Ziegler’s crocodile newt (Tylototriton ziegleri)

Annamite striped rabbit (Nesolagus timmins)

Glue-spitting Vietnamese velvet worm (Eoperipatus totora)

Red Shanked Douc (Pygathrix nemaeus)

Vietnamese Mossy Frog (Theloderma corticale)

Cua Da land crab (Gecarcoidea lalandii)

Great Hornbill (Buceros bicornis)

Vietnamese golden cypress (Cupressus vietnamensis)

GEF Assembly and Reflections on Science
STAP papers on Integration, Innovation, and Learning

Integration

Innovation

Learning

www.stapgef.org
Key messages from the roundtables

**Integrate:**
- Private-public partnerships across the value chain (**Food**)
- Land Degradation Neutrality -impetus for integration and systems approach (**Drylands**)
- Chemicals management has clear links to Sustainable Development Goals (**Preventing toxicity...**)
- Connections between livelihoods, biodiversity and the Amazon system (**Amazon**)
- To reverse the trend of declining wildlife requires empowering local communities, sustained cooperation, and changes in behavior (**Wildlife**)

**Innovate:**
- Systems approaches can replace take, make, waste (**Circular economy**)
- Develop global standardization protocol on recyclability/biodegradability of plastics (**Marine plastics**)
- Embrace technologies, public-private capital, economic and livelihood opportunities (**Blue economy**)
- Define targets based on open dialogue processes that explore and negotiate solution pathways (**Science-based targets for Earth**)
- Innovative mechanisms are developing rapidly for conservation finance (**Conservation Finance**)
- Move to safer alternatives and make the best use of the data and information (**Preventing toxicity...**)

**Learn:**
- Networks of cities sharing experience encourages best practices (**Cities**)
- Stakeholder engagement from local communities to government project inception leads to better outcomes (**Food**)
- Reinforcing the connections between ethnic groups, and supporting their culturally-grounded understanding of biodiversity and ecosystems, is critical to the Basin’s sustainability (**Congo Basin**
Novel entities: emerging issues for next Assembly

**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
6 MAJOR TRANSFORMATIONS

Digital revolution
Artificial intelligence, big data, biotech, nanotech, autonomous systems

Human capacity & demography
Education, health, ageing, labor markets, gender, inequalities

Smart cities
Decent housing, mobility, sustainable infrastructure, pollution

Sustainable consumption & production
Resource use, circular economy, sufficiency, pollution

Food, biosphere, water & oceans
Sustainable intensification, biodiversity, forests, healthy diets, nutrients

Decarbonization & energy
Energy access, efficiency, electrification, decent services

SDGs:
Prosperity
Social Inclusion
Sustainability

Johan Rockström’s presentation to the Assembly