Sectoral Guidance for Tracking Green Finance

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ABOUT INTERNATIONAL DEVELOPMENT FINANCE CLUB

IDFC, created in 2011, is a leading group of 26 national and regional development banks from all over the world. IDFC members have the unique function of supporting domestic policies while transferring international priorities into their own constituencies. IDFC members are aligned with and work together to implement the Sustainable Development Goals (SDGs) and the Paris Climate Agreement agendas. Through IDFC, and in close partnership with other development bank networks, members join forces as a platform to promote and leverage sustainable development investment worldwide.

ABOUT CLIMATE POLICY INITIATIVE

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has seven offices worldwide, in Brazil, India, Indonesia, South Africa, the United Kingdom, and the United States.

ABOUT TRINOMICS

Trinomics is an international research and consultancy firm that provides specialist policy advice in the fields of environment, climate change, energy and sustainability, supporting businesses, governments and organizations in the development and implementation of effective policies and broader strategies.

CONTENTS

1. INTRODUCTION

Together, International Development Finance Club (IDFC) members account for a major portion of the global development finance landscape, increasingly with a mandate to deliver low-emission, climate-resilient development in their countries of operation. As IDFC members' green finance flows grow, ensuring the transparency, consistency, and credibility of their climate finance reporting will be key. The three-year *IDFC Capacity Building Initiative for Tracking Green Finance* is designed to deliver practical and actionable guidance to IDFC members on robust climate finance tracking. This Sectoral Guidance document unpacks the details of using the Common Principles to track climate finance flows in the following five sectors: energy; transport; water; agriculture, forestry, and other land use (AFOLU) and fisheries; and the urban sector. These are priority sectors for many IDFC members and therefore merit closer examination of the practical aspects of quantifying and tracking finance flows in each specific sectoral context.

This document applies the following structure for each sector:

1. Context
2. Tracking mitigation finance
    a. Table of eligible mitigation activities
    b. Taxonomy alignment for mitigation activities
3. Tracking adaptation finance
    a. Determining adaptation eligibility
    b. Quantifying adaptation
    c. Case studies
4. Tracking biodiversity finance (water, AFOLU and fisheries, and urban sectors)
    a. Table of eligible nature and biodiversity activities
    b. Quantifying biodiversity finance
    c. Case studies
    d. Links between nature and biodiversity finance and climate finance

First a general context is given, highlighting the relevance of the sector to mitigation and adaptation action, as well as to the Sustainable Development Goals (SDGs) more broadly. Each chapter then details the practical aspects of tracking mitigation, adaptation, and biodiversity finance, respectively.

For mitigation, a detailed breakdown of the relevant sectoral taxonomy is provided, seeking to unpack technical terms, screening criteria, and guidance per the Common Principles for Climate Mitigation Finance Tracking (2023). This is supplemented with further information on conducting an (ex-ante) greenhouse gas (GHG) emissions reduction assessment within the particular sectoral context, as well as clarification of the approach to quantifying mitigation finance for eligible activities and linking that with the reporting template used by IDFC members for the Green Finance Mapping (GFM).

For adaptation, the guidance elaborates on conducting a sectoral climate risk assessment and provides hypothetical case studies to illustrate the approach to qualifying and quantifying adaptation finance under the updated Common Principles for Climate Change Adaptation Finance Tracking (2023).

Similarly, the biodiversity section[1] seeks to clarify eligible activities and the scoring approach for quantifying biodiversity finance under IDFC's in-house methodology (2021), as well as provide an overview of potential overlaps with climate finance with a view to avoiding double-counting.

Overall, this document aims to build on the approaches outlined in the General Guidance[2] prepared by Climate Policy Initiative (CPI) and Trinomics for IDFC members. It delves deeper into sectoral contexts to ensure that members are equipped with the specific technical guidance needed to track finance across priority sectors. The expectation is that this Sectoral Guidance will assist IDFC members with the reporting process for future iterations of the IDFC's GFM.

1 The Energy and Transport chapters do not contain a biodiversity tracking section, given the limited relevance of these sectors in terms of eligible activities.

2 The General Guidance prepared by Climate Policy Initiative and Trinomics on behalf of the IDFC can be found here: www.climatepolicyinitiative.org/publication/guidance-for-tracking-green-finance/

2. ENERGY SECTOR GUIDANCE

2.1 CONTEXT

It is estimated that the energy sector accounts for as much as three-quarters of global greenhouse gas emissions (GHG) (IEA, 2023). As such, the energy sector holds significant mitigation potential. Substantial and transformative changes are needed for energy systems in the near future, including reduced fossil fuel consumption, increased production from low- and zero-carbon energy sources, and increased use of electricity and alternative energy carriers (IPCC, 2022). CPI estimates that the energy sector requires around USD 3 trillion per year in climate finance between now and 2030 and up to USD 2.6 trillion per year from 2030-2050 (CPI, 2023a). Though the energy sector typically receives the largest proportion of global mitigation finance, it also has the largest climate finance investment gap, at USD 2.5 trillion per year (CPI, 2023a). The importance of climate finance for energy sector mitigation, transition, and transformation is underscored by global trends of rising energy demands driven by increasing population growth and urbanization - a trend that is expected to continue (IPCC, 2022).

With increasing climate risks, including rising temperatures and extreme weather events, adaptation measures, such as building climate-resistant infrastructure for the energy sector, are essential for safeguarding assets, minimizing disruptions, and maintaining energy security.

It is important to recognize that investing in decarbonized energy systems may entail short-term trade-offs across economic, environmental, and social dimensions. For instance, for some renewable energy technologies, there may be short-term trade-offs between emissions reduction and network reliability. Some energy projects, especially those involving the construction of new infrastructure, can have significant land and water demands and can have a negative impact on water supply, local ecosystems, and air quality (Quin et al., 2018; IPCC, 2022). However, such trade-offs are likely to be temporary and must be balanced against the greater and more unpredictable costs of inaction.

In this sectoral context, the Common Principles start from the premise that activities are only eligible if they neither conflict with, nor undermine, the objectives of SDG 7; ensuring access to affordable, reliable, sustainable, and modern energy for all. The transition of the energy sector also impacts many other important global socioeconomic factors, such as economic growth, energy security, and air pollution (IPCC, 2022). Therefore, investors should also consider the importance of a just transition in the energy sector, ensuring that the costs and benefits of the transition are fairly distributed across and within regions. IDFC institutions should make a conscious effort to assess the potential negative impacts of their energy sector investments, prioritizing synergies, avoiding trade-offs, and considering a just transition.

2.2 MITIGATION

Mitigation in the energy sector is achieved through the following key actions:

1. Renewable energy generation
2. Lower-carbon energy generation

3. Efficient energy generation
4. Energy efficiency
5. Energy storage and network stability
6. Transport of energy
7. Reduction of fugitive emissions

The Common Principles for Climate Mitigation Finance Tracking (2023) identifies a positive list of 13 energy sector mitigation activities. Table 2.1 seeks to simplify this list and provide further guidance and explanation of key terms with screening criteria. Where screening criteria involve demonstrating a substantial increase in energy efficiency or a substantial reduction in net GHG emissions while complying with either country- or sector-specific standards/benchmarks, these may be validated based on published sources or defined by the reporting institution itself.

Table 2.1 Eligible mitigation activities in the energy sector

No.	Action areas	Eligible activities	Guidance	Screening criteria
2.1	**Renewable energy generation**	Generation of renewable energy to supply electricity, heating, mechanical energy, or cooling	The renewable energy must have low lifecycle GHG emissions, that is, emissions that are substantially lower than corresponding GHG emissions from fossil fuel generation, without carbon capture and storage, or utilization. First-generation liquid biofuels, or biofuels derived from food crops, are not eligible unless: • they are sourced from waste • they are produced according to international sustainability standards (e.g., RTRS, RSPO) Additionally, the biofuel may not interfere with food security. For bioenergy from solid biomass, lifecycle GHG emissions must include emissions from transport and production (e.g., tilling and fertilizer use).	To validate eligibility, there needs to be a demonstrated substantial reduction in net GHG emissions compared with energy generation from fossil fuels. Analysis of GHG must consider Scope 1, 2, and 3 emissions[3] from all materials and related activities such as energy generation, construction (e.g., hydropower reservoir construction), and transportation (e.g., biomass). Both direct and indirect land-use emissions should be included in the assessment if deemed material and feasible to assess. However, for renewable energy forms that are widely recognized as having low GHG emissions(e.g., wind, solar, tidal), a GHG emissions assessment is not required. A good example of a substantial reduction in GHG emissions for this activity would be a shift in electricity generation from coal to solar, which can achieve up to 90% CO_2 emissions reduction.

3 Scope 1 emissions are direct GHG emissions from sources that are owned or controlled by an organization. Scope 2 emissions are indirect GHG emissions from the generation of electricity, heat or steam that is purchased or consumed by an organization. Scope 3 emissions are indirect emissions that occur as a result of an organization's activities, such as emissions from the supply chain or employee commuting.

No.	Action areas	Eligible activities	Guidance	Screening criteria
2.2	**Renewable energy generation**	Joint use of renewable energy and fossil fuel for energy supply. Examples include integrated solar power or energy production from biomass.	Energy supply is considered the generation of electricity, heat, mechanical energy, or cooling. For renewable energy generation, the same criteria as Activity 2.1 apply. The joint use of fossil fuel and renewable energy is considered mitigation finance only if it results in substantially lower GHG emissions than in the use of fossil fuels alone. Fossil fuel consumption must be minimized as much as possible in all cases, and only used where integral to renewable energy consumption.	To validate eligibility, there needs to be a demonstrated substantial reduction in net GHG emissions from the joint project compared with energy generation from fossil fuels alone. Only finance for renewable energy is eligible as mitigation finance, even in cases where separate sources are financed together. If project costs cannot be disaggregated by energy type, finance can be apportioned according to the share of energy input/output that is renewable.
2.3	**Lower-carbon energy generation (hydrogen)**	Production, transport, or storage of low-carbon hydrogen or low-carbon products made from low-carbon hydrogen	Hydrogen is produced through the electrolysis of water which requires the input of electricity. Low-carbon hydrogen includes hydrogen generated with very low-carbon electricity, such as renewable energy or natural gas with carbon capture and storage or utilization (see Activity 12.5), or any source where a substantial reduction of GHG can be demonstrated. Production of low-carbon materials/products from hydrogen may include fuels, chemicals (e.g., ammonia, methanol), polymers, and other products. The hydrogen used to produce these must have low-carbon lifecycle emissions to be eligible. (See also Activity 4.9 in the Common Principles for criteria on use)	To validate eligibility, there needs to be a demonstrated substantial reduction in net GHG emissions compared with hydrogen generation from efficient steam reforming of natural gas. Scope 3 emissions should be taken into account where expected to be material. In cases where the hydrogen's end use is as a transport fuel, all transport and storage costs are also eligible, regardless of the hydrogen's carbon intensity. In contrast, where transport and storage are shared between low-carbon and non-low-carbon hydrogen, only financing apportioned for the low-carbon hydrogen may be considered mitigation finance.
2.4	**Lower-carbon energy generation**	Measures that replace existing carbon-intensive fuels with different, lower-carbon fuels to supply energy	Energy supply is considered the generation of electricity, heat, mechanical energy, or cooling. The lower-carbon fuel may not be a fossil fuel (e.g., natural gas) for electricity generation. Fossil fuels may be considered for other uses (e.g., heating). In these cases, the project may not extend the life of equipment generating energy, heat or cooling from fossil fuels. In all cases, the project may not deter the expansion of renewable energy.	To validate eligibility, there needs to be a demonstrated substantial reduction in net GHG emissions compared with an alternative carbon-intensive fuel. Scope 3 emissions should be taken into account where expected to be material.

