Working Paper

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On the one hand, there is a wide acceptance, at the abstract, most general, even definitional level, that degrowth involves planning or amounts to a planned transition. On the other hand, there is strikingly little explicit engagement with, debate on, and research into what exactly 'planning for degrowth' could look. This gap urgently needs to be addressed.

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# Planning beyond growth

## The case for economic democracy within limits

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Abstract

Degrowth and post-growth economics has emerged as a particularly fruitful approach in the debates about the reorientation of economies in the Global North towards environmental sustainability, equality, need satisfaction and democracy (Kallis et al. 2018; Parrique 2019; Weiss and Cattaneo 2017; Schmelzer, Vetter, and Vansintjan 2022). This perspective promotes 'a *planned* reduction of energy and resource use designed to bring the economy back into balance with the living world in a way that reduces inequality and improves human well-being' (Hickel 2021, 1, emphasis added). Yet, the specifics of this 'design' are not precisely delineated.

On the one hand, there is a wide acceptance, at the abstract, most general, even definitional level, that degrowth involves planning or amounts to a planned transition. On the other hand, there is strikingly little explicit engagement with, debate on, and research into what exactly 'planning for degrowth' could look. This gap urgently needs to be addressed.

By exploring the degrowth-planning nexus, this paper seeks to lay a foundation for this effort. It starts by critically reviewing the existing degrowth and post-growth literature on planning and scrutinise the reasons why planning has so far largely been neglected in this research. Then, it delineates the specific questions, requirements and challenges that arise for planning in the context of degrowth. Finally, it opens some avenues for advancing the intersection between degrowth/post-growth and planning by sketching a possible design for planning processes beyond growth.

# 1. Introduction

Degrowth and post-growth economics has emerged as a particularly fruitful approach in the debates about the reorientation of economies in the Global North towards environmental sustainability, equality, need satisfaction and democracy (Kallis et al. 2018; Parrique 2019; Weiss and Cattaneo 2017; Schmelzer, Vetter, and Vansintjan 2022). This perspective promotes 'a *planned* reduction of energy and resource use designed to bring the economy back into balance with the living world in a way that reduces inequality and improves human well-being' (Hickel 2021, 1, emphasis added). Material degrowth requires transforming our infrastructure (for example, away from automobile-dominated mobility (Mattioli et al. 2020), our energy systems away from fossil fuels (Christophers 2022; Malm 2016) and, more generally, a complete restructuration of our production and consumption modes towards sobriety. Such a radical shift is a difficult process that warrants a reconfiguration of core institutional parameters of our economic systems.

To avoid major disruptions in such transition process, the degrowth and post-growth literature proposes to escape the expansionary and accelerating dynamics of the capitalist economic 'by design, not disaster' (Victor 2019; Schmelzer, Vetter, and Vansintjan 2022). Yet, the specifics of this 'design' are not precisely delineated. On the one hand, there is a wide acceptance, at the abstract, most general, even definitional level, that degrowth involves planning or amounts to a planned transition. Some of the most widely cited definitions of degrowth include the term. For example, Hickel (2021, 1) defines degrowth as 'a planned reduction of energy and resource use', Kallis (2011) as 'the intentional limiting and downscaling of the economy to make it consistent with biophysical boundaries', Alexander (2015, 91) speaks of degrowth as a 'process of planned economic contraction, with the aim of moving toward a socially desirable, ecologically sustainable, steady state economy', or Schmelzer (2015, 264) defined degrowth simply as 'a planned contraction of economic activity aimed at increasing well-being and equality'. In fact, in most definitions the decrease is explicitly qualified if not as 'planned' at least in similar terms such as 'voluntary', 'managed', 'purposeful', 'intentional', 'deliberate', or 'democratic' (Parrique 2019, 224).

On the other hand, there is strikingly little explicit engagement with, debate on, and research into what exactly 'planning for degrowth' could look. The reality of planning itself – its primary actors, whether it is centralized or decentralized, participatory or commons-inspired, the role of the state in planning, investment and planning etc. – is rarely engaged with explicitly. A recent paper on the relationship between degrowth and the state, for example, does not even mention let alone discuss planning (D'Alisa and Kallis 2020). Most papers which explore planning and degrowth focus on spatial or urban planning, without connection to macroeconomic level or state policies (cf. Lehtinen 2018; Wächter 2013; Xue 2022; Ferreira and von Schönfeld 2020).

One current of degrowth positions that has recently become more prominent takes a more explicit postcapitalist perspective and expresses the need for planning both with regard to downscaling material and energy throughput, emissions or production and consumption and with regard to organizing social provisioning that meets everyone's need (Kallis et al. 2020;

Hickel 2020b; Burkhart, Schmelzer, and Treu 2020; Muraca 2013; Cattaneo et al. 2012; Hofferberth 2021; Smith, Baranowski, and Schmid 2021; Akbulut and Adaman 2020; Schmelzer, Vetter, and Vansintjan 2022). Despite this acknowledgement, the specificities of how planning could work, how to organize these processes democratically, and what it means in practice to manage economies beyond markets are not spelled out. This contribution builds on this strand of research and ambition to provide a framework for the planning-degrowth nexus.

In view of the ambition and challenge of a transition beyond economic growth, this is a gap that urgently needs to be addressed. By exploring the degrowth-planning nexus, this paper seeks to lay a foundation for this effort. Most of the degrowth/post-growth literature acknowledges that to degrow the material throughput, one must move away from the capitalist drive toward accumulation. We advance positively that this implies to deploy post-growth socio-economic relations. The institution of planning informed by in kind indicators and diversified qualitative evaluation is considered as a crucial device to pivot away from an economy governed by market exchange and profit-driven corporations to a more conscious management of our production and consumption systems driven by deliberately stated social and ecological targets.

To progress in our understanding of that institutional path forward, past and present debates on planning can inform and be informed by degrowth. There is a long tradition of ecological planning in geography and environmental management studies (Ndubisi 2002; Steiner and Brooks 1981), with recent contributions in industrial engineering (Denkena et al. 2022) that analyze planning from a functionalist perspective focusing on the administrative branch or the industrial process. Moreover, economic planning has long been an important topic in both economics and socialist literature and is today seeing a revival with the rise of new left parties and related planning proposals (Devine 2010; Phillips and Rozworski 2019; Vettese and Pendergrass 2022; Harnecker and Bartolome 2019). So far, most of these planning debates – including the newly emerging strands integrating digitalization and platform tools – have largely lacked a substantial engagement with the question of growth/degrowth and limits in general (Cottrell and Cockshott 1993; Hahnel 2021; Tremblay-Pepin 2022). However, there are a some exceptions in the eco-socialist tradition (Löwy 2008; 2005; Adaman and Devine 2017; J. O'Neill 2004) and recent attempts to revisit democratic socialist planning models in the light of current ecological challenges (Planning for Entropy 2022; Vettese and Pendergrass 2022).

