Greening the Human Development Index

Hermele, Kenneth

Published in:
International Trade and Environmental Justice: Toward a Global Political Ecology

2009

In: International Trade and Environmental Justice ISBN: 978-1-60876-426-6
Editors: A. Hornborg, A.K. Jorgensen, pp.

Chapter 11

GREENING THE HUMAN DEVELOPMENT INDEX

Kenneth Hermele
Human Ecology Division, Lund University, Sweden

"We need a measure of the same level of vulgarity as GNP – just one number – but a measure that is not blind to social aspects of human lives as GNP is."
Mahbub ul Haq quoted in Sen (1999)

"There is a limit to what one can do with numbers – just as there is a limit to what one can do without them. Finding the right balance is not easy."
Herman Daly (1996)

DO WE NEED A SINGLE MEASURE OF SUSTAINABLE DEVELOPMENT?

Although a controversial and much criticized concept, GNP still commands a position of dominance among traditional economists as well as politicians and media when it comes to being able to measure the performance of societies, in the North as well as in the South. This comes through even among those who criticize the GNP severely and propose alternative measures: they more frequently than not incorporate the GNP (or parts of it) into the alternatives they construct. This goes also for the few attempts that have been made to include a broader vision of

development – particularly the UNDP Human Development Index – as well as for the measure of ecological sustainability, somewhat erroneously called the Index of Sustainable Economic Welfare, ISEW (Daly & Cobb 1990).[1]

One problem here is that any measure that aspires to capture sustainability will have to deal with the environmental impact of trade. By including the GNP in the measure of sustainability a contradiction is established already at the outset. The more exports the better, says the GNP, while trade activities – exports as well as imports – are strongly correlated with increased ecological stress. Thus, a measure of sustainable development would be well advised to shy away from including the GNP.

Nevertheless, several measures of sustainable development do take the GNP into account – although they normally take as their point of departure a critique of the very concept they later incorporate into their preferred measure. This testifies to the standing of the GNP as such.

But this procedure of incorporating the GNP also creates a problem in terms of utility of the alternative measure. Any measure that is based on the GNP will be positively correlated with it, a fact which of course Daly and Cobb (1990, chapter 3) recognize. Still, they opt for a concept, just as did the UNDP, which has precisely this limitation: if the dominating and the alternative measures correlate in a significant and systematic way, why should we substitute the latter for the former?

TWO BASIC CONCEPTS – SUBSTITUTABILITY VS. COMPLEMENTARITY

Integrating the GNP in a new measure means that we choose a composite index, one which adds together different concerns and considerations. This is an advantage if one believes that "the weakness of one indicator can be compensated for by the strengths of another" (Alston 2000:251). Then the weakness of the GNP may be corrected by adding other components which make up for the drawbacks encountered, such as social and environmental indicators. However, it seems at least as likely that a composite index will reinforce the weaknesses of the ingoing components rather than improve the quality of the overall measure.

[1] The ISEW is not an index properly speaking, but a measure in money-terms of economic activities, reduced by social and ecological costs, taking into consideration the distribution of income in an attempt to capture the welfare dimension. It is expressed in money terms.

Adding two or more dubious measures will not lead us to an improved single, composite indicator.

This dividing line is recognized in the discussion on sustainability. Customarily, there are two ways to define the concept of sustainable development, one weak and one strong. The dividing line between weak and strong sustainability is whether we assume substitutability or complementarity as the leading principle. If substitutability reigns, then different kinds of resources are possible to substitute for one another: economical and social for ecological, ecological for cultural, economical for social, etc.

On the other hand, if we consider substitutability to be the exception rather than the rule, we may choose a definition of sustainable development based on complementarity: economic, social and ecological resources complement – but do not substitute for – one another.

Human ecologists prefer to call the former definition "weak sustainability" since it is easer to achieve than sustainable development in the latter meaning, which consequently is called "strong sustainability". Strong sustainability demands that each component – ecological, economic, social, etc. – at least is kept intact separately; a weakening of one component cannot be compensated for by a strengthening of another. Weak sustainability, on the other hand, would allow us to reach the conclusion that sustainable development is at hand in spite of the fact that its ecological components are growing weaker, a conclusion which seems counter-intuitive.

A third definition of sustainability – I call it a "narrow sustainability" – also exists, which only takes into consideration ecological aspects. With this understanding, a measure of sustainable development ought to capture only the ecological dimensions of a given society. Hence, an attempt to measure sustainable development in this third (ecological) guise only includes physical indicators. As we will see below, this is an understanding that frequently informs ecologically based formulations of sustainable development.

