

Socially Sustainable Economic De-growth

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ABSTRACT

Economic growth is not compatible with environmental sustainability. The effort to push up the rate of growth by increasing obligations to repay financial debts is in direct conflict with the availability of exhaustible resources and with the capacity of waste sinks. The economic crisis of 2008–09 has resulted in a welcome change to the totally unsustainable trend of increasing carbon dioxide emissions. The Kyoto Protocol of 1997 was generous to the rich countries, giving them property rights on the carbon sinks and the atmosphere in exchange for the promise of a reduction of 5 per cent of their emissions relative to 1990. This modest Kyoto objective will be fulfilled more easily because of the economic crisis. This shows that economic de-growth, leading to a steady state, is a plausible objective for the rich industrial economies. This would be supported by the environmental justice movements of the South, which are active in resource extraction conflicts.

INTRODUCTION

Key words from environmental politics of the past twenty years have a hollow ring in the context of the present economic downturn. The Intergovernmental Panel on Climate Change (IPCC) never contemplated (self-imposed censorship, perhaps?) a decline in the rich countries' GDP of 5 per cent, and then a long period of non-growth as might perhaps be the case. This was not in the economists' and industrial ecologists' script. For twenty years, the orthodox slogan has been 'Sustainable Development' (dating from the Brundtland Report of 1987) meaning economic growth that is environmentally sustainable. We know, however, that economic growth is *not* environmentally sustainable. The discussion on *décroissance* or de-growth that Nicholas Georgescu-Roegen started thirty years ago is now a topic for discussion in the rich countries: *la décroissance est arrivée*. Now it is the moment to substitute GDP by social and environmental indicators at the macro-level and to trace progress towards a socio-ecological transition by the behaviour of such indicators.

I would like to thank Servaas Storm and other readers for comments on an earlier version. This article is dedicated to Herman Daly.

The economic crisis of 2008–09 affords an opportunity to put the economy of the rich countries on a different trajectory as regards material and energy flows. Before 2008, world carbon dioxide emissions were growing by 3 per cent per year: we would have reached 450 ppm (parts per million) in thirty years. Carbon dioxide emissions peaked in 2007. Now is the time for a permanent socio-ecological transition to lower levels of energy and materials use, including a decrease in the HANPP (human appropriation of net primary production). The crisis might also provide an opportunity for a restructuring of social institutions. The objective in rich countries should be to live well without the imperative of economic growth. Moreover, we are on the path for a reduction in world population once it peaks at 8,000 or 8,500 million, thereby reducing pressure on resources and sinks in the second half of the twenty-first century.

Georgescu-Roegen's explicit sponsorship of the concept of *décroissance* (de-growth) in 1979 (Grinevald and Rens, 1979/1995), Herman Daly's views on the steady-state since the early 1970s (Daly, 1991), and Serge Latouche's success in France and Italy in the last ten years insisting on economic de-growth (Latouche, 2006), have all prepared the terrain. Now is the time in rich countries for socially sustainable economic de-growth reinforced by an alliance with the 'environmentalism of the poor' of the South.

THE THREE LEVELS OF THE ECONOMY

Frederick Soddy was a Nobel laureate in Chemistry and a professor at Oxford. His *Cartesian Economics* was published in 1922, and *Wealth, Virtual Wealth and Debt* in 1926. Soddy's teachings from the 1920s became easy to understand for ecological economists who had read Georgescu-Roegen's *The Entropy Law and the Economic Process* (1971). Soddy's main point was simple and still applies today. It is easy for the financial system to increase debt (private or public), 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 an increase in the extraction, and eventual destruction, of fossil fuels. Energy is dissipated and cannot be recycled. Real wealth would instead be the current flow of energy from the sun. Economic accounting is false because it mistakes the depletion of resources and the increase of entropy for wealth creation. 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. Economic accounting does not properly count environmental damages and the exhaustibility of resources.

We might indeed say that Soddy's doctrine was a precursor of ecological economics.¹

In other words, the economy has 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 debts and the interest. The financial system creates 'virtual' wealth. Banks give credit well beyond what they hold as deposits, and this drives or pulls economic growth, at least for a while.

Then there is what the economists describe as the 'real economy', the so-called productive economy. Hakan Samuelsson, chairman of the German truck-making firm MAN, made this distinction very clearly when he said: 'Creating value through financial leverage will be harder in future, so we can get back to our real job which is creating industrial value through technology, innovation, and efficient manufacturing' (quoted in *The Economist*, 11 April 2009). When the economists' real economy grows, it indeed allows some or all the debt to be repaid; when it does not grow enough, debts are defaulted. In 2008, the mountain of debt had grown far beyond what increases in GDP could pay back. The situation was financially not sustainable; GDP itself was not ecologically sustainable.

Further down, in the basement and foundations of the economic building, underneath the economists' real economy, there is the third level: the ecological economists' *real-real* economy: the flows of energy and materials. Their growth depends partly on economic factors (types of markets, prices) and partly on physical limits. At present, there are not only resource limits but also conspicuous sink limits. Climate change is caused mainly by the excessive burning of fossil fuels.

Returning to 'debt-fuelled growth' after 2009 would be financially dangerous. It is indeed impossible for the time being, as banks are loaded with 'toxic assets' and therefore reluctant to lend. The phrase itself is in fact misleading: growth is not 'fuelled' by debt and by money; it is prosaically fuelled by coal, oil and gas. The fossil fuels are not produced by the economy; they were produced geologically many thousands of years ago.

GREEN KEYNESIANISM OR SUSTAINABLE DE-GROWTH?

