

Two Brown Noddies are standing on a dark, jagged rock formation. The bird on the left is facing left, and the bird on the right is facing right. They have white bodies, brown wings and heads, and large blue webbed feet. The background is a soft-focus view of the ocean under a blue sky.

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 – from synthetic horseshoe crab blood for vaccine production to genetically modified organisms for invasive species control – 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](#)).

The CBD’s upcoming 17th meeting of the Conference of Parties ([COP 17](#)) is an opportunity for a balanced, evidence-based discussion of these technologies and a steppingstone 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 [thematic action plan \(TAP\)](#) to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology 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. Synthetic biology could enhance the current conservation toolbox, with cross-cutting contributions across a wide range of KMGBF targets, as recognized by the latest report of the Expert Group (annexes I and II to [CBD/SYNBIO/AHTEG/2026/1/3](#)). Applications include:

- **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:** The use of gene drive technologies is one option, though still largely at proof-of-concept stage.

Given the current and potential contribution of synthetic biology to conservation efforts, it is critical that Parties are able to research and apply these tools where they align with national needs and priorities.

The TAP 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. 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.

- **Prioritize the TAP:** The TAP ([CBD/SBSTTA/REC/28/3](#)) 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. The plan should help countries to maximize the benefits and minimize the risks associated with synthetic biology approaches and, as such, its scope should be beyond biosecurity and biosafety elements.
- **Allocate resources to TAP implementation:** Adopting the TAP at COP 17 is necessary but insufficient. Without secured implementation funding, the gap between developing and developed countries will continue to widen, and this opportunity to fight biodiversity loss at the scale the crisis demands will be missed.
- **Reconsider the usefulness of a new AHTEG:** AHTEGs are resource-intensive and rely on a restricted poll of experts, which compromises the depth of their reports, particularly on broad assignments such as horizon scanning and technology assessment. Given that outcomes have often fallen short of expectations, further investment in this mechanism is neither necessary nor an efficient use of limited time and funds.
- **If a new AHTEG is formed, it should focus on supporting the TAP:** Its mandate should support TAP implementation rather than repeat assessments already carried out under the Convention, its Protocols and other bodies. Instead, defining quantifiable indicators for the TAP, for example, would contribute to the TAP's long-term value by providing Parties with key data on progress and implementation, even if on a voluntary basis.
- **Ensure any AHTEG focuses on new topics and issues:** An assessment of synthetic biology applications for conservation would likely reintroduce technologies that have already featured in prior horizon scanning and been extensively discussed under the CBD and its Protocols. A scope this broad would be duplicative and exceeds the expert group's capacity to produce insightful and policy-relevant output.

Resources are limited and should be allocated to impactful initiatives, such as capacity-building. Another synthetic biology AHTEG will not directly contribute to the objectives of the Convention and the KMGBF targets, diverting funds from what would lead to tangible results.

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 [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 (ESHIA). 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.