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Sufficiency, the year after

From emergency sufficiency to the urgency of sufficiency

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Executive summary

Until now, energy sufficiency has been viewed as a temporary crisis management tool, activated in response to spikes in fossil fuel prices (such as the oil shocks of the 1970s and the gas crisis of 2021) rather than as a political objective in its own right that could be sustained over time. **Although a new French energy sufficiency plan was scheduled to be presented in the fall of 2024, the dissolution of the National Assembly has disrupted the political agenda. Nevertheless, the success of France's decarbonization strategy now more than ever depends on moving from emergency-driven sufficiency to policies that recognize the urgency of sufficiency itself.**

The absence of a clear majority in the Palais Bourbon is forcing deputies to try out a new method of political decision-making, that of true parliamentarianism. In the absence of a coalition agreement, it will be necessary to form *ad hoc* majorities on a text-by-text basis. One of the most pressing issues is the need to define the major objectives of France's energy and climate policy within a Law of Energy and Climate Programming (**LPEC**)[1]. This initiative, which could potentially gain transpartisan support—as it is part of the Nouveau Front Populaire's program and the "legislative pact" of the Republican Right (formerly LR) — would provide an opportunity to debate energy consumption and usage reduction strategies across different time horizons. In essence, it would involve consulting citizens on their willingness to embrace these changes, as well as

1 B. Calatayud. A. Delmestre. P-V. Nguyen. 2024, « La transition énergétique à l'heure du parlementarisme : comment sortir de l'opposition nucléaire-renouvelables pour atteindre nos objectifs ? ». Jean Jaurès Foundation.

the necessary conditions (such as timing, the example set by public authorities, and investments in low-carbon alternatives) to facilitate the implementation of sufficiency policies.

First, beyond its potential to reduce emissions—estimated at "between 12% and 17%," according to the Pisani-Ferry-Mahfouz report[2] **energy sufficiency is a key factor in economic, social, security, geostrategic, and even health resilience. These are just some of the co-benefits generated by sufficiency policies, which must be systematically measured and highlighted through tracking indicators, coupled with regular assessments of the effectiveness of implemented measures and a comprehensive evaluation of the multiple benefits they yield to guide decision-making.** This approach helps avoid short-term economic decisions that fail to recognize the more diffuse returns on investment from sufficiency policies—a particularly pressing risk given France's current budgetary constraints. Such pitfalls must be avoided, as advancing sufficiency requires costly **investments in infrastructure that provide everyone with low-carbon alternatives**. Although expensive, these investments will ultimately be less costly than the price of inaction on climate change.[3]

Secondly, it is crucial to move beyond a strategy based solely on incentives (communication, sufficiency plan) and adopt a **legislative approach. This approach should prioritize mandatory measures over voluntary ones and target the largest emitters first (in line with social justice principles), focusing on the supply side before individual households.** These measures should be implemented progressively (until low-carbon alternatives are developed) and include effective enforcement mechanisms with sanctions. To foster a cross-party consensus on the measures to be adopted, we recommend building on initiatives already present and discussed in public debate. For example, in the transport sector, this could involve supporting the Adam bill to **accelerate and monitor the greening of corporate vehicle fleets**, the proposal from the Citizens' Climate Convention to **ban advertising for SUVs**, or adopting a German-style annual train pass allowing unlimited travel across France's regional train network.

Finally, the success of energy sufficiency will also depend on the ability of public and private actors to lead by example and embody these changes (reciprocity, exemplarity), thereby promoting their widespread adoption. So far, **eco-friendly practices within French households have been seen as the only manifestation of sufficiency.** This perception is reinforced by a majority of French citizens (54%) who believe they "consume slightly less than the average French person," according to the latest ADEME survey. **This limited view constrains the potential of sufficiency. The acceleration of the ecological transition, and indeed France's ability to "forge a nation," will depend on the ability to move beyond this individualistic logic and foster a depoliticized and shared understanding of sufficiency as a common value.**

Introduction

On 6 October 2022, the French Minister for Energy Transition, Agnès Pannier-Runacher, presented a plan to reduce energy consumption in France by 10% by 2024. By reducing its combined gas and electricity consumption by 12%[4] in the first year (after adjusting for weather effects), France already seems to have succeeded in its mobilising challenge. **However, this achievement should be viewed with caution as it represents only a short-term success and reflects a range of complex economic and social factors.**

2 Pisani-Ferry, Jean, et Selma Mahfouz. 2023. "The Economic Impact of Climate Action. France Stratégie". *France Stratégie*. https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/2023-incidences-economiques-rapport-pisani-5juin.pdf

3 M. Kotz. A. Levermann. L. Wenz. 2024, "The economic commitment of climate change". *Nature*. https://www.nature.com/articles/s41586-024-07219-0

4 « Sobriété énergétique : cinq annonces pour aller plus loin ». *Info.gouv.fr*. 10 octobre 2023. https://www.info.gouv.fr/actualite/sobriete-energetique-cinq-annonces-pour-aller-plus-loin

The French government's proactive approach to promoting the concept of energy sufficiency is primarily a response to the inflationary effects of the "gas shock"[5] in the summer of 2021, which evolved into an energy crisis following Russia's invasion of Ukraine in February 2022. [6] This crisis was driven by two main factors: first, a seven-fold increase in gas prices on the European wholesale market during the first 11 months of 2022 compared to the average prices between 2016 and 2020[7], due to a halving[8] of Russian gas flows to Europe. Second, the crisis in the French electricity sector (nuclear and hydropower), with 2022 production volumes 15% lower than the previous year.[9]

During the winter of 2023, several opinion polls revealed that nearly three out of four French respondents reported lowering their heating temperatures.[10] The primary motivation cited was "economic considerations" (63%), which are likely to continue strongly influencing behavior, given the end of the gas price shield on July 1, 2023,[11] and the nearly 10% increase in regulated electricity tariffs on February 1, 2024. [12] While this context may help sustain the observed momentum in reducing energy consumption, it raises concerns for at least three reasons. First, it risks further worsening the living conditions of those in energy poverty[13] —more than 3.5 million people in France.[14] Second, it could signal a structural destruction of industrial energy demand. Third, by framing sufficiency as a temporary "wartime" effort focused mainly on reducing waste through small actions, there is a risk of overlooking certain aspects of a multifaceted concept that has yet to be fully embraced by the French public.

"Sufficiency policies" as defined by the Intergovernmental Panel on Climate Change (**IPCC**) "are a set of measures and daily practices that avoid demand for energy, materials, land and water while delivering human well-being for all within planetary boundaries."[15] **Energy sufficiency as currently promoted by the French government suffers from a notable lack of binding and systemic measures.** The way sufficiency has been approached so far prevents it from reaching its full potential. Beyond being a simple decarbonization strategy that could help

5 Nguyen Phuc-Vinh, and Thomas Pellerin-Carlin. 2021. "Soaring energy prices in Europe". *Institut Jacques Delors.* Accessed 3 May 2024. https://institutdelors.eu/publications/flambee-des-prix-de-lenergie-en-europe/

6 Nguyen, Phuc-Vinh, and Thomas Pellerin-Carlin. 2022. "European dependence on Russian gas: the Nord Stream 2 example". Accessed 5 May 2024. https://institutdelors.eu/publications/la-dependance-europeenne-au-gaz-russe-lexemple-nord-stream-2/

7 IEA. 2023. « Gaz naturel ». https://www.iea.org/energy-system/fossil-fuels/natural-gas Consulté le 30 mai 2024.

8 Nguyen Phuc-Vinh, Camille Defard, Fiona Breucker. 2022. "Security of gas supply in Europe". Accessed 5 May 2024. https://institutdelors.eu/publications/la-securite-dapprovisionnement-gaziere-en-europe/

9 RTE. 2022. « Bilan électrique 2022 ». Accessed 3 May 2024. https://analysesetdonnees.rte-france.com/bilan-electrique-synthese#:~:text=Le%20volume%20total%20d%27%C3%A9lectricit%C3%A9,ann%C3%A9e%202021%20(522%20TWh)

10 Bléhaut, Marianne, Pauline Jauneau-Cottet, and Elodie Lemaire. 2023. "Faced with rising energy prices, the French are forced to be sober - Note de synthèse n° 37". *Sourcing Crédoc N°Sou2023-4896.* https://www.credoc.fr/publications/face-a-la-hausse-des-prix-de-lenergie-les-francais-contraints-a-la-sobriete-note-de-synthese-n-37

11 "Energy: with the end of the tariff shield, should we expect higher bills?". *La Tribune.* 17 July 2023. https://www.latribune.fr/entreprises-finance/industrie/energie-environnement/energie-avec-la-fin-du-bouclier-tarifaire-faut-il-s-attendre-a-une-hausse-des-factures-969953.html

12 Everything you need to know about the rise in your electricity bill on 1 February 2024". *Economie.gouv.fr.* 22 January 2024. https://www.economie.gouv.fr/actualites/tout-comprendre-sur-la-hausse-de-votre-facture-delectricite-au-1er-fevrier-2024#

13 "What is the impact of the current energy crisis on fuel poverty?" *Lemondedelenergie.* 13 April 2023. https://www.lemondedelenergie.com/quel-est-impact-crise-energetique-actuelle-sur-precarite-energetique/2023/04/13/

14 Devalière, Isolde, Pierrette Briant, et Séverine Arnault. 2011. « Énergie : avec la fin du bouclier tarifaire, faut-il s'attendre à une hausse des factures ? ». *INSEE PREMIÈRE No 1351.* INSEE (institut national de la statistique et des études économiques). https://www.latribune.fr/entreprises-finance/industrie/energie-environnement/energie-avec-la-fin-du-bouclier-tarifaire-faut-il-s-attendre-a-une-hausse-des-factures-969953.html

15 IPCC, (Intergovernmental Panel on Climate Change). 2023. "Climate Change 2023". *Synthesis Report Summary for Policymakers.* https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

France and the European Union (EU) meet their climate goals, **sufficiency is a method for managing resources that ensures supply security, reduces dependencies in a logic of strategic autonomy, and fosters a resilient economy capable of addressing rising costs of living and inequalities.**[16]

As the Haut Conseil pour le Climat (High Council on Climate (HCC)) pointed out[17], *"during the period of the second carbon budget up to 2022, only two-thirds of the required energy sufficiency efforts were achieved. If the average pace from this period continues, the reduction in final energy consumption will not be sufficient, and the target will only be met with a delay of more than a year."* This observation justifies the need to assess the sufficiency plans implemented so far in France to maximize their potential. The conclusions drawn from this assessment could inform potential cross-party discussions within a future Energy and Climate Programming Law (LPEC), called for in the programme of the New Popular Front, but also in the "legislative pact" of the Republican Right (former LR).

