

AUTHOR**Yves Bouvier**

Sorbonne Université (Faculté
des Lettres)/ UMR Sirice
yves_bouvier@hotmail.com

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Energy consumers, a boundary concept for the history of energy

Abstract

The historical approach of energies consumers is based on several questions on the conceptual frameworks. In the daily life anthropology framework, energy consumption disappears behind the use of the artefacts and becomes an infra-consumption. The category of “energy” itself presumes an integrated vision of energy sources. This vision is not rooted in the consumers practices and we suggest the concept of “energies consumers” to be closer to these behaviours. From this dialogue between empirical and theoretical approaches, the “energies consumers” is a concept fruitful for the contemporary historical works (gender, global history, transition...).

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Plan of the article

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1 In the endeavor of constructing an integrated history of energy—or more simply a history of energy—the demarcation of the field comes up against many boundary concepts.¹ These boundary concepts belong to a number of disciplines, and as such anchor historical methods both when facing and alongside the other social sciences. Energy consumption and consumers fall under this situation. The very definition of the category of “energy consumer” raises problems for the historian, with respect to both the first and second term. It is an unproductive assessment on the part of the historian to consider that the “energy consumer” will orient himself toward a history of consumption and energy, given the extent to which both are still emerging, and how neglected a subject the energy consumer is with respect to both. Moreover, while the discipline of history is just beginning to seize upon the subject, the large amount of research in other disciplines in the Humanities and social sciences evinces a dynamic that sometimes has a tendency to carry away the historian, instead of enabling him to better establish his disciplinary field. Historical reflection is nourished by the results and epistemological explorations² of fields such as the sociology of consumption and the sociology of energy, consumer law and energy law, consumption economics and energy economics, along with the geography of consumption and energy geography.

2 In the history of consumption, which has undergone a major renewal over the last decade in the work of Frank Trentmann,³ Matthew Hilton,

Marie-Emmanuelle Chessel,⁴ Ruth Oldenziel and others, energy has long occupied a minor role. The contribution of these authors was to leave behind questions regarding the origins of consumer society, all while maintaining that “an initial increase in consumption”⁵ during the eighteenth century, along with a transformation of distribution methods during the twentieth century, were both major shifts. By positioning the history of consumption within the circulation of objects, the material civilization of everyday life, and the organizational methods of consumers, this research definitively ascribed a singular role to consumers and users, especially in European history, by making them independent of productive structures.⁶ Within this social and political history of consumption, which tempers cultural explanations for consumption and even more so political ones, energy remains largely ungraspable, in the sense that the marketing and distribution of energy seem to follow a logic that is different than that of objects, as a result of regulation and legislation constructed around the notion of “public service,” as well as the disappearance of the purchased product in the act of consumption. For that matter, purchasing practices for energy leave little room for the symbolic dimension that serves as an explanatory linchpin for anthropological approaches. The “Material Cultures of Energy” project led by Frank Trentmann and Hiroki Shin, which was completed in 2017,⁷ laid the groundwork for the history of energy consumption through four research focuses (space, forecasting, shortage, transition). Yet even in the most recent research, consumers have often been less studied than consumption and its staging, to the point of being called a “missing person”⁸ in the history of

¹ Boundary concepts are the pendants of boundary objects for the social sciences, that is to say categories that concern various disciplines. Pascale Trompette and Dominique Vinck, “Retour sur la notion d’objet-frontière,” *Revue d’anthropologie des connaissances*, vol. 3, n° 1, 2009, 5-27.

² Éric Rémy, Philippe Robert-Demontrond (eds), *Regards croisés sur la consommation* (Cormelles-le-Royal: Éditions EMS, 2014) ; Roberta Sassatelli, *Consumer Culture: History, Theory and Politics* (Los Angeles: Sage Publications, 2007).

³ Frank Trentmann, “Beyond Consumerism: New Historical Perspectives on Consumption,” *Journal of Contemporary History*, vol. 39, n° 3, 2004, 373-401 ; Frank Trentmann, *Empire of Things. How We Became a World of Consumers, from the Fifteenth Century to the Twenty-first* (London: Allen Lane, 2016). The author evokes the domain of energy a number of times in this magisterial compendium.

⁴ Marie-Emmanuelle Chessel, *Histoire de la consommation* (Paris: La Découverte, 2012).

⁵ Daniel Roche, *Histoire des choses banales. Naissance de la consommation. XVII^e-XIX^e siècle* (Paris: Fayard, 1997), 10.

⁶ Ruth Oldenziel and Mikael Hård, *Consumers, Tinkerers, Rebels. The People who Shaped Europe* (Basingstoke: Palgrave MacMillan, 2013).

⁷ <http://www.bbk.ac.uk/mce>

⁸ Frank Trentmann, “Knowing Consumers – Histories, Identities, Practices”, in Frank Trentmann (ed.), *The Making of the Consumer. Knowledge, Power and Identity in the Modern World* (Oxford - New York: Berg, 2006), 1.

consumption, despite the paradoxical fact that the “consumer-citizen” has never been more present in discourses.

- 3 It is important to recognize that the history of energy does not truly exist today. Approaches focusing on an energy source have explored consumption and consumers, but have done so by giving preference to a particular source, and more rarely by examining the processes of choice, situations of competition, and mechanisms of substitution and replacement. Historical analyses of energy companies and their markets have drawn attention to marketing strategies, notably for gas and electricity. Uses and users have been presented in research that remains broadly incomplete despite having opened the way forward,⁹ which is not the case for consumers of coal, oil (gasoline or heating oil), and alternative sources of energy. The book *Consuming Power* by David E. Nye marked one stage in this understanding of energy consumption, by emphasizing ordinary behavior within a complex process of the construction of energy systems.¹⁰ However, this book—and this is not a criticism—remains on a high level of generality, one that is in keeping with a panorama stretching over multiple centuries, and based more on the cultural characteristics associated with each energy than on a history of practices.
- 4 Finally, with regard to methods, the historian is on shifting ground given the plethora of research on energy consumers in the fields of sociology, political science, law, economics, anthropology, and semiology. The contribution of history is not reducible to applying concepts from the other social sciences to the past, however heuristic they may be. The historiographical appraisal of studies of energy consumers is ultimately quite scant, perhaps due to a lack of clearly identified

sources, although it is not entirely empty. This text, which is based on new approaches to the history of consumption, as well as current explorations that span the historical field, will sketch out a few areas of future research within a history of energy approach, as well as avenues to avoid. The objective of this text is not to develop a consensus-based and historicized definition of the “energy consumer” that seeks to serve as a reference for future research, nor is it to proceed with the preliminary deconstruction of a notion, an indispensable stage in analysis. It is instead the exploration of what the concept of “energy consumer” denotes for the historian.

