

TRANSPORT / EUROPE #7



SUFFICIENCY OF TRANSPORT SYSTEMS: TRANSLATIONS IN EUROPE?

This collective thinking about sufficiency continues on from the discussion of the decarbonization of transport, the subject of the preceding issue of the review (#6). It shows a particular diversity in the way in which this issue is addressed – or is not addressed as such! – in the observed countries, and this diversity is more pronounced than when the OPSTE (Observatoire des Politiques et Stratégies de Transport en Europe / Observatory on Transport Policies and Strategies in Europe) considers more precise topics, whether technical or legal. The notion of *sobriété*, which can be understood in the broad sense in French, has no direct equivalent in other European languages – even the Latin languages. It thus appears as a rather abstract political - or even conceptual - notion, which allows us to explore issues that pertain to political and social culture, which underlie the issues of mobility generally addressed by the observatory.

To prepare this newsletter, the OPSTE met by videoconference in two three-hour sessions on October 19 and 26, 2022.

SUFFICIENCY AND TRANSPORT IN EUROPE

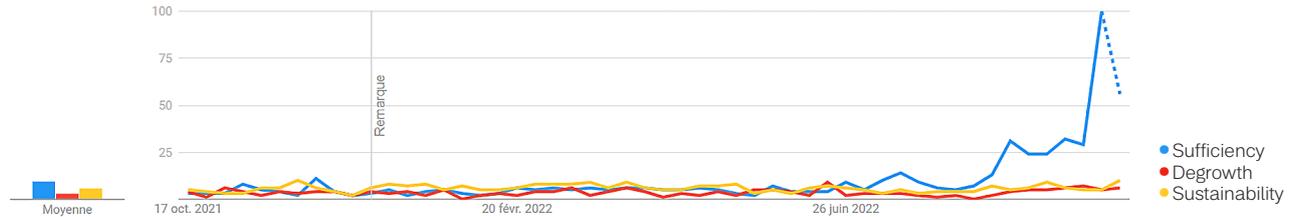
Sobriété : the word and the concept

The word *sobriété* comes from the Latin word *sobrietas* which means temperance in the consumption of wine and, more broadly, moderation, prudence (source: [Le Trésor de la langue française informatisé](#)). This broad use of the word *sobriété* is not found in other European languages, not even in Spanish and Italian.

However, the notions of savings (of energy or more broadly of resources), moderation, temperance (avoiding

excess and luxury on the one hand, austerity and deprivation on the other), have meaning in all of the countries observed by the OPSTE.

The idea is not to translate the notion of *sobriété* or moderation into the various European languages as a linguist would do, such as *Mäßigkeit* in German, sufficiency in English (as in the reports of the IPCC), *μετριοπάθεια* in Greek, *matigheid* in Dutch, *powściągliwość* in Polish, *måtta* in Swedish, without forgetting *sobriété*, *sobrietà* and *sobriedad* in the Latin languages.



Occurrence of the terms *sobriété*, degrowth and sustainability on search engines. France, October 2021 – October 2022

Source : Google trends

The difficult translation of the concept of *sobriété*

The notion of *sobriété*, when it is applied to energy consumption or transport, does not seem to have an exact equivalent outside of France. Translating it into English is not so easy, but some possibilities could be: “Sobriety,” “sober use,” “austerity,” “conservancy,” “moderation,” and “temperance ».

This concept includes ways of avoiding or reducing energy expenses, whether through technical and industrial improvements or through changes in individual or collective behaviors. For example, we can choose to travel using a low-emission vehicle, such as an electric car or a train, we can combine two trips to reduce the total distance travelled, or we can choose not to make the journey in question at all.

The concept of *sobriété* is a subject of political debate within France itself. We want to consume less, but how do we do that?

In its reports, IPCC refers to sufficiency, a term it defines as follows : « Sufficiency policies 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 boundaries¹ ».

Drawing from this description, we have therefore decided to translate *sobriété* by sufficiency in this bulletin.

The idea is rather to examine and compare the ways in which these notions are translated into public policies and, as such, are presented in various places in technical, economic, social, political and environmental debates. We will lastly consider the relevance of the word *sobriété* considered as a political tool.

SYSTEMIC APPROACH

The topic of sufficiency encourages us to undertake philosophical thinking concerning its stakes and implications on the scale of the functioning of society as a whole, facing the limitation of the resources that it can call on without threatening the climatic equilibrium of the globe in the Anthropocene era. Does it portend a profound change of course, or even an upheaval in ways of life (which some people desire, while others fear it or even reject it)?

A systemic analysis shows that it would be wise to consider the evolution of economic production and particularly energy production, consumption, transports, and before examining research, development and technological evolution in parallel with social evolution. Will these changes be accepted by society, in the diversity of its population categories and its territories? What offsetting and distributions will be needed? What contradictions, what rebound effects could cancel out the efforts developed in various places?

SUFFICIENCY OF MOBILITY OR ENERGY

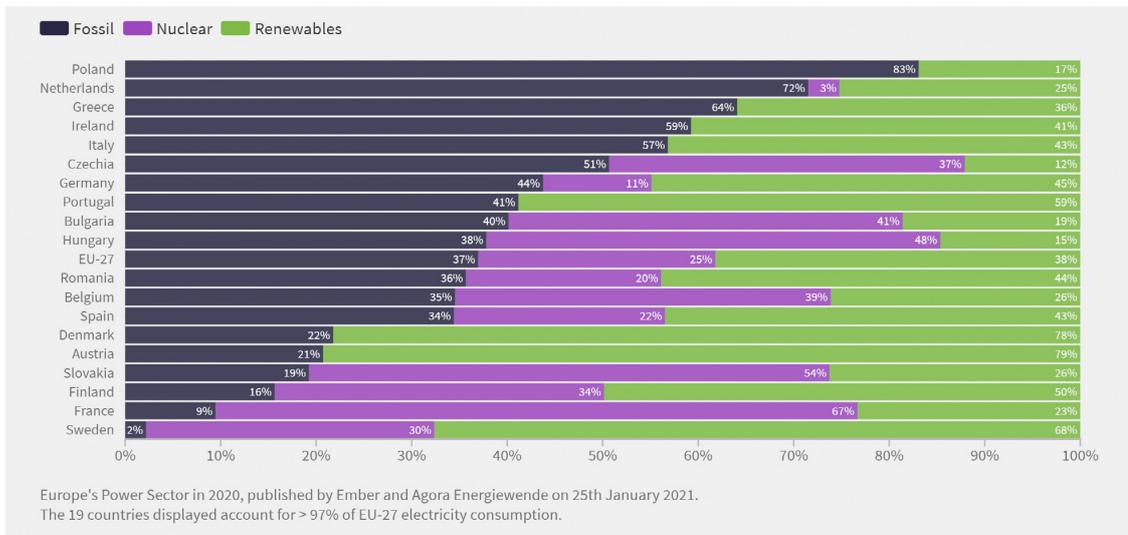
SUFFICIENCY OF MOBILITY, THE FREEDOM TO COME AND GO

A distinction should be made between sufficiency of mobility and the energy sufficiency of mobility. The first notion pertains to what is commonly but inaccurately called the demand for transport (inaccurately because it does not involve a market in the strict sense for the reason that most journeys are made with personal means) and the supply of transport (more precisely the technique used to produce the transport, particularly from the angle of the energy used).