Basing one's sustainability concept on substitutability can be quite "rewarding". The Swedish Ministry of Finance commissioned a study of the Swedish development based on such a weak understanding of sustainable development (SOU 2000). The exercise was premised on two assumptions:

1. Firstly, it was accepted that something relevant about Sweden's sustainable development could be stated in spite of the fact that the measure had to exclude a number of environmental factors which were difficult to calculate in money terms. Hence greenhouse gases,

biodiversity, and the reduction of the ozone layer were left out of the picture.

2. Secondly, social and cultural aspects were left out which means that the traditional three-part composition – economical, social, and ecological – of sustainable development was forsaken.

Hence, the measure used by the Ministry of Finance is basically GNP, reduced by re-investments in order to reach a better concept of economic growth, the Net National Product, NNP.[2] Finally, the NNP is reduced by the calculated costs of a few environmental consequences of this economic growth (such as the imputed cost to forestry of acid rain). The result, the Ministry of Finance concludes, is that since this composite measure – the environmentally adjusted NNP, i.e. a measure expressed in money terms – has grown from 1993 to 1997, the two years for which it has been calculated, "the calculations indicated that Sweden's development may be assessed to be sustainable" (SOU 2000:146).

Anyone who adheres to the strong understanding of sustainable development will find this conclusion meaningless. From an ecological perspective it should be obvious that the whole exercise is premised on the assumption that weak sustainability is the relevant concept. Actually, this concept embraces a "very weak" definition of sustainability, since major ecological factors have been left out of the calculations as well as other components which normally are included in the weak definitions such as social and cultural issues.

THE HDI - A SUBSTITUTABILITY MEASURE THAT MAKES SOME SENSE

All measures of development based on substitutability, however, are not equally misleading. The UNDP's Human Development Index, although it was recognized that it was a vulgar measure – see the quote above from Mahbub ul Haq of the UNDP, who took the initiative to construct the Human Development Index – and although its chief constructor, economist Amartya Sen (1999, p 23), considers it to be "a crude measure", has a number of interesting traits:

[2] When re-investments are reduced from the GNP in order to reach the NNP, it means that only new investment activities are included, which makes the NNP a better indicator of *economic growth* than the GNP (which includes replacement of worn-out and depleted infrastructure, etc. in its growth concept).

1. First, it has established absolute limits. Human development, as defined by the UNDP, will not grow as society surpasses an average life span of 85 years, nor after achieving an average annual income of more than 40 000 US$ (measured in PPP-terms)[3]. Likewise, the HDI cannot be higher than 1.
2. Secondly, the income component of the HDI is measured by a logarithm, which means that an identical increase of income will add more to human development at the lower end of the spectrum than in the higher. This is equivalent to saying that a given increase in income is more important to poor people than an identical increase for rich people.
3. Thirdly, the HDI is expressed in a common metric but not in money terms. The index method enables comparisons without exposing the HDI to the accusation of being reductionist (e.g., for expressing everything in dollars). Each of the three dimensions is expressed in a language relevant to that dimension: life years for a long and healthy life, years of schooling and literacy rates for knowledge, money (adjusted to take purchasing power into account) for a decent standard of living.

Table 1. The Construction of the Human Development Index

Dimensions of Human Development	A long and healthy life Index 0-1, weight 1/3	Knowledge Index 0-1, weight 1/3	A decent standard of living Index 0-1, weight 1/3
Indicator	Life expectancy at birth	Adult literacy rate (weight 2/3) Gross enrolment ratio (weight 1/3)	GNP per capita (PPP)
Limits	25-85 years	Adult literacy: 0-100 % Gross enrolment ratio 0-100 %	US$ 100-40 000 PPP

Source: Human Development Report 2005.

[3] PPP stands for purchasing power parity. By taking the purchasing power into account, poor countries´ GNP will become higher, and rich countries´ will decline. The PPP reflects the domestic living conditions of people better than the GNP, but it does not account for international

Nevertheless, the HDI has three limitations:

1. It is based on substitutability among its three indices, which leads us to conclude that it is a weak measure.
2. Since it includes GNP with the weight of 1/3 in the HDI, it will show a strong positive correlation with the GNP. In other words, rich countries typically end up at the upper end of the scale of the HDI, whereas poor countries end up at the lower. In this sense, the HDI does not contribute very much to our understanding of development.[4]
3. It lacks an ecological dimension, which means that it cannot be used to study countries' sustainability, not even in the weak meaning of sustainability.

