



Article

Well-Being in Times of Decline: The Feasibility and Effectiveness of Degrowth for Sustainability

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Abstract

In the intensifying debate between degrowth and green growth, many recognize that degrowth is more effective in meeting the climate catastrophe. However, concerns about degrowth persist in regard to public acceptance of declining economic standards. Analyzing the experience of Greece during a long-term economic decline, this study finds that subjective well-being temporarily decreased but eventually rebounded to pre-decline levels. This indicates that a decline in economic standards does not necessarily result in a long-term well-being decline. Furthermore, Greece outperformed other European countries that pursued green growth policies in environmental reductions. Greece highlights the feasibility and effectiveness of degrowth for sustainability.

Keywords

Crisis, Economic growth, Happiness, Income inequality, Social transformation

Introduction

To mitigate the current climate catastrophe, a drastic reduction in environmental impacts of countries worldwide is desideratum (Rappleye and Komatsu, 2020; Washington et al., 2020; Liu et al., 2022). To achieve this goal, many high-income countries have implemented green growth policies. Green growth policies aim to reduce environmental impacts, while promoting economic growth through investment in green technologies (UNEP, 2011; OECD, 2011; World Bank, 2012). This has led to a substantial increase in investment in green technologies across high-income countries (OECD, 2017).

However, an increasing number of studies have raised concerns about the feasibility of green growth (Parrique et al., 2019; Hickel and Kallis, 2020; Keyßer and Lenzen, 2021; Fawzy et al., 2020; Jaschke and Biermann, 2022; Jeswani et al., 2022). In this research space, environmental impacts are divided into two components: (1) environmental impacts per economic output and (2) the total economic output. Green growth aims to reduce the former while increasing the latter, which leads to a slow reduction in total environmental impacts. So slow is the reduction, however, that even strong green growth countries are off track to decrease their carbon dioxide (CO₂) emissions at the necessary rate to attain zero-carbon emissions by 2050 (Nieto et al., 2018; Parrique et al., 2019; United Nations Framework Convention on Climate Change, 2021).

Emerging technologies, such as various Negative Emissions Technologies (NETs), have been considered as potential solutions. However, large-scale deployment of these technologies can increase other environmental impacts (Parrique et al., 2019; Fawzy et al., 2020; Jaschke and Biermann, 2022; Jeswani et al., 2022). For example, large-scale deployment of non-bio NETs (direct air carbon capture and storage, enhanced weathering, and mineral

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carbonation) can lead to high fossil fuel depletion, acidification, and human toxicity. For these reasons, green growth may not provide a comprehensive solution to the environmental crisis (Parrique et al., 2019; Hickel and Kallis, 2020; Jeswani et al., 2022; Savini, 2023). Indeed, despite the widespread adoption of green growth policies, many high-income countries continue to struggle to effectively reduce their material consumption (Pothen and Welsch, 2019; Hickel and Kallis, 2020).

Recognizing the problems of green growth, degrowth has gained increasing attention among scholars and policymakers (Kallis et al., 2018; Fitzpatrick et al., 2022a,b; Koskimäki, 2023; Parrique et al., 2023). Degrowth can be defined as an intentional social, economic, and cultural transformation that shifts the focus from economic growth to securing the well-being of humans and nature. This transformation involves a planned downscaling of production and consumption, prioritizing elements that better support the well-being of humans and nature and reducing environmental impacts (Hickel, 2021). Recognizing that this downscaling can disproportionately impact vulnerable groups, the government continues to play a crucial role in promoting social equality through measures such as granting employment with reduced working hours and reinforcing social security safety net (Kallis et al., 2018; Hickel, 2021). Additionally, empowering non-governmental collective initiatives that work toward improving well-being is integral to the transformation. This social transformation is, in turn, underpinned by a cultural shift: moving away from an emphasis on individual achievement and benefits towards prioritizing interconnectedness between individuals and their relationship with nature (Kallis et al., 2022). Initially, discussions on degrowth were limited to small, peripheral academic circles. However, the continuous increase in global CO₂ emissions and other environmental impacts has led scholars and policymakers to explore alternatives to green growth. Consequently, mainstream journals have begun publishing papers on degrowth (D'Alessandro et al., 2020; Keyßer and Lenzen, 2021; Hickel et al., 2022; Lenzen et al., 2022). The Intergovernmental Panel on Climate Change (IPCC, 2022) has also recently recognized degrowth as one potential strategy to reduce CO₂ emissions.

Nevertheless, despite the potential of degrowth, concerns remain around feasibility and effectiveness. The primary challenge in evaluating degrowth lies in the absence of countries intentionally downscaling their economies. While some small-scale examples exist (e.g., city and town scales, Kallis et al., 2022), no country-scale examples currently exist, making it difficult to empirically assess the outcomes of implementing degrowth policies in high-income countries. Consequently, researchers have turned to change in existing societies to derive implications for degrowth (Hickel and Kallis, 2020; Komatsu et al., 2022a).

Among various issues surrounding degrowth, two critical issues have been underexplored. One is surrounding degrowth feasibility: would the general public accept a decline in economic standards? Büchs and Koch (2019) and Milanovic (2021) question the feasibility of degrowth based on common assumptions that a decline in economic standards will lead to lower rates of happiness and well-being. Degrowth advocates have pointed out that economic growth does not always lead to improvements in subjective well-being among high-income countries (Daly, 2017; Kallis et al., 2018; Hickel, 2019). However, Büchs and Koch (2019) suggest that even though an increase in economic standards does not increase the level of subjective well-being, a decline in economic standards can result in a decline in subjective well-being. The reason is that adaptation to a loss is much less successful than adaptation to a gain. To support their argument, Büchs and Koch (2019) direct attention to a decline in subjective well-being during economic recessions. It is widely recognized that short-term economic recessions often result in a decline in subjective well-being (Diener and Tay, 2015).

A critical aspect missing from the current debate is the examination of long-term perspectives on the dynamics of decline. Degrowth entails a long-term process spanning decades. It is thus essential to examine the long-term responses of subjective well-being to a long-term decline in economic standards. However, few studies have explored this aspect due to the limited number of high-income countries experiencing prolonged economic decline. Japan and Greece represent the exceptions, with Japan's two-decade-long decline in household income offering insights into the relationship between economic standards and subjective well-being. In a recent study examining Japan, researchers addressed this issue (Komatsu et al., 2022a). That study found that subjective well-being initially declined but eventually returned to the original level within two decades despite the absence of income recovery. In other words, a decline in economic standards does not always result in a long-term decline in subjective well-being. Nevertheless, the generalizability of these findings to other countries has yet to be examined.

