



# Paper assets, real debts

## An ecological-economic exploration of the global economic crisis

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### Abstract

**Purpose** – This paper sets out to investigate the potential contribution of the inter-disciplinary field of ecological economics to the explanation of the current economic crisis. The root of the crisis is the growing disjuncture between the real economy of production and the paper economy of finance.

**Design/methodology/approach** – The authors trace the epistemological origins of this disjuncture to the myths of economism – a mix of academic, popular and political beliefs that served to explain, rationalise and perpetuate the current economic system.

**Findings** – The authors recommend ending with economism and developing new collective and discursive processes for understanding and engaging with ecological-economic systems.

**Originality/value** – The authors embrace the notion of sustainable de-growth: an equitable and democratic transition to a smaller economy with less production and consumption.

**Keywords** Economic depression, Recession, Ecology, Economic theory

**Paper type** Conceptual paper

Benjamin M. Friedman, author of *The Moral Consequences of Economic Growth*, recalled that when he worked at Morgan Stanley in the early 1970s, the firm's annual reports were filled with photographs of factories and other tangible businesses. More recently, Wall Street's annual reports tend to highlight not the businesses that firms were advising so much as finance for the sake of finance, showing upward-sloping graphs and photographs of traders. "I have the sense that in many of these firms" Mr. Friedman said, "the activity has become further and further divorced from actual economic activity." Which might serve as a summary of how the current crisis came to pass. Wall Street traders began to believe that the values they had assigned to all sorts of assets were rational because, well, they had assigned them (David Leonhardt, *New York Times*, 21 September 2008).

Marx long ago observed the way in which unbridled capitalism became a kind of mythology, ascribing reality, power and agency to things that had no life in themselves. [...] And ascribing independent reality to what you have in fact made yourself is a perfect definition of what the Jewish and Christian Scriptures call idolatry (Rowan Williams, Archbishop of Canterbury, *The Spectator*, 24 September 2008).



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Immediate explanations pointing to proximate causes of the current financial crisis dominate public discourse: the greedy bankers, the bad loans, the unregulated financial products or the collapse of the housing market. Instead, we engage with the structural causes of the crisis. The uneven temporal and spatial pattern of capital accumulation has – deservedly – received much attention as a structural cause of the cyclical repetition of economic crises. But less attention has been paid to ecological and resource factors. This paper highlights some key ecological-economic insights concerning the current economic crisis. We argue that:

- at the roots of the crisis is the growing disjuncture between the real economy of production and the paper economy of finance;
- the costs of the financial crisis pale in comparison to those of current and forthcoming ecological crises;
- the myths of economism – a mix of academic, popular and political beliefs that serve to explain and rationalise the economic system – allowed and justified the disjuncture between real and paper economies; and
- the current crisis provides opportunities at an epistemological level, to escape from economism and at the practical level, to promote alternative socio-economic paradigms such as de-growth and environmental justice.

But first let us explain the nature of ecological economics.

### **Ecological economics: bringing natural reality back into the economy**

The field known as ecological economics (EE) was born out of the dissatisfaction of economists and natural scientists with the treatment of environmental issues by mainstream economics. Today EE involves a diverse field of researchers united by an ambition to reclaim the classical economic tradition of putting nature as a key factor in economic analysis. One might distinguish between a more conservative line of EE which accepts the basics of neoclassical economics but works to couple better economic with ecological models and a more critical, political-economic line of research, to which the authors of this paper belong, which seeks new paradigms for understanding ecological-economic systems as a whole and emphasises distributional, institutional and power issues (Spash, 1999). Georgescu-Roegen's (1971) seminal critique of economics based on the laws of thermodynamics and in particular entropy and the distinction between stocks and flows is often seen as the departure point of modern EE (though there is a long lineage of related thinking before him; see Martinez-Alier, 1990). Kenneth Boulding's (1966) thesis on the bio-physical limitations of economic activity and Karl William Kapp's (1970) reframing of environmental externalities as the pervasive social costs of free markets are also foundational EE contributions.

