

Growth, A-Growth or Degrowth to Stay within Planetary Boundaries?

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Abstract: The environmental sustainability of economic growth has been subject to much debate for many decades. Recently, two alternatives to the growth paradigm have been put forward: namely, “a-growth” and “degrowth.” The first proposes to ignore GDP information and focus instead on sound environmental, social, and economic policies independently of their effects on economic growth. The second recommends a downscaling of the economy so as to make it consistent with biophysical boundaries. We compare these approaches in the context of the growth paradigm and examine whether they have any merit. We further consider the potential contribution of institutional economics to further develop such alternatives.

Keywords: a-growth, degrowth, environmental sustainability, gross domestic product (GDP), growth paradigm

JEL Classification Codes: O44, O47, Q56

The sustainability of economic growth, given planetary boundaries (Rockström et al. 2009), is heavily debated (Jackson 2009; Victor 2010). Institutional economists, and this journal in particular, have made important contributions to our understandings of the limits of GDP and the alternatives to it (Brinkman and Brinkman 2011), the interplay between growth, the environment and sustainable development (Bromley 1985; Groenewegen et al. 1992; Stern 1997; Swaney 1987), and the institutional limitations and processes of change necessary for sustainability transitions (Keong 2005; Rosser and Rosser 2006). Institutional economists analyze the economy as an open system within which technological, cultural, and ecological factors interact. From such a perspective, it is clear that development cannot be reduced to GDP but serves higher-level, instrumental social values (Adkisson 2009).

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Somewhat in parallel to institutional economics, there has been the development of the interdisciplinary field of ecological economics, which tends to see the economy as coevolving, rather than simply growing (Daly and Farley 2004; Kallis and Norgaard 2010). Several authors have called for more exchange and better integration between institutional and ecological economics (Paavola and Adger 2005; Söderbaum 1993). Ecological economics has frequently paid attention to growth limits, being critical not only of mainstream economic perspectives, but also of functionalist institutionalist accounts (DeGregori 1987). Following the economic crisis of 2008, many new contributions have appeared within the realm of ecological economics that both revitalize the old growth-versus-environment debate and engage with new alternatives to growth. One recently debated option is “degrowth.” Degrowth is the intentional limiting and downscaling of the economy to make it consistent with biophysical boundaries (Kallis 2011). Another option is “a-growth”, a perspective which proposes to ignore or even “abolish” GDP as a welfare and progress indicator, and focusing, in this way, on sound environmental, social, and economic policies independently of their effects on economic growth (van den Bergh 2011).

These are not mere academic preoccupations. In Europe, criticism to GDP has made headway in the arenas of policy and civil society. The former French president, Nicolas Sarkozy, commissioned a report explicitly dealing with alternatives to GDP (Stiglitz 2009). Again from France, a movement of academics and activists has emerged calling for “*decroissance*,” or “degrowth” (Latouche 2009), which is spreading to other European countries (see www.degrowth.eu). The movement is even influencing politics (Baykan 2007). Some ecological economists have embraced the idea of degrowth (Kallis 2011; Martinez-Alier et al. 2010;), while others have been critical of it (van den Bergh 2011). In this brief article, we aim to provide institutional economists with an update of these debates by presenting, assessing, and comparing pro-growth, a-growth, and de-growth proposals. We conclude by suggesting two ways in which institutional economists can contribute to this ongoing discourse.

A-Growth

The first way of contributing begins with recognizing that the GDP indicator, rather than GDP growth, is the problem, and that we should ignore it in public debate on policy and welfare. By implication, one has to be “agnostic” about, or indifferent to, economic growth, which has been referred to as an “a-growth” perspective.

The motivation for this approach is that the GDP indicator cannot be trusted to effectively capture social welfare. This is so for several reasons (van den Bergh 2009). First, GDP is really an estimate of the costs, not the benefits, of market-related activities in society, while it entirely excludes informal or non-market activities. Second, economic theory always focuses on social welfare as societal goal, and it does not offer any support for GDP as a measure of social welfare. Indeed, it has been shown that GDP is only a good approximation of social welfare under very strict, unrealistic conditions (Weitzman 1976). Third, according to some happiness or

subjective well-being studies, between 1950 and 1980 the increase in mean welfare stagnated and even reversed into a negative trend in most economically advanced countries, despite a steady pace of GDP growth (Layard 2005). Fourth, a multitude of factors influence individual welfare or happiness. Alongside the need for basic goods and services, these include relatively stable income, social status advancement, and effective adaptation to physical and economic changes. As a result, it is unlikely that the aggregation of individual incomes, represented by GDP, will deliver a robust indicator of social welfare. Fifth, an important subcategory of unpriced effects of growth relates to the use of natural resources and the environment, meaning that its welfare implications are not captured by GDP.

