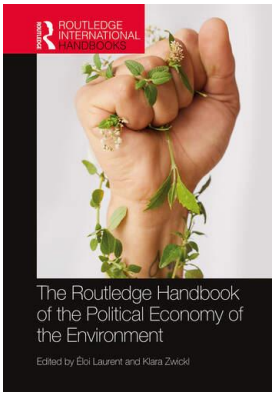

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FROM THE WELFARE STATE TO THE SOCIAL-ECOLOGICAL STATE

Éloi Laurent

Introduction: a welfare state for our era

In a landmark book, which for the first time defined, clarified and detailed the notion of social policy, English sociologist Richard Titmuss writes, "We do not have policies about the weather because, as yet, we are powerless to do anything about the weather" (Titmuss 1976: 1). Times have changed. Powerful as we have become, we can now do something about storms, droughts and floods that affect and sometimes ravage human communities all over the planet because of the climate change and more generally ecological crises for which we are responsible. The Anthropocene is, in the geological sense as in the meteorological sense, the era of the time on our watch. But we also have power over the social consequences of ecological crises we have put in motion.

In its simplest form, the welfare state opposes a right to a risk. The combination of the industrial revolution and the "first globalization" at the end of the 19th century, by increasing economic vulnerabilities, in turn reinforced demands for collective protection. More precisely, increased social volatility of human existences has given rise to the need for a double or better joint protection, of human well-being and the biosphere. Remarkably and too rarely underlined, ecology has emerged at the end of the 19th century as a domain of knowledge, only a few years before the birth of social protection as a public policy (the welfare state was born in 1883 with the law on labor accidents granted by Bismarck to German workers tempted by socialism, while in 1868, Ernst Haeckel defined ecology as the science of the relations between living organisms and their organic and inorganic environment).

The modern welfare state was devised in the 1880s in unified Germany to forge a new alliance between labor and capital (out of the influence of what Bismarck called "socialists") and was built later in most of Europe's countries upon the idea that human beings are entitled to receive protection against the hazards of social life. "Social security" – currently guaranteed to fewer than 30% of the world's population in about half of the planet's countries – is in fact a considerable extension of the "civil security" that Hobbes entrusted to the Leviathan in the mid-1600s. This chapter essentially argues that our era calls for a deep transformation of this very successful institution into a social-ecological state, able to provide social-ecological protection of human well-being in the face of climate change, the destruction of biodiversity and the degradation of ecosystems visible and tangible everywhere on the planet. As the brutal "yellow

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vests" crisis in France has shown in 2018–2019, to be fair, accepted and therefore effective, ecological transition policies must take into account the social dimension of ecological issues. The transition will be just or just not be (Laurent 2020). As the COVID-19 pandemic has shown a year later, the welfare state is therefore a strategic institution in the century of environmental crises.

In fact, studies arguing for the advent of a "sustainable welfare state" are now developing, as evidenced by a special issue of the journal *Sustainability* published in early 2020 (Hirvilammi and Koch 2020) that extends the pioneering work of James Meadowcroft, Ian Gough and others on the link between social policies and climate change (Gough et al. 2008). Social-ecological analysis and policy are gaining ground.

This chapter first retraces the genealogy of the social-ecological state (first section) to then clarify its philosophy (second section), its perceived foundational need of economic growth (third section), its functions (fourth section) and, as an illustration of its necessary generalization to all levels of governance, its application to urban policy (final section).

A genealogy of the social-ecological state

Why begin the metamorphosis of our welfare state, thought in the 19th century to overcome the conflict between work and capital, into a social-ecological state calibrated for the 21st century, designed to reconcile social issues and environmental challenges? How do we build robust institutions capable of guaranteeing social-ecological progress, defined as the democratic progress of human development in the Anthropocene age? We can take two different paths to establish a philosophical continuity between the welfare state and the social-ecological state: that of social risk and that of individual well-being.

If we retain the risk approach, it now appears that social risk includes an important environmental dimension (embodied in the floods, heat waves, storms, etc. that individuals, groups, localities and nations around the world are experiencing with increasing frequency and intensity). Citizens are therefore entitled to expect public authorities to develop new means of risk pooling and protection policy. If we chose to consider not the risk facing individuals and groups but the sources of their well-being, it also appears that it is in great part determined by the environmental conditions of existence (climate, air pollution, water quality, access to energy, etc.). There is thus every reason for social policy to include the environmental dimension. This integration is still in its infancy in the beginning of the 21st century, but it can be traced back to Europe's 14th century.

In fact, one could argue that social-ecological policy preceded social policy in Europe. If the first social welfare law dates back to 1883, the first social-ecological decree appeared in 1306, when the English king Edward I attempted to ban the use of coal in London for sanitary reasons (his own mother having fallen sick because of the thick pollution of sulfur engulfing the city). It was not until 1956, some 650 years later, that the British Parliament voted for the Clean Air Act, approved in the aftermath of the 1952 "Great Smog" that killed 4,000 Londoners by air poisoning.

