

CBD COP17 and the Future of Synthetic Biology Governance

Preventing the Normalisation of Engineered Life in Biodiversity Policy

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BIOSAFETY



Acronyms

ABS	Access and benefit-sharing
AHTEG	Ad Hoc Technical Expert Group
AI	Artificial intelligence
CBD	Convention on Biological Diversity
COP	Conference of the Parties
DSI	Digital sequence information
FMSS	Farmer-managed seed systems
FPIC	Free, prior and informed consent
GEF	Global Environment Facility
KM-GBF	Kunming–Montreal Global Biodiversity Framework
R&D	Research and development
SBI	Subsidiary Body on Implementation
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
TAP	Thematic Action Plan on Synthetic Biology



Introduction

At the 17th meeting of the Conference of the Parties (COP17) to the Convention on Biological Diversity (CBD) in Yerevan, Armenia (19–30 October 2026), Parties will consider a proposed Thematic Action Plan (TAP) on Synthetic Biology. The TAP marks a significant development in the CBD's approach. Earlier work centred largely on precaution, horizon scanning, hazard identification, and oversight. The proposed plan extends into capacity-building, technology transfer, knowledge-sharing, research, and innovation. These are longstanding and legitimate priorities for developing countries. The critical question is what they are intended to build.

If directed towards independent assessment, biosafety, regulation, and sovereign decision-making, they could strengthen the ability of countries to govern or refuse synthetic biology. If directed towards research programmes, infrastructure, finance, and technical partnerships for developing these technologies, they could create institutional pathways towards uptake and deployment before fundamental questions of biodiversity, rights, sovereignty, liability, and corporate control have been resolved. COP17 will therefore decide not only the wording of the TAP, but the direction of synthetic biology governance under the CBD.

This briefing sets out what is at stake in the negotiations and the safeguards needed to protect the public interest. Written for civil society, movements, Indigenous Peoples, local communities, peasants, farmers, and concerned delegates, it argues for precaution, democratic accountability, and the sovereign authority of countries and communities to assess, regulate, and refuse these technologies.





What is **synthetic biology**?

The CBD defines synthetic biology as “a further development and new dimension of modern biotechnology that combines science, technology, and engineering to facilitate and accelerate the understanding, design, redesign, manufacture and/or modification of genetic materials, living organisms and biological systems” (CBD, 2016). In practice, synthetic biology is part of an industrial project that seeks to redesign, engineer, and construct genetic material, organisms, and biological systems for commercial, military, agricultural, conservation, pharmaceutical, and broader bioeconomy purposes.

Its applications include gene drives, engineered microorganisms, synthetic DNA constructs, genome-edited organisms, genetically engineered pesticides—including genetically engineered insecticides and other pesticidal organisms—self-spreading technologies, engineered crops, synthetic biology-based conservation interventions, synthetic foods and ingredients, cell-based products, and other genetically engineered organisms intended for environmental release, industrial production, or commercial deployment.

The expanding reach of synthetic biology

Synthetic biology is distinguished by the scale, speed, and increasingly automated nature of biological engineering. By combining digital sequence information (DSI), artificial intelligence (AI)-assisted design, automated DNA synthesis, biofoundries, and proprietary platforms, it seeks to make living systems programmable and commercially scalable (Thomas, 2024; ACB, 2026).

Embedded in patent regimes, private data ownership, and research networks dominated by powerful corporate, military, philanthropic, and Northern interests, it can turn genetic resources, traditional knowledge, and biological functions into digital and patentable assets. For biodiversity-rich countries and communities, this risks shifting control from territories and sovereign institutions to proprietary databases, algorithms, and global bioeconomy value chains.



The **proposed Action Plan** and its **institutional reach**

COP17 will receive a partially agreed TAP mandated by COP16 and negotiated further at Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)-28 in Nairobi in July 2026. Parties will not revisit the plan as a whole: negotiations will be confined to the contested provisions that remain in brackets, which are identified in the annex. This narrow mandate makes each unresolved issue especially consequential, because the surrounding architecture for research, cooperation, and implementation is already largely settled.

