Homo ecologicus, a leading figure of environmental change?

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Environmental sociology now clearly attests the unequal contribution made by corporations and individuals to climate change (Rieger 2024, previous issue) and more generally to the ecological crisis (Freudenburg 2006; Collins et al. 2020), and advocates for focused and constraining regulations directed toward "big polluters." And yet, a glimpse at the current direction of environmental policies shows a very different reality. In France, for instance, conservative voices denounce the tyranny of "écologie punitive" (punitive ecology) as soon as measures are taken to bind behaviors and economic sectors, which more broadly illustrates the strength of race-to-the-bottom dynamics when it comes to governing environmental problems (Vig and Kraft 2012).

If ecological urgency does not warrant some level of constraint, what then is an alternative? During the past ten years spent on the study of environmental policies, I have realized how strong our reliance is on individual responsibility, self-regulation, voluntary commitments, informational devices, and other behavioral conceptions of environmental change. These manifold initiatives have become a cornerstone of environmental policies (Jordan et al. 2003), producing many studies, typologies, and theories. Yet my purpose here is not to focus on their many specificities but rather to give meaning to this overall liberal trend and critically assess its scope and limits.

I suggest the trend depicts a specific problematization of environmental change that puts the emphasis on *Homo ecologicus*, a theoretical representation of a rational agent whose behavior is determined by an acute awareness of its ecological footprint, and whose economic choices and daily actions are oriented toward minimizing its environmental impacts. This standardized figure does not target the most polluting social groups, but individuals more generally. It spans corporations, consumers, and ordinary citizens and wields responsible behavior as a flag.

But can the future of planet Earth fall upon the shoulders of enlightened individuals and responsible corporations? To explore such a question, the concept of *Homo ecologicus* helps to bridge separate debates in sociology about corporate responsibility, market-based policies, green consumption, and sustainability governance. In what follows, I trace by analytical and empirical means the different aspects of *Homo ecologicus* and its various translations into governing consumer behavior, ordinary ecological practices, and corporate action. The related areas of scholarship take a first perspective on the "invisibilization" of social and economic structures, setting aside the systemic dimension of environmental problems. A second perspective accrues from the reliance on environmental markets as a means of internalizing negative externalities. The tools of economic sociology are useful here to shed light on the various influencing strategies of stakeholders: Far from the theoretical idea of minimizing ecological footprint, market transactions and the related sociotechnical infrastructure that make them possible are sites for the dominance of economic interests over ecological ones. By providing renewed stances on liberal environmental policies, the tools of sociology in general, and of economic sociology in particular, can help us make significant contributions to policy analysis.

In the following, I outline a brief political history of *Homo ecologicus* to examine the rationale underlying its emergence and appropriation in several social areas. I then build on green consumption and waste management to highlight how social inequalities and low investments hide behind the emphasis on individual actions and reveal the limited scope of these pro-

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grams. In a third section, I use voluntary carbon markets as an illustration of the economic distortions that span market-based policies, throughout their conceptions and implementations. This then paves the way for a reflection on the links between economic sociology, policy analysis, and the promotion of more ambitious action for environmental change.

The historical roots of *Homo ecologicus*

To better capture the society that is taking shape by following the tracks of *Homo ecologicus*, economic sociology can first help us to understand its historical origins. Where does *Homo ecologicus* come from? What explains such strong colonization of environmental policy frameworks?

There are fruitful answers to these questions in Popp Berman's stimulating study of the influence of microeconomists within the US state apparatus (Popp Berman 2022), in which environmental programs appear as a textbook case. From the 1960s, a new way of assessing public policy emerges as microeconomists come to occupy a prominent place in the US government apparatus as well as in expert and advisory organizations. This leads to the spread of what Popp Berman calls a "microeconomic style of reasoning": A general framework that dominates the way in which public problems are thought through, placing a central value on the notions of efficiency, incentives, choice, and competition. The microeconomic style of reasoning also leads to a new approach to the political regulation of markets. According to its precepts, well-designed and competitive markets are the means for the efficient allocation of resources, goods, and actions. Meanwhile, environmental command-and-control regulations designed in the early 1970s are heavily contested by business coalitions in the USA (Bonneuil 2015), ultimately leading to their dismantling and replacement with more flexible market-based policies. Technical norms, pollution thresholds, and tax – the Clean Air Act's main tools to encourage clean investments and reduce industrial pollution – are scrutinized by economists who, after a set of empirical studies evidencing the inefficiency of those tools, spread a universal economic narrative that undermines regulatory policies as a whole (Lane 2012).