In the same post-war period in the United Kingdom, at a time when the welfare state was taking off thanks to pioneering figures like William Beveridge, researchers rediscovered the importance of environmental factors in the state of health of populations, a link at the origin of the hygienist policies in the 18th and the 19th century that had been gradually neglected in the first half of the 20th century. Social policy, brought to light as an academic discipline by Richard Titmuss, was extended as a public domain to environmental issues, most notably by François Laffite, Titmuss's co-author. Laffite (Titmuss and Lafitte 1963) implicitly conceptualized social-ecological policy when he defined social policy as a policy of the local environment,

encompassing not only social conditions of life (family, work, leisure), but also access to environmental amenities, control of urban pollution and all the environmental factors likely to influence the well-being of individuals. In doing so, he extended the realm of protection granted by the welfare state and before the welfare state by the state.

The philosophy of the social-ecological state: from unequal uncertainty to mutualized risk

The fundamental goal of the state, as theorized in the 16th and the 17th century by Machiavelli, Bodin and Hobbes, is indeed to produce security, a civil security extended to social security with the advent of the welfare state in the 19th century. Social protection is not only about risk recognition and accident insurance: it aims to turn uncertainty into risk in order to pool and reduce uncertainty and thus reduce social inequality. In this perspective, social protection in the 21st century should return to its primary purpose to enlarge it to environmental protection. Let's briefly review the three historical stages that led to public mutualization of social risk (Laurent 2018a).

The first stage, before the 19th century and the advent of collective protections, is that of social uncertainty answered by solitary prayer. François Ewald (1996) puts it well: "For a long time, we shared the risks through the Church and religion: we responded to the risk through Providence. The more the divine was incomprehensible, the more it was necessary to have faith." But as Ewald adds,

> this response was exhausted in 1755 with the Lisbon earthquake. Through a phenomenon of sudden dissolution, a common way of experiencing events had become impossible: that of Leibnizian optimism. From then on, it will be said that it is human nature and short-sightedness that are the causes of our misfortunes and not the divine will. Risk became both an individual problem through the suffering it implies and a social problem through the responsibilities it involves
>
> (1996: 54)

This thinking lays the way for the second stage, where foresight (or on the contrary improvidence) becomes the expression of moral responsibility. Foresight, first individual, each member of society assuming and being accountable for his or her risks, becomes collective throughout the 19th century. In France, for instance, mutual benefit societies are created outside the state and then recognized by the state in 1835 and then encouraged by the state with the law of April 1, 1898, on labor accidents. This law in fact tipped the French system towards social protection and the third stage, where it is public solidarity, embodied in the welfare state, that addresses social risk.

The function of security production and risk reduction is at the root of such a welfare state, which intends to measure, supervise and predict society. It is based on the distinction established by Franck Knight (2006) between risk (measurable unknowns) and uncertainty (unmeasurable ones). If social life is uncertain in the sense of Knight, then the welfare state will not be able to protect human well-being from unforeseen events. But if social accidents can be normalized, in the statistical sense of the term, then the apparent fatality can be standardized and domesticated through insurance mechanisms. Unpredictable individual risks become manageable social risk that can be calculated, pooled and mitigated.

To go back to the French case, one can see this metamorphosis of uncertainty into risk when comparing the opening statement and Article 1 of the ordinance of October 4, 1945, creating

Social Security in France. Uncertainty is the social problem explicitly identified in the opening statement:

> Social security is the guarantee given to everyone that in all circumstances he will have the necessary means to ensure his subsistence and that of his family in decent conditions. Finding its justification in a basic concern for social justice, it responds to the concern to rid the workers of the uncertainty of tomorrow, of this constant uncertainty which creates a sense of inferiority and which is the real and profound basis of the distinction of classes between the self-assured and their future self-possessed and the workers on whom weighs, at any moment, the threat of misery.

Article 1 of the ordinance provides the solution to this problem, public risk sharing:

> A social security organization is set up to guarantee workers and their families against risks of any kind likely to reduce or eliminate their earning power, to cover maternity expenses and the family expenses they bear.

Social protection is here clearly defined as the mutualization of social risk with a view to reducing it and more equitably distributing its burden among citizens. At the start of the 21st century, social risk cannot be thought of (and mutualized) without taking into account the ecological crises that increasingly threaten human well-being in all corners of the world.

While attempting to understand the fundamental principle underlying the welfare state, Danish sociologist Gøsta Esping-Andersen proposed, in line with Richard Titmuss's founding work and after Karl Polanyi, the notion of "de-commodification" of labor, that is to say the protection of work from market logic by means of social law aiming at an ethically superior value, namely human well-being. For Esping-Andersen, social protection is founded on the idea that work is not a commodity. In his view, this common principle is embodied throughout the world in distinct institutional logics, which lead to giving it more or less strength.[1]

The guiding principle of the social-ecological state is de-naturalization (or, positively, socialization), that is to say the social domestication of environmental crises. De-naturalization consists more precisely of transforming ecological uncertainty into social risk, by means of guarantees and public insurance aimed at making the social consequences of the environmental crises of the 21st century as fair as possible, therefore mitigating their natural violence. As the next sections show, like the welfare state, the social-ecological state has to assume a function of allocation, redistribution and stabilization but without relying as much as the welfare state on economic growth that is accelerating ecological crises it intends on mitigating.

In the emerging literature on social-ecological analysis and policy, the term "eco-social state" is sometimes found (see for instance Koch and Fritz 2014). Yet, eco-social could as well refer to "economic-social" as to "ecological-social" given the meaning and historical use of the Greek radical *oikos* (meaning household) by Aristotle and Xenophon to define economics, well before it was used to define ecology. For this reason, *social-ecological state* seems a preferable concept (Laurent 2021).

