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The Rise of Energy Citizens

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Introducing the French national debate on energy transition in 2012, its “facilitator”, Laurence Tubiana called not to oppose centralization against decentralization:

Far from a centralized vision that has been ours until now, energy is nowadays perceived also as a local question, where everyone, as explains the economist Jeremy Rifkin, could be producer and consumer. [...] We must think a fundamentally renewed energy system. [...] Let's invest in energy sobriety, in renewables, that are sources of technological innovations, and value and job creations. An industrial revolution is coming, which challenges are also social.¹

As this extract urged to consider, not only technical issues are at stake in this national debate, but also the socio-political impacts associated with the choice of energy system. Energy production, transport and consumption are deeply engaging people and social structures, both at individual and global scales. During the 20thC, struggle for oil control has been a key in conflicts at global level. The question of energy is strongly linked to geopolitics, and even more in a climate change context:

Energy security interprets climate change through the prism of existing energy and security concerns. [...] The energy responsible for emitting carbon dioxide is the same energy imported from politically and economically volatile regions. A safe climate is thus synonymous with energy independence and domestic security. Maximising efficiency and domestic renewable energy are justified for reasons largely unrelated to ecological and climate concerns. For some, all this lends new legitimacy to nuclear power. Energy security emphasises the agency of national policy-makers, whose decisions affect both climate and security. These actors are primarily motivated by a concern for economic growth and national security.²

Discourses are commonly opposing two paradigms, with on the one side, a traditional monopolistic hard path, associated with fossil fuels, and on the other side, a distributed renewable promising soft path, supported by a self-regulated network distributing electricity. Those reductive narratives are sketching different level of decision process, but energy choices are linked to geopolitics constraint.

¹ Laurence Tubiana, “Cessons les postures idéologiques sur l'énergie”, *Le Monde*, 29/11/2012. All translations are the author's.

² John S. Dryzek and Hayley Stevenson, « Global democracy and earth system governance », *Ecological Economics*, 70 (2011), 1865-1874.

In the decentralized model, security stands on the stability of the networks and the diversity of the nature of the contributions to create a resilient system. According to its promoters, it relies on a governance framework that respect “shared singularities” and promotes “horizontality among communities”, “citizen legitimacy” and “diversity of models of organization” against “industrial uniformity”.³ Within the traditional path, energy security and energy sovereignty requires a common front, at national or regional level. For instance, at EU level, the Energy Union has been introduced to move beyond past crises and by a new governance maintain “a common vision, objectives, and speaking with a united voice”.⁴

In recent years, discourses promoting a more decentralized approach are rising, carrying the figure of a future “energy citizen” against an old centralized model. But the models are intertwined with the technological development, and in particular the expansion of “smart grids”, sometimes supporting prophetic revolutionary visions. Energy issues are essentially and practically connected to social and political systems, it is therefore necessary to question the concept of citizenship supported by the decentralized scenarios for the future of energy system.

Hard and soft paths

Between concentration and decentralization in energy, discourses and analyses are commonly depicting a duality opposing two paradigms. On one side is described a centralized version of energy (hard path), shown has the ancient or traditional model. To ensure the needed infrastructures, this model is supposed to be supported by a strong state, where democracy (if it exists) is based on political representation, and where decision-making is a top-level process, considering essentially high volume production and long distance distribution. Prominent arguments are promoting national good, like energy independency, but also regional equity and/or solidarity required in an international market of energy. From production to distribution, a strong relationship between state and ultra-powerful industrial organization has been established.⁵ Nuclear production and distribution of electricity as well as natural gas production and importation are often considered as good examples of this pattern.

The conventional fossil-nuclear regime, which emerged in the 1950s, exhibited a set of specific characteristics. On the technological level, energy was generated mainly by nuclear power and fossil fuels in a centralized production structure before being transmitted to a multitude of consumers. On the political level, the state subsidized and supported conventional power generation over the whole value chain. The public discourse centered on security of supply and affordability as main targets of the energy system. On the economic level, an oligopoly of four big utilities shared the biggest part of the German energy market. As each of the "big four" disposed of its own

³ Michel Derdevet, *Énergie, l'Europe en réseaux douze propositions pour une politique commune en matière d'infrastructures énergétiques*, rapport au président de la république française, La documentation Française, 2015. See also Strunz 2014, *op. cit.*

⁴ Annika Hedberg, *EU's quest for energy security. What role for the Energy Union?* 23 March 2015.

