Monitoring systems for postgrowth cities. Pathways and recommendations to foster models to monitor societal progress

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Extended Abstract

1. Introduction

Today, cities play a significant role in the discussion about sustainable development (SD). During the last 50 years, the unstoppable urbanisation process has been accompanied by perceiving cities as places of higher well-being. Elements such as education, health services, jobs, access to essential utility services, urban infrastructure, human connectivity, and innovative economies are positively perceived. However, a negative counterpart is rooted in the consumption of transboundary resources impacting natural ecosystems or the increasing inequality that leads to detrimental human well-being. This ambivalent position of looking at cities leads to locating the discussion within the scope of pursuing cities' sustainable development for current and future generations.

One key aspect relates to how cities transition towards SD and if alternative paradigms such as postgrowth could promote ecological balance, social justice and local resilience. In particular, the role of urban monitoring systems and indicators are key because they facilitate bridging the abstraction of SD with the policy-making process. In this regard, the volume of metrics and indicators is expanding according to an increasing data production and growing ICT technologies, such as AI and big data analytics. Moreover, urban monitoring systems are often developed according to a specific framework, leading to redundancy and fragmentation in the decision-making process. For instance, the operationalisation of SD according to the SDGs, Doughnut Economics (DE), and Broad Prosperity (BP) in Amsterdam present overlapping visions about the city's SD while simultaneously limiting collaboration and communication across different stakeholders.

This study thus aims to identify key factors that enhance urban monitoring systems to better envision post-growth cities. It does so by conceptually and empirically comparing the SDGs, DE and BP frameworks and their monitoring systems and identifying how the local governments and policymakers can use this knowledge in the policy-making process. We used the city of Amsterdam as a case study.

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1. Data and Methods

Scientific and grey literature are used to identify potential government actions that local authorities like municipalities can implement in the context of postgrowth and their monitoring systems. Open-ended interviews and a questionnaire are conducted to discuss the role of alternative frameworks such as SDGs, DE, or BW in policy and decision-making. The empirical analysis follows to identify key government actions supported by academic literature and concrete recommendations for local governments. The case study concerns the city of Amsterdam.

2. State-of-the-art

2.1. Alternative economic growth paradigms

Commented [Ev1]: Can you describe the three paradigms based on the five criteria in Table 5, without making it longer?

2.1.1. Degrowth

Degrowth is a term rooted in the main political and economic discussions of economic growth and its environmental and social consequences (Kallis et al., 2018). This notion argues that the philosophical, cultural, and institutional structures of economic growth need to be revisited and reoriented due to irreversible negative environmental impacts (Kallis, 2011). Degrowth questions how the systemic mechanisms of economic growth have continuously led to exceeding ecological limits by the continuous transformation of raw materials into finished products and waste production while impeding the Earth from naturally regenerating. Georgescu-Roegen has discussed this through the idea of entropy (Daly, 1995). The argument points out how the economic process intensively and continuously transforms energy resources, and how it is returned to the environment as waste. He describes energy circulation as a process that receives low-entropy inputs derived from nature and high-entropy waste generation. This endless process, exacerbated by economic growth, creates an irreversible imbalance in the natural restoration process of the Earth (D'Alisa et al., 2015; Daly, 1995; Daly & Joshua Farley, 2004). From a degrowth perspective, a primary goal is thus to substantially downscale material throughput by changing the macro-economic and political structures of economic growth while enabling alternative individual perspectives of well-being (Hickel et al., 2022; Kallis, 2011).

(Kallis, 2011) highlights that economic growth is not compatible with the idea of throughput degrowth. Firstly, economic growth intensively uses non-renewable energy and material resources, which have created and reproduced a lock-in in how the capital is created and reproduced. Secondly, technological innovations rely on efficiency improvements, which are necessary but insufficient to stay within CO2 emission limits. Thirdly, there is still not enough renewable energy surplus compared with conventional due to the production of clean energy depends to some extent on non-renewable resources. These aspects are related to the idea that nature has been considered in academic and policy practices as an unbounded and independent external element at the service of the economic system (Wachsmuth, 2012). Degrowth thus revindicates how nature is necessary in the sustainable development curse by looking at key functional elements within the production and consumption process that do not improve human well-being. Within this perspective, a reduction in the material metabolism is required and invites society to reconsider sustainable development without the structural dependences of economic growth.