FOR A SYSTEMIC APPROACH TO ENERGY CONSUMERS

Energy consumers nowhere to be found

The category of “energy consumer” is not an obvious one for the historian, as the singular makes it as mysterious as the “European voter,” “French laborer,” or “Eastern merchant.” Because the historical approach is firstly based on concrete contextualized situations rather than the construction of an ideal-type, the plural imposes itself, and “energy consumers” subsequently replaces the imperfect “energy consumer.” But are energy consumers any more graspable by historians? Nothing could be less certain. Energy is consumed in all human activity (cooking food, heating lodgings, lighting, transportation, producing goods), and this was true well before any notion of “consumer society” or of the commercial circulation of objects. Certain approaches emphasize the physical aspects of these energy productions, especially animals and humans, without giving consumers a role in this dynamic.¹¹ During the modern period, consumption increased considerably, corresponding of course to the increase in production by different energy sources, as well as the increase in uses.¹² The usual distinction between industrial

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⁹ AHEF (Association pour l'histoire de l'électricité en France), *L'électricité et ses consommateurs, textes réunis et édités par Fabienne Cardot* (Paris: AHEF/PUF, 1987) ; Serge Paquier, Jean-Pierre Williot (dir.), *L'industrie du gaz en Europe aux XIX^e et XX^e siècles. L'innovation entre marchés privés et collectivités publiques* (Bruxelles: Peter Lang, 2005), especially ch. 2.

¹⁰ David E. Nye, *Consuming Power. A Social History of American Energies* (Cambridge: The MIT Press, 1998), 11.

¹¹ Jean-Claude Debeir, Jean-Paul Deléage, Daniel Hemery, *Une histoire de l'énergie. Les servitudes de la puissance* (Paris: Flammarion, 2013).

¹² David E. Nye, “Consumption of Energy”, in Frank Trentmann (ed.), *The Oxford Handbook of The History of Consumption* (Oxford: Oxford University Press, 2012), 307-325.

and domestic consumers amounts to separating energy as a factor of production from energy as the satisfaction of non-productive needs. This is how statistics included the service and domestic sectors in gas and electricity consumption, since this consumption was “non-productive.”

6 From a historical perspective, and following on the concept of “technological momentum,”¹³ the first consumers of a given energy, often industrial actors, are crucial in the growth of an industry and the structuring of production capacities, whether it be for coal, electricity, or oil. According to Thomas P. Hughes, these first users were not simply purchasers of energy, but actually the designers of energy networks, which were constructed according to a process seeking to satisfy these initial demands. Since the phase of industrialization initiated in the mid-eighteenth century, factories, works, and mills were the first consumers of energy, thereby fashioning a new system of consumption.¹⁴ This social construction of networks by energy consumption has strong inertia, framing the subsequent production and consumption that develop in enduring fashion. By defining the market, these industrial activities structured energy networks and marketing methods, and even became involved in the construction of production capacities for their own needs. Industrial consumers thus became producers according to a logic of vertical integration, in an effort to control costs and to not be entirely dependent on suppliers. Verified for gas, oil, and coal (steel industry), this logic reached its most developed expression with electricity during the first half of the twentieth century in Norway (Norsk Hydro), Germany, Switzerland (Aluminium Industrie AG, subsidiary of AEG), France (Ugine, Pechiney), and the United States (Alcoa).¹⁵ The primary consumers of elec-

tricity remained the electro-intensive companies in the aluminum, chemistry, steel, and railroad industries.¹⁶ Today other major firms, such as Google, which is acquiring wind and solar farms and has set the goal of 100% renewable energies for its purchases, are developing production capacities in order to control costs and free themselves of purchases that are dependent on fossil energies, notably in terms of public image. Historical studies are woefully lacking on these industrial energy consumers despite their role, whether it be through an approach focusing on an energy source, or through the set of scales ranging from a monograph on an industrial site to the European or even global space.

7 Unsurprisingly, the consumers that have drawn the most attention—even though they did not necessarily have a leading role in the energy system depending on the period or the energy source (domestic consumers represented less than 10% of coal consumption in the United Kingdom in 1900, as opposed to 38% around 1830)¹⁷—are indeed households, and hence domestic consumption. The first traces of an institutional definition of domestic consumers appeared in legal proceedings, for instance when British courts defined a “consumer interest” in contractual negotiations between a gas supplier and clients, offering recommendations as early as 1847 to avoid the commercial exploitation of consumers by gas companies.¹⁸ The regulation of a local energy system by legal or political authorities was not necessarily in favor of

Finance in the History of Light and Power, 1878–2007 (New York: Cambridge University Press, 2008), 90–91 ; Denis Varaschin, *La fée et la marmite. Electricité et électrométallurgie dans les Alpes du Nord* (Le Parnant: La Luiraz, 1996).
¹⁶ Christophe Bouneau, *Entre David et Goliath. La dynamique des réseaux régionaux. Réseaux ferroviaires, réseaux électriques et régionalisation économique en France du milieu du XIX^e siècle au milieu du XX^e siècle* (Pessac: MSHA, 2008).

¹⁷ Astrid Kander, Paolo Malanima, Paul Warde, *Power to the People. Energy in Europe over the Last Five Centuries* (Princeton: Princeton University Press, 2013), 189–190.

¹⁸ Martin Daunt, “The Material Politics of Natural Monopoly: Consuming Gas in Victorian Britain”, in Martin Daunt, Matthew Hilton (ed.), *The politics of consumption. Material Culture and Citizenship in Europe and America* (Oxford, New York: Berg, 2001), 69–88.

¹³ Thomas P. Hughes, *Networks of Power. Electrification in Western Society, 1880–1930* (Baltimore: The Johns Hopkins University Press, 1983) ; Richard F. Hirsh, « Power Struggle: Changing Momentum in the Restructured American Electric Utility System », *Annales historiques de l'électricité*, n° 2, 2004, 107–123.

¹⁴ Vaclav Smil, *Energy Transitions. History, Requirements, Prospects* (Santa Barbara: Praeger, 2010), 10.

¹⁵ William J. Hausman, Peter Hertner, Mira Wilkins, *Global Electrification. Multinational Enterprise and International*

consumers: the case of the local government in Manchester, which maintained a high price for gas in order to collect revenues and thereby reduce taxes, echoes that of Geneva, where the municipalization of energy networks in the late nineteenth century was in keeping with the same preoccupation on the part of local elites to ensure “good management,” in an effort to avoid tax increases.¹⁹ In these different examples, the emergence of the category of “energy consumers” proceeded from an institutionalization of regulation.

8 This institutional approach to the notion has hardly exhausted the subject. Reflection regarding the category of energy consumers has also drawn on an empirical process. Consumption is segmented socially and spatially, especially in an urban environment it helps to structure,²⁰ defining consumers based on their lifestyles, social belonging, and spaces. This segmentation of spaces in the characterization of energy consumers cannot be reduced to the city/country distinction, even if we are aware of the role of the countryside in the emergence of new uses through a behavior of resistance/appropriation in the United States,²¹ and even within the definition of “consumption systems” through a hybridization of behavior combining self-sufficiency and commercial networks.²² One could mention for instance the continuation of self-supply

for wood, even with homes being connected to a network providing electricity.

