

Part I. Endorsement of submission

Name of Country/Organization:

Testbiotech

Name of CBD National Focal point/Head of Organization endorsing:

Christoph Then

Signature of the CBD National Focal Point/ Head of Organization:



Date: 24 November 2023

Part II. Submission of information

In submitting information, kindly provide the following information on one or more of the 12 trends and issues in synthetic biology as follows:

1. Trend and issue in synthetic biology chosen

Use of synthetic biology in wild organisms in the context of resilience in threatened species

2. Potential positive and potential negative impacts on the three objectives of the Convention

a. Conservation of biological diversity

If organisms derived from synthetic biology are introduced to persist and propagate within natural populations it would mean genetic engineering of the 'germline of biodiversity', with the risk of disrupting existing ecosystems and their future evolutionary dynamics. As the examples of the chestnut tree and corals show (Testbiotech 2021), the introduced Synbio organisms may become a source of further destabilization of the threatened species.

b. Sustainable use of its components

c. Fair and equitable sharing of the benefits arising out of the utilization of genetic resources

3. Potential gaps or challenges for risk assessment, risk management and regulation, including availability of tools for detection, identification and monitoring

The biological characteristics of the original GE organisms produced in the lab and tested under controlled conditions, cannot be regarded as sufficient to predict all relevant effects that can emerge in the next generations, and in interaction with the receiving environments (Bauer-Panskus et al., 2020; Koller et al., 2023).

The requirement to demonstrate 'spatio-temporal controllability' should be introduced into environmental risk assessment as cut-off criteria: If spatio-temporal controllability is not demonstrated, the organisms cannot be released into the environment (Then et al., 2020).

4. Additional relevant considerations (e.g., socioeconomic, ethical, cultural, human health, intellectual property, liability and redress, IPLCs, public engagement, among others)
5. Timeframe to commercialization or release into the environment
6. Potential linkages to the Kunming-Montreal Global Biodiversity Framework and potential contribution to other internationally relevant goals and targets

Submission of supporting documentation:

For any publication that you may want to share as part of your submission, kindly include:

1. Name of publication(s), author, date and DOI or URL link.

Bauer-Panskus, A., Miyazaki, J., Kawall, K., Then, C. (2020) Risk assessment of genetically engineered plants that can persist and propagate in the environment. *Environ Sci Eur*, 32, 32. <https://doi.org/10.1186/s12302-020-00301-0>

Koller, F., Schulz, M., Juhas, M., Bauer-Panskus, A., Then, C. (2023) The need for assessment of risks arising from interactions between NGT organisms from an EU perspective. *Environ Sci Eur*, 35(1), 27. <https://doi.org/10.1186/s12302-023-00734-3>

Then, C. Kawall, K., Valenzuela, N. (2020) Spatio-temporal controllability and environmental risk assessment of genetically engineered gene drive organisms from the perspective of EU GMO Regulation. *Integr Environ Assess Manag*, 16(5), 555-568. <https://doi.org/10.1002/ieam.4278>

Testbiotech (2021) Testbiotech comment on the IUCN report “Genetic frontiers for conservation, an assessment of synthetic biology and biodiversity conservation”
<https://www.testbiotech.org/node/2802>

2. Attach in pdf format any publication you have listed above.