EE positions the economy as a subsystem of a larger local and global ecosystem (Daly, 1991). Ecological and economic systems are seen as mutually constitutive, metabolically related (Giampietro, 2003) and coevolving (Norgaard, 1994). EE rejects the rational, "homo-economicus" assumptions of mainstream economics and their liberal-utilitarian normative counterpart, which privileges market and cost-benefit mediations of human wants. Multiple, incommensurable values are recognised and deliberative-democratic mediation advocated (Martinez-Alier *et al.*, 1998; Norgaard, 1994). Nonetheless, many ecological economists understand also the tactical use of

economic valuation of environmental services and negative external effects in a society where the generalised market is king.

EE is particularly critical of the notion of growth-as-progress (Norgaard, 1994). Gross domestic product (GDP) is criticised both technically (van den Bergh, 2006) and fundamentally as hiding the social – environmental and distributive – costs of economic expansion (Martinez-Alier, 2002). From an EE perspective, externalities are not accounting problems, but social cost-shifting successes predicated upon institutional and power inequalities that allow some peoples' values to count and others' not (Martinez-Alier, 2002).

But how is all this relevant to the present crisis?

### **Real wealth versus paper wealth**

Rather than focusing on the immediate level of finance, from an EE perspective the economy must be analysed at three levels. At the top there is the financial level that can grow by loans made to the private sector or to the state, sometimes without any assurance of repayment as in the present crisis. The financial system borrows against the future, on the expectation that indefinite economic growth will give the means to repay the interests and the debts. Then there is what the economists describe as the real economy, the GDP at constant prices. When it grows, it indeed allows for paying back on some or all the debt, when it does not grow enough, debts are defaulted. Increasing the debts forces the economy to grow, up to some limits. Then, down below, underneath the economists' real economy, there is the ecological economists' *real-real* economy, the flows of energy and materials whose growth depends partly on economic factors (types of markets, prices) and in part from physical and biological limits. The *real-real* economy also includes land and the capacity of humans to do work.

The EE explanation of the crisis is simple. The upper level of finance grew way too fast and too large for the real economy beneath to catch up. Frederick Soddy, a Nobel Prize winner in Chemistry, had made this point in his book *Wealth, Virtual Wealth and Debt* (Soddy, 1926) published in 1926 (Martinez-Alier, 1990). Soddy argued that it is easy for the financial system to increase the debts (private or public debts), and to mistake this expansion of credit for the creation of real wealth. However, in the industrial system, growth of production and growth of consumption imply growth in the extraction and final destruction of fossil fuels. The obligation to pay debts at compound interest could be fulfilled by squeezing the debtors for a while. Other means of paying the debt are either inflation (debasement of the value of money), or economic growth – which is falsely measured because it is based on undervalued exhaustible resources and unvalued pollution.

According to ecological economist Herman Daly, the current crisis is due to the overgrowth of financial assets relative to the growth of real wealth; there is too much liquidity, not too little. "Paper exchanging for paper is now 20 times greater than exchanges of paper for real commodities" (Daly, 2008). As a consequence the value of present real wealth is no longer sufficient to serve as a lien to guarantee the exploding debt and debt is being devalued (Daly, 2008).

Can the real economy catch up with debt? Ecological economists have argued with neo-classical economists whether continuous growth is possible (see *Ecological Economics*, Vol. 22), let alone desirable. Ecological economists have scrutinised the optimistic assumption of neo-classical economists (and most Marxists as well) that

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resource substitution and technological innovation will always surpass biophysical limits (Daly, 1991). This is not to posit a simplistic notion of absolute bio-physical limits to growth, but to take seriously the possibility that the depletion of stock resources, the degradation of “sinks”, such as the global atmosphere and the increasing occupation of Earth’s space, may limit the continuous expansion of the scale of the economy and condition future human activity decisively (Norgaard, 1994). Adaptation to the changing environmental conditions may not be gradual or reversible: resources, sinks and ecosystems have thresholds which, once surpassed, lead to dramatic and very fast changes. Humans may adapt to whatever the future might bring, but the question is how many will survive and which, at what level of subsistence they will live, and what pain will be suffered along the way.

Bio-physical constraints and the bottom level of the economy condition the rate at which real wealth can increase. In addition to financing and housing, high oil prices also triggered the present crisis. These were due not only to the OPEC oligopoly and oil market speculation but also due to the approaching peak-oil (Deffeyes, 2001) and market expectations of it. Also while in the 1920s the price of commodities decreased for a few years before 1929, this time the increase in commodity prices (also driven by the misguided subsidies to agri-fuels) continued for some months after the strong decline in the stock exchange started in January 2008. In late 2008 the prices of oil and commodities were declining, but this is because of declining demand, not increasing supply. Consumption of oil is going down (*Financial Times*, 2008).

