

Delving at the Core of Everyday Life – Between Power Legacies and Political Struggles

The Case of Wood-Burning Stoves in France

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Introduction

Despite the fact that among Western European countries, France possesses one of the largest expanses of forests after Sweden and Finland, the use of wood as an energy source has mainly been ignored over the course of the twentieth century. During the last century, fire became associated with special occasions in people's minds, but no longer with heating. The exception was in remote rural areas, where farmers have not changed their heating methods. Wood is associated with peasant society, with dirt because it is necessary to clean up ashes, with health risks because smoke spreads through the house if the pipes have holes in them, and with energy inefficiency because France has always used cast-iron stoves or open fireplaces, not earthenware stoves as in neighbouring countries. Wood also requires space for storage and handling, for sawing or chopping. In other words, wood appears to have lost its appeal, except for when people are on holiday or for creating a blaze during an evening gathering. Moreover, politicians are inclined to spurn it.

Research into energy transition has shown how the technical systems in place lead to inertia and not only limit possible action in the future (Nader 1981; Araújo 2014) but also frame a specific thinking that prevents the ability to 'shift gears' (Nader 2004). And more than many other European countries France is shown to be locked into choices made in the past. Change is hampered by the nuclear infrastructure built in the 1970s and onwards to make electricity accessi-

ble to all, the prevailing ideology that it is impossible to do without this energy source (Lee and Gloaguen 2015) and the belief that a change in consumption is not possible without going backwards. The existing infrastructure represents physical barriers to new thinking (Nader 1981) and defines the energy landscape. When looking at the willingness of the government to continue the exploitation of nuclear energy and the lobbying to have it qualify as renewable, France appears more than ever locked in nuclear energy, which makes any change in users' practice difficult (Raineau 2018), as 'changes in patterns of energy demand are closely entwined with the dynamics of supply infrastructure and provisioning systems' (Walker 2014: 50).

This should mean that the electricity production associated with renewable energies like solar or wind power is relegated to a back seat in the system. However, their share is increasing. Furthermore, unlike choices made in the recent past, which tended towards greater simplicity and invisible heating systems, people are once more opting for a visible source of heating – wood – that requires places to store it as well as much handling. Why make this choice when any change to routine is costly because of the need to acquire new habits (Ehn and Löfgren 2009; Ilmonen 2013; Ortar 2014)? These questions raise the issue of the role of energopolitics in influencing decisions made by, and the capacity of, a state to change its energy regime, as well of how civil society takes alternative paths in locked-in systems. This requires getting to know who uses these stoves and understanding the contextual factors such as the political environment in the transition processes (Shove and Walker 2007), as well as the influence of the historical and cultural contexts (Labussière and Nadaï 2014). The aim is to comprehend the motives for this choice and which set of knowledge and habits rendered it possible.

This chapter is based on a diachronic analysis of daily consumption practices of various energy resources such as electricity or hydrocarbons, which may be understood by analysing local journeys and describing daily practices observed in the Lyon (France) region in 2012–13. The interviewees live and work in the suburban areas of the city and the entire socioprofessional spectrum is represented.

The Turbulent History of Wood

Indeed, the poor image of wood only partially corresponds to reality. Although marketing through the traditional routes for selling firewood declined steeply throughout the twentieth century (de Lagarde

2000), the noncommercial gathering of wood – for self-supply, agricultural work, *affouage* (estovers) and the black market – has remained constant and has even increased as French forests have grown (Pointereau 2000). France is not unusual from this point of view: wood-gathering for one's own use is highly prevalent in Northern Europe and has been the subject of particular studies (Nyrud et al. 2008; Petersen 2008; Jalas and Rininen 2016). The declared portion of firewood production (which is therefore officially included in the statistics) represented only 6% of total activity in 1999 (de Lagarde 2000), and in 2013, out of 26 million m³ of forest reserves harvested for energy, only 6 million m³ was offered for sale (Pouet and Gauthier 2013). The attempt to use wood as an energy source in a country seeking energy autonomy was thus largely ignored by the public authorities throughout the twentieth century – a phenomenon that is not limited to France, as suggested by the sparse research dealing with the use of wood for heating (Jalas and Rininen 2016; Chatti et al. 2017). Invisibility of production is in part due to the high number of private forests, accounting for three-quarters of forest cover on generally small plots of land, which are self-managed or handed over to be managed by neighbours or relatives. This is the case even though the running of state-owned forests has been governed by a ruling of Colbert, acting on behalf of King Louis XIV, since 1669. Since then, the state has tried to convert forest products into the taxes, revenues and profits they can yield (Scott 1998). If the state has managed to create national laws to regulate harvesting, the very fact that almost four centuries later, municipalities still have the right to decide on the conditions of the estovers and that most of the forests escape any regulations tells us a lot about the resistance encountered.