No.	Action areas	Eligible activities	Guidance	Screening criteria
2.5	**Lower-carbon energy generation**	Use of waste gas for energy supply	Energy supply is considered the generation of electricity, heat, mechanical energy, or cooling. Examples of waste gas that can be used as feedstock for energy supply include: • Landfill methane • Abandoned mine methane • Flared or vented gas • Biogas from municipal sewage, wastewater, or agricultural activities • Associated gas (gas separated from oil in oil production) The following waste gases are not eligible: • Coalbed methane • Gas from new oil production • Methane from mines currently producing coal Using the waste gas, especially for associated gas, may not extend reliance on oil production by making it more financially attractive or deter the expansion of renewable energy.	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions from the use of the waste gas, compared with the use of a non-waste gas or a selected benchmark. Financing for new or modified infrastructure for waste gas transport is eligible, but must be apportioned to reflect the share of infrastructure utilization by the waste gas. If the share cannot be reasonably determined, then no finance may be considered mitigation finance.
2.6	**Efficient energy generation**	Upgrades to existing plants that either generate electricity or desalinate water so that they can jointly provide both energy and desalination	Energy supply is considered the generation of electricity, heat, mechanical energy, or cooling. Only existing electricity generation processes are eligible. New electricity generation from a joint venture is not eligible.	To validate eligibility, the combined energy generation and desalination processes must demonstrate a greater energy efficiency than each of the processes carried out separately. If either process involves the combustion of a fossil fuel without carbon capture, it must be demonstrated that there is no viable lower-carbon alternative.
2.7	**Energy efficiency**	Improvements to existing energy production to improve efficiency	Applies to energy production for electricity, heat, mechanical energy, or cooling.	To validate eligibility, there must be a demonstrated substantial improvement in energy efficiency or a substantial reduction in relative GHG emissions compared with operations before the improvements, or a selected benchmark. If the energy production process involves the combustion of a fossil fuel without carbon capture, it must be demonstrated that there is no viable lower-carbon alternative.

No.	Action areas	Eligible activities	Guidance	Screening criteria
2.8	**Energy storage and network stability**	Measures to improve energy storage or energy network stability or flexibility	Improvement measures should increase the consumption of very low-carbon energy. For renewable energy projects (e.g., grid connection to renewable energy plants), the eligibility criteria of Activity 2.1 must be met. Eligible activities may include: • Behind-the-meter battery storage • Electric vehicles for energy storage • Power system stabilizers • Series compensation • Static reactive power compensators • Synchronous condensers Storage of fossil fuel energy is not eligible. Storage of waste heat may be eligible, so long as it does not extend the life of fossil assets.	Measures must be shown to have significant impact on increasing the consumption of low-carbon energy. Measures that only marginally improve network flexibility or stability (e.g., smart grid technologies) are not eligible. It must also be demonstrated that storage will not increase GHG emissions in the short- or medium-term. If storage is shared among multiple energy sources, only financing for very low-carbon energy storage may be considered mitigation finance. Where storage is part of a transmission and distribution system, see criteria for Activity 2.9. For energy storage of non-very low-carbon energy, the entity must show how storage will increase renewable (or very low emissions) energy. This may be the case for storage investments with long economic life that may support renewable or low-carbon energy in the future. The entity must demonstrate how this objective will be met.
2.9	**Transport of energy**	Construction of new transmission and distribution (T&D) infrastructure or supports for very low-carbon electricity	The very low-carbon electricity must be non-nuclear. Eligible sources can either be renewable energy (meeting criteria of Activity 2.1) or fossil-based if carbon capture and storage or utilization is used. Potentially eligible activities include: • Extending access to unelectrified areas by connecting them to a power system that is following a decarbonization plan • Extending access using locally produced renewable electricity (e.g., new mini-grid) • Strengthening the grid backbone infrastructure aimed at enabling the flow of additional renewable electricity Eligible T&D systems may include: • Interconnected transmission or distribution network • Isolated grid • Mini-grid • Micro-grid An interconnected transmission or distribution network has a common market or dispatch rules that regulate electricity flows. A country may have several grids; conversely, a single grid may cover several countries.	To validate eligibility, it must be demonstrated that the T&D infrastructure built will either maintain or increase the share of total non-nuclear, very low-carbon electricity delivered. Financing apportionment depends on project type: • T&D systems required for or dedicated to non-nuclear, very low-carbon energy are eligible: all financing is eligible. • T&D investments in existing grids: portion of finance is equal to the share of additional non-nuclear, very low-carbon energy that can be delivered from the investment over a 10-year period, which spans from five years before and five years after the start of the operation of the new infrastructure. • T&D investment in new, unconnected grids: proportion of finance according to the share of non-nuclear, very low-carbon energy delivered at the start of operation and in the following five years. • Interconnections between grid systems, financing: weighted average, by the share of expected flows of new non-nuclear, very low-carbon electricity in the respective grids during a 10-year period (spanning from five years before and five years after the start of the operation of the new infrastructure). • For new meters and other retail-end equipment: finance is eligible if they are handled by retail rather than distribution companies and meet the criteria of Activity 2.12.

No.	Action areas	Eligible activities	Guidance	Screening criteria
				Data used to calculate additional eligible electricity delivered may include: • Planned giga-watt hours • Planned plants and expansions and appropriate load factors • Dispatch data from the past five years from ministries or utilities • Capacity data and relative load factors (location- and technology-specific)
2.10	**Transport of energy**	New high-efficiency transmission or distribution of heat or cooling energy	With the exception of the installation of advanced pilot systems (control and energy management systems), transport systems that carry energy primarily generated from fossil fuels are not eligible.	The project must use the best available technology, or emerging technology with higher efficiency, to be eligible. Costs for all parts of eligible distribution systems can be considered mitigation finance, including metering infrastructure. For other types of metering infrastructure, see Activity 2.12.
2.11	**Transport of energy**	Energy-efficiency improvements or reduction of GHG emissions for the T&D of energy in existing systems	Applies to the distribution of electricity, heat, cooling, low-carbon gases, or CO_2. Examples of projects include improvements to prevent losses that occur during T&D of energy, also called technical loss reduction, such as: • Reactive power compensation plans • Upgrade to high voltage levels • Transformation to direct current • Reduction of sulphur hexafluoride • Reducing gas shrinkage in pipeline transport.	To validate eligibility, a substantial improvement in energy efficiency or a substantial reduction in GHG emissions must be shown relative to the status before the project intervention. In the case of transport of energy from fossil fuel combustion, special attention should be paid to avoiding carbon lock-in.
2.12	**Energy transport and sale**	Measures targeting consumers that reduce energy consumption or increase renewable energy uptake	Examples of projects include: • Reduction of commercial or collection losses (besides those due to standard billing time lags) • Meter installation (calibrated meters, pre-paid meters, individual meters where needed, two-way metering) • Demand management (time-of-use pricing, load shifting, virtual power plant services) • Smart grid devices.	There are no specific screening criteria listed.

No.	Action areas	Eligible activities	Guidance	Screening criteria
2.13	**Reduction of fugitive emissions**	Reduction of fugitive emissions in existing energy transport and storage or in gas flaring	Fugitive emissions are the unintentional release of pollutants, and may occur in the transport of energy (along pipelines or in other transportation) or in storage (such as tanks, wells, or other storage. Fugitive emissions also occur during the flaring of natural gas. Reduction of fugitive emissions from the flaring of gas from a closed coal mine is eligible.	In the case of flaring emissions from a closed coal mine, it must be demonstrated that methane utilization is not viable.

CONDUCTING (EX-ANTE) GHG EMISSIONS REDUCTION ASSESSMENT

To demonstrate an activity's eligibility as a project that results in a "substantial reduction of GHG emissions" or increased carbon sequestration, an ex-ante GHG emission reduction assessment may need to be conducted. In the energy sector, emissions primarily include direct emissions (Scope 1) during energy generation (either from the combustion of fossil fuels or other activities). Scope 2 emissions, or indirect emissions associated with the purchase of energy, may be relevant if a company must purchase electricity or heat as an input for its energy generation. Additional indirect emissions (Scope 3) may include emissions from the transportation and distribution of energy products; extraction of any materials (e.g., coal, gas, metals) used in energy generation; or end-of-life treatment of products or equipment (e.g., energy plant components).

In many cases, the screening and eligibility criteria for mitigation activities require there to be a substantial relative reduction in GHG emissions (or reduction in carbon intensity, or energy intensity). In such cases, an ex-ante GHG emissions reduction assessment can and should be used to demonstrate eligibility.

The Common Principles allow for investors to forgo GHG assessment if the investment is in a renewable energy technology that has a demonstrated and widely recognized low-carbon intensity or low lifecycle emissions, such as solar, wind, or tidal energy. In other cases, an ex-ante GHG emissions reduction assessment should be conducted and cover direct and indirect emissions, taking into account Scope 3 emissions where they are measurable and material. This assessment should be conducted using methodologies approved by the Intergovernmental Panel on Climate Change (IPCC).

Per International Financial Institution (IFI) GHG accounting guidance (2015; 2021), pre-project baselines represent a reasonable scenario of what would occur in the absence of the project, whether that is a 'without project' scenario or an 'alternative project' scenario.[4] The accounting exercise may be limited to a single activity, facility, or entire infrastructure, depending on the particular project context (i.e., whether new infrastructure or technology is constructed or there are upgrades to existing systems).

4 The 'without project' scenario considers emissions that would have created if the particular project had not been implemented, and no other project had been implemented in its place (i.e, status quo remains). The 'alternative project' scenario considers emissions from the most likely alternative project that would achieve the same project outcomes, or emissions level, or service.

With regard to the energy sector, IFIs have published the Approach to GHG Accounting for Renewable Energy Projects (2015) and the Approach to GHG Accounting for Energy Efficiency Projects (2023).

QUANTIFYING ENERGY SECTOR MITIGATION FINANCE

As described in the General Guidance, only project costs that are directly integral to climate change mitigation are eligible to be counted as mitigation finance. In the scenario where all project expenditures contribute to the reduction or sequestration of GHGs, the **total cost** of the activity can be counted as mitigation finance. For instance, for a project financing the construction of new renewable energy generation such as a solar PV plant, all project costs would be considered mitigation finance since the entire project directly translates into a reduction of GHG emissions from energy generation (Activity 2.1).