9 Finally, from a historical perspective, one of the primary difficulties is the identification of consumers at a given moment. Statistical aggregates over the *longue durée* outline trends,²³ although the result of these compilations is disappointing when they limit themselves to adding up energy sources. Disruptions, whether accidental or connected to an event, serve as revelatory moments for such consumption by disrupting consumer behavior.²⁴ This is especially true of blackouts²⁵ as well as geopolitical crises, such as the Suez crisis in 1956 or the OPEC decision in September 1973; even the shortage of coal during the world wars revealed consumption at the very moment it was disappearing. Energy consumers, who are difficult for the researcher to grasp, become partially visible in the sense that they must adapt to an abruptly new situation.

10 The first assertion therefore sounds obvious: there is not *a* consumer of energy, but rather *consumers* of energy. The diverse statuses between companies, administrations, and private individuals, along with the multitude of uses ranging from car transportation to apartment heating, make it difficult to be satisfied with aggregate statistics, whether on the national level or by energy type. How should the coal that still served in 1960 for locomotive propulsion be added to the buckets needed for a few old domestic stoves in the city center, or to a modern electricity production factory? Quite the contrary, it is through tracking the behavior behind consumption data that consumers can be found, thereby making energy a social relation²⁶ and not just a physical measurement.

¹⁹ Serge Paquier, “Développement internationale des industries de réseaux et construction d’une identité nationale : les cheminements technologiques et institutionnels des villes suisses vers un système stabilisé au XIX^e siècle,” *Flux*, n° 72/73, 2008, 13–26.

²⁰ Jon Stobart, Andrew Hann, Victoria Morgan, *Spaces of Consumption. Leisure and Shopping in the English Town, c. 1680–1830* (Abingdon: Routledge, 2007), 18–19.

²¹ Richard Kline, “Resisting Consumer Technology in Rural America: The Telephone and Electrification,” in Nelly Oudshoorn, Trevor Pinch (eds.), *How Users Matter. The Co-Construction of Users and Technology* (Cambridge: The MIT Press, 2003), 51–66.

²² Jean-Claude Dumas, “La consommation dans les campagnes françaises dans les années 1880–1914 : un régime de transition,” in Nicolas Marty, Antonio Escudero (ed.), *Consommateurs & consommation. XVII^e–XXI^e siècle. Regards franco-espagnols* (Perpignan: Presses universitaires de Perpignan, Publicacions Universitat d’Alacant, 2015), 221–248.

²³ Astrid Kander, Paolo Malanima, Paul Warde, op.cit., 457 (cf. note 17).

²⁴ Frank Trentmann, “Disruption is Normal. Blackouts, Breakdowns and the Electricity of Everyday Life,” in Elizabeth Shove, Frank Trentmann, Richard Wilk (ed.), *Time, Consumption and Everyday Life. Practice, Materiality and Culture* (Oxford: Berg, 2009), 67–84.

²⁵ David E. Nye, *When the Lights went out. A History of Blackouts in America* (Cambridge: The MIT Press, 2010).

²⁶ Mathieu Arnoux, *Le temps des laboureurs. Travail, ordre social et croissance en Europe (XI^e–XIV^e siècle)* (Paris: Albin Michel, 2012).

In search of energy consumers

11 Have energy consumers previously consumed energy? There is nothing incongruous about the question, given how much the analysis of consumer behavior in modern societies is based on the premise that consumers had a capacity to choose. Some uses, especially those connected to public services (education, health), can be grasped outside of this framework. However, following on numerous studies of self-service stores and retailers,²⁷ the staging of choice and the conditioning of consumer behavior are considered as pillars of “consumer societies.” The capacity to choose assumes a possibility of choice, in other words a kind of competition between different products. Contrary to a vision based on the monopolies of private or public companies, situations of competition were not absent from the field of energy, quite the contrary. Sometimes likened to public services, companies providing energy could compete with one another. Let us think, for instance, of retailers of the coal that provided the essential part of energy for heating and cooking for most European households until the 1960s. Not only were different qualities of coal distinguished in order to adapt to the retail market,²⁸ thereby creating competition between products, but different brands, sources, and distribution channels were also battling it out among themselves. Similarly, the act of purchasing gasoline for a car was clearly connected to a distinction between fuels (depending on the motorization, but also on additives), with different prices and communication processes (the most classic being the accumulation of points to ensure customer loyalty), competing brands, along with commercial and political considerations connected to the taxation of gasoline. Unlike stored energies, in the case of flow energies such as gas and

electricity, competition between companies was less frequent until the recent period of deregulation. We will nevertheless mention the case of Barcelona and Marseille, where electrical companies contended with one another before the First World War.²⁹

12 While this competition between providers of the same energy deserves attention, what is more interesting for a history of energy is actually competition between different sources of energy. Some uses were involved in confrontations over the *longue durée*. Cooking and heating are the best examples of a competition that does not necessarily include competition between companies. For cooking, it would be simplistic to consider the evolution of energy sources as a linear succession, transitioning from wood to coal, and then to gas and ultimately electricity. Not only were hybrid systems (coal-gas, gas-electricity) successfully developed, but different energies coexisted more than they succeeded one another, as manufacturers of gas stoves innovated to preserve their market share, often with the support of energy companies.³⁰ For heating as well, recompositions took place during the twentieth century, sometimes even within a few years. In the United States in 1950, the primary fuels were coal (35% of homes), gas (29%), and oil (23%). Wood was still the primary fuel in 11% of homes, while electricity was used in less than 2% of households. Two decades later, coal represented only 3% and wood 2%, while the share of gas had risen to 61%.³¹ Lighting

²⁷ Franck Cochoy, *Aux origines du libre-service. Progressive Grocer (1922-1959)* (Lormont: Le Bord de l'eau, 2014) ; Ralph Jessen, Lydia Langer (ed.), *Transformations of Retailing in Europe after 1945* (Farnham: Ashgate, 2012). We note the recent appearance of a journal, *History of Retailing and Consumption* (Taylor & Francis Online).

²⁸ Nadège Sougy, *Les charbons de la Nièvre, La houillère de La Machine, ses produits et ses marchés (1838-1914)* (Grenoble: PUG, 2008).

²⁹ Horacio Capel (dir.), *Las Tres Chimeneas. Implantación industrial, cambio tecnológico y transformación de un espacio urbano barcelonés* (Barcelon: FECSA, 1994) ; Yves Bouvier, *Connexions électriques. Technologies, hommes et marchés dans les relations entre la Compagnie générale d'électricité et l'Etat. 1898-1992* (Bruxelles: P.I.E. Peter Lang, 2014), 56-67 for the case of Marseille, and 115-121 for Barcelona.

³⁰ Yves Bouvier and Léonard Laborie, “L'Europe comme civilisation matérielle en transition,” in Yves Bouvier and Léonard Laborie, eds., with the collaboration of Reynald Abad and Arielle Haakenstad, *L'Europe en transitions. Énergie, mobilité, communication. XVIII^e-XXI^e siècles* (Paris: Nouveau monde éditions, 2016), 9-21.