The economic crisis of 2008–09 has brought John Maynard Keynes back to the main stage. In Keynesian language, we can say that economies have unused productive capacity — there is a gap between effective demand and

1. My interpretation of Frederick Soddy's views (see Martinez Alier, 1987) is similar to that of Herman Daly (1980), which I read only later.

full-capacity utilization of labour and industrial equipment. Unemployment is increasing, and the appropriate remedy is to increase public expenditure, ‘deficit spending’ as it is called. Public spending is good because it will indirectly lead to people buying cars, paying off mortgages and even buying new houses, getting such industries out of the doldrums. Governments are under pressure not only to increase spending for public investments or consumption but to refinance private debts to banks that will not be paid (‘toxic assets’), partially converting such private debts into public debts.

Keynes himself was faced with the crisis of 1929 and the challenge of how to get out of it. The pre-Keynesian prescription of waiting for the market to reach equilibrium, which meant waiting for increasing unemployment to depress wages so much that employers would want to hire workers again, was a recipe for disaster. To make this point clear, Keynes famously said that he did not care what happened in the long run, once the economy had recovered from the crisis. In the 1950s economists such as Roy Harrod and Evsey Domar converted Keynesianism into a doctrine of long-term growth. Provided there was enough private or public expenditure in consumption and investment to keep effective demand close to potential supply at full capacity utilization, the economy would not fall into crisis. Meanwhile, the investment would have increased potential supply, so that new expenditure would be required in the next round in order for the economy not to fall into a crisis, in a virtuous path of continuous growth. Such economic models were metaphysical in the sense that they did not consider exhaustible resources or pollution.

Keynesianism was triumphant in the 1960s, the era of very cheap oil. Later, both short-run and long-run Keynesianisms were set aside and neo-liberal thought was resurrected. The neoliberals, like Hayek, thought that markets knew much more than the state; but one unanswered objection to neoliberalism raised by environmentalists was that the market did not value future, inter-generational scarcities.² In the crisis of 2008–09, neoliberalism is suffering from ill health. Some bankers are asking for the state to take over their banks. Keynes has come back, reincarnated in Stiglitz and Krugman. As ecological economists we must ask, is this a short-run Keynes to get out of the worst aspects of the crisis, or also a long-run Keynes to get into a path of continuous economic growth?

Those who propose a short-run Green Keynesianism or a Green New Deal as a temporary measure, are close to ecological economics. If public investment must grow, as indeed it must to contain the rise in unemployment, it is better to channel it to the welfare of citizens and to ‘green’ energy production, than into motorways and airports. However, Green Keynesianism should not become a doctrine of continuous economic growth. Until now, growth has come with the use of energy from coal, oil and natural gas. In

2. As Otto Neurath had already pointed out in Vienna in the 1920s in the socialist calculation debate against Von Mises and Hayek; cf. Martinez Alier (1987).

Green Keynesianism it seems desirable to increase public investment in energy conservation, photovoltaic installations, urban public transport, housing rehabilitation, organic agriculture. It does not seem desirable to persevere in the faith of economic growth. In rich countries a slight economic decline is already taking place which could easily be socially sustainable. We are not in the 1930s: in Europe we have economies with annual per capita incomes of over 25,000 euros. A drop of 10 per cent (with a corresponding decrease in energy and material flows) can be managed if institutions of redistribution are in place. We would then enter into a socio-ecological transition. There is already an agreement in Europe for carbon dioxide emissions to be cut by 20 per cent compared to 1990. In fact, in early 2009, emissions and GDP are decreasing faster than is required to reach this target.

The feminist movement made clear many decades ago that GDP does not value what is not in the market, such as unpaid domestic work and voluntary work. A society rich in 'relational goods and services' would have a lower GDP than an (impossible) society where personal relations would be exclusively mediated by the market. The sustainable de-growth movement insists on the non-chrematistic value of local, reciprocal services. Moreover, in research that updates the literature on the so-called Easterlin Paradox, economists (or rather, psychologists) now agree that above a certain threshold GDP growth does not lead necessarily to greater happiness. GDP should no longer have the dominant position in politics that it has held up to now, to the detriment of environmental and social considerations.

However, de-growth might lead to social problems, and these must be faced for the de-growth proposal to be socially accepted. If labour productivity (e.g. number of cars that a worker produces per year) grows by 2 per cent annually, but the economy is not doing the same, this will lead to increased unemployment. The answer must be twofold. Increases in productivity are not well measured. If there is replacement of human energy by machines, does the price of energy take into account the depletion of resources and negative externalities? We know that it does not. Furthermore, we should separate the right to receive remuneration from the fact of being employed. This separation already exists in many cases (children and young people, pensioners, persons receiving unemployment benefits), but it should be extended further. We have to redefine the meaning of 'job', taking into account unpaid domestic services and the voluntary sector, and we must introduce or expand the coverage of a universal Basic Income or Citizen Income.

Another objection is raised. Who will pay the mountain of debts, mortgages and other debt if the economy does not grow? The answer must be that no-one will pay. We cannot force the economy to grow at the rate of compound interest at which debts accumulate. The financial system must have rules different from those which apply today. In the United States and Europe what is new is not, therefore, Keynesianism, or even Green Keynesianism. What is new is a growing social movement for sustainable de-growth. The current crisis opens up opportunities for new institutions and social habits.