In the case where some project costs are relevant to mitigation while others are not, only the cost of mitigation-relevant activities can be counted. For instance, for a project financing improvements to an energy grid that distributes electricity generated both from renewable sources and fossil fuel combustion (Activity 2.9), only a proportion of the project costs may be considered mitigation finance. In this case, costs would be apportioned based on the percentage of additional renewable or non-nuclear low-carbon energy that is expected to be transmitted by the improved grid during the prescribed 10-year period (see Activity 2.9 in Table 2.1). In all cases, project costs should be assessed with the principle of conservativeness in mind to determine if they are integral to climate change mitigation.

Importantly for the energy sector, projects may not be considered as mitigation finance if they contribute to the continued use or the lock-in of fossil fuels. This condition is especially relevant for projects that may support the joint use of low-carbon and non-low-carbon energy. In such cases, the IDFC institution must demonstrate that the project does not contribute to the continued use of fossil fuel, for example, by making it comparatively less expensive.

LINKING WITH THE GREEN FINANCE MAPPING (GFM) TEMPLATE

After identifying one of the 13 eligible mitigation activities in the energy sector and quantifying the portion of relevant mitigation finance, the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the relevant sectoral sub-category. For renewable energy generation, activities are further broken down by the type of renewable energy.

Energy	Mitigation activity no.
Renewable energy generation	**2.1, 2.2**
Onshore Wind	*2.1, 2.2*
Offshore Wind	*2.1, 2.2*
Solar PV	*2.1, 2.2*
Concentrated Solar	*2.1, 2.2*
Small hydro (<50MW)	*2.1, 2.2*
Large hydro (>50MW)	*2.1, 2.2*
Geothermal	*2.1, 2.2*
Biomass/Biogas	*2.1, 2.2*
Ocean power (wave, tidal)	*2.1, 2.2*
Renewable energy plant retrofits	*2.1, 2.2*
Other technologies	*2.1, 2.2*
Miscellaneous (mix of technologies)	**2.1, 2.2**
Lower-carbon energy	**2.3, 2.4, 2.5**
Energy efficiency	**2.6, 2.7**
Energy storage and network stability	**2.8**
Transportation of energy	**2.9, 2.10, 2.11, 2.12**
Fugitive emissions	**2.13**

ALIGNING WITH OTHER TAXONOMIES

Some IDFC members are obligated to follow national taxonomies, or to report to OECD DAC using the Rio Markers approach. Keeping this in mind, Table 2.2 illustrates how to match the Rio Marker sector codes and the EU taxonomy with the corresponding GFM reporting rows for the energy sector. Recognizing that IDFC members may also be obligated to follow other national taxonomies (neither the EU taxonomy nor the OECD Rio Markers), this exercise nonetheless at least provides an illustration of how to conduct alignment.

Table 2.2 Taxonomy alignment for the energy sector

Rio Marker CRS Purpose Code|Sector		**EU Taxonomy Activity** Sub-sector|Activities		**Corresponding GFM sub-sector** [Energy]
232 233 23410	Energy generation, renewable sources Energy generation, non-renewable sources Hybrid energy electric power plants	Electricity generation	Production of Electricity from Wind Power Production of Electricity from Geothermal Production of Electricity from Solar PV Production of Electricity from Concentrated Solar Power Production of Electricity from Bioenergy (Biomass, Biogas and Biofuels) Production of Electricity from Ocean Energy Production of Electricity from Hydropower Electricity generation from renewable non-fossil gaseous and liquid fuels.	Renewable energy generation Onshore wind, offshore wind, solar PV, concentrated solar, small hydro (<50MW), large hydro (>50MW), geothermal, biomass/biogas, ocean power (wave, tidal), renewable energy plant retrofit, other technologies, miscellaneous (mix of technologies) Lower-carbon energy
		Heat & power / Cogeneration	Cogeneration of heat/cooling and power from solar energy Production of heat/cooling from solar thermal heating Cogeneration of heat/cooling and power from geothermal energy Production of heat/cooling from geothermal energy Installation and operation of Electric Heat Pumps Cogeneration of heat/cooling and power from bioenergy Production of Heat/cooling from Bioenergy (Biomass, Biogas, Biofuels) Cogeneration of heat/cooling and power from renewable non-fossil gaseous and liquid fuels Production of heat/cooling from renewable non-fossil gaseous and liquid fuels	
		Biofuels	Manufacture of biogas and biofuels for use in transport and of bioliquids	
23183	Energy conservation and demand-side efficiency	NA	NA	Energy efficiency
NA	NA	Energy storage	Storage of Electricity Storage of hydrogen Storage of thermal energy	Energy storage and network stability
236	Heating, cooling, and energy distribution	Transmission and Distribution	Transmission and Distribution of Electricity Transmission and distribution networks for renewable and low-carbon gases District heating/cooling distribution	Transportation of energy
NA	NA	NA	NA	Fugitive emissions

2.3 ADAPTATION

Unlike mitigation, there is no exhaustive list of eligible activities for adaptation finance in the energy sector because adaptation is highly context-specific. Since different geographies experience different impacts of climate change, a particular intervention may not qualify as adaptation in all cases. Adaptation in the energy sector includes measures that protect against direct negative impacts on energy system infrastructure from physical climate risks (e.g., damage from extreme weather or floods), as well as indirect impacts that put stress on energy systems (e.g., rising temperatures increasing the demand for cooling) (World Bank, 2019).

As outlined in the General Guidance document, adaptation relevance is determined by a three-step process to validate that the financed project/activity demonstrates vulnerability to climate risk, has the intent to reduce vulnerability, and demonstrates a direct link between the project and the reduction of vulnerability. Table 2.3 describes this validation process in more detail and illustrates the process of validating an example adaptation project.

Table 2.3 Validation of adaptation relevance

Project example: Installation of green infrastructure and physical barriers for a coastal transmission and distribution substation			
Step	**Description**	**Validation**	**Example**
Step 1: Context of vulnerability	The context of vulnerability is clearly demonstrated using a robust evidence base.	A robust evidence base could include primary data collection and analysis by the reporting institution or making use of external published data/ analyses. Climate risk assessment is conducted at this stage (see Box 2.1).	Sea-level rise and its impact on coastal zones is well documented. The project may use data on sea-level rise in the area of implementation or data on increased flooding incidence as validation for this step.
Step 2: Intent	There is an explicit statement of intent by the project proponents to reduce the identified climate change vulnerability identified.	Intent may be demonstrated through project objectives stated in project planning or appraisal documents.	The stated project objective in the project proposal is to improve the resilience of the substation and prevent damage from flooding or sea-level rise.
Step 3: Clear and direct link	There is a direct link between the project activities and reducing the identified climate change vulnerability.	A clear and logical link can be articulated between project activities and the reduction of an identified vulnerability to climate change.	By financing these infrastructure improvements at the substation, the project improves the resilience of the substation by protecting the asset from physical damage caused by flooding and sea-level rise.

Box 2.1 Conducting a climate risk assessment for the energy sector

A climate risk assessment establishes the context of vulnerability, validating Step 1 of determining adaptation relevance (Table 2.3) by determining whether particular sectors, geographies, and/or clients are vulnerable to climate risks and how these risks will affect a proposed project.

Climate risk is generally thought of as the interaction of a hazard (e.g., flooding) with exposure (the extent to which the project is exposed to, or likely to be affected by, the identified hazard) and vulnerability (susceptibility, sensitivity, or lack of capacity of the exposed system to cope with and adapt to the hazard). Examples of climate risk in the energy sector include:

- Flooding as a result of extreme weather events or sea-level rise damaging energy sector assets or infrastructure
- Wildfires damaging distribution lines or power stations
- Rising temperatures increasing the demand on energy systems for cooling
- Temperature increases reducing substation capacity, negatively impacting transformers, and reducing transmission efficiency
- Droughts reducing the availability of water needed for cooling or steam generation.

In screening for climate hazards relevant to the energy sector, institutions may use past and current weather/disaster records and use model-based climate projections. Climate risk assessments should consider the severity and frequency of prospective hazards in the particular project location to assess the level of **exposure** to climate risk; that is, the extent to which the project components and infrastructure are likely to be affected by the identified hazard. For instance, an energy sector project in a coastal area may be more likely to be impacted by extreme weather, sea-level rise, or floods, whereas a project located in a drier, hotter region may be at a greater risk of extreme heat, wildfires, or drought.

Assessing **vulnerability** to identified hazards requires an account of socioeconomic conditions in the project area (income level, employment status, industrial structure); the state of the surrounding natural environment; and existing legal policies and planning relevant to adapting to climate change. Vulnerability can also be driven by the properties or design of the investment itself. For example, some technologies are designed to withstand higher temperatures, whereas others lose efficiency under similar circumstances.

Various existing tools can be used by IDFC institutions seeking to conduct a climate risk assessment on prospective projects in the *Energy* sector, such as:

- The World Bank's Climate and Disaster Risk Screening Tool has a specific in-depth screening assessment for energy
- The World Bank's Good Practice Note for Energy Sector Adaptation describes potential climate risks to the power sector and types of adaptive responses
- WB Think Hazard provides a general view of the hazards for a given location that should be considered in project design and implementation to promote disaster and climate resilience
- GCA Adaptation Exchange Country Profiles provides profiles on adaptation strategies in response to climate challenges in various countries
- KPMG has developed An enhanced assessment of risks impacting the energy system.

A project that passes the three-step validation process above is considered an eligible adaptation activity. The activity is then classified as Type 1, Type 2, or Type 3 adaptation, per the [Common Principles for Climate Change Adaptation Finance Tracking (2023)], and further elaborated on via the 'decision trees' in the General Guidance document.

The classification of the adaptation type also provides some indication of the amount of adaptation finance embodied in the project. While there is no universal approach to calculating adaptation finance, for activities where adaptation is the primary objective (Type 3), the **total cost** of the relevant activity is considered adaptation finance. Where adaptation is not the primary objective (Types 1 or 2), less than 100% of the cost of the adaptation-relevant activities is counted as adaptation finance.

An **incremental approach** can be used to estimate these costs. This involves estimating the additional costs of activities relating to adaptation relative to a hypothetical baseline for a scenario in which the project does not address any physical climate risks. However, this type of analysis may not be possible in every case. Alternative approaches for quantifying adaptation finance could include:

- Efforts to isolate the costs of the adaptation-relevant activities, taking as granular an approach as possible. Institutions can then track a proportion of these adaptation-relevant activity costs or the costs in entirety, depending on the type of adaptation activity (see Table 2.4)
- Applying fixed shares to wider costs to estimate adaptation-relevant costs; this constitutes a **proportional approach** (see General Guidance).