Is the social-ecological state a growth state?

Hirvilammi (2020)[2] reminds us that the system of full employment was conceptualized in the form of a "virtuous circle" by the Swedish economist Gunnar Myrdal, thinker and architect of the social protections of his country and theorist of the welfare state. Myrdal's "virtuous circle"

aims at formalizing the alliance between social protection and economic growth. This circle is virtuous because of two feedback nodes – full employment on the one hand and education and training policies on the other – that link wage levels and labor productivity. The social-economic alliance, typical of the second half of the 20th century in Europe, is cumulative: economic growth fueled by the increase in labor productivity and employment in turn feeds social progress through the reduction of inequalities and extension of social protection to all areas of the life cycle (education, housing, employment, pensions). Attitudes and behaviors (political confidence, aspirations for social progress, etc.) propagate the structural dynamic. In this balance resides a good part of what has been called social democracy.

Can the social-ecological state do without growth? We might want to do without growth for reasons of ecological sobriety but could find it an impossible task because we need to "finance" (or afford in a more conservative view) our social policies. We therefore face in fact a formidable dilemma between two contradictory demands: ecological transition and social progress. This allegedly consubstantial link between the welfare state and economic growth is in reality not robust, and it appears even less convincing in a social-ecological approach to public policies.

First, from a historical perspective, it is important to recognize that the welfare state was born and developed in a context of weak and unstable economic growth, the end of the 19th century in Europe, its financial scope being considerably extended in Europe in an equally weak and unstable growth regime, the 1940s. Conversely, the social austerity policies that have greatly weakened European welfare states since the early 1990s (with disastrous consequences on the human level, as shown by the health record of the United Kingdom, Italy, Spain and France in the face of the COVID-19 pandemic) were deployed in a context of moderate but sustained growth. The case of the United Kingdom in particular shows that it is not the level of economic growth that governs the choice of whether to "finance" social policy, but political considerations. The case of Japan shows, on the contrary, that the brutal collapse and the prolonged absence of economic growth can be accompanied by a very strong increase in social spending (in this case a doubling of their share as a percentage of GDP between years 1980 and the end of the 2010s). It can also be shown empirically, by widening the historical lens, that the unprecedented acceleration of human development in the 20th century depends much more on the meteoric improvement in health and education than on the increase in income by inhabitant (for a comprehensive argument on the perceived dependency of the welfare state on growth, see Laurent 2021).

More fundamentally, the argument that, without GDP growth, redistribution policies become impossible, is empirically very fragile. Such an assertion first forgets that the state of primary and secondary inequalities has a major influence on production capacities and therefore generation of growth (inequalities are not only unjust socially, they are also economically ineffective). Above all, however, it ignores the fact that GDP growth weighs almost nothing against the structural parameters that determine social spending, as the French case shows, whose net social spending (according to the definition of the OECD) is today the highest in the world (see Laurent 2021).

In a pay-as-you-go system like the French system, the financial equilibrium depends fundamentally on a demographic equilibrium between the number of contributors and the number of retirees, which itself depends on the age pyramid, the lengthening of life expectancy at 60 years, workforce activity and the average age of retirement, all parameters that are only marginally influenced by the growth rate of the GDP. The equilibrium is also based on the increase, not of GDP, but of activity income, that is, mainly wages, which itself depends on the distribution of added value and therefore, again, on choices of distribution and redistribution and not of production (i.e. equity and not efficiency issues). Even with weak growth in the aftermath

of the great recession of 2009, social systems were able to return to equilibrium in France (a fact often overlooked; the general pension system had returned there to equilibrium in 2017).

Similarly, health spending depends essentially on the speed of demographic aging, the growing influence of environment-related diseases on chronic and transmissible pathologies (pollution, quality of food, etc.) and the cost of medical technologies. Expenditure on family, education, housing or poverty policies also depends fundamentally on demographic structures and the state of social inequality. Finally, the outlook for social spending depends on structural parameters such as demography (net migration, fertility, mortality) and activity and employment behaviors much more than on the increase in GDP. It is therefore these fundamental parameters that must be improved to guarantee the sustainability of social spending, if that is indeed the objective pursued.

What is more, the idea that growth is necessary to "finance" social policies is an archaic way of conceiving these policies in the age of environmental challenges: it is important today, in social as in energy matters, to move from a logic of spending to a logic of sobriety. Indeed, the ecological extension of the welfare state – imposed by the social risks engendered by environmental crises – is based on a logic of savings rather than spending pledged on taxes, themselves based on income. The financing of the social-ecological state can thus be ensured by the colossal savings of social expenditure allowed by the mitigation of ecological crises.

Let us think of the savings made possible by rational, that is to say non-self-destructive, treatment of ecosystems and biodiversity which would have made it possible to avoid the epidemics of AIDS, Ebola, MERS and SARS and of course COVID-19. Consider the savings in social spending made possible by the gradual alleviation of the ozone layer crisis, which has started to regenerate as a result of effective global governance and has thus avoided tens of millions of skin cancer cases on the planet. Consider the potential savings in social spending by mitigating climate change or air pollution, not to mention the health and therefore financial consequences of improving eating habits, sports practices or urban mobility.