The time is then ripe for the rise of market forms of policy compliance. Coase's famous proposition about the problems of social cost (Coase 1960) is reinterpreted and adapted to pollution matters (Dales 1968). Such is the case for the SO2 air pollution problem for which a cap-and-trade program is created in the USA in 1990 to facilitate (understand "to lower the costs of") corporate compliance. Firms whose activities fall under pollution regulations can either comply or offset their pollution by buying credits on a regulated market. Progressively, market forms of environmental policies proliferate in various institutional settings (Knoll 2019), ranging from regulated to voluntary involvement in the production and circulation of what Chiapello and Engels (2021) label as "environmental intangibles," a specific type of commodity based on the measurement and commodification of environmental impacts. Widespread expressions include biodiversity offsets, carbon markets, water quality trading, and index insurance. In the past decades, environmental problems have been progressively narrowed to the management of corporate impacts, while economic transactions and price signals have become the means by which firms are tied to the figure of *Homo ecologicus*.

A parallel trend in the shape of green consumption also emerges in the 1970s, relying more directly on consumer behavior to regulate corporate actions. At that time, the first environmental labels are created in Europe by public regulators as a way to convert environmental values into economic value with a price signal to encourage more environmentally sustainable behavior. Rapidly, private endeavors follow, reflecting a shift toward business-to-business regulations, third-party certification, and private governance more generally (Hatanaka et al. 2005). Particularly popular in agri-food systems, integration of social and environmental criteria through sustainability standards are meant to stimulate corporate change by reorienting consumer behaviors. The aim is to make consumers aware of the environmental impact of their purchasing decisions, encouraging them to switch to alternative practices deemed more virtuous. Labels provide material signaling with logos to direct consumption choices, while scores, more recently populating supermarket shelves, provide quantified information about a specific criterion (such as nutritional quality) and allow ranking of products. By harnessing the figure of *Homo ecologicus* and applying it to both consumers and firms, sustainability standards are meant to foster behavioral change.

Later on, in the 1990s, economic instruments and market regulations are also experimented with in the field of waste management and circular economy, demonstrating the mobilization of *Homo ecologicus* rationale to incentivize citizen behavior. Several countries, including Germany and France, adopt what is known as "extended producer responsibility" (EPR), a policy that assigns responsibility for end-of-life products to producers, including at the post-consumer stage, therefore shifting the responsibility for waste

management away from municipalities and consumers and to firms. EPR generates and gathers corporate funding that helps to cover the collection, sorting, and recycling of waste, in compulsory or voluntary fashions. Here again, the responsibility of firms is deeply intertwined with individual behaviors: The efficiency of recycling, a widely acknowledged strategy to manage humanity's overproduction of waste, relies on the voluntary involvement of citizens to sort their own garbage. Ultimately, it exempts governments from reflecting on frugal consumption and reducing waste production.

Throughout the years, corporate responsibility has changed its meaning. The polluter-pay principle, historically taking the form of an ecotax system in Pigou's *Economics of Welfare* ([1920] 2013), has given way to more flexible market devices, while standards have emerged with the promotion of sustainable development. First deemed the cause of environmental problems, firms have been progressively hailed as solutions in the face of growing ecological damage; state-firm relations have diversified, opening up to less binding forms of regulation (Knoll 2019). Behavior, awareness, or performance – the criteria through which firms are made to act on environmental problems – stem from a conception of rational, individual, and free economic agents grounded in economics, behavioral sciences, and social psychology (Asdal and Marres 2014). For its promoters, *Homo ecologicus* appears as the leading figure in sustainability struggles, and market reform, nudge policies, corporate accountability, and consumer education are the tools of environmental salvation.

A smokescreen obscuring social and economic structures

Why should we be wary of *Homo ecologicus*? Several areas of scholarship in the social sciences are helpful in nourishing criticism of individual incentives in the resolution of environmental problems. They highlight that considering consumers and citizens as all-powerful individuals has a smokescreen effect that obscures social and economic structures of the environmental crisis, thus thwarting any ambitious transformation of economic and social regulations. In this section, I build on critical Bourdieusian sociology of consumption and on political sociology to discuss the social and economic consequences of individual responsibility in environmental policies, as well as their limits.