Table 2.4 Examples of adaptation activities for the Energy sector

Type	Description	Example	Quantification
Type 1: Adapted activities	Adapted activities integrate measures to **manage physical climate risks** to ensure the project's success; these can be thought of as enhancing the *resilience of* the project.	• Stronger foundations for newly constructed offshore wind installations (see first case study in the next section) • Elevating energy assets in flood risk areas	<100% total activity costs
Type 2: Shared objectives	Activity that directly reduces climate risk but has adaptation as a **joint objective** (alongside wider development objectives); these can be thought of as enabling *resilience through* the project.	• Development of new underground transmission lines in wildfire risk areas (see second case study in the next section) • Increase storage and distribution capacity during storms via primary and secondary feeders	<100% total activity costs
Type 3: Primary objective	**Adaptation is the primary objective**. The activity is expected to have a transformational impact on one or some of the underlying causes of vulnerability at the systemic level; that is, the system's susceptibility, sensitivity and/or lack of capacity to deal with relevant climate hazards. The activity is likely to have been identified by assessing the physical climate risks of the wider system in which the project takes place.	• Customer demand reduction programs to reduce peak load due to climate-related extreme heat (see third case study in the next section)	100% total activity costs

LINKING WITH THE GFM TEMPLATE

After identifying an eligible adaptation activity in the energy sector, and quantifying the portion of adaptation finance (see the General Guidance document), the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the relevant sub-sectoral categories. For the energy sector, adaptation measures may come under the sub-categories of coastal protection; other disaster protection; budget support; or cross-cutting; depending on the adaptation measure itself. These sub-categories are listed in the table below.

Coastal protection
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mixture of the above)
Other disaster risk reduction
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mixture of the above)
Budget support for adaptation policies
Cross-cutting
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mixture of the above)

CASE STUDIES

To align with the updated adaptation tracking methodology, examples of potential energy adaptation activities are provided below.

CASE STUDY: Type 1 Adaptation

Measures protecting an offshore wind installation

An IDFC member is investing USD 350 million in a new offshore wind installation for a project aiming to increase the supply of very low-carbon energy in the area of implementation (mitigation Activity 2.1). The area where the project is being implemented has seen an increase in extreme weather conditions such as severe storms, which have the potential to damage offshore wind turbines—a trend that is projected to continue. Therefore, measures are integrated into the project design to protect the installation against both current and future damage caused by extreme weather. In this case, the measures include constructing towers with stronger or reinforced foundations, such as monopile or twisted jacket foundations.

These measures are considered Type 1 adaptation because they yield resilience *of* the project assets (rather than achieving resilience *through* the project). Resilience is not the main goal of the project, but measures are implemented to protect the assets against climate risks that threaten the project. Adaptation finance may be estimated here by applying a Type 1 coefficient (i.e., less than 100%) to the exact cost (CAPEX; OPEX) of the reinforced turbine foundation. If the exact cost of the reinforced foundation cannot be isolated, adaptation finance can be estimated by applying the Type 1 coefficient to estimated costs for the foundation that is calculated by taking a proportion of overall turbine costs; this is a proportional approach.

CASE STUDY: Type 1 Adaptation

Protecting energy supply from wildfires

An IDFC member is investing USD 475 million in the construction of a new transmission and distribution system in a rural area with limited electricity access. The overall objective of the project is to increase access to electricity, particularly low-carbon generation. To protect the transmission and distribution system against damage from the increased frequency of stormy weather and flooding (occurring as a result of climate change), parts of the cabling are placed in reinforced underground tunnels.

This is a Type 1 adaptation example, yielding resilience *of* the project asset (rather than resilience *through* the project). Adaptation finance should be quantified here by applying a Type 1 coefficient (i.e., less than 100%) to the exact cost (CAPEX; OPEX) of constructing the underground tunnels and installing the cabling within them. If the exact cost of this activity cannot be isolated, adaptation finance can be quantified by applying the Type 1 coefficient to estimated costs that is calculated by taking a proportion of overall cabling installation cost; this is a proportional approach.

CASE STUDY: Type 2 Adaptation

Upgrading a transmission and distribution system to cope with extreme heat

An IDFC member is investing USD 150 million to support the upgrading of electrical transmission and distribution system infrastructure in an area that has been experiencing heat waves, resulting in an increased demand for energy for cooling. There are dual objectives for this project. The first objective is to ensure that the electricity system can maintain functionality in periods of extreme heat and deal with the resulting cooling demand to avoid power outages during heatwaves and resulting knock-on effects on health, transport, and other sectors. The second objective is to increase transmission capacity to cope with wider increases in energy demand in line with population growth and the electrification of transport systems. The proposed program involves a number of upgrades to the system that increase transmission capacity, as well as the refurbishment of equipment such as transmission lines and transformers with materials that can operate in extreme heat. Adaptation is a joint objective for the upgrading activity; therefore, this is a Type 2 scenario.

This is a Type 2 adaptation activity, yielding resilience *through* the upgrading program. Adaptation finance can be quantified here by applying a Type 2 coefficient (for example, 60%) to the costs of the upgrading activity.

Note, this 60% Type 2 coefficient is for illustrative purposes only: if the main objective for the electricity system upgrade was dealing with wider electricity demand rather than adapting to extreme heat, applying a lower share would be more appropriate

3. TRANSPORT SECTOR GUIDANCE

3.1 CONTEXT

Transport is the backbone of economic growth, facilitating mobility, trade, and access to services and opportunities. A sustainable transportation system ensures the provision of safe, inclusive, affordable, and environmentally friendly mobility for passengers and freight, benefiting both current and future generations (IPCC, 2023). One of the targets of SDG 9 is to expand the availability of reliable infrastructure, including transport, that can support human and economic development (SDG 9.1)(World Bank, 2022).

However, the transport sector is also a significant source of GHG emissions. According to the IPCC report (2023), direct GHG emissions from transport accounted for approximately 23% of global energy-related CO_2 emissions in 2019, making it the fourth-largest source of GHG emissions. By 2035, it is anticipated that the transport sector will emerge as the primary source of GHG emissions, contributing to 46% of global emissions, and is projected to escalate to 80% by 2050 (ADB, 2017). This alarming trajectory underscores the urgent need for mitigative actions in the sector.

Addressing challenges posed by climate change to the transport sector necessitates significant climate finance. Estimates by CPI suggest that the transport sector will require up to USD 1.9 trillion per year in climate finance leading up to 2030, with the need increasing to up to USD 3 trillion per year from 2030 to 2050 to close the financing gap (CPI, 2023a). This underscores not only the necessity to mobilize more finance but also highlights the importance for IDFC members to enhance their understanding of their current investment portfolios. Better tracking of current climate finance flows is essential to identify funding gaps, optimize resource allocation, and ensure that investments are directed towards projects that significantly contribute to mitigating climate change impact and advancing adaptation efforts, thereby supporting the transition to a more sustainable and resilient transport system globally.

3.2 MITIGATION

Mitigation in the transport sector involves one or a combination of the following key action areas:

1. Urban and rural transport
2. Inter-urban transport
3. Maritime and inland waterway transport
4. Aviation
5. Vehicles and associated infrastructure
6. Fuels for transport
7. Transport management

In this sectoral context, the Common Principles start from the premise that activities are only eligible if they neither conflict with nor undermine the objective of SDG 9.1, which is to expand the availability of reliable infrastructure, including transport, that can support human and economic development. The Common Principles for Climate Mitigation Finance Tracking (2023) identifies a positive list of 11 transport sector mitigation activities. Table 3.1 seeks to simplify this list and provide further guidance and explanation of key terms with screening criteria. Where screening criteria involve demonstrating a modal shift from a higher-carbon to a lower-carbon mode, or a substantial reduction in net GHG emissions, while complying with either country- or sector-specific standards/benchmarks, these may be validated based on published sources, or defined by the reporting institution itself.

Table 3.1 Eligible mitigation activities in the transport sector

No.	Action areas	Eligible activities	Guidance	Screening criteria
8.1	**Urban and rural transport**	Urban and rural public transport projects	Modal shift not only means the current shift to lower-carbon modes, but also the prevention of a future shift to higher-carbon modes. Two types of activities are exempt from demonstrating a modal shift: • Activities that improve the performance of an existing public transport system; • Technology-substitution projects, which are addressed as part of Activity 8.6. Both fleets and infrastructure that are fundamental to the operation of public transport services are eligible, but only the portion of financing dedicated to public transport is eligible to be tracked as mitigation finance. Examples include: • Buses • Bus rapid transit • Tram • Metro • Cable car • Monorail • Rail transit • Ferry used in public transport	To validate eligibility, a modal shift from a higher-carbon to a lower-carbon mode needs to be demonstrated, except where the activity enhances the efficiency of an existing public transport system. Road infrastructure shall be eligible if specifically and exclusively designed for improving or supporting public transportation systems, as opposed to general road use.
8.2	**Urban and rural transport**	Non-Motorized Transport (NMT) or electric personal mobility systems	Both fleets and infrastructure that are fundamental to the operation are eligible, but only the portion of financing that is dedicated to NMT schemes is eligible to be tracked as mitigation finance. Examples include: • Bicycles • Pedestrian mobility • Schemes for sharing bicycles	Road infrastructure shall be eligible if specifically and exclusively designed for improving or supporting NMT system, as opposed to general road use.

No.	Action areas	Eligible activities	Guidance	Screening criteria
8.3	**Low-carbon inter-urban transport**	Low-carbon inter-urban railway projects for freight or passengers	This includes railway transport ensuring a modal shift of freight and/or passenger transport from road or air to rail (both improvement of existing lines and construction of new lines are eligible). ▪ Technology-substitution projects are exempted and addressed as part of Activity 8.6. Both fleets and infrastructure that are fundamental to the operation of transport services are eligible, while activities specifically intended for the transport or storage of fossil fuels or blended fossil fuels, indicated by fleets or infrastructure being acquired or built for this explicit purpose, are excluded, regardless of their additional uses. Blended fossil fuels refer to mixtures of fossil fuels and biofuels, such as a mixture of gasoline and bioethanol or petroleum diesel and biodiesel; these are also eligible.	To validate eligibility, there needs to be a demonstrated modal shift from a higher-carbon to a lower-carbon mode, except where the activity enhances the efficiency of an existing railway system. Activities dedicated to the transport of fossil fuels or blended fossil fuels (where a high proportion of the blended fuel is a fossil fuel) shall not be eligible.
8.4	**Low-carbon inter-urban transport**	Low-carbon bus or coach – public passenger transport	This modal shift not only means the current shift to lower-carbon modes but also the prevention of a future shift to higher-carbon modes ▪ Technology-substitution projects are exempted and addressed as part of Activity 8.6. Both fleets and infrastructure that are fundamental to the operation of transport services are eligible.	To validate eligibility, there needs to be a demonstrated modal shift from a higher-carbon to a lower-carbon mode.
8.5	**Maritime and inland waterway transport**	Low-carbon water transport projects for freight or passengers, or efficiency improvement	Ensure a modal shift of freight and/or passenger transport from road to air to waterways (both improvement of existing infrastructure and construction of new infrastructure are eligible). Both fleets and infrastructure that are fundamental to the operation of transport services are eligible. For the criterion excluding the eligibility of activities 'dedicated to the transport of fossil fuels or blended fossil fuels,' *dedication* refers to fleets or infrastructure being acquired or built with the explicit intention of transporting or storing fossil fuels, even if the actual use additionally serves other purposes. Potentially eligible efficiency improvements: ▪ Technical efficiency measures (such as improvements in design, propulsion, machinery and operation) ▪ Route optimization services ▪ Ship-to-ship route exchanges ▪ Enhanced monitoring systems ▪ Introduction of digitization ▪ Port-call synchronization.	To validate eligibility, there needs to be a demonstrated modal shift from a higher-carbon to a lower-carbon mode or a demonstrated substantial reduction in relative GHG emissions, against a selected benchmark. This is with the exception of activities that enhance the efficiency of an eligible existing inland waterway or short-sea shipping system. Activities dedicated to the transport of fossil fuels or blended fossil fuels (where a high proportion of the blended fuel is a fossil fuel) are not eligible. A good example of a significant reduction in relative GHG emissions is a freight decarbonization project that utilizes modal shift to reduce the direct (tailpipe) emissions of CO_2 per ton-kilometer (g CO_2/tkm) by 50%.