To explore the degrowth-planning nexus, we start by critically reviewing the existing degrowth and post-growth literature on planning and scrutinise the potential reasons why planning has so far largely been neglected in this research. Against this backdrop, the second part of the paper provides a framework for analyzing and debating the degrowth-planning nexus. We start by delineating the specific questions, requirements and challenges that arise for planning in the context of degrowth. And we finally open some avenues for advancing the intersection between degrowth/post-growth and planning by sketching a possible design for planning processes beyond growth.

# 2. Why is planning neglected in postgrowth debates? An analysis of political and theoretical hurdles

We can trace the origin of ‘de-growth’ to André Gorz’s (alias Michel Bosquet) comments on the *Limits to Growth* report in the early 1970s (Bosquet 1973). However, the intellectual appeal of degrowth as a political project only emerged since the 2000s and rests on two diverging understandings of degrowth (Durand and Légé 2013; Eversberg and Schmelzer 2018; Schmelzer, Vetter, and Vansintjan 2022). One takes place within economics with authors such as Nicholas Georgescu-Roegen and Herman Daly. It focuses mainly on the ecological limits of Earth. In the words of Daly, confronted with the physical limits of the earth system, after a certain threshold that many rich countries passed in the latter half of the 20th century, GDP growth becomes ‘uneconomic’: at some point, ‘the quantitative expansion of the economic subsystem increases environmental and social costs faster than production benefits, making us poorer not richer, at least in high consumption countries’ (Daly 2008, 2). The steady state economics he thus advanced as an alternative, together with similar approaches from the emerging field of ecological economics, can be understood as an attempt to *reconfigure economics*. They address issues that are traditionally dealt with by economists such as employment, investment and consumption from a perspective that tries to fully incorporate the ecological dimension, sources and sinks of resources.

Another strand of degrowth proposes a radical critique of economics itself, a critique of economic thinking as a form of knowledge that became dominant with the growth economy. Due to these close interconnections it is deemed to stand in in the way of thinking and talking about other economic and social orders freed from the logics of growth and ‘the economy’ (Schmelzer 2016). In that sense, degrowth aims at ‘*escaping from the economy*’ (Fournier 2008, emphasis added) which importantly also includes a critique of economics – of the perspectives, methods, and basic assumptions of the discipline claiming to explain economic activities. This perspective comes from various corners of social science and humanities – including from within economics – but it addresses an external critique to economics, a cultural critique that challenges both the discipline as a specific form of knowledge and economic growth as a way of living.

Both perspectives converge in the research field on post growth. They tend to be reluctant to engage with the issue of planning, but the reasons of their neglect for planning are different. What unites this emerging field is an acknowledgement of the necessity of a social-ecological transformation of the economy and of economics, including a fundamental critique of the hegemony of growth, the deprioritisation of economic growth as a policy goal and a focus on sustainability and wellbeing (cf. Büchs and Koch 2017; Lange 2018). Within this shared vision, one can identify different, namely (1.) 'steady-state economics' (SSE) which largely relies on a neoclassical framework, (2.) 'the new economics of prosperity' or 'prosperity and managing without growth' inspired largely by Post-Keynesian theory, and (3.) the emerging degrowth literature that grew out of anthropological critiques of ‘development’, ‘consumption’ and ‘progress’. The first two strands differ in their theoretical and methodological approaches and related political implications, but their reliance on markets prevents them from substantially engaging with planning. The anthropological critiques of growth at the root of much degrowth thought tends to be biased toward localism, community, and cultures and thus disregard the need for society-wide planning. In this section, we’ll analyze the reasons for the disregard of planning, focusing on these three strands. We will not discuss those degrowth currents that combine anthropological perspectives with ecological, feminist and Marxist economics and system-critical proposals for alternatives that are much more open to acknowledging the need for some forms of planning, on which we will build in the remainder of this paper (Kallis et al.

2020; Schmelzer, Vetter, and Vansintjan 2022; Hickel 2020b; Chertkovskaya, Paulsson, and Barca 2019).

## 2.1. Steady state economics aims at the internalization of ecological externalities

Appreciating the close connection between environmental degradation and economic growth, as well as the thermodynamic limits to breaking this link, SSE seeks to determine a maximum size of the economy at a sustainable level sufficient to provide necessary goods and services for society and hold throughput constant at that level (Daly 1996). A constant stock of capital (understood as physical artifacts) and a constant population size are deemed necessary to maintain this 'sustainable scale' which sets the limits to growth. The steady state of the economy thus concerns biophysical processes and not economic growth in monetary terms, as accounted for by GDP.

Alongside the goal of a 'sustainable scale', an SSE aims for 'efficient allocation' and 'just distribution' to achieve greater equality and fairness in the economy. Allocation refers to the use to which the resources available in an economy are put, i.e. the goods and services produced therewith. Allocation is deemed efficient, and therefore good, when conforming 'with individual preferences as weighed by the ability of the individual to pay. […] [R]elative prices determined by supply and demand in competitive markets' are considered as most suited to achieve this goal (Daly 1992, 186). The goods produced are then to be distributed in a just manner among people, including future generations.

Although proponents of SSE criticise neoclassical economics for continued pursuit of economic growth, the framework ultimately rests on neoclassical foundations, including neoclassical theories of supply and demand as well as general equilibrium theory (Brand-Correa et al. 2022; Daly 2008; Pirgmaier 2017). These have been found not only to be theoretically flawed but also unsuited to gain a realistic understanding of contemporary capitalist economies (Brown and Spencer 2012; Fine 2013; Hofferberth 2021; Pirgmaier 2017).

The analysis of the sources of the social-ecological crisis and ways to address it reflect SSE's theoretical foundations. Within the theoretical framework of SSE, the problem of the economy's limitless drive towards economic expansion is deemed to be solvable by setting limits to the absolute size of the economy. Rather than questioning the fundamental relations of capitalist economies that give rise to the degrading patterns of growth, the price system and market mechanisms are even to be extended to areas hitherto not governed by these institutions, including natural resources and population. In order to achieve an SSE (the three goals of an SSE – sustainable scale, efficient allocation and just distribution) Daly (2014) proposes the establishment of absolute caps to both resource depletion and population size coupled with market mechanisms to manage the efficient allocation of depletion and birth quotas respectively, as well as minima and maxima for income and wealth to counter inequality. In addition to emerging ethical questions, these proposals fully remain in the boundaries of the current economic system. Private property and the free market are deemed as 'impeccable' institutions while welfare bureaucracies and centralized control are being opposed (Daly 1991, 54).

Overall, the neoclassical approach of the SSE praises the efficiency of market competition and favors politically managed price mechanisms to steer the reduction of throughput, supposing a high plasticity of economies to adapt to the ecological constraint. Such an approach to economic growth and transformation prevents an effective engagement with the system's structures, thereby also impeding the conception and exploration of the full range of alternative forms of economic organisation, including planning. Recent contributions to steady-state economics have elaborated the policy catalogue to achieve an SSE. While this has included a shift away from market-based approaches to the stabilization of population a debate around planning has failed to materialise (R. Dietz and O'Neill 2013; Fanning and O'Neill 2016; Daniel W. O'Neill 2012; 2015) A notable exception is Lawn (Lawn 2011) who ascribes planning an essential role to achieve an SSE: planning would be necessary for the democratic determination and implementation of ecological and social targets that SSE envisions.