The second underexplored issue pertains to whether a decline in economic standards would result in a more rapid

decline in environmental impacts than green growth policies. Degrowth advocates assert that degrowth can reduce CO₂ emissions and other environmental impacts more effectively than green growth (Hickel and Kallis, 2020; Rikkinen et al., 2021; Koskimäki, 2023). However, this assertion has yet to be examined in an empirically rigorous way, which represents a crucial omission in the current discussions. Although one widely cited study addressed this issue, it relied on data from the early stages of green growth policy development (Hickel and Kallis, 2020). That study used data up to 2013, whereas green growth policies began to be adopted in the 2010s. Hence, a thorough, updated investigation is essential to empirically ascertain whether a decline in economic standards is more effective in reducing environmental impacts compared to green growth policies, using more recent data.

The current study addresses these two points: (1) long-term changes in subjective well-being and (2) reductions in environmental impacts in a society with declining economic standards. The focus of this research is Greece, the only high-income country, besides Japan, to encounter a long-term decline in economic standards in recent memory. This decline in economic standards was caused by the World Financial Crisis (2007–2008) and the subsequent Government-Debt Crisis (2009–2018). There has been no recovery of economic standards in Greece since then. The current Gross Domestic Product per capita is more than 20% lower than that before the crisis (Eurostat, 2023). Exploring the case of Greece, the current study addresses two key questions: (1) whether a long-term decline in subjective well-being is observed and (2) whether the reduction in environmental impacts for Greece is more pronounced than that for other European countries with strong green growth policies. A handful of previous studies have explored changes in subjective well-being in Greece shortly after the crisis (e.g., Arampatzi, 2013). However, our study's novel contribution is a long-term perspective. This perspective will provide valuable insights into the feasibility and effectiveness of degrowth in a real-world context.

Materials and Methods

Economic standards

To examine changes in economic standards, we primarily used real Gross Domestic Product (GDP) at purchasing power parity (PPP) per capita. We also examined changes in the real gross disposable income of households per capita. Several previous studies suggested that household indicators were stronger determinants of subjective well-being than aggregated, national indices (Diener et al., 2013). Data for GDP per capita and household income were derived from Eurostat (2023) and Statista (2023), respectively.

Subjective well-being

To examine changes in subjective well-being, we used data derived from the Standard Eurobarometer Series available on a European Union (2023a) website. The European Union conducts regular public opinion surveys in European Union countries. These surveys use a face-to-face format and randomly select no less than 1,000 respondents aged 15 or older. Respondents are interviewed at their homes in the national language of the country (European Union, 2023b). This survey provides reliable estimates of temporal changes in subjective well-being due to its short survey interval (typically twice a year).

The survey included one question about subjective well-being. The question asked respondents to rate their overall life satisfaction as “very satisfied”, “fairly satisfied”, “not very satisfied”, or “not at all satisfied”. We calculated the total percentage of respondents who chose “very satisfied” or “fairly satisfied”. We also calculated the total percentage of respondents who chose “not very satisfied” and “not satisfied at all.” We then examined the changes in these percentages over time. We also confirmed that our conclusions did not change even when using a weighted mean of the percentages of respondents for the four response categories.

Although the World Value Survey (2023) offers subjective well-being data, we chose not to utilize this dataset due to its limitations. Specifically, the dataset only contains recent subjective well-being data for Greece, making it inadequate for examining long-term changes in subjective well-being there.

Environmental impacts

To examine changes in environmental impacts, we used data for consumption-based CO₂ emissions per capita (Our World in Data, 2023), Ecological Footprint (Global Footprint Network, 2023), and Material Footprint (OECD, 2023a). CO₂ emissions are directly linked to the climate crisis. Ecological Footprint considers CO₂ emissions and other factors (e.g., land use changes) to assess environmental impacts more comprehensively. Material Footprint provides another dimension to human environmental impacts.

To benchmark the magnitude of the changes in environmental impacts for Greece, we compared Greece and three European countries (i.e., Czech Republic, Sweden, and Estonia) with strong green growth policies. These were the countries that ranked 1st to 3rd among 36 European countries according to the abundance of green economic opportunities (Global Green Growth Institute, 2021, p. 92–93). Greece was ranked 30th. The rankings were based on four components including green investment, transfer, employment, and innovation.

We also confirmed that even when using other countries for benchmarking, our results did not change qualitatively. Specifically, we confirmed that our results did not change when using Slovak Republic, Denmark, and Germany for benchmarking. Slovak Republic ranked the highest among European countries in terms of public expenditure on research, development, and demonstration (RD&D) for renewable energy (share of all energy-related RD&D). Denmark ranked the highest in terms of the invention of environmental-related technologies (share of all inventions). Germany ranked the highest in terms of the total number of inventions of environment-related technologies (OECD, 2017, p. 103–105).

Results

Economic standards

Greece experienced an increase in GDP per capita until 2008. In the following period with the World Financial Crisis and Government-Debt Crisis, Greece experienced a decline in GDP per capita (Figure 1a). There has been no recovery of GDP per capita to pre-decline levels. As of 2021, the GDP per capita of Greece was 18,830 Euros. This was 22% lower than the peak value (22,370 Euros) recorded in 2008.

Household income changes mirrored GDP per capita (Figure 1b). Household income in 2022 was 22% lower than the peak value recorded in 2009. The correlation between household income and GDP per capita was very strong ($r = 0.977$ with a 95% bootstrapping confidence interval of [0.956, 0.993]).

Subjective well-being

The percentage of people who were “very satisfied” or “fairly satisfied” with life decreased during the period between 2008 and 2012 (Figure 1c). However, this percentage began to increase in the succeeding period despite no apparent recovery in GDP per capita and/or household income. This percentage reached 67% in 2022, which approximated the mean percentage during 2005–2008 (65%).

Similarly, the percentage of people who were “not very satisfied” or “not satisfied at all” with life sharply increased during the period between 2008 and 2012 (Figure 1d). However, this percentage began to decrease in the succeeding period. This percentage was 33% in 2022, which approximated the mean percentage during 2005–2008 (35%).

