The world we see shapes the world we make

How the underlying ontologies lead to different recommendations from environmental and ecological economics – the Green Economy example

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Introduction: the "Green Economy" discourse

Since the beginning of the decade, the discussion on sustainable development has lost in prominence, being gradually replaced by a debate on the "Green Economy" (UNEP 2011) family of concepts, including the "Green New Deal" (UNEP 2009), "Green Growth" (OECD 2011) or a "Global Marshall Plan for a Worldwide Eco-social Market Economy" (Rademacher 2012). However, the substance of this replacement is not exactly clear; several rounds of informal negotiations have not produced a clear-cut definition of what a Green Economy ultimately is. The promises are striking (conserving nature, overcoming poverty, providing equity and creating employment), but the means, measures and philosophy behind look rather familiar. Essentially is seems to be environmental modernisation modernised by an increased concentration on economic instruments, market mechanisms and voluntary agreements with the business sector which is described (and portraits itself) as the main agent for achieving sustainability.

For the analysis and the policy recommendations offered how to solve the environmental crisis, the ontology (synonymously the world view, pre-analytic vision or metaphysics) is decisive. Which one that is can be detected from the terminology used.

To UNEP, the sustainability crisis is the biggest market failure ever (as climate change was to Prof. Stern when issuing the Stern Report). Describing it this way points to a specific analytical approach based on neoclassical resource economics: a market failure occurs when the market for whatever external reasons fails to deliver what in principle it could have delivered, and once the market disturbance is eliminated, the market will return to its equilibrium mechanisms and thus solve the problem. Whoever considers the failure of sustainable development to be a market failure must call for better markets, not for alternative or complementary regulatory mechanisms. The EU builds its green economy approach on the same ontological base when describing the world in terms of capital stocks, natural, manufactured and financial as the basis of the green economy, and human and social capital outside it. The capital stock terminology indicates the environmental economic world view: humans and the environment are resources or production factors, and their value lies in their contribution to the economic process. From the terminology observed we can conclude that the ontology of the new Green Economy paradigm is derived from environmental economics, the new mainstream in economics, essentially neoclassical economics endogenising the environment as a resource.

This approach has been sharply criticised by agents claiming that unsustainability is not a market failure but a market system failure, something no market could deliver. They call for a limitation to market processes, not for better markets (at least they do not rely upon them), for physical and not necessarily for monetary accounting, and suggest to limit the throughput of the economy. Based on the physical accounting approach, they are sceptical towards the commodification of nature, claiming that the market optimum expected from them is not necessarily ecologically optimal. Regarding capital stocks they consider them not as an adequate way of describing nature and society, since capital stocks – if the term is to be meaningful in any way – have to consist of commensurable elements, or elements described in commensurable units such as their price (as a proxy for their utility). This description

would allow for substitution an and between the stocks, an idea critics reject, and allocate a value to each element of the stocks based on utility/price, where they suggest other values than utility to be taken into account. While the chorus of critics is no way homogenous, most of these elements can be attributed to the typical ontology of ecological economics.

> *"Subject the natural world to cost-benefit analysis and accountants and statisticians will decide which parts of it we can do without. All that now needs to be done to demonstrate that an ecosystem can be junked is to show that the money to be made from trashing it exceeds the money to be made from preserving it."* George Monbiot, author and Guardian columnist, from http://www.wdm.org.uk/greeneconomy

Distinct world views, distinct worlds to live in

While different schools of thought co-exist in all disciplines, their differences are much more pronounced in social than in natural sciences. While – at least for external observers – different approaches in natural science are often complementary, the different sides of a dice, in economics the different paradigms tend to be mutually exclusive, resulting in a discourse not aiming at a synthesis of different theoretical approaches, but at the exclusion of minority positions without falsification (the lack of an empirical basis may be one of the reasons). The different ontologies make them mutually exclusive stories about how the world really is and how it should therefore be perceived. Some rifts, however, affect both natural and social sciences, for instance the endorsement (environmental) and rejection (ecological economics) of a positivist model of science, the attitude towards pluralism, and the perception of multi- and transdisciplinarity (environmental against, ecological economics in favour).

Comparing the environmental and the neoclassical ecological economics ontologies, two basic discrepancies can be identified causing all or most of the differences between the two bodies of theory and the resulting policy recommendations: the topology and the integration of thermodynamics into the world view.