³¹ Stanley Lebergott, *Pursuing Happiness. American Consumers in the Twentieth Century* (Princeton: Princeton University Press, 1993), 107.

was also the subject of rivalry between gas and electricity for public spaces, and between the oil lamp and electrical bulb for private spaces.³²

13 This competition between energies therefore entails a situation of choice for the consumer. Yet were consumers genuinely making a choice between energies when they chose an electrical refrigerator instead of a gas refrigerator in 1950? How was the choice of a new stove made: was it firstly a desire to modernize an interior, or to change energy source? At what moment and to what extent is energy a criterion in a consumer's purchasing decision for a capital good? The answer is not clear given how much purchasing logic, or at least what historians can perceive of them, differs from one use to another. The energy consumption of an appliance can have an impact on the choice depending on the price of the initial investment and consumption during use, introducing a sometimes summary economic calculus into the purchasing decision. Once again, reducing the analysis to individual choice risks obscuring the overall aspects of household appliances and energy infrastructures. The kitchen is also a technical and political construction, illustrated by the kitchen debate between Nixon and Khrushchev.³³ Similarly, likening an individual car to a new liberty no doubt confers a political meaning on this acquisition.³⁴

14 What role should be ascribed to the choice of energy in consumption that combines political meaning, economic interests, and social aspirations? In a certain way this is a question that is no longer relevant, for the notions of choice and energy cannot be adopted without critical examination. By opting for one source of energy rather than another, do consumers think of themselves as energy consumers? Do

they formulate an energy choice? By establishing the list of energy consumption for a suburban area during the 1980s, which more or less corresponds to a "social model" of Western societies, we find both charcoal for summer barbecues as well as fuel oil for the boiler, natural gas for the stove, gasoline for the car, and electricity from either a nuclear, hydraulic, or thermal source for lighting and practically all household appliances. Recent sociological studies³⁵ have challenged this approach of complete awareness on the part of consumers. What emerges is that energy consumers are in fact "consumers of energy," not only because behavior leads them to use different sources of energy, but especially because a global and uniform grasp of energy is not put in place at any point. In other words, the fragmentation between energy sources portrays a consumer broken into little pieces, running counter to a conception of *homo consumericus*³⁶ as *homo economicus*, or even as a rational social actor.

ENERGY CONSUMERS IN CURRENT HISTORICAL APPROACHES

By considering that "energy consumers" is more of an analytical category—even if this is sometimes the case in certain consumerist groups—we can examine current historical paradigms to determine what role this category should be given. A history of energy is therefore firstly inscribed in the dynamics of the historical field. 15

Energy consumers in globalizations

While consuming different sources of energy, did individuals from Western societies think of the implications of this consumption? The question of course applies today, although it merits being asked of earlier periods. Numerous consumerist groups have sought to make consumers more responsible, which is to say to unveil the mechanisms that enable this consumption in order to bring about a change in behavior, whether through the acceptance of a higher price (fair 16

³² Alain Beltran, "Lumières 'fin de siècle' en Europe (1880-1914)," in Y. Bouvier, L. Laborie (eds.), *op.cit.*, 169-189 (cf. note 30).

³³ Ruth Oldenziel and Karin Zachmann, ed., *Cold War Kitchen. Americanization, Technology and European Users* (Cambridge: The MIT Press, 2009).

³⁴ Mathieu Flonneau, Léonard Laborie, and Arnaud Passalacqua, eds., *Les transports de la démocratie. Approche historique des enjeux politiques de la mobilité* (Rennes: Presses universitaires de Rennes, 2014).

³⁵ Sophie Dubuisson-Quellier, ed., *Gouverner les conduites* (Paris: Les Presses de Sciences-Po, 2016).

³⁶ Gilles Lipovetsky, *Le Bonheur paradoxal. Essai sur la société d'hyperconsommation* (Paris: Gallimard, 2006), 11.

trade), or the boycott of products for moral, political, or environmental reasons. Energy does not escape this rule.

- 17 With the global turn, the historian has the legitimate temptation to propose a global history of energy, although this has been much more attached to productions and their physical measurement³⁷—not without lapsing into caricature³⁸—than to consumers. Some historical studies of non-Western worlds have prepared the subject,³⁹ although it is raw materials in particular that can inscribe consumer behavior in this approach. Oil,⁴⁰ coal, and uranium⁴¹ lend themselves well to this global history, which consists of the circulation of materials on the planetary level, along with economic interests, links between energy resources and political authorities that are rather easily seen as being inflammatory, and the deconstruction of consumer behavior by both consumerist movements and public authorities. It is hardly a revelation to affirm that the Berlin car driver in 1900 was inscribed in a global economy, since oil was primarily imported from the United States,⁴² or that the user of a hairdryer in Paris in 1985 was connected to the uranium mines of Niger, or that the boy carrying a bucket of coal in a Neapolitan building in the 1870s was connected to British imperial power.⁴³ Perhaps more so than in other domains—although this remains to be proven

37 Vaclav Smil, *Energy in World History* (Boulder: Westview Press, 1994) ; Alfred W. Crosby, *Children of the Sun. A History of Humanity's Unappeasable Appetite for Energy* (New York: W.W. Norton & Co, 2006).

38 Bruce Podobnik, *Global Energy Shifts. Fostering Sustainability in a Turbulent Age* (Philadelphia: Temple University Press, 2005) ; Timothy Mitchell, *Carbon democracy. Political Power in the Age of Oil* (New York: Verso, 2011).

39 Pierre Lanthier, "Appropriating modernity : electricity in Mumbai's slums before the financial crisis of 2008," *Entreprises et Histoire*, n°70, 2013, 92-105.

40 Brian C. Black, *Crude Reality. Petroleum in World History* (Lanham: Rowman & Littlefield Publishers, 2012).

41 Gabrielle Hecht, *Being Nuclear, Africans and the global Uranium Trade* (Cambridge: The MIT Press, 2012).

42 Helmut Mejcher, "Banking and the Germano oil industry, 1890-1939," in R.W. Ferrier, Alexander Fursenko, *Oil in the World Economy* (Abingdon: Routledge, 2016 [1989]), 95-96.

43 Giovanni Federico, Sandra Natoli, Giuseppe Tattara, and Michelangelo Vasta, *Il commercio estero italiano. 1862-1950* (Bari: Editori Laterza, 2011), 37.

for food and leisure—energy consumers are globalized consumers, in the sense that energy sources circulate on a global level. Explorations of global history, which focus on phenomena of global dimensions as well as connections/circulations and processes of integration,⁴⁴ are absent from this research, leaving the task of periodizing the globalization of the energy consumer entirely open.

Economic and diplomatic considerations, much more so than environmental ones, have marked out the institutionalization of the global scale in the field of history.⁴⁵ The circulation of raw materials first and foremost had a political connotation that imposed itself in the very conception of the consumer. Until the mid twentieth century, the import of British or German coal by France, Switzerland, and Italy created a dependence of which the political authorities were aware, but which remained relatively removed from consumers given how much the promotion of this energy was based on the commercial dynamism of private actors. For instance, for French households before the First World War, the promotion of British or German anthracite for heating had supplanted the coke from national steel and gas industries. Similarly, in Europe during the 1970s and 1980s, the origins of oil imports (Middle East, Africa, Soviet Union) were familiar in public opinion, even if only through the oil crises and contracts signed with the Soviet Union. Yet it seems that no consumer movement was able to organize by emphasizing the political aspects of this supply of provisions.

