energy production and energy efficiency (sufficiency is addressed to a much lesser degree). The collective action is built out of a common framing and social innovation (hybridization of socio-technical devices and actors). Moreover, today these mobilizations are part of a territorialization of energy issues, which might redefine the relationships between production and consumption of energy.

Keywords: Community, energy transition, territory, social innovation, socio-technical devices

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L'électrification des puits de surface à Sidi Bouzid : une solution à l'échec du programme de développement rural?

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Axées sur la lutte contre l'exode rural qui traduit un déséquilibre entre villes et campagnes en Tunisie, les politiques de développement ont, depuis la première moitié des années soixante dix, misé sur le développement du monde rural. L'enjeu était de fixer une population appauvrie et marginalisée par les politiques coloniales. Ces politiques post-coloniales ont trouvé leurs meilleures expressions dans une vague de creusage de puits de surface notamment dans le gouvernorat de Sidi Bouzid au centre-ouest de la Tunisie.

Petite et moyenne paysannerie se sont engagées dans la voie du programme de modernisation de l'agriculture entrepris par l'Etat qui a débouché, dès la moitié des années quatre vingt dix, sur le projet de l'économie en eaux d'irrigation. Ce dernier qui a pour façade une mise en valeur rationnelle des ressources hydrauliques n'est, en réalité, qu'une réponse aux exigences d'une économie mondialisée. Toutes ces expériences de développement rural se sont soldées par un échec qui s'est traduit par une paupérisation manifeste de la masse paysanne, l'élevation du taux de chômage rural et l'endettement des petits et moyens producteurs agricoles.

C'est dans ce contexte que le programme de l'électrification des puits de surface s'impose. Il vise, d'après le discours officiel, à alléger les frais de la production agricole qui auraient pour effet l'amélioration des revenus de la masse paysanne. L'analyse sociologique de ce dernier

programme vise à démontrer qu'il n'était qu'une solution à l'échec du processus de modernisation de l'agriculture à Sidi Bouzid puisqu'il n'était pas une réponse à une demande sociale mais plutôt une intervention politique de la part d'un Etat afin de limiter les effets négatifs de la mondialisation sur la société paysanne. Au lieu donc d'être un facteur de développement, l'énergie électrique est devenue un moyen entre les mains de l'Etat pour concilier pressions intérieures et pressions extérieures. C'est la raison pour laquelle la satisfaction en matière d'électrification des puits de surface n'était que partielle pour constituer, ainsi, une source de tension sociale et de mobilisation d'une population rurale qui n'a pas cessé de subir les déceptions d'une politique agricole dépendante.

Notre propos serait donc d'évaluer la mise de l'énergie électrique au service du développement rural en mettant le projet de l'électrification des puits de surface à Sidi Bouzid dans le contexte de la dynamique de développement de la société rurale. Nous nous efforçons d'expliquer sociologiquement le paradoxe suivant:l'action de l'Etat en matière d'électrification des puits de surface s'avère incompatible avec la rareté de l'énergie électrique et le coût élevé de sa production.L'observation directe et les données statistiques nous servent de moyens pour diagnostiquer une réalité sociale si complexe ce qui signifie bien que notre démarche méthodologique serait à la fois quantitative et qualitative.

Mots-clefs: Crise du monde rural- modernisation de l'agriculture politiques agricoles- électrification- mondialisation.

The energy autonomy of the isolated and island territories, a technological delusion. The case of Guyana and La Réunion

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The VAETII program of the CNRS (NATIONAL CENTER FOR SCIENTIFIC RESEARCH) towards the Energy Autonomy of the Isolated / island Territories began a multidisciplinary approach to define and estimate policies and measures adapted to the context of the island / isolated territories with the aim of reaching an energy autonomy. Two territories were studied : Guyana and La Réunion. The socio-anthropological study allows to determine how the sociological and cultural factors can thwart the efficiency of the measures of control of the

demand of energy and direct the social practices and the demand in energy service in a contradictory way with the project of energy empowerment.