Basically, the COVID-19 pandemic and its treatment by public authorities around the world signals the relegation of economic growth to the rank of a third-rate indicator in the 21st century: ecosystems determine health which determine economic possibilities. In other words, increasing economic growth while degrading ecosystems and therefore human health is a counterproductive development strategy. From this point of view, the social-ecological state freed from growth is not a post-materialist luxury: it is an economic necessity. What exactly does it consist of?

The three functions of the social-ecological state

The great strength of the best typologies of economic thought is to regain their relevance in radically new historical contexts on the condition of minor updates. This is the case with the tripartite analysis of the functions of public spending proposed by Richard Musgrave 60 years ago (Musgrave and Peacock 1958). Musgrave distinguished three "branches" of public finance, akin to the three powers that the American Constitution separates.

The first, called allocation, aims at the supply of public goods (or the demarcation of the border between public goods and private goods by the state); the second, distribution (and not just redistribution) aims to put public finances at the service of the collective preferences of citizens; the third, called stabilization, uses public finance as an instrument to maximize the "magic square" in its Kaldorian version.[3]

Going further, what could be the purpose of a social-ecological state? It would be no different from that fulfilled by the welfare state through its functions of allocation, redistribution and

stabilization, but these functions would be applied to environmental issues. In this respect, there is no fundamental difference between social and environmental policy: both aim at correcting market economy failures such as imperfect information, incomplete markets, externalities, and so on that justify public intervention.

Allocation: a sober hence economical social-ecological state

We must begin here by emphasizing, to better get around it, the main defect in Musgrave's typology of separating issues of social justice and issues of economic efficiency. Ecological crises, such as the COVID-19 pandemic, show how these issues are in fact intertwined, inseparable, inextricable. The allocation function therefore obviously has powerful distributive effects which must precisely be the subject of social compensation (via redistribution), as in the case of the regulation of carbon emissions.

In this regard, it should be noted that while Musgrave takes care to specify that regulatory policies of this type are not included in the allocation function, on the contrary, they must be integrated into them: in a social-ecological approach, regulation policies are indeed the major component of the allocation function and the central reason for its economic and social positive impact on human well-being.

As has been said, the social-ecological state is mostly financed by savings, not by taxes. Even when new taxes have to be introduced, such as carbon taxation, this can easily lead, if properly calibrated, to double savings in terms of quality of life and income for the majority of the population (Berry and Laurent 2019; Boyce in this volume; Malliet and Haalebos in this volume). Note that to measure these benefits, there is no need to resort to fragile and ethically questionable methods of monetization of human life or growth points gained or lost by environmental policies. There are indeed many reliable environmental health indicators (Laurent 2018b).

The allocation function of the social-ecological state essentially means revealing the hidden social costs of ecological crises – such as respiratory diseases, strokes, and so on caused by air pollution in European urban centers – in order to reduce them as well as mitigating the inequality that they compound. Numerous reports indeed stress the beneficial effect of environmental regulations on health and well-being (such as the Clean Air Act in the United States and the Montreal Protocol on the ozone layer at the global level). The social cost of ecological crises must be made visible in order to reveal the misguided allocation of resources to which the current economic systems lead.

Distribution and redistribution

Scientific advances in the understanding of ecological crises bring us closer to the moment when, as with the social phenomena of the end of the 19th century and of the post-war period, collective responsibility will replace fatality and environmental uncertainty will make way for social-ecological risk. The IPCC indeed takes great care, in its reports, to probabilize climate risks in four distinct categories: which is almost certainty (the substantial increase in extreme temperatures by the end of the 21st century); which is very likely (the average increase in sea and ocean levels, which will contribute to an increased risk of coastal submersion), which is likely (the greater frequency of heavy precipitation and the strength of most tropical cyclones) and finally which is quite likely (heat waves and retreat of the glaciers). Often questioned by its detractors for the apocalyptic nature of its predictions, the IPCC actually helps us, by means of reasoned forecasts, to familiarize us on the matter of ecological crises with the language and logic of risk.

However, so-called natural disasters (which in fact arise more and more from human action and are better understood as social-ecological disasters, Laurent 2011) are still not fully "insurable" for three main reasons: they have a highly variable gravity, which prevents modeling and evaluating their cost; they are not entirely random (in particular due to the human factor described earlier); and they are subject to an anti-geographic selection (certain regions, for example coastal, are much more subject than others to disasters, which leads to very high insurance costs that cannot be spread evenly over the population). Solidarity must therefore overcome the limits of private insurance, which in certain years only covers half of the growing financial costs linked to the multiplication and intensification of ecological disturbances, particularly climatic. For instance, out of the 158 billion dollars in cost of so-called natural disasters estimated by the Swiss reinsurance group Swiss Re for the year 2016 worldwide (compared to 94 billion dollars in 2015), only approximately 49 billion dollars in damage were covered by insurance companies.

A social-ecological state must therefore pool these costs, reduce them and more fairly distribute them, just as the welfare state has done for social risks for more than a century. Faced with ecological crises for which we are fully responsible, we must in short again rely on the equalizing power of the welfare state, which can transform uncertainty into risk, hazard into protection, chance into justice. This may imply, institutionally, in a country like France, the creation of a new "social-ecological" branch of Social Security or the integration, within each of the existing branches, of environmental risks.