Interest in wood was rekindled after the first oil crisis, but had very little effect until 1998, when a report entitled 'Forests: An Opportunity for France' was carried out for the Prime Minister by Jean-Louis Bianco: this was followed by a law on forest orientation in 2001 (Loi d'Orientation sur la Forêt du 9 juillet 2001), which explicitly introduced the principle of forest multifunctionality. In 2009, the Grenelle 1 Law and then the 2015 Law on Energy Transition for Green Growth enforcing the use of renewable energies maintained interest in wood. Nonetheless and despite this law, the National Forests Office (ONF), which has three main missions – the management of public forests, the prevention of risks in natural environments (dunes, mountains and forest fires) and the provision of services – and takes care of 25% of the French forest, has seen its budget diminished drastically. In 2017, the ONF's civil servants denounced an unofficial

privatization of the ONF while the government was considering to dismantle it. However, in June 2019, a report has stated the importance of a multifunctional management of public forests that fully addresses the challenges of climate change, the development of the wood industry, the preservation of biodiversity and the development of rural areas. Based on these observations, the state intends to maintain the management unit of public, state and municipal forests by the ONF (Ministère de l'agriculture et de l'alimentation 2019).

Meanwhile, a review has been carried out by the ADEME (the French Environment and Energy Management Agency), which has the role of stimulating, animating, coordinating, facilitating and carrying out operations to protect the environment and control energy, reporting on the poor state of heating installations that used wood and the lack of organization of this industry (Guitton 2015). To alleviate this deficiency, the ADEME launched a campaign to inform people about the new wood-fired stoves and boilers that produce lower levels of pollution and consume less wood. These appliances are simpler to use than the older versions and are cleaner, since the ashes fall into a drawer that is easy to empty. The state supports this campaign by offering tax reductions when people purchase the appliances. However, these subsidies do not compensate for the cost differential, and both stoves and boilers remain expensive to buy. Nevertheless, more than seven million households benefited from these measures between 2005 and 2011, and state support for wood-burning equipment is thought to have represented €130 million in 2012, falling to €100 million in 2014 because of the reduction in help with tax credit (Guitton 2015). These appliances are only partly replacing the old-fashioned stoves as the households acquiring them did not use this kind of heating previously. In 2019, despite a slight stagnation in the sales, 'France is still seen as an El Dorado', says a foreign brand established in France interviewed by the Observatory of renewables energies (Observatoire des énergies renouvelables 2019). The 2019 report also mentions a change in the behaviour of the professionals as now pellet stoves are offered even by professionals who supplies all the electrical conduit equipment for new houses.

The Political Structure of Energy Choices in France

Let us first reconsider the surprise caused by wood heating becoming the natural choice. As mentioned above, despite its long history of forest public management, more than an interest in wood as an

energy resource, the ONF has been saved by the effects of climate change that are already noticeable and the political willingness to reinforce the need to preserve biodiversity. The French energy system has often been identified by characteristics conducive to great stability, if not inertia, caused by the effects of inheritance and sedimentation that have gradually led France's energy policy on a path of dependence. Supported state interventionism in the formulation and implementation of energy policy is one of the main features of this system (Aykut and Evrard 2017). Indeed, historically, France has had to rely on imported energy. From the First World War onwards, energy dependence was regarded as unacceptable: during that time, France was cut off from the coal supplies provided by the Nord-Pas-de-Calais and Belgian coalfields, and had to rely heavily on UK shipments. These supplies were often slow and difficult. The government at the time, under Clemenceau's leadership, even had to send an emergency message to the United States so that the French front could continue to receive supplies during the darkest days of the last German offensive. The Second World War was also marked by energy shortages that affected the daily lives of the French and their businesses. After the war, the country still had to rely on German and American coal, and experienced four years of power cuts.

This heavy reliance on imports meant that after the First World War, the state sought to diversify its sources of supply for coal and oil and to find ways of producing its own energy (Beltran 1998). From 1920, the state decided to intervene directly in certain areas of the economy, including energy. In the oil sector, the state created the *Compagnie française des pétroles* (French Oil Company) in 1924. This would become the *Régie autonome des pétroles* in 1939, before evolving into Total in 1991. After the Second World War, the law of 1946 nationalized the production, transport, distribution, import and export of electricity and gas. Public enterprises were created: *Charbonnages de France* was nationalized in 1945, and *Electricité de France* (EDF) and *Gaz de France* (GDF) in 1946. In the post-war period, when France occupied a secondary position on the international scene, the Gaullian discourse according to which 'France cannot be France without greatness' confirmed the interests of many elites in the industrial sector and, more particularly, that of energy (Hecht 2009). Moreover, after the Suez Crisis in 1956, the need to become independent of Arab oil against a background of dwindling coal resources led to an economic interest in nuclear power. However, the concern was subsequently forgotten because of the return to cheap oil until the first oil crisis of 1973–74, which exacerbated the

need for home-produced energy. This institutional and intellectual context considerably influenced the constitution of a particularly atypical French ‘energy mix’, embodied by the slogan ‘all electric, all nuclear’, put forward by EDF in the early 1970s (Aykut and Evrard 2017). Throughout the rest of the twentieth century, this policy was justified in the name of the general interest, which gave legitimacy to the officials pursuing it. The policy was made possible because of a desire for continuity and dirigisme, coupled with the existence of suitable decision-making structures. This resulted in a system based on monopolies or quasi-monopolies in production, distribution and imports, but with the exception of petroleum products – monopolies that were mainly held by public companies. However, this system has been forced to open up under EU regulations.