Environmental impacts

Greece experienced declines in CO₂ emissions, Ecological Footprint, and Material Footprint after the World Financial Crisis (Figure 2). These declines for Greece were mostly greater than those for Czech Republic, Sweden, and Estonia. CO₂ emissions for Greece in 2020 were 42% lower than the mean value for 2005–2008. This percentage was comparable to that for Sweden and greater than those for Czech Republic and Estonia (Figure 3a). The Ecological Footprint for Greece in 2018 was 33% lower than the mean value in 2005–2008. The Material Footprint for Greece in 2019 was 32% lower than that in 2005. These percentages were higher than those for the other three countries including Sweden. Yet in contrast to Sweden, where a significant reduction was observed in CO₂

emissions, the substantial decrease in Greece was not limited to CO₂ emissions alone.

The results were the same when comparing Greece with Slovak Republic, Denmark, and Germany (Figure 3b). The reduction in CO₂ emissions for Greece in 2020 (42%) was comparable to that for Denmark and greater than those for Slovak Republic and Germany (Figure 3a). The reductions in the Ecological Footprint and the Material Footprint for Greece (33% and 32%, respectively) were higher than those for the other three countries including Denmark. These results indicate that Greece achieved more rapid and comprehensive reductions in environmental impacts than other countries with strong green growth policies.

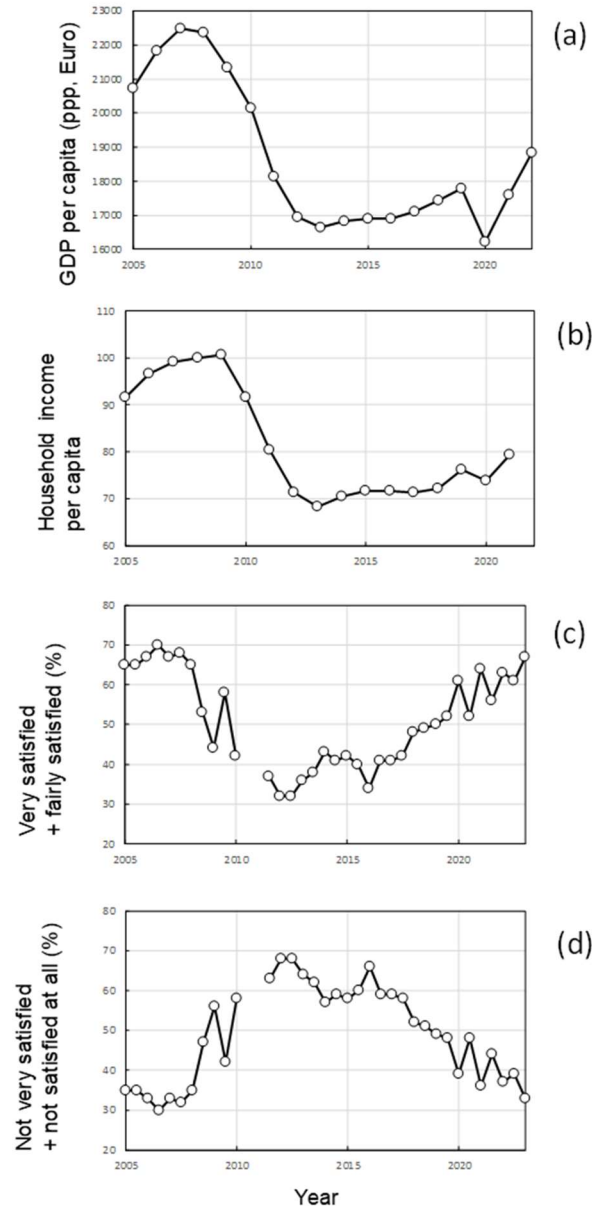


Fig. 1: Changes in (a) real GDP per capita (ppp, Euros), (b) the real gross disposable income of households per capita (index = 2008), and (c, d) subjective well-being for Greece.

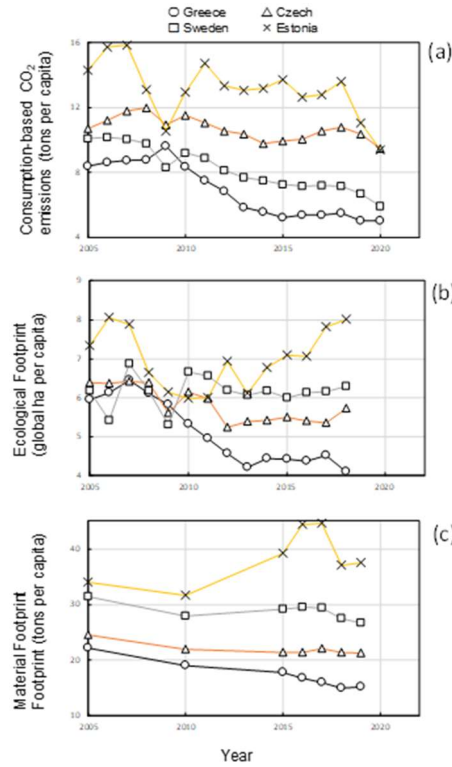


Fig. 2: Changes in (a) consumption-based CO₂ emissions per capita, (b) Ecological Footprint, and (c) Material Footprint.

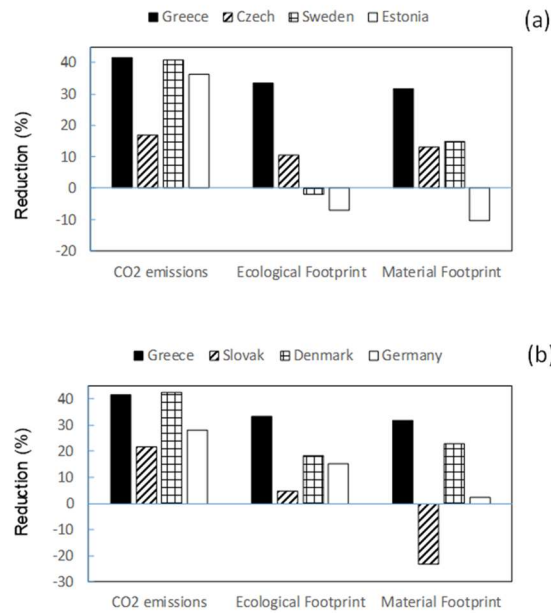


Fig. 3: Reduction percentages for consumption-based CO₂ emissions per capita, Ecological Footprint, and Material Footprint: comparison of Greece (a) with Czech Republic, Sweden, and Estonia and (b) with Slovak Republic, Denmark, and Germany. The percentages were calculated by the latest value divided by the mean value for the period between 2005 and 2008.