Should travel be restricted? Voluntarily or by obligation? Through regulations or pricing systems? How can we distinguish between the journeys of people and products which can be described as useless (and declared as such by whom, according to which criteria?), appropriate but made inadequately or totally necessary? Before all national laws, the Universal Declaration of Human Rights of the United Nations, adopted in 1948, set forth in its article 13: “Everyone has the right of free movement.” The French law of 1982 (Mobility Policy Act, *Loi d’orientation des transports intérieurs*, LOTI) went further, going from freedom of movement to a right to transport. Conversely, some people denounce a “mobility ideology,” making travel, and still more the speed of travel, into a false value to be fought as such and advocate de-mobility. In most countries, the issue is rather maintaining or even increasing the mobility of people, as well as its safety and fluidity, while decreasing its nuisances. Only one country (the Netherlands) explicitly advocates a decrease, but only for work-related travel.

In most countries, in light of the shortages, the appeals to conserve energy focus on individual behaviors in terms of the heating of homes and other household consumption as well as the heating of professional buildings and the industrial activities which consume the most energy, more than transport.

1 - IPCC, *Climate Change 2022, Summary for Policymakers*, 2022, 53 p.



Electricity mix in Europe (2021)
Production of electricity from fossil, nuclear and renewable energy

Source : The European Power Sector, Ember, 2021.

GLOBAL PROBLEMS, LOCAL CONTEXTS

The attitude of both public authorities and citizens towards moderation of energy consumption, particularly for transport, is not just an issue of political or moral culture or of institutional functioning. The structures of the economy, with regard to both energy production and consumption, frame the debate, in a field characterized by “path dependence” of economists in which changes have far-reaching consequences and are slow to produce tangible effects.

Structures of the economy and electricity production

The structures of the economy and the bases of energy production frame the thinking on transport.

The intensity of freight transport of the European economies (measured by the tonne-kilometers/GDP ratio) varies considerably from one country to another depending on its productive specialization, the size of its territory and its opening to international trade. A country which specializes in services or high tech consumes, all other things being equal, less freight transport than a country with heavy industries. Significant but less marked differences can also be found in mobility practices for people (measured in kilometers traveled per inhabitant and per year).

Furthermore, while electricity is destined to become a primordial energy vector in transport systems, the way

of producing it and its continuous availability over the entire territory are obviously important factors. The share of fossil energy in electricity production varies from 2% in Sweden to 83% in Poland. Decarbonizing energy for transport is not a goal which is equally accessible here and there.

Perception of the topic of sufficiency in opinion

These issues, **which have an obvious political dimension**, are perceived differently in various categories of opinion and with respect to other concerns.

In countries where the car ownership of households has reached its limit and where a certain disaffection for cars can be seen (for example among young people who don't plan to get a driver's license), some of the people questioned think that sufficiency efforts should be made when this is possible. We are seeing an increase in walking and bicycling in cities, with opinion trends showing a preference for trains or giving up air travel and far away holidays, etc.

These issues are experienced quite differently in zones where substitutes for automobiles are rare or even non-existent, inconvenient or costly but also in countries where widespread car ownership is recent and still experienced as a sign of coming out of a long period of lack and a time lag compared with other countries, as well as social status and freedom.



INSTITUTIONAL LEVELS AND POLITICAL ACTION TOPICS

The transport system, more than ever linked to the energy system, is affected by both the short time of the current situation and the long time of structural evolutions. The political systems of the countries observed grasp this difficulty in very different ways. However, the list of action topics for moving towards greater sufficiency in the energy consumption of transport systems is quite similar from one country to another. .

Political initiative

In order to move towards greater sufficiency, in particular for movements of people, the proposals come from **very different sources depending on the institutional structures and the political traditions** of the countries.

In this case, the Central Government (executive and legislative) plays the primary role of initiative or at least coordination, in a more or less cooperative or conflictual relationship with the political opposition, professional organizations and civil society (and particularly NGOs). This is how it is independently of the place that the topic of the environment, transports and sufficiency has or has not had in the campaign that led to the election of the current government.

2 - [Decarbonizing transport, an essential goal](#)

In the decentralized and federal countries, initiatives are taken above all on the level of the regions, or even of large cities.

In other places, a process of negotiation with multiple actors and at different levels can lead to compromises, with the initiatives coming from civil society bodies which then work with local and regional authorities, professional organizations and even the government.

Sufficiency policies

The comparison confirms the list of the means of action to move towards greater sufficiency in transport, as thinking about decarbonization (see bulletin #6²) has already established. These initiatives can address the intensity of journeys as such, or rather their consumption of energy from fossil sources: development of walking, bicycling and other active modes, encouragement of carpooling and the moving from solitary use of cars towards collective transport (which should also be decarbonized if it is not already). Access to electric cars is also encouraged by purchase premiums and soon will also be through forms of social leasing.

Teleworking, which decreases the number of journeys (unless there is a rebound effect), reveals issues that were not previously apparent, such as the need to better distribute it over the days of the week, if it is concentrated over one or two days and does not reduce the peaks of congestion of public transport.

Furthermore, it is in city centers, the areas best served by public transport, that we find the highest proportion of people who are teleworking (white collar rather than blue collar workers). These new practices encourage collective transport operators to develop new and more flexible subscription formulas. Likewise, the now common use of videoconferences is taking the place of in-person meetings which require long journeys.

The use of e-commerce is more controversial. On the one hand, a round of multiple deliveries by small utility vehicles is more efficient from an energy and environmental standpoint (all the more so if they are electric) than as many individual car journeys to go to points of sale as there are customers. On the other hand, the occupation of the public space by delivery vehicles and the installation of “dark stores” (mini-warehouses in cities) are more visible for city dwellers and perceived as nuisances. There is also the social issue of delivery agents, in particular those who have a precarious employment status, or who are even in irregular situations and therefore vulnerable.

Low-emission zones (LEZ) are a matter of public health concern. They aim to limit and then eliminate the circulation of vehicles that emit local pollutants (and especially particles) and to encourage the use of non-emitting vehicles. They can consequently decrease the intensity of transports themselves by forbidding access of the oldest vehicles to the city center. This leads to a crowding-out effect which affects above all the poorest populations: how have countries where there are already many low-emission zones resolved this political issue?

Despite the strong relationship between traffic speed and the consumption of automobiles, measures to limit speed (on highways, freeways, roads or in urban areas) are rarely suggested.

Several of these measures apply poorly in sparsely populated areas and create a gap between people who can access sustainable mobilities and the others.