Although the 2000s were characterized by a gradual state withdrawal from energy companies, the state retains a strong political role in controlling energy prices – which has become a social issue – and in the future of nuclear power. In France, nuclear power accounted for 71.6%¹ of energy generation in 2017, meaning that the country ranks first in the world for the use of nuclear power (Lee and Gloaguen 2015). In 1983, electricity production from nuclear power far exceeded consumption due to overestimated figures for consumption, resulting in a policy to incentivize electricity consumption. Meanwhile, France had become the largest Western European power exporter – a trend currently reinforced by the decline of electricity consumption since the 2008 financial crisis.

In support of the decision to develop nuclear plants, the French state advocated heating by electricity, stressing the dual benefit: there would be no release of CO₂ into the atmosphere and the cost of purchasing equipment would be low. In 2017, heating by electricity represented 10% of national electricity consumption and 28% of household consumption.² It currently supplies 30% of households in France. Electrical heating in France accounts for half that of Europe, and although consumer prices for electricity have increased by around 50%, since 2007 these prices have remained on average 20% cheaper than in the rest of Europe (Briand and Oparowski 2019).

The political initiative to use electricity was publicized by media campaigns and accompanied by the training of house builders and designers at all stages in the process. Thus, in the 1980s and 1990s, due to the low investment costs related to electrical heating, many individual homes and buildings were fitted out with it, even though the buildings themselves were inadequate for this heating method (i.e. without thermal insulation). This trend was particularly important

in the private rental sector, where investment and operating costs are not borne by the same people. Landlords fail to provide the bulk of the investment for the thermal insulation and allow future tenants to bear the resulting high running costs.

Meanwhile, the price of gas and oil has fallen by almost 30% compared to 1985. The ‘fossil fuel-electricity’ differential became very favourable to oil and gas. Nowadays, the second-largest source of energy used by households is gas. The state has been less active in policy-making, but gas has grown as a source of heating in cities, especially in communal dwellings with a boiler and for cooking. The growth is mainly accounted for by urban heating, although gas storage tanks have also increased in rural areas, where they were in competition with oil. Despite the lack of state incentives and the higher installation and maintenance costs, gas heating has expanded in individual households because of its better performance and ease of use.

The Contradictions of the ‘French-Style’ Energy Transition

In contemporary France, the concept of energy transition emerges in a context of international mobilization on climate change and has been put forward by two coalitions of causes: first a bottom-up approach up, driven by outsiders of the energy system who question technical and economic aspects, behavior change, and the very conception of energy systems; second a more consensual and top-down approach, carried by the insiders, namely dominant players in the existing energy regime, which will gradually succeed in imposing their vision to the State. (Aykut and Evrard 2017: 18–19)

Established in September 2012 by Eric Besson, the then Minister of Energy, and chaired by university professor Jacques Percebois, the 2050 Energy Commission is responsible for conducting an analysis of the various possible energy scenarios for France by 2050. The authors of the report appropriate the concept of energy transition, while justifying the nuclear choice, on the one hand, by the importance of the climate problem and, on the other hand, by economic arguments. They conclude that the scenarios that maintain the level of nuclear power generation are cheaper for consumers and at a macroeconomic level, and add that the choice of nuclear energy presents an advantage for the competitiveness of the French industry and the energy independence. Two of the report’s eight recommendations concern nuclear power.

This *Energy 2050* report embodies the appropriation and specific framing of the notion of transition, carried out by insiders of the French energy system, according to which ‘the reduction in the use of fossil fuels (coal, oil, gas) is the main characteristic of the energy transition’.³ It is mainly on the basis of this report that the energy transition in France will be implemented. ‘It is based on a top-down logic, driven by a state that does not want – or cannot – control everything, but nonetheless asserts itself as the central actor in putting the transition narrative into politics. The concept of energy transition becomes a political instrument allowing, in a more or less explicit and more or less visible way, to maintain a certain continuity in existing energy and industrial policies’ (Aykut and Evrard 2017: 33).

Promulgated on 17 August 2015 after multiple postponements and fairly sharp criticism, the Law on Energy Transition and Green Growth (TECV Law) confirms in several respects the continuity of French energy policy, despite the development of a narrative of the transition. The first element relates to the relative disconnection between the establishment of spaces for deliberation and the decision-making process, identified both at the time of the implementation of the major orientations of energy policy in the 1970s (Colson 1977) and more recently in the context of the Grenelle de l’Environnement (Boy et al. 2012; Topçu 2013).