Topology and its implications

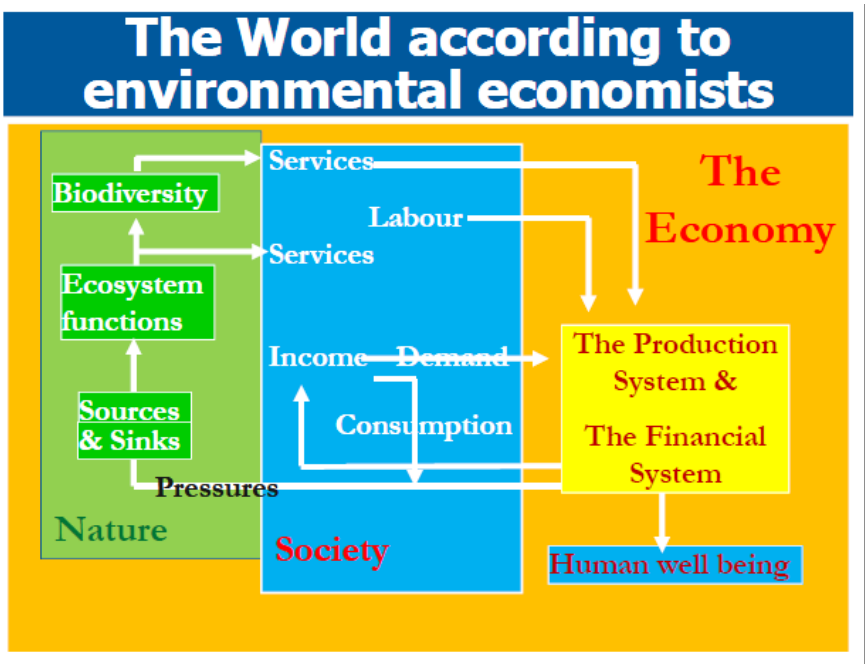
Environmental economics

Environmental economics is a derivate of neoclassical economics; to understand its world view a look at the origins is helpful. Neoclassical economics, the currently globally hegemonial school of thought, is essentially a theory of exchange. While – in a rough classification – 18th century physiocrats, emerging in an agricultural society, saw the origin of value in the land and 19th century classical economists, a product of early industrialisation, in human labour (this applies to Malthus and Smith – a moral philosopher (!) – as much as to Marx and Ricardo), these "holistic" or "organic" views were replaced by an "atomic" view in neoclassical economics, which is based on exchange and knows no inherent value of goods or services (Rink and Wächter 2002). Instead, value is considered as externally attributed utility, identified as the result of supply and demand curves matching in a market, and expressed as price as a proxy for utility. The purpose of neoclassical economics is to describe the optimal allocation of goods in exchange processes, thus increasing the overall exchange value which is considered as a proxy for welfare. As maximising the aggregate is the objective, distributional questions are not dealt with in neoclassical economics but delegated to other social sciences like sociology. The production process is described by production functions deriving production values from capital and labour input; the environment and its resources do not play a role. This reflects the situation at the time of theory development: both capital and labour were scarce and expensive, while resources (sources and sinks) were abundant and

cost free.

Environmental economics is about to become the mainstream variant of neoclassical economics. It emerged when it became obvious that environmental influences are relevant cost factors for the economic process, be it that the cost of resources were increasing, or that the disposal of waste and other effluents became expensive (in European manufacturing about half of all expenditures are for materials management, and only a quarter for labour). This led to the necessity to extend the body of theory to "internalise" the formerly "external" environment. In doing so, environmental economics builds upon the neoclassical market equilibrium approach and the optimum expected from undisturbed market forces in welfare economics. The extension provided is recognising the value of nature as a production factor; as the environment made itself felt in the economic process, it was conceptually integrated as a part of the economic system. Nature and its components are then considered economic goods, commodities, thus nature and its services need to be priced to allow the market mechanism to function. It is in this sense, that environmental damage is the most severe market failure ever (UNEP 2011). According to the environmental economics explanation this failure has been caused by the fact that nature, with its sources and sinks a part of the economic system, had no price, and was overexploited due to this undervaluation.

Figure 1: The environmental economists' topology: the economy is the metasystem



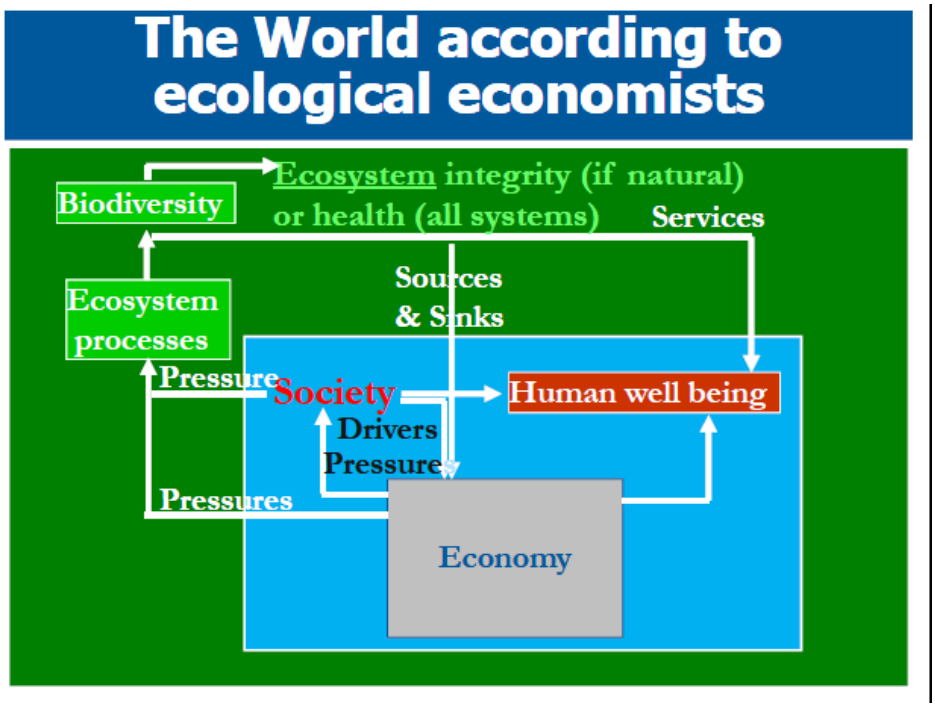
Another implication of viewing nature and its components as commodities is that the components of nature and its services are seen as essentially independent entities, which can be traded individually, each fetching its own market price which will then guaranty a welfare maximising result. To achieve this, the components of nature – often common pool goods or public goods – need to be transformed into objects that can be bought and sold, and thus they need to be privatised. If they become scarce, their price will rise and cost-effective protection measures will be taken. Cost effectiveness is given if the cost of protection are not higher than the value of the good or service rescued, leading to a welfare maximum of the outcome (Coase 1960). If privatisation is not possible (like for the air to breathe), cost internalisation can be achieved by levying fees or taxes on the consumption of these resources reflecting their (externalised) value and bringing it back into the market mechanism (green taxation, eco-taxes).

Ecological economics

Ecological economists perceive the economy as a part of the larger society and this as a part of the overall ecosystem. In this view, it is necessary to clearly distinguish and object and its price: then the market may provide the economic optimum, even with damage costs etc. included, based on price mechanisms, but not necessarily a social or ecological optimum, as these are determined according to criteria of the larger system, i.e. outside the economy and its market mechanisms. Daly (2000) illustrates the difference by emphasising that some environmental economists do not expect major damages from climate change as the sector most affected, agriculture, only makes up for less than 3% of the GDP in most affluent countries, so the economic loss would be limited – but what, Daly asks, would these people eat once the "negliable 3%" have collapsed? Ignoring the physical economy of material and energy flows leads to gross misperceptions of challenges such as climate change, as this case exemplifies.

The ecological world view considers ecosystems as complex entities which cannot be subdivided into discreet, independent objects to be traded, and thus as having no market price. However, what can be and is traded are specific products, goods and services, like all harvested goods. Overexploitation of harvesting opportunities may however decrease the environmental value of a system, i.e. its capability to provide (at least partly) economically unvalued, but ecologically important functions and services. Thus in this world view, not extending the market regime to biological objects, functions and services is considered the most appropriate tool, instead limits to the market mechanism are highlighted. Decisions have to be taken according to a set of societal values, with cost consideration one legitimate but not decisive concern as "economic value is not an adequate measure of how important a service may be to human survival" (TEEB for Policy Makers, p.10).