When it comes to the fiscal underpinning of redistribution, a direction of reform could be to shift tax systems toward the penalization of the excessive use of natural resources, starting with fossil fuels. Countries of the world, chief among them the OECD group, should embark on a third tax revolution, after the taxation of income at the beginning of the 20th century and of consumption in the 1950s. Currently, on average, environmental taxation in the European Union, for instance, the most advanced region of the world on the matter, only represents 6% of total taxation and has actually declined since 2002 (when it represented 7%). In the rest of the developed world, it remains much too low to influence behaviors and shift production and consumption systems toward greater sustainability, with only a few countries being an exception, such as Denmark.

Stabilization: a social-ecological state that preserves essential well-being

Let us now consider the function of stabilization. In its traditional meaning, this consists of governments' bringing into play automatic stabilizers and discretionary policy in order to cushion an economic shock and prevent a recession from degenerating into a depression. The stabilization function thus increases resilience. The social-ecological stabilization function is, by the same logic, aimed at enabling individuals to deal with ecological shocks (e.g. the heat wave of 2003 in Europe that killed 70,000 people) by preserving their well-being.

The macroeconomic objectives that justify Musgrave's function of stabilizing are clearly outdated and should therefore be updated (for the central banks themselves, the inflation target is gradually becoming obsolete). Essential well-being appears to be a relevant stabilization target, in particular the protection of the essential components of human well-being from ecological shocks (pandemics, heat waves, etc.).

Understood in this broad framework, what would a social-ecological policy look like? The development of a social-ecological policy requires prior identification and analysis of the associated and sometimes inextricable character of the social and environmental dimensions: there is

a need to recognize the ecological stakes within social issues, as well as to reveal the social stakes of ecological issues, at the national as well as European level (the social-ecological dimension of carbon taxation,[4] for instance, is a national and European policy matter). This approach can be formalized using a social-ecological matrix (see Figure 15.1).[5]

How can we represent the mutually beneficial social-ecological interactions that sustain the functions of the social-ecological state in a dynamic rather than the static way used in Figure 15.1? Since the key feature of social-ecological policies is to dovetail social issues and ecological challenges, we can sketch a social-ecological feedback loop (Figure 15.2) reproducing the mathematical symbol of infinity but also evoking a Möbius strip (the shape that inspired the recycling logo since the early 1970s and by extension the circular economy).

This image, which depicts dynamic social-ecological synergies, clarifies the background of the cumulative social-ecological loop argument by emphasizing two essential nodes: the link between inequalities and ecological crises (the sustainability-justice nexus, see chapter 3) and the link between ecosystem health and human health (the full health nexus). This is an essential change compared to 20th-century welfare states: the transition from full employment to