THE PRICE OF OIL

The teaching of economics in universities is still based on an image of the economy as a merry-go-round between consumers and producers. They encounter each other in markets for consumer goods or in markets for the services of production factors (like selling labour time for a wage). Prices are agreed, quantities are exchanged. This is chrematistics. Macroeconomic accounts (GDP) aggregate the quantities multiplied by the prices. However, the economy may be described in a different way, as a system of transformation of (exhaustible) energy and materials (including water) into useful products and services, and finally into waste. This is ecological economics (Boulding, 1966; Daly, 1968; Georgescu Roegen, 1966, 1971; Kneese and Ayres, 1969).

The critique of conventional economic accounting often emphasizes the forgotten current values of environmental services provided by ecosystems. The environmental services from coral reefs, mangroves, tropical rainforests etc. may be given a notional money value per hectare per year, and then the lost hectares are translated into virtual economic losses. This approach is useful for impressing the public with the importance of environmental losses but it is hopelessly inadequate for grasping the relations between economy and environment, because our economy depends on processes of photosynthesis from millions of years ago for our main energy sources. It depends on ancient biochemical cycles for mineral resources that we are squandering without replacement. In the case of oil, the extraction peak in the Hubbert curve has perhaps been reached. In 2007 we were taking almost 87 million barrels per day (mbd) — in terms of calories, the world average was equivalent to about 20,000 kcal per person/day (ten times the food energy intake), and in the USA it was equivalent to 100,000 kcal per person/day. In exosomatic energy terms, oil is then far more important than biomass. In early 2009, extraction had decreased to 84 mbd.

The European Union, Japan, the USA and some parts of China and India are large net importers of energy and materials. The USA, having reached the internal peak oil in the 1970s, imports more than half the oil it consumes. These imports of energy and materials into rich countries must by necessity be relatively cheap for their social metabolism to work properly. As Hornborg put it (1998), ‘market prices are the means by which world system centres extract energy (i.e. available energy) from the peripheries’, aided sometimes by military power. The attempt to make Iraq produce an extra 2 or 3 mbd failed after 2003, as Alan Greenspan noted sadly in his memoirs (2007). OPEC, after the drop in the price of oil in 1998, and helped by the efforts of Hugo Chavez from Venezuela and the economic boom in China and India, successfully managed the restriction of supply. The price of oil peaked in 2007–08.

During the building boom in the USA, houses were sold to people who were unable to pay the mortgages, or houses were built on the hope that

credit-worthy buyers would appear (also seen in Spain, in the large acreage of empty new houses). Real salaries in the USA did not increase much in recent years but credit to consumers grew. Income distribution became more unequal. Household savings were at a minimum when the crisis started. The bankers apparently thought that economic growth would continue and would increase the value of the houses that were mortgaged. They ‘packaged’ the mortgages and sold them to other banks which sold or tried to sell them to innocent investors. The housing boom ended in 2008. The private building industry has all but disappeared in some countries.

Part-nationalization of some banks in the EU and the USA avoided sudden widespread bank failure, at the cost of raising the public deficit. Deficit spending in a situation of lack of aggregate demand is a Keynesian prescription with which one might agree at present — as long as it goes to solving the most pressing social problems, and to environmental investments, and not to military spending (to secure oil?) or to the car and motorway industries. In any case, the financial free-for-all was not the only cause of the crisis, which was triggered by high oil prices due not only to the OPEC oligopoly but also to the approaching peak oil. Economic theory does not say that an exhaustible resource should be sold at the marginal cost of extraction. One could argue that oil at US\$ 140 a barrel is still cheap from the point of view of its fair inter-generational allocation and the externalities it produces. The stock market started to fall in January 2008 but the price of oil kept increasing until July 2008. As the crisis deepened, the price of oil went down but it will recover in real terms if and when the economy grows again. There is here an automatic ‘de-stabilizer’ for the economy. It is difficult to find new oil, as we go down the Hubbert curve. Moreover, a low price of oil implies a declining supply in a few years because of declining investment in the fields with higher marginal costs. On top of this, OPEC tries to reduce oil extraction during the crisis to keep the price up.

ECONOMIC DE-GROWTH AND CARBON DIOXIDE EMISSIONS

One of the effects of the economic crisis is a shift in the unsustainable trend of increasing carbon dioxide emissions. The Kyoto Protocol of 1997 was generous with the rich countries: it gave them property rights on the carbon sinks and the atmosphere in exchange for the promise of a reduction of just 5 per cent of their emissions relative to 1990. In the context of the economic downturn, this modest objective will be fulfilled more easily. One could even imagine by October 2008 that the carbon trade would collapse unless lower caps were adopted. Air travel, house and car sales all decreased in the second half of 2008 in many European countries and the USA. Motorists in the USA were buying 9 per cent less gasoline in early October 2008 than in early October 2007, so that the figures released in February 2009 showing a

6 per cent decline in output of the US economy in the last quarter of 2008 were not a surprise.

However, the apostles of growth are not willing to use the current crisis to shift the economy to a different technological and consumption pattern. On the contrary, they find reasons to think car sales will remain strong because, while the US has nearly one car for every person of driving age, China has less than three cars for every 100 people and India fewer still. 'Once people have a roof over their heads, meat on the table and a good job, the next thing they want is a set of wheels', intones *The Economist* (14 November 2008), announcing that in the next forty years the world's fleet of cars is expected to increase from around 700 million today to nearly 3 billion.

The economies of India and China (propelled by internal demand) might well continue to grow at rates of 4 or 5 per cent in 2009 and beyond. Provided the oil price remains low, the car industry will grow faster than the economy and will be an engine of economic growth together with the building industry. However, a world of 3 billion cars would require a vastly increased expenditure of energy. How will the real economy impact on the *real-real* economy? How will the cars be fuelled? Electricity? Hydrogen? What will the energy cost be?