## 2.2. The economics of prosperity beyond growth focuses on macroeconomic stability with constant or declining GDP

While SSE pays less attention to GDP itself and macroeconomic dynamics in general, research in the areas of post-growth macroeconomics and 'managing without growth' focuses very explicitly on the possibilities of maintaining macroeconomic stability in view of constant or declining (GDP) growth rates. Post-Keynesian approaches which integrate environmental variables dominate this strand.[1] Post-Keynesian theory generally locates the driver for economic growth in an economy's aggregate demand which is strongly determined by investment decisions which are in turn shaped by 'animal spirits' (Kurz and Salvadori 2010). The main purpose is the exploration of demand, monetary and credit dynamics able to accommodate the ecological constraint.

Ecological macroeconomic models are the main tools via which the feasibility of stable post-growth trajectories is explored. There is a diverse set of parallel or combined methodologies such as stock-flow-consistent system dynamics, physical and monetary input-output or agent-based modelling as well as analytical models (Hardt and O'Neill 2017). Victor's (2008, 2019) system dynamic stock-flow consistent LowGrow model analyses the interplay of GDP per capita, unemployment, debt to GDP ratio, poverty and GHG emissions in the Canadian economy and has been adapted to the German context (Gran 2017). Other models include additional parameters such as inequality and the monetary system via the interest rate (Cahen-Fourot and Lavoie 2016; Jackson and Victor 2011; 2015; Richters and Siemoneit 2017; 2019). Overall, the models indicate that absolute limits to growth are compatible with a smooth articulation of macroeconomic variables, including with an interest-based monetary system and reduced levels of economic inequalities.

Conveying clear and feasible transition pathways is a distinct appeal of ecological macroeconomic models as it renders respective scenarios conceivable and tangible (Victor 2008), for instance with changing patterns of investments and different productivity regimes

[1] A number of models also integrate neoclassical elements, e.g. by determining the supply-side through the integration of a (Cobb-Douglas) production function (cf. Gran, 2017; Victor, 2008). Strikingly, there are several models that do not specify their theoretical underpinnings (Hardt and O'Neill 2017).

(Victor 2019). However, a caveat of this kind of exercises is that they are built to represent the economico-ecological dynamics within the current monetary system dominated by the price mechanism. It is thus not sure that they are well suited 'to describe and test a very different system' (Hardt and O'Neill 2017, 208). Lange's (2018, 416) argument for not exploring planned economies is insightful in this regard: 'switching from a market to a planned economy presents an entire shift of the economic system instead of changing selected macroeconomic conditions. The consequence is that most aspects of the macroeconomic theories applied in this work become obsolete'. A related shortcoming of many models is that they overlook the social-relations underpinning macroeconomic regularities and, especially the class relations and competitive struggles that sustain the systemic drive toward growth (Durand and Légé 2013). They could thus be over-optimistic about the socioeconomic possibility to shift in a post-growth regime without major alterations of the basic parameters of capitalist economies.

Overall, clinging on to capitalist institutions and especially on the hegemony of market exchange as a dominant coordination mode ultimately limits this strand of the literature to engage with planning. In particular, by focusing on monetary, financial and macroeconomic variables, qualitative demand-side changes and the social process of the definition of the needs are neglected. Moreover, alternative modes of economic coordination able to integrate ecological constraints from the onset are not considered. Finally, the economic crisis dynamics entailed by the process of transition themselves are largely overlooked. Economic history suggests that rapid changes within the price system disrupt enterprises' revenues and costs, which could lead to major socioeconomic crises (O'Sullivan 2021) and prevent structural change (Weber 2021). Such economic crisis dynamics are already present in current limited attempts to engage the ecological transition, for instance with the so-called 'energy dilemma' where attempts to curb carbon emissions hurt growth through rising costs (Bradshaw 2010; Durand 2021a; 2021b).

## 2.3. Anthropological critiques of growth tend to be biased toward localism, community, and cultures

Discontent with the kind of social relations fostered by the ways of living mediated by markets is far from new. Aristotle, Smith, Marx or Keynes criticized the anthropology resulting from the unfolding of market exchanges or envisioned a post-growth future. John Stuart Mill was thus not completely original among economists when he wrote that he was not charmed by those who think 'that the trampling, crushing, elbowing, and treading on each other's heels, which form the existing type of social life, are the most desirable lot of humankind, or anything but the disagreeable symptoms of one of the phases of industrial progress' (Mill 1848, 754).

Beyond the ecological economics focus on the physical limits of GDP growth, another strand of degrowth rejoins the cultural critique of economic growth and development. The anthropologist Arturo Escobar considers international development as a form of cultural imperialism comparable to colonialism imposed on poor countries (A. Escobar 1995). This also echoes the concept of '*sumak kawsay/vivir bien*' (Acosta 2012), which has been popularised by Andean Indigenous movements as an alternative to development and was inscribed in Ecuador's new 2008 Constitution and in Bolivia's 2009 Constitution. The cultural critique of growth is also a pillar of the degrowth current *à la française* (Martínez-Alier et al. 2010)

championed by Serge Latouche (2010). It draws on the works of Jacques Ellul and Ivan Illich (Ellul 2004; Illich 2009; Samerski 2018; Tordjman 2011), pointing to the alienation resulting from the overwhelming sophistication of technologies, modern institutions and consumerism, promoting instead voluntary simplicity as a way to foster quality of life and solidarity among people.

Among this cultural critique of growth and development, one particularly resolute perspective comes from economics itself, expressing the poverty of the anthropological norms of the discipline and its dangerous implications for human societies and the biosphere. This radical criticism of economics does not lead to a championing of conscious macro-planning, but instead calls for an empowerment of autonomous local community.

Calling for a 'decolonization of the minds' from economism (S. A. Marglin 1990) – a title reused by Serge Latouche as *Décoloniser l'imaginaire* (2003) - and qualifying economics as a *Dismal Science* (2010), Harvard economist Steven Marglin argued that economic development 'is simply the formalization of modern Western culture' (S. A. Marglin 2003, 26). Marglin thus rejects a Lewis-type justification of development, namely that 'economic growth ... gives man control over his environment, and thereby, increases his freedom'. Drawing on Amartya Sen's (1987; 1999) argument that the expansion of choices may be desirable for intrinsic and instrumental reasons, Marglin shows that 'the argument that growth expands choices fails to take adequate account of the many reasons why growth eliminates some choices at the same time as it adds others' (1990, 7).
Pointing out the destruction of traditional knowledge and solidarity by development policies and the modernisation path, he insists that 'the Western model of development, notwithstanding its considerable economic successes, has yet to produce an acceptable model for relationships between people or with nature'. In the face of major social, ecological and economic crises ahead, he considers that 'It is in our own self-interest as well as the global interest to promote cultural diversity', as it 'may be the key to the survival of the human species' (1990, 16). The culture in which economic development flourished is characterized by 'individualism, self-interest, the privileging of 'rationality', unlimited wants and the rise of the moral and legal claims of the nation-state on the individual' (1990, 25). Economic growth and development are detrimental for poor countries whose indigenous cultures and economies are being destroyed due to Western cultural imperialism. However, they are also negative for the population of the west who 'has paid a high price through the weakening to the breaking point of communal ties' (2003, 25). The general point is that 'markets substitute impersonal relationships mediated by goods and services for the personal relationships of reciprocity and the like' (2003, 27). Accordingly, Marglin calls for the reinforcement of immediate interpersonal ties at the local level: 'there should be mechanisms for local communities to decide, as the Amish routinely do, which innovations in organization and technology are compatible with the core values the community wishes to preserve' (2003, 28).