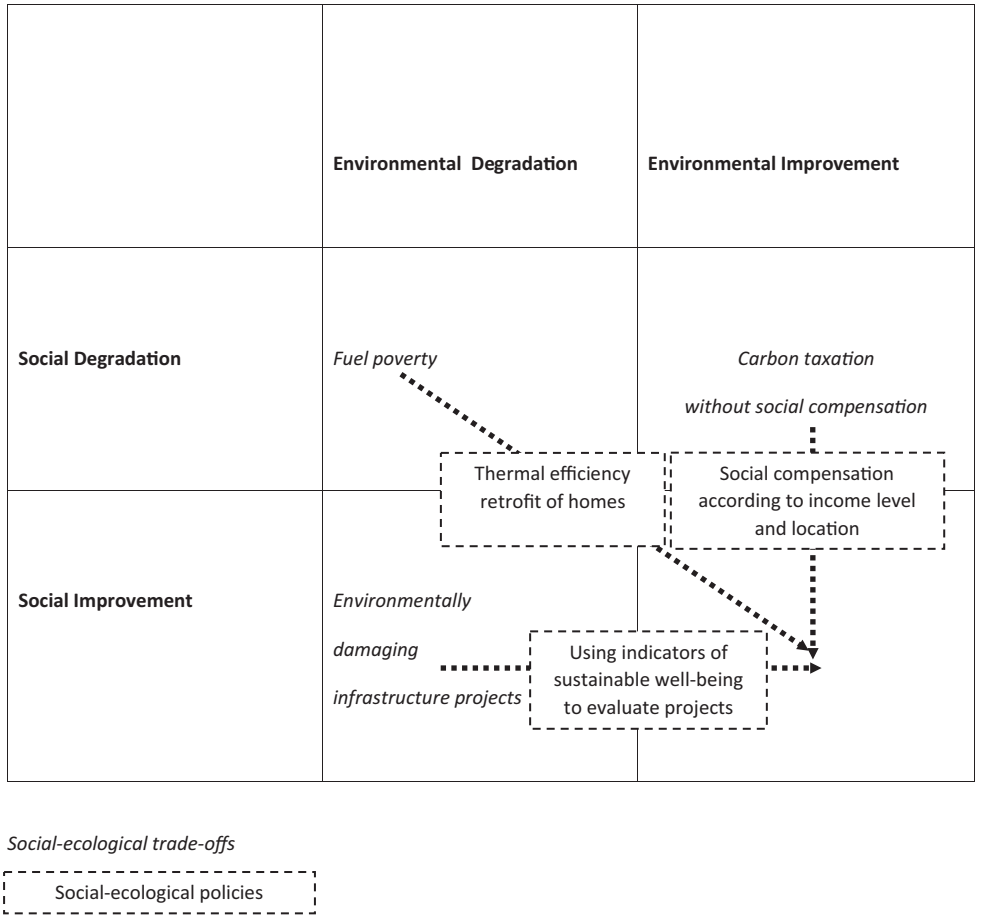


Figure 15.1 Social-ecological trade-offs and synergies

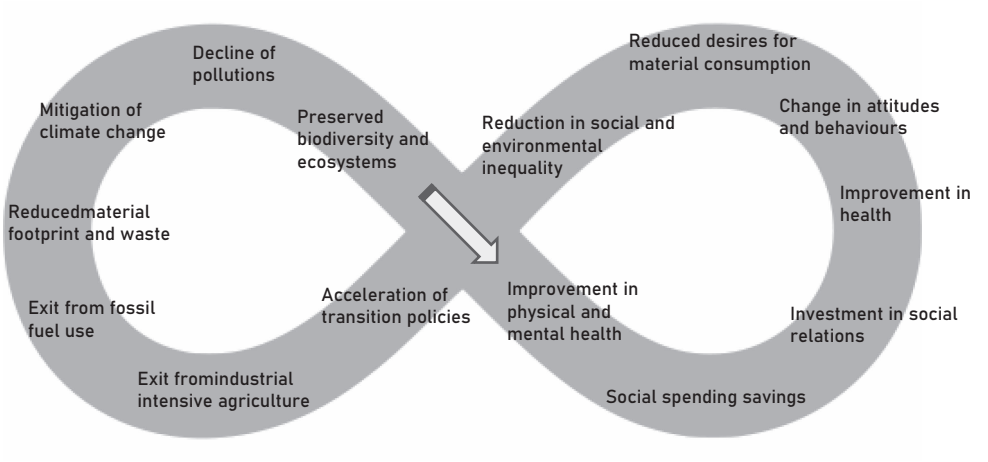


Figure 15.2 The social-ecological feedback loop

full health – that is, human health understood in all its ramifications and implications (physical health, mental health, social links, happiness, health inequalities, environmental health, social and environmental inequalities).

The urban social-ecological state

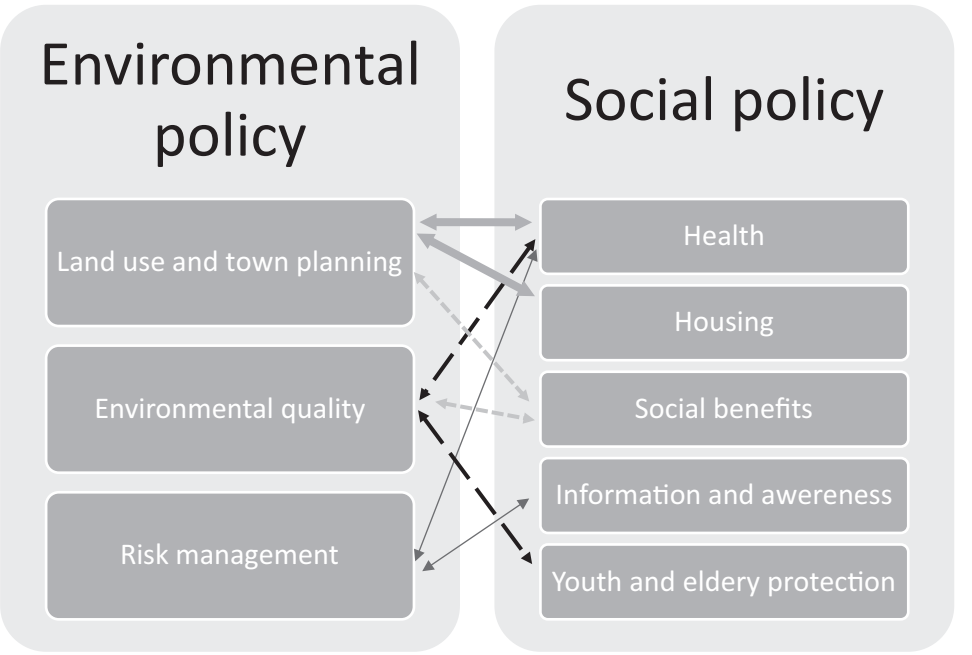
The shift toward a social-ecological state able to carry through the just transition involves not only central or national authorities but all levels of governance, from regional powers such as the European Union to municipalities. The mobilization of urban spaces in this social-ecological transition is in fact crucial, for cities now concentrate a majority of inhabitants (a proportion that reaches 75%–80% in North America and Europe). While occupying only 5% of the surface of the planet, cities account for 66% of the energy consumed and 75% of CO_2 emissions.

Four approaches to the sustainability of cities can be defined using four different disciplines. A city is first of all an administrative and geographical place. Cities can be defined, in this first approach, as dense and interconnected collective living spaces. The notion of "urban systems" reflects these spatial and human interrelations. The question of the hierarchy between spaces (especially in view of the contemporary logic of metropolitanization, which sees the connection of an urban pole to one or more peripheries), inducing more or less controlled mobility between them, appears critical from the point of view of environmental sustainability. It naturally leads to the second approach to urban systems, the economic approach, centered on the concepts of agglomeration and sprawl. From this perspective of urban economy, a city is essentially a place of efficient agglomeration (of jobs, goods, services, people, institutions and ideas). But, in a perspective of sustainability, this agglomeration can also prove to be inefficient, generating considerable environmental and social costs, like those attached to air pollution.