GREENING THE HDI

This brings us to the central question of this paper: is it a good idea to construct a green version of the HDI, a *Sustainable* Human Development Index, SHDI? A number of more technical points must be tackled, although briefly, before an answer to this question may be given.

Firstly, which concept of sustainable development would we like to use for the SHDI? Following the principles of the HDI – the existence of absolute limits, and that money reductionism is out of the question – means that we need an absolute measure of the ecological dimension of sustainable development. Ecological footprint analysis measures how large an ecologically productive area is appropriated by the average lifestyle of a given country, expressed in hectares per capita. The ecological footprint is calculated by adding together the area required for producing food and forestry products as well as the area needed to absorb the volume of carbon dioxide emitted when petroleum, coal, and oil is burnt. This area is then divided by the number of citizens of each respective country (Wackernagel & Rees 1996; WWF 2004).

purchasing power. Hence it disregards all aspects of international power and influence, which are better captured by sticking to the regular GNP.

[4] This is the general picture, but interesting exceptions exist: Cuba improves its ranking by more than 40 positions, and Sweden by 17, when GNP rank is compared with HDI rank for each country. This also holds true for ex-communist countries, to varying degrees. Similarly, oil-rich countries lose a similar number of positions since they come out worse when measured by HDI as compared to GNP.

A country's ecological footprint may now be analysed in two alternative ways:

1. We compare the footprint with the country's national ecological capacity, i.e. with the biologically productive area that exists within the borders of each country. In this way, we consider sustainability to be a local issue: a country is sustainable if its footprint fits within its national borders. In other words, sustainability is measured against local ecological limits. I call this *national* sustainability.
2. We compare the ecological footprint of a country with the globally available area if every human being was given the same ecological rights, or environmental space. Here I use the concept of *global* sustainability, i.e. disregarding the relationship between the population and the area of any specific country. With this global concept as a point of departure, we can calculate the limit for a sustainable lifestyle at 1.8 ha/capita (calculated as the available global ecological area divided by the world population).

Table 2 shows the ecological footprints for the world and major regions in a local as well as a global perspective.

Table 2. Ecological footprints 2001, hectares per capita

	Ecological footprint, ha/capita	Ecological capacity, ha/capita	Local perspective: Surplus/Deficit compared to local capacity, ha/capita	Global perspective: Surplus/Deficit compared to global equity norm, ha/capita
World	2.2	1.8	- 0.4	- 0.4
North*)	6.4	3.3	- 3.1	- 4.6
Africa	1.2	1.3	+ 0.1	+ 0.6
Asia**)	1.3	0.7	- 0.6	+ 0.6
Latin America	3.1	5.5	+ 2.4	- 1.3
Central and Eastern Europe	3.8	4.2	+0.4	- 2.0

Source: *WWF* 2004. Foreign trade is included in the figures: areas appropriated for the production of exported goods are attributed to the importing country.

* Excluding Japan. **)Including Japan but excluding Middle East and Central Asia.

Conclusions that follow from Table 2 are as follows:

1. Ecological footprint analysis gives us a rough estimate as to how much the lifestyles of the world, regions, and individual countries have to be altered in order to achieve sustainability. For the globe as whole, today's ecological footprint must be reduced by one-fifth. The world as a whole is today unsustainable.
2. Local sustainability. Africa and Latin America are well within the respective ecological limits of each region. More surprising, perhaps, is the fact that a number of rich – and sparsely populated – countries also live within their own, local ecological limits, e.g. Canada, Sweden, Finland, and Norway.
3. The remainder of today's rich countries, however, as well as "transitional" economies such as Russia and the other countries of central and eastern Europe, have lifestyles which overshoot their respective areas. All these countries are unsustainable from the point of view of local sustainability.
4. Global sustainability. Africa and Asia (despite the fact that Japan is included) remain within the global sustainable limit of 1.8 ha per capita. Latin America however, does not fit within the global equity norm.

I will limit myself to only considering sustainability within the framework of global equity, which means that my definition of a sustainable lifestyle includes the assumption that all human beings have equal rights as far as ecological resources are concerned. The fact that a growing number of ecological problems – most notably climate change – are affected by lifestyles globally, further underlines the usefulness of this global definition of sustainability.