In such a perspective that favors the value of community ties, it is not surprising that there is little interest in planning, which is perceived as a technocratic and as a distant way of managing resources and alienating people's life. The brutal experience of Soviet-style planning and its limits obviously contribute to this hostility. However, it is important that there is also a deeper connection between the cultural critique of growth/development and degrowth. The logical implication of favoring immediate social relations is an empowerment of local communities whose correlate is a scaling down of the division of labor. This overlooks the risk that an abrupt

disruption of interdependencies translates into a massive de-specialization of productive activities, a dramatic reduction in the productivity of labour and, finally, an unsustainable reduction of living standards.

One of the strategic blind spots of such thinking is that human societies have to deal with the legacies of the past. In the context of the ecological crisis, Marx's famous statement takes a sinister tune. 'Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past. The tradition of all the dead generations weighs like a nightmare on the brain of the living' (Marx 1852). This tradition also takes the form of infrastructure and processes that are very active and cannot be just abandoned. The current generation must deal with the existing production/consumption nexus. It cannot get-rid of this overarching socialization (Mandel 1986) by simply retracting on local communities. The transition beyond growth also needs to be addressed materially and institutionally (for example by phasing out fossil-based or otherwise dirty or unnecessary activities) at a level inaccessible to local actors, which is precisely one of the reasons why planning must be considered.

# 3. How to plan for degrowth

## 3.1. Deliberating limits and needs satisfiers

Any transition to a sustainable future requires meeting social needs within biophysical limits. This is a tremendous challenge considering the deepening ecological crisis and ongoing social hardship that goes along with global capitalist unfolding. It is even more difficult that the notions of limits and needs are ambiguous and that there is no readily available scientific definition of what a safe and just space for humanity would be. Based on the theory of human needs it is possible to identify a set of universal basic needs whose satisfaction represents a prerequisite for human flourishing. Yet, the specific ways in which these needs are satisfied differ according to context, time and space (Gough 2017; Doyal and Gough 1991; Gough 2020) and they are not reducible to bio-physical parameters (Keucheyan 2019). Needsatisfiers are thus those diversified and changing institutional and material means of meeting needs.

The *planetary boundaries* framework proposes to delineate 'the "planetary playing field" for humanity if we want to be sure of avoiding major human-induced environmental change on a global scale' (Rockström et al. 2009b, 2). It identifies nine boundaries related to critical Earth-system processes that jointly constitute the 'safe operating space' and that, if transgressed, will push the planet beyond the relatively stable conditions of the Holocene during which human societies evolved. Of these, as far as this was measured to date, six are currently exceeded (biosphere integrity, climate change, biogeochemical flows, land-system change, freshwater and chemical pollution/novel entities) (Steffen et al. 2015; Rockström et al. 2009a; Persson et al. 2022), which pushes the earth system in an uncertain trajectory and increase the vulnerabilities of human societies.

The metaphors of 'limits' and planetary 'boundaries' have been very successful in communicating the necessity to break with the idea that natural capacities can be infinitely

substituted. Nonetheless, it should be used cautiously (Althouse 2022, 144–48). Indeed, while there are phase shifts and non-linearities, there is not such a thing as a clear-cut threshold between sustainability and collapse, but rather a multiplicity and multidimensional interrelated thresholds to choose between (Norgaard 1995, 130). Rather than a series of events reaching limits, another way of conceptualizing ecological degradation would be to regard it as 'one single catastrophe, which unceasingly piles rubble on top of rubble' (Benjamin 1940), a tragic process who call for intervention but without the reassuring availability of strictly defined tipping points. Even if we accept the idea of limits, those cannot be objectively defined. Indeed, while the initiators the *boundaries* approach advance that 'the thresholds in key Earth System processes exist irrespective of peoples' preferences, values, or compromises based on political and socioeconomic feasibility', they also recognize that 'normative judgments influence the definition and position of planetary boundaries' (Rockström et al. 2009b, 5). The making of such judgments is thus a crucial matter to navigate safely the ecological crisis.

An additional issue with the idea of limits is that it risks obscuring the uneven vulnerabilities to environmental change. Limits are not an external physical fact but are socially and politically built, resulting in variegated sensibilities across the ecological and social space (O'Brien and Leichenko 2000; Adger, Eakin, and Winkels 2009). Correspondingly, the notion of limits mobilizes the ideology of scarcity at the expense of the infinite pathways compossible with a balanced relation between human societies and the rest of the biosphere. It is thus important to clear this notion from its Malthusian association (Kallis 2019) and to acknowledge that if science must inform the definition of ecological boundaries those are not objectively out-there but must be pondered and evaluated by a scientifically informed political process.

Building on this notion of planetary boundaries, the *safe and just space* framework proposed by Kate Raworth (Raworth 2017) adds the element of 'justice' to the space. The framework includes 12 social objectives, which Raworth define based on a close reading of government papers submitted to the Rio+20 conference. It visualizes sustainability in terms of a doughnut-shaped space – in which people's needs are met based on sufficient use of resources (the inner boundary), but not so high as to transgress planetary boundaries (the outer boundary).

This approach is extremely useful to the extent that it comprehensively articulates the socioeconomic and the ecological dimensions. However, the question of the need satisfiers is even less objective that of the ecological boundaries. A set of basic needs can be defined as universal prerequisite for human life, however how they are met is a matter of social choice (Gough 2020). More importantly, guaranteeing conditions of survival does not exhaust human aspiration meaning that desirable social outcome should include a broader conception of needs while moving away from consumerism (Keucheyan 2019). Considering both the diverse potential ways to satisfy the core needs and the wider scope of desirable outcomes of socioeconomic processes the degrowth literature put the emphasis on notion such as collective autonomy and self-limitation (Cattaneo et al. 2012; Muraca 2013; Brand et al. 2021; Castoriadis 1998).

Just as for outer boundary of limits, the definition of the inner boundary of needs satisfiers cannot be the result of purely scientific investigations, but demand social processes of deliberation, negotiation and decision. Defining what Brand et al. (2021, 265) call 'societal boundaries' is a 'controversial process – based on normative judgments, ethical concerns, and socio-political struggles'.