Figure 2: The ecological economists' topology: nested systems, the environment as metasystem



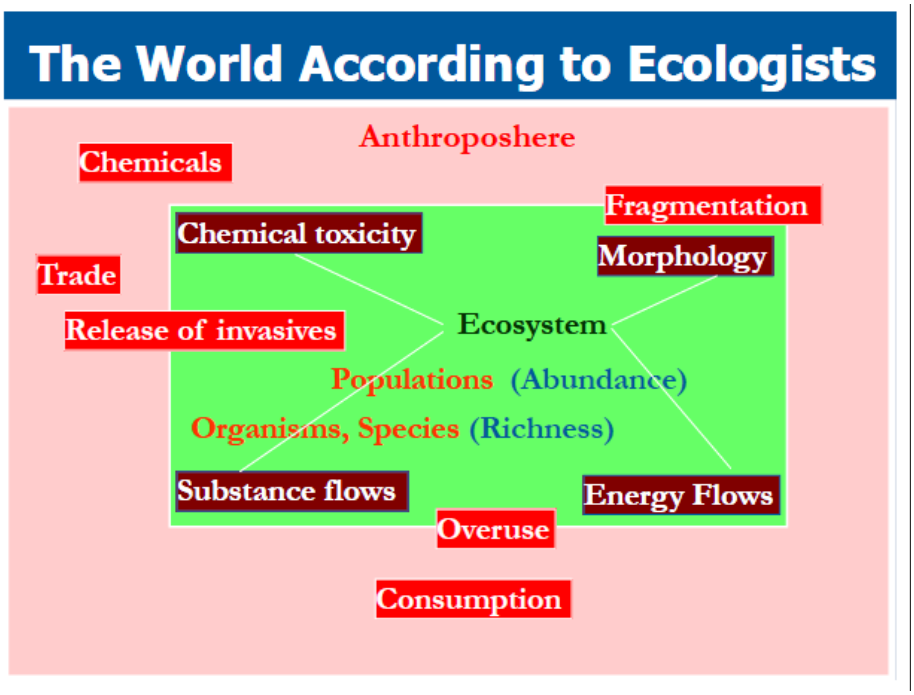
While sharing the call for political decisions based on societal values, some ecological economists disagree even with this limited role of economic values, for conceptual reasons. Sagoff (2008) describes biospheric and climate systems as 'lumpy', explaining that 'lumpy goods' are goods that cannot be provided incrementally, divided into pieces and sold in units. The choice is either to save, protect, 'buy' the whole system, or let it go bust. There is no way to trade marginal amounts – and thus no price: politics, not markets are needed to provide solutions (Sagoff 2008: 232).

The ecological attitude also alters the role of economic instruments: they do no longer measure the value of nature to include it into the market (commodification), but they are incentives introduced to bring about behavioural change. For this behalf, their effectiveness is assessed by monitoring behavioural change, and their level is independent of any value calculation. For instance, an economically optimal solution may even include the loss of 'useless', and thus not 'valuable' ecosystems or species.

Thermodynamics

Environmental and ecological economists are thus easiest distinguished by the fact that the former perceive nature as a part of the economy, to be managed according to economic rules, while the latter vice versa consider the economy to be a part of nature and subdued to its laws, not least the entropy law, and has to be managed according to such limitations set by the laws of nature. As decisive for the management approach, the understanding of the laws of thermodynamics, and their application in deriving policy recommendations, is the second basic difference between ecological and environmental economics.

Figure 3: The ecologists' world view – still different, as most often economy and society are treated as "external", and their impacts as "external influences" the ecosystem has to deal with



Neoclassical economics is based on a mechanistic world view, a model taken from Newtonian physics (early economists described their science as the "mechanics of the economy"). The independent individuals interacting in the market are moulded along the lines of the gas theory of physics: as ecology learnt from other disciplines, so did economics. However, neoclassical economics, and with it its derivates like environmental economics, stopped doing

so rather early, and missed the insights of entropy theory, let alone of quantum mechanics, or the more recent developments in ecology which since decade has given up describing ecological systems as being in or close to a state of equilibrium.

Missing the entropy theory has severe consequences: standard economists perceive all processes as reversible (thus lacking a sense of urgency in combating environmental degradation including climate change), allowing them to discount the future as path dependent impacts do not have to be taken into account. Resource scarcity plays no role as 100% recycling is possible, and growth can be unlimited since entropy does not exist in neoclassical environmental economic thinking.

Table 1: World views compared – a rough sketch

	Biology & Ecology	**Environmental economics**	**Ecological economics**
Underlying value orientation	Often ecocentric	anthropocentric	mixed
Relation nature and economy	Society part of nature	Nature subsystem of the economy	Economy subsystem of society, society subsystem of nature
System view	Biology (physiology, genetics,…): autonomous individuals Ecology: nested hierarchy of systems, self organising, evolving	Autonomous utility maximising individuals interacting via markets, "atomistic view"	Humans as both selfish and altruistic, individuals and social actors, "systemic/ dialectic view", co-evolution of social, economic and natural systems
Understanding Thermodynamics	Evolution is irreversible, development is path dependent, resilience is central, life is a non-equilibrium process	Systems are in equilibrium, processes are reversible, 100% recycling possible, unlimited growth is possible	Economic systems develop irreversibly along pathways, bifurcations can be stimulated, attractors can change, unlimited growth is impossible
Sustainability Understanding	Sustainable = long term resilient/ intact ecosystems	Sustaining capital stocks, sum of values	Spaceship Earth Economics
Interdisciplinary intersections	Economic/financial theory, ecosystem services valuation	Ecological modernisation, technology fix	Scale, material flows, capping use
Target group of policy recommendations	Conservation policy makers	Economic & fiscal policy makers, business	Policy makers, civil society
Specific aspects; sustainability metrics	Ecosystems perspective; concept of resilience and vulnerability	Weak sustainability, commensurability, monetisation, sustaining sum of capital stock values	Strong sustainability, incommensurability, monetary & physical accounting, transdisciplinarity