There is a historic trend towards increasing energy costs of obtaining energy (a lower EROI — energy return on investment). Brazil's recent discovery of 30,000 million barrels of oil (one year's worth of world consumption) thousands of meters under the sea, might become a bottomless sink for energy and money. Coming down from the peak of the Hubbert curve will be politically and environmentally difficult. Conflicts arise in the Niger Delta and in the Amazon regions of Peru and Ecuador against companies such as Shell, Repsol, Oxy. Appeals to some other energy sources (agro-fuels, nuclear energy) will compound the difficulties. Wind and photovoltaic energy are fortunately increasing. They will help to compensate for the dwindling supplies of oil over the next few decades. Coal supplies are increasing (they grew sevenfold in the twentieth century) but coal is noxious locally, and also globally because of carbon dioxide emissions.

The Peak in Carbon Dioxide Emissions

As a result of the economic crisis, carbon dioxide emissions are now going down. Could this decline be sustained? Have emissions peaked? This could be a unique historical chance.

In May 2008 it was announced that carbon dioxide concentration in the atmosphere was at a record level of 387 ppm according to measurements at the Mauna Loa observatory in Hawaii. This meant an increase of 30 per cent above the level of 300 ppm that Svante Arrhenius used in his article of 1896, when he pointed out that burning coal would increase the concentration of carbon dioxide in the atmosphere and would increase temperatures. Between

1970 and 2000, the concentration had increased by 1.5 ppm per year; from 2001 to 2007 growth in concentration reached 2.1 ppm. In early 2008 the world was still travelling at full speed towards 450 ppm, to be reached in about thirty years. The increase in the prices of oil, gas and other commodities up to July 2008, and the economic crisis in the second half of 2008 and 2009, stopped economic growth and changed the trend in carbon dioxide emissions. From the point of view of climate change, the economic crisis is to be welcomed.

Carbon dioxide concentration in the atmosphere will still increase, although not so quickly. Emissions are still much higher than the absorption capacity of the oceans, the soils and new vegetation. The IPCC argues in its reports that emissions should go down by 60 per cent (and not by the paltry 2 or 3 per cent likely to occur in 2009, even if this signals a permanent change in the trend). The objective of 60 per cent reduction is far from today's reality, and also from the Kyoto and likely post-Kyoto commitments. Nevertheless, the IPCC recommendation is today closer to implementation than previously.

The Emissions Peak in Spain

Spain has been the worst offender to date among the European countries for not complying with the Kyoto targets, followed by Italy and Denmark. This makes the Spanish case interesting, even though her emissions per capita are 'only' double the world average. In 2007, Spanish emissions still increased over 2 per cent in comparison to 2006, reaching an increase of 52.6 per cent compared to 1990, the base year for the Kyoto protocol. Inside Europe, Spain was permitted an increase of 15 per cent by 2012, but had already reached 52.6 per cent. The government said in 2008 that it would buy permits from Eastern Europe and use the Kyoto flexibility mechanisms.

Now, however, the emissions peak in Spain has coincided with a possible world peak. The Spanish 2007 peak is likely to be definitive. This is, after all, an economy with a high level of income per capita that is now declining somewhat while unemployment increases, but where the car and electricity markets cannot easily grow as in China and India. Spanish carbon dioxide emissions went down in 2008 and are still going down in 2009. They are likely to keep dropping in 2010 because of the continuing economic crisis and because of changes in the energy mix. The expected decrease of 5 or 6 per cent in 2008 (there are still no official figures) can be explained by decreased electricity production in the last four months of the year (compared to 2007), a decrease in oil consumption, and a relative increase in wind energy and combined-cycle gas electricity (instead of coal). Industrial production declined nearly 20 per cent in December 2008 compared to one year earlier. Cement production has gone down to 30 million tons per year from a previous peak of 50 million tons, propelled by a building boom

that produced an excess of unsold houses and flats, and very large financial debts.

Lack of demand for their products led several industries (such as ceramics from Villareal in Valencia) to sell their carbon emission permits at the end of 2008. In April 2008, industries in the energy, cement and paper sectors had received 'grandfathered' permits³ under the European emission trading scheme (EU ETS). The crisis has produced, in Spain as elsewhere in Europe, an abundance of permits and a decline in the price of carbon dioxide allowances. A low price is a disincentive for the introduction of technical changes that would avoid carbon emissions. Since it was based on economic projections that did not include a financial crisis (economic de-growth did not enter the imaginations of the EU bureaucrats), the present number of permits is excessive: the EU and the Spanish government should rapidly decrease the allocation of permits.

It must be emphasized that the market for carbon dioxide allowances is an artificial market. The supply depends on the political will to restrict emissions, not down to the necessary level (e.g. 60 per cent reduction), but to what is seen as politically and economically bearable in a mindset that assumes continuous economic growth even in the richest countries. While the reduction of carbon dioxide emissions in Spain in 2008 was perhaps about 8 per cent, in 2009 (as foreseen in April) it could reach 10 per cent, because of the economic crisis and because this will be an excellent year for hydroelectric electricity thanks to abundant rainfall.