Degrowth thus embraces a variety of perspectives. It includes a more top-down approach in which a structural change is needed to decouple the catastrophic impacts of welfare as a product of a shrinking

economy. For instance, economic development needs to be revisited in light of assessing and restructuring institutional and political structures under a capitalistic economy. Within this paradigm exists the idea that the economy can be steered to a new stage in which exists a just transition between the post-growth economic model and a steady-state economy. In other words, a substantial reduction in production is required to reach a stage where exist long-term balanced but dynamic flows and stocks of production and waste of materials (Büchs & Koch, 2019; Daly & Joshua Farley, 2004).

Although the main degrowth discussion points out to carefully examine the anthropogenic metabolism of production and consumption beyond ecological limits (Daly & Joshua Farley, 2004), it also considers how the logic of capital creation and accumulation moves beyond planetary boundaries and at the expense of human well-being decline (Kallis et al., 2012). In that sense, degrowth revindicates Marxist critiques of how capital creation and accumulation are possible through the continuous surplus valorisation and the constant circulation of money, commodities and wage labour (Harvey, 2018). In that sense, degrowth is linked to shifting away from the economic growth paradigm as the primary mechanism to achieve higher human well-being.

To do so, several economic, institutional and policy aspects are commonly discussed in the degrowth literature. To introduce a global CO2 emission cap derived mainly from fossil fuels that allow long-term stability in the economic cycles while allowing more efficient use of resources and widening share in CO2 emissions worldwide (Kallis et al., 2012; van den Bergh & Kallis, 2012). This idea aligns with how wicked problems such as energy transition are tackled. For instance, large-scale renewable energy infrastructure such as the Sahara wind farms or solar panels projects can substantially reduce CO2 emissions. However, such installations might unintendedly alter local ecosystems (Li et al., 2018). Another example is related to the decreasing dependency of fossil fuels sources but an exponential demand from necessary minerals for renewable energies such as cobalt, leading to major social and environmental impacts in Congo (Kara, 2023). In that sense, degrowth advocates revisiting how small-scale systems managed by small communities can help reduce the dependency on big-scale infrastructures (D'Alisa et al., 2015). This idea is linked to how Western societies can embrace sharing, frugality and conviviality as individual and societal values (Kallis et al., 2012). From that perspective, a degrowth economy can substantially reduce working hours, which in the current model is usually perceived as lower productivity rates and labour (Hickel et al., 2022). Through these interventions, GDP is expected to decline as a consequence of diminishing the material metabolism in the production and consumption process.

Commented [Ev2]: What about change the tax system from labour to materials?

Commented [Ev3]: It is important to mention that within a degrowth, certain sectors are allowed to grow, while others decline.

2.1.2. A-growth

The A-growth refers to being agnostic about using GDP as an essential instrument in policy-making. The term was coined by Jeroen van den Bergh (B. Haddad & Solomon, 2023; van den Bergh, 2009, 2017), inspired by main discussions about Green Growth in the context of pursuing an economy able to deal with environmental degradation. Van den Bergh argues that greening the growth is not a feasible strategy to tackle major climate change issues. From an A-growth perspective, there is scepticism about how continuing to foster economic growth can solve major climate challenges (van den Bergh, 2011). In part because there is an existing lack of compatibility between climate policies and new growth avenues derived from low-carbon energy production innovations. One reason is based on the possibility of energy rebound, and another point out to consumers unnoticeable product quality improvements of low carbon innovations

(van den Bergh, 2017). Moreover, a systemic problem link to reducing CO2 emissions without harming employment is a structural element in economic growth (Jackson & Victor, 2011; van den Bergh & Kallis, 2012).

A-growth highlights the importance of a planetary consensus to create the conditions for implementing environmental and climate policies. Despite cooperation failures from the Kyoto Protocol or the Copenhagen Summit on Climate Change, current efforts are crucial on the Paris Agreement and using science-based findings, e.g. IPCC, to strengthen discussions around climate issues (van den Bergh, 2018). Additionally, A-growth recognises that bottom-up approaches such as voluntary actions and grassroots movements are necessary to know how small-scale sustainable initiatives can be escalated, yet not sufficient to reduce CO2 emissions considerably. Improving institutional instruments can effectively influence pro-environmental behaviours and how technological innovations spill-overs enhance societal welfare benefits (van den Bergh, 2011). In that sense, there is a vision in which A-growth can improve trade-offs among post-growth agendas in the Global North while allowing a growth-based development approach in the Global South (van den Bergh, 2022a).

