INFRASTRUCTURE for the SUSTAINABLE DEVELOPMENT GOALS

POLICY BRIEF | NOVEMBER 2018

Mainstreaming biodiversity in the infrastructure sector: Fostering system-level approaches

Convention for Biological Diversity COP 14 (Sharm El-Sheikh, Egypt, 17-29 November 2018)

BACKGROUND

As a key outcome of the 13th Meeting of the Conference of Parties (COP) to the Convention on Biological Diversity (CBD) in December 2016, the Cancun Declaration underlined the importance of mainstreaming biodiversity into development decisions to solve pressing economic and societal challenges. The declaration highlighted the need for integrated approaches to both the conservation and the sustainable use of biodiversity within sectors that directly depend on or impact biodiversity. Ahead of COP 14, the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) has called for further work on mainstreaming biodiversity in the energy and mining, infrastructure, and manufacturing and processing sectors.

Building on this momentum, it is of paramount importance to call attention to the interlinkages between biodiversity, ecosystems, and landscapes (natural infrastructure) and diverse forms of infrastructure, including systems for water and sanitation, transport, buildings, energy, food, telecommunications, resource use, and waste management. This nexus is central to achieving the 2030 Agenda for Sustainable Development. The delivery of all of the socio-economic Sustainable Development Goals (SDGs) depend on the development of new infrastructure. At the same time, resilient infrastructure (SDG 9) depends on the services and benefits provided by natural habitats and ecosystems, and infrastructure itself can have significant impacts on terrestrial (SDG 15) and marine (SDG14) ecosystems and biodiversity. Infrastructure also impacts climate change (SDG13), which in turn has consequences for the natural environment. The significance of the relationship between infrastructure and biodiversity is underlined by both the scale of expected infrastructure development and the longevity of infrastructure assets. Sustainable forward-thinking approaches are thus critical.

Recognition of the interdependencies of biodiversity and infrastructure is essential at all stages in countries' infrastructure development pathways. These issues are as relevant to high income countries with a legacy of aging infrastructure, as they are in rapidly urbanising countries where major investments will be made into new infrastructure over the coming years.

1. Convention on Biological Diversity. *Cancun Declaration on Mainstreaming the Conservation and Sustainable Use of Biodiversity for Well-being*. 2016. https://www.cbd.int/cop/cop-13/hls/in-session/cancun-declaration-draft-dec-03-2016-pm-en.pdf
2. Convention on Biological Diversity, Subsidiary Body on Scientific, Technical, and Technological Advice. *Recommendation Adopted by the Subsidiary Body on Scientific, Technical, and Technological Advice, XXI/4. Mainstreaming of biodiversity in the sectors of energy and mining, infrastructure, manufacturing and processing, and health*. 2017. Paragraph 3. https://www.cbd.int/doc/recommendations/sbstta-21/sbstta-21-rec-04-en.pdf

KEY MESSAGES

1. Infrastructure needs to incorporate sustainability principles to eliminate or minimize threats posed to the conservation and sustainable use of biodiversity. Construction of linear infrastructure and dams, in particular, if not carefully planned can often lead to the fragmentation of natural habitats. All types of infrastructure can pollute air, land and water, and thus pose direct and indirect threats to ecosystems and biodiversity. Point source pollution can destroy habitats, and climate change caused by greenhouse gas emissions can result in the loss of habitat, shifts in species distribution, and changes to migration and breeding patterns, among other things. The construction of infrastructure also requires large amounts of natural resource inputs, and the extraction of those resources impacts biodiversity. In addition, the opening of new transportation routes can lead to issues such as an increased pressure on natural resources and biodiversity, including through increased illegal wildlife trafficking and the introduction of invasive species. All of these potential impacts must be considered in the infrastructure decision-making process in order to avoid or minimize them when possible and offset them if necessary.

2. Environmental and social safeguards should be applied starting from an early stage of the infrastructure planning cycle. Upstream strategic planning and forward-thinking by governments are required to ensure that biodiversity is integrated across the entire infrastructure lifecycle. While a number of tools exist for integrating environmental and social safeguards into infrastructure development and spatial planning, they are usually applied only at the project level, and often too late in the project planning cycle to be effective in managing environmental and social risk.[3] The early application of strategic planning tools and approaches such as Strategic Environmental Assessment (SEA) to support the decision-making process at national and landscape scale is essential to reducing impacts to biodiversity. Public participation and stakeholder engagement are also of particular importance at the earliest stages of project planning, and can help to ensure that ecosystem service and biodiversity benefits are incorporated into decision-making processes, as local and indigenous communities are often the de facto guardians of the environment.