## 3.2. Focusing on provisioning systems

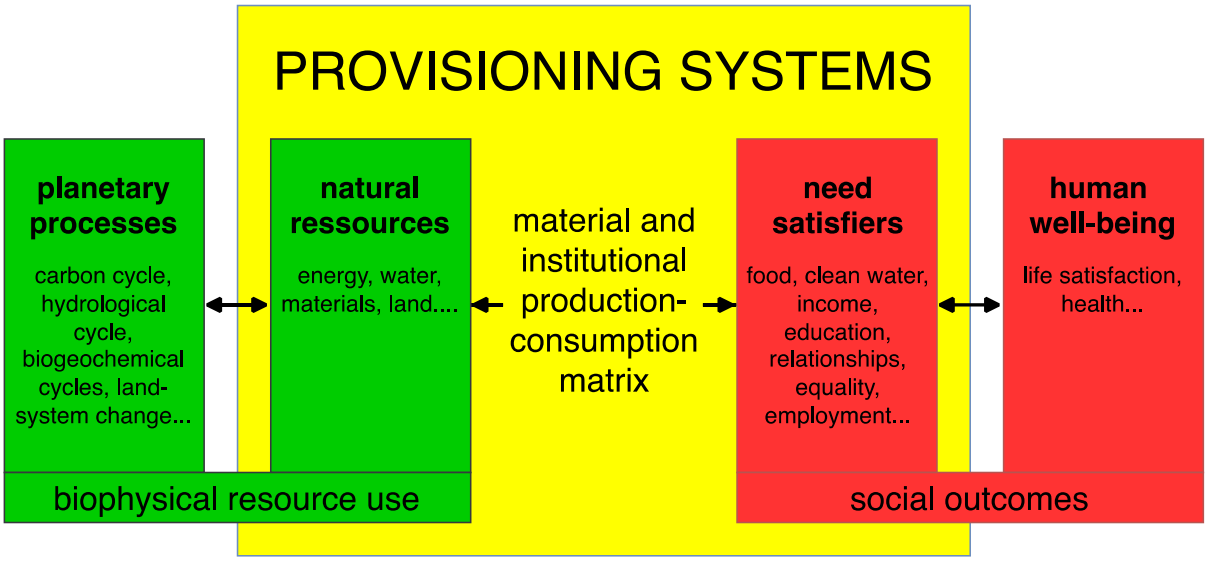
Many scholars, such as Raworth and Brand et al., acknowledge that the delimitation of a safe and just space for human societies to flourish within the biosphere require a political intervention in the economic realm. Remarkably, however, they do not engage with the specific institutional order corresponding to that project and its relation to the functioning of economic entities. This leaves a void not only about the deliberation of social targets and limits but also concerning the concrete mechanisms to ensure they are achieved.

Our argument is that of ecological planning can fill this void. In essence: we propose to plan the doughnut. Based on normative judgment and procedural robustness, we aim for a pluralistic and democratic planning process that could allow for a consistent articulation and dynamization of the two boundaries of the doughnut as part and parcel of the social metabolism.

For how do to this, we approach the economy in the heterodox tradition (Hofferberth 2021; Agenjo-Calderón and Gálvez-Muñoz 2019; Jo and Todorova 2018; Power 2004) as the process of social provisioning – the material and institutional matrix that structure the production-consumption framework (Fine, Bayliss, and Robertson 2018). Building on O'Neill et al.'s (2018), Figure 1 represents the links between biophysical planetary processes and wellbeing outcomes. Provisioning systems are at the center, mediating between biophysical processes and social outcomes. Provisioning systems themselves encompass material and socioeconomic dimensions, such as physical infrastructure, technology, economic relations and intricated forms of governance.

Provisioning systems are constituted of, first, technological devices and infrastructures inherited and produced and, second, institutions that shape human production and consumption at the individual, micro and macro level. Markets, communities, administrative bodies, organization, but also the legal framework involved in production and consumption processes are some instances pertaining to these systems. Their reach includes the connection to natural resources, through which they interact with planetary processes, and need satisfiers, that shape human well-being and respond to living conditions (Vogel et al. 2021; D. W. O'Neill et al. 2018; Fanning, O'Neill, and Büchs 2020; Plank et al. 2021; Bayliss and Fine 2021).

*Figure 1. Provisioning systems linking biophysical resource use and social outcomes delineate the scope for planning (adapted from O'Neil et al. 2018)*




In order to respect certain biophysical boundaries and achieve defined social targets, one should focus on the dynamics of provisioning systems and regulate them consciously so that they deliver what is expected. This sociopolitical effort of definition of the boundaries and the corresponding conscious socioeconomic regulation of the provisioning systems is precisely what post-growth ecological planning is about.

## 3.3. What post-growth aims at and planning can help achieve

The normative content of postgrowth political economy can be summarized in a nutshell: welfare for all is to be achieved in a democratic manner, in line with planetary boundaries and without major social and economic disruption. To square these multiple targets, we contend that social-ecological coordination via general planning is required since only such a mechanism allow to manage consciously the economy according to deliberately set priorities. In the following, we specify five goals that planning beyond growth should achieve.

### Setting and effectuating limits and priorities

Setting absolute caps to GHG emissions, resource extraction and use, biodioversity loss is what sets postgrowth perspective apart from other economic policy interventions (Hickel 2019). An essential element of the planning process is thus the determination of the remaining resources that can safely be used for economic activity. These limits need to be set at the global level and broken down to regional, national, and local levels, and to various economic sectors and need satisfiers (Anderson, Broderick, and Stoddard 2020; Hickel 2020a; Hickel et al. 2022; Pörtner et al. 2021).

The establishment of caps on resource use and GHG emissions renders decisions over the use of remaining resource budgets pertinent. Priorities regarding how, for what purpose and in which quantities resources are to be used should be set. This warrants decisions regarding the types of need satisfiers and their distribution but also their quality and the organization of

the productive chain of goods and services they require to become available. For instance, regarding the question of mobility needs, choices will have to be made regarding the relative importance of public and private transportation, the role of air, road, rail and sea mode of transportation, the kind of machinery they rely on, the related products and services that their production and maintenance requires and, last but not least, how individual and organizations would be able to use them. It would thus become possible to organise resource use in a way to counteract the continued co-existence of outright poverty and wasteful luxury lifestyles which is one expression of the current system's failure to provide for well-being for all (cf. Oswald et al. 2021), while still allowing for the expression of personal tastes and singular lifestyles to flourish within those collectively set limits.

### Ensuring democratic participation

Post-growth economics favors democratic and participatory decision-making. Büchs and Koch (2019, 161) propose to follow 'a dual strategy' which unites expert knowledge with the knowledge and visions of those whose needs are to be satisfied. Other authors emphasize the involvement of an even wider set of stakeholders, including producers and residents (Schmelzer, Vetter, and Vansintjan 2022, 216–18). One could argue these decisions should involve all those concerned by them, including people in distant parts of the world, future generations and even ecosystems themselves (Bourg 2017; Descola 2018).