If one accepts that (per capita) GDP is not a robust, reliable indicator of social progress, then the logical implication is to ignore it. This means that one is completely indifferent to GDP growth, or one supports an “a-growth” position. GDP growth may be good in some periods, for some countries, in certain development stages, but the goal of “growth no matter what” is not a wise strategy. In fact, unconditional GDP growth means a constraint on our search for progress: It frustrates good policies in many areas, including climate, labor, health, and public utilities. Some have termed this trend the “neoliberal ideology/tyranny of growth” (Fournier 2008) and “GDP fetishism” (Stiglitz 2009). According to the a-growth view, we should not fall into the trap of being unconditionally pro- or anti-growth.

A-growth, consistent with ignoring GDP information, will make two policy strategies regarding currently important problems more acceptable. The first policy entails a large-scale transition from fossil fuel to renewable energy sources in response to peak oil- and climate change risks. Such a transition will involve a shift to resources with a lower energy concentration and productivity, which inevitably translates into a reduced productivity of the economy as a whole. Indeed, current growth is largely generated by relatively dirty activities, which use much energy and material resources, as well as create a disproportional amount of pollution (Hueting 2010). Within the traditional growth paradigm, realizing environment and resource sustainability is, therefore, extremely difficult as it means sacrificing productivity, and thus growth. In other words, the growth paradigm presents an enormous barrier to introducing necessary environmental policies, hence, to making a “sustainability transition.” An a-growth position removes this barrier, because environmental regulation is no longer constrained by unconditional growth. The a-growth view is that, since growth in rich nations hardly contributes to welfare, implementing stringent environmental policies will not do much harm to welfare.

Another policy implication relates to the current global economic crisis. A major concern here is the high rate of unemployment. One may see it as a challenge to studying how to realize full employment in an “a-growth economy”— that is, an economy which is not necessarily, or always, growing. As with the previous example, sacrificing some productivity — thus growth — may be necessary to realize other goals, notably increasing employment (Jackson and Victor 2011). Yet, both governments and economists hardly ever consider this strategy. Instead, their response has consistently been prioritizing growth restoration in the hope that an increase in

employment will follow automatically. The lack of creativity in this context is disappointing and does not characterize an open scientific approach to the problem.

A-growth, or letting go of growth as a legitimate and even necessary condition for realizing welfare (growth), reflects a rational approach to public decision-making. It does not mean being in favor of zero- or negative growth. It just eliminates the unnecessary constraint of unconditional GDP growth, which hampers our search for human progress. Following an a-growth strategy, we would, in some periods, be willing – without even realizing it – to give up some GDP growth for a better environment, more employment, more leisure time, and improved public services; that is, when this approach yields improvements in individual well-being and overall social progress. In other periods, desirable economic change might well be consistent with growth, but nobody should really care. The most important thing is that an a-growth view could enhance the social-political acceptability of such key public policies that matter for welfare.

Degrowth

Degrowth is another recent notion. It has been defined as an equitable downscaling of economic production and consumption to assure that society's throughput – resource use and waste – stays within safe ecosystem boundaries (Kallis 2011; Schneider et al. 2010). Degrowth moves beyond the criticism of GDP, to ask explicitly for an intentional downscaling of economic activity and material affluence. The premise is that efficiency and technological improvements alone cannot prevent climate change, ecosystem destruction, and resource depletion. The scale of the economy may have to shrink, too. In three hundred years of industrialization, there has been a strong correlation between growth and forms of environmental damage, including most recently through energy over-use and CO₂ emissions. Countries that reduced their material flows and CO₂ emissions have done so either because of economic decline (i.e., the ex-communist bloc in Europe), or through relocation to other countries of their consumer goods production (Peters et al. 2011). Recession and negative growth in some western countries following the latest economic crisis led, for the first time, to an absolute decline in CO₂ emissions (Friedlingstein et al. 2010). However, negative growth is socially unstable and potentially catastrophic (Jackson 2009). As an alternative, degrowth proponents argue for a “prosperous way down” (Odum and Odum 2001) – that is, a “socially sustainable economic degrowth” (Martinez-Alier 2009). This involves implementing social policies that will contribute to a smooth and stable economic downscaling.