The environmental consequences of energy consumption are evident today on two levels: within the consumption itself, and within the production of energy that is made available. Whether evoking the pollution connected to combustion engines, diesel or not, or the waste from

44 Sebastian Conrad, *What Is Global History?* (Princeton: Princeton University Press, 2016), 6-11.

45 A number of histories of international organizations connected to energy have been completed. See especially Rebecca Wright, Hiroki Shin, and Frank Trentmann, *From World Energy Conference to World Energy Council. 90 years of cooperation, 1923-2013* (London: WEC, 2013).

nuclear power plants, environmental considerations have become a structural part of industrial societies. Against a backdrop of global warming, it is indeed fossil energies that have primarily been blacklisted. But has consumer behavior integrated this awareness in everyday gestures? Have consumers made the connection between their consumption and the environmental aspects of production? The historian is not in a position to provide an answer, only to seek out in the past the expression of an energy boycott, or of a public opinion campaign on the subject. The identification of environmental consequences does not date from recent decades.⁴⁶ Well before the dramatic episode of 1952, London fog was identified as a consequence of mass coal use. In similar fashion, the effects of the overconsumption of wood gave rise to increasingly political debates during the eighteenth century.⁴⁷ The construction of the Cusset factory-dam in the heart of Lyon during the 1890s was based on both a discourse of maintaining small-time jobs and on a local hygienism that boasted of the disappearance of smoke resulting from the use of hydroelectricity.⁴⁸ The health effects of the pollution generated by leaded gasoline were identified and fought in the United States beginning in the 1970s. At the time, 98% of motorized vehicles used this type of gasoline, and 80% of the lead in the air was due to automobiles.⁴⁹ Yet these environmental arguments were situated in and associated with local configurations, with the occasional assertions applying a global scale being much more rhetorical than argumentative. In the end, it was during the 1980s, with the emergence of the notion of a global environment, that this new idea was

introduced: energy consumption has effects on global warming and the pollution of the planet.

In this globalization of energy consumption, the 20
tendency to ascribe guilt to the consumer is more in keeping with a moral injunction than a historical observation of consumer practices. It would be useful in this respect to retrace how the moralization of energy consumption emerged in discourses, especially to see how stigmatization, denunciation, and discernment appeared.⁵⁰ Of course political movements in the past relied on consumer awareness to fight against slavery and political situations (boycott in Ireland, or more recently against Apartheid in South Africa, or against the occupation of Palestinian territories). Yet there are no studies for consumer movements linking coal consumption with working conditions in mines—whose health aspects were well-known even though history began exploring the subject only recently⁵¹—or for movements that succeeded in mobilizing motorists against oil spills or military conflicts linked to oil interests. We can naturally analyze the current situation, as Jean-François Mouhot has done, as one of an emerging awareness of environmental considerations resulting from the least consumption of everyday energy.⁵² Nevertheless, no such movements were structured for energy in the past. The antinuclear movement itself, powerful albeit not very structured, only marginally focused its activities on electricity consumers, preferring instead to politicize the subjects of its risks and waste instead of a boycott of electricity consumption.

Energy consumers were thus firmly inserted in 21
this global circulation of raw materials, particularly with the rise of coal and oil. While the

⁴⁶ Jean-Baptiste Frescoz, *L'apocalypse joyeuse. Une histoire du risque technologique* (Paris: Seuil, 2012).

⁴⁷ Reynald Abad, "L'Ancien Régime à la recherche d'une transition énergétique ? La France du XVIII^e siècle face au bois," in Y. Bouvier, L. Laborie (eds.), op. cit., 23-84 (cf. note 30).

⁴⁸ Stéphane Frioux, *Les batailles de l'hygiène. Villes et environnement, de Pasteur aux Trente Glorieuses* (Paris: PUF, 2013) ; Denis Varaschin, *La Société Lyonnaise des Forces Motrices du Rhône (1892-1946). Du service public à la nationalisation* (Le Parnant: La Luiraz, 1996).

⁴⁹ Peter Dauvergne, *The Shadows of Consumption. Consequences for the Global Environment* (Cambridge: The MIT Press, 2008), 80.

⁵⁰ Mathieu Brugidou, "Faire preuve de discernement à propos des économies d'énergie : un nouvel énoncé des ménages/citoyens," in Isabelle Garabuau-Moussaoui, Magali Pierre (dir.), *Pratiques sociales et usages de l'énergie* (Paris: Lavoisier, 2016), 227-239.

⁵¹ Judith Rainhorn, ed., *Santé et travail à la mine. XIX^e-XXI^e siècle* (Villeneuve d'Ascq: Presses universitaires du Septentrion, 2014).

⁵² Jean-François Mouhot, *Des esclaves énergétiques. Réflexions sur le changement climatique* (Seysssel: Champ Vallon, 2011).

prism of globalization is useful for the historian to grasp consumer practices, it does not appear to be very relevant to understanding the motivations of individual consumers, which are more inscribed in local social configurations with multiple dimensions, and which Jérôme Cihuelo and Arthur Jobert have called “interface situations.”⁵³

Social history of an infra-consumption

22 The consumer has been studied as the purchaser of objects, in accordance with a logic of comfort, equipment, and social signs.⁵⁴ The transfer of the North American “consumption system,” with its political implications, to Europe has been the subject of numerous publications on a possible “Americanization” of Europe through lifestyles. Yet this “American mirror” is not so much that of energy, but of objects.⁵⁵ The purchasers of goods are never considered as energy consumers, even if these laundry machines, cars, and game consoles require energy. The energy consumer disappears behind the uses of goods,⁵⁶ making energy consumption an “infra-consumption.”

23 Taking an interest in energy consumers entails abandoning entire sections of the social sciences devoted to consumption. How is it possible to conceive of a fetishization of the kilowatt-hour? What sacralization is there for the natural gas burning beneath a pan? Does an emotion as a consumer of energy take hold when a coffee

maker is plugged in? Semiology and semiotics, which are sometimes included in studies, are not on solid ground when the subject is energy instead of a technical object. The economic approach itself is not always relevant in understanding consumer behavior: are we thinking of an electricity bill when we are in front of the television? The answer is of course no. As a result, the process of making energy consumption invisible can itself become a subject of exploration. Conversely, filling a stove with coal or turning the dial on a radiator can be associated with the expense generated. When consumers flipped the switch to turn on an electric bulb during the 1890s, they potentially had the cost per hour of lighting in mind, all the more so if they had just dropped a coin in the meter installed inside their home.