No.	Action areas	Eligible activities	Guidance	Screening criteria
			Other eligible activities include: • Inland waterways • Short-sea-and deep-sea shipping infrastructure and fleets	
8.6	**Low-carbon vehicles and associated infrastructure**	Low-carbon land-based, airborne, or waterborne vehicles transporting passengers or freight with zero or low direct emissions, or associated infrastructure	Direct emissions refer to tailpipe emissions. Vehicles and associated infrastructure cover all modes. Innovative low-carbon aviation activities are covered separately in the Common Principles, under *Research, development, and innovation.* Vehicles, trains, waterborne vessels, and infrastructure that is fundamental to the operation of transport services are eligible. For the criterion excluding the eligibility of activities 'dedicated to the transport of fossil fuels or blended fossil fuels,' *dedication* refers to any otherwise eligible vehicle or associated infrastructure being acquired or built with the explicit intention of transporting or storing fossil fuels, even if the actual use additionally serves other purposes. Examples include: • Charging stations and other associated infrastructure for electric vehicles, hydrogen, or dedicated biofuel fuelling.	Activities dedicated to the transport of fossil fuels or blended fossil fuels (where a high proportion of the blended fuel is a fossil fuel) are not eligible.
8.7	**Low-carbon fuels for transport.**	Low-carbon transport operations using biofuels or synthetic fuels with low lifecycle GHG emissions	For guidance on biofuels, refer to Activity 2.1 for the energy sector. Synthetic fuels with low lifecycle GHG emissions (or e-fuels) are those that use low-carbon feedstocks of hydrogen and CO_2. Examples are hydrogen (addressed as part of Activity 9 under *Manufacturing* in the Common Principles), captured CO_2 (Activity 12.5 under *Cross-sectoral activities*), and CO_2 from direct air capture.	Lifecycle GHG emissions shall not exceed the level of GHG emissions from the current fuel mix. GHG emissions shall be substantially lower than the corresponding GHG emissions of transport relying on fossil fuels. For eligibility of biofuels, refer to Activity 2.1 for the energy sector. Both fleets and infrastructure that are fundamental to the transport operation are eligible.
8.8	**Transport demand management**	Transport demand management policy or associated Intelligent Transport Systems (ITS)	Policies or systems leading to a reduction in the use of personal or freight transport and shifting from private car use to mass transit NMT. Examples include: • Transit-Oriented Development (TOD) • Low- or zero-emission zones • Mobile sharing application providing access to alternative modes such as bicycles and scooters • Investments in information and communications technology (ICT) to increase traffic operational efficiency, or enable shared mobility.	Investments related to policy actions or ITS expected to substantially decrease overall travel demand or lead to modal shifts towards more efficient modes shall be eligible.

No.	Action areas	Eligible activities	Guidance	Screening criteria
8.9	**Low-carbon fuels for transport**	Use of waste gas as a transport fuel	For guidance on eligible waste gas, see Activity 2.5 in the energy sector, activity 5.10 in the AFOLU sector, and Activities 7.6 and 7.9 in the urban sector.	For eligible waste gas, see Activity 2.5 in the energy sector, activity 5.10 in the AFOLU sector, and Activities 7.6 and 7.9 in the urban sector.
8.10	**Air traffic management**	Efficient air traffic management	There is no specific guidance.	To validate eligibility, there needs to be a demonstrated substantial reduction in relative GHG emissions, ensuring that any potential increase in air traffic from the activity does not offset the benefits in GHG emissions intensity.
8.11	**Aviation**	Efficient airport system operation or on-site renewable energy generation	Criteria for ground transport activities (such as bus fleets, car fleets, and people-movers) are covered under Activities 9.6 and 8.7. Criteria for airport buildings are covered under Activities 10.1 and 10.2 as part of *ICT and digital technologies* in the Common Principles. Examples of eligible activities include: • Higher operational efficiency of aircraft movements in the airfield and in the landing and take-off cycle • Energy-efficiency improvements in equipment.	To gain eligibility, there needs to be a demonstrated substantial reduction in net GHG emissions, against a selected benchmark from energy efficiency or other GHG reduction measures. For eligibility of on-site renewable energy generation, see Activity 2.1 in the energy sector.

CONDUCTING (EX-ANTE) GHG EMISSIONS REDUCTION ASSESSMENT

To demonstrate the substantial reduction in net GHG emissions, an ex-ante GHG emission reduction assessment should be conducted to compare emissions against a pre-project baseline. Emissions released by the transport sector include direct (Scope 1) emissions—largely CO_2 —caused by the combustion of fossil fuels used in vehicles, and indirect (Scope 2) emissions caused by the electricity consumed by electric vehicles and the transportation infrastructure, where the GHG depends on the energy mix of the electricity grid. The majority of GHG emissions in the transport sector arise from manufacturing vehicles and the infrastructure that supports the vehicles' movement, such as roads, bridges, etc., namely the Scope 3 emissions (UNFCCC, 2015). An ex-ante GHG emissions reduction assessment to assess the eligibility of an activity ('a substantial reduction in GHG emissions, relative to the pre-project baseline') should cover direct and indirect emissions, taking into account Scope 3 emissions where they are measurable and material.

Per International Financial Institution (IFI) GHG accounting guidance (2015; 2023), pre-project baselines represent a reasonable scenario of what would occur in the absence of the project – whether that is a "without project" scenario or an "alternative project" scenario.[5] The boundary for the

5 The 'without project' scenario considers emissions that would have created had the particular project not been implemented, and no other project had been implemented in its place (i.e., status quo remains). The 'alternative project' scenario considers emissions from the most likely alternative project that would achieve the same project outcomes, or emissions level, or service.

accounting exercise may be limited to the single activity, facility, or entire infrastructure depending upon the particular project context (i.e., is it a greenfield project constructing an entirely new facility/infrastructure or a brownfield project at an existing facility/infrastructure).

IFI (2015) provides further guidance on Scope 3 GHG analysis:

- When conducting a Scope 3 GHG assessment for the transport sector, it is crucial to begin with a comprehensive cross-modal demand analysis
- This analysis should delve into how transport policies and projects influence changes in transport demands, fossil fuel utilization, and, ultimately, GHG emissions
- Consideration should be given to the primary drivers of user behavior, with a particular focus on factors such as income, monetary travel costs, and travel time
- The boundary for the Scope 3 GHG analysis should be determined based on material changes identified through the cross-modal demand analysis.

QUANTIFYING TRANSPORT MITIGATION FINANCE

As outlined in the General Guidance document, for an activity that qualifies as mitigation, only costs that are directly integral to climate change mitigation are eligible to be counted as mitigation finance. If all project expenditures contribute to the reduction of GHGs, the **total cost** of the activity can be counted as mitigation finance. For instance, financing the construction of a monorail in a city reliant solely on private car commuting would entail categorizing all project expenses, including the advisory services on monorail design and the feasibility study, as mitigation finance. Although some elements may not involve the construction of the monorail, it is part of the necessary process of developing the infrastructure. As long as the overall project actively facilitates a transition from a higher-carbon to a lower-carbon transportation mode, it aligns with the objectives outlined in Activity 8.1.

On the other hand, the costs (of a project) that do not contribute to climate change mitigation cannot be counted as mitigation finance, even if they comprise a significant share of the total project cost. For example, in a project financing public passenger transport involving both electric buses and petroleum-fuelled buses (Activity 8.3), only the portion of project costs attributable to electric buses qualifies as mitigation finance. Project costs should be assessed with the principle of conservativeness in mind to determine if they are integral to climate change mitigation. In such cases, it is only the isolated cost of mitigation-relevant activity that can be counted as mitigation finance.

LINKING WITH THE GFM TEMPLATE

After identifying one of the 11 eligible mitigation activities in the transport sector, and quantifying the portion of relevant mitigation finance, the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the following sub-sectoral categories.

Transport	Mitigation activity no.
Urban and rural transport	8.1, 8.2
Low-carbon inter-urban transport	8.3, 8.4
Low-carbon vehicles, low-carbon fuels, and demand management	8.6, 8.7, 8.8, 8.9, 8.10
Maritime transport: low-carbon mode and efficiency improvement	8.5
Aviation: efficiency and renewable energy	8.11

ALIGNING WITH OTHER TAXONOMIES

Table 3.2 illustrates how to match the Rio marker sector codes and the EU taxonomy with the corresponding GFM reporting rows for the transport sector. Recognising that IDFC members may be obligated to follow other national taxonomies (neither the EU taxonomy nor the OECD Rio Markers), this exercise nonetheless at least provides an illustration of how to conduct alignment.