The Spanish government spoke too early when it announced that it would buy 'hot air' permits from Eastern Europe when the price was still high in 2008. 'Hot air' is a name for the overflow of permits from Eastern European countries whose economies decreased after 1990 (and whose energy efficiency improved), such as Russia, Poland, Romania and Ukraine. In the Kyoto Protocol of 1997 the European Union gave itself a generous quota (equal to 1990 emissions minus a reduction of about 8 per cent for 2012), therefore large amounts of 'hot air' will now appear also in Western and Central European countries such as Germany (which is already on the Kyoto path and whose economy seems to be decreasing by 5 per cent in 2009). The creation of cheap 'hot air' is counterproductive for further reductions of emissions.

TOWARDS COPENHAGEN 2009

World GDP will decrease by 1 or 2 per cent in 2009, while economic de-growth in the US, the European Union and Japan will be larger than this. Between August 2008 and March 2009, consumption of gasoline in the US

3. 'Grandfathering' means that the previous emissions levels of individual companies are used to set their future permit allowances.

decreased by as much as 10 per cent. Emissions from these countries plus Russia will decrease by not less than 5 per cent. These figures may seem modest, but they are extremely high in comparison with the objectives that were seen as politically acceptable up to now. Neither the IPCC nor Lord Stern's report had contemplated a scenario of slight economic de-growth in the world economy followed by a period of non-growth in the EU and the US. This is the scenario that could convert the carbon dioxide emissions peak of 2007 into a unique historical event.

The economies of South America, which in the neoliberal period had turned back to primary commodities and become exporters of raw materials in greater amounts than ever before, now will pay an economic price. Their growth is stopping because of the economic crisis, and declining terms of trade. Increased carbon dioxide emissions from China and India are expected to be more or less in line with economic growth in India (of about 5 per cent), and a little lower than economic growth in China. India's emissions per capita are well below the world average (India has over 15 per cent of world population and about 4 per cent of emissions). China's emissions per capita are much closer to the world average. As a country it is now the largest emitter, slightly ahead of the USA. Increased emissions in India, China, Indonesia and a few other countries whose economies are growing in 2009 will not compensate for the decrease in the USA, Europe and Japan. There is a chance that 2007 was not an isolated peak, but rather a historical peak, a unique event.

How will such developments be received in the climate change conference in Copenhagen in December 2009? Will the positive effects of the crisis be acknowledged? Will a slight economic de-growth and a socio-ecological transition towards a steady state in the rich economies be accepted as a plausible and beneficial scenario? Will raw material exporting countries change their tune and start exporting less but at higher prices, by introducing natural capital depletion taxes, and taxes that compensate for negative local externalities? Will the Copenhagen conference favour the idea that OPEC briefly considered in 2007, introducing the Daly-Correa tax on oil exports to help finance the world energy transition? Or, on the contrary, will carbon emissions recover and increase again with economic recovery?

Toxic Assets and Poisonous Liabilities

The assets that take the form of claims to debts that will remain unpaid, have been given the name of 'toxic assets'. In the balance sheet of banks, the value of such assets will have to be downsized or written off. On the liability side of the balance sheet, our accounting conventions do not include damages to the environment. An enormous 'carbon debt' is owed to future generations, and to the poor people of the world who have produced fewer greenhouse gases. Large environmental liabilities are also owed by private

firms. Chevron-Texaco is being asked to pay back US\$ 16 billion in a court case in Ecuador. Since 1888, the Rio Tinto company has left behind huge liabilities in Andalusia, where it got its name, in Bougainville, in Namibia, in West Papua (together with Freeport McMoran) — debts to poor or indigenous peoples. Shell has very large liabilities in the Niger Delta. These poisonous debts are in the history books but not in the accounting books.

We might take the current case of Vedanta bauxite mining in the Niyamgiri hill in Orissa, India. The decline in the price of aluminium if the economic crisis deepens might save the Niyamgiri hill. The price dropped more than 50 per cent in the last months of 2008, so that bauxite is also cheaper. We may still ask: how many tons of bauxite is a tribe or a species on the edge of extinction worth? And how can you express such values in terms that a Minister of Finance or a Supreme Court Judge can understand? Against the economic logic of euros and dollars, the peasant and tribal languages of valuation go unheeded. These include the language of territorial rights against external exploitation, the ILO convention 169 which guarantees prior consent for projects on indigenous land, or in India the protection of the *adivasi* by the Constitution and by court decisions. Appeal could also be made to ecological and aesthetic values. The Niyamgiri hill is sacred to the Dongria Kondh. We could ask them: how much for your God? How much for the services provided by your God?

From the South: The Environmentalism of the Poor

One may readily agree that conventional economic accounting is misleading. The experience that Pavan Sukhdev (with Haripriya Gundimeda 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 TEEB process (The Economics of Ecosystems and Biodiversity) sponsored by the Director General of Environment of the European Commission and by the German Minister of Environment. 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 (for the TEEB interim report, see EC, 2008).

Decisions may indeed be improved by giving monetary values to environmental resources and services which are undervalued or not valued at all in conventional economic accounting. But there are other considerations. One is our uncertain knowledge about the working of ecosystems, and about the future impacts of new technologies; another is the idea that non-monetary values should not be excluded from decision-making processes. The fetishism of fictitious commodities must be avoided.

In National Income Accounting one could introduce valuations of ecosystem and biodiversity losses either in satellite accounts (physical and monetary) or in adjusted GDP accounts ('Green Accounts'). The economic valuation of losses might be low compared to the economic gains of projects that destroy biodiversity. However, which groups of people suffer most from such losses? In their project 'Green Accounting for India', Sukhdev, Gundimeda and Kumar 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 (Gundimeda et al., 2006). 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. Thus, 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. This is the 'environmentalism of the poor'.