24 However, in the end it was the object that consumed energy much more than its user. And if we need to calculate the energy consumption of an object, what should be counted? The trips made for the purchase? The energy incorporated in the object for its manufacture, which can be calculated using life cycle analyses? And how to reconstruct the life cycle of objects from earlier periods? Consumption connected to use seems the most obvious, although it is not necessarily the most important; for instance for a cellular phone, the energy consumption connected to its manufacture represents approximately 75% of the total, as opposed to less than 20% for usage. Can one include the production of waste and possible recycling, and even the production of energy that is obtained in this phase? When the energy consumption of a device is mentioned, it is the consumption relating to its use. The European classification of household appliances is based on an energy label introduced in 1992, which presents the energy consumed during the appliance’s use. This informs the consumer regarding an estimated bill, but not regarding the complete energy assessment of the purchased product. The question of the energy consumption of household appliances should also be resituated in historical perspective in order to understand when this information appeared, as well as for what type of object

⁵³ Jérôme Cihuelo and Arthur Jobert, “Énergie et situations d’interface,” in Jérôme Cihuelo, Arthur Jobert and Catherine Grandclément, eds., *Énergie et transformations sociales. Enquêtes sur les interfaces énergétiques* (Paris: Lavoisier, 2015), 217–236.

⁵⁴ Mary Douglas and Baron Isherwood, *The World of Goods. Towards an Anthropology of Consumption* (New York: Basic Books, 1979).

⁵⁵ Richard Kuisel, *Seducing the French. The Dilemma of Americanization* (Berkeley: University of California Press, 1993); Victoria de Grazia, *Irresistible Empire. America’s Advance through Twentieth-Century Europe* (Cambridge: The Belknap Press of Harvard University Press, 2005).

⁵⁶ Regina Lee Blaszczyk, *American Consumer Society, 1865–2005. From Hearth to HDTV* (Wheeling: Harlan Davidson, 2009). For the electric twenties in particular, p. 139–140 and p. 152–153. See also chapters 8 to 10 of Peter Scott, *The Market Makers. Creating Mass Markets for Consumer Durables in Inter-War Britain* (Oxford: Oxford University Press, 2017).

and energy source. The impact of certain contexts of shortage (war, economic crisis, embargo, increasing scarcity, etc.), along with strong competition between industrial actors in a period of prosperity, have played a decisive role in the introduction of this information.

25 This assessment of the partial invisibility of energy consumption agrees with the nuances provided by the notion of agency, which is to say the consumer's capacity to act on his or her environment. In the case of energy, it is actually the consumer's inability to act that is given priority, even if it is not synonymous with absolute passivity. Agreeing with Frank Trentmann's more general reflections on the new orthodoxy of the active consumer, which calls for a consensus-based discourse seeking to break with the pattern of mass consumption, one can consider that the figure of the consumer proceeded from a unification of behavior and demands in the late nineteenth century and especially during the interwar period, by virtue of the dual role of public authorities (legislation) and associations.⁵⁷ The consumer, and energy illustrates this assertion well, cannot be reduced to a simple marketing construction. A social history of consumers emphasizes the decisive nature of the years between 1910-1940 in the emergence of this new figure, especially through children's consumption.⁵⁸ The historical examination of the socialization of energy consumers has yet to be completed, although illustrated magazines and school programs contributed to "educating" consumers by promoting uses and elementary security rules.

26 Cultural approaches to energy, whether the study of utopic or dystopic representations or studies on gender, can also be questioned. Does a gendered history have meaning on the level of consumers? Responding in the affirmative may seem obvious, given how much the division of household tasks or the relation to certain goods—automobile, vacuum, washing machine,

etc.—illustrate gender relations in Western societies. Yet here once again, energy disappears behind the object. The research of Kristin Ross,⁵⁹ Karin Zachmann and Ruth Oldenziel,⁶⁰ and Quynh Delaunay⁶¹ avoids energy consumption. We should recognize that the abundance of advertising, along with the power of slogans (the inevitable "Moulinex liberates the woman" from 1962) and the consistent denunciations by feminist movements, have displaced analysis from a social history to the socio-cultural relations of gender. Social stereotypes have sometimes been associated with energy, as in this a 1967 study conducted by an applied sociology firm, which states that "gas is considered more feminine, and electricity more masculine. Gas is highly associated with household chores and the practice of everyday tasks. Electricity is associated with rigor, precision, knowledge, and progress. It entails industrial clarity and appears more rational, whereas gas is the symbol of pragmatism."⁶² Only systematic academic studies of gender relations with respect to different energy sources and energy in general can provide a way out of conventional discourses. The most structured research began to appear in the United Kingdom.⁶³ A gendered history of energy probably deserves to be explored, although the connection to energy consumption could be minor, with the research that has already been conducted for energy leading to a rediscovery of obvious facts that are otherwise familiar.

The social relations that are inherent to consumption naturally concern the field of energy. In general, social norms do not conceive of

⁵⁷ Frank Trentmann, ed., op.cit., 11 (cf. note 8).

⁵⁸ Lisa Jacobson, *Raising Consumers. Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004), 4-5.

⁵⁹ Kristin Ross, *Aller plus vite, laver plus blanc. La culture française au tournant des années soixante* (Paris: Editions Abbeville, 1997).

⁶⁰ Ruth Oldenziel and Karin Zachmann, eds., op.cit. (cf. note 33).

⁶¹ Quynh Delaunay, *La machine à laver en France. Un objet technique qui parle des femmes* (Paris: L'Harmattan, 2003).

⁶² Opinion poll conducted by Cofremca and commissioned by Gaz de France. Archives nationales du monde du travail, 2011 020-8064.

⁶³ Anne Clendinning, *Demons of Domesticity. Women and the English Gas Industry, 1889-1939* (Farnham: Ashgate Publishing, 2004) ; Graeme Gooday, *Domesticating Electricity: Technology, Uncertainty and Gender, 1880-1914* (London: Pickering & Chatto, 2008).

consumption in the same way depending on the social category: the moral of thrift for the poor, whereas the consumption of the rich is encouraged because it is good for prosperity.⁶⁴ Whether it is for wood during the eighteenth century or for the uses of coal by the working classes in cities during the nineteenth century, the search to limit consumption was inscribed in a discourse combining social economy and aspirations of social mobility. The “energy insecurity” that is observable was of course transformed when the notion of public service gradually took hold, initially through local regulations, although it involved only certain energies (electricity and gas, but not oil). It took until the turning point of the 2000s for legislation to recognize a “right to energy,” under pressure from both unions and consumer organizations as well as through European regulations.⁶⁵ Unlike most capital goods, energy does not come under financing conditions based on credit. Except for the most underprivileged households, energy is considered as both a vital good and a commercial good, with the implementation of cut-offs for outstanding bills. Specific behaviors subsequently set in, as do strategies of access to energy for individuals in precarious situations,⁶⁶ combining social assistance, deferred cashing of bills, brief service interruptions, and possible violations through unmetered connections. We will simply note that the Soviet Union made universal access to energy—especially for heating—a pillar of its social model by implemented free energy supply, which could lead to waste as well as tensions in collective housing.

⁶⁴ Martin Daunton and Matthew Hilton, “Material Politics,” in M. Daunton and M. Hilton, eds., *The politics of consumption. Material Culture and Citizenship in Europe and America* (Oxford, New York: Berg, 2001), 4.