SOME KEY ISSUES

The preceding list already presents a rich inventory of the multiple fields and levers for action for promoting mobility sufficiency. Some important topics have turned out to be more complex, or newer, and merit a deeper examination. Key issues of tax systems, town and country planning and electric cars have been chosen.

Tax system and pricing system

The tools of tax and pricing systems can be used to reinforce more direct interventions on mobilities: differentiated taxation for the purchase of vehicles (bonuses or penalties according to their environmental performances, although the market for used decarbonized vehicles is still very limited) or facilitation of their use (differentiated tolls on roads involving fees, favorable terms for parking in cities, etc.).

The tax system for fuels is currently somewhat contradictory. To limit the social effects of the rise in oil prices on the international market and its macro-economic consequences on inflation and the level of activity, the excise duties on fuels are limited. Do they send the wrong **price signal** to consumers, when they should be encouraged to consume less? It would be inappropriate to describe them as subsidies however. They constitute rather partial tax relief. There is also debate on the modalities of this policy: should the decrease in excise taxes benefit all car users (leading to a substantial decrease in tax revenues for the State) or should it be concentrated on the populations who need it the most? In any event, it is a temporary measure to accompany a moment of particular crisis (the war in Ukraine) while in the long term the energy transition is imperative to reach the goals defined by the European Union in the Green Deal.

In the field of collective transport, we note new initiatives involving very low prices for public transport over rather large perimeters, particularly in Austria, in Germany and in Spain, while free public transport has been proposed, and sometimes implemented, on the scale of several urban networks. Are these measures – sometimes controversial if they compromise capacities for upkeep and network development – sustainable? Will they be developed?

Territorial development

Observing the phenomenon of urban sprawl which shaped the landscape of Europe (but with very unequal intensity, depending on the apportionment and the jurisdictions of the local authorities and the control of construction rights), geographers and urban planners stress the need for new orientations in territorial development. For example, in France, the goal of zero net artificialization aims to curb the consumption of agricultural and fallow land, to encourage the densification of the use of land, to avoid the scattering of space with isolated constructions, to rebuild cities on cities, to create in the large urban areas secondary polarities creating the “15-minute city”, etc.



These transformations, attractive as they are, can only have a structural effect on mobilities in the long term. The inertia of the built environment is very high and turning back is improbable, especially as the electric car and other means of decarbonized transport will give sparsely populated territories a sustainable accessibility that seemed utopian only a few years ago.

Electrical mobility

Lastly, the shift to electric cars will make it possible to reduce the primary source of greenhouse gas emissions of our economic system (transport) and in the part that emits the most (road transport). This radical transformation is a long term affair and the “S” logistics curve for the dissemination of electric cars is only at its beginning, but it is in place. The political orientations are clear on the scale of Europe and the transformation of the automobile industry is irreversibly underway, on the global scale.

The European Union’s ban on the sale of combustion vehicles by 2035 is an ambitious objective. It includes at least three indissociable aspects:

- The **industrial transformation** of automobile construction and repair, including the constitution of a European sector for battery production (transformations of skills and jobs, etc.);
- The modalities for the **distribution** of electric cars, limiting the phenomena of social discrimination;
- The installation of a **network for the supplying** of low-cost and decarbonized electricity, available at all times and over the entire territory.

We need a structured **planning** approach, of which the very principle disappeared from the political calendars of many States many years ago, etc.

ROLES OF THE EUROPEAN UNION

The national efforts discussed above can pertain to specific initiatives, more or less innovative, but they are part of a European dynamic. Many even pertain to obligations of the Member States to apply the regulations and to transpose the European directives into their respective national laws. **The interaction between the national and EU levels is particularly strong** – and necessary – in this field.

In the current context of rising energy prices, the Commission recently increased the number of proposals aiming to reduce energy consumption, but without particularly targeting the transport sector at this level of generality:

- The REPower EU Plan (May 2022) aims to rapidly reduce the dependency of the EU on Russian fossil fuels, particularly through energy savings. In this way, it was proposed that the European binding objective of energy efficiency be brought to 13% by 2030, versus 9% in the Fit for 55 packet.
- With regard in particular to the reduction of gas demand (July 2022), the Commission presented a new regulation assigning to all of the Member States an objective of voluntary reduction of gas demand of 15% between August 1, 2022 and March 31, 2023. This regulation, on which the Member States agreed at a meeting of the Council of Ministers of energy, is accompanied by a European plan for reduction of gas demand.
- The Commission proposes the introduction of an obligation of reduction of electricity consumption of 5% at certain peak times (September 2022) and the setting of an objective of reduction of the overall demand for electricity of at least 10% until March 31, 2023.

The term *sobriété* is not used by the Commission, neither in the political declarations accompanying the proposals, nor in the legislative proposals themselves. Nor was it included by the co-legislators at the time of the adopting of the texts involved.

With regard to transport, the goal of the EU is the decarbonization of mobilities and not their restriction. The European Green Deal (December 2019) identified the need to decarbonize the transport sector to achieve climate neutrality by 2050, in light of the share that it represents in the total emissions. Several types of measures, announced in the Strategy for Sustainable and Intelligent Mobility (December 2020) were proposed on the level of the EU and are for the most part in the process of negotiation among the co-legislators, to:

- Facilitate modal transfer: revision of the directive on combined transports, revision of the Trans-European Transport Network (TEN-T) regulations.
- Revise the carbon pricing instruments to better internalize the external costs (Fit for 55 packet of July 2021): proposal to establish a new system for the exchange of emission quotas distinct from the current EU-ETS, intended to cover emissions of road transport (and of the construction industry); proposal to modify the EU-ETS rules pertaining to aviation

by decreasing the number of quotas allocated free of charge to airline companies for intra-European flights; lastly, extending the field of application of the EU-ETS to the CO₂ emissions of large ships regardless of their flags.

- Reduce the emissions of road vehicles (Fit for 55 packet): the Commission proposed a new tightening of the emission standards for cars and vans. Newly registered cars must reduce their emissions by 55% between now and 2030 and by 100% by 2035 compared with 2021 (respectively 50% and 100% for vans). All new cars registered starting in 2035 will be zero-emission vehicles. This is accompanied by reinforced support for the deployment of infrastructures for alternative fuels, with a draft regulation imposing the installation of charging and refueling stations at regular intervals on the major highways of the EU (every 60 km for electrical recharging and every 150 km for refueling with hydrogen on the TEN-T central network).

Sufficiency: a heuristic notion?

By the end of this cross-analysis of the national and EU policies, the diagnosis already presented in issue 6 of the *Transport / Europe* bulletin was confirmed: the topic of the decarbonization of transports occupies a leading place among the many items of a transport policy. In light of the obvious change in progress, the climate-skeptic opinions are now marginal. Given the enormity of the stakes, the European Union is playing an eminent role of leading, encouragement, and convergence with regard to national policies, also avoiding free-riding behaviors by which a country might avoid efforts on the pretext that they have little impact on the world total. Without being in the EU, Switzerland is not outside of these ambitions, with the specific features of its democracy and the emphasis that it places on research and technology in conjunction with political action. This political option of the EU gives it a legitimacy to intervene in international and world bodies which debate these issues.