Discussion and Conclusions

Subjective well-being

In Greece, a decline in economic standards initially led to a decline in subjective well-being. However, within one decade, the level of subjective well-being subsequently returned to where it once stood, despite no recovery of economic standards. Similar results have already been reported in Japan (Komatsu et al., 2022a). Japan and Greece represent the only available cases of high-income countries experiencing a long-term economic decline. In both instances, no long-term decline in subjective well-being was observed. This unequivocally demonstrates that a decline in economic standards does not necessarily lead to a lasting decrease in subjective well-being, findings that directly challenge the work of Büchs and Koch (2019) and Milanovic (2021). Those two previous studies have contributed doubts about degrowth. But these results for Greece and Japan suggest that such doubts may be unwarranted when the perspective shifts to a longer time span. In short, our results suggest subjective well-being is elastic and recovers in a relatively short time span.

The case of Greece is particularly important because it experienced a more pronounced economic decline than Japan. Greece experienced a more than 20% decline in GDP per capita and little economic recovery thereafter. Despite this, the rebound in subjective well-being is evident.

Beyond the cases of Greece and Japan, few other high-income countries have experienced steep declines in economic standards. Italy and Spain experienced a decline in economic standards on a smaller magnitude, with GDP per capita values in 2021 for these countries respectively 7% and 8% lower than the peak value recorded in 2007. Our supplementary analysis of Standard Eurobarometer Series data (European Union website, 2023a) revealed that levels of subjective well-being there also recovered after the crisis. In 2007, the percentage of respondents who were "very satisfied" or "fairly satisfied" stood at 73% for Italy and 88% for Spain. These figures declined to 54% and 65% in 2013, respectively. However, at present, these percentages have again risen to 78% and 87% for Italy and Spain, respectively. The current level of subjective well-being is comparable to that before the crisis for both countries.

Environmental impacts

For Greece, reductions in environmental impacts have been more rapid and comprehensive than those observed in other European countries, even those with strong green growth policies. Importantly, this study utilized recently obtained data after the widespread implementation of green growth policies. These findings support recent arguments by Hickel and Kallis (2020), Keyßer and Lenzen (2021), and Jeswani et al. (2022), specifically that although green growth policies may lead to some decrease in several environmental impact indicators, that decrease may not be sufficiently rapid or comprehensive to achieve environmental sustainability (as discussed in the introduction).

Our study provides concrete empirical evidence that supports degrowth being more effective than green growth in reducing environmental impacts. Although this topic has been extensively discussed in the literature, empirical examinations have been scarce. Therefore, our study fills this void by offering solid evidence that reinforces the argument for prioritizing degrowth strategies over green growth alternatives.

Behind the well-being recovery

Although Japan and Greece offer insights into the feasibility and effectiveness of degrowth, these countries do not, in fact, serve as examples of successful degrowth transitions to a post-growth society (Tokic, 2013). Degrowth is an intentional movement that aims to shift the focus from economic development to the well-being of humans and nature, ultimately leading to reduced environmental impacts (Andreoni and Galmarini, 2014; Kallis et al., 2018). However, neither Japan nor Greece actively embraced this shift towards well-being. Instead, their political leadership focused on revitalizing their economies when faced with economic decline. Notably, in Japan, economic strategy papers continued to focus on GDP for more than a decade following the onset of economic decline (e.g., Cabinet Office, 2004). Only after this period did the focus gradually shift towards employment (Cabinet Office, 2007) and working hours (Cabinet Office, 2019), indicators more directly linked to people's well-being. Similarly,

a recently published blueprint for Greece's future still emphasizes GDP growth over well-being (Government of Greece, 2021). GDP is mentioned 214 times in the document, whereas well-being is mentioned merely 10 times. Both Japan and Greece thus unintentionally experienced a recovery of well-being, without a deliberate transition towards degrowth.

Further studies should thus explore mechanisms behind the recovery of subjective well-being levels in Greece and Japan, as well as Italy and Spain. This exploration will help scholars and policymakers gain insights into how to navigate the initial stages of a degrowth transition. To initiate this exploration, we propose one hypothesis regarding the recovery of subjective well-being. Our hypothesis posits that while governments, industries, and citizens responded to the crisis in an ad hoc manner, their efforts incidentally aligned with some of the proposals made by degrowth theorists.

Our literature review largely supports this hypothesis. As mentioned in the introduction, degrowth theorists advocate for downscaling the production and consumption of less vital elements for human and environmental well-being. In Japan, despite a large reduction in overall consumption, the consumption of food, utilities, water, and health and medical care remained unchanged or even increased after economic growth ceased (Komatsu et al., 2022a). Similarly, in Greece, the economic crisis had the least impact on sectors such as agriculture, health, and social work (Voulgaris et al., 2015).

The economic downscaling led to a rise in unemployment, disproportionately affecting vulnerable groups in both countries (Ohtake, 2000; Anagnostopoulos et al., 2015). This indicates that Japan and Greece do not represent successful cases of degrowth. However, both countries eventually implemented measures to prevent an increase in social inequality. They strengthened support for vulnerable groups, including unemployed youth and families with children, and reduced wage gaps between full-time and part-time employees (Kasaki, 2011; Kourachanis et al., 2017; Kenjo, 2021; Matsaganis, 2020). Although the effectiveness of these measures varied, both countries moved in the direction proposed by degrowth theorists. Notably, they succeeded in preventing a considerable increase in income inequality, as assessed by the Gini index and p90/p10 ratios (Argitis et al., 2017; OECD, 2023b). Importantly, the economic downscaling catalyzed the implementation of measures to ensure social equality, particularly in Greece, where the downscaling was more pronounced. Interestingly, Greece failed to implement such measures to ensure social equality in the 1990s and 2000s when economic conditions were more favorable. The economic crisis made existing injustices and inequality more visible, prompting the successful implementation of measures to ensure social equality in the 2010s (Matsaganis, 2020).

The economic downscaling also catalyzed the emergence of non-governmental collective initiatives that work for improving well-being. In Japan, many non-governmental organizations (NGOs) emerged in the late 1990s after the economic crisis (JANIC, 2022). These NGOs often took on the roles that were originally played by governmental organizations (Ogawa, 2004). Greece witnessed an even more pronounced emergence of non-governmental collective initiatives (Benmecheddal et al., 2017; Zaimakis, 2018; Kourachanis et al., 2019; Markantonatou, 2021). These initiatives included social kitchens, social medical centers, and alternative markets. Social kitchens and medical centers were run by volunteers and provided food and medical services in public spaces. Alternative markets often used bartering and alternative currencies (including time) to facilitate relational exchanges. The rise of alternative initiatives is consistent with the perspective put forth by degrowth and post-growth advocates (Nørgård, 2013; Barlow et al., 2022; Buch-Hansen and Nesterova, 2023).