One more step is needed before we propose a new index of Sustainable Human Development. We must decide how to measure a country's ecological sustainability. One way to tackle this question is take a bipolar position: a country is either sustainable, or it is not. This means – using the customary HDI methodology – that a country's ecological index will be either 0 or 1, and that no country would score in between the extreme values. Countries with footprints smaller than the global sustainable area will score 1, while countries with more demanding lifestyles will score 0. The logic here is that there is no such thing as "partly sustainable", or "partly unsustainable". Sustainability requires that your ecological footprint is below the average area available to all human beings.

However, this way of defining ecological sustainability – in absolute terms, i.e. a country is either sustainable or not – misses the opportunity to make

distinctions among countries with very different ecological footprints. For instance, some countries appear to be more unsustainable than others, i.e. their ecological footprint is much larger than the average size even for countries of similar levels of income. And some countries are quite far below the sustainability limit, thus leaving ecological space which can be appropriated by other countries. Such differences may be worth taking into account. Another argument for choosing a sustainability indicator which tells us something about the relative standing of a country is that we may want to be able to measure where a country is heading, i.e. whether its ecological footprint is growing or shrinking. Thus a relative sustainability measure should give us an indication as to how much above (or below) the sustainability limit a country is positioned.

A problem with an absolute definition of sustainability is that it makes it impossible to measure changes within an overall situation that is either sustainable or unsustainable. Changes in ecological footprints of individual countries will not lead to changes in the SHDI. Since we have defined sustainable development using the absolute – and from an ecological point of view reasonable – condition that a country's footprint must be within the globally available space, we cannot distinguish countries that are improving from those that are deteriorating. Similarly, we cannot praise countries which are relatively sustainable, nor criticize those which are particularly unsustainable.

It thus seems reasonable to elaborate a version of SHDI which establishes the conditions for relative performance (i.e. improvement or deterioration) when it comes to the ecological footprints of individual countries. At least this makes political (albeit perhaps not much ecological) sense. I have therefore chosen to use the relative global sustainability measure. First, however, we have to decide how important we want to make the ecological component in the calculation of SHDI: by adding a fourth component to the three already constituting the HDI, we would grant it a quarter of the weight of SHDI. However, I have opted for maintaining the three-component model of the HDI by letting ecological footprints replace today's longevity measure and thus to give the same relative weight as the three components have today.[5]

The definition of Sustainable Human Development is thus:

$$\frac{\text{Education (0-1)} + \text{PPP (0-1)} + \text{Sustainability (0-1)}}{3}$$

[5] I have chosen to eliminate the longevity index from the proposed SHDI and to replace it by the sustainability index, based on the assumption that the educational index captures the social aspects of human development reasonably well. Or put in another way: I assume a high degree of positive co-variation between longevity and schooling.

CALCULATING THE SHDI

Table 3 is based on this reasoning. The ecological component of SHDI has two limit values. The value 0 is defined as being equal to the largest country footprint (i.e. to the footprint of the USA which in 2001 was 9.5 ha/cap), while the value 1 corresponds to the sustainability level for global equity, hence at 1.8 ha/cap. All countries in between these limits are given an index value which increases by 0.1 for every 0.83 ha/cap that their respective ecological footprint decreases.[6] Another relative component is also introduced: all countries with smaller ecological footprints than the globally sustainable area receive a "reward" in index terms of 0.1 points for every 0.83 ha/cap that their footprint remains below this globally accepted level of 1.8 ha/cap.

In other words, this way of calculating the SHDI rewards improvements and also countries with footprints well within the globally available area. The only drawback is that this also means that we consider countries to be *relatively* sustainable and unsustainable, a concept which may be difficult to square with a human ecology understanding of the concept of sustainability. The same applies, perhaps, to the notion of "more than sustainable", which here will be applied to all countries with footprints below 1.8 ha/cap.

Table 3. Sustainable Human Developoment Index 2001. Relative global sustainability

	HDI 2001	Rank HDI*)	Ecological footprint, ha/cap	SHDI – relative global sustainability	Rank SHDI**)
Brazil	0.777	65	2.2	0.873	1
Japan	0.932	9	4.3	0.853	2
China	0.721	104	1.5	0.837	3
Russia	0.779	63	4.4	0.780	4
India	0.590	127	0.8	0.777	5
Sweden	0.941	3	7.0	0.737	6
Nigeria	0.463	152	1.2	0.683	7
USA	0.937	7	9.5	0.647	8

* No. of countries ranked 175; ** No. of countries ranked 8.