Presented as a voluntary framework for capacity-building, technology transfer, and knowledge-sharing, the Action Plan also extends to research, assessment, and regulatory cooperation. Whether adopted or merely noted, it could inadvertently influence national policy, partnerships, and finance, including through the Global Environment Facility (GEF) and the Global Biodiversity Framework Fund. Its implementation context is especially significant because COP17 will convene alongside the meetings of the Parties to the Cartagena and Nagoya Protocols and the review of the Kunming-Montreal Global Biodiversity Framework (KM-GBF). As a result, decisions on synthetic biology may influence, and be influenced by, parallel negotiations on biosafety, genetic resources, benefit-sharing, and biodiversity governance. (CBD, 2026a, 2026b).

The central question is whether the final text strengthens precaution, independent assessment, rights, and sovereign decision-making, or allows synthetic biology to acquire institutional momentum as an accepted biodiversity solution. Language on innovation, participation, and benefit-sharing must therefore be tested against its practical effect: does it support public-interest governance and the authority to refuse, or does it contribute to the policy, financial, and institutional conditions that enable the wider development and deployment of synthetic biology applications (Achterberg, 2024; Third World Network, 2024, 2026).

From **precaution** to **promotion**

The CBD has been one of the few multilateral forums to approach synthetic biology primarily through precaution, rights, and public-interest oversight. Earlier deliberations emphasised horizon scanning, scientific uncertainty, risk/impact assessment, caution on environmental release, biosafety, and access and benefit-sharing (ABS) before wider deployment (CBD, 2024a).

That orientation shifted at COP16 in Cali in 2024, when Decision 16/21 mandated a TAP extending into capacity-building, technology transfer, knowledge-sharing, research, innovation, participation, and benefit-sharing (CBD, 2024b). While these are, as noted above, legitimate priorities for developing countries, their purpose is decisive: they can strengthen independent knowledge, oversight, and sovereign choice, or accelerate synthetic biology uptake before its ecological, socio-economic, cultural, rights-related, and political-economy consequences are understood, contributing to the normalisation of technological interventions as biodiversity solutions.



Yet the safeguards needed to ensure that such choices are informed, precautionary, and democratically governed remain incomplete and contested.

- Evidence of claimed benefits is limited;
- Methods for assessing cumulative and irreversible impacts are underdeveloped;
- Liability, redress, and benefit-sharing remain contested;
- DSI governance is still evolving; and
- The rights of Indigenous Peoples, local communities, and other rights holders to give or withhold consent are not secure.

What we are defending: **life, sovereignty, and the right to refuse**

The Six Safeguards: Defending Biodiversity, Communities, and the Commons

Against this backdrop, six safeguards provide the political and public-interest framework for assessing the Action Plan. They are not procedural refinements intended to facilitate acceptance of synthetic biology, but substantive safeguards against its normalisation, public subsidisation, release, and corporate capture. They are also intended to ensure that biodiversity governance remains focused on precaution, rights, justice, and the structural causes of biodiversity loss, rather than becoming a vehicle for technological solutions whose wider consequences remain uncertain. Together, they define what must be defended in the negotiations and the standards against which every provision, whether agreed or bracketed, should be judged.

1. No normalisation of synthetic biology as a biodiversity solution.

The Action Plan must not present synthetic biology as inevitable, benign, or necessary. These are false solutions: high-risk technological interventions that divert attention, public resources, and research capacity from the structural drivers of biodiversity loss—including industrial agriculture, extractivism, corporate concentration, dispossession, pollution, habitat destruction, and unjust economic systems. By treating biodiversity loss as a problem to be engineered around rather than transformed at its roots, they risk reinforcing the very systems that have produced the crisis.

2. No environmental release, field trials, or deployment.

Civil society should oppose the release, field testing, deployment, and commercialisation of synthetic biology organisms, especially where they may persist, reproduce, spread, cross borders, or disrupt ecosystems and livelihoods. Precaution must include prevention, prohibition, and refusal—not managed exposure to technologies whose harms may be irreversible.

3. No capture of public research, finance, or development agendas.

Public resources should strengthen independent science, biosafety research, horizon scanning, technology assessment, agroecology, farmer-managed seed systems (FMSS), community-led conservation, and locally determined innovation. They must not be channelled into promoting, developing, or commercialising synthetic biology applications.



4. Capacity-building must strengthen the power to assess, regulate, and decide without undue influence.

Developing countries need resources, training, infrastructure, and independent expertise to exercise precaution; conduct risk, technology and socio-economic assessments; monitor impacts; secure liability and redress; and make sovereign decisions. Capacity-building must not become a pathway into donor-driven pilots, private partnerships, biofoundries, or dependency.