The third definition of urban spaces or systems comes from sociology and defines cities as spaces of social cooperation. Urban space must be shared to fulfill its essential vocation. According to this third approach, a city is the product of human density and social diversity

and in fact embodies a certain vision of social justice. Finally, the city, an enterprise of human cooperation, is subject to the conditions of its environment and affects it in return, locally and globally. The key concepts here are those of urban metabolism and urban adaptation, including climate change. Urban metabolism considers the city as a living organism or an ecosystem and focuses on the quantity of resources it needs to function (water, energy, etc.) and the waste it rejects. Urban adaptation refers to the process of adjusting urban systems to global environmental change (climate change, destruction of biodiversity, degradation of ecosystems), taking into account its observed or expected effects.

These four approaches outline four main axes of urban social-ecological policy (Figure 15.3):



: Axis 1 - traffic speed regulation to limit urban pollution; development of non-polluting public transport to facilitate access to housing.

: Axis 2 - uniform collection of garbage in all areas of the city; social aid for non-polluting mobility.

: Axis 3 - monitoring and evaluation of environmental health indicators such as air pollution; quality of food in school canteens.

: Axis 4 - alert and social-ecological measures in the event of heat waves in the direction of isolated elderly people; containment measures when threatened with the spread of animal viruses such as COVID-19.

Figure 15.3 Urban social-ecological policies in France

- Axis 1: Mobility-environment-health: mobility for access to housing, employment, leisure and public services in connection with associated pollution and its effects on human health (environmental health);
- Axis 2: Social and environmental justice: environmental inequalities in access to amenities and exposure to risks; social policy aimed at easing ecological transition;
- Axis 3: Quality of life: improvement of human well-being and integration of well-being indicators into public policies;
- Axis 4: Footprint and vulnerability: urban metabolism (consumption of natural resources, pollution and waste generated) and adaptation to climate change.

One can illustrate this approach with the case of air pollution regulation and mitigation in French urban areas. The vast majority of French cities exceed the WHO safety thresholds for fine particle pollution, 17 of the 20 largest French cities exceeding the standards for $PM_{2.5}$ particles in 2016. In mainland France, pollution by fine particles alone represents more than 48,000 (preventable) deaths each year, or about 8% of all deaths, as much as mortality due to alcohol. In other words, the forced inhalation of fine particles causes as many deaths in the French population as voluntary alcohol consumption and corresponds to an average loss of life expectancy at 30 years of nine months. If the health impact of two other major air pollutants (ozone and nitrogen dioxide) is added, the toll reaches about 58,000 premature deaths, or around 10% of all deaths in France.

The case of Paris is interesting because of the recent successful efforts of the city's officials to combat air pollution along social-ecological lines. The establishment of a low-emission zone, which first concerned the intramural territory before being partially enlarged in the summer of 2019 to the greater has been accompanied by a complete ban on diesel and gasoline vehicles in 2030, a measure without an equivalent in France. Previous measures have greatly regulated car traffic with convincing results: air quality in Paris has been improving by 30 percentage points in less than a decade (in 2019, 70% of days were considered to be of good or very good air quality).

The development of cycle paths and practices (practices accelerated by the transportation strike of the 2019–2020 winter and the COVID-19 crisis that followed) providing health benefits for both users and pedestrians has been accompanied by public financial support: Paris has created a set of around 30 financial aids intended for individuals and businesses willing to switch from fossil fuels to electric vehicles.

Conclusion: four worlds of the social-ecological state?

When Esping-Andersen identified his three worlds of welfare capitalism in the early 1990s, the OECD undertook a long-term work to measure the impact of "structural rigidities" – at the forefront of which were social protections now strongly developed in Europe and beyond – on "labor market performance" assessed using unemployment and growth rates. The perspective of these studies was radically opposed to that of Esping-Andersen on two counts: work was relegated to its economic utility, and the convergence towards a single social model was promoted, a model considered from the almost exclusive angle of its cost-benefit "optimality."

Thirty years later, it is clear that the debate on the welfare state has largely turned to the advantage of the proponents of economic efficiency, who have succeeded in convincing those in power, especially in Europe where it was born, that social protection is a burden rather than a lever. This does not mean that the principles of the welfare state have become obsolete or that the resulting public policies have ceased to be effective and just, but rather that a simplistic

vision of the functioning of the economy, which opposes a predator state to a liberating market, has come to dominate public debate.

French president Emmanuel Macron's speech on March 12, 2020, delivered under the shock of the COVID-19 health crisis, sounds from this point of view as an epiphany as radical as it is late: "What this pandemic is already revealing, is that free health care, without condition of income, course or profession, our welfare state, are not costs or burdens, but precious goods, essential assets when fate strikes"; "There are goods and services which must be placed outside the laws of the market."

All of this is true. It is also diametrically opposed to the policy conducted in France since the 2017 presidential election and during the previous mandate, when Emmanuel Macron exerted a considerable influence on the Holland presidency. It is also not precise enough. If "fate" "strikes" humanity today, it does not fall from heaven: humans, in the age of the environmental crises of the Anthropocene, have become their own fatality.

The 2020 decade, which opens the 21st century, is indeed that of the ecological challenge: faced with climate change, the destruction of biodiversity and the degradation of ecosystems, human communities must initiate a profound transformation of attitudes and behaviors of their members to prevent the 21st century from being one of self-destruction of human well-being. The first months of the first year of this decisive decade leave little doubt about the urgency of this collective effort.