[6] The calculation here is simple. The difference between sustainability and worst performance is 8.3 ha/cap (9.5 – 1.2 = 8.3). I then split this area into equal tenths, making each tenth (or 0.83 ha/cap) of improvement or deterioration worth one tenth in SHDI.

Sources: Calculations based on UNDP and WWF 2004.

Table 3 shows a dramatic shift in the ranking order compared to the HDI. A country like Japan, which is relatively less unsustainable than either Sweden or USA, keeps its high-end position. On the other hand, Nigeria, although it is credited for being "over-sustainable", i.e. for having an ecological footprint below 1.8 ha/cap, still cannot make up for its dismal performance in the other areas that constitute the SHDI, and hence remains at the lower end of the ranking.

CONCLUSION

Should we prefer the ecologically adapted SHDI to the ordinary HDI if we want to know whether a country is sustainable or not? My answer is affirmative, the SHDI is to be preferred to the HDI as the latter in no way cares about ecological limits. In a competition of weak measures, based on substitutability, we should prefer one that at least includes some ecological aspects to the ones that are totally blind to ecological considerations. And it is illustrative that the ranking list is completely overturned when we pass from one weak measure to another weak measure of sustainable human development. The last are now among the foremost, and vice versa. Moreover, it is gratifying to have a simplified, reductionist concept to communicate to politicians and the media. After all, as ul Haq and Sen recognized, crudeness and vulgarity can be made good use of.

Nevertheless, the SHDI shares with all other substitutability concepts the drawback of only measuring weak sustainability, the least interesting or relevant understanding of sustainable development. Countries may advance their SHDI – just as their HDI, or for that matter their GNP – by improving in one area while at the same time deteriorating in another. As long as the overall measure grows, all is well. Hence, SHDI may show improvement although the ecological footprint of a country grows, bad performance is balanced out by good performance in another, unrelated sphere.

It may thus be wiser, at least for a cautious person, to refrain completely from constructing sustainability measures that are based even partially on money, as suggested by Daly (1996:98):

> "That passions for growth have become attached to such arbitrary measures of welfare [i.e. the GNP] sometimes makes me think that we would be better off without any such measures at all. The mere existence of any numerical index of welfare is a standing invitation to the fallacy of misplaced concreteness – to

serving the inevitably distorted reflection of reality represented in the index instead of directly serving the reality itself."

Daly here expresses profound doubts about the concept that he himself has proposed, the ISEW. This shows how difficult it is to construct composite measures which are minimally and scientifically acceptable. But it also shows how tempting it is to attempt to do so. However, this contradictory note is not one that I would like to end with, when it comes to considering measures of sustainable development. Two more issues need to be addressed.

What would a Narrow, Ecological Sustainability Measure Look Like?

The Swedish parliament has established a range of 16 environmental goals, all defined in physical terms. No attempt is made to summarize this aspect of sustainability, which illustrates the complexity of using a narrow definition of sustainability (see Table 4).

Table 4. Sweden's environmental quality objectives

Objective	Indicators	Will the objective be achieved?
1. Reduced climate impact	Greenhouse gas emissions	Probably not
2. Clean air	Sulphur dioxide, nitrogen dioxide, volatile organic compounds	Probably not
3. Natural acidification	Acidification of lakes, streams and forest soils, sulphur dioxide emissions, nitrogen oxide emissions	Probably not
4. A non-toxic environment	Data on health and environmental properties of chemical substances, environmental and health information on products, phase-out of substances of very high concern, continuous reduction of health and environmental risks of chemicals, guideline values for environmental quality, contaminated sites	Probably not
5. A protective	Emissions of ozone-depleting	Perhaps, but only

ozone layer	substances	with stronger measures than at present
6. A safe radiation environment	Radioactive substances, skin cancer, electromagnetic fields	Perhaps, but only with stronger measures than at present
7. Zero eutrophication	Programmes of measures to achieve good ecological status, phosphorus emissions, nitrogen emissions, ammonium emissions, nitrogen oxide emissions	Probably not
8. Flourishing lakes and streams	Protection of natural and cultural environments, restorations of rivers and streams, water protection areas, releases of animals and plants, action programmes for threatened species, programme of measures to achieve good surface water status	Perhaps, but only with stronger measures than at present
9. Good-quality ground water	Protection of water-bearing geological formations, groundwater levels, good-quality drinking water, programmes of measures to achieve groundwater status	Perhaps, but only with stronger measures than at present
10. A balanced marine environment, flourishing coastal areas and archipelagos	Marine environments of high conservation value, cultural heritage and agricultural landscapes of coasts and archipelagos, action programmes for threatened species, bycatches, catches-recruitment, noise and other disturbances, discharges of oil and chemicals, programmes of measures to achieve good surface water status	Perhaps, but only with stronger measures than at present
11. Thriving wetlands	Strategy for protection and management, wetland protection plan, forest roads, wetlands on agricultural land, action programmes for threatened species	Perhaps, but only with stronger measures than at present
12. Sustainable forests	Long-term protection of forest land, enhanced biological diversity, protection of cultural heritage, action programmes for threatened species	Probably not