In *Down to Earth* (15 August 2008), Sunita Narain gave current examples from India where the economy will still grow in 2009, driven by internal consumption, cheap oil imports and public expenditure:

In Sikkim, bowing to local protests, the government has cancelled 11 hydro-electric projects. In Arunachal Pradesh, dam projects are being cleared at breakneck speed and resistance is growing. In Uttarakhand last month, 2 projects on the Ganga were put on hold and there is growing concern about the rest. In Himachal Pradesh, dams are so controversial that elections were won where candidates said they would not allow these to be built. Many other projects, from thermal power stations to 'greenfield' mining, are being resisted. The South Korean giant Posco's iron ore mine, steel plant and port are under fire. The prime minister has promised the South Korean premier the project will go ahead by August. But local people are not listening. They don't want to lose their land and livelihood and do not believe in promises of compensation. In Maharashtra, mango growers are up in arms against the proposed thermal power station in Ratnagiri. In every nook and corner of the country where land is acquired, or water sourced, for industry, people are fighting even to death. There are wounds. There is violence. There is also desperation. Like it or not, there are a million mutinies today After I visited Kalinganagar, where villagers died protesting against Tata's project, I wrote this was not about competition or Naxalism. These were poor villagers who knew they did not have the skills to survive in the modern world. They had seen their neighbours displaced, promised jobs and money that never came. They knew they were poor. But they also knew modern development would make them poorer. It was the same in prosperous Goa, where I found village after village fighting against the powerful mining lobby. (Narain, 2008)

These movements combine livelihood, social, economic and environmental issues, with emphasis on issues of extraction and pollution. They set their 'moral economy' in opposition to the logic of extraction of oil, minerals, wood or agro-fuels at the 'commodity frontiers', defending biodiversity and their own livelihood. In many instances they draw on a sense of local identity

(indigenous rights and values such as the sacredness of the land) but they also connect easily with the politics of the left. However, the traditional left in southern countries still tends to see environmentalism as a luxury of the rich.

From the South: A Refusal to Provide Cheap Commodities?

The question is not whether economic value can be determined only in existing markets, inasmuch as economists have developed methods for the monetary valuation of environmental goods and services or of negative externalities outside the market. Rather, the question is whether all evaluations in a given conflict (extraction of copper and gold in Peru or bauxite in Orissa, a hydel dam in the North-East of India, the destruction of a mangrove in Bangladesh, Honduras or Brazil to the benefit of shrimp exports, the determination of the suitable level of carbon dioxide emissions by the European Union), must be reduced to a single dimension. Such an exclusion of values should be rejected in favour of a plurality of incommensurable values.

Will the economic crisis bring an end to the boom in exports of energy and materials, thus diminishing pressures at the commodity frontiers? Grandiose plans for more and more exports from Latin America were pushed particularly by President Lula of Brazil. More roads, pipelines, harbours and *hidrovias*, more exports from Latin America of oil, gas, coal, copper, iron ore, soybeans, cellulose, biodiesel and ethanol, this was the credo of President Lula. In October 2008, and in total opposition to the views of Via Campesina and the MST in Brazil, Lula was still pushing for an opening of world markets to agricultural exports. He went to India to press for the liberalization of agricultural imports and exports in the Doha round. True, the export boom gave Lula money for social purposes and increased his popularity. Petrobras was no less dangerous to the environment and to indigenous peoples of Latin America than Repsol or Oxy. But Lula's obsession with primary exports made him do nothing about deforestation of Amazonia and drove environment minister Marina Silva to resign in 2008. What will the strategy of President Lula and the Latin American left be after the crash of 2008–09? It seems that the economy of Brazil will 'de-grow' by 1 per cent in 2009.

Lula's insistence on the virtues of ethanol for export is misguided. Agrofuels have a low EROI (especially taking into account the vegetation that already existed before agrofuels occupied the land); they increase the HANPP to the detriment of the biomass needs of other species; and they imply large unpaid-for 'virtual' water exports.

In fact, the crisis should be an incentive to focus on internal development, and not to sell the environment so cheaply. The prices of commodities have gone down, and moreover other values (social, environmental) have been sacrificed. In this respect, some proposals from Ecuador in 2007

(supported to a degree by president Rafael Correa, who is a traditional left-wing economist more than an ecological economist), are interesting. At the November 2007 OPEC summit meeting in Vienna, when Ecuador returned to the organization, OPEC approved in principle a resolution in support of the Yasuni-ITT proposal (to leave oil in the ground in a territory with uncontacted indigenous people and of great biodiversity value), and it also voiced interest in the so-called Daly-Correa ecotax. The tax, proposed by president Correa at that OPEC meeting, is based on the concept by Herman Daly in a speech to OPEC in 2001 (see Daly, 2007). OPEC countries have dismissed the existence of the enhanced greenhouse effect. This eco-tax would show their concern for climate change. An OPEC-imposed carbon tax at the oil wellhead instead of attempted regulation of emissions from the tailpipe (by carbon taxes or cap-and-trade) would be fairer to exporting countries and perhaps more effective in reducing global carbon dioxide emissions. This ecotax would make acceptance of climate change easier for oil exporting countries (and also, if imitated, for gas and coal exporting countries). The principle is to export less at a higher price. Money generated from the tax would go towards financing an energy transition away from fossil fuels, towards helping poor people around the world, and towards helping countries like Ecuador and Nigeria to keep oil (or gas or coal) in the ground when located under fragile and culturally sensitive ecosystems (Martinez Alier and Temper, 2007).