Does the term sufficiency help it with these perspectives? It is probably not indispensable, because to our knowledge only one country – France – makes regular use of it in policy, particularly in the field of transport. However, the concept dives deeply into philosophical traditions and traces a path of equilibrium between excess, waste and its destructive effects on the one hand, and scarcity and deprivation on the other, i.e., the negation of the freedom of movement and the ineffectiveness of the right of transport. Moreover, the word does not just belong to the political expression of the past few months, it has been used in scientific

work carried out for several years now in France for the exploration of possible futures for transport and for society as a whole, particularly the *Prospective 2040-2060 des transports et des mobilités* of the General Council for the Environment and Sustainable Development and France Stratégie³ and *Futurs énergétiques 2050* of RTE (the manager of the electricity transport network)⁴.

Paradoxically, it is perhaps because it is organized here around a word which is not easy to translate, a concept to be specified, that the work of the OPSTE leads to a grasping of essential notions and values, those which short-term technical or political considerations most often neglect.

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3 - Auverlot D., Roche P.-A., Sauvart A. (dir.), *Prospective 2040-2060 des transports et des mobilités*, CGEDD et France Stratégie, February 2022.

4 - RTE, *Futurs énergétiques 2050: les scénarios de mix de production à l'étude permettant d'atteindre la neutralité carbone à l'horizon 2050*. Principaux résultats, October 2021.

TRANSPORT POLICIES AND STRATEGIES IN EUROPE

The issue of *Transport / Europe* includes contributions from OPSTE experts:

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The documents of OPSTE experts reflect solely the opinions of their authors.

Our colleague Bertil Carstam has decided to end his participation in the work of the OPSTE. He has been a member of the College of Experts since the creation of the Observatory in 2020. With constant availability, competence and courtesy, he has contributed to our understanding of European transport diversity through his knowledge of transport policies in Sweden and the Nordic world (road safety, infrastructure planning, etc.). We thank him warmly and wish him a happy retirement.

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BELGIUM

The word *sobriété* is absent in political debate in Belgium, in all of the regions. At most, **sustainable mobility** is sometimes mentioned.

The largest Flemish NGO in this field (*Netwerk duurzame mobiliteit*, Network for sustainable mobility) defines sustainable mobility “as a mobility sufficient to participate fully in social life without the negative consequences of our individual behavior in terms of mobility affecting the lives of others in the short- or long-term.” In order to realize this vision, it proposes three principles:

- Avoiding superfluous travel (particularly through teleworking and videoconferences, using e-commerce, although it is controversial);
- Giving preference to public transports, bicycling and walking over cars;
- For the inevitable car journeys, organizing vehicle sharing, choosing less polluting cars, and rationalizing journeys.

In fact, teleworking has become organized on a large scale since the Covid crisis, revealing a potential that was previously unsuspected. The impact is strong on collective transport (decrease in the number of passengers and thus in receipts). This is particularly true for railroads (the National Low Carbon Strategy introduced more flexible subscription formulas), because the workers most likely to do remote work (intellectual work, administration, etc.) are those whose offices are located in city centers served by rail. We might furthermore think that a rebound effect of the decrease in essential journeys could be an increase in leisure journeys, in cars.

The proposals of public authorities differ depending on the regions.

- In Flanders, the objectives are traffic fluidity, safety, the transfer towards less polluting modes and increases in investments in the transport system, not sufficiency!
- In Brussels, both a city and a region, the goal is improvement of urban transport, modal transfer and the optimization of flows while avoiding transit in a city composed of calm neighborhoods. The decrease in journeys is not taken up as a specific objective.
- In Wallonia, the regional mobility plan is based on the vision called “FAST”: fluidity, accessibility, safety, health and modal transfer. The objective of reducing journey distances is put forward with no proposal of particular measures.

Territorial development actions will not manage to erase the urban sprawl inherited from the preceding decades. It is recommended that new professional or commercial facilities be located near existing hubs, not in an isolated manner. However, limiting urban sprawl in the future assumes a modification of the zoning of construction land and would lead to very costly compensation of the owners involved.

We also know about the importance of company cars (“salary cars”) and the effect of support for automobile mobility, with high consumption vehicles, which comes from the existing tax system (automobile expenses are deductible from taxable income).

For the moment, the government is seeking above all to limit the effects of inflation on households and companies (and thus employment), including through its non-targeted measures such as a decrease in VAT for the residential gas and electricity contracts. In the short term, is not a priority.

FRANCE

The use of the word *sobriété* in political debate appears to be a French peculiarity. While it is present in the discourse and thinking of several organizations and institutions which have been working on the outlook and future of energy consumption for several months or even years, the word is not unanimously accepted, as some people advocate the more radical objective of degrowth (and de-mobility), others frugality (referred to as “happy” to distinguish it from austerity), etc.

A distinction is commonly made between energy efficiency (in particular in the field of transport) resulting from a reduction in the energy consumption of equipment thanks to technical improvements, and sufficiency resulting from changes in lifestyles. Is this dichotomy relevant? In this way, the more intense use of collective transport and active modes (walking, bicycles), an eminent contribution to a sufficiency effort, will be greatly facilitated by MaaS (Mobility as a Service) systems based on highly technological information systems.

Is it necessary then to depict the field of the conceptions of the problem of decarbonization as a triangle composed of an option of tech savvy transition in opposition to an option of degrowth, between which an option of sufficiency would offer a solution of synthesis and compromise?

We see in any case a shift in behaviors, with a breakthrough for bicycles of which the use increased by 9% in 2022 compared with 2021 and by 34% compared with 2019, particularly in urban areas. The increase in the occupancy rate of cars offers another margin for progress. This rate is on the order of 1.4 passengers/vehicle on average, and still less for short-distance daily commuting. In order to better use the useless seat kilometers that are thus produced, carpooling increased substantially in 2022, reaching one million journeys.