3. An integrated approach to infrastructure planning and development is crucial to incorporate a broad array of stakeholders and cross-sectoral linkages while mainstreaming biodiversity in the infrastructure sector. The complex networked properties of infrastructure mean that the development of infrastructure projects requires a whole-system approach to properly assess impacts upon the environment, to optimize trade-offs, identify synergies for more efficient operation, and to guard against lock-in of unsustainable practices. Interlinkages between different infrastructure systems, sectors, project phases, locations, and aspects of sustainability (environmental, social, and economic) should be considered. Institutions and governance mechanisms that support multi-disciplinary cooperation and coordination across various policy levels (sub-national, national, international) are necessary to implement

3. World Wildlife Fund. *Review of Screening Tools to Assess Sustainability and Climate Resilience of Infrastructure Development*. 2017. https://c402277.ssl.cf1.rackcdn.com/publications/1113/files/original/Review_of_Screening_Tools_Final_Report_SEP_2017.pdf?1510591991 and Inter-American Development Bank. *Lessons from Four Decades of Infrastructure Project-Related Conflicts in Latin America and the Caribbean*. 2017. https://publications.iadb.org/handle/11319/8502.

such an approach, and multi-stakeholder consultation should be built in at different stages of the process to ensure that infrastructure is delivering the right services in an inclusive manner. Existing tools such as Strategic Environmental Assessment (SEA), Environmental and Social Impact Assessment (ESIA), Cumulative Impact Assessment (CIA), the Capacity Assessment Tool for Infrastructure (CAT-I), spatial planning tools, and the various guidelines and sustainability rating schemes (e.g. Envision, SuRe, INVEST), can all be used to support an upstream, integrated approach that both minimizes impacts to nature and maximizes opportunities to protect and strengthen it.

4. Avoiding, or at least minimizing, detrimental impacts of infrastructure projects on ecosystems and biological diversity should be prioritised over offsetting environmental degradation. To this end, policy incentives need to promote public participation and early-stage holistic infrastructure planning that uses the mitigation hierarchy that prioritises efforts to avoid impacts, followed by minimisation, then restoration, with offsetting as a last resort. Application of the mitigation hierarchy is most effective at the earliest stages of planning, when avoidance and minimization options are still cost-effective and politically feasible. This is particularly important for the protection of globally valuable ecosystems.

5. Climate resilience should be considered for all infrastructure projects. A better understanding of the complex relationships between climate pressures and landscapes will help us to reduce the impacts of infrastructure on biodiversity. It will also help to limit climate risks to infrastructure systems. Infrastructure planning should consider Nature-based Solutions (NbS), which provide catalytic opportunities to limit and mitigate climate risks and biodiversity loss, while at the same time increasing the resilience of infrastructure itself and improving service provision. For example, avoiding infrastructure development in locations that are most exposed to climate hazards (e.g. mountain slopes and low-lying coastlines) helps to manage climate risks to infrastructure and conserve biodiversity.[4]

6. Mainstreaming Nature-based Solutions in the infrastructure sector can contribute to a "triple-win" of increased environmental, social, and economic sustainability. The complex networked properties of ecosystems in nature provide a host of infrastructure services, including water filtration, carbon sequestration, land stabilization, and flood protection, among others. Natural infrastructure solutions such as the enhancement of storage capacities of wetlands, the preservation or restoration of forests to protect against landslides, increasing the number and ecological value of urban green spaces, or the implementation of permeable pavements have the potential to protect biodiversity and provide ecosystem service benefits.[5] This simultaneously improves public health and helps to support the transition to an inclusive green economy, inter alia through the creation of green jobs.[6] Infrastructure planning and development should account for and maintain the natural systems and what they need in order to continue to flow, adapt, and produce – while delivering the services humans need to survive.

4. World Wide Fund for Nature and the International Institute for Sustainable Development. *Infrastructure at odds with biodiversity? Policy paper – Mainstreaming biodiversity conservation into infrastructure.* 2017. https://www.cbd.int/financial/2017docs/wwf-infrastructuremain2017.pdf

5. For more information on NbS and natural infrastructure, please refer to the IUCN report *Nature-based Solutions to address global societal challenges*

6. International Union for the Conservation of Nature. *Nature-based Solutions to address global societal challenges.* 2016. https://portals.iucn.org/library/node/46191

7. Maintaining or restoring natural infrastructure is often less costly than "grey" infrastructure alternatives, especially once cross-sectoral co-benefits are taken into account. For example, in Vietnam the restoration and protection of almost 12,000 hectares of mangroves had a cost of USD 1.1 million. Yet, it saved USD 7.3 millions of expenditures on dyke maintenance per year.[7] Investing in maintaining and strengthening the functional capacity of natural ecosystems should thus be the first priority for policymakers. Once natural ecosystems services are lost, the cost of restoring or replacing them is much higher than the cost of preserving them in the first place.

8. Innovative financing solutions are needed for sustainable infrastructure. The SDGs and Paris Agreement provide a framework of quantifiable sustainable development targets. Meeting these targets will require tens of trillions of dollars of infrastructure investment. Innovative financing solutions - such as green bonds, for example - are needed to increase the sustainability of the investments. Such financing mechanisms should incorporate biodiversity, climate mitigation and adaptation, inclusivity, and other elements of sustainability. The city of Washington D.C, for example, has leveraged public sector finance to create a stormwater retention market allowing developers to purchase credits from offsite, green infrastructure solutions across the city. This solution creates incentives for less costly but green alternatives to onsite installations, at the same time addresses sustainable development priorities such as protecting natural habitats, creating jobs and boosting the economy.

7. TEEB. *The Economics of Ecosystems and Biodiversity for National and International Policymakers.* 2009. http://teebweb.org/wp-content/uploads/2013/04/TEEB-for-POLICYMAKERS-Chapter-10.pdf

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