First, Australia was ravaged by a succession of giant fires that only rain eventually put out. Then it was the COVID-19 pandemic that led to the arrest of almost half of humanity and, with it, the entire global economy. Then, giant fires erupted again, on the West Coast of the United States.

It is hardly debatable that states around the world are ill-equipped to deal with these ecological shocks. Hence the need to make progress in the field of social-ecological analysis and policy that this chapter has explored and to build a social-ecological state calibrated for our time. In fact, different social-ecological states are emerging in the world according to different criteria: vulnerability (exposure to risks, state of health of the population, etc.), protection (development of social protections, the degree of social inequality, etc.) and resilience (social cohesion, trust, the quality of institutions, etc.). Using these three criteria, four different regimes appear on the planet. Four worlds of the social-ecological state are currently visible.

Bio-techno power is the first world of the social-ecological state. What Michel Foucault called half a century ago "the power over life" is today combined with digital control tools whose omnipotence he could not imagine. In the light of the management of the COVID-19 crisis, a mode of socialization of environmental crises becomes clearer, which combines strong exposure to risk, authoritarian power, civil discipline and digital surveillance. South Korea is the most emblematic country of this model, but China has prefigured and applied it on a larger scale. The admiration for this social-ecological regime, palpable in European countries in 2020 whose populations were considered less reliable and whose governments are deemed to be too lax, disregards what ecological authoritarianism has cost the whole world when the first alerts on what was only a regional epidemic were fiercely repressed by the Chinese power, in the fall of 2019. The "effectiveness" of bio-techno power is thus doubly doubtful, from both the factual and the ethical points of view.

The second world is that of *ecological neoliberalism*. In Brazil, the United States and Australia, economic fundamentalism takes the place of social-ecological policy. Environmental regulations as well as health protections are weakened in favor of a small minority who have captured political power and exploited it as a rent to extract huge profits from activities of health privatization and environmental degradation. Yet in these countries, exposure to environmental risks is high

and collective protection is already weak and fragile, as the COVID-19 health tragedy in the US makes clear.

Economic naturalism appears as the third world of the social-ecological state, and it is the prerogative of European countries. Unable to define together a new social-ecological regime calibrated for the 21st century, they opted for a naturalization of the economic system they have built in common since the 1950s, notions borrowed from the living world such as growth and competition, ending up governing human societies and social systems. We can see today how secondary these superficial economic realities are destructive of the social cooperation which underlies it. The health crisis triggered by COVID-19, for instance, hit the French health care system at the exact moment when political power – neither "globalization" nor "demographic aging" – was pushing it, knowingly, to its breaking point. The national madness of the so-called budgetary rationalization of the social system is the reflection of European rules that seem to have as their objective collective ill-being.

The fourth and last world of the social-ecological state is that of *natural regulations*. Even if the welfare state continued its global expansion in the contemporary period, it still concerns only 30% of humanity today. In most of Africa and Asia, human communities simultaneously face very high exposure to environmental risk while enjoying very little social protection. The case of India, where health spending per capita is around $60 (70 times lower than that of OECD countries), is significant from this point of view. Humans therefore need to rely mostly if not solely on natural protections, such as the heat, varying with seasons, that has the power to destroy many viruses. More generally, it is the regulatory services provided by ecosystems that protect humans: climate regulation, purification of air and water, tsunami mitigation, destruction of parasites and pathogens, and so on. These natural regulations, more or less degraded by humans since the industrial revolution, are for them both enemies and allies, the heat waves appearing when viruses disappear, the mangroves protecting marine submersions caused by human-induced climate change.

The major difference between this rudimentary typology and that, much more sophisticated, of Esping-Andersen is due to its temporality: Esping-Andersen conceived its ideal-types after a century of evolution of the welfare state, while a strong path dependency had helped stabilize its different regimes. The four worlds of the social-ecological state as we can see them today are still in their infancy. Far from being crystallized, their internal contradictions will make them evolve rapidly.

In fact, as with the nascent welfare state of the late 19th century, the social-ecological state remains largely to be invented in the years to come. We are now called to a double revolution: putting health back at the heart of our public policies, and putting the environment at the heart of our health policies.

Notes

1 The Esping-Andersen typology, which has become classic, is, as was Titmuss's, a tripartition that contrasts the "corporatist" (as in Germany), "social democratic" (as in Sweden) and "liberal" (as in the United States) models, each characterized by a purpose, a funding method and different governance principles. At the end of the 20th century, Esping-Andersen therefore perceived three worlds of what he called "welfare capitalism."

2 "Sustainable Welfare beyond Growth," *Special Issue of Sustainability*, 2020, www.mdpi.com/journal/sustainability/special_issues/sustainable_welfare_beyond_growth

3 The magic square is a graphic representation of the economic health of a country. It summarizes the four main objectives of a country's short-term economic policy, namely growth, full employment of factors of production, the external balance of the trade balance and price stability.

4 Gough (2017) has very compelling arguments as to the respective merits (or comparative advantages) of social-ecological policies, in particular he argues for social investment (such as subsidies for home retrofitting) rather than social compensations (such as transfers in cash).
5 This figure is adapted from Laurent 2015.

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