To do so, one proposal is to introduce global caps on key resources such as oil and CO₂ emissions that are shared equitably between nations on a per capita basis (“cap and share,” Douthwaite 2011), and are declining over time. In addition, degrowth proponents put forward three more propositions in order to respond to the negative effects of economic contraction on employment and social stability: namely, work-sharing, strengthened social-security system, and alternative economic spaces existing outside the market economy (Latouche 2009). Work-sharing refers to reduced

working hours, allowing more people to be employed, and to creating jobs with low economic productivity but high social value. Examples of such are healthcare services, education, and small scale, local businesses (Jackson 2009). A strengthened social safety net to buffer any negative effects of remaining unemployment includes a scheme for basic income, guaranteed by the state to all citizens (Raventös 2007), and a job-providing system, with the state acting as the employer of last resort in periods of crisis (Lawn 2009). Obviously, both work-sharing and social security will require a more drastic redistribution of income than currently is the case. This means a significant increase in taxes for those with higher incomes to levels that were common in many countries – including in the U.S. – in the 1960s and 1970s. In addition, a shift of taxation from labor to energy, materials, and capital will be needed (de Mooij 1999; Korten 2009).

Furthermore, the link between well-being and access to wage labor in the formal economy can be weakened by improved access to non-monetized goods and services. There are various social innovations in this domain, including urban food gardens for own consumption, time-banks where participants exchange services on the basis of their labor time, and co-housing projects where participants co-invest “sweat-equity” in house rehabilitation (Carlsson 2008; NEF 2009). Such practices are driven by the logic of producing social “use value” rather than monetary “exchange value.” Although currently marginal, alternative economic practices grow under crisis conditions as local communities lose access to formal labor and credit markets and self-organize in mutual support networks to survive. Of course, none of the above alternatives negates the importance of job creation by private firms and governments.

A Comparison of Growth, A-Growth, and Degrowth

Table 1 compares a-growth and degrowth with conventional views on growth, the “growth paradigm.” The a-growth strategy proposes to be agnostic of what will happen to the economy once good environmental and social policies are pursued. It is consistent with the belief that stringent environmental and climate policies are likely to depress growth, at least for a while, since much of growth (before the crisis) was generated in relatively “dirty sectors,” whereas “cleaner sectors” are generally low-growth (Jackson and Victor 2011). The degrowth strategy turns the causality around by insisting that the economy must be downscaled to meet environmental and social goals. One question about the relative merits of the two options concerns the power of environmental regulation. The degrowth proposal refers to the historically high correlation between GDP and indicators of pollution and resource use. But one could respond that this – at least, in part – is due to the absence of serious environmental regulation in the past. Thus, the past may not reflect the future, in which we manage to implement good policies.

Should degrowth be the way to go – notably, reaching a safe level of CO₂ emissions, given that we need to reduce these by at least 95 percent by 2050; and possibly to 99- (Jackson 2009, chapter 5, figure 17) or even one hundred percent (Matthews and Caldeira 2008) – then, degrowth would have to “downscale” the

economy by a factor of 20 to 100. This suggests that actually implementing environmentally effective degrowth may not be so romantic and innocent. One should, however, realize that it may be equally unrealistic to expect that such an ambitious goal is realizable with positive growth: that is, with pro-growth strategies, complemented by decoupling growth and environmental pressure (and thus maintaining growth), through substitution in production and consumption, and application of more efficient, innovative technologies. This pessimistic conclusion is confirmed by the literature on environmental Kuznets curves, showing that decoupling does not hold in general, and, in fact, only applies to relatively easy problems, mainly associated with human health (Stern 2004). Tim Jackson (2009) has argued that “the numbers do not add up,” and unless we succeed in completely decarbonizing the economy through technology, some level of degrowth is unavoidable.