⁵ Nigel Lucas, *Western European Energy Policies. A Comparative Study of the Influence of Institutional Structure on Technological Change*, Clarendon Press, Oxford, 1985

*transmission network, the regional separation of networks effectively inhibited competition and fostered a very rigid market structure. In sum, the fossil-nuclear regime was very resilient for several decades because technological, political and economic structure mutually reinforced each other. At least two positive feedbacks perpetuated the fossil-nuclear regime's configuration. A technological-economic feedback fostered large-scale production and transmission infrastructure and an economic-political feedback ensured adequate political support.*⁶

On the other side (soft path), the version is described as based on local production with energetic autonomy of collectivities according to regional resources (often renewable). Supporters of this model are frequently promoting local level decision-making process, connected to participative democracy. As in this situation, consumers are likely to be also producers (directly or through shares or parts in a cooperative or a local company), it is also supposed to be a way for citizen empowerment by design.

*Radical decentralisation, "small is beautiful", identifies the structural cause of climate change in a model of development that privileges industrial-scale production, which therefore needs replacing by small and local scale production. Present global governance arrangements are dominated by big businesses, state elites, and international institutions. Community-level development, mitigation, and adaptation can better respond to human needs and the environment. Carbon markets and offsetting are rejected because they shift responsibility and accountability away from the local level. Decision-making processes also need to be de-centralised to allow for genuine participation by marginalised and affected peoples.*⁷

For authors like Aurélien Evrard, a major characteristic of the soft energy path is to focus more on energy demand, resulting in a trans-sectorial approach unifying all issues (production, transports, construction...) for local and citizen participative decisions.⁸ Prescribing the decentralization of energy supply and local energy autonomy, proponents of this vision are promising to democratize energy through citizen empowerment and local level decision making, often in analogy with other political decentralization or democratization, such as information in the decades of Internet. They promote decentralization as a scenario for sustainable development and a "smart revolution". This model requires the use of high-tech networks of distribution in order to manage complicated connection between diverse producers and various needs.

Smart Technologies and the Internet of Energy

In both the two models, electricity distribution is now to be considered evolving with the development of self-regulated networks. Often called "smart", mostly for marketing purposes,

⁶Sebastian Strunz, "The German energy transition as a regime shift", *Ecological Economics*, 100 (2014), 150-158.

⁷John S. Dryzek and Hayley Stevenson, *op.cit.*

⁸ Aurélien Evrard, "Les énergies renouvelables et l'électricité. A propos d'un conflit entre un secteur et une alternative de politique publique", *Ecologie & Politique*, n°49/2014, 67-80.

devices implicated in the development of a new generation of energy distribution are essentially based on in-house measuring devices (“smartmeter”) communicating data with allocating servers, in order to enhance, in “real” time, the efficiency of the network meshing electricity producers and consumers (“smartgrid”). Orkney Islands are often shown as a laboratory for innovation in marine energies, but furthermore, in 2009, they have deployed the first UK’s smart grid, interconnecting over 700 energy generators, ending a long dependency to a “centralized, expensive and extremely polluting diesel power station”.⁹

Some actors of the field are considering that the introduction of such technologies is not going to conduct a gradual evolution but to trigger a disruptive shift in energy system. The most famous promoter of this vision is Jeremy Rifkin, which predicts that personal electricity production, auto-consumption and proximity smartgrids can bring an “Internet of energy”. For him, we are on the eve of a third industrial revolution, of a collaborative age. He even claims that this phenomenon will simply lead to the end of work and capitalism.