While the 'dual strategy' in its original formulation envisions a combination of 'central planning and democratic participation' to allow for need satisfaction (Doyal and Gough 1991, 297), we consider that those two elements should be integrated. To represent the diverse positions in the process of planning, multiple groups of interest, sectors and organisations at different political and geographic scales should be adequately involved. Moreover, to allow for the broadest and fairest participation, planning institutions should be designed to explicitly tackle existing inequalities and alleviate disadvantages to participation, e.g. due to race, gender, or class.

### Organizing and fairly sharing meaningful and necessary work

Aligning economic activity with social-ecological targets requires the re-organisation of production processes within organisations and the economy at large. This includes not only the use of resources but also the way in which work is organised. Planning could contribute to workers' self-organisation and to sharing work more fairly within society. Informed by a critical assessment of observed working patterns, deliberation should reveal the necessity and desirability of activities and thereby provide a basis for organizing the division of labor. It would allow the estimation of the amount and type of work required in the areas that are deemed socially desirable and ecologically viable and match them with the capabilities and relative appetence of individuals. An important element would be the inclusion of both hitherto monetised work as well as work provided 'for free' within households and communities (cf. Dengler and Lang 2021; Barca 2019) while 'bullshit' and 'batshit' jobs should be phased out (Schmelzer, Vetter, and Vansintjan 2022, 232–35).

The reduction of working hours is a goal in and of itself since. As Marx famously wrote, for individuals 'the realm of freedom actually begins only where labour which is determined by necessity and mundane considerations ceases' (Marx 1894, chap. 48). Beyond that, it is a

lever to ensure a balanced distribution of employment in an economy which stops growing even as productivity continues to rise (cf. Jackson and Victor 2011). According to André Gorz, the radical reduction in working time can be understood as the redistribution of the surplus value that results from increases in productivity from capital to labour – in the form of free time (Gorz 1985; Schmelzer, Vetter, and Vansintjan 2022, 232–37).

### Mastering the purposeful development of productive forces

Postgrowth also involves a profound restructuring of the material-technical basis of society, a fundamental change in the productive forces of modern industrial societies that requires different technical models and organization of labour processes as well as changed ownership structures: as long as the primacy of profit – rather than criteria of sustainability, usefulness and desirability – dominates design processes and investments in technical infrastructures, this transformation will not succeed. One attempt to develop a concept of technology for the degrowth relies on Ivan Illich's concept of 'convivial tools' and delinates five central dimensions,: connectedness, accessibility, adaptability, bio-interaction, and appropriateness (Vetter 2017; Schmelzer, Vetter, and Vansintjan 2022, 228–31). It should be articulated with an effective ability to command the necessary resources and tools to restructure the economy according to the socio-ecological objectives (Hofferberth 2021; Zoellick and Bisht 2018).

### Dealing with social and macro-financial disruptions

The unprecedented speed and scale of the changes necessary to stay below 1.5 degrees and face the other dimensions of a multifold ecological crisis while ensuring wellbeing for all poses challenges in terms of the smoothness of the structural transformation of our economies (IPCC 2018). Dedicated planning could prevent and counteract ruptures and disruptions that may occur in that process.

The abandonment of polluting activities is a particular cause for concern. The phasing out of entire industries will have to be made taking into account adverse social effects such as unvoluntary unemployment and its deleterious consequences on the broader social life of the localities and people concerned. Financial asset stranding is another challenge arising on the back of moving to an ecologically sober economy. Limiting resource extraction and use, in particular for fossil, demands the early retirement of existing infrastructures and production facilities and the write-off of related assets. The amount of asset values concerned poses a major risk for economic and financial instability (Mercure et al. 2018; Semieniuk et al. 2021; Pisani-Ferry 2021; Daumas and Salin 2021; Carney 2015).

Macroeconomic coordination is required to prevent these major adjustments to generate a full-blown socio-economic crisis. To absorb smoothly the impact of material degrowth, planning process will have to be adequately linked to monetary, fiscal and financial policy. A crucial dimension will be the adaptation of the monetary and credit systems to the funding needs for investment in cleaner production and the dismantling of dirties activities (Antal and van den Bergh 2013; Farley et al. 2013). Credit policy experienced in the post-war era - rather than 'risk-based' pricing of financial assets - could be an effective tool to pursue qualitative developmental objective while managing price dynamics (Monnet 2018; Kedward, Gabor, and Ryan-Collins 2022).

# 4. Discussion: an institutional outline for planning provisioning systems within safe and just operating space

We are aiming for planning institutions able to achieve strong sustainability, based on a pluralistic and democratic deliberation of limits and needs and on the participatory management of provisioning system. What would they look like? We consider several bodies of literature essential to approach this question. This includes the huge literature on socialist and capitalist planning experiences, war economies, post-capitalist models of democratic planning and recent renew interest for planning (Ellman 1971; Bettelheim 1975; Leontief 1976; Mandel 1986; Lavoie 1985; Monnet 2018; Actuel Marx 2019; Sapir 2022; Tremblay-Pepin 2022). It also encompasses the literature and frameworks developed within ecological economics and political ecology that center issues of biophysical limits and the scale of economic activities as well as analyses of the social metabolism of societies, e.g. concerning throughput of energy and matter (Haberl et al. 2019; Pineault 2022). While the proposal of institutional parameters for a potential planning framework beyond growth may inspire social actors and garner interest and trust in its feasibility, one must appreciate that social transformation is an open-ended process, and that any framework will necessarily benefit from and be shaped by the unmatched creativity and unsurpassable pluriversality (Arturo Escobar 2020) of real-world practical institutional making.

Acknowledging these crucial sources of knowledge, yet unable to do them justice in this paper, we nonetheless want to bring forward a minimal proposal to advance the dialogue between and about planning and degrowth, putting the safe and just space perspective at the core of the former while inviting the latter to engage positively in macro-institutional design. This rudimentary exercise builds on the argument developed in the preceding sections to sketch the broad institutional contours of how planning beyond growth could be designed. We propose this framework not as an ideal model but rather as a readily available inspiration for academics, campaigners and policymakers that can be taken as a basis for discussion and adjustment in specific contexts. In this sense, it can be conceived as a bridging framework to navigate the social-ecological transformation by both building on already existing institutions (including markets, firms, community networks, public institutions, state apparatus, etc..) and by enabling the emergence and strengthening of alternative ones (all to facilitate the reorganisation of existing provisioning systems in line with the outlines of consciously delineated boundaries).

Our proposal is based on three considerations:

1. This exercise of thought is historically grounded in the contemporary conjuncture and aims to redeploy and recombine existing institutions and tools rather than to imagine a completely different institutional configuration. We suppose that planning socioeconomic activities within a safe and just space would likely result in overcoming the logic of accumulation that lies at the core of capitalism. But this would be a side-result of planning deployment rather than an objective so that adhering to that hypothesis is not a prerequisite to endorse the framework.