The TECV Law was to concretize the two main commitments of President Hollande on this subject: the reduction to 50% of the atom’s share in electricity production by 2025 and the closure of the Fessenheim Power Plant before the end of his five-year term. On this point, however, the transition came up against, on the one hand, the traditional inertia factors of the French energy sector, which are the institutional and legal constraints, and, on the other hand, the resilience of the main players, notably EDF (Deront et al. 2017). In general, the implementation of all of the ambitious objectives (the halving of final energy consumption in 2050, the reduction in the share of fossil fuels by 30% or the development of renewable energies up to 32% of the energy consumption and 40% of electricity production by the same deadline) proposed in the TECV Law depend on the adoption of a complementary regulatory text: multiyear energy programming (PPE). After having been repeatedly postponed, the publication of this text on 1 July 2016 was not enough to remove doubts about the contradictions of this ‘French-style’ energy transition. Those doubts are confirmed as, according to the World Nuclear Industry Report Status 2019, the atom is no longer competitive. President Macron has nevertheless postponed the reduction to 50% of the atom’s share

in electricity to 2035 and will decide in 2021 about the opportunity to build more power plants using Evolutionary Power Reactor (de Ravignan 2019), despite a constant slowdown in the electricity consumption in France and neighbouring countries, and the slow but constant increase of the share of renewables (Commissariat Général au Développement Durable 2018), a growth pushed by the ADEME and the Ministry of Sustainability.

However, within the state, different actors are playing according to their own agenda. The ADEME is pushing towards more energy efficiency and the diversification of energy resources, while after several years of fight, the ONF has seen its mission re-established and wood consumption is growing. Despite the willingness to carry on producing nuclear energy and the efficiency of the lobbies, the 2009 Grenelle 1 Law established the need to develop renewable energy sources, including wood, and did not recognize the nuclear industry as renewable. Moreover, electrical heating equipment in new housing saw a decrease from 70% to 15% in 2017,⁴ due in particular to a new norm, RT 2012, following the Programming Law fixing the Orientations of the Energy Policy of 2005, which has benefited other heating systems. The main purpose of this thermal regulation is to reduce energy consumption: new buildings now have to have a maximum average primary energy consumption of under 50 kWh/m² per year. This calculation, using primary energy, is unfavourable to electricity, with its retained coefficient of 2.58 (the ratio between the final energy available for end users and the primary energy entering the system, which therefore has a bearing on the efficiency of power plants as well as transport losses and distribution).

Nevertheless, in the French energy system, the trend for using wood appears paradoxical because it makes visible the invisible and necessitates a change of practice in a context where buying supplies through the traditional channels fails to meet demand. Wood is not only a visible source of energy, which people can store themselves, but its supply structures are mostly informal. Furthermore, as I have indicated, help towards purchase does not compensate for the difference in cost when compared with other heating fuels. Why then use wood?

Energy Choices: Choosing between Following the Herd, Economics and Ecology

Salim and Yvette live on a north-facing hillside in the Beaujolais region, in an ancient hamlet 3 km away from the nearest village. Salim

is employed in a service enterprise and his wife is a foster mother. Until 2004, they lived in a small suburban town to the west of Lyon, in an apartment that had become too small for them following the birth of their two youngest sons, who were twins. They then decided to buy a house 5 km away. The house is large, but is at the bottom of a wooded valley and so gets very little sun in winter. It is centrally heated by an oil-fired boiler, which is quite common in rural areas. But the couple very quickly became alarmed by the size of their bills and decided to look for an alternative solution. As the house is surrounded by woods, Salim points out that it was ‘natural’ for them to consider buying a boiler using this source of energy, with he himself cutting the wood.

Salim comes from a family of migrant workers who arrived in Beaujolais in the late 1950s. Yvette too originates from Beaujolais and also comes from a working-class background. Their home has been completely renovated by Salim. He insulated it and changed the source of heating by having a wood-fired boiler installed. Shove and Walker (2007) and Maniates (2001) have shown that the analysis of such changes in practice is largely founded on the assumption that individuals are guided by economic choices. These analyses, based on the notion of ‘homo economicus’, do little to explain the obstacles to changing behaviour among consumers, since they assume that any change in practice is motivated by individual choice, itself made because of certain values held, and that it is those values that need to be modified. This thinking also dominates the approach adopted in public policy, which does not take into account the complexity of the different spheres of everyday life and the value systems intertwined with it (Sahakian and Wilhite 2014). In Salim’s case, the economic argument played a role, as did the aid provided by the state. Although the boiler was expensive, he expects a quick return from his investment.

‘What we might call the everyday ethics of energy is . . . about negotiating an increasingly tangled thicket of norms and imperatives. This is particularly the case in contexts where responsibility is delegated to individuals for following norms of energy use that reflect the need, in response to the “energy trilemma”, to reduce energy use not only because of its costs but on climate change grounds also’, wrote Groves et al. (2017). The complexity of prescriptive regulations is particularly felt in Salim’s case. In a situation where higher energy costs have been announced and purchasing power has decreased (Pora and Wilner 2017) because of the crisis France has been undergoing for the past ten years, and since the couple have bought a house that is partic-

ularly deprived of sunlight, the possibility of saving money on heating is an important consideration. Yet for all its importance, it is not the only consideration. The environmental argument backs up the choice of heating as recent woodstoves are supposed to produce fewer emissions than traditional ones. Although environmentalism has not succeeded in making a political breakthrough in France, it is a concern for people and has acquired the quality of a norm whose effects upon lifestyles are measurable (Commissariat Général au Développement Durable 2017). The decision to go over to using wood has therefore resulted from several factors – increased energy costs, ADEME information campaigns that have highlighted the advantages of new stoves, and the environmental argument – all of which the couple say they appreciate, but they are also aware that it is possible to obtain supplies of wood at very little cost or even free of charge.