5. No bypassing of sovereignty, rights, or benefit-sharing.

Synthetic biology must not be used to appropriate biodiversity, genetic resources, traditional knowledge, and DSI, or to evade ABS obligations. Nor should it be used to undermine independent science or reduce countries to technology recipients. Indigenous Peoples, local communities, peasants, and farmers must not be reduced to sources of biological material, knowledge, and data, or be exposed to risks. Sovereignty, free, prior, and informed consent (FPIC), full and effective participation, community rights, and enforceable benefit-sharing must remain non-negotiable.

6. No deepening of corporate control over life, food systems or biodiversity governance.

Synthetic biology can expand patented control over organisms, traits, biological data, production platforms, biofoundries, and conservation technologies. The TAP must not create legitimacy, markets, or policy pathways for this enclosure of life, nor undermine food sovereignty, seed sovereignty, biodiversity-based livelihoods, or democratic governance.

The following section carries these safeguards into the negotiating choices before COP17. The annex then maps them against the specific provisions in brackets in the TAP that still need to be resolved in Yerevan.





From **principles to text**: the key negotiating choices

Reading the brackets politically

The unresolved text at COP17 reflects a deeper contest over the future of biodiversity governance: whether the CBD will strengthen the ability of countries and communities to scrutinise and, where necessary, refuse synthetic biology, or help establish it as a legitimate field of biodiversity policy, finance, and implementation.

The brackets are therefore not minor drafting disputes. They identify points where precaution may be diluted, environmental release facilitated, public resources redirected towards technology development, rights weakened through qualification and conditionality, and corporate control reinforced through partnerships, patents, licensing, harmonisation, and standards. At stake is not only the governance of synthetic biology, but also whether biodiversity policy becomes further aligned with technological fixes rather than structural responses to the causes of biodiversity loss.

The six choices below set out what each cluster of wording means for movements and public-interest advocates. The annex provides the corresponding provisions, paragraph references, and negotiating positions for those working directly with the text.

Key negotiating choice 1: scrutiny or uptake?

The first choice concerns whether the Action Plan becomes a vehicle for normalising synthetic biology. Formal adoption would give it political authority, enabling governments, funders, research institutions, and companies to treat synthetic biology as an agreed part of biodiversity implementation. Merely “taking note” would carry less authority, but could still shape finance, partnerships, and national policy. The essential position is to resist any status or framing that recasts a contested technology agenda as an accepted biodiversity solution.

Key negotiating choice 2: precaution before release.

The second choice is between precaution as a power to prevent harm and precaution reduced to product-by-product risk management. A genuinely precautionary approach must apply before technological pathways are established and must preserve the authority to prohibit field trials and refuse environmental release where engineered organisms may persist, reproduce, cross borders, or cause irreversible harm. Assessment and containment must never become a license to proceed.

Key negotiating choice 3: independent assessment or speculative promise?

The third choice concerns the weight given to promised benefits when the means to detect and assess emerging synthetic biology developments, their cumulative impacts, and their potentially irreversible effects remain inadequate. Public-interest monitoring, horizon scanning, and independent assessment must be strengthened rather than left optional while research and development (R&D) advance. The burden of proof should rest with those proposing the technology, and speculative benefits must not be placed on the same footing as ecological, social, cultural, and rights-related harms that may be irreversible (Friends of the Earth USA, 2026; Pollinis, 2022; Wells and Steinbrecher, 2021).



Key negotiating choice 4: rights, sovereignty, and enforceable benefit-sharing.

The fourth choice concerns who controls biodiversity, knowledge, and data. Weak language on traditional knowledge, participation, FPIC, DSI, sovereignty, and benefit-sharing could enable the appropriation of genetic resources and community knowledge while shifting control to external databases, institutions, and companies. Rights must not be reduced to consultation, nor benefit-sharing transformed from a binding obligation into a matter of voluntary promotion or goodwill. Countries, Indigenous Peoples, and local communities must retain sovereign authority, meaningful consent, enforceable rights, and liability and redress, including the right to say no (CBD, 2022).

Key negotiating choice 5: capacity for public oversight or technology development?

The fifth choice is what capacity is built, by whom, and for whose benefit. The Action Plan provides concrete support for research infrastructure, training, national road maps, and investment in synthetic biology, while the institutions needed to monitor, regulate, and refuse it remain less secure. This imbalance risks using the language of development and equity to draw biodiversity-rich countries into technological pathways shaped elsewhere.