2. The planning apparatus can be conceived as a multiscalar stack (Bratton 2016) that provides a canvas upon which autonomous and diversified social relationships flourish. The planning process can take place beside and in part autonomously from state apparatus and its usual activities, which means that the planning authority must be sanctioned by the legal system. Planning operates fundamental material and socioeconomic variables but it doesn't exhaust socioeconomic activity, letting room for the ongoing development of production and consumption regulated by market, solidaristic and statist modes of coordination. Some constraints are cascading top-down upon actors from one level to the next, e.g. in terms of available resources and predefined targets. However, at each level actors will be free to decide how to attain those targets and to define their own complementary distinctive goals. There is scope for a panoply of organizational forms, old and new.

3. The envisioned architecture articulates distinctive levels of planning but in a non-pyramidal way. The application of the subsidiarity principle ensures the greatest possible autonomy of the lowest levels in the framework. What can be dealt with at the lowest level should. Issues that warrant coordination with other entities will have to be deliberated and enforced at a higher level. Decisions taken at a higher level then reimpose themselves on the lower levels, e.g. resource limits and social goals determined at the upper level. Although this is 'top-down' in some sense, the autonomy of higher levels is only relative because decisions are nurtured by the inputs from the lower level in addition to other specific sources of knowledge and information (scientific bodies, professional entities, etc..). This constitutes a strong bottom-up element of the framework. We envision planning as an iterative process, continuously integrating and implementing decisions at the different levels involved.

### A fractal architecture

Figure 2 outlines a *fractal architecture* of such multilevel planning. The colored areas indicate different interdependent but relatively autonomous levels of planning. This encompasses the design and deployment of the rules framing provisioning systems at the top, local and sectoral levels as well as grounded unfolding at the microlevel. The latter can include city councils, enterprises and other autonomous entities such as collectively owned renewable energy projects (Kunze and Becker 2015), social housing associations or agricultural production units. The *bottom-up shading* of each square suggests the evolution from messy inputs to a formal plan. At each planning level, the two white squares represent the *elaborative and executive planning bodies* and their respective administrative apparatus.

### Elaborative body

The *elaborative body* corresponds to the institutional process that deliberates the limits and objectives of provisioning at the level of concern. *Pluralistic inputs* from scientific communities, citizens, social movements government bodies, including *information and knowledge* from subordinated levels, are deliberated and integrated to elaborate a plan for the socially and environmentally viable provisioning at that level. This is what we understand as qualitative aggregation and integration through deliberation.

The democratic quality and density of the process is crucial to ring-fence the legitimacy of the plan and ensure its deployment over the relevant time frame, which means ensuring commitments to long terms goals in spite of successive changing conditions. It must thus combine a strong representativity with an adequate mobilization of competencies. The experiences of direct citizen's involvement such as the citizen assembly convocated in France after the 2018 *gilets jaunes* uprising show that attempts to build microcosmic representation of the people using quotas, random draw and a rich process of expert gathering could provide an effective basis for deliberation (Pech 2021).

As rightly stresses by Leontief: 'A plan is not a forecast. The whole idea of planning assumes the possibility of choice among alternative feasible scenarios**'** (1976, 8). The main tasks of the deliberative body are thus: 1) to integrate/aggregate diverging views via deliberation; 2) to engage in a dialogue with the executive body about the elaboration of alternative scenarios of social, ecological and economic pathways; 3) to deliberate and choose between them. At the higher level, this process of elaboration takes place based on strong sustainability (Özkaynak, Devine, and Rigby 2004; Dietz and Neumayer 2007) as a foundational rule, while at the lower level, compliance with the constraints set at the higher is the foundational rule allowing for subordinated creative adaptation.

### Executive body

The *executive body* is responsible vis-à-vis the deliberative body and mobilizes the resources of public administration to prepare the plans and choose adequate instruments for their implementation. It also oversees the attainment of the set goals and adjusts interventions to deal with unexpected developments. This body relies on a consistent in-kind calculation apparatus that combines quantitative and qualitative targets such as carbon quotas, biodiversity targets, ceilings concerning the artificialization of the soils and detailed indicators regarding housing, energy, mobility, education, and health service provision. The ecological statistical apparatus (in kind measures and targets) should be connected to private business central planning system such as Ikea's centralised supply chain planning that combine operational, tactical, and strategic horizon to anticipate and organize the sourcing and distribution of the products (Jonsson, Rudberg, and Holmberg 2013). Cybernetical loops of the kind envisioned in the Cybersyn Chilean project of management of the national economy during Salvador Allende's term would allow for combined effectiveness of active involvement of producers and consumers via immediate feedbacks and real-time centralization and diffusion of relevant metrics (Medina 2011). The executive body's action is backed by an effective control of the economic and material resources which are mobilized (Bettelheim 1975; 1970) via various policy tools such as public investment, industrial policy, public budgeting, credit policy (Monnet 2018), experts' appointment policy etc..