By analysing the factors (historical, cyclical, structural) that have made France a pioneer in promoting energy sufficiency measures (I), and by offering an evaluation of the current measures (monitoring over time, effectiveness, limitations) (II), *this paper aims to explore how to sustain the practice of energy sufficiency in France over time, and by extension, across Europe.* By capitalising on past experience, France has a unique opportunity to demonstrate the many benefits of energy sufficiency and to set itself up as a model for its European partners.

I • From emergency sufficiency to the urgency of sufficiency

In France, as in Europe, the concept of energy sufficiency has been promoted in response to an energy crisis caused by the soaring price of a fossil fuel commodity. This was the case in 2022, following the first-ever *"gas shock"* in the autumn of 2021.[18] Similarly, in the 1970s, energy sufficiency became a topic of discussion in response to the oil shocks of 1973 and 1979.

NEW ENERGY CRISIS: WHY ARE THE OLD SOLUTIONS NO LONGER SUFFICIENT?

In 1973, oil accounted for almost two-thirds (63.9%) of final energy consumption in France (see chart). What's more, around three quarters (71.4% in 1973 and 75.1% in 1979) of the "black gold" consumed came from the Middle East,[19] the epicentre of the oil crises.

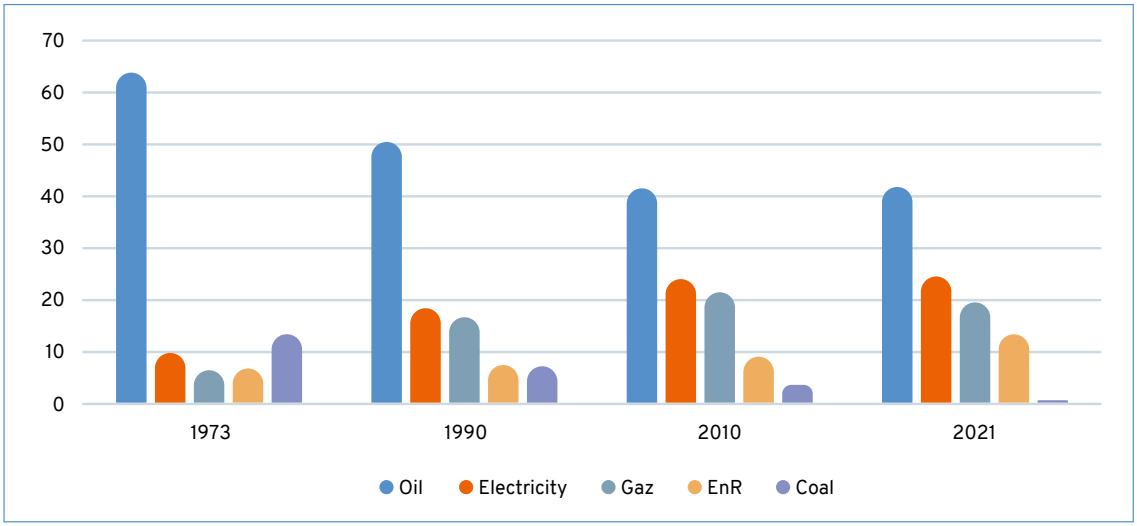
16 European Environmental Bureau, Negawatt, Energy Cities, Association of Cities and Regions for Sustainable Resource Management, Client Earth, Die Rolle von Energiesuffizienz in Energiewende und Gesellschaft, Rescoop.eu, et Jacques Delors Energy Centre. 2024. "Manifesto: A Resilient and Resource-wise Europe: Sufficiency at the Heart of the EU's Future". https://www.negawatt.org/IMG/pdf/sufficiency_manifesto.pdf

17 High Council for the Climate. 2024. "Annual Report 2024 - Staying the course on decarbonisation, protecting the population", June.

18 Nguyen, Phuc-Vinh, and Thomas Pellerin-Carlin. 2021. "Soaring energy prices in Europe. *Jacques Delors Institute*. Accessed 3 May 2024. https://institutdelors.eu/publications/flambee-des-prix-de-lenergie-en-europe/

19 "France's Energy Balance for 2021. 2021. "France's Energy Balance for 2021. 5 May 2021. https://www.statistiques.developpement-durable.gouv.fr/bilan-energetique-de-la-france-pour-2021

FIGURE 1. Final energy consumption by form of energy (in %)



▲ Source: Phuc-Vinh Nguyen and Fiona Breucker based on SDES data.

A year after the 1973 oil crisis, a famous advertising slogan stated that in France, *"we don't have oil, but we have ideas"*.[20] And one of those ideas was the concept of energy sufficiency.

It was against this backdrop that the Agence pour les économies d'énergie - the forerunner of today's Agence de la transition écologique (The French Agency for Ecological Transition (ADEME)) – was created, with a mandate to *"conduct a policy of rationalising energy consumption"*, a world first. Developed as a matter of urgency, this logic of *"rationalisation"* – not rationing – was above all centred around an *"appeal to the thrifty spirit of the French people"*[21] as formulated by President Georges Pompidou at the end of December 1973. A strategy based on three pillars was developed:

- The development of electricity produced from nuclear power as a **substitute for oil-based electricity**;
- Implementation of **energy efficiency measures** aimed at reducing energy consumption by maximizing output and minimizing losses between delivered and utilized energy, involving technological changes;
- Introduction of so-called **energy sufficiency** measures, which aim to reduce overall energy consumption by promoting activities low in energy consumption, i.e. changing the structures (infrastructure and policies) that shape behaviour..

The temporary measures deployed in response to the crisis have since faced varying fates. Instead of pursuing energy sufficiency, France opted for substitution, leading to the launch of the famous "Messmer plan," which ultimately resulted in the construction of 58 nuclear reactors to reduce France's dependence on imported fossil fuels. Although electricity accounted for less than 10% (9.7%) of the final energy consumed, it was primarily produced from oil (40.2%).[22] This technological gamble subsequently legitimised other choices, such as favouring electric traction over thermal traction for trains on the new high-speed lines, or state support (via sub-

20 "1977: Roger Gicquel calls on the French to turn off the lights to save energy. INA illuminates the news. 7 October 2021. https://www.ina.fr/ina-eclaire-actu/en-1977-roger-gicquel-appelait-les-telespectateurs-a-faire-des-economies-d-energie-en-direct

21 « Pompidou en 1973 : "Économisons l'essence, économisons l'électricité, économisons le chauffage" » | INA. 5 May 1973. https://www.ina.fr/ina-eclaire-actu/pompidou-sobriete-energie-petrole-essence-economisons-abondance-insouciance

22 Energy Agency, International. 2021. "France 2021: Energy Policy Review. International Energy Agency. https://www.iea.org/reports/france-2021

sidies) for the installation of electric heating. For its part, the energy efficiency policy was supported over the long term by *"continuous incentives for thermal renovation, through several successive thermal regulations for new housing and tax measures, from 1978, for all housing"*.[23]

Contrary to the logic of diversifying supply and the energy efficiency measures, **the sufficiency measures were neither improved nor renewed despite their convincing results**. Among the measures introduced were a limit on heating to 20°C[24] and then 19°C (1979), a speed limit of 90km/h on roads and 120km/h on motorways, prohibiting store window lighting[25] and the turning off of television at 11pm. The discontinuation of these measures hindered the development and institutionalization of the energy sufficiency concept, limiting its emergence in public debate and any potential consideration in policy-making. **In contrast to France, some European countries recognized and exploited this potential as early as the 1970s.** For example, the municipal government of Copenhagen (Denmark) began to promote the use of bicycles in the city, partly because of the oil crisis. This included various long-term measures such as infrastructure planning and funding[26], which have now made Copenhagen one of the world's leading cycling hubs.[27] A similar approach was taken in the Netherlands, where using a bicycle instead of a car for traveling to urban destinations results in a 10% time saving today. Driven by civil society's response to high road accident rates, this demonstrates that energy sufficiency measures can yield various societal benefits (such as health and safety improvements) beyond merely saving energy.[28]

As the energy crisis subsides with the reduction in gas and electricity prices, there is a risk that the promotion of energy sufficiency measures will also decline, as was the case in the past. Therefore, it is crucial to quickly learn from past experiences. Beyond being an essential strategy for achieving our climate and environmental goals more easily and cost-effectively, energy sufficiency also strengthens the resilience of our economies by judiciously managing limited resources. It can further help reduce energy system costs by avoiding unnecessary investment in infrastructure and inefficient consumption of resources. Simulations contained within multiple scenarios show that the most ambitious sufficiency assumptions result in the lowest total costs for the energy system.[29] By the same token, sufficiency also helps to reduce our costly dependence on imports, particularly of fossil fuels: in France, the gas bill for 2022 was €46 billion, compared with €8 billion in 2019.[30] Moreover, this approach enables us to tackle social crises such as growing inequalities, while improving our well-being and reducing healthcare costs[31].

