

## **Background**

On the 1<sup>st</sup> and 2<sup>nd</sup> February 2010, HDRO held an informal brainstorming meeting on “Sustainability, environment and human development”. The meeting took place at the London School of Economics and it counted with 14 participants, of whom 3 were HDRO staff members (Francisco Rodriguez, Ricardo Fuentes and Isabel Pereira). The participants came from different types of institutions (academic, think tanks, and international organizations) and were selected based on their expertise and professional involvement with the challenges of analyzing sustainable development. A complete list of participants, with contacts and expertise details, is attached. Also attached is the agenda of the meeting.

## **Summary**

The issues under debate were related to three main areas: **conceptual framework**, how to address sustainability in the human development approach; **measurement**, what indicators and/or composite indices should be chosen or designed to address the conceptual relevant aspects; and finally, the current **policy** architecture at national and international levels, and what can further be expected or desired to ensure sustainable human development outcomes.

### **1. Conceptual discussion**

- When looking at sustainability of Human development (HD), we need to define concepts as much accurately as possible. First, **sustainability of HD** is different from **sustained HD**. Both add a time dimension to HD, but while *sustained* HD considers *past* progress in the HD indicators, *sustainable* HD has a forward looking perspective and tries to anticipate whether current behaviour is compatible with *future* HD progress.
- When talking about the sustainability of HD we need to consider the future progress of **all HD dimensions** (e.g., education, health, income, social participation, quality of institutions, security, etc) and not only environment. While we are interested in all dimensions, the nature and the significance of the threats that we are facing are valid reasons to focus **primarily on environment**.

One way of analyzing sustainability (future progress) of HD is by focusing on the evolution of different types of capital (natural, human and social, reproducible), but natural capital has particular features that make the case for special attention. The reason is that substitutability with other types of capital is weaker and therefore natural capital/environment imposes constraints on future progress of HD (even if we are not totally sure of what are the exact links between environment and other HD dimensions, such as peace/security). We are currently creating debts that we may not be able to repay in the future.

For some countries, other types of capital (HD dimensions) are relevant, but for the world as a whole natural capital (environment) is the core threat and threat to future HD.

We need to explain why this is the case, and then turn to a more narrow and focused discussion on environment.

- When addressing future HD progress, there are **different principles** for thinking about inter-generational aspects, including: max sum of discounted capabilities, minimax (Rawlsian) approach, and responsibility (stewardship) approach. However:
  - **Maximizing future (discounted) capabilities** may end up ignoring that we live on a constrained planet – it ignores the possibility of strong sustainability. Also, it is not easy to see how we can discount capabilities.
  - There is no particular reason to justify the **minimax** approach and, again, that would imply comparing HD over different moments in time and to attribute a value to the different HD dimensions over time. It is true that in reality we face trade-offs (present vs future HD), but we don't know exactly how to solve them. The ethical case for discounting future HD is hard to defend, and we would have to go with a pure discount rate of zero.
- Therefore, the best is to advocate for the **stewardship/responsibility** approach, where we do not maximize welfare/HD, but we ensure at least as much as we have today for the next generation(s).
- The potential study of future HD will necessarily be based on the assumption that we will be able to predict future paths. In reality, however, there are **uncertainties** about several factors, such as technology change, which can be modeled with various **probabilities**.

## 2. Measurement

- Gunnar Kohlin (Univ. Gothenburg) presented a 9-step approach to choosing an indicator:
  1. define the development objectives and how possible results can be measured;
  2. once the development objectives are formulated, identify what are the impact, outcome, and output indicators or indices;
  3. indicators and criteria may need to be adjusted for countries' specific needs and contexts;
  4. when applicable, use indicators already in use and prioritised by the partner country/region – HDR may set a norm/standard to be used by countries (or groups of countries);
  5. assess data quality with local institutions;
  6. select a few relevant indicators;
  7. decide on state and/or process indicators;
  8. describe cross-cutting linkages when a selected indicator also measures other sector goals or priority issues;
  9. for regional strategies, consider selecting more process indicators, since state indicators (such as air or water quality) can be difficult to aggregate at regional level because they may vary from city to city, or country to country.
- We cannot separate the **intrinsic and the instrumental** values of environmental resources. For example, we may be able to live without biodiversity (although it's not totally certain that we can), but this is not the world we want. This links with questions of **justice** and the **distribution** of impacts associated with reduced biodiversity (and other changes in environment). The impacts may be very different at global or local levels, and is not enough to consider averages.
- For the environment, in general, there is an inherent **tension between global and local** analysis, due to the presence of externalities. For example, in carbon emissions: the effects are local, but the resource (atmosphere) and the solutions to solve challenges are global. Some countries may not be affected by the change in environmental conditions/resources, but may contribute for negative

impacts in other countries, e.g., Norway has green-consumption, but it affords such consumption by exporting oil.