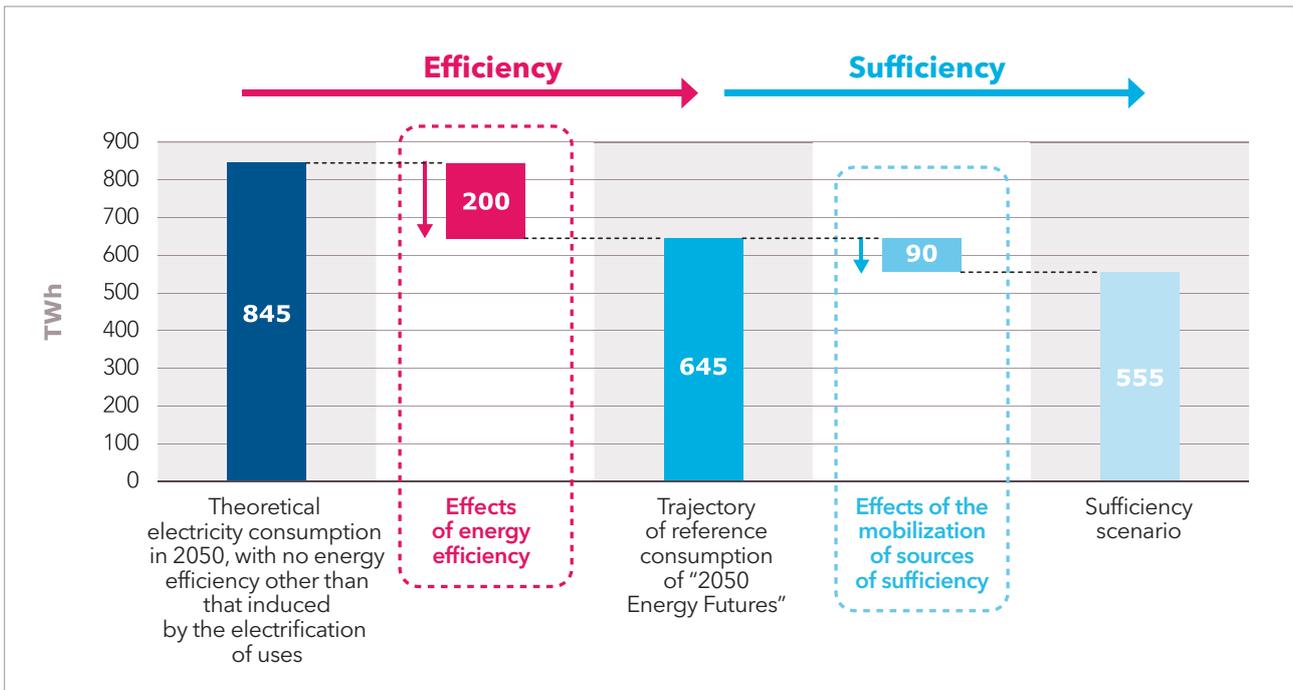
The situation today is characterized by an arbitration between **short-term constraints and long-term imperatives**. The war in Ukraine and the restarting of the world economy after the Covid crisis are causing an energy shortage in Europe and raising prices. In France, delays in the maintenance of some nuclear power plants are adding to the uncertainties, including a risk of power cuts during the peak periods of winter which are coming (which could lead to the shutdown of certain industries, without affecting the supplying of households).

The opposition between short-term and long-term appears in the handling of energy prices by public authorities. To protect households and companies from inflation and to protect jobs, taxes on oil products

and other forms of energy have been temporarily reduced. These measures – all the more costly for the State budget because they are not concentrated on the vulnerable populations – make it possible to maintain, for a while, the consumption of products which emit large amounts of greenhouse gases although it is necessary, in the long term, to decrease this and then end it.

In the short term, a decrease in consumption on the order of 10% with respect to the preceding year, obtained on a voluntary basis (companies and households applying the advice for moderation issued by the public authorities) is thought to be sufficient to overcome the difficulties. Opinion surveys show a certain support for such efforts, more so from women than from men and from elderly people more than from young people.

In the long term, while transport policy is more closely than ever linked to energy policies, several prospective scenarios concerning energy needs have been developed. The most frequent reference is made to the thinking of RTE, the company that manages the electricity transport network. In all of the hypotheses, it predicts both an overall decrease in energy consumption (through various economic measures, whether these result from technical, organizational



Expected effects of energy efficiency and sufficiency on the level of electricity consumption (compared with the reference trajectory)

Source : RTE-E, *Futurs énergétiques 2050 Principaux résultats*, octobre 2021.

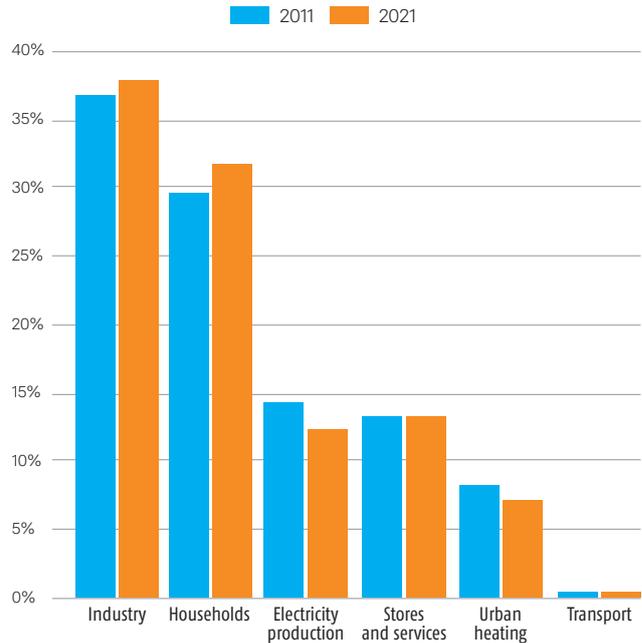
or behavioral evolutions), but, however, an increase in the consumption of electrical energy, substituting for forms of energy that emit greenhouse gases. The necessary increase in the production of electricity raises serious issues of investment and involves debate on the choice of the energy mix upstream from electricity production, excluding fossil energy but including or not including nuclear power alongside the renewable energies.

In the graph below, RTE evaluates, from a projected volume of electricity consumed annually without a particular moderation effort by 2050 (845 TWh), the share of the savings that could come from technical improvements (efficiency: 200 TWh) and that which would come from sufficiency efforts (90 TWh). While they are not equal in size, both of these sources of energy savings should be harnessed.

GERMANY

The term sufficiency is not used in technical and political debate in Germany, whether for energy in general, energy consumed by transports, or the volume of transport as such.

On the scale of the society, the issue of energy savings is present. The discussion focuses above all on individual behaviors to get through the crisis (limiting the temperature in apartments or limiting the use of domestic hot water), with the foremost concern being the availability of gas (largely supplied by Russia until recently) rather than oil products. On the local level, municipalities are lowering the temperature in their offices, limiting the lighting in streets, etc. Transports account for only a very small share of gas consumption.



Gas consumption by sector in Germany (in percentage of the total, 2011 and 2021)

Source : Bundesverband der Energie- und Wasserwirtschaft, Entwicklung des Erdgasabsatzes in Deutschland, 2022

The Federal Government devotes substantial financing to limiting the price of gas for households and companies, for up to 80% of their consumption, and leaves the remaining 20% governed by market prices (prices for which the increases encourage people to consume less energy).

In terms of transport, the objective is not in any way to limit, but on the contrary to **increase mobilities** (in particular daily mobilities) **while decreasing their energy consumption and nuisances**. For this reason, the experiment of a fixed price of 9 euros per month for local and regional transports was undertaken during the summer months of 2022. The increase in the number of passengers was very high, but the cost of the operation was judged to be too high for the public finances.