Karen and her husband Jan are from the Netherlands, and arrived in France in the early 1990s. After renting accommodation in the centre of Lyon, they bought an eighteenth-century house to renovate in 2000, in a hamlet 60 km from Lyon and at an altitude of 800 metres. They carried out most of the work themselves and had the benefit of receiving tax credits during the first stage when they bought solar panels, which they had installed on the roof. The surplus electricity was sold to EDF, which is usually the case in France. As with Salim, their main concern is not to become free of the infrastructure (they are linked to the national network) or from the systems of state aid. They know what the various possibilities are and say they are ready to take advantage of them if their income allows, since these investments have a cost. Here again, it is not about freeing themselves from a sociotechnical system or from the market economy – quite the contrary, since their use of solar power reinforces existing sociotechnical systems. They installed central heating soon after beginning the renovation and chose electricity for it in order to use the electricity they were producing and thereby limit the cost of heating at high altitude, as the winters are cold.

During the second phase of their project, they adopted wood heating. Several factors then came into play. Despite the solar panels, the size of their bills led them to consider a complementary heating solution. They renovated the living room fireplace, which they now use frequently, but it gives out insufficient heat. The few years they had already spent in the region enabled them to observe that it was very easy to obtain cut wood or stands of growing timber. The final aspect was that Karen had grown up in a house heated by wood and was very fond of this form of heating, which she said she preferred to oth-

ers. Taking advantage of state subsidies, in 2008, they bought a heat distribution insert that allowed them to heat the ground floor and stairwell by means of a fan blower. Environmental concerns played a part in this choice: ‘Using wood for heating is obviously one of the reasons too, using renewable resources.’ But parental example has also had an effect, since the house her father renovated in the Netherlands uses wood for heating. Thus, it is certainly ‘because of the environment, because of cost too, since there is quite a lot of wood round about, so it can be found for a good price’ (to quote Karen’s words) that wood heating was chosen. And this form of heating is much used by them as ‘We only start the central heating going if it’s very cold, like now, because we don’t especially heat all the bedrooms if we’re using wood heating. We heat the main rooms. . .’ They thus reconfigure the uses of domestic space according to the season (Ortar 2018b). In this context, the decision is also about acquiring independence from the market economy.

Pierre, a senior manager, and Nadine, who makes artisan clothing, are aged around fifty and are the parents of two grown-up children. They live in the inner suburbs of Lyon, in a 1950s house surrounded by woods. Being in a hollow at the side of a hill, the house receives little sun, and to make the most of this poor sunlight, Pierre has to cut down the surrounding trees each year. The house has oil heating. They have a fireplace with an open fire, but in 2000 they decided to install a wood-burning stove designed to complement the central heating in the lower part of the house. For a time, the wood they used was cut from around the house, but then Pierre decided to use the stove during the night too and so added to the fuel supplies by buying oak logs. In 2011, they embarked on a renovation of the house’s heating and the wood-burning stove began to give out too much heat for the house. They then sold the existing stove and bought a smaller one in 2013. The initial decision to use firewood was pragmatic, linked to the abundance of wood around them and an attempt to make up for the mediocre heat emitted by the fire in the fireplace. However, in the early stages, they simply wanted to supplement the heat from the boiler, which, as in Karen’s case, they gradually ceased to use and came to rely almost exclusively on wood. Their reasons were financial, but comfort also played a part: the heating obtained from the stove was preferred to the central heating and they liked seeing the fire through the glass. Although, like the others, they benefited from financial help, the initial decision to buy was taken because it matched the context in which they lived, namely the fact that they were surrounded by woods.

Serge and Fanélie are forty-year-olds in senior management who have two children. They too live in the inner suburbs of Lyon. In 1999, they bought a house heated by town gas. In 2009, they completely renovated and extended it, practically doubling its floor surface. To heat the vast newly built kitchen-cum-living room, they had a wood-burning stove installed, while the rest of the house remained gas-heated. The decision to use wood was motivated by several factors, the first being that some of their friends had bought wood-burning stoves and appeared to be very satisfied with them. The other reason was financial: buying the stove enabled them to benefit from an increased tax reduction because it completed the renovations carried out on the old building – insulating the walls and replacing the single-glazed windows. A third reason was connected to the fact that they could obtain supplies of wood at little cost. And the last was environmental, a relatively vague argument linked to those put forward by the ADEME in its publicity leaflets, giving information about the requirements necessary to qualify for the tax reduction.