Table 3.2 Taxonomy alignment for the transport sector

Rio Marker CRS Purpose Code|Sector		EU Taxonomy Activity Sub-sector|Activities		Corresponding GFM sub-sector [Transport]
21020 21030	Road transport Rail transport	Transport Modes	Urban and suburban transport, road passenger transport Operation of personal mobility devices, cycle logistics Transport by motorbikes, passenger cars, and light commercial vehicles	Urban and rural transport
		Infrastructure	Infrastructure enabling low-carbon road transport and public transport Infrastructure for personal mobility, cycle logistics	
21020 21030	Road transport Rail transport	Transport Modes	Passenger inter-urban rail transport Freight rail transport Freight transport services by road	Low-carbon inter-urban transport
		Infrastructure	Infrastructure for rail transport	

Rio Marker CRS Purpose Code|Sector		EU Taxonomy Activity Sub-sector|Activities		Corresponding GFM sub-sector [Transport]
21010 21081	Transport policy and administrative management Education and training in transport and storage	N/A	N/A	Low-carbon vehicles, low-carbon fuels, and demand management
21040	Water transport	Transport Modes	Inland passenger water transport Inland freight water transport Retrofitting of inland water passenger and freight transport Sea and coastal freight water transport, vessels for port operations, and auxiliary activities Sea and coastal passenger water transport Retrofitting of sea and coastal freight and passenger water transport	Maritime transport: low-carbon mode and efficiency improvement
		Infrastructure	Infrastructure enabling low-carbon water transport	
21050	Air transport	Transport Modes	Leasing of aircraft Passenger and freight air transport	Aviation: efficiency and renewable energy
		Infrastructure	Low-carbon airport infrastructure Air transport ground handling operations	

3.3 ADAPTATION

Unlike the positive list of eligible mitigation activities outlined above, there is no exhaustive taxonomy of eligible urban adaptation activities. This is because adaptation is highly context dependent and, therefore, a particular intervention may only qualify in one particular geography (that is experiencing a particular climate risk) and not in another. Adaptation in the transport sector refers to strategies and measures designed to safeguard and enhance the resilience of transportation networks and services against the adverse effects of climate change. This includes maintaining, managing, strengthening, and protecting infrastructure (such as roads and railway tracks), and/or equipment from damage caused by climate change and improving service and operation (such as real-time traffic information systems and early warning systems) to enhance the preparedness of the transport sector to extreme weather events (ClimateADAPT, 2018).

As outlined in the General Guidance document, adaptation relevance is determined by a three-step process to validate that the financed project/activity demonstrates vulnerability to climate risk, intent to reduce vulnerability, and a direct link between the project and the reduction of vulnerability. Table 3.3 describes this validation process in more detail and illustrates the process of validating an example adaptation project.

Table 3.3 Validation of adaptation relevance

Project example: Enhancement of Urban Public Transportation Infrastructure for Flood Resilience			
Step	**Description**	**Validation**	**Example**
Step 1: Context of vulnerability	The context of vulnerability is clearly demonstrated using a robust evidence base.	A robust evidence base could include primary data collection and analysis by the reporting institution or making use of external published data/ analyses. Climate risk assessment is conducted at this stage (see Box 3.1).	Historical flood incidence and climate projections show a trend towards more frequent and severe urban flooding.
Step 2: Intent	There is an explicit statement of intent by the project proponents to reduce the identified climate change vulnerability. identified.	Intent may be demonstrated through project objectives, stated in project planning or appraisal documents.	It is clearly stated in the project appraisal document that the project is committed to retrofitting and upgrading the urban public transportation system to be resilient against flooding, and ensuring continuity of services during extreme weather events.
Step 3: Clear and direct link	There is a direct link between the project activities and reducing the identified climate change vulnerability.	A clear and logical link can be articulated between project activities and the reduction of an identified vulnerability to climate change.	By financing measures such as retrofitting subway ventilation systems to prevent water ingress, elevating entrances, and installing advanced drainage systems to manage floodwaters effectively, the project integrates flood risk assessment with engineering solutions to address the specific vulnerabilities of the transport infrastructure.

Box 3.1: Conducting a climate risk assessment for the transport sector

A climate risk assessment establishes the context of vulnerability, validating Step 1 of determining adaptation relevance (Table 3.3), by determining whether particular sectors, geographies and/or clients are vulnerable to climate risks and how these risks will affect a proposed project.

Climate risk is generally thought of as the interaction of a hazard (e.g. flooding) with exposure (the extent to which the project is exposed to, or likely to be affected by, the identified hazard) and vulnerability (susceptibility, sensitivity, or lack of capacity of the exposed system to cope with and adapt to the hazard).

Examples of climate risk in the transport sector include:

- Flooding from extreme weather events or sea-level rise impacting roads and railways
- Heatwaves causing rail tracks to buckle and asphalt roads to soften
- Storms and hurricanes damaging airports and port infrastructure
- Droughts affecting waterway transport by lowering water levels
- Increased precipitation and flooding disrupting public transport services

To screen for climate hazards relevant to the transport sector, institutions may use past and current weather/disaster records and model-based climate projections. Climate risk assessments should consider the severity and frequency of prospective hazards in the particular project location to assess the level of **exposure** to climate risk; that is, the extent to which project components and infrastructure are likely to be affected by the identified hazard. For instance, a transport sector project in a coastal area may be more likely to be impacted by extreme weather, sea-level rise, or floods, whereas a project located in a drier, hotter region may be at a greater risk of extreme heat, wildfires or drought.

Assessing **vulnerability** to identified hazards requires an account of socioeconomic conditions in the project area (income level; employment status; industrial structure); the state of the surrounding natural environment; and existing legal policies and planning relevant to adapting to climate change. With tangible investments, it may also be necessary to assess the technical design of the project, as vulnerability can also be driven by properties or design of the investment itself. For example, some technologies are designed to withstand higher temperatures, whereas others lose efficiency under similar circumstances.

Various existing tools can be used by IDFC institutions seeking to conduct a climate risk assessment on prospective projects in the transport sector, such as:

- Coalition for Climate Resilient Investment's Physical Climate Risk Assessment Methodology, providing a generalized guide to the core process of climate risk assessment
- World Bank's Climate and Disaster Risk Screening Tool, offering an in-depth assessment tool for the transport sector
- International Institute for Sustainable Development's CRiSTAL Community-based Risk Screening Tool – Adaptation and Livelihoods, identifying climate risk at the community level
- UNCTAD's Climate Risk and Vulnerability Assessment Framework for Caribbean Coastal Transport Infrastructure, establishing a framework on climate risk vulnerability assessment for Caribbean Coastal Transport Infrastructure
- ISDB's Transport Sector Climate Change Adaptation Guidance Note, identifying potential climate risk in the transport sector.

A project that passes the three-step validation process above is considered an eligible adaptation activity. The activity is then classified as Type 1, Type 2 or Type 3 adaptation, as per the (2023) Common Principles for Climate Change Adaptation Finance Tracking, and further elaborated on via the decision trees in the General Guidance document. Examples of Type 1, Type 2, and Type 3 adaptation activities in the transport sector are provided in Table 3.4 below.

The classification of the adaptation type also provides some indication of the amount of adaptation finance embodied in the project. While there is no universal approach to calculating adaptation finance, for activities where adaptation is the primary objective (Type 3), the **total cost** of the relevant activities is considered adaptation finance. Where adaptation is not the primary objective (Types 1 or 2), less than 100% of the cost of the adaptation-relevant activities is counted as adaptation finance.

An **incremental approach** can be used to estimate these costs. This involves estimating the additional costs of activities relating to adaptation relative to a hypothetical baseline for a scenario in which the project does not address any physical climate risks. However, this type of analysis may not be possible in every case. Alternative approaches for quantifying adaptation finance could include:

- Efforts to isolate the costs of the adaptation-relevant activities, taking as granular an approach as possible. Institutions can then track a proportion of these adaptation-relevant activity costs or the costs in entirety, depending the type of adaption activity (see Table 2.4).
- Applying fixed shares to wider costs to estimate adaptation-relevant costs; this constitutes a **proportional approach** (see General Guidance).

Table 3.4 Examples of adaptation activities for the transport sector

Type	Description	Example	Quantification
Type 1: Adapted activities	Adapted activities integrate measures to manage physical climate risks to ensure the project's success; these can be thought of as enhancing the project's resilience.	• Using heat-resistant materials in the construction of tram tracks to prevent damage from higher temperatures, within a broader tram infrastructure project	<100% total cost
Type 2: Shared objectives	Activity that directly reduces climate risk but has adaptation as a **joint objective** (alongside wider development objectives); these can be thought of as enabling *resilience through* the project.	• Expanding and upgrading public transit systems with climate-resilient infrastructure, improving accessibility and reducing emissions while adapting to future climate conditions	<100% total cost
Type 3: Primary objective	**Adaptation is the primary objective**. The activity is expected to have a transformational impact on one or some of the underlying causes of vulnerability at the systemic level; that is, the system's susceptibility, sensitivity and/or lack of capacity to deal with relevant climate hazards. The activity is likely to have been identified by assessing the physical climate risks of the wider system in which the project takes place.	• Reinforcing port infrastructure to protect against stronger storms and higher tides, directly addressing climate change vulnerabilities in coastal regions	100% total cost

LINKING WITH THE GFM TEMPLATE

After identifying an eligible adaptation activity in the transport sector, and quantifying the portion of adaptation finance (see the General Guidance document), the reporting institution completes the GFM survey template (inputting adaptation finance amounts in US dollars [$]) according to the relevant sub-sectoral categories. For the transport sector, adaptation measures may fall under the sub-category of coastal protection, other disaster protection, budget support, or cross-cutting, depending on the adaptation measure.

Coastal protection
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mix of the above)
Other disaster risk reduction
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mix of the above)
Budget support for adaptation policies
Cross-cutting
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mix of the above)

CASE STUDIES

To align with the updated adaptation tracking methodology, three examples of potential transport adaptation activities are provided below, corresponding to Type 1, Type 2, and Type 3 adaptation, respectively.

CASE STUDY: Type 1 Adaptation

Adapting tram line to flood risk

An IDFC member is investing USD 250 million in the development of a new tram line in a metropolitan area. The metropolitan area is identified as at risk from climate change-induced heavy rainfall and potential flooding. Therefore, the project integrates advanced drainage systems into the development of the new tram line that can increase the likelihood of continued operation during and after current and future floods by helping to quickly divert floodwater away.

These measures are considered Type 1 adaptation because they yield resilience *of* the tram infrastructure (rather than resilience *through* it). Resilience is not the main goal of the project, but measures are implemented to protect against climate risks that threaten the project. Adaptation finance here should be quantified by applying a Type 1 coefficient to the cost (CAPEX; OPEX) of the advanced drainage systems. If the exact cost of the advanced drainage systems is not known, adaptation finance could be quantified by applying the same coefficient for Type 1 activities to a wider cost category (e.g., 5% of the cost of constructing the track).

CASE STUDY: Type 2 Adaptation

Upgrading the public transport system with adaptation and resilience components

An IDFC member is investing USD 200 million to upgrade a city's public transport system, to tackle dual challenges of urbanization-driven increases in demand, and vulnerability of the transport system to climate change impacts. The project aims not only to improve mobility and reduce congestion but also to enhance the system's resilience to climate change, particularly in terms of temperature variations and extreme weather events. Advanced systems were installed to provide real-time data on weather conditions, allowing for adaptive management of transport services during extreme weather to avoid service disruptions and the resulting congestion.

This is a Type 2 adaptation activity. There are dual objectives of adaptation and transport service improvement yielding resilience *through* the weather monitoring system. Adaptation finance should be quantified by applying a Type 2 coefficient (e.g., 50%) of the cost (CAPEX; OPEX) of installing the weather monitoring system.

Note that the 50% share mentioned is for illustrative purposes only. The actual proportion should be based on the number of adaptation-relevant objectives for the activity. For instance, if the adaptation and resilience objectives represent 1 out of 5 objectives for an activity, applying a 20% share would be more appropriate.