In the case of Guyana, we shall see how the recent electrification of the territories of rivers Maroni and Oyapock contributes to increase the energy dependence. For La Réunion, we shall see that the project of energy autonomy collides with at the same time geographical constraints, but also economic, political and social constraints.

Keywords: autonomy energetics, electrification, development, sociotechniques constraints

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Arrangements of Energy

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If we are to understand energy, its use, and its conservation we cannot begin by assuming that these things are unproblematic and thus need no study. We cannot begin by assuming we know what energy is, what energy science is, what energy technology is, any more than we can assume we know the natures of science and technology in general. The physical, psychological, sociological, and technological of energy are not essential categories with their content and ontology fixed for all time. Actually, this is precisely what they are not. We must begin with the assumption that we know nothing either about energy subdivided by these adjectives or the adjectives themselves. Instead we must allow the interactions process from which these categories and boundaries emerge to instruct us. I propose to examine two small aspects of the arrangements and rearrangements of "energy facts" over the last 10 years in the United States and Europe. First, I consider the movements of the study of energy among the physical sciences, including a look at the configurations of the physical sciences

that delve into energy questions. Second, I examine the constitution and re-constitution of a "social" realm for energy and the "sciences" that study and explain that realm. In this work I attempt to look past all essentialist assumptions that might hide the assembling work done to bring forth energy fundamentals of any sort and the agencies involved with this work, both human and nonhuman. Obviously my look at these questions here will be cursory and restricted. But I hope at least to lay a ground work for continued examination of the basics of energy and energy study.

Keywords: energy, science, essentialism, ontology, social

Repenser le lien entre les ménages et leurs consommations d'énergies grâce aux nouvelles technologies « Smart » : quels outils pour quelles formes d'acceptabilité sociale?

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La maîtrise des consommations énergétiques des ménages est devenue l'un des grands enjeux du XXIème siècle, et de nouveaux outils sont aujourd'hui développés pour aider les individus à mieux maîtriser leur enveloppe énergétique. Les technologies « smart » de comptage intelligent et de restitution dynamique sont aujourd'hui à l'étude dans plusieurs projets de recherche expérimentaux, notamment le projet de recherche européen SHOWE IT. Cette présentation entend montrer comment ces nouvelles technologies de communication sont développées et testées dans le cadre de ce projet, et quels sont les premiers résultats des enquêtes menées par les sociologues sur les évolutions des représentations et pratiques des ménages au sein des trois sites pilotes en France, en Grande-Bretagne et en Suède.

L'évolution des comportements de consommation énergétique des ménages fait peser de nouvelles inquiétudes en matière de sécurité des approvisionnements tant en termes de production des énergies (électricité, eau et gaz), que de fourniture (pression accentuée sur les réseaux de distribution). Les nouvelles pratiques de consommation concernent à la fois le taux de plus en plus élevé d'équipements électroniques et électroménager des ménages, ainsi que le niveau d'utilisation voir de multi-usage de ces équipements au quotidien.

Le projet de recherche européen SHOWE IT cofinancé par la Commission Européenne, étudie depuis janvier 2011 et pour une durée de 3 ans l'impact de ces nouveaux outils de comptage et de restitution des données de la consommation énergétique sur les comportements de maîtrise des individus, en situation réelle. Avec la participation de 11 partenaires industriels, de scientifiques et de bailleurs sociaux venant de 6 pays différents, cette étude expérimente l'acceptabilité sociale des compteurs intelligents et des tablettes tactiles de restitution sur trois sites pilotes en France, en Suède et en Grande-Bretagne. La première année de l'étude a donné lieu à une enquête sociologique qualitative menée sur une trentaine de ménages afin de sérier un ensemble de représentations, de pratiques et de potentiels leviers comportementaux.

L'une des premières conclusions de cette étude est que l'information délivrée aux ménages reste aujourd'hui parcellaire et minimise ce que certains appellent « la prise de conscience » ou la « réflexivité » (Beck, Giddens, Lash) des individus comme première étape vers des comportements potentiellement plus économes en matière de consommation d'électricité, d'eau et de gaz.

Mots-clés : Consommation énergétique, ménages, technologies Smart, réflexivité, acceptabilité sociale**.**