Although the desire to be independent from the market economy, along with environmental concerns and the domestic economy, emerge as the prime factors in these choices, it should be noted that experience of living in houses also plays an important role in the search to find different heating methods from those tried in the past. When nuclear power stations began production, it was necessary to find national outlets for electricity. Electric radiators were then installed into dwellings *en masse*, with the advantage that they were cheap to buy. However, these systems turned out to consume an excessive amount of energy. Sylvie grew up in one such house and remembers having been cold throughout her childhood because her parents avoided raising the thermostat. Even when the heating was on, it still felt cold because the thermostat switched the heating off when the chosen temperature was reached. Another reason for the cold was that in order to benefit from a lower electricity tariff, her parents had to cease using electricity for twenty-two days of the year. When she and her husband, Stéphane, had their house built, they decided to install a wood-burning stove to back up the gas central heating, on account of the type of heat it gave out. The argument for choosing this dual system was economic – they did not want to push the boiler temperature beyond 21°C – but it was also about meeting standards and seeking to extend them without infringing them.

Since wood-burning stoves do not have thermostatic control, temperatures higher than the state-recommended norms are not recorded, as there is no need to preset them. If ‘the warmth or cold

we perceive therefore depend, at least in part, on the different social and material relations we have actualized in order to heat up or cool down' (Vannini and Taggart 2014: 69), being as warm as one wants to be in a normative context implies interacting with different devices and their technical features, being free to go beyond any given settings. This use of wood to obtain one's own feeling of a comfortable temperature, feelings that are outside the norms, is based on the very characteristics associated with the wood-burning stove when used as a back-up – it uses living material, drawn from abundant deposits, and only functions for as long as it is tended to. In Sylvie's case, the state subsidy did not play a role because the decision to buy a wood-burning stove was taken as soon as they planned to build their house: the choice was motivated solely by the wish for a degree of warmth that was too costly to be acquired by other means of back-up heating. Wood was affordable because it came from the municipality (commune) where Sylvie's parents had their second home.

Parallel Economy

Wood heating thus forms part of a parallel economy of self-supply, involving networks of friends and acquaintances as well as knowhow. When Salim and Yvette justify their choice of wood for economic reasons, this argument is less simple than it appears at first sight, because the decision to use wood is part of two different economic systems. The first is the market economy: the subsidy received following the purchase and installation of the stove will take the form of a deduction from income tax. It is understood as a net benefit linked to the purchase, a benefit that, from this point of view, stops there in terms of the declared economy. The use of the stove, on the other hand, is part of a different system: that of a parallel economy and the self-supply made possible by the particular way in which the wood industry is structured in France. In order to obtain the wood needed to heat the house, in addition to the wood cut on their plot of land, the couple implement different synergies requiring knowledge of the limits of communal territory and the rules governing wood-cutting.

In communal forests, cutting is governed by *affouage* (estovers), a term that means the potential, given by the Forestry Code, for a town council to reserve a section of the woods in the communal forest for the domestic use of inhabitants. Historically apportioned by fires, permission for wood-cutting decided by the town council is now granted to those who request it against payment of a tax, or

even freely in many municipalities. Wood-cutting in private forests, on the other hand, depends on the decision of the owners and may be preferred or used in addition to estovers when the cutting is not sufficient to ensure that winter needs are met. Urban communities have abolished estovers, which therefore means that city dwellers wanting access to standing timber have to know people owning forests or second homes. The last great rural exodus took place between 1950 and 1970, but many houses continued to be used by families and, after that, their descendants. Until the 2000s, rural property outside of tourist areas was very cheap, which allowed even modest households to become second-homeowners. These links have persisted over time. If one does not own woods oneself, finding kindling depends on the networks of people living around these dwellings, whether they are family or simple acquaintances, as the cases of Stéphane and Sylvie demonstrate.

Accessing wood that is virtually free of charge therefore implies having extensive knowledge of at least one area of land or possessing a wide network of contacts who can provide an entry to woodland. Salim and Yvette were born in a neighbouring municipality and know the place thoroughly, particularly Salim, who, alongside his job, renovates houses. He uses these opportunities to glean information about the owners of different woodlands – owners whom he canvasses for permission to cut wood in exchange for handing over some of the wood he has cut. Wood heating is therefore a way of capitalizing on local resources and becoming independent of the market economy – a choice adopted with an economic rationale that does not involve the market.

The same approach governs Karen and Jan's choice, even though Karen's energy options indicated that she had internalized the socio-technical system and accepted dependency: when the couple installed solar panels, these were linked up to the network, which offers a commercial outlet for the surplus and allows demand to be topped up in winter. The decision was dictated by EDF's marketing offers and there was no obvious desire to free themselves from an economic system and weighty infrastructure. But in fact, when Karen talks about her decision to use wood, she indicates that it is intended to 'make them as little dependent as possible on the authorities . . . Well, all that's akin to the EDF, etc.' Wood was chosen on account of the informal networks that enabled them to obtain supplies of kindling close at hand: the municipality in which they live has many woods, making it possible for them to cut wood themselves or have cut wood delivered. For Karen and Jan, using wood is as much about

being in control of their consumption – made tangible by the physical mark it makes in the outbuildings where it is stored – as the production networks. Here again, it is about setting themselves apart from the market economy for reasons that are as much economic as ideological; controlling their energy consumption from production to consumption is a way of taking back power and becoming free of a dominant economy that affects all of their daily life. ‘Managing on your own implies resistance to the powers that dominate and a permanent struggle to prevent practical compromises becoming dishonest compromises of the mind and soul’, notes Latouche (2004: 6) in relation to parallel economies, and it is indeed from such resistance that Karen and Jan’s attitude stems in their desire to limit their dependence on the network.