Overall, estimates from the General Directorate of Energy and Raw Materials published in 1987 indicated approximately *"34 Mtoe/year of energy had been saved since 1973*

23 Dupont, Françoise. 2018. "Energy and buildings: figures for France since 1950", *Annales des Mines - Responsabilité et environnement*, 90 (2): 5-11. https://doi.org/10.3917/re1.090.0005

24 Art. 2 of Decree 71-1025 of 4 December 1974.

25 Electricity accounted for less than 10% (9.7%) of the final energy consumed, and was primarily produced from oil (40.2%): Energy Agency, International. 2021. "France 2021: Energy Policy Review. *International Energy Agency*. https://www.iea.org/reports/france-2021

26 Héran, Frédéric. 2015. "Why so many cyclists in the Netherlands?" *Urban Transport*, 126: 10-15. https://doi.org/10.3917/turb.126.0010

27 "Cycling strategy: Copenhagen, Denmark - EBRD. Ebrdgreencities. Accessed on 3 May 2024. https://www.ebrdgreencities.com/policy-tool/cycling-strategy-copenhagen-denmark-2/

28 "Stop the Child Murder: How the Netherlands Became Bike Nirvana". November 5, 2014. https://medium.com/@carriekirby/stop-the-child-murder-how-the-netherlands-became-bike-nirvana-416b611be746.

29 European Environmental Bureau, Negawatt, Energy Cities, Association of Cities and Regions for Sustainable Resource Management, Client Earth, Die Rolle von Energiesuffizienz in Energiewende und Gesellschaft, Rescoop.eu, and Jacques Delors Energy Centre. 2024. "Manifesto: A Resilient and Resource-wise Europe: Sufficiency at the Heart of the EU's Future. https://www.negawatt.org/IMG/pdf/sufficiency_manifesto.pdf

30 "148 billion: France's energy import bill has tripled in three years". *Euractiv*. 6 October 2023. https://www.euractiv.fr/section/energie-climat/news/148-milliards-deuros-la-facture-des-importations-energetique-de-la-france-a-triple-en-trois-ans/

31 Wiese, Frauke, Jonas Lage, Luisa Cordroch, Carina Zell-Ziegler, Johannes Thema, Benjamin Best, and Stefan Heiland. 2022. "Why sufficiency? An interdisciplinary perspective" https://osf.io/preprints/socarxiv/bgrp3

compared with the situation that would have resulted from consumption in line with economic growth"[32] given that France's total primary energy consumption in 1973 was around 180 Mtoe.[33] These results **validate the innovative approach adopted at the time, which consisted of responding to the oil supply crisis by, among other things, reducing energy demand** rather than simply substituting supply. However, despite the immediate economic gains, no efforts were made to institutionalize energy sufficiency, a situation that risks repeating itself as the energy crisis subsides.

SUFFICIENCY, A FACTOR OF ECONOMIC RESILIENCE

Thanks in particular to a proactive strategy of diversifying gas supplies[34] coupled with a renewal of the voluntary objective of reducing gas demand by 15%, **the European Union has been able to get through the winter more smoothly**, to the point where gas storage facilities were filled to record levels at the end of the winter.[35] This sense of security is also shared by France, which, with only three nuclear reactors out of operation (compared to 26 at the end of April 2022)[36] and improved hydraulic reserves[37], has once again become the EU's leading net exporter of electricity in 2023.[38] Although reassuring, this observation nonetheless raises the **question of France's ability to avoid a collective demobilisation that would lead to a rebound effect**[39] **in energy consumption.**

Despite this, the call for energy sufficiency has never been more prominent among the French. According to the ADEME[40] barometer from March 2024, **economic reasons significantly outweigh environmental considerations when it comes to implementing energy sufficiency measures.** This result may be attributed to the fact that energy sufficiency has thus far been viewed primarily as a short-term strategy in response to soaring energy prices, rather than a long-term approach involving changes in infrastructure and public policies that would enable a low-carbon lifestyle with high levels of well-being for all.

The current structure of society means that energy sufficiency can involve time and financial costs (e.g., a train journey is still more expensive and slower than a flight). [41] This is all the more damaging given that changes in infrastructure and public policy towards a low-carbon society could bring multiple benefits for everyone. For example, modal shifts towards soft modes of transport such as cycling can improve road safety, make urban spaces more attractive, and offer a range of health benefits for citizens (more active lifestyles and a reduction in noise and

32 Bernard Laponche, 2008. "World energy prospects and challenges. A new paradigm." Retrieved May 3, 2024 https://enda-cremed.org/bpd/opac_css/doc_num.php?explnum_id=244

33 Statista, 2024. "Total primary energy consumption in France from 1973 to 2014" Accessed on 3 May 2024 https://fr.statista.com/statistiques/548259/consommation-totale-energie-primaire-france/

34 Nguyen Phuc-Vinh, Camille Defard, Fiona Breucker. 2022. "Security of gas supply in Europe". Accessed on 5 May 2024. https://institutdelors.eu/publications/la-securite-dapprovisionnement-gaziere-en-europe/

35 Financial Times, 2024. EU exits winter with gas storage at record levels". Accessed on 5 May 2024. https://www.ft.com/content/1ddd28cb-0a8b-4dd6-a981-55c0303d78d0

36 Selectra, 2024. "Nuclear power in France in 2024: production, benefits and risks. 5 May 2024. https://selectra.info/energie/guides/comprendre/nucleaire

37 RTE, 2023. « Bilan électrique 2023 - Production | RTE ». 5 May 2023. https://analysesetdonnees.rte-france.com/bilan-electrique-2023/production#Vuedensemble

38 Le Monde, « La France est redevenue première exportatrice d'électricité en Europe en 2023 ». *Le Monde.fr*. 5 May 2023. https://www.lemonde.fr/economie/article/2024/01/17/la-france-est-redevenue-premiere-exportatrice-d-electricite-en-europe-en-2023_6211385_3234.html

39 The rebound effect means that efficiency gains are often partially or completely offset by a new allocation of resources and money saved, either towards an increase in the same type of consumption or towards other impacting consumption: Parrique, T., J. Barth, F. Briens, C. Kerschner, A. Kraus-Polk, A. Kuokkanen, and J. H. Spangenberg. 2019. "Decoupling debunked - Evidence and arguments against green growth as a sole strategy for sustainability". *European Environmental Bureau*. Accessed May 20, 2024. https://eeb.org/library/decoupling-debunked/

40 ADEME, 2024. «Baromètre Sobriétés et Modes de vie. Accessed 5 May 2024. https://librairie.ademe.fr/changement-climatique-et-energie/6630-barometre-sobrietes-et-modes-de-vie.html

41 Flipo, A, and S Rabourdin. 2023. "In-depth analysis of highly sufficient lifestyles (Deliverable D 3.2). *FULFILL Project*. https://fulfill-sufficiency.eu/wp-content/uploads/2023/07/D3.2_interviews-micro.pdf

pollution).[42] In addition, sufficiency measures aimed at sharing space (inclusive housing,[43] shared accommodation, cohabitation, etc.) can help to combat social isolation, provide services for the elderly, and reduce the cost of housing for all.[44] **Encouraging the development of sufficiency therefore implies highlighting the economic and social benefits before the environmental co-benefits.** It will also depend on the ability of public and private players to embody these changes (reciprocity, setting an example) in order to contribute to their generalisation.

While 83% of French respondents believe that "people consume too much" today in France, only 28% feel personally concerned "at the household level," and 49% believe they could "consume less." **One hypothesis to explain this gap between perception and actual consumption is that energy sufficiency has so far been promoted primarily through "*eco-actions*"**, such as lowering the heating at night or when the home is unoccupied, or turning off lights when leaving a room. Consequently, there is a risk of distorting the concept of energy sufficiency and reducing it to a limited manifestation within the collective imagination. As the "widespread" practice of eco-gestures in households is identified as the sole representation of sufficiency, it perpetuates the illusion of a sufficient lifestyle that is reflected in the perception of the majority of respondents, who believe they "consume slightly less than the average French person" (54%). In fact, if public authorities intend to push the sufficiency agenda further, integrating a necessary structural and sustainable dimension, **it will be crucial to move beyond merely urging simple and individual actions and to create the necessary conditions for its development. While eco-gestures remain useful, they are insufficient as they do not target the main components of the average French person's carbon footprint, such as transportation (see recommendations below) or even food consumption**. Therefore, promoting energy sufficiency requires addressing behavioral aspects by examining the relationship to housing, mobility, and consumption.

Various studies and reports, including those from ADEME, Réseau de Transport d'Électricité (RTE), and négaWatt, as well as the IPCC and the International Energy Agency (IEA),[45] have introduced scenarios involving the role of energy sufficiency in achieving carbon neutrality by 2050. For example, negaWatt estimated that a 28% reduction in final energy consumption by 2050 (compared with 2015) could be achieved.[46] RTE, for its part, was able to forecast savings in electricity consumption of around 25 TWh in 2035 (rising to 60 TWh with significant structural changes) and 90 TWh in 2050 compared with the scenario serving as a baseline.[47] However, as RTE points out, *"this type of scenario (…) is not consensual"*.