The question is not simply whether capacity is built, but whether it strengthens genuinely sovereign scientific and technological capabilities. Without stronger safeguards, investments in research infrastructure, training, data systems, and partnerships may create enabling conditions for external technology developers, research networks, and commercial actors, while doing little to support independent research agendas, democratic oversight, and national control over technology choices. Such approaches risk positioning countries primarily as recipients, testing grounds, or sources of biological resources and data, rather than as autonomous decision-makers.

Capacity-building and public finance should instead support independent detection, horizon scanning, assessment, monitoring, biosafety, regulation, and liability and redress. Their purpose must be to expand the sovereign space to decide and refuse where necessary, while strengthening independent scientific capabilities and public-interest governance—not creating donor-driven pilots, private infrastructure, commercial markets, or technological dependencies that lock countries into synthetic biology.

Key negotiating choice 6: public-interest cooperation or corporate enclosure?

The final choice is whether cooperation serves the public interest or deepens corporate enclosure. Public-private partnerships, voluntary licensing, intellectual property rules, and international standards can place patents, proprietary platforms, and corporate institutions at the centre of biodiversity policy while the public bears the costs and risks. Cooperation must not become a gateway to corporate control, institutional capture, or technological dependency over organisms, genetic data, food systems, or conservation technologies. It should be transparent, publicly governed, and subordinate to precaution, sovereignty, rights, food and seed sovereignty, biodiversity protection, and the authority to refuse.

What delegates must defend at COP17

COP17 offers Parties a clear opportunity to prevent the Action Plan from acquiring authority as a programme for synthetic biology uptake. The positions below set out the minimum political line needed to preserve precaution, public-interest governance, and sovereign decision-making.



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- Reject any outcome that gives the Action Plan authority as a programme for the development, financing, transfer, testing, or deployment of synthetic biology.
- Defend precaution as a safeguard against harm from technological interventions in nature, including the power to withhold approval, prohibit release, and refuse deployment where there is scientific uncertainty or the potential for serious or irreversible harm. Precaution must not be reinterpreted as an obligation to deploy technologies on the grounds that inaction may carry risks.
- Ensure that capacity-building and public finance strengthen independent assessment, monitoring, biosafety, regulation, and liability and redress, rather than creating markets, pilots, infrastructure, promotional outreach, or dependency for uptake.
- Refuse attempts to elevate speculative benefits above scientific uncertainty, irreversible harm, ecological integrity, rights, sovereignty, and proven alternatives.
- Uphold Target 17 of the KM-GBF and CBD Articles 7, 8(j), 11, 12, 14, 16, 18, 19, and 20 as foundations for biosafety, rights, ABS, traditional knowledge, liability and redress, and accountable public governance—not as cover for implementation.
- Protect political attention and public resources for agroecology, FMSS, community-led conservation, and structural action on the forces driving biodiversity loss.



No false solutions in biodiversity's name

COP17 will test whether the CBD places life, justice and democratic authority above technological ambition. Biodiversity governance must resist the enclosure of life and defend the sovereignty, collective rights and living systems on which genuine transformation depends.



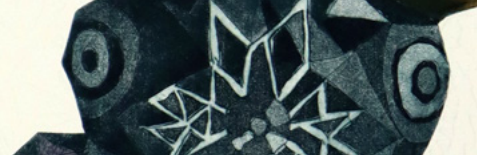
Annex: The choices behind the brackets

This annex is a practical guide for negotiators, Parties, movements, and public-interest advocates engaging with the unresolved text before and during COP17. It brings together the relevant wording and references, the essential negotiating positions, and what is at stake.

As brackets are removed, merged, or replaced, the central test remains: does the outcome strengthen precaution, rights, sovereignty, and the authority to refuse or create further pathways for synthetic biology uptake through finance, technology transfer, capacity-building, and national planning?

The purpose is not to render synthetic biology more acceptable through procedural safeguards but to resist its normalisation as a biodiversity solution and keep attention focused on the structural forces driving the interconnected crises of biodiversity, food, climate, land, health, and the economy.