In addition, A-growth raises a major uncertainty about shrinking the Economy as degrowth advocates (van den Bergh, 2011). Within this economic vision, degrowth unknown the size of reduction required to stabilise the production and consumption to stay within planetary boundaries. Moreover, a substantial reduction because the market economy can exacerbate unemployment rates and considerably reduce public funding for public goods (van den Bergh, 2017). In addition, it is still difficult to foresee for decision-makers a shrinking economy without reducing welfare because present use of GDP per capita as the main welfare metric.

Therefore, A-growth advocates for fully decoupling from GDP (van den Bergh, 2022a). That means that in an A-growth paradigm, the economy can grow, degrowth or just has zero growth (Haddad & Solomon, 2023). Lifting up the dependency on GDP could improve policy-making to improve well-being by holistically assessing welfare trade-offs. It would implicate revisiting and institutionalising a Beyond GDP agenda (Hoekstra, 2019; van den Bergh, 2022a). Thus, the role of institutions such as IMF, OECD and UN is crucial in the A-growth paradigm because they can facilitate an international consensus according to indicator standards (e.g. monetary versus non-monetary or unidimensional versus multidimensional) that can better replace GDP (Hoekstra, 2019; van den Bergh, 2017).

2.2. The GDP dominance

This study primarily situates within the discussion of introducing indicators for measuring better societal progress. For the last 50 years, the Gross Domestic Product (GDP) has been the most influential indicator worldwide. GDP is a powerful indicator because it encapsulates in one monetary indicator the performance of various economic activities at national and regional levels. Through the international cooperation between governments and agencies such as the UN, IMF, World Bank and OECD, GDP has been harmonised (Hoekstra, 2019). Under the economic growth paradigm, GDP has become a primary monitoring and target instrument that influence institutional practices, academic research and methodologies (Fleurbaey, 2009; Hoekstra, 2019; van den Bergh, 2022b)

However, GDP has been criticised because it lacks envision an economy that fosters the sustainability of human well-being within planetary boundaries. Scholars agree that GDP does not measure what matters for society and leaves behind essential economic aspects such as unpaid labour, environmental impacts or the value of government services (Coyle, 2014; Hirschman, 2016; Hoekstra, 2019; Stiglitz, 2020; Stiglitz et al., 2009). GDP per capita roughly captures individual welfare and offers a limited overview of the interlinked social, economic and environmental dimensions necessary for a more comprehensive view of well-being (van den Bergh & Antal, 2014; van den Bergh & Kallis, 2012). Breaking the societal lock-in from GDP is challenging because it has been institutionalised to a point interwoven with economic policy on all scales – globally, national, regional and cities.

2.3. The Beyond-GDP agenda: SDGs, DE and BW

Beyond GDP corresponds to the initiatives about developing metrics to inform better and steer policies to safeguard the health of the economic, social and environmental systems (European Commission, 2022; Stiglitz et al., 2009). Three important approaches have emerged in the last decade. UN introduced the SDGs to tackle major national and global issues formulated in the 2030 Agenda for Sustainable Development and the Paris agreement (Sachs et al., 2019; Schmidt-Traub et al., 2017). The 17-SDGs framework aims to embrace sustainable development based on the five Ps: Prosperity, People, Planet, Peace and Partnership (Sachs et al., 2019). The DE was proposed by Raworth (2017), corresponding to a theoretical and academic approach to rethinking fundamental economic growth principles. The DE introduces a social-ecological perspective to the economy where principles of social justice can be guaranteed by achieving a minimum human-wellbeing standard within planetary boundaries (Raworth, 2017; Steffen et al., 2015).

Finally, based on the (UNECE et al., 2013) approach, the Broader Welfare (BW, Brede Welvaart in Dutch) framework has been introduced in the Dutch context to tackle major social, economic, environmental and sustainability issues (Aalders et al., 2019; Auke Rijpma et al., 2016; Horlings & Smits, 2019). BW reunite two main constructs to measure SD. The first is human well-being, conceptualised through Sen's capabilities and functionalities approach. The second is related to the capital's approach to measuring sustainability.

2. Conclusions (tentative)

The study provides an overview of the role of urban monitoring systems for a postgrowth city. The conceptual framework suggests key aspects of using citizen science-based monitoring systems to strengthen urban sets of indicators. Frameworks such as DE and BW can help to enable systemic relationships across multiple SD topics as well as to look at indicators to improve underrepresented populations and distributional aspects, which are currently absent in current urban monitoring systems. The conceptual framework and recommendations present insights and tools to use in designing more urban monitoring systems that better respond to the transition towards a postgrowth city paradigm.

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