New Science, New Opportunities for GEF-5 and Beyond

Thomas E. Lovejoy
Chairperson
GEF-Scientific and Technical Advisory Panel
Introduction

Humanity has taken for granted the availability of environmental services provided by our natural capital which is only now being evaluated through initiatives such as the study on The Economics of Ecosystems and Biodiversity (TEEB).

The best available science and technology is needed to guide and sustain the GEF’s impact, STAP’s advice is deliberately forward-looking, but based on past experience.
Climate change is being even more dangerous than previously expected with the current CO$_2$ concentrations close to 390 ppm compared to 280 ppm and the average global temperatures 0.75°C warmer than they were a couple of centuries ago.

Source: Hansen et al. 2006
Climate Change, continued

The discovery of dangerous ‘tipping points’ that are potentially a threat to ecosystems upon which human society depends, underline the danger of climate change. Amongst the consequences are:

- Rainfall system collapse due to Amazon forest dieback;
- Ocean acidification impacting upon carbon sequestration;
- Thawing of the permafrost releasing methane
- Coral reef degradation
Biodiversity is in critical danger

The target agreed by the world’s Governments in 2002, “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth”, has not been met.

Global Biodiversity Outlook

Example: Red List Index shows continuing decline
Recognising biodiversity as an asset

An estimated 75 percent of the world’s poorest people – 880 million women, children and men – live in rural areas, the conservation of biodiversity and the functioning of the ecosystems upon which they depend are critical issues both for the global environment and human well-being.

Biodiversity is a fundamental provider of global environmental benefits, such as regulation of carbon, nutrients, water cycles and climate and the protection of evolutionary capital.
Land degradation

The Land Degradation Assessment in Drylands (LADA) concluded:

● Land degradation is cumulative and a global issue.

● Nearly one-fifth of degrading land is cropland – more than 20% of all cultivated areas.

● Approximately 16% of the land area shows improvement.

● About 1.5 billion people depend directly on the degrading areas.

Conclusion – Land degradation presents a complex picture: some areas are becoming worse; a few getting better; but in aggregate – a massive impact on the productivity of the world’s soil resources and on rural livelihoods.
Degradation of International Waters

Concerns with International Waters cover freshwater in landscapes and groundwater basins and in marine ecosystems in the world’s oceans. Freshwater biodiversity is declining more rapidly than terrestrial:

1. freshwater drainage concentrates pollution from the land into water bodies;
2. lack of awareness of freshwater as a living aquatic ecosystem; society has dammed 172 of the world’s 292 large river systems including eight of the most diverse biogeographically;
3. most freshwater species are highly linked to particular water bodies and therefore vulnerable to threats at very local scales.
In the oceans, the drivers of change include shifts in climate such as warming and ocean acidification, acoustic pollution, disturbances to trophic structure, fisheries interactions, harmful algal blooms, and environmental contaminants.

Reported only since the 1960s, dead zones in the coastal oceans have doubled each decade since and thus extending the area of severe hypoxia (<0.5 ml O2/litre)
With the trade in chemicals and products growing even faster than chemicals production, the dissemination of and pollution by new potentially-toxic chemicals worldwide is now a reality.

To be effective, the Stockholm Convention Parties need collection of POPs data, but there remain important gaps at the regional level on POPs effects and exposure.
How should GEF be positioned in future?

STAP’s vision and proposed priorities for GEF interventions in GEF-5 are based on guidance from Conventions and from its networks which offer new scientific, technological and policy developments.

In a world in which environmental change is exponential and synergistic, GEF's program and projects must be informed by the best and most up to date science.
In Climate Change, STAP advises

- To continue promoting technology transfer, building capacity and creating an enabling environment for intensive mitigation actions in energy efficiency and renewable energy, methane emission reduction strategies in the livestock sector, and eco-cities
- To play a global leadership role in ecosystem carbon sequestration focusing on forests (REDD+) and peatlands stabilization without compromising biodiversity and livelihoods
- Start removing institutional barriers preventing support for integrating climate adaptation activities in GEF Trust Fund projects and building a longer-term vision for climate resilience of GEF investments
Biodiversity: actions needed

The primary goal for GEF is the conservation of life on earth in its widest sense. Actions to support ecosystems and livelihoods include:

- Standalone biodiversity conservation measures such as managing alien invasive species
- Building climate change resilience into biodiversity conservation
- Integrating biodiversity conservation and all of its benefits with climate change mitigation efforts.
Evidence could catalyse change

The Millennium Ecosystem Assessment found that “Few well-designed empirical analyses assess even the most common biodiversity conservation measures”.

This lack of empirical evidence doesn’t mean that interventions won’t work, but that strengthening evidence will buoy much needed support to scale up and mainstream biodiversity conservation in society.

The GEF can help build the evidence base for biodiversity conservation.
In land degradation, STAP advises

The following need high priority attention in GEF-5 and beyond –

- Tracking changes in total system carbon – especially the largest terrestrial C sink in the soil.
- Understanding the direct and indirect drivers of land degradation, how society responds, and livelihoods are impacted.
- Developing agricultural systems that are environmentally friendly and productive – without increasing food prices or creating barriers to food security.
- Integrating systems of land use across landscapes.
Opportunities in International Waters

GEF’s approach of targeting multi-country, governance-first interventions is essential and GEF can make a difference in a number of priority GEF-5 candidate topics including:

- Transboundary governance arrangements;
- Reversing nutrient inputs from land to address coastal low oxygen zones;
- Protecting marine biodiversity in the 64% of the oceans beyond national jurisdiction, using new scientific knowledge to identify Ecologically and Biologically Significant Areas (e.g. through the Global Ocean Biodiversity Initiative – GOBI)

Caption: global patterns of biodiversity. Hubbert’s Index on 30 specimens, ES(30), calculated on the basis of OBIS data, aggregated into 1 degree squares.
In POPs and Chemicals, STAP advises

- To support efforts to bridge the gap between conventional data gathering systems and new approaches to provide confidence to policy makers.

- STAP’s vision for GEF-5 and beyond includes the three topics that are central to the delivery of GEBs in the chemicals area:
  1. Support for actions linking climate change and chemicals agenda;
  2. Address toxic substances and poverty;
  3. Encourage a programmatic approach towards chemicals management to address the legislative and institutional frameworks.
In Climate Resilience, STAP advises

- To take full account of the inter-linked issues of climate change, biodiversity loss and land degradation as the major global environmental challenges impacting on food, water, livelihoods and ecosystems.
- GEF should take effective steps not only to enhance resilience of its own investments in projects and programmes but also take a global role in showing how ecosystem restoration and building resilience to climate change may be done in a cost-effective way.
Need for Cross-focal area integration

Global Environmental Benefits are best delivered by promoting the synergies and avoiding the negative trade-offs not only between GEF focal area strategies but also between environmental and human development needs.

GEF actions should promote: Sustainable Forest Management (SFM) in order to reduce the vulnerability of forest ecosystems to climate variability, conserve biodiversity and enhance carbon stocks;
Climate Change, SFM and Land Degradation:

better land management can preserve the functioning of ecosystems for productive purposes and enhance the carbon sink potential of soils
Improved water resource management through integrated approaches, which are sensitive to biodiversity, sustainable land management and climate change, can help with the transition to sustainable use of specific landscapes, catchments, seascapes or wetland basins.
What next?

It is abundantly clear that the human future depends on proactive, progressive and integrated management of the planet and its biological and physical environment.

GEF has to play a cutting edge and exemplary role in such a transformation using the best of science and technology to do so.