One could argue that oil at \$US150 a barrel is in fact cheap from the point of view of its fair inter-generational allocation and the externalities it produces. As the crisis deepens, the price of oil goes down but it will recover in real terms if and when the economy grows again. Declining prices will cause some expensive sources to stop production (Alberta oil sands, for instance) and will also lead to lack of investment in new extraction sites. OPEC will try and reduce oil extraction during the crisis. The scheduled OPEC meeting of mid-November 2008 was brought forward to 24 October, when it decided to cut oil extraction by 1.5 mbd. Should oil prices increase again (aided by speculation in the futures market), then this will make economic recovery more difficult. Peak-oil does not mean immediate scarcity. It means that it is less easy to find oil than before, and that supply cannot increase any further above the previous level. Something like half the reserves are still there, but extraction will take place at a declining rate. We are not sure, however, whether we have already passed the peak or not, and we cannot be certain about the economics of other energy sources. This means that the current rate of fossil fuel-driven growth may be unsustainable.

Even if one is not convinced that limits and peaks have been reached, the subtle fact remains that there is no way the economy can grow fast enough in real terms to redeem the massive increase in debt (Daly, 2008). As Daly (2008) argues, “spatial displacement of old stuff to make room for new stuff is increasingly costly as the world becomes more full, and increasing inequality of distribution of income prevents most people from buying much of the new stuff – except on credit”. More crucially, with projected (desired) growth rates, the change in the global atmosphere due to greenhouse gas emissions will have such catastrophic impacts that will more than offset any growth (Intergovernmental Panel on Climate Change, 2007). Wishful thinking about de-materialised growth has proven elusive (Martinez-Alier, 2002; Polimeni *et al.*, 2008).

### **The real toxic debts**

The assets that take the form of claims to debts that will remain unpaid have been given the funny name of “toxic assets”. But what about the liabilities, like the enormous “carbon debt” that is owed to future generations, and to the poor people who have produced little greenhouse gases (Srinivasan *et al.*, 2008)? Large environmental liabilities are due by private firms. Chevron-Texaco is being asked to pay back 16 billion dollars in a court case in Ecuador. The Rio Tinto company left behind large liabilities since 1888 in Andalusia where it got its name, and also in Bougainville, in Namibia, and in West Papua together with Freeport McMoran (Martinez-Alier, 2002). These are debts to poor or indigenous peoples, also like those of Shell in the Niger Delta. These real poisonous debts are in the history books but not in the accounting books. New fossil fuels and mineral sources have a low EROI (energy return on investment) and high marginal costs. Diplomatic and military pressure on the exporting countries intensifies; although the rate of oil extraction could still increase somewhat, the coming down from the peak will be steeper and more conflictive still.

We do not need to subscribe to a dollars game to argue that in all likelihood the economic costs from global ecosystem degradation and climate change (Millennium Ecosystem Assessment, 2005; Intergovernmental Panel on Climate Change, 2007) will be an order of magnitude higher than the accumulated debt that belies the present crisis. We should be even more concerned about forthcoming ecological crises than we – rightly – are about the present financial crisis.

Ironically, economists are advocating the same recipe for ecological problems to the one that belies the present financial crisis: commodify unpriced ecological goods and let the free markets regulate their provision without state intervention. Karl Polanyi (1944), in *The Great Transformation*, saw the parallels between the deregulation of money supply and the commodification of nature and the double danger these posed. Money and nature (alongside labour), he argued, are fictitious commodities, that is things that circulate in the market as though they are commodities originally produced for it, when clearly they are not. Like Polanyi, many ecological economists have insisted on the impossibility and undesirability of nature’s commodification (Vatn and Bromley, 1994). But such voices are against the current: new fictitious markets, from trading carbon to pollution permits, water rights or payments for ecosystem services, are increasingly imagined and enacted (Kosoy, 2008). The risks of linking the value and level of protection of ecosystem services to the ups and down of markets and currencies go unnoticed (Harvey, 1996; Kosoy, 2008).

To understand how these myths of self-regulating markets, perpetual growth and the disjuncture of the fictitious, paper economy from the real economy came to be, we need to turn to the realm of ideas and their interaction with politics and economics.