TAP wording and reference	Essential position	Key Issues for the negotiations
[Adopts] / [takes note of] the TAP	Reject adoption. If the TAP cannot be stopped, "takes note of" is less dangerous, but only if it is tied to strict precautionary constraints.	Adoption would give the TAP political authority and make it easier to use as a basis for funding, implementation, and technology transfer.
Voluntary use of the TAP	Support voluntariness only where it protects countries and communities from pressure to participate.	No country should be steered into synthetic biology uptake. Precaution, rights, assessment, liability and redress, and refusal must remain binding principles, not optional safeguards.
Horizon scanning, monitoring, and assessment	Defend and strengthen this language.	This is the strongest remaining basis for keeping the TAP anchored in the consideration of uncertainty, independent assessment, non-release, and the authority to refuse.
Methodological gaps and lack of clear mechanisms	Maintain reference to this language strongly.	These gaps show that existing systems are not ready to identify, assess, or govern synthetic biology or protect from irreversible harm. They support non-release, non-deployment, and a precautionary pause.
Potential positive and negative impacts	Reject false balance.	Speculative benefits must not be placed on the same footing as irreversible ecological, social, cultural, and rights-related harms.
[Reminds] / [urges] Parties to take a precautionary [and science-based] approach	Support "urges". Accept "science-based" only if science is independent, multidisciplinary, precautionary, and rights-based.	Precaution must not be reduced to technocratic risk management after development pathways have already been accepted. Preferable language would be to be 'based on the best available science and current knowledge, including all knowledge systems'.
Precaution with respect to R&D, innovation, environmental releases, and use of synthetic biology applications	Strongly support this language, and ensure that precaution is broadened beyond release.	Precaution must apply before design, finance, transfer, field trials, release, use, or commercialisation—not only at the point of environmental release.
Target 17, mutually agreed terms, "where applicable"	Use Target 17 to tighten precaution and ABS. Reject loopholes such as "where applicable".	Weak ABS wording can enable DSI-enabled biopiracy and weaken obligations to obtain consent and share benefits.



TAP wording and reference	Essential position	Key Issues for the negotiations
Precaution, receiving-environment risks, environmental impact assessment, and biocontainment V/14(e), 1.5(g)	Defend strong precautionary language, explicit consideration of receiving-environment risks, robust environmental impact assessment, and biocontainment measures that do not create a presumption in favour of release.	Weakening these provisions could shift the emphasis from precaution and prevention towards risk management and technological containment as the primary response to uncertainty. Safeguards 2 and 4.
R&D budgets, in silico infrastructure, national road maps, and finance: 1.1(c), 1.2(c), 1.4(a), VI/16–17	Do not earmark sector budgets, infrastructure, national plans, or GEF resources for synthetic biology uptake. Prioritise independent detection, assessment, biosafety, monitoring, regulation and liability and redress.	These provisions could institutionalise synthetic biology in public planning and finance before democratic acceptance or adequate safeguards, diverting resources from agroecology and community-led alternatives. Safeguards 1, 3, and 4.
Governance capacity versus R&D capacity: Outcome Area 1 objective, 1.3(a)–(b), output 1.5	Remove brackets around monitoring, governance, and regulation, and retain the assessment actions in output 1.5. Do not fund unqualified R&D scholarships while oversight remains optional.	The current asymmetry builds capacity to develop synthetic biology while weakening the capacity to scrutinise, govern, and refuse it. Safeguards 2, 3, and 4.
Knowledge systems, FPIC, benefit-sharing, sovereignty, and information hubs: 2.2(f), output 2.3, 3.1(a), 3.1(f)	Restore explicit protection of Indigenous Peoples' and local communities' knowledge systems; remove qualifications on FPIC; use "ensure" for benefit-sharing; retain biosafety and ABS outputs; protect sovereignty over genetic resources; and place information hubs under transparent, rights-based public governance.	Weak or bracketed language can facilitate appropriation of genetic resources, traditional knowledge, and DSI, weaken consent and benefit-sharing, and shift control to external information systems. Safeguards 5 and 6.
Public-private partnerships, voluntary licensing, intellectual-property frameworks, and standardisation: 2.2(f), 1.4(b)	Reject default reliance on private partnerships and voluntary licensing. Prevent intellectual property rules or international standards from narrowing policy space, public control, biosafety obligations, or the right to refuse.	These provisions can consolidate proprietary platforms, patents, and corporate standards while socialising risk and public investment. Cooperation must remain transparent, accountable, and subordinate to sovereignty, rights, food and seed systems, and biodiversity protection. Safeguards 3 and 6.



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