The institutional transformation described above was accompanied by broader cultural shifts in both Japan and Greece. Correlations between institutions and culture are widely discussed in existing literature (Markus and Kitayama, 2010; Oliver et al., 2022; Komatsu et al., 2019, 2021, 2022b; Buch-Hansen and Nesterova, 2023). In Japan, data shows a clear shift in the concept of happiness from individual achievement to interpersonal, harmonious relationships (Komatsu et al., 2022a). People responded to the decline by (re)learning how to find happiness within human relationships and within the relationship between humans and nature. This shift in the concept of happiness is evidenced in the rise of interpersonal trust. A similar cultural shift is observed in Greece. Ervasti et al. (2019) analyzed quantitative data on trust in Greece and found that an increase in interpersonal trust after the economic crisis. Zaimakis' (2018) interview-based study identified the shift in emphasis from individuality and competition to mutuality and cooperation. This cultural shift might be correlated with the emergence of non-governmental collective initiatives. The rise of alternative self-administered, local initiatives may facilitate direct interactions

among people and enhance interpersonal trust and subjective well-being. Psychological studies suggest positive interactions with others can enhance interpersonal trust, which can in turn increase happiness (Wollebaek and Selle, 2002; Yamamura et al., 2015; Maas et al., 2016; Kwan, 2019; Lu et al., 2020).

Although our casual observations support the hypotheses, further in-depth investigations of institutional and cultural changes in these countries are necessary. Some related investigations have begun to emerge (Sekulova et al., 2017; Figueiredo et al., 2020; Komatsu et al., 2022a), but more research is needed. Such research projects may help identify key factors that allowed Japan and Greece to avoid a long-term decline in subjective well-being. The identification of these factors will help design policies that intentionally facilitate a degrowth transition. Such research projects will require international and interdisciplinary collaborations. Fortunately, the field of degrowth scholarship has become increasingly international and interdisciplinary, and is now better situated to lead in these directions (Fitzpatrick et al., 2022b; Buch-Hansen and Nesterova, 2023).

Implications for futures

After studying the cases of Japan and Greece, what future scenarios can we envision? The cases of Japan and Greece, along with a wealth of research on degrowth, may pave the way for a paradigm shift, leading high-income countries to consider and implement degrowth policies. One positive indication of increasing interest in degrowth is evident as the Dutch Parliament invited a degrowth proponent for a hearing in 2022 (Commons Network, 2023).

The significance of the cases of Japan and Greece also lies in their demonstration of an alternative pathway, which we here term "crisis-catalyzed degrowth." Degrowth is traditionally characterized as a deliberate and planned process of economic, social, and cultural transformations. In both Japan and Greece, some of the proposed transformations occurred largely unintentionally. Initially, both countries sought to revive their economies but were unable to do so successfully. Over time, they gradually recognized the infeasibility, injustices, and inequalities inherent in their existing socio-economic paradigm, leading them to implement some of the measures advocated by degrowth theorists. This may partly explain the subsequent recovery of subjective well-being in both countries. The cases of Japan and Greece thus indicate that a paradigm shift from economic growth to degrowth can be also triggered as a response to an economic crisis. Such a transformation aligns with the views of Vollarth (2019), Bardi (2020), Vigni et al. (2022), and Naudé (2023), who consider societal collapse as an opportunity for societal change.

It is worth noting that transformations can be facilitated by not only economic crises but also social and environmental crises. Emerging climate change impacts, for instance, have begun to affect our behavior. Climate anxiety partly explains the low fertility rates in high-income countries (Schneider-Mayerson and Leong, 2020; Helm et al., 2021). Although declining fertility rates may not be specifically advocated by degrowth theorists, they do have the potential to facilitate degrowth transitions by aligning with the principles of sustainable population dynamics and reduced resource consumption.

It remains theoretically possible that technological breakthroughs could solve environmental problems, including climate change, although existing data continues to challenge this enduring optimism (Parrique et al., 2019; Hickel and Kallis, 2020; Keyßer and Lenzen, 2021; Fawzy et al., 2020; Jaschke and Biermann, 2022; Jeswani et al., 2022). But even if technological breakthroughs were achieved, they still might not eliminate the need for social and cultural transformations. Technological advances, in fact, may only exacerbate income inequality and unemployment. Economists predict that under a successful green growth scenario, income inequality and unemployment increase (D'Alessandro et al., 2020; Naudé, 2023). Additionally, the widespread adoption of Artificial Intelligence technology may further contribute to income inequality and unemployment (Makridakis, 2017; Korinek and Stiglitz, 2021). Hence, successful green growth can actually hasten unforeseen economic and social crises (O'Neil, 2020). Consequently, it becomes crucial for us to deepen our understanding of the social and cultural transformations necessary to tackle these issues and continue pursuing overall human well-being, as we have endeavored to do in this paper.