The Federal Government and the Länder agreed to continue the operation but with an increase in the price of the subscription to 49 euros per month (issued only by digitally and by card) for unlimited access to all local and regional transports. The ratio of commercial revenues/expenses would decrease on average, for all of the Länder, from 70% to 50%.

The Länder insist however that public financing should vigorously support investment for service improvement, not just decrease the fares. An ambitious plan for modernization of the national and regional rail network was announced.

GREECE

Regardless of the terms, we observe a concern with sufficiency in Greece, whether speaking of decarbonization in general or in terms of transport in particular, of the internalization of negative externalities, new technologies, fuels or transport organizations or alternative behaviors of travelers. Alongside sustainable development and a green economy, there is even talk of a blue economy because Greece is eminently maritime.

Alongside the technical aspects, the debate also commonly takes on an antagonistic **political and ideological dimension**. During the Covid period, society became aware of the need for a more decisive role of the State in the economy and the organization of public assets. A radical fringe of the opinion challenges the very principle of capitalism in its inaptitude to settle the collective problems. Others want stronger market regulation, as well as industrial and energy planning. They also request the reconstitution of a public sector after the broad privatization of network companies required by the debtors during the processing of the debt (between 2008 and 2015), a privatization which did not demonstrate its efficacy in the recent phase and which weakened the capacity for action of the public authorities. Moreover, wind and photovoltaic energies have excellent development perspectives in the country and call for adequate support.



As in other countries, the energy and climate plan of 2019 predates the end of Covid and the war in Ukraine. With regard to mobilities, it recommends teleworking, the use of collective transports, e-commerce, and advanced logistics.

We note that electricity prices increased before the war in Ukraine, with a market linking the price of electricity and gas in a very controversial manner in Europe.

The media are talking about the possibility of power cuts. No restrictive measures has been taken for the moment. The public authorities are encouraging sufficiency more through dialogue on the voluntary commitments of individuals than through regulations and bans.

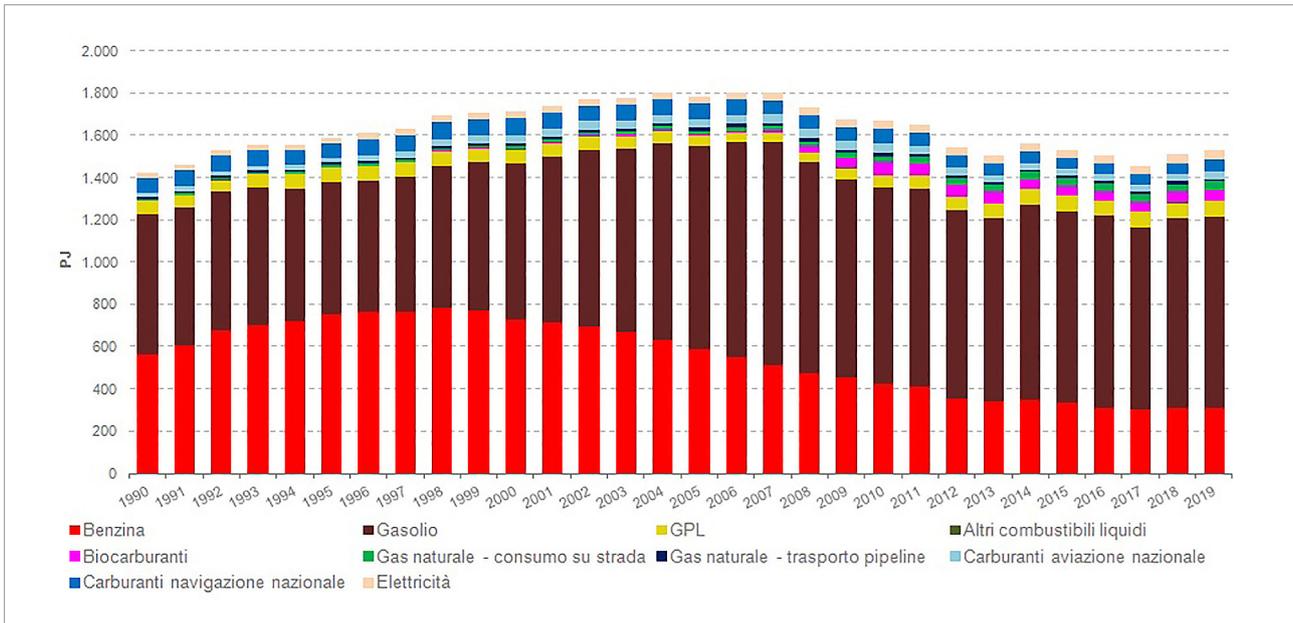
In the medium term, we note deeper evolutions of mentalities and behaviors. The automobile is no longer the sign of social standing that it had long been, collective transport is being reinforced (particularly through the extension of the Athens metro network and the replacement of the bus fleet with hybrid models), the electrification of the country's main rail line has been completed, electrical power supplies for ships are being installed in ports, etc. Purchases of electric cars are supported by a Green fund, and carpooling is encouraged (with, coming soon, a law governing the implementation of dedicated digital platforms). A national scheme is proposing the construction of ten duly localized logistics platforms.

ITALY

The word *sobrietà* exists in Italian. It can designate, in the broad sense, a habit, a way of being moderate as opposed to luxury, splendor and excess and also to austerity and asceticism. It belongs to the philosophical and moral vocabulary but is not commonly used in the political field, whether for speaking of energy consumption or mobility. However, the need to combine "sober" changes of behavior with technical progress in order to move towards the decarbonization of transports is commonly accepted.

The Energy Services Manager is a company under the supervision of the Ministry of the Economy and Finance which is in charge of promoting renewable energy sources and energy efficiency. In a recent report, it was demonstrated that **transport accounts for about one third of the country's energy consumption**, mostly in the form of oil products (92%). Road transport is the largest consumer (83%), followed by air transport (12%). The share of biofuels in this consumption remains low.

Transport is thus one of the main fields in which major reductions of fossil energy consumption must be achieved to reach the national and European objectives for decarbonization. With regard to past and current trends, we observe an increase in energy consumption from transport from 1990 to 2007, then a decrease as of 2008 (year of the beginning of the international financial crisis and a slowdown in economic activity) and lastly a stabilization as of 2013. A drastic decrease is now needed.



Consommation de carburant et d'électricité par les transports en Italie, 1990-2019

Source : Istituto Superiore per la Protezione e la Ricerca Ambientale, Consumi energetici nei trasporti.

Various initiatives were organized in the country, such as the National Plan for the recharging of electric motor vehicles, the simplification of authorizations for facilities for the distribution of bio-methane, public subsidies for the purchase of low emission vehicles, a Guide for fuel consumption and the CO₂ emissions of vehicles, etc.