Table 1. A Comparison of Growth, A-Growth and Degrowth

Statement supported	Growth paradigm	A-growth view	Degrowth view
GDP is an accurate indicator of social welfare or happiness	Yes	No	No
GDP growth is necessary and sufficient for full employment	Yes	No	No
Growth of income increases welfare	Yes	Sometimes, not always	No
Growth does not harm, or even promotes, equity and environmental sustainability	Yes	Not always	No
The aim of unconditional GDP growth constrains our search for improvements in social welfare	No	Yes	Yes
Further average income growth does not increase social welfare in rich countries; here, growth is mainly a zero-sum status game and the result of moving informal activities into formal markets	No	Yes	Yes
Microeconomic and macroeconomic theories do not give any support to GDP growth as a welfare-increasing strategy	No attention	Yes	No attention
The GDP growth paradigm can be seen as an invention of mainly empirical macroeconomists and politicians	No	Yes	No attention
The past shows a high positive correlation between income and environmental pressure	No attention	Yes	Yes
Growth is bad for the environment	No	Sometimes, not always	Yes
Degrowth is a focused strategy to fight inequity and unsustainability	No	No	Yes
Growth is generated mostly by relatively dirty activities using much energy and material resources and creating much pollution	No attention	Yes	No attention
Stringent environmental policies can decouple income from environmental pressure, and thus allow for a continuation of the old growth pattern	Yes	Possible but unlikely	No

An environmental policy approach, which is consistent with an a-growth perspective and does not put degrowth first, is capable of arranging a balanced solution to the environmental goals in terms of substitution, as well as technological and scale effects. As already stated, degrowth – notably, in very dirty sectors, where substitution and new technology cannot realize the environmental goals – may be an outcome of this policy approach, but not the starting point. One could, of course, propose to combine an explicit degrowth strategy with such an environmental policy strategy. But then the question arises: If policy already will stimulate a degree of necessary or unavoidable degrowth, why would then any *ex ante* choices and extra effort for degrowth also be needed?

From a degrowth perspective, the answer is that an explicit commitment to downscaling the economy can help to remove the main obstacle to the environmental policies: namely, their negative impact on growth (or, in everyday terms, that in times of economic recession, the “environment has to wait”). In this sense, the a-growth and degrowth strategies come closer together, both aiming to remove the growth paradigmatic resistance against policies that are good for the environment, society, and human well-being. They differ, however, in that the degrowth view suggests that only a society consciously embracing the objective of downscaling its production and consumption is capable of accepting stringent environmental policies (Kallis 2011).

In conclusion, one of us is more optimistic about being able to implement serious, effective environmental regulation before realizing an intentional, voluntary downscaling of this magnitude (van den Bergh 2011). This does not mean that he denies degrowth as a likely outcome of regulation, at least during some initial period. The other is more confident that a certain level of degrowth is unavoidable in any sustainable future scenario, and believes that it should even be set as a goal. Rather than avoiding calling things by their name, and becoming tactically agnostic, he prefers to give a name, “degrowth”, to the direction to which such policies will, and should, be leading us (Kallis 2011).

The belief that degrowth is needed to solve environmental problems somehow ignores that one cannot predict the changes of composition and volume at various levels in the economy – including production inputs, sector structure, technology, and consumption – that will result from implementing stringent environmental or climate policies. The problem is that with so many degrowth scenarios to “downscale” the economy, one cannot imagine how these will realize environmental goals to the same degree. The question is then: How can we know *ex ante* the environmental and social implications of these degrowth scenarios? Or which of them should we opt for, presuming we have a choice? This is precisely why advocates of degrowth often use the term “sustainable degrowth” (Kallis 2011; Martinez-Alier et al. 2010) to refer to this subset of possible scenarios that have positive social and ecological effects. The research question from this perspective becomes the identification of the conditions and instruments (like pollution caps and reduced work hours), under which the inevitable and desirable economic degrowth becomes socially and ecologically sustainable (Kallis 2011).