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References

- Anagnostopoulos, A., Bitzenis, A., & Kontakos, P. (2015). Tackling undeclared work in Greece. *Global Business & Economics Anthology*, 2, 32-46. http://www.paraoikonomia.gr/wp-content/uploads/18_portugal_pp_32_46_Anagnostopoulos-Bitzenis-Tackling...pdf
- Andreoni, V., & Galmarini, S. (2014). How to increase well-being in a context of degrowth. *Futures*, 55, 78-89. <https://doi.org/10.1016/j.futures.2013.10.021>
- Arampatzi, E. (2013). *The Impact of a Financial Crisis on Happiness (Master's thesis)*. Erasmus University. <https://thesis.eur.nl/pub/14816/MA-ThesisEfstratiaArampatzi-370885.pdf>
- Argitis, G., Koratzanis, N., & Pierros, C. (2017). The Greek Crisis: Outlook and an alternative economic policy. In AKW, ECLM, IMK, & OFCE (Eds.), *Independent Annual Growth Survey, 5th Report* (pp. 1-46). AKW, ECLM, IMK, & OFCE. https://www.socialistsanddemocrats.eu/sites/default/files/iAGS_2017_report_published_november_2016_0.pdf
- Bardi, U. (2020). *Before the Collapse: A Guide to the Other Side of Growth*. Springer.
- Barlow, N., Regen, L., Cadiou, N., Chertkovskaya, E., Hollweg, M., Plank, C., Schulken, M., & Wolf, V. (2022). *Degrowth & Strategy: How to Bring About Social-Ecological Transformation*. Degrowth Vienna and May Fly. <https://www.degrowthstrategy.org/>
- Benmecheddal, A., Gorge, H., & Özçağlar-Toulouse, N. (2017). Rethinking alternative markets in the context of economic crisis and austerity in Greece. *Journal of Macromarketing*, 37(2), 193–205. <https://doi.org/10.1177/0276146717696894>
- Buch-Hansen, H., & Nesterova, I. (2023). Less and more: Conceptualising degrowth transformations. *Ecological Economics*, 205, 107731. <https://doi.org/10.1016/j.ecolecon.2022.107731>
- Büchs, M., & Koch, M. (2019). Challenges for the degrowth transition: The debate about wellbeing. *Futures*, 105, 155-165. <https://doi.org/10.1016/j.futures.2018.09.002>
- Cabinet Office. (2004). *Japan's Economy 2004*. Cabinet Office, Japan. <https://www5.cao.go.jp/keizai3/whitepaper2.html#nihonkeizai>
- Cabinet Office. (2007). *Japan's Economy 2007*. Cabinet Office, Japan. <https://www5.cao.go.jp/keizai3/whitepaper2.html#nihonkeizai>
- Cabinet Office. (2019). *Japan's Economy 2019–2020*. Cabinet Office, Japan. <https://www5.cao.go.jp/keizai3/whitepaper2.html#nihonkeizai>
- Commons Network. (2023). *Postgrowth Intergroup receives prof. Jason Hickel in Dutch Parliament*. <https://www.commonsnetwork.org/2023/03/14/postgrowth-intergroup-receives-prof-jason-hickel-in-dutch-parliament/>
- D'Alessandro, S., Cieplinski, A., Distefano, T., & Dittmer, K. (2020). Feasible alternatives to green growth. *Nature Sustainability*, 3, 329-335. <https://doi.org/10.1038/s41893-020-0484-y>
- Daly, H. (2017). A further critique of growth economics. In S. Shmelev (Ed.), *Green Economy Reader* (pp. 55-66). Springer. https://doi.org/10.1007/978-3-319-38919-6_4
- Diener, E., & Tay, L. (2015). Subjective well-being and human welfare around the world as reflected in the Gallup World Poll. *International Journal of Psychology*, 50, 135-149. <https://doi.org/10.1002/ijop.12136>
- Diener, E., Tay, L., & Oishi, S. (2013). Rising income and the subjective well-being of nations. *Journal of Personality and Social Psychology*, 104, 267-276. <https://doi.org/10.1037/a0030487>
- Ervasti, H., Kouvo, A., & Venetoklis, T. (2019). Social and institutional trust in times of crisis: Greece, 2002–2011.

- Social Indicators Research*, 141, 1207–1231. <https://doi.org/10.1007/s11205-018-1862-y>
- European Union. (2023a). Eurobarometer. <https://europa.eu/eurobarometer/surveys/browse/all/series/4961>
- European Union. (2023b). About Eurobarometer. <https://europa.eu/eurobarometer/about/eurobarometer>
- Eurostat. (2023). Real GDP Per Capita. https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table
- Fawzy, S., Osman, A.I., Doran, J., & Rooney, D. (2020). Strategies for mitigation of climate change: a review. *Environmental Chemistry Letters*, 18, 2069–2094. <https://doi.org/10.1007/s10311-020-01059-w>
- Figueiredo, E., Partalidou, M., & Koutsou, S. (2020). ‘No choice’ or ‘a choice’? – An exploratory analysis of ‘back to the countryside’ motivations and adaptation strategies in times of crisis in Greece and Portugal. In F. N. Döner, E. Figueiredo, M. J. Rivera (Eds.), *Crisis and Post-Crisis in Rural Territories* (pp. 119-139). Springer. <https://doi.org/10.1007/978-3-030-50581-3>
- Fitzpatrick, N., Vrettos, C., Manero Ruz, A., Mendy, L., Tuckey, A., & Ishihara, S. (2022a). Sowing the Seeds of Degrowth Futures: Reporting back from Degrowth Vienna 2020. *Journal of Futures Studies*, 26(4), 99–111. [https://doi.org/10.6531/JFS.202206_26\(4\).0009](https://doi.org/10.6531/JFS.202206_26(4).0009)
- Fitzpatrick, N., Parrique, T., & Cosme, I. (2022b). Exploring degrowth policy proposals: A systematic mapping with thematic synthesis. *Journal of Cleaner Production*, 365, 132764. <https://doi.org/10.1016/j.jclepro.2022.132764>
- Global Footprint Network. (2023). Country Trends. Global Footprint Network. [https://data.footprintnetwork.org/?_ga=2.136657072.1252264263.1650464166-1848263317.1649992616#/#](https://data.footprintnetwork.org/?_ga=2.136657072.1252264263.1650464166-1848263317.1649992616#/)
- Global Green Growth Institute. (2021). *Green Growth Index 2021*. Global Green Growth Institute. <https://greengrowthindex.gggi.org/wp-content/uploads/2022/12/2021-Green-Growth-Index-1.pdf>
- Government of Greece. (2021). *Greece 2.0: National Recovery and Resilience Plan*. Government of Greece. https://greece20.gov.gr/wp-content/uploads/2021/07/NRRP_Greece_2_0_English.pdf
- Helm, S., Kemper, J., & White, S. (2021). No future, no kids—no kids, no future? *Population and Environment*, 43, 108–129. <https://doi.org/10.1007/s11111-021-00379-5>
- Hickel, J., & Kallis, G. (2020). Is Green Growth possible? *New Political Economy*, 25, 469-486. <https://doi.org/10.1080/13563467.2019.1598964>
- Hickel, J., Kallis, G., Jackson, T., O’Neill, D. W., Schor, J. B., Steinberger, J. K., Victor, P. A., & Ürge-Vorsatz, D. (2022). Degrowth can work – here’s how science can help. *Nature*, 612, 400-403. <https://doi.org/10.1038/d41586-022-04412-x>
- IPCC. (2022). *Climate Change 2022: Mitigation of Climate Change*. IPCC. <https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/>
- Japanese NGO Center for International Cooperation (JANIC). (2022). *Data Book on NGOs in Japan*. JANIC. <https://www.mofa.go.jp/mofaj/files/000150460.pdf>
- Jaschke, G., & Biermann, F. (2022). The policy discourse on negative emissions, land-based technologies, and the Global South. *Global Environmental Change*, 75, 102550. <https://doi.org/10.1016/j.gloenvcha.2022.102550>
- Jeswani, H. K., Saharudin, D. M., & Azapagic, A. (2022). Environmental sustainability of negative emissions technologies: A review. *Sustainable Production and Consumption*, 33, 608-635. <https://doi.org/10.1016/j.spc.2022.06.028>
- Kallis, G., Kostakis, V., Lange, S., Muraca, B., Paulson, S., & Schmelzer, M. (2018). Research on degrowth. *Annual Review of Environment and Resources*, 43(1), 291-316. <https://doi.org/10.1146/annurev-enviro-102017-025941>
- Kallis, G., Varvarousis, A., & Petridis, P. (2022). Southern thought, islandness and real-existing degrowth in the Mediterranean. *World Development*, 157, 105957. <https://doi.org/10.1016/j.worlddev.2022.105957>
- Kasaki, E. (2011). Modern workers and the social security system. *The Japanese Journal of Labour Studies*, 612, 40-50. <https://www.jil.go.jp/institute/zassi/backnumber/2011/07/pdf/040-050.pdf>
- Kenjo, E. (2021). Work style changes, pension plans, and life planning. *Journal of Pension Academy of Japan*, 40, 42-71.
- Keyßer, L. T., & Lenzen, M. (2021). 1.5 °C degrowth scenarios suggest the need for new mitigation pathways.