### **The myths of economism**

Let us distinguish between an economy that is “out there” and the complex of myths that people, both individually and in order to act together, have developed to aid them in living within the economy. This distinction is roughly parallel to nature as a reality of its own and the complex of myths traditional peoples hold about nature and their relation to nature. In traditional societies, myths provide explanations for natural phenomena, facilitate individual and collective decisions, and give meaning and coherence to life. As people act on their myths, their societies and the natural

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environment are shaped and co-evolve around them. Today, as we act on scientific understandings that were first mechanical, then chemical, and more recently biological, we see agricultural soils and rural communities transforming and co-evolving with the path of science (Norgaard, 1994). As modern people, we also act on comparable beliefs about our world (a world that is largely economic), that are rooted in the discipline of economics. We refer to this complex of myths as economism, and like traditional beliefs and scientific understanding, economism explains phenomena, facilitates individual and collective decisions, and gives meaning and coherence to our lives. Similarly, our economy is driven by and coevolves around economism.

With a 25-fold increase in global market activity during the twentieth century, the economy became the cosmos of roughly half the world's people. The rise of the market economy in everyday life, with exchange occurring over ever greater distance, can be thought of as a wedge between our contact with nature and with the moral consequences of the decisions we make. The growth of the economic cosmos is both facilitated and rationalised in public discourse by economic reasoning, albeit typically quite simplified. Simplification is also key to the dominant approach of rational thinking and the nature of disciplines. The history of scholarly economic thought can be understood as a process of boundary keeping, a process of rationalising arguments that either ignored entirely or entailed gross simplifications about the natural world and broader questions of right and wrong.

Increasingly, modern people, few of whom are trained in the natural sciences, must peek through the economy to see how we relate to the natural world. Economists have pioneered and encouraged this approach. Barnett and Morse (1963) provide a clear example of trying to understand the state of nature and our relation to it through the economy. They argued that resources could not possibly be scarce because resource prices declined from the late nineteenth century through much of the twentieth. Rising prices indicate resource scarcity whether simply thinking in terms of supply and demand between two periods, using Ricardo's argument about how the best land is used first, or exploring Hotelling's far more sophisticated model of optimal resource use over time. These patterns of thinking can be summarised by the simple argument:

If resources are scarce,  
If market participants know that they are scarce,  
Then resource prices will rise.

Barnett and Morse, and numerous economists and non-economists since (Simon, 1981; Lomborg, 2001) have simply reversed the argument, declaring that since resource prices have been falling, resources cannot be scarce. But the minor premise of their own argument, the part that connects economics to reality, has been forgotten. If market participants do not know resources are scarce in some real sense, the economic argument is invalid. If they do know, we should simply ask them. Surely it is better to learn from the differences in understanding between participants and thereby learn about the risks and conditions under which their understandings are more likely true. Prices simply blend the complexities of their understanding to a single directional indicator with no other information (Norgaard, 1990).

The critically important point, however, is that for markets to work well, sufficient market participants need to understand independently the reality behind the markets. Economists, however, are arguing that we can understand reality through markets

apart from whether the actors in the market understand reality. This presumption explains how trouble arose in the USA through the housing market. Judging reality through the market, home buyers and banks were confident that housing prices would continue to go up because housing prices had “always” gone up. Lenders made loans to home owners whose abilities to pay were marginal and contingent upon both a healthy economy and their beliefs that home prices would always rise. Lenders knew that these new home owners might not be able to make their mortgage payments, but this was not seen as a problem because the banks thought they would simply be left holding an asset whose value was still greater than the mortgage that remained to be paid. Then Wall Street investment banks repackaged the risky mortgages as equities, portraying them as hot stocks in a rising market. The mass deception worked, indeed the increased perception of wealth helped drive up home prices by adding to the demand for homes. Everything was going up until energy prices also went up and the economy began to be less healthy. Mortgage payments were not made, banks foreclosed, but as they did so in increasing numbers, housing prices dropped, and the assets of the banks became “toxic”. The problem was that all the actors in the process had been looking at what they thought was reality through trends in market signals rather than looking at the underlying reality.

For the same reasons that the financial crisis arose, managing it is difficult because economic actors are looking at crashing equities prices rather than underlying real conditions, which surely have not changed that drastically, and as they do, the market crashes ever more rapidly in a self-fulfilling prophecy.