Using kindling cut by farmers arises from the same wish to resist. At the same time, relationships with friends and neighbours can be built by using short distribution channels for economic reasons; this system encourages informal exchanges and adds a human touch to buying energy. Knowing a farmer who is likely to sell wood implies having recourse to informal networks of family or friends living in rural areas. The wood bought by Serge and Fanélie comes from a farmer with whom a first cousin exchanges grazing rights. Purchasing wood from him therefore keeps them within a network for exchanging services, which fosters local relationships and enables them to continue participating in a local life from which they are separated by living in Lyon. It also emphasizes the importance of not separating economic activity from kinship (Godelier 1973), even in the Western world. These networks are based on mutual trust because most of the sales are not declared. Another way of obtaining cheap wood is to know a craftsman working with wood, or sawmills that sell discounted offcuts or even give them away. These methods too are based on mutual acquaintance, since owners only give wood away to those they know if they do not sell their offcuts in the form of pellets; thus, the production chain continues right up to the disposal of leftovers.

Finally, there are the official marketing networks. In most cases, these too are informal networks that have to be sought out in order to be identified. They also meet specific needs that are supplementary to production. In the case of Pierre and Nadine, when the stove stopped being a simple back-up and became the main source of heating, they began to use the services of a wholesale dealer to obtain species with a heating capacity that was better than that of the trees, such as oak, that were available in their own garden. These types of

wood, which are denser and therefore burn more slowly, were used at night or during the daytime absences. This usage involves particular skills and knowledge of wood that go far beyond the economic domain. Sourcing wood sits at the core of several niches that have so far mostly escaped the attention of the state when it turns to the black market and the use of informal networks, but also when it turns to the uses that the municipalities are making of their woods. In *Seeing Like a State*, Scott (1998) documented the difficulties encountered by the French government since the seventeenth century to get taxes and use forest as a financial resource, despite the existence of fiscal penalties. The fact is that the state lacked and still lacks the information and, to some extent, the administrative network to know the exact revenues coming from forests (ibid.: 47–49). The fact that wood has been of little interest during the second part of the twentieth century has extended this state of affairs beyond what has happened in other domains. The irony, however, is that the incentives to go for wood-heating stoves have been rendered attractive by its lack of presence in the supply chain.

Cutting Your Own Wood

Wood is also a ‘hot’ energy. In an article about off-grid heating practices in Canada, Vannini and Taggart find that whereas on-grid heating is something we might metaphorically call a ‘cool’ energy, off-grid heating is something we might label a ‘hot’ energy. Hot energies demand greater intensities of participation in socio-technical and spatio-temporal processes than cool energies do because they are locally controlled by homeowners, rather than distally managed by utility providers. (Vannini and Taggart 2014: 65)

Using wood if one does not own a forest means, at the very least, looking for a supplier of kindling or of wood that is ready to saw. Even when the wood is delivered already sawn, there is still work to do to store it and carry it between the place of storage and the house so that the stove can be refilled. Wood heating therefore demands physical effort in order for the stove to work and the heat produced to be maintained. Wood heating requires a presence and winter consumption has to be predicted when the weather starts to become colder, so that the amount of wood steres (cubic metres) needed can be estimated. Daily requirements must also be thought about to anticipate the length of time each day that heating will be wanted, and this implies not only knowledge of the quality of woods used but

also the average duration of burning time according to the diameter of the logs. These core skills can be acquired as one goes along, that is, through practice on the job, if they were not known beforehand.

In addition to these skills and the handling needed in order to make the stove work, knowledge of wood-cutting is also required for all those who cut their wood themselves. In French literature, finding your own wood supplies is associated with people of few means (Sansot 2002): manual workers and employees forced to do work on the side in order to pay their bills (Weber 1989). Growing your own vegetables has also been understood in terms of workers' allotments (Weber 1998), whereas when the more well-to-do indulged in this practice, it was seen to be for ornamental purposes (Gojard and Weber 1995; Dufour 1998). Where wood in particular is concerned, practices connected with its use ceased to feature in texts written by anthropologists observing a rural world in the process of disappearing over the decades following the Second World War (Jolas et al. 1990).

The practice of cutting your own wood (*faire son bois*), according to the old French expression, shows the particular value placed on knowhow and on work often done by several people at once. It also reflects the specific timeframe of winter – the wood being cut when the sap is at its lowest – together with essentially male modes of socializing and a particular physical expenditure of energy. This practice has changed very little over the course of time, even if mechanization has made it less strenuous than in the past (Verdier et al. 1990).