Agens (Federal Transport and Services Agency) and Enea (National Agency for New Technologies, Energy and Sustainable Economic Development) proposed a method to obtain measurable and comparable consumption data between the production sites and companies. The goal is to encourage operators in the transport sector to improve their follow-up system, to increase companies' awareness of the importance of energy diagnostics and to identify the sources of better efficiency in which to invest. The Ministry of Transport is encouraging the use of electrical mobility in its diverse forms: trolleybuses, electric bicycles, electric cars.

A systematic approach of analysis of the energy structure of transport activities according to the UNI CEI EN 16247-4⁵ standard takes into account the composition of the fleet of vehicles (type, size, power supply, approval class), their state of upkeep, their occupancy rates, the level of competency of the employees (rational use of energy), etc. and distinguishes four levels in the functioning of the system:

- The transport function: transport of merchandise (for hire and for own-account), transport of passengers, collecting of municipal waste, distribution of postal packages;
- The transport network: public urban road transport, underground networks, bus networks, domestic high-speed rail services, regular air services between the domestic airports;
- The transport line: link between two points, with or without stops, with or without regular frequency;
- The production factors: vehicles and components, auxiliary systems and drivers.

We observe that these elements of analysis and action focus mainly on the **technical and organizational improvement of the production of transport** but barely mobilize the possibility of changes of behavior of users of the system (households, government services and companies).

THE NETHERLANDS

For centuries now, **transport** has held a **primordial** and specific **place** in the Dutch economy and society (in history, the prosperity of the United Provinces was largely based on trade and transport and the word *freight* is of Dutch origin). Still today, mobility is seen as a positive value and Schiphol Airport and the Port of Rotterdam are essential assets for the country's activity.

5 - European standard for energy audits, and here particularly energy in transport

In the debate on the fight against climate change, the environmental community sometimes refers to the notion of austerity (which in the Netherlands does not have a pejorative sense the way the word shortage would have), not *sufficiency*. A set of measures were taken for the decarbonization of transport:

- National Agreement for the Climate of 2019 between the Dutch government and the sectors of industry, electricity, mobility, agriculture and construction. It provides in particular for a decrease in work-related travel between now and 2030.
 - The government's policy project for the next ten years (published in June 2022) includes the preceding objectives, covering more sustainable active mobilities and personal mobilities, electric cars, sustainable fuels, sustainable navigation and air transport and lastly logistics, with a corresponding finance plan (Climate and Transition Fund and other resources).
 - In the follow-up of the realization of the 2019 plan for the points relating to mobility, we note the action of the Travel Otherwise (Anders Reizen) coalition stemming from civil society and which now includes companies, associations and civil service units to materialize the objectives of decarbonization of transport.
 - Other initiatives, such as the Urgenda movement, aim to limit the use of cars by organizing in companies a competition between colleagues to go to work in the most sustainable way possible.
 - Taking advantage of the start of the Tour de France cycling event in Utrecht in 2015, the Tour de Force movement is promoting its National Vision for bicycles.
- As in other European countries, the Covid health crisis led to on-going teleworking. While half of workers are thought to be liable to telework on certain days of the week, it is also thought that some 25% to 30% of students could undertake distance learning. The immediate effect is a decrease in work-related travel, but we don't yet know whether there will be a rebound effect.

In an announced *sufficiency* effort, the government announced in 2022 that Schiphol Airport would have to reduce its number of flights from 500,000 to 440,000 per year in 2023. The idea was to reduce the nuisances for local residents without harming the country's international accessibility.

Moreover, in 2021 the National Council for the Environment and Infrastructure issued an opinion for an Integrated Accessibility Policy organized around three recommendations:

- Moving from the resolution of one-off mobility problems to a broader vision of prosperity, in a political approach combining long-term visions and chosen instruments;

- Moving from a classic approach of infrastructure solutions (mode by mode) to a broader approach of accessibility solutions, including digital solutions and the effect of territorial planning;
- Moving from an approach by sector and by project to a more integrated approach (national and regional) by "area", while enlarging the base.

A proposal of this sort is part of a Dutch political tradition of negotiation between several public and private actors and on several institutional and geographic levels, to arrive at compromises which are as consensual as possible. This way of doing things is anchored in history and people commonly speak of the "Polder Method".

POLAND

Neither the Polish government nor public opinion have addressed the topic of sufficiency as such, although underlying concern expressed in terms of savings, moderation, etc. is not absent. There are however enduring memories of the time when moderation of consumption was due to shortages, including the lack of essential goods, which makes it more difficult today to fight against what could be called excessive consumption.

Furthermore, Poland is particularly concerned by the issue of energy, for its entire economy, including transport. Its industrial structure is characterized by the importance of traditional heavy industries (steel industry, production of cement, chemistry, etc.), which consume large amounts of coal which emits greenhouse gases. The same is true for electricity production. Between 2011 and 2020, energy consumption decreased by 5.2% on the scale of the European Union and increased by 10.4% in Poland. For transport activity alone, the variation rates are respectively -9.7% in the EU and +25.1% in Poland.

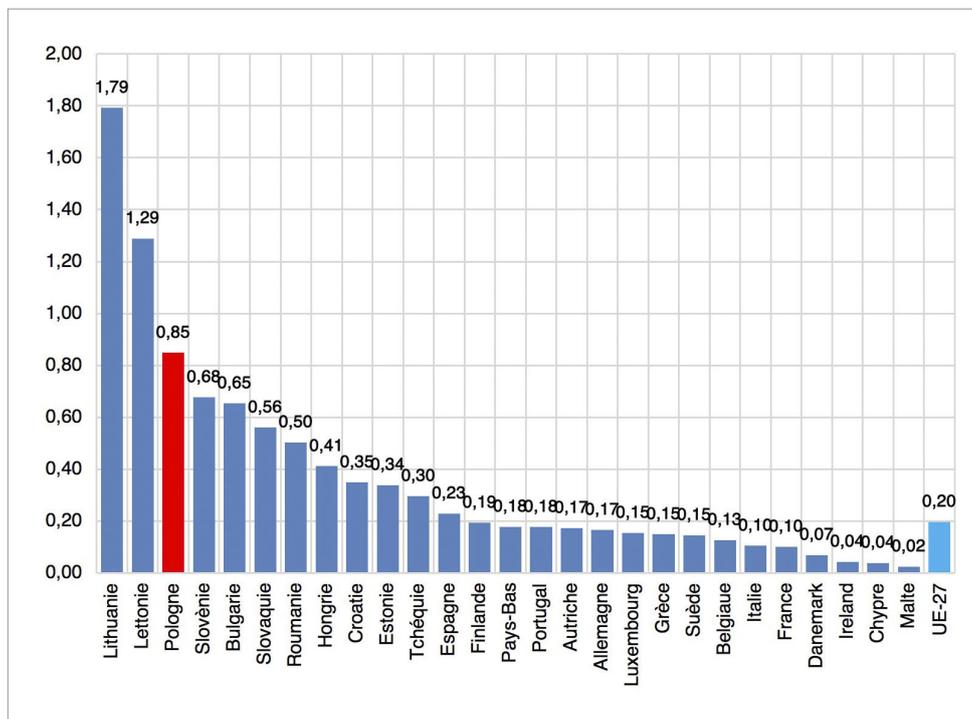
The production system is very "transportivore" if we compare the freight transported (measured in tonne-kilometers) with the GDP (in euros). Poland is number three in Europe for this criterion, after Lithuania and Latvia, which provide intense land transit between Russia and the Baltic Sea. Moreover, the Polish truck fleet has become the number one for international road transport of merchandise in Europe, which reinforces the place of transport in the country's economy.