In his 2014 book,¹⁰ Rifkin writes that renewable energy, like solar and wind, have a marginal cost nearly free, or even negative in generous times (a sunny Sunday in Texas or Sicily), as small producer installation and maintenance costs are minimal considering network issues. In his program, energy auto-production and 3D printing will provide zero marginal cost products, as well as website shops and electric delivery will provide a zero cost distribution. Thus leading to the “ultimate contradiction at the heart of capitalism”, increase of productivity lowers marginal costs, which eventually drop to zero, the markets shut down and capitalism dies! Criticisms of this scenario have been numerous, of course. For instance, 3D products represent only a part of capitalistic economy and of consumed energy; Rifkin is not considering limitation in rare materials and raw resources...

The word of the American consultant echoes in France where Jeremy Rifkin was asked in 2012 to write a Master plan to conduct Nord-Pas-de-Calais region toward a third industrial revolution. For Ex-Minister of the Environment, Corinne Lepage, asks to consider this as an example and a milestone for a brighter future, a “New World economy [...] at the service of mankind, free of fossil and fissile energies, connected and relocated”.¹¹

Going back to the very first citation of our paper, we can read that Tubiana is referring to Rifkin’s views when she underlines the necessity to go beyond the centralized until-now-vision toward a more individual-based model. But as she states, a scenario for the future of energy is not only a technical necessity but also supports a social vision, even implicitly.

⁹See Orkney Renewable Energy Forum, <http://www.oref.co.uk/>. Leonardo Meeus and Marcelo Saguan, “Innovating grid regulation to regulate grid innovation: From the Orkney Isles to Kriegers Flak via Italy”, *Renewable Energy*, 36 (2011), 1761-1765.

¹⁰ Jeremy Rifkin, *The Zero Marginal Cost Society*, Palgrave Macmillan Trade, 2014.

¹¹Corinne Lepage (dir), ADNM, “Executive Summary”, *L’économie du nouveau monde*, report to the Minister of environment, 12 June 2015, 12-13.

Acceptability and Empowerment

In on-going or conservative scenarios, the socio-political implication of energy system is often not described.¹² Contrariwise in scenarios that need behavioral, social or political changes, social impacts argument can represent major statements¹³. For environmental orientated prospective, like the one produced by the European Environmental Agency, deep social, technical and even behavioural changes are required.¹⁴ In this report from EEA, political change is implicit for energy production whereas social impact is explicitly formulated through the necessity of fundamental individual behavioral changes to integrate renewable energy consumption.

But even within projects based entirely on renewables, the question of the model is still crucial. The lack of acceptance of some initiatives could be linked with the resurgence of a hard vision in the development of renewable energy, which is usually associated with a more decentralized approach.¹⁵ As Evrard stands, the issue of co-existence between hard and soft paradigms is at stake, raising concerns that the initial decentralized conception has been losing ground against power companies, imbalance which is at the root of acceptability problems.¹⁶ To move from a centralized production controlled by a small number of large size companies strongly linked to governments and using few big-scale technologies to “recombinant swarms of small producers and consumers”, blurring the divide between consumers and producers, leads to interrogate decision-making processes for energy. Based on a larger and more complex distribution of actors, this prospective is supposed to take more into account the social dimensions of energy issue.¹⁷

And this move is rather to promote participatory process in decisions. Paired with recent public mobilizations around energetic issues¹⁸, it conducts to broaden the notion of energy citizens¹⁹.

[...] some, especially on the left wing of the German political spectrum, conceive the Energiewende as an integral part or catalyst of a more

¹² For an example of implicit statements in economical publications, see Antonin Pottier, *L'économie dans l'impasse climatique. Développement matériel, théorie immatérielle et utopie auto-stabilisatrice*, PhD thesis, EHESS, 2014.

¹³ In this case, “energy citizenship” is more a rule for energy consumers, see Wagner Sousa de Oliveira and Francinalva Veras de Oliveira, “Energy Citizenship: Educational and Behavioral Aspects in Energy Consumption”, paper for the 3rd International Conference on Financial Education, July 2012.

¹⁴ EEA, *Renewable energy in Europe — approximated recent growth and knock-on effects*, Technical report No 1/2015, 12-13.