The choice between global or local measures ultimately depends on the goal of the analysis and on whether it is possible to aggregate data. Sometimes, if we want to give specific policy messages that are valid at regional level, we need to have a disaggregated analysis.

The world as a whole is probably weakly sustainable (if assets are substitutable) and surely strongly unsustainable (if there is no possible substitutability between assets) – just look at CO2 emissions, or the percentage of decline in ecosystems services.

When studying **local** impacts, we also don't know much about responses and adaptation, and how we can transfer the results/assessment of a particular context to another (the benefits may be very much local **specific**).

- **Today's** performance and **future** sustainability are two different things. Do we want to be accurate and not **mix the measurement** of both? There was no consensus on this point. As academics we would like to keep things separate, however, given the policy use of HDR indicators we may want to combine. A combined analysis of present and future makes a stronger case that today's behaviour will limit future HD path, and gives **incentives for policymakers** and societies to change their behaviour.
  
- **Two broad strategies** for measurement are: a joint analysis of HDI plus a sustainability criterium or a combined unidimensional measure. In both cases, it is important that measurement is simple and conveys a policy message.
  - a) An ideal separate indicator for sustainability would show that if the level of that indicator today is above (below) a certain threshold, we could expect a better (worse) future HD outcome for that country. None of the existing measures is ready-to-use, but the one conceptually more sound and which HDR could try to push forward in the debate (also to contribute to a possible improvement of the existing measure) is the **Adjusted Net Savings (ANS)**, from The World Bank. This measure explicitly includes an intertemporal dimension.
    - The idea behind ANS and other existing initiatives based on the "capital approach" is that wealth is composed of assets (reproducible, natural, human) and flows of those assets translate in well-being. When the flows are below a certain level (in the case of ANS, negative) we know that well-being (consumption flows) will decline in the future. However, when they go above that threshold, we cannot be sure that well-being will improve – condition is necessary, not sufficient; it is a weak test.

**ANS** is not comprehensive, e.g., land degradation, biodiversity indicators such as fish stocks are not included, the values of natural assets are market prices but many environmental services are not measured in the market, the irreversibility of assets is not considered (some assets may be critical for the functioning of ecosystems), the value of emissions damage is not differentiated by country, etc.

Dasgupta's approach on **comprehensive wealth** is theoretically more robust, and seeks to measure the correct (shadow) value of the different assets. However, so far there have been only few attempts to calculate those values (shadow prices) and the overall methodology and results are not available and ready to be used for a large set of countries.

On the proposal of **ANS-HD** presented in this meeting, several participants were reluctant to support adhoc weights to reflect the intrinsic and instrumental investments for education and health, which adds another layer of uncertainty in already imprecise indicators. As an alternative, a theoretical model similar to the one generating ANS could be derived, where the endogenous variable would be HD rather than total wealth. This has also been the focus of discussion with Eric Neumayer in the meeting of Feb 2<sup>nd</sup>.

- **Other possible measures** could be used as **separate sustainability criteria**, even if they do not explicitly and univocally link the situation of today with that of tomorrow (which may create a less strong policy message). These are:

- i) **Ecological Footprint (EF)**. This measure may be not theoretically robust, but it conveys a clear message on the excessive use of natural resources (linked with consumption). Graphing HDI against EF, the policy message is that “in general, high and very high HDI countries are burning the planet and making HD more difficult for other countries in the future”. This could motivate policymakers to improve environmental performance, together with other HD dimensions.

EF shows different patterns of consumption, which in itself is not a problem (e.g., if Italians drink more wine, and Germans more beer, there is in principle no problem), and in fact that is the main argument favouring international trade. The problem comes when **prices** of the resources consumed do not reflect the correct opportunity cost, due to negative externalities associated with the depletion of resources. So, ultimately, the previous ANS and wealth approach with the correct prices in place would also reflect that some countries have an excessive use of natural resources.

EF considers **strong sustainability** since it does not allow substitutability between natural capital and other types of capital. However it does allow substitutability between different kinds of natural capital (weak sustainability *within* natural capital).

The most striking finding from the EF is that carbon emissions are the most important single driver of the excessive use of natural resources (EF trends are driven mostly by carbon footprint). An alternative would be to consider only carbon (dioxide) emissions and/or GHG emissions.

- ii) **Carbon (dioxide) emissions and/or carbon footprint**, where the main difference between them is that while the first associates the CO2 burden with producers, the footprint associates with consumers.

The allocation of the responsibility of CO2 is actually a controversial issue in the debate. In practical terms, it is more difficult to measure the carbon content of consumption than of production. In conceptual terms, however, the relevant factors are:

- \* first, and above all, the definition of **property rights** regarding the atmosphere (the common resource). If there are global externalities and the status quo is not polluting, then all the damage should be allocated to the producer. We can also argue that if a country has more natural resources than the remaining ones, it should be responsible to defend them – but what if all countries have the same share of the world resources? Again it depends on the definition of property rights.