Although sufficiency is viewed in a positive light by 41% of French people surveyed[48] and 70% of French people believe that the idea of living well is not incompatible with the idea of sufficiency, it could nonetheless be seen as politically connoted when *"the ecologist electorate and those on the left of the poli-*

42 Wiese, Frauke, Jonas Lage, Luisa Cordroch, Carina Zell-Ziegler, Johannes Thema, Benjamin Best, and Stefan Heiland. 2022. "Why sufficiency? An interdisciplinary perspective" https://osf.io/preprints/socarxiv/bgrp3

43 "Inclusive housing: a shared home and social life". Accessed on 5 May 2024. https://www.pour-les-personnes-agees.gouv.fr/changer-de-logement/autres-solutions-de-logement/habitat-inclusif-un-chez-soi-et-une-vie-sociale-partages

44 Breucker, Fiona, and Charline Dufournet. 2024. "Working Paper with recommendations. *FULFILL*. https://fulfill-sufficiency.eu/wp-content/uploads/2024/05/D7.2_Working-paper-with-recommendations_Final-Version-1.pdf

45 The IEA estimates that all these changes in behaviour can reduce energy-related activity by around 10% to 15%, and account for around 8% of the reduction in emissions between now and 2050 compared with 2020.

46 négaWatt, Association. 2023. « La sobriété énergétique, pour une société plus juste et plus durable ». Accessed on 3 May 2024. https://negawatt.org/IMG/pdf/sobriete-scenario-negawatt_brochure-12pages_web.pdf

47 RTE, 2023. Bilan Prévisionnel 2023-2035 : RTE illuminates the challenges of the major shift towards a low-carbon society". Accessed on 5 May 2024. http://www.rte-france.com/actualites/bilan-previsionnel-transformation-systeme-electrique-2023-2035

48 Against 15% negative, 35% neither positive nor negative and 9% no opinion.

tical spectrum show the greatest willingness to change".[49] **There is a risk that the potential of sufficiency to enhance economic and climate resilience could be undermined by partisan interests**, as was the case in France for renewable energies[50] or on the question of nuclear power,[51] or even leading to what France Stratégie described as *"constrained trade-offs"* with a *"greater political and social cost"*.[52] It therefore seems essential to put these hypotheses up for public debate in order to assess the degree to which the French are receptive to the concept, and then to the resulting measures. For example, in the transport sector, the apparent rejection of a speed limit of 110 km/h on highways can be nuanced by the fact that the Citizens' Convention on Climate had proposed this measure. The same applies to the agricultural sector, particularly the issue of meat consumption.

In accordance with Article L.100-1 A of the Energy Code, the adoption of an Energy and Climate Programming Act is necessary and long overdue. Possibly cross-party, since it was included in the programme of the Nouveau Front Populaire, but also in the "legislative pact" of the Republican Right (ex-LR), such a law is also being called for by a large number of players in the sector, from NGOs to lobbyists. This law would set targets for reducing greenhouse gas emissions, improving energy efficiency in France, and promoting sufficiency. It presents an opportunity to review recent experiences and debate the level of sufficiency that can be implemented in France and under what conditions (timing, leadership, investments, etc.). Although the implementation of sufficiency policies was explicitly mentioned in three political declarations by groups in the National Assembly (MoDem, Les Écologistes, Les Socialistes), it was notably absent from the legislative campaign. This lack of political backing must be addressed to build a cross-party consensus around it. Therefore, indicators and other monitoring tools are necessary to measure the effectiveness of sufficiency measures already in place and those to come—not only to ensure the proper allocation of financial resources but also to make the return on investment visible over time.

II • Sufficiency: a mature discourse to be translated into action

Although the discourse is more mature in France than in the rest of Europe, most of the efforts thus far have largely focused on changes in individual behavior (I) rather than on a structural transformation of collective lifestyles (II).

I THE SUFFICIENCY PLAN: THE MOMENTUM IS THERE…

The plan's focus on reducing energy demand as an independent objective is in itself positive. Until now, the lever of structural demand reduction (efficiency, sufficiency) has remained under-utilised compared to supply-side measures in the fight against climate change, which makes the introduction of a national strategy in favour of energy sufficiency particularly encouraging. The 12% reduction in combined electricity and gas consumption recorded in France between October 2022 and October 2023,[53] taking into account meteorological

49 ADEME, 2024. « SOBRIETE AU QUOTIDIEN : ENTRE ENVIE D'AGIR ET CONTRAINTES QUOTIDIENNES ». 1 March 2024. https://presse.ademe.fr/2024/03/sobriete-au-quotidien-entre-envie-dagir-et-contraintes-quotidiennes.html

50 Carine Sebi, Valeria Fanghella, Joachim Schleich, 2024. "Opinion | Wind energy: why is it so divisive?". Accessed 5 May 2024. https://www.lesechos.fr/idees-debats/cercle/opinion-energie-eolienne-pourquoi-divise-t-elle-autant-2076309

51 Nguyen Phuc-Vinh, 2022. « L'avenir énergétique de la France: quelle politique pour le nouveau quinquennat », *Policy paper*, Paris: Institut Jacques Delors, 21 July. https://institutdelors.eu/wp-content/uploads/2022/07/PP280_Plan-quinquennal_Nguyen.pdf

52 Aude Pommeret, France Stratégie, 2023. "The Economic Impacts of Climate Action - sufficiency". Accessed on 5 May 2024. https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/fs-2023-les_incidences_economiques_de_laction_pour_le_climat-thematique-sobriete.pdf

53 « Sobriété énergétique: cinq annonces pour aller plus loin ». *Info.gouv.fr.* 10 October 2023. https://www.info.gouv.fr/actualite/sobriete-energetique-cinq-annonces-pour-aller-plus-loin

effects, attests to the positive impact of the plan on this objective,[54] even if it does not distinguish between reducing and destroying demand, particularly in the industrial sector. Highly exposed because of their high energy consumption (metallurgy, paper/cardboard, chemicals, manufacture of non-metallic mineral products), some companies have had to reduce their production and therefore their consumption in response to soaring prices.[55] As a result, for the period from October to December 2023, the level of production in certain energy-intensive industries remains, according to INSEE, lower than in the second quarter of 2021 (before the rise in energy prices) *"in the pulp, paper and cardboard (-19.7%), iron and steel (-18.9%), glass and glassware (-13.9%) and basic chemicals (-10.9%) sectors"*.[56] While S&P Global Commodity Insights estimates that "approximately 6 to 10% of European industrial gas demand is lost forever due to demand destruction",[57] energy sufficiency should not be equated with such a phenomenon. To avoid this, more granular monitoring indicators capable of measuring and distinguishing between demand destruction, temporary sufficiency, or structural sufficiency are required to better guide political decision-making.

One of the strengths of the plan lies in its inclusive nature, giving responsibility to a range of players, including the State, public institutions, industry and business. More specifically, as far as the State is concerned, the plan incorporates a welcome symbolic dimension, positioning it as a role model in a logic of leading by example. By highlighting government initiatives, such as turning off the lights of the Louvre Pyramid at 11pm and dimming the façades of the Château de Versailles starting at 10pm, the plan seeks to instil and disseminate a sense of collective responsibility and show citizens that all state stakeholders are participating in the efforts and have a role to play. However, while these measures are symbolically important, they do not result in substantial energy savings and therefore call for reinforcement. Such reinforcement should not come with exemptions for the wealthiest, whose behaviors tend to be the most polluting, as this could undermine the broader public's willingness to accept these efforts. This must also be coupled with exemplary behavior on the part of public authorities. This is especially crucial considering that with "2.5 million employees, 190,000 public buildings, and 400 million meals served,"[58] the public sector holds significant potential for energy sufficiency.

In this respect, the plan for the ecological transformation of the State, presented by the Prime Minister at the end of March 2024, is an interesting and welcome initiative as it targets sectors that have so far been less addressed, such as agriculture and transport. **By involving public sector agents, the State is going further than it has so far envisaged for the rest of the population.** For example, it is encouraging state agents to switch from planes to trains for journeys that can be made in less than 4 hours (there is a ban on flights of less than 2.5 hours), to use lighter vehicles (1.4 tonnes) by removing large SUVs from the fleet, and to change their meals to "healthier, more environmentally-friendly food". Switching to a vegetarian diet can reduce food-related greenhouse gas emissions by

54 Ministry of Ecological Transition. 2023. "ENERGY SUFFICIENCY PLAN". *Ecologie.gouv.fr*. https://www.ecologie.gouv.fr/sites/default/files/22152_Plan-sobriete_DP-2023-if-2.pdf

55 "What impact will the rise in energy prices have on industry?" *Entreprises.gouv.fr*. 22 September 2023. https://www.entreprises.gouv.fr/fr/etudes-et-statistiques/themas-de-la-dge/incidence-hausse-prix-energie-industrie

56 French National Institute for Statistics and Economic Studies. 2024. « En décembre 2023, la production manufacturière augmente de 1,2 % ». *Insee.fr*. https://www.ft.com/content/d040fa26-8b68-429d-baf1-20f922b24edf

57 "What to make of falling gas prices. *Financial Times*. February 29, 2024. https://www.ft.com/content/d040fa26-8b68-429d-baf1-20f922b24edf

