



QUICK TIPS

INTEGRATING THE ENVIRONMENT AND CLIMATE CHANGE IN INFRASTRUCTURE PROJECTS

Infrastructure is the essential foundation for economic and social activities and, according to the G20 Quality Infrastructure initiative, covers energy, transport, water, cities and digitalisation¹. The next decade is a ‘use it or lose it’ moment in economic history with infrastructure investments surpassing the total current stock. Given the long lifespan of such investments, we must ensure projects not only avoid negative impacts (do no harm), but are also low-emission, resilient, sustainable and circular (do good). It is important to realise that environmental and social screening, impact assessment, monitoring and management - legal requirements and standard practice in all countries to avoid negative impacts - are not enough to implement the objectives of the green deal. This document aims to go beyond standard practice and provide guidance on how to do more good, or rather, do it right. In this respect, the post COVID-19 green recovery provides a unique chance to engage in transformative actions

towards greener infrastructure for the future, summarised as “building back better”. This requires the combined efforts of government and the private sector.

Infrastructure is cross-sectoral and can be spatially differentiated into ‘nodes’ or ‘hubs’ with concentrations of activities and “linear infrastructure” connecting these hubs. This note provides quick practical tips to maximise opportunities for environmentally sustainable and climate compatible infrastructure projects and investments. It addresses project development (preparation, appraisal and procurement), implementation (construction, operation, maintenance) and decommissioning; for policy and planning, including the use of strategic environmental assessments, reference is made to other - sector-specific - Quick Tips.



Environmental concerns related to infrastructure

- ▶ Direct impacts: infrastructure construction and operation is associated with drivers of environmental change: land conversion, fragmentation of natural habitats (e.g. barrier effect of dams or roads), extraction of minerals, disturbance (e.g. noise, hydrology, erosion), waste, pollution and greenhouse gas emissions (from vehicles, ships, industry).
- ▶ Indirect consequences: new roads provide unintended access to unexploited natural areas (logging, poaching, land conversion) or may induce people to migrate into more vulnerable areas (e.g. floodplains); construction and use of transport infrastructure leads to the spread of communicable diseases (HIV/AIDS, COVID-19) and invasive plants or animals; reservoirs attract unplanned settlers; above-surface oil pipes are susceptible to illegal tapping or terrorist attacks, etc.
- ▶ Natural hazards and climate vulnerability: hard infrastructure may be susceptible to damage or failure due to natural hazards exacerbated by climate change (extreme weather events, sea level rise, changing temperatures) leading to network unreliability and disruptions of value chains.

¹ Digitalisation is addressed in a separate Quick Tips document.



Work progress at waste water treatment plant in Masaya



Water supply in Yaoundé – EIB/AFD project

- ▶ Transboundary impacts: infrastructure projects in cross-border river basins/watersheds and infrastructure corridors can have profound impacts in neighbouring and up- or downstream countries. Differences in regulations, policies and economies often complicate a shared approach to address environmental issues.
- ▶ Lock-in and stranded assets: Given the long lifespan of infrastructure and its relative inertia to transformative action, failure to invest in clean, sustainable and resilient infrastructure can lock countries into a greenhouse-gas and resource intensive development pathway or risk the stranding of assets before the end of their lifespan.



Five fundamental questions to ask of each proposed project

1. How does the project **impact** the environment and climate? This is usually covered by Environmental and Social Impact Assessment (ESIA).
2. How does the project **depend** on the environment? Projects may depend on ecosystem services (e.g. hydropower, inland shipping, cities depend on sufficient water stored or supplied by ecosystems). This is an ESIA requirement with an increasing number of IFI's.
3. What **risks** does environmental degradation and/or climate change and/or natural hazards create for a project? This relates to climate resilience. Climate Risk Assessment, standalone or as part of an ESIA, provides relevant early information.
4. How can a project **improve** the environment? This positive planning approach reflects the transition agenda of the European Green Deal. Moving from “do no harm” to “do good”.
5. What **alternative** solutions exist for the problem addressed by the project? Which alternative contributes most to the Green Deal objectives?



Mainstream sustainability and resilience as early as possible

- ▶ Pro-actively identify opportunities to integrate environmental, climate and disaster risk reduction **objectives** into identification, design, construction, operation and decommissioning of infrastructure projects; integrate environmental criteria into project selection and prioritisation (e.g. using carbon prices or considering environmental externalities in cost-benefit analyses, multi-criteria analyses).
- ▶ Ensure that infrastructure projects are linked to spatial and/or land-use plans, which preferably are aligned to climate, environmental, biodiversity and disaster risk reduction objectives.
- ▶ Engage early with public, private and civil society stakeholders; plan for the disclosure of environment-related information (transparency), also to investors and ensure accountability.
- ▶ Apply an early ESIA, including a Climate Risk Assessment, before or coinciding with economic analysis in the identification phase, so it can contribute to the comparative analysis of options/alternatives.



Promote the ‘greening’ of infrastructure

- ▶ Green infrastructure: create networks of (semi-)natural or constructed nature that provide a variety of ecosystem services ranging from flood storage and coastal defence, to nature protection, combatting urban heat islands or providing recreational space.
- ▶ Nature-based solutions: use natural ecosystem processes to address issues traditionally solved by hard (or grey) infrastructure (e.g. coastal defence, wind breaks, water purification, sediment traps) in order to be more flexible and resilient (“green where possible, grey where necessary”).