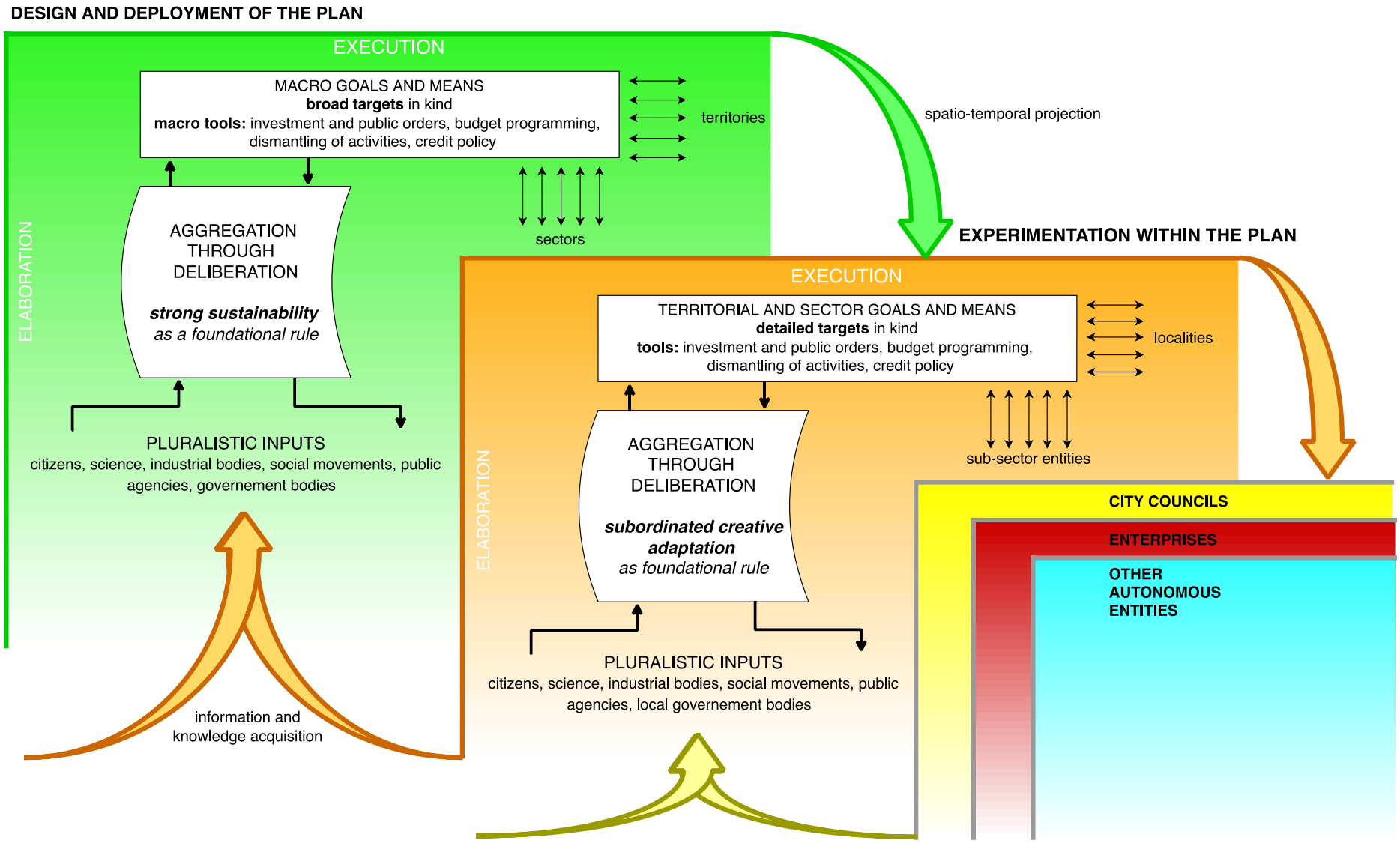
### Means of spatio-temporal projection

The *spatio-temporal projection* of the plan by the executive body is both material (resource allocation) and semiotic (communication of signs and meanings) and exerts an effective constraint vis-à-vis the subordinated levels (Bensussan, Durand, and Rikap 2022). However, it is not an absolute one since it is perpetually renegotiated to adjust to the irreducible uncertainty of real-life processes. More importantly, if this constraint delineates a space for the development of the territorial/sectoral/grounded activity it doesn't prescribe this activity as

subordinated levels are actively encouraged to *experiment*. Within this space, an autonomous process of self- planning takes place.

Relative autonomy of the subordinated level implies conversely that there are limits of the reach of the planning process at the superior level. This allows for considering the infinite complexity of the concrete and preserves a diversity of socioeconomic practices, which limits the risk inherent to technical monoculture. Moreover, it gives room to people to make sense of personal activity, their subjective investment, and be able to meaningfully influence the labour process (Clot 2014). Applying the principle of subsidiarity facilitates the greatest possible autonomy at the lowest level of organization and the coordination at higher levels where needed.

*Figure 2. A fractal architecture of multilevel ecological planning beyond growth*



# 5. Conclusion

Addressing the multiple and aggravating social-ecological crises of our time demands a fundamental rethinking of our current economic system. Post-growth and degrowth have emerged as increasingly influential proposals for a radical reorganization of society that leads to a drastic reduction in the use of energy and resources and that is deemed necessary, desirable, and possible. The changes of modern societies' mode of production and living that can achieve rapid decarbonization while maintaining high standards of living by overcoming economic growth amount to a major society-wide social-ecological transformation of the magnitude comparable to industrialization, but within decades. Any such transformation warrants mechanisms of coordination that are decidedly designed for that purpose, especially when viewing it as a democratic and participatory process.

Against that backdrop, we argue that degrowth scholars should engage more actively in past and ongoing debates about planning and further investigate which kinds of planning degrowth could involve, but also, how the discussions about planning would have to be adapted for the specific questions, requirements, and challenges that arise in the context of degrowth. These include, for instance, the management of absolute caps in resource use and emissions, their harmonization with social targets such as universal access to essential goods and services, planning just transitions in the phase-out of dirty sectors, or questions regarding the participatory planning of investment and divestment decisions, including technological innovation and what has been discussed as collective *dépense* of the surplus (Bataille 1949).

To advance this discussion, we critically scrutinized potential reasons why planning has so far largely been neglected in the field of post-growth research. We identified two key sets of reasons: First, mainly regarding both neoclassical steady state economics and post-Keynesian postgrowth economics, we discussed how the reliance on markets, market mechanisms and market instruments prevents a substantial engagement with planning. Second, we discussed how the bias toward localism, community, and cultures at the root of the anthropological critiques of growth which underpin much degrowth thought tend to block any meaningful engagement with policies for society-wide planning. For advancing the debate on planning, we thus argue for neglecting both pitfalls by focusing a) on in-kind, non-market-mediated forms of planning and b) on multi-level, fractally integrated and subsidiary planning institutions that mediate the local with society-wide and global institutions.

Based on this analysis, the second part of the paper provides a framework for debating and designing the degrowth-planning nexus. To characterize the specific requirements and challenges that arise for planning in the context of postgrowth/degrowth, we build on the two of the most influential frameworks in the field of sustainability, *planetary boundaries* and the *just and safe space* framework underlying the Doughnut economics model. We argue that both ecological limits social priorities cannot simply be defined scientifically, but to become societally effective need to be socially deliberated and planned. Planning the doughnut requires pluralistic and democratic planning processes of provisioning systems that mediate ecological boundaries and human well-being. In discussing how postgrowth could benefit from exploring the potential of such social-ecological coordination by focusing on mechanisms and institutions to facilitate the management of the economy according to deliberately set priorities, we identify five goals that planning beyond growth should achieve: setting and effectuating

limits and priorities, ensuring democratic participation, organizing and fairly sharing meaningful and necessary work, mastering the purposeful development of productive forces, and ensuring adequate coordination to deal with potential social and macro-financial disruptions.

In the discussion section we aim at opening some avenues for advancing the intersection between post-growth and planning by sketching a possible design for planning processes beyond growth. Presented as a humble proposal to advance the debate, aiming to redeploy and recombine existing institutions, envisioned as a multiscalar stack of autonomous and diversified social relationships, and based on the principle of subsidiarity, we hope that the institutional outline for planning provisioning systems within safe and just operating space is useful for advancing a critically important discussion – and related research – at the intersection of post-growth and planning.

Looking beyond this paper, some future avenues for research and action seem particularly relevant. First, more research is needed to spell out the details of the different democratic and deliberative processes such as the exact process of decision-making at various levels, who to involve and how, what is to be decided at what level and by whom, how to resolve conflicts, how to enforce decisions, and how to articulate the multi-scalar subsidiarity. The question of the relation between planning and the state and, at the world level, the state system is particularly arduous. Second, there is still little systematic analysis of historical and currently existing real-world examples of ecological planning processes – both at municipal, regional, state, and international levels and within the private sector, multinational companies and the designs of markets. Which processes work well, which ones can be used for society-wide planning (and do not only work from a business economics perspective), and how can the types of in-kind ecological planning we envision be linked to these (from Wal-Mart to the United Nations Sustainable Development Goals) (Phillips and Rozworski 2019; Dörre 2021)? Third, more research is needed on questions related to the actual implementation of planning processes, including strategies to advance post-growth planning, which actors to involve, how to connect different political and geographical levels, what currently existing processes and institutions to build on, connect, or scale up. The challenges ahead render this a complex yet exciting area of research and experimentation.

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