Indicative literature	Naeem et al., 1994; Kay et al., 1999; Scheffer et al., 2001; Groom et al., 2006; Rock-ström et al., 2009	Costanza 1980; 1997, Pearce Hueting 2011	Boulding, 1966; Daly, 1973; Georgescu-Roegen, 1986; 1972
Empty vs Full World Paradigm	Full world reaching limits	World view: Empty World	Full World Paradigm
Understanding Efficiency, Goal	mixed	Less throughput for a given service	More services from a given throughput
Optimisation	mixed	Better if more services	Better if less resource consumption

Sources: Neugebauer 2012, modified; Daly 1996, Rink and Wächter 2002, Spangenberg 2005, Renn 2012, modified

Without question, many of the components of a green economy are important and have been long since demanded by the environment and development NGOs –for instance the improvement of energy and resource efficiency by means of ecological tax reforms and the abolishment of environmentally harmful and socially unnecessary subsidies, more recycling, a transition to renewable energies in industrial as well as in so-called developing countries, and more. But even decoupling of resource use and economic growth, the transition to green technologies, and ecological modernisation can become dangerous if perceived a solution to problems, in case the ontology the proposals are based on does not fit with the reality we experience.

Three resulting flaws of the green economy: objectives, tools, and the not-so-hidden agenda

The objectives

The objective of the green economy strategy is essentially to revitalise the conditions of doing business. Faced with Peak Oil and global resource limits (sources and sinks), which make a reduction of consumption unavoidable, it is the attempt to turn the challenge into a business opportunity. This resonates well with the business sector, where sustainability, understood as resource efficiency, has become the buzzword of so-called 'Corporate Social Responsibility' or CSR strategies. Although CSR "has a hard earned reputation for flakiness [today] managers are increasingly aware that they must squeeze the most out of finite resources. Sustainability thus fits nicely with lean production and tight supply-chain management. Indeed, it provides new ideas for reducing cost. […] Gone are the days when it was mainly about managing corporate reputations – or "greenwashing" […]. Today's iteration of CSR is […] encouraging businesses to become more frugal in their use of resources and more imaginative in the way they think about competitive advantage" (The Economist 2012a). Pricing nature as a production factor turns 'frugality' into a competitive advantage welcome by major corporations. As pointed out above, it is understood to heal a market failure, and with this 'correction' the market is expected to deliver an 'optimal' result (again).

Thus the pricing of environmental 'externalities' (damages which are considered external to the market economy, and not recognised as its necessary outcome as already shown by Kapp (1950); social 'externalities' are mostly ignored) is expected to solve the environmental

problems, and green technology as the basis of the next growth cycle. So what IT technology has delivered (and what genetic engineering and nanotechnology failed to realise) is now expected from green technology: to provide the technological basis for another period of unfettered economic growth. This is why ministries of the economy and business corporations convert from hostility towards environmental demands to endorsing them – but only as long as they do not imply less consumption (and thus profit), but more technology.

However, this expectation is flawed in more than one sense: a decoupling of resource consumption that would permit a >95% reduction of CO_2 emissions as needed in industrialised countries is hardly imaginable, so even the technologically greenest growth will imply that necessary reduction targets are missed (BUND 2011). Economic growth intensifies the problems; for instance, the 20% gain in carbon intensity of the global GDP since 1992 has been by far overcompensated by economic growth. Secondly, the technologies developed or under development are dependent on scarce resources (the role of rare earths has become a prominent example in the last couple of years), so that the strategy is dependent on the unlimited access to resources mainly located in the South. For this behalf, free trade supported by military superiority (and where necessary military interventions) are the unsustainable methods of choice.

The tools

This has been labelled a neo-colonial attitude, which is only partially right – after the experiences in Iraq and Afghanistan, the appetite for semi-colonial occupations has been largely lost, and instead economic take-overs (like the OECD's MAI, failed due to citizens' protests, but also the new EU raw materials strategy) are preferred (Spangenberg 2010), supported by the threat of short-term, maritime based interventions (the "offshore strategy"). US, EU and NATO military strategies are explicitly aimed at securing the free access to crucial resources. Joseph Nye, formerly chairman of the US National Security Council, summarised this attitude in one sentence: "Markets and economic power rest on political frameworks, and American military power provides that framework" (Gerson 2012).

The market and the political frameworks are thus at the core of the environmental modernisation strategy, presented as a new green economy idea. Here again, the green economy strategy does not appear very new, but a repetition and extension of former approaches: there is no resource sovereignty, no limits to resource consumption, no minimum resource supply for all humans, as the basic assumption is that the market rules ok. As long as environmental (and social) damages are considered to be 'externalities', and the economic optimum expected from market mechanisms to necessarily coincide with a social and environmental optimum, and markets to be the most efficient kind of regulatory mechanism, it appears plausible to minimise environmental damage by turning environmental goods and services into market goods. Thus a further commodification of nature and a regulation by market instruments is considered the most promising way forwards, making nature an exchangeable good regardless of local human needs and natural carrying capacities, let alone the dignity of nature itself. The commons need to be privatised to turn them into market goods, goes the argument, this being a superior way of protecting them, ignoring the fact that they are goods in the possession of communities, or belong to humankind as a whole, and this non-economic value is destroyed by turning them into commodities.

Privatising public goods, commodification of the commons are not an instrument for safeguarding a green future but hand out the common heritage of mankind to private profit interest. Public wealth is spoilt to increase private riches, use value turned into exchange

value, publicly owned abundant goods in scarce market commodities. The "tragedy of the commons" (Hardin 1968) is still frequently cited (according to which public or common pool goods are necessarily overexploited and run down) although being counterfactual (Ostrom et al. 1999) and representing a racist and right-wing extremist point of view (Clark 2010). Instead of turning even more public goods into private property, sustainable development requires re-establishing the primacy of politics over the market and of public over private interest, and a decommodification of human labour, rather than a commodification of nature. This criticism is not new – in the 19th century the inverse correlation of public wealth and private riches was known as the Lauderdale paradox (Foster, Clark 2009), but still private goods are protected in almost every constitution, but common goods in almost none. Consequently, greening the business world, although overdue for at least 35 years, is a necessary step, but a far cry from leading to a sustainable economy, let alone a sustainable society.