Another criticism to the degrowth argument is that there is no single, consistent unit to measure the scale of the economy, so that the meaning of the notion is unclear. It might mean degrowth of consumption, work-hours, GDP, GDP per capita, or some measure of the physical size of the economy. Indeed, one finds authors on degrowth shifting between these different meanings that are often, but not always, mutually consistent (van den Bergh 2011). Degrowth proponents, in turn, argue that this lack of precision is not necessarily a drawback. First, degrowth should offer a vision for creating a better world, wherein people live with less. Although the details of operationalizing this vision, such as the indicators which will measure progress towards it, are yet to be developed, this is no reason for one to refrain from accepting the vision as such. Second, the degrowth vision is multi-dimensional and includes a combination of physical degrowth and decommodification on the production and consumption side. Third, apart from offering a vision, the call for degrowth intends to act as a challenge to the dominant ideology of growth and continuous expansion of the market economy. Simply ignoring this is not enough. Degrowth advocates argue that it is important to demonstrate that there are concrete alternatives; namely, that it is, in principle, possible to organize economies in such a way that they do not have to grow or “die,” this already being the status quo.

While the a-growth position suggests that the prominence of the GDP indicator creates a barrier to good policies, from a degrowth perspective, the core problem is the systemic dependency of stable economies on an ever-expanding output. Thus, there is the need to imagine alternative forms of economic organization and to pursue policies for their realization. Interestingly, the two viewpoints converge on suggestions for key policies, including global caps and work-sharing.

Both a-growth and degrowth strategies are likely to be received as extreme within the current political setting, where recovery of growth is the unquestioned, priority response to the economic crisis – an approach, also endorsed by non-mainstream voices, focusing on Keynesian or austerity policies to recover growth. For example, work-sharing does not receive any attention, even though it can much more effectively relieve unemployment in the short-to-medium term. In particular, work-sharing can offer opportunities for young people to attain the necessary experience for a long-term integration in the labor market. Instead, growth will take at least ten to fifteen years to solve the extreme unemployment in Spain, for example, where 25 percent of the total work force and 50 percent of the young people are currently employed.

A-growth is, nevertheless, more likely to get support as there is increasing recognition among politicians and economists of the shortcomings of the GDP indicator (Stiglitz 2009). Degrowth, on the other hand, may galvanize the radical rearguard that is convinced that the ecological and economic crises have systemic roots, and that it is time for major institutional and life-style changes rather than mere reforms (Speth 2009). Perhaps the degrowth perspective can exert pressure through social movements which, in turn, might lead to the adoption of a-growth approaches at the political level.

Further Research and the Role of Institutional Economics

Ongoing research in institutional economics, like on alternatives to GDP, is obviously very relevant to the above debates (Brinkman and Brinkman 2011). The debate on a-growth versus degrowth, however, poses some interesting questions to institutional economists. From an a-growth perspective, a crucial question becomes: Why economics, economists, and politicians alike remain loyal to GDP? Indeed, the arguments against using GDP as a progress indicator have been often repeated and are supported by influential economists, including many Nobel Prize laureates. This has been labeled the “GDP paradox” (van den Bergh 2009). Research in this domain might assess the intertwined institutional, educational, media, and cultural processes that have locked-in GDP as the preferred macroeconomic policy objective (despite GDP not playing any significant role in macroeconomic theory, where the goal is always framed in terms of a social welfare notion). In addition, institutional economics could investigate how GDP growth is exactly perceived in different schools of macroeconomics which, in turn, support different perspectives on how to combat the current crisis.

The “a-growth perspective” sees unconditional GDP (per capita) growth as an annoying and limiting constraint instead of as a useful societal goal. The perspective in question proposes to remove this constraint from the public sphere and politics. This will allow for more freedom for such public policies as combating unemployment (work sharing, even though it may lower average productivity and income), as well as environmental damage (stringent climate policy, even though it may harm some high-growth sectors). As a result, we would be more relaxed about growth and not get paralyzed by fear (as individuals and as a society) when growth turns low or negative. In fact, we should prefer not to know about this: that is, ignore GDP. This would preclude economic instability while allowing us to focus on real welfare-improving politics.

From a degrowth perspective, the interest is not so much on GDP, but on the evolution of alternative economic practices that can flourish outside of the growth economy. Such “Nowtopias” of cohousing projects, or consumer-producer cooperatives (Carlsson 2008), are institutionally organized and result from a coevolution of social, technological, cultural, and ecological processes. There is a scope for studying their institutional dynamics, as well as for understanding how core institutions of the market economy pose obstacles to the emergence of such alternatives.

