Ziegler’s crocodile newt (*Tylototriton ziegleri*)

Annamite striped rabbit (*Nesolagus timmins*)

Glue-spitting Vietnamese velvet worm (*Eoperipatus totoro*)

Cua Da land crab (*Gecarcoidea lalandii*)

Red Shanked Douc (*Pygathrix nemaeus*)

Great Hornbill (*Buceros bicornis*)

Vietnamese golden cypress (*Cupressus vietnamensis*)

Vietnamese Mossy Frog (*Theloderma corticale*)

Scientific and Technical Advisory Panel
Report to the 54th Meeting of the GEF Council
STAP Panel Members

Rosina Bierbaum
Chair, USA

Thomas Lovejoy
Senior Advisor to Chair

Blake Ratner
International Waters
USA

Brian Child
Biodiversity
South Africa

Ricardo Barra
Chemicals & Waste
Chile

Annette Cowie
Land Degradation
Australia

Ferenc Toth
Climate Change
Adaptation
Hungary

Ralph Sims
Climate Change
Mitigation
New Zealand
The livelihoods of most rural people are directly supported by soil; and all of us, whether in recreation or occupation or subsistence, depend upon soil as the hub of all life-supporting processes.
Planetary Boundaries
A safe operating space for humanity

Design: Odhbo
The 3 inter-dependent facets of sustainability
In 2014, STAP called for a focus on “environmentally sustainable development”

http://www.stapgef.org/stap-report-fifth-gef-assembly
Integration, Innovation, and Learning

Integration

Innovation

Learning
Integration to solve complex environmental problems

1. Systems thinking
2. Theory of change & Plan B
3. Resilience planning
4. Implementation pathways
5. Knowledge management
6. Stakeholder engagement
7. Flexibility
Bringing integration to our food system
The circular economy food system
A future food system for healthy human beings and a healthy planet

Problem:

- Need to increase food production, but current “take-make-waste” system detrimental to the environment

Solutions:

- Reduce inputs and use resources more efficiently, without decreasing productivity
- Circular economy keeps resources in use, maximizes value, recovers and regenerates at end of life - consider for the ‘Food systems, Land Use and Restoration’ Impact Program
Systems thinking needed for plastics

<table>
<thead>
<tr>
<th>Recent Estimates</th>
<th>Business as Usual Projections</th>
</tr>
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<tbody>
<tr>
<td><strong>Production and Use</strong></td>
<td></td>
</tr>
<tr>
<td>Up to 380 Mt in 2015</td>
<td>Up to 1500 Mt by 2050</td>
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<tr>
<td>6% in 2014</td>
<td>20% by 2050</td>
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<tr>
<td>1% in 2014</td>
<td>15% by 2050</td>
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</tbody>
</table>
### Systems thinking needed for plastics

<table>
<thead>
<tr>
<th>Disposal and Post-disposal</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>6,300 Mt - cumulative from 1950 to 2015</strong></td>
<td><strong>33,000 Mt by 2050</strong></td>
</tr>
<tr>
<td><strong>4900 Mt in 2015</strong></td>
<td><strong>12,000Mt by 2050</strong></td>
</tr>
<tr>
<td><strong>Over 150 Mt in 2015</strong></td>
<td><strong>Over 450 Mt by 2025</strong></td>
</tr>
<tr>
<td><strong>1:5 in 2014</strong></td>
<td><strong>1:1 by 2050</strong></td>
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</table>
Plastics and the circular economy

Problem

- Plastics consume/affect a lot of natural resources:
  - Oil, produces carbon dioxide
  - 185 liters of water to make 1 kg of plastic
  - plastics ingested by marine life
  - Microplastics contaminate drinking water, fish

- Plastics use chemical additives including POPs
- Last for decades to centuries

Solutions:

- Renewable feedstocks
- Use plastics as resources
- Redesign plastics
- Business and consumer collaboration
- Fiscal and regulatory measures
Environmental security: dimensions and priorities

STAP Assembly report 2014 encouraged more attention to environmental security:

“to enable improved human well-being, health, security, livelihoods and social equity at the same time as environmental benefits”

Environmental security is centrally important to the GEF. Relevant to all focal areas

Many GEF operations exposed to conflict risk

Addressing environmental security in an explicit, consistent and integrated manner is essential to deliver global environmental benefits – including the sustainability of GEF project investments.
Environmental security: dimensions and priorities

Recommendations:

1. Explicitly address environmental security in project and program design
2. Consider use of protocols from GEF agencies (including UNDP, UN Environment and World Bank, etc.) to assess conflict risk
3. Evaluate links between environmental change and vulnerability in GEF interventions
4. Contribute to conflict prevention through environmental cooperation
Innovation

“...an idea, embodied in a technology, product or process, which is new and creates value...To be impactful, innovations must also be scalable, not merely one-off novelties”

Five domains:
- Technological
- Business model
- Institutional and social
- Policy
- Financing
Novel entities are broadly defined as, “things created and introduced into the environment by human beings that could have positive or negative disruptive effects on the earth system; and may include synthetic organic pollutants, radioactive materials, genetically modified organisms, nanomaterials, microplastics.”

Importance – past novel entities:
- CFCs ➔ ozone depletion
- POPs ➔ impact on ecosystems, biodiversity and human health
Novel entities: examples

**Gene editing: modification of DNA of organisms**
+ Cacao and maize plant - climate change adaptation
+ Controlling methane emission in ruminants
+ Saving endangered species or eradicating invasive species
  - But threat to biodiversity, ecosystems

**Technological critical elements (rare earth elements): needed for green and emerging technologies**
- But chemical pollution, biodiversity loss, deforestation, and land degradation

**Cellular agriculture: producing livestock products from cell cultures without the animal itself**
+ Help reduce the environmental footprints of current food production systems
  ? But regulation, ethical concerns, and public acceptance
Learning

Knowledge management essential for:

• Maximize GEBs
• Evaluating best practices
• Scaling-up
• Transformational change

Recommendations:

• 5% set-aside for KM applied in all programmes/projects
Community-based natural resource management is a local approach to sustainability problems

Applicable where poverty and biodiversity losses overlap

4 key elements:
- Ownership
- Price
- Governance
- Co-learning and adaptive management
Preliminary GEF-7 Work program

• Integration
  – Climate risk screening
  – Stakeholder engagement in socio-ecological transformations
  – Land Degradation Neutrality guidelines
  – Reducing climate vulnerability and climate adaptation

• Innovation
  – Remote sensing
  – Aquaculture contributions to nutrition security, climate mitigation, and land restoration

• Learning
  – Development of a global mercury platform
  – Estimating environmental impact of C&W projects
  – Continue to press for monitoring, evaluation and learning in screening
Preliminary GEF-7 Work program

• Continue to contribute to the Food Security, Commodities, and Cities IAPs

• And work with the GEF partnership on designing the new Impact Programs