However, rejecting all economic instruments out of hand would mean throwing out the baby with the bath tub: some of these, like an ecological tax reform and the abolishment of environmentally and socially harmful subsidies, are urgently needed. They are economic tools to achieve politically defined targets. As opposed to that, artificial markets for public goods, where – as we currently experience – the market sets the targets, offer no effective protection but rather create new risks for humankind, nature and the environment, as seen in emission trading and the REDD mechanism (BUND/FoE Germany 2011).

Besides the ideological attitude, there is an economic reason why the commodification of nature and its services is promoted: creating a new kind of tradable goods constitutes new fields for business activities, and provides enormous opportunities for growth and profit (this is why business says "¥€$ to the green economy"). As high profits and low investment into the real economy create a huge surplus of money looking for profitable investment opportunities, and as these are mostly found in speculation, it is no surprise that after the IT and the housing bubble have burst, speculators are now focussing on minerals, oil and food, causing skyrocketing prices with devastating impacts on the global poor and their daily life.

Resource efficiency strategies (as the recent EU one) and changing consumption patterns are attempts to manage not the supply side, but the demand side of the economy. Although a necessary element of any really green economy, they are so far rather considered a minor complement than an alternative to the expansionist strategy: they tend to be too weak and mobilise too little support in business and politics to be able to replace supply securing expansionist strategies. Overall, expansionist strategies securing supply are dominating demand management, the attempt to do with what we have, i.e. the sustainability option (Spangenberg 2010).

Deregulation, free markets, free trade and the preference for economic instruments and voluntary agreements in politics have turned out to be a safe recipe for disaster. Following Paracelsus' (1536) famous insight that "the dose makes the poison", what might have been a cure for some ills has been applied in a dose making it a poison. In such a situation it is urgent to reduce the overdose, not increase the prescription and thus the toxic effect, as the Green Economy as suggested by UNEP and OECD does.

The not-so-hidden agenda

The primary macro-level objective of the green economy initiative is enabling future economic growth by decoupling growth from environmental limitations. Decoupling as such is not bad – compare it to current policy e.g. in Canada where oil production from tar sands is set to rise from 2 m barrels a day (b/d) to 3.3 m b/d by 2020, each barrel causing

three to four times greenhouse gas emissions as the same amount of conventional oil does – a nightmare for the climate and a reason for Canada to withdraw from the Kyoto protocol. And what is the reason? It is "because natural gas exports, long the mainstay of the energy industry, are threatened by shale gas in the United States" (another unsustainable means of energy production emitting greenhouse gas, banned in France and in parts of Germany) and "replacing gas exports with tar-sand oils is vital for economic growth" (The Economist 2012b). Demonising environmental, threats to charities and dismantling of environmental legislation and democratic right come along with this typical case of growth mania.

However, decoupling economic development and resource consumption is necessary but no way enough. As reducing resource expenditure is reducing operating cost, efficiency is another driver of growth and in the end can lead to increasing consumption (a phenomenon known to economists since the 19th century as 'Jevons' paradox'). Furthermore, for a capitalist market economy a stationary state is not an option: the advanced goods-producing economy requires the permanent generation of new demand (dressed and partly perceived as needs); otherwise saturation and a marginal profit of zero are threatening. Thus ever new products are pushed into the market, advertising suggests their indispensability for human well-being, or their character as essentials for social status (the critique of these phenomena is not new and goes back to Veblen (1899)).

The second, less explicit objective is avoiding distribution debates – without growth, more justice cannot be generated by distributing surplus, but only by taking from those who have and giving to those who do not, taking from the 1% and giving to – let's say – the lower 50%. It is against this backdrop that the social consciousness of the wealthy groups in the affluent countries is eroding – their recognition of poverty in and between countries is fading away, their willingness to donate money or even share their riches is reaching historical lows. They consider their wealth as something they deserve, even feel that they do not get their fair share and feel called upon to give to 'undeserving', 'worthless' lower income groups (Zick et al. 2010). Redistribution instruments like the pre-Reagan US income tax level of 94% (an element of the New Deal shining up in none of the "Green New Deal" proposals) are no longer imaginable, the bourgeois society is eroding. Less equality contributes to less social cohesion, and – empirically – to a more violent society with more compensatory or addictive consumption (Wilkinson, Pickett 2009).

Another downside of the economic thinking is it image of society as composed of independent individuals – accommodating collective processes is not within the reach of neoclassical economic thinking. This 'methodological individualism' did not prevail in classical economics: Adam Smith acknowledged the right of every citizen to have access to goods sufficient to lead a dignified life in her respective society. In fact, Adam Smith went well beyond the standard characterisations of living conditions and considered such functionings as not being "ashamed to appear in public," and analysed how the commodity requirements for this achievement - clothing, shoes, etc. - varied with social customs and cultural norms (Smith 1776). "In analysing these relationships, Adam Smith not only distanced his own approach from commodity fetishism and wealth maximization, he also showed the social nature of these relationships between commodities (and opulence), on the one hand, and capabilities (and achievements of living conditions), on the other (Sen 1986).

However, this societal context plays no role any more in modern neoclassical economics, and thus justice as an interpersonal value relation, and democracy (as government for and of the people) as an interpersonal process both play no role either in economic models and prescriptions. Regarding sustainable development, democracy, stakeholder empowerment

and human rights are the key pillars of the most neglected dimension, the institutional one (Spangenberg 2007). Unlike Agenda 21, which emphasises the need for empowerment of women, youth, trade unions and civil society organisations like environmental and development NGOs, the sustainable development discourse has neglected this dimension (and the economic dimension as well: maximising profit is a far cry from creating a resilient economic system which can be sustained in the long run, see Spangenberg (2005)); also power, influence and interests, and to a large degree also justice and equity are neither economic nor environmental nor social, but societal issues and must be brought back into the picture.

