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CBD SBSTTA-28: Position Paper on Synthetic Biology

Synthetic biology offers the potential to address biodiversity and public health challenges that conventional tools and methods alone cannot solve. Applications already in use or development demonstrate synthetic biology's current and potential future contributions to the objectives of the Convention on Biological Diversity (CBD) and the Kunming-Montreal Global Biodiversity Framework (KMGBF). These applications range from synthetic horseshoe crab blood for vaccine production to genetically modified organisms for invasive species control.

The upcoming twenty-eighth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-28) is an opportunity for a balanced, evidence-based discussion of these technologies and a stepping stone towards closing the gap between developed and developing countries in assessing, developing and benefiting from synthetic biology.

Next steps on synthetic biology under the CBD:

The capacity-building thematic action plan is crucial to deliver concrete support to Parties interested in the research and use of synthetic biology that directly contributes to the Convention's objectives and KMGBF targets. Its implementation should be a priority for the next CBD intersessional cycle. Rather than additional assessments or dedicated horizon-scanning exercises, Parties need capacity to research, develop and benefit from these technologies.

Innovation, including synthetic biology, is essential to meet the scale of the biodiversity crisis

Existing conservation approaches remain essential but are often resource-intensive, hard to scale, and insufficient on their own to halt and reverse biodiversity loss. The current and potential benefits of synthetic biology identified by the Expert Group (annexes I and II to CBD/SYNBIO/AHTEG/2026/1/3) illustrate its cross-cutting contribution across a wide range of KMGBF targets, including:

- **Reduced harvesting pressure on wild species:** Recombinant factor C replaces reagents derived from horseshoe crabs in pharmaceutical safety testing, and semi-synthetic artemisinin reduces reliance on wild-harvested Artemisia for malaria treatment.
- **Reduced land, water and emissions footprints:** Cultured meat and engineered microbes can replace more resource-intensive agricultural inputs.
- **Support for restoration and species recovery:** Engineered resistance to pathogens and increased genetic diversity in small, endangered populations can aid recovery, as in black-footed ferret conservation and amphibian disease resistance work.
- **Potential control of invasive alien species:** Localized use of gene drive technologies is one option, though still largely at proof-of-concept stage.

SBSTTA recommendations should recognize this contribution and the need to support Parties in researching and applying these tools where they align with national needs.

The capacity-building thematic action plan should be strengthened, adopted, and made a priority

Synthetic biology approaches have vast, cross-cutting benefits in relation to KMGBF targets, ultimately contributing to the objectives of the Convention, as indicated by the AHTEG experts (CBD/SYNBIO/AHTEG/2026/1/3) and Secretariat Note (CBD/SBSTTA/28/4). However, many countries face long-standing challenges in capacity-building, technology transfer and knowledge-sharing to enable them to fully explore the potential of synthetic biology. The independent scientific study commissioned under decision 16/21 echoes these gaps, identifying capacity-building and inclusive, well-resourced governance as priorities for many Parties.

The thematic Action Plan to Support Capacity-Building and Development, Access to and Transfer of Technology, and Knowledge-Sharing in the Context of Synthetic Biology (CBD/SBSTTA/28/4/Add.1) is an opportunity to respond to these challenges. Its focus should be practical: helping countries build the regulatory, technical and institutional capacity to research, assess, and use these technologies on their own terms. As CBD resources are limited, support should go where it is most needed, such as national regulatory and biosafety capacity, including functional laboratories, equipment and technical expertise.

Any future CBD work on synthetic biology should have the action plan at its core, translating commitments on equitable capacity-building, technology transfer, and knowledge sharing into tangible results. Should a further AHTEG be established, its mandate should support implementation of the action plan, not repeat assessments already available under the Convention, its Protocols and other bodies, or conduct another horizon scanning with no practical impact.

Importantly, progress needs to be measurable to contribute to the plan's long-term value. Drafting quantifiable indicators for the action plan would provide Parties with key data on progress and implementation, even if on a voluntary basis.

Existing assessment frameworks are largely fit for assessing synthetic biology

Synthetic biology's impacts need to be assessed responsibly, case by case, and in the spirit of the 1992 Rio Declaration, as recognized by the AHTEG conclusions. National authorities have access to frameworks under the CBD and its Protocols, the World Health Organization (WHO), European Food Safety Authority (EFSA), and methodologies such as Environmental, Social and Health Impact Assessments (ESHIAs). These frameworks are largely fit for that purpose: assessing the potential risks and benefits of different applications of synthetic biology in each national context. The gap to fill is not a shortage of mechanisms or guidance, but a shortage of capacity to use the ones that exist.

As resources are limited, further work in the next cycle should therefore prioritize long-standing demand for capacity-building: helping countries carry out the assessments they consider necessary, and research, develop and benefit from these technologies. Designing new assessment mechanisms, new methodologies for quantifying benefits, or a dedicated horizon scanning exercise on technologies already considered extensively under the Convention would pull resources away from that priority.