In late 2008 the economic crisis was bringing down the prices of commodities including oil, and the moment for such a tax seemed to have passed. Since July 2008, prices for wheat, maize and soybeans have declined by 60 per cent, as have prices for copper, nickel and aluminium. Part of the financial boom in Iceland was based on outside investments in the expectation of an increase in aluminium smelting. Environmentalists protested against smelters and electricity plants that ruined pristine environments, a cost not factored into the economic accounts. The economy of Iceland collapsed in October 2008; banks could not give back the money due to deposit holders and have been nationalized.

While in the 1920s, commodities prices dropped for a few years before 1929. This time, commodity prices continued to increase — pushed along by misguided agro-fuel subsidies, by the OPEC cartel, and by financial investment in the futures market — for some months after the fall in the stock market had started. By late 2008, however, commodity prices were declining because of declining demand. The Baltic Dry Index measures shipping rates: it fell precipitously after July 2008 partly because of decreasing Chinese imports of iron. On 16 October 2008, the Mexican multinational CEMEX announced that it would reduce its labour force by 10 per cent around the world because of declining demand for ‘aggregates’ and cement, while car factories in Europe and the USA reduced output from mid-2008. The price of oil went down in late 2008 not because of increased supply but because of decreased demand. Some oil projects (with low EROI and high

marginal costs), such as the Alberta oil sand production and the Orinoco heavy oil exploitation might be stopped, as might the small but economically, environmentally and socially costly Yasuni ITT project in Ecuador.

For commodities other than oil, exporting countries might react irrationally, maintaining or even increasing the supply in an attempt to maintain revenues. There might be a soybean price war between Argentina and Brazil. Rather than go down such a path, this would be the moment for Latin America, Africa and other net energy-and-materials exporters to think of endogenous development, moving towards an ecological economy. A refusal from the South to provide cheap commodities to the industrial economy, imposing natural-capital depletion taxes and export quotas, would also help the North (including some parts of China) in its much-needed long-term path towards an economy that uses less materials and energy. Many Southern countries will also suffer from a reduction in migrants' remittances.

BOTTOM-UP NEO-MALTHUSIANISM

The chance of a socio-ecological transition towards reduced use of energy and materials will be improved if the human population, after reaching a peak within a few decades, declines somewhat. There has been forceful — and justified — criticism against the emphasis on population growth as a cause of environmental deterioration. The neo-Malthusianism of the 1970s rested on the Malthusian principle that population growth would lead to poverty and famine. Success in reducing mortality rates in Third World countries was bringing a population explosion, or a 'population bomb' as the Stanford biologist Paul Ehrlich described it in 1968. Critiques of such neo-Malthusian doctrine are based on the possibilities provided by technical change, and also on distributive issues. An average Indian citizen produces fifteen times less carbon dioxide than a citizen of the USA because of much lower exosomatic use of energy. I agree with such critiques. However, one cannot deny the importance of population growth, particularly when the technologies and consumption patterns adopted in countries which become wealthier are similar to those of the rich countries. The importance of population growth in increasing social metabolism is obvious. Paul Ehrlich's equation $I = PAT$ took into account population, affluence and technology. He was right.

It is important to remember that neo-Malthusianism is not new. In the 1970s, the Left was anti-neo-Malthusian, but in the late nineteenth century a substantial part of the Left had been neo-Malthusian. There were many debates around 1900 on how many people the Earth could feed, focusing only on the needs of the human species. The neo-Malthusians of the late nineteenth and early twentieth centuries were political radicals and feminists. There was a great difference between the original Malthusianism of T.R. Malthus and the neo-Malthusianism of 1900. Scholarly historical work on neo-Malthusianism has clearly documented the radical, feminist movement

in favour of limiting births in Europe and the US around 1900. In France this movement took the name of *la grève des ventres*; in South India, the ‘self-respect’ movement launched by E.V. Ramasamy (known as Periyar, a Tamil thinker and political activist, 1879–1973) took a similar line; in Brazil the feminist neo-Malthusian anarchist Maria Lacerda de Moura (1932) wrote: ‘Love one another more and do not multiply so much’. In view of this intellectual and social history, it might be useful to offer the following definitions:

- *Malthusianism*: Population undergoes exponential growth unless checked by war and pestilence, or by chastity and late marriages. Food grows less than proportionately to the labour input, because of decreasing returns. Hence, subsistence crises occur.
- *Neo-Malthusianism circa 1900*: Human populations could regulate their own growth through contraception. Women’s freedom was required for this, and was desirable for its own sake. Poverty was explained by social inequality. ‘Conscious procreation’ was needed to prevent low wages and pressure on natural resources. This was a successful bottom-up movement in Europe and America against both churches, and states (which wanted more soldiers) (Masjuan, 2000; Ronsin, 1980).
- *Neo-Malthusianism after 1970*: A doctrine and practice sponsored by international organizations and some governments. Population growth is seen as a main cause of poverty and environmental degradation. Therefore states must introduce contraceptive methods, even without women’s prior consent.
- *Anti-Malthusianism*: The view that assumes that human population growth is no major threat to the natural environment, and that it is even conducive to economic growth as Esther Boserup and other economists have argued.

The socio-ecological transition towards lower levels of use of energy and materials will be helped if the world demographic transition is completed, and if the global population — after reaching a peak of 8 or 8.5 billion inhabitants — goes down to 5 billion, as some projections indicate (Lutz et al., 2001). The world population increased fourfold in the twentieth century from 1.5 billion to 6 billion. Environmental awareness might influence birth-rates (as in the ‘bottom-up’ European neo-Malthusianism of 1900, or in ‘top-down’ birth-rate policies in China since 1980).