The ecological economics program: sustainable economies

With a different pre-analytical vision or ontology, a different problem analysis and different policy recommendations emerge. In 1987 the World Commission for Environment and Development (Brundtland Commission) defined Sustainable Development as (WCED 1987, p. 43):

> *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*
>
> 1. ***The concept of "needs",*** *in particular the essential needs of the world's poor, to which overriding priority should be given, and*
> 2. ***The idea of limitations*** *imposed by the state of technology and social organisation on the environment's ability to meet present and future needs."*

The Brundtland report's praise for economic growth has to be understood in this framing: economic growth is justified and considered necessary as far as it is instrumental to reach both objectives, satisfying needs and respecting limits. The OECD Green Growth concept (OECD 2011) fails on both accounts, and the UNEP Green Economy concept, while paying lip service to the needs of the poor is concrete only as far as the environment is concerned. Instead, all too often, only the first part of the definition is quoted and its lack of precision bemoaned, to come up with "complementary" explanations based on neoclassical economics and neoliberal politics promoting economic growth as a priority issue for sustainable development.

Consequently, any policy for a Green Economy must address both these criteria, the concept of needs and the idea of limitation, to be *in the context of sustainable development.* Poverty alleviation needs not be mentioned separately, as it is inherent to sustainable development as one of two guiding principles. Ecological modernisation programs either not addressing human needs and poverty eradication, and/or discussing resource efficiency without referring to limits in absolute terms may be useful in their own right, but cannot claim to be implementing a "Green economy in the context of sustainable development". Unlimited growth, however green, is not sustainable (it is not even development).

Furthermore, besides the environmental, social and economic dimensions, UNCED, for all its weaknesses, highlighted questions of influence and power which are even more off the agenda at UNCSD 20 years on. However, without taking these structural factors of societies into account, and without changing them for the better, any sustainable development strategies must fail, as the last two decades (with their significant worsening in this respect) all too obviously testify. Thus all four dimensions have to be taken into account when trying

to develop effective strategies – UNCSD neglects half of them (see figure 2).

Sustainable development is meant to give (back) the economy a purpose, serving human needs. These needs, however, are not identical with the greed of capital owners and shareholders. The needs of the global poor in particular are needs not underpinned by purchasing power, and thus do not resonate in the market. As meeting them is the first key concept within sustainable development, and the market cannot serve their needs, it is the wrong distributive mechanism – free market shareholder value capitalism cannot be sustainable.

Instead, sustainable development can be described as a development with resource consumption between the upper and lower limits of our environmental space (FoEE 1995). The upper limits have been quantified recently by science, identifying the "safe operating space for humankind" (Rockström et al. 2009), which can be translated into upper limits for resource consumption. Such limits can of course be extended by social and technological development (the former including redistribution mechanisms), but cannot be replaced to give way for unlimited growth – but this is exactly what Green Growth (and essentially also the UNEP Green Economy, UNEP 2011) are calling for. Limits to growth, or resource capping are not part of these policy concepts. Thus they are not sustainable.

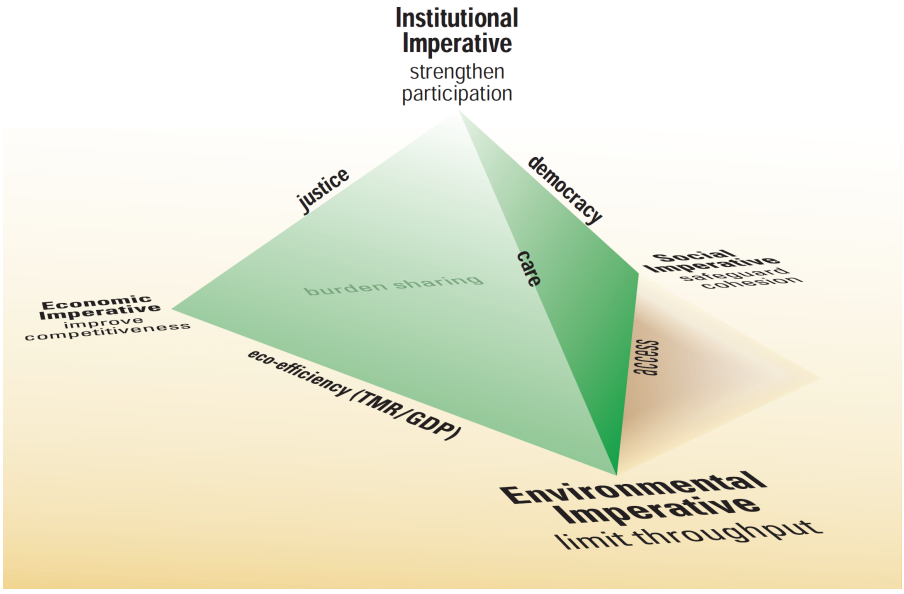


Figure 4: Four dimensions of sustainability are needed to accommodate the core demands, inclu-ding justice and democracy (Source: J. H. Spangenberg, Wuppertal Institute 1996)

Regarding the lower limit or floor of the environmental space, indicating the minimum resource availability required for a dignified life (known in Latin America as the Linea de Dignidad), it cannot be quantified like the ceiling (already Adam Smith knew this), but quality criteria and provision processes can be identified. Last year the International Labour Organisation has published an operationalisation of what it calls the 'social protection floor', a concept combining human rights (including labour and social rights) with a concept of minimum social security, human dignity and good work, proving an excellent basis for the further elaboration and concretisation (ILO 2011). Addressing human needs in a market economy implies guarantying sufficient purchasing power to all citizens. In an economy based on paid labour, sufficient wages (no working poor) and full employment contribute

to this end, as do the welfare state transfers for those who do not have a job in the formal economy (the informal economy also produces significant contributions in the fight against poverty). Measures like a basic income entitlement, right to employment etc. have been discussed for decades, while primary income distribution adjustments are an upcoming issue. Similarly, for the 'limitations' criterion, efficiency standards have long been discussed, but not so consumption caps. All these issues must be part of any policy programme for sustainable development living up to its name.

The transition to a sustainable society requires a fundamental cultural change, following the insight that setting social as well as environmental limits indeed mean limiting the freedom of choice of some individuals, but that such limitations are the precondition for the free flourishing of all members of society. We have to overcome the economic liberalism interpretation of human freedom as freedom to consume, and replace it by a democracy based definition, freedom as the freedom *for* sustainable livelihood and lifestyle choices, and a freedom *from* political and economic oppression.