⁶⁵ François Bafoil, Ferenc Fodor, and Dominique Le Roux, eds., *Accès à l'énergie en Europe. Les précaires invisibles* (Paris: Les Presses de Sciences-Po, 2014).

⁶⁶ These strategies, which are beyond the field of energy, are the focus of Anaïs Albert's work, *Consommation de masse et consommation de classe. Une histoire sociale et culturelle du cycle de vie des objets dans les classes populaires parisiennes (des années 1880 aux années 1920)* (Ph. D., université Paris 1 Panthéon-Sorbonne, 2014); Sophie Bérout, *Les Robins des bois de l'énergie* (Paris: Le Cherche Midi, 2005).

Unlike the shortage for the poorest consumers, 28 the behavior of the most well-to-do social categories was marked by abundance and even conspicuous consumption, in the sense of Thorstein Veblen. The strong blaze in the fireplace of a dwelling in Normandy, the increase of Christmas decorations, the gasoline consumption of certain 4x4s are so many signs of social affluence. Such behavior has been denounced since the mid-1970s, and in a kind of anthropomorphism energy waste is associated with social portliness⁶⁷ and the excesses of a society of energy abundance. Still, such behavior has not disappeared, although the most excessive manifestations are less visible. For all that, economic affluence still leads to considerable energy consumption, despite discourses encouraging greater control.⁶⁸

Energy consumerism: organization, demands, and environmental turning point

While considering that energy consumers in the 29 past did not undergo strong structuring in the social domain, it is nevertheless useful to take interest in forms of mobilization and the role played by energy in these movements. There was an attempt to establish a “buyer's internationale” in 1908 during the international conference of the Ligues sociales d'acheteurs.⁶⁹ While advocacy movements were organized on a local basis, some movements had a larger scope, such as the creation of the *National Consumers League* in the United States in 1899, or the *Ligue sociale d'acheteurs* in France in 1902. Energy took its place within this emerging consumerism, which was both structured by elites and led by local social movements, as demonstrated by protests against gas rates in France before

⁶⁷ Benjamin Dessus, *Pas de gabegie pour l'énergie* (La Tour d'Aigues: éditions de l'Aube, 1994).

⁶⁸ Anne Dujin and Bruno Maresca, “La température du logement ne dépend pas de la sensibilité écologique,” *Crédoc. Consommation et modes de vie*, n° 227, 2010; Marie-Christine Zélem, *Politiques de maîtrise de la demande d'énergie et résistances au changement. Une approche socio-anthropologique* (Paris: L'Harmattan, 2010).

⁶⁹ Marie-Emmanuelle Chessel, “Consommation et réforme sociale à la Belle Epoque. Le congrès international des Ligues sociales d'acheteurs (1908),” *Sciences de la société*, n° 62, 2004, 45-67.

the First World War.⁷⁰ Furthermore, as shown by Marie-Emmanuelle Chessel, modes of organization, discourse, and range of actions circulated on the scale of industrial societies fairly early, with internationalization being driven by the decisive role of Catholic circles engaged in social activities.⁷¹ The organization of consumer movements took place in connection with industrial actors, while in the United States and Europe energy providers and equipment manufacturers supported associations or publications for the promotion of energy uses. The *Electrical Association for Women*, which was created in the United Kingdom in 1924 and existed until 1986, or the *Women's Gas Federation*, had equivalents in other countries, such as the Australian association founded in 1934 by Florence McKenzie, or Paulette Bernège's publications in France on the role of electricity in housekeeping. The transnational dimension of a political consumerism took other forms during the last quarter of the twentieth century with the diffusion of labels and certifications.⁷² While present in the demands made by the consumer movements that developed and became institutionalized during the second half of the twentieth century, energy was rarely emphasized until recent years, when deregulation created situations of choosing between different providers. In the defense of consumers and in the practice of a state that regulates conflicts connected to consumption,⁷³ energy was likened to a public service, with subjects such as low prices, installation security,

and generalized access. At the Salon des consommateurs, held for the first time in Paris in October 1972, energy companies organized their stands around three subjects: hygiene, health, and security. The intense debates regarding consumer society are indicative of the political dimension ascribed to consumers.⁷⁴

In addition to structured movements, whose 30 expression in the public sphere can be retraced, an infra-political interpretation emerged, particularly in the work of Lizabeth Cohen,⁷⁵ which combines the political system with consumer practices. A "Consumers' Republic" and even a "democracy of consumers" was apparently exported from the United States to Europe through advertising, cinema, productivity, discourses, and public relations.⁷⁶ This "new American hegemony" during the Cold War, which combined NATO protection, Marshall Plan assistance, and the adoption of American products, naturally came from the productivity of American industry, as did the "incredible consumption of energy during the manufacturing process."⁷⁷ Western democracies were thus consolidated and rooted in the liberal bloc by applying the slogan "the consumer is king." This perspective is of course somewhat simplistic, if only because it sets aside infrastructures, whose role in the integration of different blocs have been shown by other historians,⁷⁸ although it raises a real question in the political meaning to be given to consumers. While objects that use energy have been studied, such as the Miracle Kitchen by RCA-Whirlpool and its tour in Europe in 1957,⁷⁹ the same is not true of the political

⁷⁰ Dominique Pinsolle, "Les grèves des abonnés du gaz en France (1892–1914): des grèves de consommateurs parmi d'autres ?," *Transportes, Servicios y Telecomunicaciones*, n° 25, 2013, 130–148.

⁷¹ Marie-Emmanuelle Chessel, *Consommateurs engagés à la Belle Époque. La Ligue sociale d'acheteurs* (Paris: Les Presses de Sciences-Po, 2012).

⁷² Michele Micheletti, "Le consumérisme politique. Une nouvelle forme de gouvernance transnationale ?," in Marie-Emmanuelle Chessel and Franck Cochoy, eds., "Marché et politique. Autour de la consommation engagée," *Sciences de la société*, n° 62, 2004, 119–142.

⁷³ Alain Chatriot, "Qui défend le consommateur ? Associations, institutions et politiques publiques en France (1972–2003)," in A. Chatriot, ME Chessel, and M. Hilton, eds., *Au nom du consommateur. Consommation et politique en Europe et aux États-Unis au XXe siècle* (Paris: La Découverte, 2004), 165–181.

⁷⁴ Sheryl Kroen, "A political history of the consumer," *The Historical Journal*, vol. 47, n° 3, 2004, 709–736.

⁷⁵ Lizabeth Cohen, *A Consumers' Republic. The Politics of Mass Consumption in Postwar America* (New York: Alfred A. Knopf, 2003).

⁷⁶ Sheryl Kroen, "La magie des objets, le plan Marshall et l'instauration d'une démocratie de consommateurs," in A. Chatriot, ME Chessel, and M. Hilton, eds., op.cit., 80–97 (cf. note 73).

⁷⁷ Richard Kuisel, op.cit., 150 (cf. note 55).