This suggests a need to apply insights of institutional economics – on the ways institutions work, change, and become locked-in along path-dependent trajectories – to the history of GDP growth as a policy goal, in economics, politics, and society at large, as well as to the evolution of alternative economic practices. The debate about the merits and the feasibility of alternatives to GDP and the growth paradigm, and the actual design of such alternatives, might benefit a lot from the insights and approaches of institutional economics.

References

- Adkisson, R.V. "The Economy as an Open System: An Institutional Framework for Economic Development." In *Institutional Analysis and Praxis: The Social Fabric Matrix Approach*, edited by Tara Natarajan, Wolfram Elsner and Scott Fullwiler, pp. 25-38. Berlin: Springer, 2009.
- Baykan, B.G. "From Limits to Growth to Degrowth within French Green Politics." *Environmental Politics* 16, 3 (2007): 513-517.
- Brinkman, R.L. and J.E. Brinkman. GDP as a Measure of Progress and Human Development: A Process of Conceptual Evolution. *Journal of Economic Issues* 45, 2 (2011): 447-456.
- Bromley D.W. "Resources and Economic Development: An Institutional Perspective." *Journal of Economic Issues* 19, 3 (1985): 779-796.
- Carlsson, Chris. *Noutopia: How Pirate Programmers, Outlaw Bicyclists, and Vacant-Lot Gardeners Are Inventing the Future Today*. Oakland, CA: AK Press, 2008.
- Daly, H.E. and Joshua Farley. *Ecological Economics: Principles and Applications*. Washington: Island Press, 2004.
- DeGregori T.R. "Resources Are Not; They Become: An Institutional Theory." *Journal of Economic Issues* 21, 3 (1987): 1241-1263.
- De Mooij, R.A. "The Double Dividend of an Environmental Tax Reform." In *Handbook of Environmental and Resource Economics*, edited by J.C.J.M. van den Bergh, pp. 293-306. Cheltenham: Edward Elgar, 1999.
- Douthwaite, Richard. "Degrowth and the Supply of Money in an Energy-Scarce World." *Ecological Economics* (2011). Available at <http://dx.doi.org/10.1016/j.ecolecon.2011.03.020>. Accessed on February 17, 2012.
- Fournier, Valerie. "Escaping from the Economy: The Politics of Degrowth." *International Journal of Sociology and Social Policy* 28, 11/12 (2008): 528-545.
- Friedlingstein, P., R.A. Houghton, G. Marland, J. Hackler, J., T.A. Boden, T.J. Conway, J.G. Canadell, M.R. Raupach, P. Ciais and C. Le Quééré. "Update on CO2 Emissions." *Nature Geoscience* 3 (2010): 811-812.
- Groenewegen, John, Wicher Schreuders and Kees van Paridon. "Environment, Growth, and Sustainability." *Journal of Economic Issues* 26, 3 (1992): 915-919.
- Hueting, Roefie. "Why Environmental Sustainability Can Most Probably Not be Attained with Growing Production." *Journal of Cleaner Production* 18, 6 (2010): 525-530.
- Jackson, Tim. *Prosperity without Growth: Economics for a Finite Planet*. London: Earthscan, 2009.
- Jackson, Tim and Peter Victor "Productivity and Work in the 'Green Economy': Some Theoretical Reflections and Empirical Tests." *Environmental Innovation and Societal Transitions* 1, 1 (2011): 101-108.
- Kallis, Giorgos. "In Defence of Degrowth." *Ecological Economics* 70, 5 (2011): 873-880.
- Kallis, Giorgos and Richard B. Norgaard. "Coevolutionary Ecological Economics." *Ecological Economics* 69, 4 (2010): 690-699
- Keong, C.Y. "Sustainable Development: An Institutional Enclave." *Journal of Economic Issues* 34, 4 (2005): 951-971.
- Korten, D.C. *Agenda for a New Economy*. San Francisco: Berrett-Koehler Publishers, 2009.
- Latouche, Serge. *Farewell to Growth*. Cambridge: Polity Press, 2009.
- Lawn, Philip, ed. *Environment and Employment: A Reconciliation*. New York: Routledge, 2009.
- Layard, Richard. *Happiness: Lessons from a New Science*. London: Penguin, 2005.
- Martinez-Alier, Joan. "Socially Sustainable Economic Degrowth." *Development and Change* 40, 6 (2009): 1099-1119.
- Martinez-Alier, Joan, Unai Pascual, Franck-Dominique Vivien and Edwin Zaccai. "Sustainable De-Growth: Mapping the Context, Criticisms, and Future Prospects of an Emergent Paradigm." *Ecological Economics* 69, 9 (2010): 1741-1747.
- Matthews, H. Damon and Ken Caldeira "Stabilizing Climate Requires Near-Zero Emissions." *Geophysical Research Letters* 35 L04705 (2008): 1-5.