As the current fiscal and currency crisis demonstrates, a primary objective for public policy must be to regain the ability to act (i.e. not only to react) to address any relevant issue, including structural change. Re-establishing the primacy of policy is a necessary condition for transition management. This includes thinking out of the box. Two fields are crucial in this respect: extending the public domain – by stopping privatisation finacialisation and corporate capture, introducing upper limits to salaries, bonuses and interests (lower limits already exist), but also by reclaiming public goods in private exploitation. For instance providing free access to all environmentally relevant patents emerging from publicly financed research, and by buying up and publishing such patents currently in private ownership, would make green knowledge and technology a public good (again). The second field for new policies is changing the economic logic by modifying the policy framework, in order to put the dynamics of the economy at the service of minimising resource consumption and environmental sustainability (social sustainability must be secured by other measures).
To make these basic considerations operational, and to establish what could be called an ecological economics substantive green economy, a number of decisions should be taken. For instance:

- The protection of our natural resources must not be based on their commodification. While it is important to develop meaningful measurements of biodiversity and the benefits ecosystems provide to humankind to counterpoise measures of economic 'development', their protection must not be dependent on markets. Effective protection requires the substantial extension of networks of protected areas, both marine and terrestrial, and overall sustainable land use.
- The UN General Assembly should pass a mandate for a convention on corporate accountability, binding under international law, including binding provisions on reporting commitments on social and environmental impacts, on duties to protect and on the liability of corporations and their responsible board members, and on indemnity claims of persons concerned.
- The UN General Assembly should pass a mandate for a convention binding under international law on access to information, public participation in decision-making and access to justice in environmental matters (Rio-Declaration Principle 10).
- Measures, frameworks and global pacts on Sustainable Consumption and Production should foster goods that are produced by good work in an environmentally friendly manner and under conditions that support the economic development and sovereignty of the host country and respect the rights of local populations. Neo-colonial policies

like the EU and the German raw materials strategies must be dropped.

- Empowerment of civil society, and in particular of women, has been an important but neglected demand of Agenda 21. Combating gender discrimination, extending education opportunities (a human right to education), decent work and wages, more democracy in society and economy are one side of this coin. The other is a redistribution of power, and thus of wealth, a progressive taxation system, and restrictive measures against socially disruptive speculation.
- The WTO mandate and rules have to be changed to promote sustainable development; it needs a social and environmental legal framework and democratic legitimation. For this behalf, not only the product characteristics, but also the production processes must be recognised as a criterion for trade regulations, in particular if social and environmental standards have been violated. As one way to achieve that goal, internationally binding social and environmental minimum standards should be adopted and included into the WTO regime.
- As 20% of the global military expenditures would be sufficient to finance the implementation of the Millennium Development Goals, and as war (including civil war) is the ultimate unsustainability, disarmament, peaceful conflict solution and a ban on nuclear testing, weapons export and invasions would be a key contribution to sustainable development.
- High-risk and environmentally harmful technologies (for example CCS, genetic engineering of food and feed, deliberate release of GMOs, nuclear power, and shale gas exploration) must not be considered means of sustainable development.

Conclusion

As the (somehow erratic) compilation of policy proposals from two schools of economic thought, distinguished by their ontologies has shown, the world views, pre-analytical visions behind these two sub-disciplines are decisive for the kind of policy proposals derived. As both views are mutually exclusive, despite some overlaps the recommendations describe different development trajectories in distinct worlds with different institutional orientations and mechanisms. However, as in economics experimental work only possible on a small scale, and as alternatively the usual “reality test” is through modelling, with models based on the same basic assumptions, and hence the same ontology, falsifications rarely occur. The failure to predict or deal with the global financial crisis which has nonetheless strengthened the grip of mainstream economics on policy decision is an example for the lack of feedback and learning mechanisms typical to closed theories (making them rather belief systems or ideologies). To understand the recommendations made by different schools of thought, and to make a choice when they are contradictory, and in order not to perceive them as easily complementary, an understanding of the underlying ontologies is necessary to be able to make an informed choice.

The term ‘Green Economy’ is both a program and an epistemology suggesting a beneficial effort to address the twin environmental and economic crises afflicting the world today, based on the ontology of environmental economics. While an ontology is not accessible to empirical testing, other indications may help to assess its suitability. For instance, the Green Economy strategy has been constructed and/or endorsed by the same financial and global institutions that have underwritten climate change, income polarisation in and between countries, and brought the world to the brink of global economic collapse. Private multinational corporations, international financial institutions and influential individuals are pushing governments (nationally and as actors within the UN system) towards policies that will

increase the commodification of nature and the earth's resources, at the expense of people and the environment. Despite the well-meaning intentions of many of its supporters, due to the underlying pre-analytical vision or metaphysics such policies would negatively impact current efforts – across the spectrum of natural resource and global economy issues – to promote the rights of communities over their own resources and to stop land grabs, big dams, water markets, extractives, false climate solutions and other corporate grabs (these are concerns the environmental economics ontology does not deal with, the specific "externalities" or blind spots of this world view). An ecological economics world view instead calls for a 'right-sizing' of the economy, which in the affluent countries means slimming the economy (not the state which is already suffering from undernourishment in many countries), and in the emerging economies the recognition of consumption ceilings they are reaching soon or have even transgressed (Spangenberg 2012). Rather obviously, such a proposal can only be supported by those following a different pre-analytical vision, one in which the physical size of the economy matters for source or sink resource concerns. That does not preclude that some of the Green Economy proposals can be supported by both world views, for instance an ecological modernisation: it is 30 years overdue, both from an environmental and an ecological economics perspective. Even if on the political agenda now, however, the dispute continues regarding what should be done, how it should be done, and if what can be done under the ecological modernisation approach is sufficient to bring about a sustainable economy. What is missing from an ecological economics point of view is at least

- the primacy for meeting human needs, regardless of their purchasing power, instead of maximising shareholder value. This includes (social) justice, and in Europe a participatory welfare state. Enhanced citizen participation requires a social protection floor, and honouring unpaid work, mostly done by women.
- the acceptance of limits in absolute figures: efficiency is not enough, incremental change won't do the job. What is needed is basic (social, institutional and technological) innovation, and product rather than process innovation (including ex-novation, getting rid of outdated products). This includes for instance a transition to a nuclear and carbon free energy system, dematerialisation, ending land use extension (and of course land grabbing), limiting transport volumes, and sustainable agriculture on 100% of the land.
- better respect for non-economic values in political decision making: the prevailing criteria, dominant interests and power structures are clearly unsustainable (again, business interests explain only a fraction of this, and corporate capture of fraction thereof). Growth is no development – qualities, citizens' quality of life must become the overarching objective of economic policy again (within environmental limits).
- international relations based on peaceful cooperation amongst equals, with leadership by example, not by prescription. This includes better cooperation, keeping promises regarding transfers (technology and ODA), and a reform of the world trade and finance systems.
- active policies to change prevailing unsustainable consumption patterns: today too many people are using money they don't have to buy things they don't need to impress people they don't like. This requires not predominantly consumers' initiatives but policies redirecting consumer choices, bans on unsustainable products, extended warranty times, effective top-runner approaches and the like.