CONCLUSION: SUSTAINABLE DE-GROWTH

A transition to sustainability requires new thinking on demography and on the socio-ecological transition. Marina Fischer-Kowalski and Helmut Haberl of the IFF in Vienna, influenced by the work of environmental

historian Rolf Peter Sieferle and by ecological anthropologists, ecological economists and industrial ecologists, recently edited a book entitled *Socio-Ecological Transitions* (Fischer-Kowalski and Haberl, 2007). From hunter-gatherer societies to agricultural societies to industrial societies, the authors of this book uncover quantifiable patterns of use of energy and materials, population densities, land use and working time. They also try to distinguish possible from impossible futures. For instance, is it plausible to think of a world of 8 billion people with an energy expenditure of 300 GJ and a use of materials of 16 tons per capita/year? Or are we, in contrast, on the verge of a socio-ecological transition that will reduce energy and material use in the rich economies even if this implies economic de-growth?

Such a transition would require a reform of social institutions (to deal with unemployment), and also a reform of financial institutions to stop the financial level of the economy from growing without reference to the underlying physical realities. The imaginative selling of derivatives (financial 'products'), and the existence of unregulated offshore banking, have taken a knock in public opinion. Sensible proposals are being made by moderate political forces to turn banking into a nationalized public service. Beyond this, the current financial crisis provides an opportunity for thinking about the *real-real* economy. Taxes at origin on the extraction of resources to finance an environmentally sustainable society should be introduced. Energy consumption and the use of materials by rich people must be reduced. Frivolous calls in OECD countries for population growth in order to increase employment that will help pay for old age pensions are not at all convincing from an ecological point of view, or even from a purely financial point of view as rates of unemployment increase. This is an opportunity for starting a socio-ecological transition.

In some countries, not only the absolute amount of materials but also material intensity (tons of materials / GDP) has been increasing, indicating more pressures on the environment. Convergence to a European average of 16 tons per person/year (only materials, water is not counted here) would multiply material flows in the world threefold, with the present population. Economies can be characterized by such material flows. It can be useful to analyse patterns of external trade: while South America exports six times as many tons as it imports, the European Union imports four times as many tons as it exports. We can understand characteristic patterns of social conflicts, for instance mining and oil extraction conflicts, or resistance against tree plantations for paper pulp, or agro-fuels, or the international conflict caused by unequal access to the carbon dioxide sinks (oceans) or the temporary 'reservoir' (atmosphere). Convergence towards 300 Gigajoules per capita/year in a European pattern would mean a five-fold increase of the present energy in the world economy. If gas and especially coal are used, this would also imply a four- or fivefold increase in the carbon dioxide produced. The HANPP is also increasing: population growth, soil sealing, meat eating, paper production and agro-fuels all increase

the HANPP. The higher the HANPP, the less biomass available for other species.

At first sight, Southern countries have something to lose and little to gain from de-growth in the North because of fewer opportunities for commodity and manufactured exports, and 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 about disproportionate pollution (at local and global levels, including claims for repayment of the 'carbon debt'); they protest against waste exports from North to South (e.g. the *Clemenceau* and so many other ships to the wreaking beaches of Alang in Gujarat, or electronic waste); they argue against biopiracy, and also against *Raubwirtschaft*, i.e. ecologically unequal exchange, and the destruction of nature and human livelihoods at the 'commodity frontiers'. They also protest against the socio-environmental liabilities of transnational companies.

The world conservation movement should criticize conventional economic accounting and push for the introduction of an economic language that better reflects our relations with nature, while not forgetting the legitimacy of other languages: territorial rights, environmental and social justice, livelihood, sacredness. This is necessary for the alliance between the conservation movement and the environmentalism of the poor proposed by Adams and Jeanrenaud (2008). This alliance is not going to be easy to forge: judging by the visibility of sponsorship at the World Conservation Congress in Barcelona in October 2008, the world conservation movement has sold its soul to companies like Shell and Rio Tinto. John Muir would have been horrified.

The 'environmentalism of the poor' combines livelihood, social, economic and environmental issues, with emphasis on issues of extraction and pollution. In many instances these movements draw on a sense of local identity (indigenous rights and values such as the sacredness of the land). Such movements explicitly oppose the annexation of land, forests, mineral resources and water by governments or business corporations.

There could be a confluence among conservationists concerned with the loss of biodiversity, the many people concerned with climate change who push for solar energy, the socialists and trade unionists who want more economic justice in the world, urban squatters who preach 'autonomy', agro-ecologists, neo-rurals and the large peasant movements (as represented by *Via Campesina*), the pessimists (or realists) on the risks and uncertainties of technical change (post-normal science), and the 'environmentalism of the poor' that demands the preservation of the environment for livelihood. The international environmental justice movements have as their objective an economy that sustainably fulfils the food, health, education and housing needs for everybody, providing as much *joie de vivre* as possible. They know that in decision-making processes, economics becomes a tool of power, both in applying cost-benefit analysis to individual projects, and also at the level

of the macro-economy where increases in GDP trump other dimensions. The question is, who has the power to simplify complexity and impose a particular language of valuation? The environmental justice movements know that conventional economic accounting is false, that it ignores the physical and biological aspects of the economy, the value of unpaid domestic and voluntary work, and that it does not measure the welfare and happiness of the population. What is needed is an Aristotelian *buen vivir* (as the World Social Forum proclaims) guided by oikonomia rather than chrematistics.

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