A first and basic limit stems from numbers: In France, for instance, the average consumer's carbon footprint ranges between 9 and 10 tons of greenhouse gas emissions (GHG) per year per person, almost five times the 2 ton target set out in the Paris Agreement (2015). Studies on the individual levers that are available to reach such a target show that it is impossible to achieve without structural reform of production systems and local infrastructures (Bricas 2021). Second, this average indicator hides our highly unequal contribution to environmental harm as well as disproportionate ability to engage in sustainable lifestyles. In recent years, a growing number of studies have focused on the stratification of environmental footprints (Chancel 2014) as well as eco-friendly practices (Kennedy and Givens 2019), emphasizing the "ecocitizen paradox," which signals that individuals who declare thoroughly sustainable behavior also have a high ecological footprint. Third, consumer behavior is never completely in line with the attitudes and values consumers profess to hold. Even individuals who actively pursue a green consumption regime are likely to deviate from their moral commitments. The notion of "value-action gap" refers to the gap between consumers' ambitions and their willingness to pay a premium for greener or ethical goods, which even the most committed consumers also experience. In addition, the regulation of individual consumption behaviors comes up against an economic system that is organized around the rapid satisfaction of material desires, hammering home the idea that ambitious environmental policies cannot avoid rigorous reflection on the transformation of economic systems.

These accounts of lifestyles and consumption pattern stratification question the relevance of action based on *Homo ecologicus* as a standardized figure and equally applying to us all. Not only are individuals unequally responsible for environmental damage and solutions, but they also have various conceptions of the relevant causes and remedies (Bouillet and Grandclément 2024). While *Homo ecologicus* represents legitimate behavior through information campaigns and educational initiatives, the ecological practices individuals value are socially and geographically situated (Ginsburger 2020). This explains the differentiated appropriation of *Homo ecologicus* within societies and reveals the discrepancies between prescribed norms and concrete actions as strong limitations to green consumption and citizen-based policies.

These manifold limits are analyzed as depoliticization processes of the management of environmental problems. Two accounts of this argument appear in political sociology. Depoliticization can be understood as the "invisibilization" of deep-seated structural, political, economic, and social causes of ecological issues in media and institutional arenas (Comby 2015; Lartigue et al. 2021). Promoting such a simplified representation of the issues can be interpreted as a strate-

gy of dominant economic and political actors to avoid political confrontation and the imposition of binding rules. Although stimulating, this idea somewhat comes up against a number of studies insisting instead that the difficulties of imposing binding policies are due to the active involvement of economic players in antienvironmental lobbying (Tindall et al. 2022).

A more nuanced conception of depoliticization stems from the study of institutional documentation produced to encourage consumers and citizens to reform their daily practices. Although centered on individual responsibility to address environmental problems, the framework promoted by public agencies, ministries, and other institutional players does not seem so unaware of the underlying economic structures. Indeed, by promoting purchasing actions rooted in environmental values, the focus is certainly on the demand side, but the related reasoning follows a transitive logic, according to which aggregate consumer demand can influence the conditions under which goods are produced (Rumpala 2011). Similarly, in France the quality and quantities of sorted domestic waste have risen with the impulsion of regular information campaigns, which has led to increasing amounts of inputs awaiting structural investment in recycling infrastructures before they can be treated. By conceptualizing change first and foremost as an individual matter, the material, economic, and organizational interdependencies of production chains are excluded from the representations conveyed by institutional discourse, and even from political action. To put it bluntly, *Homo ecologicus* looks like a political fiction that masks the complexity of economic organizations.

Homo ecologicus and the carbon economy

Homo ecologicus is not just a lone individual. Should we also be wary of *Homo ecologicus* as a corporate actor? By focusing on the rise of market transactions as a widespread means of ecological action, economic sociology can accommodate many ways of understanding the limits of corporate responsibility in polluter-pay principle programs. I draw here on my own work on voluntary carbon markets to highlight the multiple influence strategies that undermine policy goals, as well as the significant public expenditures that hide behind the idea of stand-alone transactions to set *Homo ecologicus* in motion.

The analytical repertoire of Max Weber ([1921] 1978) is useful for better understanding the prominent rise of individual responsibility in environmental policies, especially the duality of formal rationalization and material rationalization, as well as the tensions between both, in the construction of a carbon economy. Following the former means paying attention to the conceptual refinement of the carbon markets and the figure of *Homo ecologicus* by its proponents, experts and scientists, leading to a greater internal coherence and abstraction. Conversely, Weber carves out the conception of material rationalization to shed light on the integration of external values and interests of stakeholders in the implementation of carbon markets.