Sustainable development targets and sustainable consumption targets, if ambitious and not subdued to the market paradigm, agreed at high level could help the process more than the

current Green Growth (OECD 2010) or Green Economy (UNEP 2011) strategies. We will have to do with 80-95% less CO_2-emissions, some 90% less resource consumption and an end to additional land use (returning grabbed land), less fertiliser use etc., all in absolute terms. If business and politics manage to achieve that with growth (which would significantly increase the reduction targets in percentage points), it would be a big surprise to anybody embarking on another world view than the neoclassical/resource economics one. However, even for policy makers sharing this world view (and for anybody else even more so), it would be advisable not to rely on it and, in concordance with the precautionary principle endorsed by UNCED (1992), to prepare for a post-growth society and economy at least in the most affluent states. Then degrowth by design can be a sustainability strategy, degrowth by disaster is none. It is time both to understand the difference of views and make a choice, and to acknowledge that a world view may not be a truth outside the discourse of a certain group, but - like every truth can be - just a shared error, and to act precautionary. Sustainable strategies are those which are sustainable in almost all worlds.

References

European Commission (2011). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Roadmap to a Resource Efficient Europe (document no. COM(2011) 571 final, 20.9.2011). European Commission: Brussels.

Buttonwood (2012). Marginal improvement. The Economist, March 31st, 2012, p. 71.

Foster, J.B., Clark, B. (2009). The Paradox of Wealth: Capitalism and Ecological Destruction. Monthly Review 61(6): http://monthlyreview.org/2009/11/01/the-paradox-of-wealth-capitalism-and-ecological-destruction

Gerson, J. (2012). NATO in crisis and the Agendas for Chicago. Global Responsibility 63: 5-7.

Grober, U. (2008). Deep roots: A brief conceptual history of ‚Sustainable Development' – ‚Nachhaltigkeit'. J. H. Spangenberg (Ed.), Sustainable Development – Past Conflicts and Future Challenges. Taking Stock of the Sustainability Discourse. Westfälisches Dampfboot, Münster: 30-47.

Hoffmann, U. (2011). Some Reflections on Climate Change, Green Growth Illusions and Development Space. UNCTAD Discussion Paper 205, Document No. UNCTAD/OSG/DP/ 2011/5.

Kapp, K.W. (1950). The Social Costs of Private Enterprise. Cambridge, Mass.: Harvard Univ. Press.

OECD (2011). Towards Green Growth. OECD, Paris.

Ostrom, E., Burger, J., Field, C.B., Norgaards, R.B., Policansky, D. (1999). Revisiting the Commons: Local Lessons, Global Challenges. Science 284(5412): 278-282

Paracelsus (1536). Die große Wundarzney. Ulm: Hans Varnier; Augsburg: Haynrich Stayner; Frankfurt/Main: Georg Raben & Weygand Hanen.

Rademacher, F. J. (2012). Rio+20 – Global Marshall Plan – Worldwide Eco-social Market Economy. Global Responsibility 64: 13.

Rockström, J. et al (2009). A safe operating space for humanity. Nature 461: 472-475.

Roddick, J. (2008). El Niño, El Viejo, and the global re-shaping of Latin America. Surviving the UNCED coups: The Policy Conflict behind Sustainable Development. J. H. Spangenberg (Ed.), Sustainable Development – Past Conflicts and Future Challenges. Taking Stock of the Sustainability Discourse. Westfälisches Dampfboot, Münster: 48-82.

Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations. Everyman's edition, London: Home University Library 1910, book V, ch. II: 351-353.

Sen, A. (1986). The Standard of Living. Tanner Lectures on Human Values. Retrieved March 25th, 2011, from http://www.tannerlectures.utah.edu/lectures/documents/sen86.pdf
Spangenberg, J.H. (2012). Which "Green Economy" for the Future We Want? Global Responsibility 64: 1-4.
Spangenberg, J.H. (2010). World civilisations at crossroads: Towards an expansionist or a sustainable future – Lessons from history. Futures 42(6): 565-573.
Spangenberg, J.H. (2007). The Institutional Dimension of Sustainable Development. In Tomáš Hak, Bedřich Moldan, Arthur Lyon Dahl (Eds.), Sustainability Indicators. A Scientific Assessment. SCOPE Books Series No. 67, Washington, Island Press: 107-124.
Spangenberg, J.H. (2005). Economic sustainability of the economy: concepts and indicators. Int. J. Sustainable Development 8(1-2): 47-64.
The Economist (2012a). Good business, nice beaches. Corporate social responsibility is evolving, and becoming a little less flaky. The Economist May 19th, 2012: 66.
The Economist (2012b). Energy in Canada: The great pipeline battle. The Economist May 26th, 2012: 40.
UNEP (2011). Towards a Green Economy. Pathways to Sustainable Development and Poverty Eradication. www.unep.org/greeneconomy, retrieved Oct. 28th, 2011.
UNEP (2009). Rethinking the Economic Recovery: A Global Green New Deal. Nairobi: UNEP.
Veblen, T. B. (1899). The Theory of the Leisure Class. An Economic Study of Institutions. London: Macmillan Publishers.
WCED World Commission for Environment and Development (Brundtland Commission) (1987). Our Common Future. Oxford: Oxford University Press.
Wilkinson, R., Pickett, K. (2009). The Spirit Level. Why Greater Equality Makes Societies Stronger. London/Berlin/New York: Bloomsbury Press.
Zick, A., Küpper, B., Heitmeyer, W. (2010) Prejudices and group-focused enmity ? A socio-functional perspective. A. Pelinka, K. Bischof, K. Stögner (Eds.). Handbook of prejudice. Amherst/NY, Cambria Press: 273-302.