58 "Info Contexte - On 28 March, the government will launch its "ecological transformation plan" for the State with great fanfare. March 28, 2024. https://www.contexte.com/actualite/energie/info-contexte-le-gouvernement-lancera-en-grande-pompe-le-28-mars-son-plan-de-transformation-ecologique-de-letat-2_186918.html

45-55%[59] **reduce land use and freshwater use**[60] **and is associated with a lower risk of all-cause mortality, including various forms of cancer, cardiovascular disease and obesity.**[61] With this in mind, a recent World Bank report recommends that high-income countries reduce consumption of animal products by redirecting subsidies from red meat and dairy products to lower-emission alternatives, such as poultry, fruit and vegetables, to take better account of the environmental and health costs to society.[62]

While most of these commitments remain declarative for the time being, they can help to generate greater public support, provided that they are respected. To achieve this, it will be essential to monitor and communicate the results of the experiment to the general public on a regular basis, in order to convince them of the validity of the State's exemplary approach.[63] On this point, the role of the State is crucial in generating a momentum that could then spread to society as a whole, following the example of the promotion of the use of teleworking (30% energy savings per teleworker per day), a measure that was subsequently taken up by some of the CAC 40 companies.[64]

Unlike other member states of the Organisation for Economic Co-operation and Development (**OECD**),[65] France incorporated the concept of sufficiency into its national legislation as early as 2015 within its Energy Transition for Green Growth Law.[66] Although sufficiency is still solely understood in its energy dimension, its legal and historical existence may have helped to facilitate the adoption of the sufficiency plan to ensure the passage of winter. With its fertile intellectual and regulatory groundwork, France has laid solid foundations for the development of sufficiency. However, this development remains incomplete, as demonstrated by the presentation of the transformation plan, which illustrates the State's difficulty in adopting compulsory measures (see below). By advocating an ecology based on "incentives" rather than "constraints", the government is still refusing to give itself the means to achieve its climate ambitions.

…YET THE PLAN NEEDS REFINEMENT

A call for energy-saving measures runs counter to the organisational model of our society. The everyday practices of individuals are shaped by material and social structures,[67] so policies and infrastructures can either promote or hinder sufficiency.[68] Currently, energy wastage is structurally

59 Springmann, Marco, H. Charles J. Godfray, Mike Rayner, and Peter Scarborough. 2016. "Analysis and valuation of the health and climate change cobenefits of dietary change" 113 (15): 4146-51. https://doi.org/10.1073/pnas.1523119113

60 Poore, J, and T Nemecek. 2019. "Reducing food's environmental impacts through producers and consumers" 360 (6392): 987-92. https://doi.org/10.1126/science.aaq0216

61 Gibbs, Joshua, and Francesco P. Cappuccio. 2022. "Plant-Based Dietary Patterns for Human and Planetary Health 14 (8): 1614. https://doi.org/10.3390/nu14081614

62 Sutton, William R., Alexander Lotsch, and Ashesh Prasann. 2024. "Recipe for a Livable Planet: Achieving Net Zero Emissions in the Agrifood System". *World Bank*. Accessed 7 May 2024. https://openknowledge.worldbank.org/handle/10986/41468

63 « Sobriété énergétique : en plein Conseil des ministres, les voitures restent moteurs allumés dans la cour de l'Elysée». *Franceinfo*. 29 July 2022. https://www.francetvinfo.fr/monde/environnement/crise-climatique/sobriete-energetique-quand-les-voitures-des-ministres-restent-moteurs-allumes-dans-la-cour-de-l-elysee_5283592.html

64 All 40 CAC 40 companies have undertaken to adopt quantified targets for reducing energy consumption and to make them public. Thirty-seven of them have also pledged to consider reducing their energy consumption by rationalising teleworking.

65 "Reducing energy sufficiency to changes in individual behaviour would be a fatal mistake". *Le Monde.fr*. 28 July 2022. https://www.lemonde.fr/idees/article/2022/07/28/reduire-la-sobriete-energetique-aux-changements-de-comportement-des-individus-serait-une-erreur-fatale_6136415_3232.html

66 "LAW no. 2015-992 of 17 August 2015 on the energy transition for green growth (1)". Legifrance.gouv.fr. 18 August 2015. https://www.legifrance.gouv.fr/jorf/article_jo/JORFARTI000031044393

67 Evans, David, and Wokje Abrahamse. 2009. "Beyond rhetoric: the possibilities of and for 'sustainable lifestyles'" 18 (4): 486-502. https://doi.org/10.1080/09644010903007369

68 Lage, Jonas. 2022. "Sufficiency and transformation-A semi-systematic literature review of notions of social change in different concepts of sufficiency" 3. https://doi.org/https://doi.org/10.3389/frsus.2022.954660

promoted in various areas,[69] such as urban infrastructures that encourage the use of private cars or train tickets that are more expensive than plane tickets. To encourage people to give up their excessive use of the car in favour of more environmentally-friendly modes of travel, appropriate infrastructure to facilitate the use of bicycles, public transport and affordable trains are essential. In France, cycling infrastructure represents the area requiring the greatest investment at local level for the climate.[70] In a bid to make savings of the order of €10 billion by 2024, the government has decided to cut €400 million from the Green Fund, even though this fund is intended to finance the ecological transition of regions.[71] More broadly, **this raises questions about the ability to finance sufficiency measures in a period of budgetary austerity** (between €12 and €20 billion in savings by 2025), which limits investment. Any additional budgetary savings on the transition will result in increased greenhouse gas emissions. Thus, a downside of the sufficiency plan is **the lack of dedicated investments in infrastructure that could offer alternatives to high-emission behaviors.**

The absence of binding measures in the current sufficiency plan, combined with high energy prices, entails the risk that less well-off households will be forced to make energy savings, while more affluent players may choose to maintain their over-consumption. As far as households are concerned, 59% of consumers say they are restricting their energy consumption, mainly to reduce their bills.[72] This finding is confirmed by the large-scale survey carried out by IPSOS for RTE, which found that 79% of respondents cited financial arguments as the reason for their efforts to reduce energy consumption.[73] In Europe, the carbon footprint of the richest 10% is six times higher than that of the poorest 50%.[74] By limiting over-consumption and supporting vulnerable households and small businesses, sufficiency appears to be a potential vector for reducing social inequalities. While a majority of French people surveyed (57%) believe that *"adopting more sober lifestyles collectively would help to reduce inequalities"*, the fact that there is a correlation between the connotation of the term sufficiency and the intensity of the budgetary constraint felt by individuals[75] illustrates the role that sufficiency can play in a logic of social justice. For example, air travel in the EU is mainly undertaken by the richest 10% of households. The rest of the population (the remaining 90%) emit just 0.1 tCO_2eq/cap[76] while air travel by the richest 1% emits 22.6 tCO_2eq/cap. In order to tax air travellers, the introduction of a kerosine tax at European level through the revision of the energy taxation directive[77]

69 Kuss, Paula, and Kimberly A. Nicholas. 2022. "A dozen effective interventions to reduce car use in European cities: Lessons learned from a meta-analysis and transition management." 10 (3): 1494-1513. https://doi.org/10.1016/j.cstp.2022.02.001

70 Colin, Aurore, Axel Erba, Morgane Nicol, and Claire Abbamonte. 2023. « Collectivités: les besoins d'investissements et d'ingénierie pour la neutralité carbone ». Institute for climate economics (I4CE). Accessed on 2 May 2024. https://www.i4ce.org/publication/collectivites-investissements-ingenierie-neutralite-carbone-climat/

71 "Ecological planning hit by crises". *Le Monde.fr*. 23 March 2024. https://www.lemonde.fr/planete/article/2024/03/23/la-planification-ecologique-percutee-par-les-crises_6223713_3244.html

72 « Baromètre énergie-info 2022 du médiateur national de l'énergie ». National Energy Ombudsman. 2022. https://www.energie-mediateur.fr/wp-content/uploads/2022/10/synthese-barometre-energie-info-2022-mediateur-national-de-lenergie-1.pdf

73 Ipsos, and RTE. 2023. "Study on the decision-making mechanisms of the French with regard to energy consumption". *Ipsos France*. https://www.ipsos.com/sites/default/files/ct/news/documents/2023-06/Ipsos%20RTE%20-%20Enque%CC%82te%20Consommation%20%26%20Production%20e%CC%81nerge%CC%81tique%20-%202023.pdf

74 Chancel, Lucas, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman. 2023. «World Inequality Report 2022. *World Inequality Lab*. Accessed on 2 May 2024. https://wir2022.wid.world/www-site/uploads/2023/03/D_FINAL_WIL_RIM_RAPPORT_2303.pdf

75 "Climate: the French expect greater involvement from the State". 2 May 2024. https://infos.ademe.fr/lettre-strategie/climat-les-francais-attendent-une-plus-grande-implication-de-letat/

76 Ivanova, Diana, and Richard Wood. 2020. "The unequal distribution of household carbon footprints in Europe and its link to sustainability" 3 (May): e18. https://doi.org/10.1017/sus.2020.12

77 Letta, Enrico. 2024. "Much more than a market. https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf

or, in case of failure, a tax on frequent flyers should be considered.