Table 4. Continued

Objective	Indicators	Will the objective be achieved?
13. A varied agricultural landscape	Meadow and pasture land, small-scale habitats, culturally significant landscape features, plant genetic resources and indigenous breeds, action programme for threatened species, farm buildings of cultural heritage value	Perhaps, but only with stronger measures than at present
14. A magnificent mountain landscape	Damage to soil and vegetation, noise, natural and cultural assets, action programme for threatened species	Perhaps, but only with stronger measures than at present
15. A good built environment	Programmes and strategies for planning, built environments of cultural heritage value, noise, extraction of natural gravel, waste, landfill sites, energy use in buildings, a good indoor environment	Perhaps, but only with stronger measures than at present
16. A rich diversity of plant and animal life	Biological diversity, status of threatened species	Probably not

Source: Sweden's environmental objectives 2006.

In reporting on the progress – or rather regress – of the various indicators, each of them is evaluated in two ways: firstly, whether the environmental objective will be reached within the time frame established; secondly, whether the trend goes in the right direction or not (irrespective of whether the goal will be achieved or not). As can be seen from Table 4, most of these 16 aspects of sustainability are in fact deteriorating, and very few are likely to improve sufficiently to reach the established goal in time, irrespective of what policy changes are being instituted in Sweden.

Measured in this way, Sweden is not even moving in the direction of sustainability. However, this way of presenting the material – with no attempt made at summarizing the trends or at constructing a composite index – misses the opportunity of using available information in the best way. A summary of the 16 indicators, showing how many are improving, would be quite useful when it comes to communicating to media and politicians the general trend of

development. Of course, such a summary indicator could – and would – be criticized for presenting a weak sustainability concept, building on the assumption of substitutability among different environmental and ecological indicators. Nevertheless, such a summary indicator would be useful and serve the overall purpose of presenting the image of development – sustainable or not – in a way that would be easy to understand.

A final word on the use of indices. As Philip Alston (2000) shows when arguing for a Human Rights Accountability Index (HRAI), processes and institutions are at least as important to evaluate as actual performance when it comes to the human rights obligations of states. Hence, he proposes an HRAI which covers three dimensions to indicate whether a nation state is accepting accountability for its human rights obligations or not: acceptance of the human rights foundations (ratifications of treaties and conventions), its processes (reporting and receiving monitoring entities), and responding to recommendations and critique presented by human rights bodies.

For our purposes, sustainable development needs to be measured also by the degree to which environmental bodies, planning mechanisms, legal measures, tax systems, etc. are being reformed and contribute to sustainable development. But introducing ever more considerations into our sustainability concept brings a danger of overburdening the indicators and indices that we want to keep simple, rather than become so sophisticated that they hide more than they disclose. To include all aspects of social, ecological, and economic aspects into one single measure would confuse rather than aid a concerted effort in the direction of sustainable development, preferably in the "strong" sense.

REFERENCES

Alston, P. (2000) Towards a Human Rights Accountability Index. *Journal of Human Development* 1(2):249-271.

Daly, H.E. (1996) *Beyond Growth. The Economics of Sustainable Dev*elopment. Beacon Press.

Daly, H.E. & J.B. Cobb (1990) *For the Common Good*. Green Print.

Sen, A. (1999) Assessing Human Development. *Human Development Report* 1999:23.

SOU (2000) *Långtidsutredningen 1999/2000*. SOU 2000:7. Ministry of Finance. [in Swedish]

Sweden´s environmental objectives 2006 – Buying into a better future. A progress report from the Swedish environmental objectives council, http://www.miljomal.nu/english/english.php

UNDP. *Human Development Report* (various issues).

Wackernagel, M. & W. Rees (1996) *Our Ecological Footprint*. New Society Publishers.

WWF (2004) *Living Planet Report 2004.*