- Nature Communications*, 12, 2676. <https://doi.org/10.1038/s41467-021-22884-9>
- Komatsu, H., Rappleye, J., & Silova, I. (2019). Culture and the independent self: obstacles to environmental sustainability? *Anthropocene*, 26, 100198. <http://dx.doi.org/10.1016/j.ancene.2019.100198>
- Komatsu, H., Rappleye, J., & Silova, I. (2021). Student-centered learning and sustainability: solution or problem? *Comparative Education Review*, 65(1), 6-33. <https://doi.org/10.1086/711829>
- Komatsu, H., Rappleye, J., & Uchida, Y. (2022a). Is happiness possible in a degrowth society? *Futures*, 144, 103056. <https://doi.org/10.1016/j.futures.2022.103056>
- Komatsu, H., Rappleye, J., & Silova, I. (2022b). Social mindfulness for global environmental sustainability? *Proceedings of the National Academy of Sciences of the United States of America*, 119(4), e2118710118. <https://doi.org/10.1073/pnas.2118710118>
- Korinek, A., & Stiglitz, J. E. (2021). Artificial Intelligence, globalization, and strategies for economic development. *Institute for New Economic Thinking Working Paper Series*, 146. <https://doi.org/10.36687/inetwp146>
- Koskimäki, T. (2023). Targeting socioeconomic transformations to achieve global sustainability. *Ecological Economics*, 211, 107871. <https://doi.org/10.1016/j.ecolecon.2023.107871>
- Kourachanis, N., Lalioti, V., & Venieris D. (2019). Social policies and solidarity during the Greek Crisis. *Social Policy & Administration*, 53, 678 – 692. <https://doi.org/10.1111/spol.12420>
- Kwan, O. Y. (2019). *Social Trust and Economic Development*. Edward Elgar Publishing. <https://doi.org/10.4337/9781784719609>
- Lenzen, M., Keyßer, L., & Hickel, J. (2022). Degrowth scenarios for emissions neutrality. *Nature Food*, 3, 308–309. <https://doi.org/10.1038/s43016-022-00516-9>
- Liu, Z., Deng, Z., Davis, S. J., et al. (2022). Monitoring global carbon emissions in 2021. *Nature Reviews Earth & Environment*, 3, 217–219. <https://doi.org/10.1038/s43017-022-00285-w>
- Lu, H., Tong, P., & Zhu, R. (2020). Longitudinal evidence on social trust and happiness in China: Causal effects and mechanisms. *Journal of Happiness Studies*, 21, 1841–1858. <https://doi.org/10.1007/s10902-019-00159-x>
- Maass, R., Kloeckner, C. A., Lindstrøm, B., & Lillefjell, M. (2016). The impact of neighborhood social capital on life satisfaction and self-rated health: A possible pathway for health promotion? *Health & Place*, 42, 120–128. <https://doi.org/10.1016/j.healthplace.2016.09.011>
- Markantonatou, M. (2021). Post-growth, post-democracy, post-Memoranda: What can the ‘post-growth’ debate learn from Greece and vice versa? *Anthropological Theory*, 21(3), 341–363. <https://doi.org/10.1177/1463499620982121>
- Markus, H.R., & Kitayama, S. (2010). Cultures and selves: a cycle of mutual constitution. *Perspectives on Psychological Science*, 5, 420–430. <https://doi.org/10.1177/17456916103755>
- Matsaganis, M. (2020). Safety nets in (the) crisis: The case of Greece in the 2010s. *Social Policy & Administration*, 54, 587-598. <https://doi.org/10.1111/spol.12614>
- Milanovic, B. (2021). Degrowth: Solving the impasse by magical thinking. GP Opinion. <https://www.globalpolicyjournal.com/blog/23/02/2021/degrowth-solving-impasse-magical-thinking>
- Naudé, W. (2023). Melancholy hues: the futility of Green Growth and Degrowth, and the inevitability of societal collapse. *IZA Discussion Paper Series*, 16139. <https://docs.iza.org/dp16139.pdf>
- Nieto, J., Carpintero, Ó., & Miguel, L. J. (2018). Less than 2°C? An Economic-Environmental Evaluation of the Paris Agreement. *Ecological Economics*, 146, 69-84. <https://doi.org/10.1016/j.ecolecon.2017.10.007>
- Nørgård, S. J. (2013). Happy degrowth through more amateur economy. *Journal of Cleaner Production*, 38, 61-70. <https://doi.org/10.1016/j.jclepro.2011.12.006>
- OECD. (2011). *Towards Green Growth*. OECD Publishing. <https://www.oecd.org/greengrowth/48012345.pdf>
- OECD. (2017). *Green Growth Indicators 2017*. OECD Publishing. <http://dx.doi.org/10.1787/9789264268586-en>
- OECD. (2023a). OECD.stat. Material Resources. https://stats.oecd.org/Index.aspx?DataSetCode=MATERIAL_RESOURCES
- OECD. (2023b). OECD.stat. Income Distribution and Poverty.