CASE STUDY: Type 3 Adaptation

Developing climate-resilient railway networks through advanced engineering

An IDFC member is investing USD 350 million in a project to redesign and reconstruct sections of a railway network that are particularly vulnerable to climate hazards such as increased precipitation, temperature extremes, potential landslides, and flooding. The objective of the project is to increase the resilience of the existing railway system to future climate-related extreme weather.

This is a Type 3 adaptation project, yielding resilience through the redesign of the railway networks. It improves the resilience of the region's public transport to climate hazards such as floods and extreme temperatures, thereby addressing some of the underlying causes of vulnerability. Adaptation finance is quantified here as 100% of the total project cost i.e. USD 350 million.

In determining that this is a Type 3 project, the IDFC member used the following checklist:

- Was the primary objective of adaptation explicitly identified during the initial planning stages of the project?
- Was the need to improve the resilience of the railway line identified as part of a comprehensive risk assessment of the wider system, e.g., the region or the local infrastructure?

- Does the railway line improvement address underlying causes of vulnerability (such as susceptibility, sensitivity or capacity of the exposed system to cope with and adapt to identified hazards) for this region?
- Is there a detailed plan to monitor and evaluate the project's performance using specific metrics related to climate adaptation and resilience?

4. WATER SECTOR GUIDANCE

4.1 CONTEXT

Flooding and drought – a consequence of too much and too little water, respectively – represent some of the biggest global climate risks induced by climate change, and pose a particular challenge for developing economies, including many IDFC member states. Indeed, many of the most significant environmental and social effects of climate change are likely to manifest through impacts on the water cycle and water security therein (LSE, 2023).

Climate action presents an opportunity to safeguard water supplies and is an essential aspect of meeting SDG 6 which aspires to the 'availability and sustainable management of water and sanitation for all.' Estimates suggest that the annual mitigation potential[6] of the water sector, globally, is over 1.3 billion tonnes CO_2e, with the largest abatement potential in reducing water grid emissions and through upgrading industrial wastewater treatment plants (VCMI, 2023). On the adaptation side, solutions that yield water savings or reduce water loss in areas prone to water stress, as well as climate-proofing water supply infrastructure, will be essential to building resilience of the sector. The water sector is also intimately connected to biodiversity, dependent upon, as well as directly impacting the healthy functioning of ecosystems. For example, well-planned water sanitation infrastructure can reduce the ecological impact of human waste, while preserving freshwater ecosystems and habitats therein, will ensure the sustainability of vital ecosystem services that ultimately underpin economic activity and development (USAID & ABCG, 2012).

When approaching climate action in the water sector, it is important to first take stock of the potential synergies and trade-offs that can arise between water-related adaptation and mitigation. Indeed, different mitigation pathways can either increase or decrease water withdrawals or water consumption, depending upon the specific mitigation technologies deployed, thereby affecting adaptation and resilience outcomes (IPCC, 2022). For example, solar pumps (replacing diesel or electric pumps) are a viable solution for reducing emissions from groundwater pumping in agriculture., However, the productivity boost may ultimately exacerbate groundwater depletion, yielding maladaptive outcomes (IPCC, 2022). Conversely, desalination – with the aim to ease freshwater shortage – is an energy-intensive process and may lead to an energy rebound effect, yielding a net increase in emissions (IPCC, 2022). IDFC institutions working on climate action in the water sector should, therefore, make a conscious effort to assess knock-on effects of planned water interventions, with a view to enhancing synergies and avoiding trade-offs.

4.2 MITIGATION

Mitigation in the water sector[7] involves one, or a combination, of the following key action areas:

1. GHG-emissions reduction

6 Wastewater treatment can be a source of highly potent greenhouse gases, particularly methane and nitrous oxide (IWA, 2022).
7 Here, the 'Water sector' refers to Water Supply & Wastewater, as per the Mitigation Common Principles.

2. Energy and resource efficiency
3. Demand management

In this sectoral context, the Common Principles start from the premise that activities are only eligible if they neither conflict with, nor undermine, the objectives of SDG 6; that is, universal access to safe drinking water (6.1) and sanitation and hygiene (6.2). Table 4.1 seeks to simplify the positive list of eight water sector mitigation activities, as documented in the Common Principles for Climate Mitigation Finance Tracking (2023), providing further guidance and explanation of key terms with screening criteria. Where screening criteria involves demonstrating a substantial increase in energy efficiency, or a substantial reduction in net GHG emissions, complying with either country- or sector-specific standards/benchmarks, these may be validated based on published sources or defined by the reporting institution itself.

Table 4.1 Eligible mitigation activities in the water sector

No.	Action areas	Eligible activities	Guidance	Screening criteria
6.1	**Energy and resource efficiency; demand management**	Energy-efficiency improvement in an existing water supply system through the deployment of low-energy-consumption technologies/equipment, promotion of better auditing practices, and/or the reduction of water losses.	Energy-efficiency improvement needs to be validated against a selected benchmark (i.e. an industry standard indicating energy inputs for a given level of service).	To validate eligibility, there needs to be a demonstrated substantial increase in energy efficiency, or a substantial reduction in net GHG emissions, against a selected benchmark. A good example of a substantial reduction in GHG emissions for this activity, and similar ones that follow, would be 20-30% energy savings/reduced energy demand.
			Low-energy-consumption technologies/equipment must yield a substantial reduction in net GHG emissions against a selected benchmark.	
6.2	**GHG-emissions reduction**	Lower-carbon new water supply project that replaces tanker use, or local coping mechanisms with a piped utility water supply system	Lower-carbon means lower emissions relative to the pre-project baseline (e.g., where water is pumped using diesel-powered pumps).	To validate eligibility there needs to be a demonstrated substantial reduction in net GHG emissions, against a selected benchmark.
			Tankers are (storage) trucks used to transport and distribute water in (suburban; rural) areas not yet served by a piped water supply system.	
			Local coping mechanisms include household/neighbourhood-level pumping of water, or household water boiling, where there is no piped/treated water available.	

No.	Action areas	Eligible activities	Guidance	Screening criteria
6.3	**Energy efficiency; demand management**	New water supply project that meets high energy efficiency standards, and/or makes use of demand management	High energy-efficiency standards involve meeting/exceeding applicable energy efficiency standards (where they exist), or employing the best locally-available technology; or creating a zero-emissions system (for example, gravity-fed pipelines). Demand management entails reducing consumer demand for water, or the timing of consumers' demand(so-called load management), thereby reducing the generation capacity needed at a water supply/treatment facility, and thereby effectively reducing energy inputs.	
6.4	**Energy and resource efficiency; GHG-emissions reduction**	Water supply or wastewater management projects that improve operation and maintenance to reduce water losses, promote energy savings, and/or meet/exceed wastewater treatment targets	Reduced water losses may involve leak detection and prevention, for example, through Supervisory Control And Data Acquisition (SCADA) systems. Promoting energy savings entails substantial energy efficiency improvement, against a selected benchmark. Wastewater treatment targets refer to reducing emissions via improvement of wastewater treatment methods; for example, targets relating to the removal of biochemical oxygen demand (BOD), chemical oxygen demand (COD), or nitrogen (thereby reducing GHG emissions).	Only the portion of financing for operation and maintenance that is dedicated to water savings, energy efficiency, or meeting/exceeding wastewater treatment targets is eligible to be tracked as mitigation finance.
6.5	**GHG-emissions reduction**	New wastewater management projects that reduce methane or nitrous oxide emissions through the collection/treatment of wastewater, fecal sludge, or septage	Reducing methane or nitrous oxide emissions involves accounting for the direct emissions from wastewater/fecal sludge/septage. Improved collection/treatment involves reducing the time that wastewater spends in anaerobic conditions, thereby reducing GHG emissions.	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions against a selected benchmark, accounting for indirect emissions arising from energy use for collection and treatment.
6.6	**Energy efficiency; GHG-emissions reduction**	Energy-efficiency improvements or improved treatment targets at existing wastewater facilities	Energy-efficiency improvements involve using less energy-intensive wastewater treatment technologies compared to the existing baseline technology. Improved treatment targets refer to, for example, targets relating to the removal of biochemical oxygen demand (BOD), chemical oxygen demand (COD) or nitrogen (thereby reducing GHG emissions).	Energy-efficiency improvements should reflect both changes in emissions due to reduced energy demand for treatment, as well as changes in direct emissions from treating wastewater. Improving treatment targets should result in emission reductions of methane or nitrous oxide, relative to existing targets, and should reflect changes in direct emissions due to improved treatment methods as well as changes in energy demand during treatment.

No.	Action areas	Eligible activities	Guidance	Screening criteria
6.7	**GHG emission reduction**	Improving latrines or the collection of wastewater/fecal sludge/ septage in wastewater projects	Improving latrines could involve gravity-based collection systems that yield near-zero energy-related GHG emissions. Improving the collection of wastewater/fecal sludge/septage involves reducing the time that wastewater spends in anaerobic conditions, thereby reducing relative GHG emissions.	Improving latrines with reduced anaerobic conditions must result in a substantial reduction in relative GHG emissions, compared to a pre-project baseline (taking into account emissions across the entire treatment process).
6.8	**Resource efficiency**	Wastewater reuse	Reuse of greywater (from sinks; washing machines; bathtubs and showers) and blackwater (from toilets; kitchens) after treatment, at the building or local level. Reuse of treated wastewater for irrigation. Reuse of treated sludge as fertilizer replacement. Retention ponds or constructed wetlands that work as integrated flood risk management (nature-based solutions).	To validate eligibility, there must be a demonstrated substantial reduction in relative GHG emissions between the wastewater reuse activity and the existing activity which is to be replaced or prevented.

CONDUCTING (EX-ANTE) GHG EMISSIONS REDUCTION ASSESSMENT

Emissions released by the water sector include direct ('Scope 1') emissions – largely methane (CH_4) and nitrous oxide (N_2O) – caused by wastewater and sewage sludge treatment, and indirect ('Scope 2') emissions caused by the production of energy by a third party but used by or in the water supply and wastewater processes. Additional indirect (Scope 3) emissions are mainly caused by the construction of capital assets (such as a water treatment plant); the use of chemical products; the reuse of by-products (such as sludge for composting); and discharge (IWA, 2022). An ex-ante GHG emissions reduction assessment to assess eligibility of the activity ('a substantial reduction in GHG emissions, relative to the pre-project baseline') should cover direct and indirect emissions, taking into account Scope 3 emissions where they are measurable and material.

Per IFI GHG accounting guidance (2015; 2023), pre-project baselines represent a reasonable scenario of what would occur in the absence of the project – whether that is a 'without project' scenario or an 'alternative project' scenario.[8] The boundary for the accounting exercise may be limited to the single activity, facility or entire infrastructure dependent upon the particular project context (i.e. is it a greenfield project constructing an entirely new facility/infrastructure or rather a brownfield project at (part of) an existing facility/infrastructure).