¹⁵ Noémie Poize et Andreas Rüdinger, « projets citoyens pour la production d'énergie renouvelable : une comparaison France-Allemagne », *working paper*, n°1/2014 IDDRI, janvier 2014 ; Alain Nadai et Oliver Labussière, *Eoliennes et paysage : la politique éolienne entre politique de l'environnement et politique du paysage*, rapport CIRED 2009 ; see also Alain Nadai and Dan van der Horst (eds), “Wind power planning, landscapes and publics”, special issue of *Land Use Policy*, Volume 27, Issue 2, April 2010.

¹⁶ Evrard, *op. cit.*, 79

¹⁷ Evrard, *op. cit.*, 73-74.

¹⁸ Some authors are considering that shale gas or wind farm contestations can be interpreted as a sign of citizen empowerment.

¹⁹ The term is used by “clean” energy activism like <http://www.energycitizens.ca> and <http://energiebuerger.sh> but also for pro-oil lobbies as <http://energycitizens.org>.

thorough transformation of the whole society. [...] Proponents of this view hope for the energy transition to deliver a more equitable and less capitalist society. They emphasize the social dimension of sustainability and argue for a fully decentralized energy supply in order to empower local communities. Energy cooperatives and local energy autonomy would render any large energy infrastructure, and hence big utilities, superfluous. In this "Thousand Flowers" view, decentralized and socialized provision of energy will clear the path for an aspired participatory form of democracy²⁰

For Devine-Wright, energy citizenship is “a counterpoint to the social and psychological ‘detachment’ of the public from energy systems embedded within centralized systems and deficit views of energy users”.²¹ For actors in the field of energy, it constitutes a representation of individuals to oppose to patronizing representation of contestation, like the NIMBY argument, but also contributes to empower citizens which are deprived of choice²², except through elected representatives, with the centralized hard path. As Devine-Wright remarks, these representations are above all categories promoted by actors, and not to be directly assimilated in academics description, as they reduce to a keyword a wide range of heterogeneous situations on the ground.²³



Figure 1 Visual for the campaign “My own energy” adopting the theme of Delacroix’s painting “La Liberté guidant le peuple” <http://mapropreenergie.fr/>

²⁰Sebastian Strunz, « The German energy transition as a regime shift », *Ecological Economics*, 100 (2014), 150-158.

²¹Patrick Devine-Wright, “Energy Citizenship: Psychological Aspects of Evolution in Sustainable Energy Technologies” in Joseph Murphy (ed.), *Governing Technology for Sustainability*, Routledge, 2014, 63-86.

²² Some authors refer to “energy literacy” and “crowd sourcing style energy practices”, see Eric Paulos and James Pierce, “Citizen Energy: Towards Populist Interactive Micro-Energy Production”, paper for the 44th Hawaii International Conference on System Sciences (HICSS), January 2011.

²³For a description of more or less « pure » cases see Henrike Sommer, OFAEnR, *Énergie citoyenne Les différents modèles participatifs en Allemagne*, octobre 2014.

Nevertheless, this citizenship seemsto differ from traditional usage rooted in rights given by state or by a passive participation in the political landscape of Hobbes' Leviathan. At the moment, it would be more cautious to consider this movement as a process that engages citizenship, as Rumpala talk of a "technological potentialism" in which the reorganization of energy system appears as a possibility for collective and political reorganization,²⁴ or as Isinin its "acts of citizenship' [that] create new 'scenes' of actionintroduce 'ruptures or beginnings' in established 'scripts' and (spatial) orders."²⁵

²⁴Yannick Rumpala, "Formes alternatives de production énergétique et reconfigurations politiques. La sociologie des énergies alternatives comme étude des potentialités de réorganisation du collectif" in Marie-Christine Zélem et Christophe Beslay, *Sociologie de l'énergie. Gouvernance et pratiques sociales*, Paris, CNRS Éditions, 2015, p. 41-52. In thisbookseealsoMelikeYalçınRiollet et Isabelle Garabua-Moussaoui, "L'énergie fait-elle communauté en France ? Le cas de la démarche d'autonomie énergétique du Méné", 175-184.

²⁵Engin F. Isin, Greg M. Nielsen (dir.), *Acts of citizenship*, London, Zed Books, 2008.