Standards can also play a key role in guiding behaviour by directly influencing the composition of supply. For example, one of the measures proposed by the members of the Citizens' Climate Convention was the introduction of a weight limit for cars[78], targeting luxury consumption and placing responsibility on producers rather than consumers. This finding is supported by the results of the 2023 edition of the "Fractures Françaises" survey, which found that the French believe that limiting climate change should be based primarily on *"changing the way companies produce"* (36%), followed by *"making major changes to our lifestyles"* (29%), ahead of *"technical progress and scientific innovations"* (15%).[79] Indeed, carmakers have adopted a business model based on ever larger vehicles, sold at higher prices to ensure greater profit margins.[80] Yet reducing the weight of vehicles, particularly *Sport Utility Vehicles* (**SUVs**), has a number of benefits, such as optimising fuel consumption (energy efficiency)[81], reducing accidents[82], reducing pollution[83], reducing the consumption of critical materials[84] and reducing road space. [85]

Companies are the main buyers on the new car market. They therefore have a strong influence on supply, since 78% of French citizens buy their vehicles on the second-hand car market.[86] **Policies aimed at regulating car size and weight should therefore primarily target companies.**[87] Targeting the electrification of the company car fleet first (following the example of leasing companies) is also in line with a rationale of social justice, since it will ultimately facilitate access to this type of mobility through the secondary market for less well-off households.[88] Moreover, sufficiency would also bring economic benefits. For instance, the French Treasury has estimated that *"a lack of sufficiency in private vehicle demand would increase investment needs by up to €19 billion per year across all types of engines."*[89]

Various studies[90] coupled with the experiences of citizens' assemblies have shown

78 "The proposals of the Citizens' Climate Convention". *Citizens' Climate Convention.* https://www.lecese.fr/sites/default/files/pdf/Convention/ccc-rapport-final.pdf

79 Teinturier, Brice, Mathieu Gallard, and Pierre Latrille. 2023. "Fractures françaises 2023" - 11th edition. Ipsos/Sopra Steria for Le Monde, Fondation Jean Jaurès, Cevipof and Institut Montaigne. https://www.ipsos.com/sites/default/files/ct/news/documents/2023-10/Ipsos-Sopra_Steria-Fractures_francaises_2023-Rapport_complet.pdf

80 Meilhan, Nicolas. 2019. "How to finally lower CO_2 emissions from cars". *La note d'analyse N.78.* France Stratégie. https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/fs-na78-2019-emissions-voitures-meilhan-20juin-bat.pdf

81 Ibid.

82 Fehr, M.. 2020. "SUV - big engines, big dangers". Accessed on 20 May 2024. https://www.axa.ch/fr/ueber-axa/blog/mobilite/axa-crash-tests-recherche-accidentologique-suv-trottinette-electrique.html

83 "Particulate matter in outdoor ambient air. 2019. "Particulate Matter in Outdoor Ambient Air. ANSES. https://www.anses.fr/fr/system/files/AIR2014SA0156Ra.pdf

84 négaWatt, Association. 2023. "Lithium: towards a necessary sufficiency". https://negawatt.org/IMG/pdf/221104_note_lithium_final__en.pdf

85 T&E. 2024. "Cars are getting 1 cm wider every two years - research". https://www.transportenvironment.org/discover/cars-are-getting-1-cm-wider-every-two-years-research/

86 T&E. 2023. "How leasing companies can become a key driver of affordable electric cars in the EU". https://www.transportenvironment.org/wp-content/uploads/2023/11/How-leasing-companies-can-become-a-key-driver-of-affordable-electric-cars-in-the-EU.pdf

87 Breucker, Fiona, and Charline Dufournet. 2024. "Working Paper with recommendations". *FULFILL.* https://fulfill-sufficiency.eu/wp-content/uploads/2024/05/D7.2_Working-paper-with-recommendations_Final-Version-1.pdf

88 T&E. 2023. "How leasing companies can become a key driver of affordable electric cars in the EU". https://www.transportenvironment.org/wp-content/uploads/2023/11/How-leasing-companies-can-become-a-key-driver-of-affordable-electric-cars-in-the-EU.pdf

89 GOURMAND, Logan. 2024. "What investment is needed to meet France's 2030 decarbonisation targets?" *Trésor-Éco No. 342.* Direction générale du Trésor. https://www.tresor.economie.gouv.fr/Articles/309d3166-4dff-46b0-8322-8773134c5937/files/3403c1d0-20f8-4569-b567-24180544cf11

90 Carattini, Stefano, Maria Carvalho, and Sam Fankhauser. 2017. "How to make carbon taxes more acceptable". Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science. https://www.lse.ac.uk/granthaminstitute/publication/make-carbon-taxes-acceptable/

that socially just sufficiency measures are likely to gain public support. Consequently, the government should not shy away from introducing more binding measures. A recent OECD study shows that public approval of climate policies depends on the perception of the policy's impact on reducing inequalities, its perceived effectiveness in reducing emissions, but also on how it will affect households (gains/losses)[91] . Sufficiency was a key focus of proposals from the citizens' consultation on the future of Europe. In October 2021, a hundred randomly selected citizens from eighteen regional conferences on the future of Europe produced a national summary of their proposals. *"Developing energy sufficiency to consume less by eliminating the superfluous"* was the measure most voted for.[92] Finally, a comparison between the Citizens' Assemblies and the National Energy-Climate Plans shows that citizens are more inclined to support sufficiency policies than many governments dare to include in their plans. The recommendations of the Citizens' Assemblies highlight a significantly higher proportion of sufficiency-oriented policies (three to six times more), with a greater emphasis on regulatory measures than the NECPs. 39% of the mitigation policies proposed by citizens are sufficiency measures. **This suggests that the current underutilization of sufficiency as a decarbonisation tool is not the result of a lack of public legitimacy**. On the contrary, these findings indicate that **there is public demand for an intensification of sufficiency policies and for regulatory change in climate change mitigation strategies.**[93]

III • From crisis management to a long-term strategy: unlocking the full potential of sufficiency

As demonstrated above, the sufficiency plan launched in June 2022 incorporates valuable short-term crisis management strategies, but misses the opportunity to introduce long-term sustainable changes in the way we consume energy. The plan relies heavily on voluntary measures, and suffers from a lack of binding regulation and investment in infrastructure to enable sustainable changes in behaviour towards lower-emission practices. Drawing on the lessons of past experience, a new version of the sufficiency plan should meet a number of criteria that we identify below if it is to help build, promote and perpetuate a shared vision[94] in France and Europe. The **aim here is to ensure that sufficiency finds its place alongside fossil fuel substitution and energy efficiency to enable France to meet its climate commitments.**

Methodology and recommendations for the next sufficiency plan:

1. **Emphasise the multiple benefits** (whether social, economic, health-related, linked to competitiveness or safety) generated by sufficiency policies, by **conducting systematic assessments quantifying these benefits as well as the costs avoided.** These policies should be integrated into the broader discussion of France's future energy strategy (Stratégie Française pour l'Énergie et le Climat).

2. **Shift from incentives to binding measures.** Transition from merely incentivizing sufficiency to implementing binding standards. Currently, sufficiency is addressed through incentives (communication, plans), which is insufficient for establishing structural sufficiency. For

91 Dechezleprêtre, A., et al (2022), "Fighting climate change: International attitudes toward climate policies", *OECD Economics Department Working Papers*, No. 1714, OECD Publishing, Paris. https://doi.org/10.1787/3406f29a-en

92 Conference on the future of Europe. 2021. "The future is in your hands - Citizens' contribution to the Conference on the Future of Europe". https://www.vie-publique.fr/rapport/282723-contribution-citoyenne-la-conference-sur-l-avenir-de-l-europe

93 Lage, Jonas, Johannes Thema, Carina Zell-Ziegler, Benjamin Best, Luisa Cordroch, and Frauke Wiese. 2023. "Citizens call for sufficiency and regulation - A comparison of European citizen assemblies and National Energy and Climate Plans" 104: 103254. https://doi.org/10.1016/j.erss.2023.103254

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effectiveness and to generate a virtuous societal dynamic, these standards should:

- **Favour binding rather than voluntary measures to** ensure that everyone makes a fair contribution. The absence of binding measures, combined with high energy prices, entails the risk that low-income households will be forced to make energy savings, while more affluent players may choose to maintain their over-consumption,
- **Target the biggest emitters first,** in the interests of social justice (State, large companies, wealthy households),
- **Target the supply side** before individual households in **order to encourage the development of low-impact alternatives**, as people's choices are influenced or even dictated by the nature of the supply, whereas large companies have more room for manoeuvre in economic decisions than individuals.
- **Apply gradually:** Implement standards progressively, especially when affecting vulnerable households, and provide support until viable alternatives are available.
- **Ensure effective enforcement:** Implement effective monitoring with sanctions for non-compliance.

3. **Invest in infrastructure** to offer alternatives that encourage low-carbon behaviour.

In terms of concrete public policies, the series of recommendations could be translated as follows:

1. The first recommendation is to **systematically highlight the co-benefits of adopting energy sufficiency measures**. This requires the adoption of monitoring indicators and the implementation of a regular evaluation system;

This concerns the presentation stage (communication), the operational implementation stage and, above all, **the public policy evaluation stage, which will require the adoption of indicators that can be used to monitor over time, evaluate and put a figure on the many benefits generated by the deployment of a sufficiency policy, be they economic, social or even linked to health or safety considerations**. Being able to assess these co-benefits will make it possible to avoid short-term economic trade-offs that fail to take into account the fact that the returns on investment from sufficiency policies are more diffuse.