- https://stats.oecd.org/Index.aspx?datasetcode=SOCX_AGG
- Ogawa, A. (2004). Invited by the State: Institutionalizing Volunteer Subjectivity in Contemporary Japan. *Asian Anthropology*, 3(1), 71-96. <http://dx.doi.org/10.1080/1683478X.2004.10552543>
- Ohtake, F. (2000). Income inequality in the 1990s. *The Japanese Journal of Labour Studies*, 480, 2-11.
- Oliver, T. H., Doherty, B., Dornelles, A., Gilbert, N., Greenwell, M. P., Harrison, L. J., Jones, I. M., Lewis, A. C., Moller, S. J., Pilley, V. J., Tovey, P., & Weinstein, N. (2022). A safe and just operating space for human identity: A systems perspective. *Lancet Planet Health*, 6, e919–27. [https://doi.org/10.1016/S2542-5196\(22\)00217-0](https://doi.org/10.1016/S2542-5196(22)00217-0)
- O’Neil, D.W. (2020). Beyond Green Growth. *Nature Sustainability*, 3, 260–261. <https://doi.org/10.1038/s41893-020-0499-4>
- Our World in Data. (2023). Per Capita Consumption-based CO₂ emissions. <https://ourworldindata.org/grapher/consumption-co2-per-capita>
- Parrique, T., Barth, J., Briens, F., Kerschner, C., Kraus-Polk, A., Kuokkanen, A., & Spangenberg, J. H. (2019). *Decoupling Debunked: Evidence and Arguments Against Green Growth as a Sole Strategy for Sustainability*. European Environmental Bureau. <https://eeb.org/library/decoupling-debunked/>
- Parrique, T., Raworth, K., & Liegey, V. (2023). Post-growth Europe: 400+ experts call for wellbeing economy. Friends of the Earth Europe. <https://friendsoftheearth.eu/publication/post-growth-europe-letter/>
- Pothen, F., & Welsch, H. (2019). Economic development and material use. Evidence from international panel data. *World Development*, 115, 107-119. <https://doi.org/10.1016/j.worlddev.2018.06.008>
- Rappleye, J., & Komatsu, H. (2020). Towards (comparative) educational research for a finite future. *Comparative Education*, 56(2), 190-217. <https://doi.org/10.1080/03050068.2020.1741197>
- Rikkonen, P., Lauttamäki, V., Parkkinen, M., Varho, V., & Tapio, P. (2021). Five transition pathways to renewable energy futures—scenarios from a Delphi study on key drivers and policy options. *European Journal of Futures Research*, 9, 14. <https://doi.org/10.1186/s40309-021-00185-0>
- Savini, F. (2023). Futures of the social metabolism: Degrowth, circular economy and the value of waste. *Futures*, 150, 103180. <https://doi.org/10.1016/j.futures.2023.103180>
- Schneider-Mayerson, M., & Leong, K.L. (2020). Eco-reproductive concerns in the age of climate change. *Climatic Change*, 163, 1007-1023. <https://doi.org/10.1007/s10584-020-02923-y>
- Sekulova, F., Kallis, G., & Schneider, F. (2017). Climate change, happiness and income from a degrowth perspective. In P. A. Victor, B. Dolter (Eds.), *Handbook on Growth and Sustainability* (pp. 160-180). Elgar. <https://doi.org/10.4337/9781783473564.00015>
- Statista. (2023). Average annual wages in Greece from 2000 to 2021. <https://www.statista.com/statistics/416209/average-annual-wages-greece-y-on-y-in-euros/>
- Tokic, D. (2012). The economic and financial dimensions of degrowth. *Ecological Economics*, 84, 49-56. <https://doi.org/10.1016/j.ecolecon.2012.09.011>
- UNEP. (2011). *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers*. UNEP. <https://www.unep.org/greeneconomy>
- United Nations Framework Convention on Climate Change. (2021). *Nationally determined contributions under the Paris Agreement*. United Nations Framework Convention on Climate Change. <https://unfccc.int/documents/306848>
- Vigni, F. L., Blanchard, E., & Tasset, C. (2022). Theories of global collapse: closing down or opening up the futures? *Journal of Futures Studies*, 27, 1-14. [https://doi.org/10.6531/JFS.202209_27\(1\).0001](https://doi.org/10.6531/JFS.202209_27(1).0001)
- Vollrath, D. (2019). *Fully Grown: Why a Stagnant Economy is a Sign of Success*. University of Chicago Press.
- Voulgaris, F., Agiomirgianakis, G., & Papadogonas, T. (2015). Job creation and job destruction in economic crisis at firm level: the case of Greek manufacturing sectors. *International Economics and Economic Policy*, 12, 21–39. <https://doi.org/10.1007/s10368-014-0287-6>
- Washington, H., Lowe, I., & Kopnina, H. (2020). Why do society and academia ignore the ‘scientists warning to humanity’ on population? *Journal of Futures Studies*, 25, 93-106. [https://doi.org/10.6531/JFS.202003_24\(3\).0002](https://doi.org/10.6531/JFS.202003_24(3).0002)

- Wollebaek, D., & Selle, P. (2002). Does participation in voluntary associations contribute to social capital? The impact of intensity, scope, and type. *Nonprofit and Voluntary Sector Quarterly*, 31(1), 32-61. <https://doi.org/10.1177/089976400231110>
- World Bank. (2012). *Inclusive Green Growth: The Pathways to Sustainable Development*. World Bank. <https://openknowledge.worldbank.org/entities/publication/dd958ad6-e19f-5acf-894c-1809db8ce348>
- World Value Survey. (2023). Data and Documentation. <https://www.worldvaluessurvey.org/wvs.jsp>
- Yamamura, E., Tsutsui, Y., Yamane, C., et al. (2015). Trust and happiness: Comparative study before and after the Great East Japan Earthquake. *Social Indicators Research*, 123, 919–935. <https://doi.org/10.1007/s11205-014-0767-7>
- Zaimakis, Y. (2018). Autonomy, degrowth and prefigurative politics: Voices of solidarity economy activists amid economic crisis in Greece. *Partecipazione & Conflitto*, 11(1), 95-120. <https://doi.org/10.1285/i20356609v11i1p95>