First, it requires a specific set of tools: a saw, a wedge, an axe and especially a chainsaw – a set of tools associated with masculinity that also comes with the risk of accident. The training is done by copying skilled elders or peers. Salim learned to use a chainsaw with a friend; he himself derived his knowledge from a relative who had worked as a wood-cutter for a time. He bought his tools in gradual stages. He does most of his cutting with neighbours in a system that functions as a mutual aid network, each of them setting aside time for doing the other's woodcutting according to a timetable worked out at the beginning of winter, when the trees have lost their leaves. Pierre cuts his wood with a friend and in turn allows the friend to store his beehives on his land, while Stéphane cuts wood once a year with his father and brother-in-law: he keeps some of the wood and the rest is left to meet the needs of the second home. Pierre learned to cut with his brother-in-law who has a wood in the Jura. The annual cutting supplies a second home and provides wood for Nadine's mother, who

opted to have electricity only in the bedrooms and bathroom of her house. Stéphane learned to use an axe at the home of his grandparents who had wood as an extra heat source, before going on to fine-tune his knowledge with his in-laws. Necessary skills to become an experienced wood-cutter are achieved through an education of the attention (Delbos and Jorion 1984) that resonates with the properties of the environment (Ingold 2001). It is a way of learning that implies having a mentor and therefore being a part of a network of people likely to train you. Wood-cutting is therefore a male social activity and is valued for that.

Women and children are rarely present during the cutting, but they lend a hand to remove branches and saw up the small wood. Just as access to the wood is a matter of who you know, knowledge of the techniques required to practise woodcutting is part of a group activity carried out with people who do one another favours and make reciprocal arrangements that are independent of the market. In this way, wood escapes the market economy twice over. Unlike the use of the wood-burning stove, the increase in work generated is not perceived as relating to ecology, as Salim admits: ‘I could easily do without it [woodcutting]. It’s not . . . I don’t mean that . . . It’s a bit of a chore really’, thus shifting the context of his commitment. It is about fulfilling a task he considers important for the family economy and that requires an investment of time and particular skills.

Conclusion: Is Wood a Government Choice?

Foucault, in his critique of power (Foucault 1976), mentions the importance of resistance that takes shape within the very intimacy of the power relationship because any act of power calls forth, arouses, and even programmes the action that is liable to resist it. Wood heating is one of these forms of resistance to the economic and governmental power that prescribes choices and seeks to guide people in their use of available energy. However, it would be simplistic to see the choice of wood only in terms of resistance and the state as a monolith able to control all energy consumption as it itself has created different entities to meet various goals such as energy efficiency, carbon neutrality and industrial development that hamper each other. In the practices surrounding wood use can be read the knowhow handed on by the network of relatives and social relationships between equals, the persistence of rural customs and knowledge of *terroir* – in short, a whole set of skills upon which individuals draw to bypass or avoid

certain constraints. Therefore, although relaunching the wood industry through a programme of subsidies for buying wood ovens and boilers is certainly a government choice, its implementation and success currently depend on re-activating and reasserting the value of a set of practices, such as an informal economy over which the state has little hold, despite a long-held wish to legislate in this area. Anthropology thus makes it possible to reveal the unthought-of political actions through the weight of cultural and technical systems on which individuals rely to escape the weight of legal constraints, but also give meaning to their daily actions.

Indeed, the social practices linked to managing energy cannot all be understood without analysing the family attitudes to which they belong (Ortar 2018a). In the same way, the energy transition processes in urban systems are based on a pre-existing energy culture as well as on inherited practices and pre-industrial structures (Emelianoff and Mor 2013). Heating with logs, from this point of view, illustrates the importance of taking into account not only the history of practices surrounding wood use but also the history of supply channels and their current state, in order to understand ongoing usage. Wood use invites us to question the role of informal economies in today's world. Through wood, the need emerges to take the economic ideas of social actors seriously (Jorion 1990), together with the desire to preserve a place for interconnections that are not strictly market ones and that encourage networks of relationships. We should also consider the importance and pleasure of practical and creative work in the search for more sustainable lifestyles, or simply for lifestyles that have meaning, in which providing for oneself is a significant factor, along with the importance of the material world and of our capacity to physically work on and with it – in short, the importance to make and act in a more and more dematerialized world, all of which stresses some important anthropological aspects that are often neglected in the research on energy.

Finally, these ways of getting around or manipulating a system enlighten us about another important factor when thinking about the weight of sociotechnical systems. Although these systems place limits on possible futures (Araújo 2014), they do not limit all of these futures (Nader 2004), as technology evolves and old solutions can be transformed into new ones. Therefore, although the nuclear option in France continues to present an alternative that is difficult to rival, as can be seen from the new report announced by the government on ending its use, we should not underestimate the importance of other energy sources as well as the role of bottom-up actions (Masse-

min 2019). The analysis of practices surrounding wood heating tells us about the importance of taking different economic attitudes into account for understanding the developments taking place, even in so-called developed countries. Wood heating also tells us about the ability of these informal systems to adapt to evolving demand, as well as their capacity to structure themselves as alternatives, and hence it enlightens us about the adaptability of society in general.

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Notes

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