- NEF. *The Great Transition: A Tale of How It Turned out Right*. London: The New Economic Foundation, 2009. Also available at www.neweconomics.org/sites/neweconomics.org/files/Great_Transition_0.pdf.
- Odum, H.T. and E.C. Odum. *A Prosperous Way Down: Principles and Policies*. Boulder: University Press of Colorado, 2001.
- Paavola, Jouni and W. Neil Adger. "Institutional Ecological Economics." *Ecological Economics* 53, 3 (2005): 353-368.
- Peters, G.P., J.C. Minx, C.L. Weber and Ottmar Edenhofer. "Growth in Emission Transfers via International Trade from 1990 to 2008." *Proceedings of the National Academy of Sciences* 108, 21 (2011): 8903-8908.
- Raventös, Daniel. *Basic Income: The Material Conditions of Freedom*. London: Pluto Press, 2007.
- Rockström Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin, Eric F. Lambin, T.M. Lenton, Marten Scheffer, Carl Folke, H.J. Schellnhuber, Björn Nykvist, C.A. de Wit, Terry Hughes, Sander van der Leeuw, Henning Rodhe, Sverker Sörlin, P.K. Snyder, Robert Costanza, Uno Svedin, Malin Falkenmark, Louise Karlberg, R.W. Corell, V.J. Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen and J.A. Foley. "A Safe Operating Space for Humanity." *Nature* 461 (2009): 472-475.
- Rosser, J. Barkley and Marina V. Rosser. "Institutional Evolution of Environmental Management under Global Economic Growth." *Journal of Economic Issues* 40, 2 (2006): 421-429.
- Schneider, François, Giorgos Kallis and Joan Martinez-Alier. "Crisis or Opportunity? Economic Degrowth for Social Equity and Ecological Sustainability." *Journal of Cleaner Production* 18, 6 (2010): 511-518.
- Söderbaum, Peter. "Values, Markets, and Environmental Policy: An Actor-Network Approach." *Journal of Economic Issues* 27, 2 (1993): 387-408.
- Speth, James G. *The Bridge at the End of the World: Capitalism, the Environment and Crossing from Crisis to Sustainability*. New Haven: Yale University Press, 2009.
- Stern, D.I. "The Capital Theory Approach to Sustainability: A Critical Appraisal." *Journal of Economic Issues* 31, 1 (1997): 145-173.
- . "The Rise and Fall of the Environmental Kuznets Curve." *World Development* 32, 8 (2004): 1419-1439.
- Stiglitz, J.E. "GDP Fetishism." *The Economists' Voice* 6, 8 (2009): Article 5. Available at www.bepress.com/ev/vol6/iss8/art5. Accessed February 17, 2012.
- Stiglitz, J.E., Amartya Sen and J.P. Fitoussi. *Mis-measuring Our Lives: Why GDP Doesn't Add up*. Report of the Commission on the Measurement of Economic Performance and Social Progress. New York: The New Press, 2011.
- Swaney J.A. "Elements of a Neoinstitutional Environmental Economics." *Journal of Economic Issues* 21, 4 (1987): 1739-1779.
- Van den Bergh, J.C.J.M. "Environment versus Growth: A Criticism of 'Degrowth' and a Plea for 'A-Growth.'" *Ecological Economics* 70, 5 (2011): 881-890.
- . "The GDP Paradox." *Journal of Economic Psychology* 30, 2 (2009): 117-135.
- Victor, Peter. "Questioning Economic Growth." *Nature* 468 (2010): 370-371.
- Weitzman, M.L. "On the Welfare Significance of National Product in a Dynamic Economy." *Quarterly Journal of Economics* 90, 1 (1976): 156-162.