By way of example, the government has estimated that €150 million will be saved between 2022 and 2023 as a result of the[95] energy sufficiency plan for government buildings. **This type of estimate should be extended to all sectors, so that we can objectively measure the benefits of energy sufficiency and identify areas for improvement.** For example, it is essential to assess the benefits of energy-saving measures in terms of their ability to avoid future health or social costs. In 2018, the economic costs generated by pollution in France were estimated at around 2% of annual GDP.[96] Pollution increases health costs and economic productivity due to work absences and the increased risk of illnesses such as respiratory diseases and lung cancer, as well as related premature deaths[97] estimated at more than 230,000[98] per year. As a result, sufficiency measures that help to reduce pollution, such as bike lanes or incentives to use smaller vehicles, appear to be economically sound choices. This should also help to reopen the debate on the application of the "polluter pays" principle in France, particularly through the carbon tax, provided that the revenue from the latter is fully redistributed towards the energy transition and

95 "Presentation of the State's ecological transformation plan". Info.gouv.fr. 28 March 2024. https://www.info.gouv.fr/dossier-de-presse/presentation-du-plan-de-transformation-ecologique-de-letat

96 "Infographic: The Economic Burden Of Air Pollution". Statista. February 13, 2020. https://www.statista.com/chart/20804/costs-of-air-pollution-from-fossil-fuels

97 Myllyvirta, Lauri. 2020. "Quantifying the Economic Costs of Air Pollution from Fossil Fuels". Centre for Research on Energy and Clean Air (CREA). https://energyandcleanair.org/wp/wp-content/uploads/2020/02/Cost-of-fossil-fuels-briefing.pdf

98 "The number of premature deaths due to air pollution continues to fall in the EU, but further efforts are needed to achieve an environment free of toxic substances". European Environment Agency. 3 August 2023. https://www.eea.europa.eu/fr/highlights/le-nombre-de-deces-prematures#:~:text=Selon%20les%20derni%C3%A8res%20estimations%20de,de%205%20%C2%B5g%2Fm3

particularly the most vulnerable households. In concrete terms, the forthcoming proposals detail a series of effective measures that could be rapidly adopted in the transport sector, given the French political context.

2. **Adopt Binding Standards**
   Implement targeted binding standards to encourage the purchase of electric vehicles (efficiency logic) and smaller-sized vehicles (sufficiency logic), while also facilitating the development of alternatives through investments in dedicated infrastructure.

Currently accounting for almost a third (32%)[99] of national greenhouse gas emissions, the transport sector is likely to be the catalyst for a number of sufficiency policies, particularly with regard to the use of private vehicles and the promotion of alternatives to their use, which are still responsible for more than half (52.3%) of the sector's emissions.

As the International Energy Agency has pointed out, *Sport Utility Vehicles* (**SUVs**) on the road worldwide generate almost one billion tonnes of CO_2.[100] Put another way, if SUVs were a country, it would be the world's sixth biggest emitter.[101] In Europe, however, sales of SUVs continue to grow[102], despite the fact that on average they emit between 10%[103] and 20%[104] more CO_2 than other types of vehicle, to the extent that in France almost one in two vehicles registered is an SUV (47%).[105] In addition to a predominantly urban profile (80%), SUV buyers are almost equally divided between businesses (52%) and private individuals (48%), who are almost exclusively in the so-called affluent categories (88%).[106] SUVs are a high emitting luxury good, reserved for those with the most money, so they provide a concrete case study for testing our proposed methodology.

Binding regulations, such as the ecological bonus-malus system, are essential for implementing a sufficiency approach aimed at reducing vehicle weight by increasing their purchase and operating costs. This should be done progressively, without exemptions, and with a clear prioritization of goals (electrification, vehicle weight, vehicle value). **In order to change the way cars are sold, a law** should also **be passed banning advertising for SUVs**, as recommended by the Citizens' Climate Convention.[107] Bearing in mind that carmakers make more margin on this type of vehicle, this ban could be **phased in gradually between now and 2030**, and the industry could be forced to gradually reduce the percentage of advertising expenditure allocated to this type of vehicle, with penalties for non-compliance. In 2019, more than 40% of the automotive industry's advertising budget was devoted to promoting SUVs.[108] Here, the aim should be to encourage the development of lighter vehicles, which would ultimately reduce the need for investment, as the French Treasury

99 CITEPA, 2024. "France further reduces its CO_2 emissions in 2023". 1 January 2023. https://www.ecologie.gouv.fr/france-reduit-encore-emissions-co2-en-2023.
100 "Cars and Vans - Energy System". 2023. "Cars and Vans - Energy System". International Energy Agency (IEA). 11 July 2023. https://www.iea.org/energy-system/transport/cars-and-vans
101 "Global SUV sales set another record in 2021, setting back efforts to reduce emissions - Analysis". International Energy Agency (IEA). 5 May 2021. https://www.iea.org/commentaries/global-suv-sales-set-another-record-in-2021-setting-back-efforts-to-reduce-emissions
102 "Cars and Vans - Energy System". 2023. "Cars and Vans - Energy System". International Energy Agency (IEA). 11 July 2023. https://www.iea.org/energy-system/transport/cars-and-vans
103 "Worrying trend towards heavily polluting SUVs undermines carmakers' sustainability claims". Transport & Environment. 6 September 2021. https://www.transportenvironment.org/discover/worrying-trend-towards-heavily-polluting-suvs-undermines-carmakers-sustainability-claims/
104 "Global SUV sales set another record in 2021, setting back efforts to reduce emissions - Analysis". International Energy Agency (IEA). 5 May 2021.
105 « Le SUV, nouvel empereur décrié du marché automobile français ». Accessed on 3 May 2024. https://www.lesechos.fr/industrie-services/automobile/le-suv-nouvel-empereur-decrie-du-marche-automobile-francais-2044423
106 "Press release 1 July 2023: French car market: recovery in first half of the year". AAA DATA. 1 July 2023. https://www.aaa-data.fr/actualites/communique-de-presse-1er-juillet/
107 "The proposals of the Citizens' Climate Convention". *Citizens' Climate Convention.* https://www.lecese.fr/sites/default/files/pdf/Convention/ccc-rapport-final.pdf
108 "The SUV, a scourge for the climate and the wallet". *WWF*. 5 May 2024. https://www.wwf.fr/sengager-ensemble/relayer-campagnes/stop-suv

has pointed out, stating that *"less sufficient demand for private vehicles would increase investment requirements by up to €19 billion per year, all engines combined"*.[109]

In addition to the environmental and economic benefits, a sufficiency policy for thermal vehicles, favoring smaller and lighter cars (though it would be preferable if manufacturers transitioned to electric vehicles now), would reduce France's geopolitical dependence on imported oil, which constitutes over 40% of our daily energy consumption.[110] In case of an oil price surge (e.g., due to Middle Eastern conflicts), this would reduce the cost to the national budget of setting up a mechanism to subsidise the consumption of fossil fuels, as was the case with the fuel allowance. A policy of sufficiency for electric vehicles (desirable, in a logic of substitution of oil by electricity) would consist of reducing the weight of the battery, making it possible to improve energy security since the availability of metals in the short term is limited.

To be fully effective, this sufficiency policy should be coupled with incentives for car-sharing and the development of alternative modes of transport (public transport, cycling, short-distance urban planning, etc.), to reduce the need to rely solely on the private car. At the same time, measures to promote the electrification of the car fleet are also needed. To this end, the Adam bill sought to **impose progressive electrification thresholds for company fleets of more than 100 vehicles. This had the dual advantage of making large emitters (companies) contribute, while at the same time introducing a logic of social justice that would ultimately facilitate access to this type of mobility through the secondary market for low- and middle-income households.**[111] The proposal also included stringent controls and sanctions. In line with the approach we are proposing, it seems appropriate to resume the discussions from where they were before the Assembly's dissolution, to save time and build political consensus.

3. **Investing to enable the emergence of less carbon-intensive alternatives**

Responding to the issue of **reducing the use of polluting modes of transport** (car, planes) requires **investment in infrastructure that will ultimately lead to changes in behaviour towards more sustainable practices** (secure bike paths, bike parking, etc.). Given the amount of expenditure required[112], these measures will have to be optimised by incorporating a better urban planning approach that is less focused on the individual car, as seen in Copenhagen's development of bike lanes after the first oil shock. Another example could be car parks at the entrances to large urban areas and next to public transport stops. They will also need to be implemented as quickly as possible, in line with the progressive approach to binding measures that we recommend. Among the avenues of financing, **the introduction of kerosene tax at European level through the revision of the energy taxation directive**[113] would make it possible to mobilise part of the investment needs (34.2 billion in potential revenue in 2022 according to T&E[114]). The revenue could, for example, be allocated directly to financing night trains, since it

109 GOURMAND, Logan. 2024. "What investment is needed to meet France's 2030 decarbonisation targets?" *Trésor-Éco No. 342*. Direction générale du Trésor. https://www.tresor.economie.gouv.fr/Articles/309d3166-4dff-46b0-8322-8773134c5937/files/3403c1d0-20f8-4569-b567-24180544cf11

110 Nguyen P.-V. 2022. « L'avenir énergétique de la France: quelle politique pour le nouveau quinquennat », *Policy paper*, Paris: Institut Jacques Delors, 21 July.

111 T&E. 2023. "How leasing companies can become a key driver of affordable electric cars in the EU. https://www.transportenvironment.org/wp-content/uploads/2023/11/How-leasing-companies-can-become-a-key-driver-of-affordable-electric-cars-in-the-EU.pdf

112 For local and regional authorities: €3.3 billion for cycling facilities and €2 billion for rail infrastructure, according to Colin, Aurore, Axel Erba, Morgane Nicol and Claire Abbamonte. 2023. « Collectivités: les besoins d'investissements et d'ingénierie pour la neutralité carbone ». Institute for climate economics (I4CE). Accessed on 2 May 2024.