⁷⁸ Per Högselius, Arne Kaijser, and Erik van der Vleuten, *Europe's Infrastructure Transition. Economy, War, Nature* (Basingstoke: Palgrave MacMillan, 2016).

⁷⁹ Ruth Oldenziel and Karin Zachmann, "Kitchens as Technology and Politics," in R. Oldenziel and K. Zachmann, eds., op.cit., 1–10 (cf. note 33).

analysis of energy consumers, despite the fact that at least in Europe providers were generally public companies or even administrations, and political authorities developed recurring discourses on energy access. Energy was sometimes an electoral campaign theme, both on the local level by challenging concession-based municipal management in France at the turn of the nineteenth century, and on the national level when the British conservative party added requests from British households to its platform in the early 1950s, including those regarding gas and electricity.⁸⁰

31 In energy as in other domains, critical consumerism was also a normative pattern that took concrete form through the implementation of labels, production of a discourse, and involvement in some consumption related issues, leading to the identification of consumer rights and responsibilities. By calling on the “responsibility” of consumers, these movements advocated for an aware, politicized, and involved consumer, who would jointly fashion his or her own behavior.⁸¹ These discourses sought to increase the reflexivity of actors in everyday practices, but also assumed that consumers were active. The movement promoted green consumption as an “alternative,” but came up against energy companies who promoted their own definitions of the green and responsible consumer. Finally, these movements put more emphasis on the (moral) responsibilities of the consumer rather than on his or her rights, thereby connecting with the origins of consumerism.

Energy consumers in technical and economic systems in transition

32 Energy consumers are grasped by the social sciences through different statuses: users, clients, consumers, etc. These statuses are partly

linked to the nature of the relation established with the providers of this energy. The insertion of consumers within techno-economic systems gives rise to questions regarding temporalities. Consumers are placed in a situation of dependence with regard to providers by virtue of their connection to a technical network, as well as purchasing practices and the connection with companies. The question that arises is to know what role these energy consumers have in the dynamics of techno-economic systems.⁸² Without returning to the role of pioneering consumers in the emergence of a system, the mass adoption of a new energy source creates a kind of energy dependence in the same way as “path dependence,” all the more so as companies seeking to promote a new energy contend with consumers who consider these new energies to be “expensive, useless, and difficult to use,” requiring entrepreneurs to build demand.⁸³ All while seeking to adopt the perspective of consumers in energy transitions, Christopher F. Jones must admit that despite boosters for demand, “providers of new energy developed in advance of consumer demand.”⁸⁴ In other words, techno-economic systems for energy were built as systems of supply rather than demand, although certain uses, such as those linked to industry, played a structuring role.

33 Once again, sociological and anthropological studies of energy have demonstrated the complexity of current situations by studying consumer practices. Elizabeth Shove in particular combines the establishment of a social norm for domestic comforts with the technical and industrial considerations of appliances such as the washing machine, air conditioner, and hot water for showers.⁸⁵ The transitions at work are naturally the result of public policies, but also of

⁸⁰ Matthew Hilton, *Consumerism in 20th-Century Britain. The Search of a Historical Movement* (Cambridge: Cambridge University Press, 2003), 179.

⁸¹ Roberta Sassatelli, “Virtue, Responsibility and Consumer Choice. Framing Critical Consumerism,” in John Brewer and Frank Trentmann, *Consuming Cultures, Global Perspectives. Historical Trajectories, Transnational Exchanges* (Oxford New York: Berg, 2006), 219–250.

⁸² François Caron, *La dynamique de l’innovation. Changement technique et changement social (XVI^e–XX^e siècle)* (Paris: Gallimard, 2010).

⁸³ Christopher F. Jones, *Routes of Power. Energy and Modern America* (Cambridge: Harvard University Press, 2014), 5.

⁸⁴ *Ibid.*, 232.

⁸⁵ Elizabeth Shove, *Comfort, Cleanliness and Convenience. The Social Organization of Normality* (Oxford, New York : Berg, 2003). See also the highly informative site <http://www.demand.ac.uk/>.

a rapid transformation of consumer behavior, a behavior that should be historicized.⁸⁶

- 34 The transition from the passive consumer to the consumer-producer is therefore interesting to study, for one could interpret it as a way of finding an active role for these energy consumers. However, in the past the industrial nature of production made it so that consumers could themselves produce their own coal, oil, or hydraulic energy, with this exploration of the consumer-producer rooting itself in reality during the period that began with the 1980s. The Danish movement against the Swedish nuclear reactor at Barsebäck promoted the development of wind energy in Denmark. While noting the participation of students in the construction of the famous Tvind wind turbine, interpreting the success of the Danish wind industry as a movement of users launching a new decentralized energy policy is excessive to say the least.⁸⁷ The same remark can be made for photovoltaic solar energy. In this declared transition toward renewable sources of energy—one championed by Jeremy Rifkin⁸⁸—a new revolution involves consumers taking ownership of the energy system. The question of national models cannot for all that be set aside so easily, and the role of companies, promoted by a competitive vision of the energy market, can lead the historian only to a certain prudence with regard to these declared upheavals of energy systems.
- 35 In addition to the initial exploration that prompted us to believe that “energy consumers” have rarely behaved as conscious consumers, or with an integrated conception of energy, I sought to provide an overview of the paths available to the historian of energy. The historical

subject emerges in all contemporary approaches, whether they involve diversity of behavior, social segmentation, the impact of cultural patterns, the inclusion of raw materials within international circulations, the production of discourses by organized movements, and the emergence of technical and moral norms. Listing the most stimulating historical examinations for a history of energy consumers cannot be done without first pointing out that they have a minor presence in sources. In a history of energy, research could thus focus on the history of measuring consumption (meters, bills, social relations), discourses regarding energy in organized consumer movements, competition between providers to attract clients and ensure their loyalty (advertising, marketing, social studies), the “production” of the consumer by educational institutions (teaching the security of using gas and electricity) and media tools (children’s publications, cartoons, public campaigns, etc.), how unions experienced difficulty in including consumers in their forms of action and demands, international normalizations of products and services, and the circulation of products and practices on a planetary scale, among others. In the end, the history of energy consumers must lead to an identification of temporalities that do not fully overlap with those of technical macro-systems of energy production, and even more so with regulations and political institutions. It is through the implementation of these explorations on different scales that the history of energy—and not just the history of consumption—can in turn nourish boundary concepts and enter into dialogue with other disciplines.

⁸⁶ Frank Trentmann and Anna Carlsson-Hyslop, “The Evolution of Energy Demand in Britain: Politics, Daily Life, and Public Housing, 1920s-1970s,” *The Historical Journal*, 2017, 1-33.

⁸⁷ Ruth Oldenziel and Mikael Hård, *op.cit.*, 262-271 (cf. note 6); Matthias Heymann, *Die Geschichte der Windenergienutzung, 1890-1990* (Frankfurt-am-Main: Campus Verlag, 1995).

⁸⁸ Jeremy Rifkin, *The Third Industrial Revolution: How Lateral Power is Transforming Energy, the Economy, and the World* (Basingstoke: Palgrave Macmillan, 2011).

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