While car ownership for households has been experienced as a factor for freedom, restraint (*sufficiency*) is however necessary to rationalize the mobility of the



Poles, who spend about one hour per day in travel, particularly short distances in passenger cars. Between 2000 and 2020, mobility increased from 5,800 to 7,000 passenger-kilometers per inhabitant and per year and the share of passenger cars in the total mobility went from 59% to 84% (for 75% and 82% respectively for the EU of 27 countries).

Faced with a population that is reluctant to reduce its consumption, the government is intervening to maintain the price of electricity (all the more so because the winters are harsh in Poland). It gives practical advice for changing everyday behaviors: not leaving electrical appliances on standby after their use, avoid excessive airing of housing, etc.



**Intensity of consumption of merchandise transport in Europe
 (en t.km / € de PIB, 2019)**

Source : Calculations of Jan Burniewicz based on Eurostat (GDP) and EU Transport in Figures

For companies, the factors that can be influenced include the heating of premises and domestic hot water, while the rationalization of logistics is a long-term undertaking.

In terms of mobility, teleworking, carsharing, the use of collective transports, eco-driving, bicycling, walking, etc. are recommended. However, there is no national energy saving plan, the initiatives are mainly local. For example, the city of Warsaw plans to convert 30% of its bus fleet to hydrogen by 2030.

SPAIN

In public debate, the word sufficiency does not appear with regard to energy and still less with regard to transport.

However, the fight against waste is on the agenda, with, as corollaries, savings, rigor and austerity. In terms of mobility, the idea is to seek sustainable mobility, but not to restrict mobility, which is perceived as a fundamental freedom and a right. Furthermore, the social actors are continuing to request more resources devoted to mobility (road and rail infrastructures in particular) to ensure mobility in a satisfactory manner by reducing the energy consumption, accidents, and various types of pollution and by reducing its cost for households and companies.

The means for reaching these objectives are multiple and involve different **time scales**. The territorial development and urban planning can aim to densify the use of land to bring homes, workplaces, leisure sites, etc., closer together, thereby reducing the journey distances and consequently the mobility needs measured in passenger-kilometers and, for merchandise, reducing the tonne-kilometers because of the short circuits. But the shift from a polarized city to a decentralized city (multi-polar) and finally to a distributed city (sometimes called the “15-minute city” when the journeys are considered) can only come into being with resolute action and in the long-term.

In a more direct way, there are efforts aiming to encourage walking (pedestrianization of roads and urban neighborhoods), the transfer of urban journeys from cars to collective transports and bicycles, development of high speed rail lines as alternatives to air and automobile transport, etc. Teleworking tends to reduce essential journeys, while urban e-commerce deliveries are considered timely if they are made in a decarbonized fashion.

Low-emission zones (*Zonas de Bajas Emisiones*, ZBE), motivated initially by concerns of public health and

pacification of streets, are mandatory for urban areas of more than 50,000 inhabitants. Because they exclude old vehicles (and their generally poorer owners) from accessing city centers, the ZBE have been the target of some protest demonstrations, lawsuits and in return mitigation measures (evenings and week-ends). In the Barcelona metropolitan area, people can receive a three-year urban public transport subscription if they turn over a polluting vehicle for scrapping.

The increases in energy prices led to several political decisions. The decrease in the VAT on gas and fuels, lowering their prices for households and companies dealing with the crisis, supports the consumption of fossil energy which must eventually be limited and then eliminated. Simultaneously, very strong initiatives for the **pricing of public transports** aim to limit the use of cars: free travel on the regional rail transports under the authority of the Central Government during the last four months of 2022, substantial reductions on the networks under the authority of the autonomous communities (from 30% to 50%). It is planned that these measures will be continued in 2023.

Lastly, opinion surveys show rather broad support for the idea of limiting the use of automobiles in cities. The responses are nuanced however as a function of the political positioning of the people questioned, with the most conservative circles being the most reticent.

SWITZERLAND

While the term *sobriété* does not appear in discussions in Switzerland, the issue that it raises leads to critical thinking on social organization as a whole, from the moment that resources are limited on a global scale and the effects of our model of production and consumption on the climate can no longer be doubted. The fantasy of an industrial optimization with no negative feedback on the environment, opened by the industrial revolution two centuries ago, no longer works, as demonstrated for example by the fragility and the dysfunctions of international logistics chains. Concerns of reliability and resiliency are now leading to a diversification of suppliers and supply chains, the reintroduction of buffer stocks, and the search for shorter circuits.

The optimization of sub-systems which are isolated from each other does not lead to an overall optimum (nor even to a simply satisfactory situation). Production, marketing, and logistics must be handled jointly, in a systemic approach.

The reduction of certain types of consumption should not be rejected by the population. While technological research is a pillar of the country's model of development, too few projects are taken as far as application on an industrial scale. Within a highly decentralized institutional framework, the analysis of problems and solutions is differentiated according to the territories. For example, biofuels from agricultural activity will have a more intense application in the regions where they are produced, as is true for hydroelectricity or geothermics.

In industry, fear of electricity shortages has pushed some companies to take the precaution of concluding guaranteed purchase options, to the detriment of a coherent vision of comprehensive needs. Potential savings that have thus far been neglected should be tapped, for example the stopping of machines when they are not used effectively, without forgetting the improvement of the processes themselves. The Covid crisis also accelerated the growth of e-commerce and the increase in the movements of vans (light-duty vehicles) calls for the optimization of urban logistics.

In terms of the mobility of people, an inventory of journeys shows that the margins for change are not the same depending on the reasons and the territories, particularly for leisure journeys. The growth in journeys by bicycle and with electric scooters has exceeded the forecasts and has revealed the need for a legal framework which can take them into account, particularly for safety reasons.

On the level of the Confederation, numerous research programs have been financed, particularly within the framework of the PNR 71 (managing energy consumption) and PNR 70 (energy transition) programs associating **technical and anthropological approaches**. Three general conclusions have emerged:

- Voluntary actions are not sufficient. For new products and solutions to lead to energy savings, appropriate regulations are indispensable;
- The new technologies are insufficiently harnessed for energy savings, particularly for the best organization of mobilities drawing on the existing digital tools;
- The efficacy of new supplies is limited by rebound effects, which can be predicted and which we can try in advance to limit. We should not avoid all innovation however for fear that users will use it!

While applications of the research are still too rare, the current period has allowed for the development of an anthropological-technological approach to grasp the issues of mobility, and sufficiency in mobility, in all of their dimensions. ■