- ▶ Retrofit green elements into existing project design, including disaster resilient features and mitigation measures such as animal under- and overpasses in roads, fish ladders in dams and weirs, green roofs to combat heat stress, integrating solar panels in infrastructure, adding flood resilience to urban structures.
- ▶ Apply a circular economy and multifunctional approach to designing infrastructure in order to favour the efficient use and reuse of assets and resources.



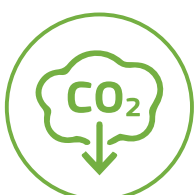
Apply the mitigation hierarchy to infrastructure projects

- ▶ Contribute to Green Deal objectives on biodiversity, climate, and environmental sustainability.
- ▶ Avoid negative and enhance positive impacts by alternative design, location (avoid sensitive areas), technology, and timing (avoid fish spawning season for dredging and construction).
- ▶ Mitigate impacts if avoidance is impossible, by adding elements (noise barriers, sediment traps), or by on-site restoration and rehabilitation of ecosystems or natural resources after temporary disturbance (during construction).
- ▶ Compensate (offset) impacts that cannot be mitigated. Biodiversity offsets are measurable conservation outcomes that result from actions designed to compensate for significant, residual biodiversity loss, based on the polluter pays principle. Offset programmes aim to deliver No Net Loss (of a habitat, species, ecological status, ecosystem services), or preferably a Net Gain.
- ▶ Screen for ESIA: if required the proponent provides an ESIA explaining how the mitigation hierarchy is applied, and including an Environmental and Social Management Plan (ESMP).



Create climate resilient infrastructure (adapt to climate change)

- ▶ Avoid a narrow focus on resilience of **assets** only, but also include the resilience of **services** provided by infrastructure networks, and of infrastructure **users**.
- ▶ Integrate climate-proofing and disaster resilience in the design of the infrastructure (e.g. Including disaster resilient building codes/design standards in infrastructure development). A Climate Risk Assessment can be useful in this regard (for example, backup capacity to avoid paralysing a whole system, enhanced maintenance and repair capacities).
- ▶ Develop emergency preparedness plans and disaster risk reduction strategies in relation to key infrastructure assets in line with local and/or national Disaster Risk Reduction Strategies.



Design for low-emission (climate mitigation) and resource efficient (circular) infrastructure:

- ▶ Opt for energy-efficient, low-carbon infrastructure and building materials, and ensure that these considerations are included at the start of the planning and design process.
- ▶ Apply circular principles to designs and material choices, including durability and adaptability, in order to optimise material use and reduce waste and emissions throughout the life cycle of the project.

- ▶ Minimise the transport of materials over long distances, minimise the energy requirements of construction techniques.
- ▶ Wherever possible, switch to low-carbon, renewable sources of energy to power infrastructure.



Promote green procurement

- ▶ Include environmental criteria in tender evaluation procedures (e.g. carbon intensity of bids, projected impact on use of resources, local air pollution or biodiversity).
- ▶ Incorporate environmental, including climate change risks/impacts into qualification and selection criteria, technical specifications, standards, KPIs, and contractual obligations.
- ▶ Require tenderers/proposers to submit an ESMP, including proven capacity to implement. This normally results from an ESIA and should become part of the contractual provisions.
- ▶ Link payments to environmental performance; and apply penalties for breaches of environmental obligations.
- ▶ Require private and state-owned enterprises to follow internationally-accepted Responsible Business Conduct standards and adopt green supply chain management.



Contribute to international environment and climate commitments

- ▶ Verify how the proposed activity contributes to disaster risk reduction and the **Rio Conventions** (See Guidance on activities that qualify for Rio Markers for inspiration) and seek opportunities to secure the relevant markers.



Integrate environment and climate change in investments

- ▶ **Blending can help achieve the Green Deal objectives:** consider using a grant to cover the additional cost of improving a project and ensuring that it is fulfilling its potential to improve long-term sustainability, and embrace the Green Deal (shifting from “do-no-harm” as the bare minimum to “do-good”).
- ▶ Ensure that **environmental and social** safeguards used by lead and intermediary financial institutions are up to EU standards and promote green public procurement in contracts.
- ▶ Promote sustainable finance and the use of the **EU taxonomy** on sustainable finance, in order to integrate sustainability considerations into financial policies and investments and mobilise finance for sustainable and green infrastructure.



Further information and support:

- ▶ [G20 Quality Infrastructure](#) with [Quality Infrastructure Principles](#); [OECD Reference Note on Environmental and Social Considerations in Quality Infrastructure](#);
- ▶ [Global Infrastructure Hub](#) and Quality Infrastructure [Investment Database](#)
- ▶ OECD, 2018, [Climate-resilient Infrastructure](#). OECD Environment Policy Paper No. 14.
- ▶ [OECD Compendium of Good Practices for Quality Infrastructure Investment](#)
- ▶ EU [Green Public Procurement page](#), including [Criteria for Road Design, Construction & Maintenance](#); [Green Procurement](#); [Circular Economy](#)
- ▶ [Designing buildings in the context of the circular economy](#)
- ▶ Guidelines “[Integrating the environment and climate change into EU international cooperation and development](#)”.
- ▶ [OECD DAC Guidance on Rio markers for climate](#) for works that qualify for Rio markers.
- ▶ [EU Sustainable Finance Action Plan and taxonomy for sustainable activities](#) - Works in view of the establishment of an EU classification system for sustainable activities, i.e. an EU taxonomy.
- ▶ [LIFELINES. The Resilient Infrastructure Opportunity](#), World bank Group* All documents are available on capacity4dev (public groups: Environment, Climate Change and Green Economy)

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