When we do try to assess the underlying ecological basis of our economy, the situation looks very bleak. By a fairly simple measure, the ecological footprint, the global population needs to reduce consumption by 25 percent to consume and process our wastes sustainably (Wackernagel *et al.*, 2002). The assessment by the Intergovernmental Panel on Climate Change (2007) indicates that we need to reduce greenhouse gas (GHG) emissions by 80 percent globally by 2050 to avoid harmful, if not catastrophic, climate change. Hansen *et al.* (2008) argue that we have already passed the point of catastrophic climate change and need to reduce the existing level of GHGs in the atmosphere. The Millennium Ecosystem Assessment (2005, p. 1) argues:

The changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people. These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems.

Making these adjustments in how we use the earth so as to not impose unjust costs on future generations while responding to the global injustices already at hand will be a major effort. Not surprisingly, however, some economists are arguing that the alignment will not be that difficult because gross domestic product will only be marginally reduced. Again, assessing whether the accommodation with reality will entail hardships cannot be determined by looking at markets. GDP went up during the Second World War while thousands died, millions lost relatives and were themselves displaced, and additional millions died early of hunger and disease.

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## Beyond economism

We need to put much more effort into being informed of underlying conditions for markets to work well, and this is both more critical and difficult when markets entail great distances and complex transactions. How can a society taking advantage of the gains from specialisation and exchange, a process that wedges people apart from reality and the moral implications of their decisions, be both informed and moral? One answer is clearly that being informed and moral are necessary for market stability, sustainability and justice, and put some serious limits on the optimal extent of exchange (Norgaard and Liu, 2007; Norgaard and Jin, 2008). While economists are fond of noting that there are always tradeoffs and optima, one of the myths of economism has been that expanding the extent of trade is always good. There are costs to expanding markets that offset the benefits, and optimal markets may be quite constrained compared to those of today.

To be better informed of reality and more moral, we probably need to deliberately set up some new institutions to facilitate these goals. The Millennium Ecosystem Assessment (MA) proved to be an interesting example of a collective process for assessing reality, discussing morality, and confronting economism (Norgaard, 2008). Some 1,400 scientists from around the world participated in a review and evaluation of the existing literature on the status and importance of ecosystems and their services and the drivers forcing their degradation. Participants from developing countries repeatedly pointed out that the values of environmental services as determined through market prices or behavior were heavily weighted by who had the income to pay for them. The prices of ecosystem services reflected the tastes and concerns of the rich more than the poor. The dollars of rich ecotourists spent on international airfares are weighted the same as the dollars of the poor spent on bus fares to get to work. Thus MA participants readily saw how markets to save trees to sequester carbon, for example, are being established in poor nations where the poor are “willing” to stop using forests because the rich have the economic power to buy up the rights of the poor to stop them from using other ecosystem services of the forest. As a consequence, carbon sequestration is cheaper than it would be in a world with less income disparity. The rich can continue to drive their SUVs because the poor are willing to forego using their forests for little. Once this was made clear within the MA process, it was very difficult to use prices generated in markets as neutral values. In short, the open participatory process of the MA began to deconstruct economism (Norgaard, 2008).

Another major contradiction of market-based valuation appeared in the Millennium Ecosystem Assessment. Several scientists noticed that for there to be any rationality to relying on stated preferences or behaviour to derive the values of environmental services, one would have to assume that lay people were sufficiently informed of the very ecological complexities the MA scientists were struggling to understand. This assumption contradicted the objective of the MA to provide much needed knowledge to the public and policymakers. In short, as with the problem of measuring resource scarcity by looking at prices over time (Norgaard, 1990), the problems of using monetary values to weight ecosystem services are tightly embedded in the very socioeconomic system driving the problems of ecosystem degradation the MA sought to understand in order to design better socioeconomic policies. This circularity highlights how difficult it is to understand nature without looking through the economy with the aid of economism. Yet MA participants were able to share their



expertise into a very rich understanding of reality while also holding serious moral discussions.