113 Letta, Enrico. 2024. "Much more than a market". https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf

114 T&E. 2023. "Aviation tax gap". https://te-cdn.ams3.digitaloceanspaces.com/files/tax_gap_report_July_2023.pdf

has been shown that they encourage more passengers to switch from air to rail.[115]

In September 2023, Emmanuel Macron announced[116] the introduction of a "rail pass" to encourage the growth of rail travel. For a flat rate of around 50 € a month, this would give all travellers unlimited use of the entire regional train network in France (Regional Express Transport and Intercités). Scheduled for the summer of 2024[117], this scheme mirrored the German initiative launched in May 2023 which, at a time of rising energy prices, aimed to reduce the pressure on citizens and encourage them to use public transport (the "German ticket" also giving access to buses and underground trains). However, the initial ambition was largely scaled back due to considerations linked to the financing of the measure and the state of the French rail system. As a result, the initiative will only be valid between June and September, and will only concern young people under the age of 27 (around 700,000 according to SNCF estimates). Once again, this illustrates the **persistent tension between the desire to balance public accounts and investment in the energy transition.** However, on the basis of feedback from Germany, it is possible to highlight the effectiveness of such a system: **a modal shift from cars to public transport has been observed without inducing a general increase in mobility following the introduction of the German ticket".**[118] Once the French experiment has been completed, **the government and the regions will need to carry out a rapid assessment to quantify the benefits (revenue from tourism, tCO_2/€ avoided, success of the measure[119], etc.), compare them with the total cost of the measure and assess whether the measure should be renewed, in particular by extending its scope to the whole population and over the whole year.** Such a policy will also need to go hand in hand with investment in modernising and extending the network to make it a credible alternative to more carbon-intensive modes of transport.

Another sufficiency measure in the public debate is the idea of *"lowering the speed limit on motorways to 110 km/hour"* (compared with 130 km/hour at present), which is seen as a controversial topic by many politicians. Despite the fact that drivers are expected to save 25% on petrol, which represents a 7% reduction in petrol costs (all journeys included), the extension of the journey by only 8 minutes over 100 km[120] seems to hinder the acceptability of the measure. In fact, in 2023, only 46% of French people[121] expressed support, according to the annual ADEME barometer. The example of the Netherlands, where the speed limit on motorways is 100 km/h during the day because of the high levels of nitrogen oxide throughout the country[122], is enlightening. The measure now enjoys a high level of support from the public despite initial resistance (46% said they were prepared to ignore the

115 Gabert, Alexandre, Yves Marignac, Mathilde Djelali, Charline Dufournet, and Aurore Flipo. 2024. "Integration of SSH findings in quantified sufficiency assumptions for decarbonisation pathways (Deliverable D5.3)". *FULFILL*. https://fulfill-sufficiency.eu/our-research/

116 "HugoDécrypte's interview with Emmanuel Macron. 4 September 2023. https://www.youtube.com/watch?v=3Z6HnUJ3hcw&t=1291s&ab_channel=HugoD%C3%A9crypte-Grandsformats

117 "The future "Rail Pass" will be aimed at all passengers, "whatever their age", says Clément Beaune". *Franceinfo*. 7 September 2023. https://www.francetvinfo.fr/economie/transports/le-pass-rail-sera-destine-a-tous-les-voyageurs-quel-que-soit-leur-age-affirme-clement-beaune_6048554.html

118 According to a study by Fraunhofer ISI „Nachhaltige Mobilität: Wie sich Gewohnheiten ändern können". May 1, 2024. https://www.isi.fraunhofer.de/de/presse/2024/presseinfo-14-mobilkult-deutschlandticket-nachhaltigkeit.html : Among holders of the "German ticket", the proportion of journeys made by public transport increased by 9% (from 29% to 38%), while car use fell by 5%. In addition, the total number of journeys made has not increased.

119 By way of example, a similar experiment in 2020 allowing 12-25 year-olds to travel unlimited on the TER network for €29 a month attracted 70,000 people, compared with the 10,000 initially expected.

120 Negawatt (2018). *Energy sufficiency Towards a more sustainable and fair society.* https://negawatt.org/IMG/pdf/181029_energy-sufficiency_negawatt-scenario_eng.pdf

121 ADEME. (2022). *Social representations of climate change: 23rd wave of the barometer.* https://librairie.ademe.fr/ged/7474/barocc-vague23-2022-rapport.pdf

122 "Netherlands reluctantly introduces new speed limit". Deutsche Welle. March 16, 2020. https://www.dw.com/en/netherlands-reluctantly-introduces-reduced-speed-limit/a-52796095

measure even if it meant being fined[123]) and has led to a 16% reduction in accidents involving injuries and fatalities.[124] In France, the pattern of approval could be similar, given that speed limits were one of the measures suggested by the Citizens' Climate Convention. Nevertheless, it might be wise to roll out such a measure gradually, starting by reducing the maximum speed limit by 10km/h "on the national and departmental road network consisting of single two-way carriageways", where the socio-economic gain (€230 million) has been estimated to be the highest[125] by the Commissariat Général au Développement Durable. In particular, this would make it possible to assess the level of public receptiveness, while allowing sufficient time for alternative solutions to emerge as a result of infrastructure investment.

Conclusion

Unable - until now - to build a self-sustaining national policy sequence around the goal of carbon neutrality (as evidenced by the three successive postponements of the Ecological Planning Councils in the summer of 2023), France is looking for a transparent narrative that will enable it to give substance to its *"French-style ecology"*. In this respect, it cannot forgo the leverage that sufficiency represents, which could contribute to reducing emissions "by between *12% and 17%*"[126] according to the Pisani-Ferry - Mahfouz report.[127] The promotion and gradual deployment of the measures described above (a methodology based on highlighting the co-benefits of a low-energy policy, the adoption of restrictive measures targeting the purchase of smaller and lighter electric vehicles, investment in infrastructure to enable the emergence of alternatives) will make it possible to **strengthen the credibility of the sufficiency narrative and make it a permanent feature, alongside energy efficiency and fossil fuel substitution policies, as a fully-fledged pillar of French ecology. This kind of narrative is not only ecological, it is also economic, social, health, security and geostrategic. It will be nourished by concrete achievements based on promoting equity**[128], exemplarity, and the reduction **of inequalities**. Provided that these aforementioned imperatives are respected (see methodology), the need for maintaining sufficiency is part of a societal project that goes beyond the ecological transition. The forthcoming consultations (on the French climate and energy strategy, during the regional Conferences of the Parties (**COP**)[129]), and the necessary adoption of a Climate and Energy Programming Act are all opportunities to examine the degree of commitment of the French people to implementing genuinely sufficiency-oriented policies, and the conditions under which change in lifestyles can take place.[130] Studies show that when citizens are better informed and more involved in the decision-making

123 "Netherlands reluctantly introduces new speed limit". Deutsche Welle. March 16, 2020. https://www.google.com/url?q=https://www.dw.com/en/netherlands-reluctantly-introduces-reduced-speed-limit/a-52796095&sa=D&source=docs&ust=1714984120235382&usg=AOvVaw0qFwHE2wxPyyuEx4Cqy-mf

124 Caspari, Lisa. 2024. „Gefährliches Exil. *Nachrichtenpodcast: Was jetzt?* Hamburg: Die Zeit. Accessed 5 May 2024. https://www.zeit.de/politik/2024-03/leonid-wolkow-alexej-nawalny-putin-kritiker-nachrichtenpodcast

125 Commissariat général au développement durable. 2018. "Reducing speeds on the roads". https://www.ecologie.gouv.fr/sites/default/files/Th%C3%A9ma%20-%20R%C3%A9duction%20des%20vitesses%20sur%20les%20routes.pdf

126 Pisani-Ferry, Jean, and Selma Mahfouz. 2023. "The Economic Impact of Climate Action". *France Stratégie.* https://www.strategie.gouv.fr/sites/strategie.gouv.fr/files/atoms/files/2023-incidences-economiques-rapport-pisani-5juin.pdf

127 Ibid.

128 Saujot Mathieu, and Andreas Rüdinger. 2022. « Un besoin urgent de faire rimerété et solidarité ». IDDRI. https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/D%C3%A9cryptage/202210-IB0222-sobriete%20solidarite.pdf

129 "Ecological planning at regional level". *Info.gouv.fr.* 3 April 2024. https://www.info.gouv.fr/france-nation-verte/la-planification-ecologique-a-lechelle-des-territoires

130 Saujot Mathieu, Nasr Clémence, Brocard Charlie, Bet Marion, Dubuisson-Quellier Sophie, « Quand on peut on veut, une approche de la transition par les modes de vie », forthcoming, June 2024.

process, they are more likely to support sufficiency policies.[131][132] **The acceleration of the ecological transition depends on this ability to bring about a shared understanding of sufficiency as a common value; and so does France's capacity to effectively '*forge a nation*'.**

131 Barbas, Alicia, and Fiona Breucker. 2024. "Report on citizen engagement activities (Deliverable D 7.1)." *FULFILL Project.* https://fulfill-sufficiency.eu/wp-content/uploads/2024/03/D7.1_Report-on-citizen-engagement-activities.pdf

132 Alexander-Haw, Abigail, Dütschke, Elisabeth, Janβen, Hannah, Schleich, Joachim, Tröger, Josephine and Mareike Tschaut. 2024. "Report on long term effects of sufficiency lifestyles and governance approaches for diffusion - preliminary (Deliverable D 3.3)." *FULFILL Project.* https://fulfill-sufficiency.eu/wp-content/uploads/2024/01/D3.3-preliminary-incl-Annex.pdf

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