\* second, on whether we have **weak or strong sustainability**. Weak sustainability (e.g., as measured by ANS) attributes responsibility of CO<sub>2</sub> emissions to the extracting countries and checks whether that country re-invests the revenues from extraction in other types of assets. In Strong Sustainability (e.g., as measured by EF) the responsibility is on consumers. Even if unsustainability is only about carbon, SS would mean that we would be consuming more than the world could afford and we would be in an unsustainable path (even with the correct prices).

Ideally one would like to consider GHG emissions (among which CO<sub>2</sub> are just one type), however at the international level there is data on GHG only for few countries (mostly Annex I countries in the Kyoto Protocol).

There may be other environmental variables that affect HD in its several dimensions, (e.g., sanitation and waste), however none probably have much negative future impact of CO<sub>2</sub>.

Given the international importance of the UNFCCC process, CO<sub>2</sub> and GHG would also be **politically correct** indicators.

**iii) Biodiversity indicators.** Biodiversity is instrumentally and intrinsically important for HD. By the Millennium Ecosystem Framework, which combines well-being with ecosystem services, we cannot separate both values. In general, there is the idea that ecosystems with larger biodiversity provide more services and are also more resilient to shocks. Eurostat plans to develop a “biodiversity index”.

b) An alternative strategy for measurement is a **combined unidimensional index**. Some ideas include: using HDI with GDP-adjusted for environment change (both depletion, and improvements), HDI adjusted by EF, HDI adjusted by CO<sub>2</sub> emissions.

In general **none** of these unidimensional indices **says anything** about the **future**, but they only indicate whether the level of current behaviour is associated with high/low depletion of natural resources. However, they may have the advantage of sending a clear **policy message**, like for example an HDI with some visual differentiation (colors by level of environmental performance).

- Among the group there was the idea that (some of) the measures in the **dashboard**, e.g., water and sanitation, are part of development and may already affect other dimensions of HD, they are not a direct measure of sustainability.

### 3. Policies

- Currently, **there is no global policy architecture** in place. However, there are prominent actors whose role can be leveraged – at international level: IPCC within UNFCCC, UNEP within UN; at national level: the ministry of environment.

**Global cooperation** is possible, as shown the successful example of the Montreal Protocol, but the case for climate change (CC) policy is much less simple. In the case of CC, policymaking needs to be responsive to the new information on ecological stress. The climate negotiations have been in

place already for 17 years and we are heading rapidly towards an increase in the global average temperature of 4C, without an international agreement.

In the case of CC, it is important to know the limits and cap emissions, setting a **binding global carbon budget**. At the same time it is important to build resilience to cope with and adapt to the impacts that can no longer be avoided.

- At the international level and given the presence of externalities, the **political economy** arguments are particularly challenging. It may be necessary to have a group of countries taking the lead (G-x, among which necessarily US and China) and agreeing in the way forward, and then the details of an international agreement on the action(s) can be defined together with other (smaller) countries. In the end we will not have a bilateral agreement, but a multilateral, where some countries lead.

Decarbonization and growth is possible, and this is the moment, but it needs leadership.

- At the national level, it is clear that the Chinese model is not compatible with a sustainable future, and we know that cleaner technology needs to be developed and adopted, but is not clear how we make the transition feasible. It is, however, clear that **if market prices and constraints are right**, people/firms will have incentives and we will find new ways of solving the problem.
- Beyond CC, **consumption patterns** based on **exhaustible** resources are a problem. Changing the structure of production will change living standards, and the **poorest** may be more negatively affected. There is a double challenge of giving energy access to the poor while at the same time target the correct price for resource depletion.
- From the **production** side, there will always be **substitutability** – so, if we neglect (theoretically) the distributional impacts, we need not to be concerned with sustainability from the side of production. We will always find a way of replacing exhaustible resources by other sources – it is a question of **time scale**. Also the geopolitics may be affected.

However, from the **sink side** (capacity of the ecosystems to regenerate), there is **strong non-sustainability**.

- What is the **role of aid**? In several areas of development, e.g., health/education aid has done a significant difference. In the case of management of environmental resources, we may also need to have targeted adaptation priorities, defined at community level [COMMENT: SEE ALL WORK OF UNDP ON ADAPTATION AT COMMUNITY LEVEL!!!]
- Is **geo-engineering** (e.g., dust in the atmosphere to combat global warming, send mirrors to the atmosphere, etc) a possibility? Most countries do not know the answer: 1<sup>st</sup> because they don't know exactly what will be the specific CC impacts for their own, 2<sup>nd</sup>, because most of those alternative solutions have not been sufficiently developed and we don't know the secondary impacts they may have. It was argued that it does not make sense to talk about **geo-engineering** nor **expecting a change in consumption behaviour**. The most important objective is to create the correct market incentives to achieve both economic growth and decarbonization!