The experience that Pavan Sukhdev (with Haripriya Gundimedia and Pushpam Kumar) gained in India trying to give economic values to non-timber products from forests, and to other environmental services (such as carbon uptake, water and soil retention), has been an inspiration for the Economics of Ecosystems and Biodiversity (TEEB) process sponsored by DG Environment of the European Commission. As the TEEB team states, a monetary representation of the services provided by clean water, access to wood and pastures, and medicinal plants, does not really measure the essential dependence of poor people on such resources and services. In their project “Green Accounting for India” they found that the most significant direct beneficiaries of forest biodiversity and ecosystem services are the poor, and the predominant impact of a loss or denial of these inputs is on the well-being of the poor. The poverty of the beneficiaries makes these losses more acute as a proportion of their “livelihood incomes” than is the case for the people of India at large. Hence the notion of “the GDP of the poor”: for instance, when water in the local river or aquifer is polluted because of mining, they cannot afford to buy water in plastic bottles. Therefore, when poor people see that their chances of livelihood are threatened because of mining projects, dams, tree plantations, or large industrial areas, they complain not because they are professional environmentalists but because they need the services of the environment for their immediate survival (see [http://ec.europa.eu/environment/nature/biodiversity/economics/index\\_en.htm](http://ec.europa.eu/environment/nature/biodiversity/economics/index_en.htm)).

Regional ecosystem assessments are now under way and there are numerous other fora that bring people together to debate underlying conditions and appropriate collective behaviour. We need to expand these and enter into them with a larger perspective on their role in offsetting the simplicities of economism.

### **Beyond growth**

The economic crisis will reduce CO<sub>2</sub> emissions and it might slow down the accelerating route to biodiversity destruction and climate change. On the other hand, it might also lead to the reduction of public and private expenditure on green technologies or pollution control. There is no doubt also that recession will hit lower-income groups and countries unevenly. But the problem with the above framing is that it is still couched in the terms of economism and growth. There is a sense of *déjà vu* with the interest rate debate (where high interest rates are supposed to make environmentally destructive projects uneconomical but also slow down environmental investments). Environment and jobs, environment and the poor are positioned at opposing ends, eco-friendly growth supposedly being the only way to reconcile them. But these are false dilemmas.

What we need is an altogether different vision and framing along the lines of an Aristotelian *buen vivir* (as the World Social Forum proclaims) guided by *oikonomia* rather than chrematistics. Here we emphasise the transformative potential of an economic crisis, a crisis that many ecological economists said would come sooner or later given the unsustainable pattern of capitalist growth. Now it is the moment to generate new social visions of living well and being happy without the imperative of economic growth. Visions that render compatible living well, working satisfactory and maintaining our local and global ecosystems.

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The concept of *décroissance soutenable*, or socially sustainable economic de-growth, which Georgescu-Roegen started 30 years ago, is relevant (Latouche, 2004). De-growth is not about decreasing GDP because we might always change accounting conventions and include in GDP other items (unpaid domestic and voluntary work) and deduct the negative externalities of biodiversity destruction, climate change, loss of human cultures. Sustainable de-growth is about creating an alternative, smaller economy, suitable to the physical needs of humans and ecosystems. With the economic crisis, *la décroissance est arrivée* in Europe, the USA and Japan. This is an opportunity for moving with the socio-ecological transition. The challenge is how to manage the transition to a smaller economy in a socially equitable way, where those that levy the greater burden are those that already “have” and who benefited the most from the past pattern of unsustainable accumulation. At first sight, Southern countries have something to lose and little to gain from de-growth in the North: fewer opportunities for commodity and manufactured exports, less availability of credits and donations. But, the movements for environmental justice and the “environmentalism of the poor” of the South are the main allies of the sustainable de-growth movement of the North. These movements complain against disproportionate pollution (at local and global levels, claims for repayment of the “carbon debt”) and waste exports from North to South (e.g. “Clemenceau” to Alang in Gujarat, or electronic waste). They resist biopiracy and *Raubwirtschaft*, i.e. ecologically unequal exchange, destruction of nature and human livelihoods at the “commodity frontiers”. They claim the socio-environmental liabilities of transnational companies (Martinez-Alier, 2002). Their objectives are to have an economy that sustainably fulfils the food, health, education and housing needs for everybody. This transition to a smaller, human and ecological-scale economy is not easy. The question is how to manage it smoothly and redistribute its costs to those that most benefited by the unsustainable path that brought us here. De-growth is not apolitical. It calls for a radically new polity with a redistribution of political and economic power to allow it to be fulfilled.

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