Voluntary carbon markets are part of the climate policy toolbox. Carbon credits are created though the development of climate projects such as afforestation, clean-technology adoption, or carbon farming, to name the main ones. The policy assumption is that setting a price on a quantity of GHG emissions enables corporations to offset their carbon footprint by purchasing credits. Being voluntary, such programs are not meant to help firms comply with regulations but rather to meet their own mitigation targets and, in the end, advertise their positive behavior. On the production side, landowners, industries, and farmers benefit from an additional income that incentivizes environmental change. For both supply and demand, GHG quantities are assessed by means of carbon footprint calculators, a perfect tool for *Homo ecologicus* as it provides an overview of an individual's contribution to the global and systemic issue of climate disruption.

Formal rationalization of voluntary carbon markets is assumed by economists and regulators involved in the theoretical conception of rationale, rules, and accountability norms enabling the conversion of GHG into credits and their circulation among creditors and debtors. Since their first inception under the Clean Development Mechanism of the UN Framework Convention on Climate Change in the mid-2000s, voluntary carbon markets have been subject to increasing moral and technical controversies. This led to the development of multiple MRV certification frameworks, standing for monitoring, reporting, and verification. Economists as well as climate and soil scientists have been deeply involved in this process that formalized auditing activities to reinforce the quality of carbon credits. In some cases, such as the French "Label Bas Carbone" certification framework, public authorities are involved in the regulation of MRV to reinforce its legitimacy.

Paying attention to the material rationalization of voluntary carbon markets sheds light on a broader range of state and non-state actors involved in the operationalization of those markets, including production, valuation, and purchase of carbon credits. The

technical complexity of the programs has paved the way for numerous professional intermediaries, and carbon consultants, software designers, credit brokers, and technical advisors are now part of a diversified ecosystem of private entities providing multiple services to make supply and demand happen. In countries like France, where the carbon economy is striving to take off, there is empirical evidence that some of these actors can influence market rules in the direction that best serves their particular or group interests. Complementarily, national commitments to carbon neutrality by 2050 under the Paris Agreement drive regulators and policymakers to launch public programs facilitating the take-off of emission reductions. Direct subsidies, zero-interest loans, and bureaucratic resources are made available to carbon economy actors so as to subsidize operational costs and sustain their participation. Despite this intense infusion of public money, the current low economic returns also foster risk minimization strategies: Practically, this translates into a concentration of investments and actions on low-intensity climate projects (such as intensification of dairy farms) rather than projects with high production costs and high climatic gains.

The tension between formal and material rationalization highlights constant maneuvering around the rules and metrics of market structure. Turning firms and individuals into *Homo ecologicus* through carbon market mechanisms takes numerous resources, and the multiplication of actors and rules goes along with a multiplication of influence over the rules. Even where the market is not working, the focus is on fixing the rules and continuing to think in terms of market mechanisms, while some types of normative commitments might also be worth thinking about.

A contribution to policy analysis

As the cousin of *Homo economicus*, *Homo ecologicus* is a theoretical economic representation that can foster new research horizons for economic sociology. The analytical tools of economic sociology can be leveraged not so much to critically examine the gaps between a perfect conception of rational action and its empirical expressions (as it has largely been the case with *Homo economicus*), but rather, I argue, to delve into the practical concretizations of related public policies and assess their ecological depth. A deeper analysis of the way individuals and corporations diversely interfere with public policies and enact environmental change is a condition of evaluating their relevance. In doing so, economic sociology can make significant contributions to the study of environmental policy processes, and to policy analysis more generally.

My point in this essay is not to conclude that any individual responsibility should be banished from all environmental programs. It is not to say either that individuals do not need to alter their current consumption practices or pay attention to their garbage. Rather, in pointing out these limits, my aim is to nourish a broader debate on the environmental policy landscape, addressing the disbalance in favor of liberal economic incentives as policy tools, and advocating for a science-based debate on the way multiple policy orientations can converge toward ambitious environmental change. The ecological backlash that spans all Western democracies these days has taken the form of a passionate condemnation of all norms and regulations, while *Homo ecologicus* seems to be trapped in a weak incremental conception of environmental change.

With contemporary societies facing major uncertainties, and significant economic tensions accruing from the ecological transition perspective, *Homo ecologicus* appears as no more than a stopgap, an easy solution that gives the illusion of taking action, whereas environmental issues are "wicked problems" (Rittel and Webber 1973) that require far-reaching changes in consumption and production patterns. While this liberal approach to the environmental crisis still has to prove its success, a more ambitious reform of the economy, based on an environmental state acting through taxation and redistribution, deserves equal attention.

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