IFI (2023) provides further guidance on the specifics of baseline determination, for example:

8 The 'without project' scenario considers emissions that would have created had the particular project not been implemented, and no other project had been implemented in its place (i.e., status quo remains). The 'alternative project' scenario considers emissions from the most likely alternative project that would achieve the same project outcomes, or emissions level, or service.

- For brownfield water supply projects, the baseline scenario may be the continued use of existing equipment/infrastructure that is still within its economic lifetime for refurbishment/rehabilitation
- For (non-revenue) water reduction projects, changes in emissions may be attributed to the reduction in the volume of water produced
- For greenfield water supply projects, the baseline scenario may be zero-emissions (e.g., where the pre-project scenario is rainwater collection or use of hand pumps). In this case, where absolute emissions are already very low in the baseline, it is not necessary to demonstrate a substantial reduction in relative GHG emissions.

In some cases, it may be too challenging or impractical to define the baseline scenario (quantifying GHG emissions), and instead, suitable benchmarks for intensity metrics – for example, tonnes CO_2e per unit of output, or gigajoules of energy per unit of output – may be available, that can be compared with accepted standards for assessing the likely mitigation impact. In this regard the IFI (2020) has published *Default Energy Intensity Factors for Water Supply Systems*, differentiating between energy intensity factors for the various processes involved in water supply systems (sourcing; conveyance (pumping); treatment; desalination; and distribution). These default indicators may be used by the reporting IDFC institution if local/country-specific datapoints are lacking.

QUANTIFYING WATER MITIGATION FINANCE

As outlined in the General Guidance document, for an activity that qualifies as mitigation, only costs that are directly integral to climate change mitigation are eligible to be counted as mitigation finance. In the case that all project expenditures contribute to the reduction of GHGs, the **total cost** of the activity can be counted as mitigation finance.

The total cost of a project dedicated to installing lower-carbon energy technology in an existing water supply and treatment plant would count as mitigation finance. On the other hand, costs of a project that do not contribute to climate change mitigation cannot be counted as mitigation finance, even if they comprise a significant share of the total project. Some costs, such as land costs, may be required for the project overall, but do not directly lead to the reduction of GHG emissions.

Project costs should be assessed with the principle of conservativeness in mind to determine if they are integral to climate change mitigation. In such cases, only the cost of the mitigation-relevant activity can be counted as mitigation finance. For instance, only the isolated cost of energy efficiency measures in a wider water supply infrastructure upgrade project would count as mitigation finance (rather than the total cost of all infrastructure upgrades).

LINKING WITH THE GFM TEMPLATE

After identifying one of the eight eligible mitigation activities in the water sector, and quantifying the portion of relevant mitigation finance, the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the following sub-sectoral categories:

Water supply and wastewater	Mitigation activity no.
Water supply: GHG-emissions reduction, energy & resource efficiency, and demand management	*6.1, 6.2, 6.3, 6.4*
Wastewater management: GHG-emissions reduction, energy & resource efficiency, and demand management	*6.4, 6.5, 6.6, 6.7*
Efficient use of wastewater	*6.8*

ALIGNING WITH OTHER TAXONOMIES

Table 4.2 illustrates how to match the Rio Marker sector codes and the EU taxonomy with the corresponding GFM reporting rows for the Water Supply and Wastewater sector. Recognizing that IDFC members may be obligated to follow other national taxonomies (neither the EU taxonomy nor the OECD Rio Markers), this exercise nevertheless provides an illustration of how to conduct alignment.

Table 4.2 Taxonomy alignment for the water sector

Rio Marker CRS Purpose Code|Sector		EU Taxonomy Sub-sector|Activities		Corresponding GFM sub-sector [Water Supply and Wastewater]
14020 14021 14030 14031	Water supply and sanitation: large systems Water supply: large systems Basic drinking water supply and basic sanitation	Water	Construction, extension, and operation of water collection; treatment; and supply systems Renewal of water collection, treatment, and supply systems	Water supply: GHG-emissions reduction, energy & resource efficiency, and demand management
14022 14032 14050	Sanitation -large systems Basic sanitation Waste management /disposal	Wastewater Solid Waste	Construction, extension, and operation of wastewater collection and treatment Renewal of wastewater collection and treatment Anaerobic digestion of sewage sludge	Wastewater management: GHG-emissions reduction, energy & resource efficiency, and demand management
14015 14040	Water resources conservation River basins development	N/A		Efficient use of wastewater
14010 14081	Water sector policy and administrative management Education and training in water supply and sanitation	N/A		Other

4.3 ADAPTATION

Unlike mitigation, there is no exhaustive taxonomy of eligible adaptation activities in the *water* sector. This is because adaptation is highly context dependent and, therefore, the same intervention (e.g., reducing water losses in water supply infrastructure) may only qualify in one particular geography (that is experiencing climate-induced water stress) and not in another. Adaptation in the water sector includes measures that protect against climate risks to water supply and distribution infrastructure (e.g., damage from extreme weather), as well as measures to reduce water losses/increase water savings in the context of climate change-induced water stress.

As outlined in the adaptation finance decision trees in the General Guidance document, adaptation relevance is determined by a three-step process to validate that the financed project/ activity is directly linked to the reduction of an identified vulnerability to climate change; in this context, reduction of vulnerability to water stress.

Table 4.3 describes the three-step validation process in more detail and illustrates the process of validating an example adaptation project.

Table 4.3 Validation of adaptation relevance

Project example: Water supply infrastructure upgrade project with measures to reduce water losses			
Step	**Description**	**Validation**	**Example**
Step 1: Context of vulnerability	The context of vulnerability is clearly demonstrated using a robust evidence base.	A robust evidence base could include primary data collection and analysis by the reporting institution, or making use of external published data/ analyses. Climate risk assessment is conducted at this stage (see Box 4.1 below).	Climate change-induced water stress is well documented. The project may use backward-looking data and/or projections on drought as validation for this step.
Step 2: Intent	There is an explicit statement of intent by the project proponents to reduce the identified climate change vulnerability.	Intent may be demonstrated through project objectives, stated in project planning or appraisal documents.	The stated project objective within the project proposal is to reduce water losses/yield water savings in order to alleviate water stress at the wider system level.
Step 3: Clear and direct link	There is a direct link between the project activities and reducing the identified climate change vulnerability.	A clear and logical link can be articulated between project activities and the reduction of an identified vulnerability to climate change.	By financing these water supply infrastructure upgrades and thereby reducing water losses and increasing water savings, the project improves the wider system's resilience to cope with climate change-induced water stress.

Box 4.1: Conducting a climate risk assessment for the water sector

Climate risk is generally thought of as the interaction of a hazard (e.g. flooding) with exposure (the extent to which the project is exposed to, or likely to be affected by, the identified hazard) and vulnerability (susceptibility, sensitivity, or lack of capacity of the exposed system to cope with and adapt to the hazard).

In screening for climate hazards relevant to the *water* sector, institutions may use past and current weather/disaster records, as well as model-based forecasts. An important consideration is to evaluate the severity and frequency of prospective hazards in the project location. This then helps to assess exposure, that is, the extent to which project components (infrastructure, assets) are likely to be affected by the identified hazard.

The *water* sector poses interesting dynamics in terms of adaptation screening, given that the context may be either:

1. Climate-proofing water and wastewater infrastructure exposed to climate risks (e.g., vulnerable to flooding, extreme temperatures); or
2. Enabling water savings/reduced water losses in areas experiencing water stress.

Various existing tools can be used by IDFC institutions seeking to conduct a climate risk assessment on prospective projects in the *water* sector. For example, the World Bank developed an open-access Climate and Disaster Risk Screening Tool, with a specific module on Water and Sanitation. The tool applies an Exposure-Impact-Adaptive Capacity framework to assess risks at a particular sub-sectoral and national level, providing users with guidance on the climate and disaster risks that may impact their project/program. In addition, WRI's Aqueduct tool is a useful resource for distinguishing between climate-induced water stress and purely anthropogenic water stress (i.e. due to overpopulation/poor water supply infrastructure)—a key part of climate risk assessment in the water sector.

A project that passes the three-step validation process is considered an eligible adaptation activity. The activity is then classified as Type 1, Type 2, or Type 3 adaptation, as per the Common Principles (2023), and further elaborated on via the decision trees in the General Guidance document. Examples of Type 1, Type 2, and Type 3 adaptation activities in the water sector are provided in Table 4.4.

The classification of the adaptation type also provides some indication of the amount of adaptation finance embodied in the project. While there is no universal approach to calculating adaptation finance, for projects where adaptation is the primary objective (Type 3), **total cost** of the activity is considered adaptation finance. Where adaptation is not the primary objective (Types 1 or 2), and the adaptation cost can be isolated, a proportion (<100%) of the adaptation-relevant cost is considered adaptation finance.

An **incremental approach** can be used to estimate these costs. This involves estimating the additional costs of activities relating to adaptation in relation to a hypothetical baseline for a scenario in which the project does not address any physical climate risks. However, this type of analysis may not be possible in every case. Alternative approaches for quantifying adaptation finance could include:

- Efforts to isolate the costs of the adaptation-relevant activities, taking as granular an approach as possible. Institutions can then track a proportion of these adaptation-relevant activity costs, or the costs in entirety, depending on the type of adaptation activity (see Table 2.4).

- Applying fixed shares to wider costs to estimate adaptation-relevant costs; this constitutes a **proportional approach** (see General Guidance).

Table 4.4 Examples of adaptation activities for the water sector

Type	Description	Examples	Quantification
Type 1: Adapted activities	'Adapted activities' integrate measures to manage physical climate risks to ensure the project's success; these can be thought of as enhancing the resilience of the project.	• Adapting water supply infrastructure to flooding • Adapting water distribution infrastructure to extreme heat	<100% total cost
Type 2: Shared objectives	Activity that directly reduces climate risk but has adaptation as a joint objective (alongside wider development objectives); these can be thought of as enabling resilience through the project.	• Water supply infrastructure upgrade program with measures to reduce water losses/increase water savings, yielding system-wide resilience to water stress	<100% total cost
Type 3: Primary objective	Adaptation is the primary objective. The activity is expected to have a transformational impact on one or some of the underlying causes of vulnerability at the systemic level; that is, the system's susceptibility, sensitivity, and/or lack of capacity to deal with relevant climate hazards. The activity is likely to have been identified by assessing the physical climate risks of the wider system in which the project takes place.	• Policy-based financing to support the efforts to build capacity amongst local government officials on the planning and management of climate-induced drought	100% total cost

LINKING WITH THE GFM TEMPLATE

After identifying an eligible adaptation activity in the water sector and quantifying the portion of adaptation finance, the reporting institution completes the GFM survey template (inputting adaptation finance amounts in US dollars) according to the relevant sub-sectoral categories under *Water Preservation*.

CASE STUDIES

Three examples of potential water adaptation activities are provided below, corresponding to Type 1, Type 2, and Type 3 adaptation respectively, as per the updated adaptation tracking methodology.

CASE STUDY: Type 1 Adaptation

Adapting water supply infrastructure to sea-level rise and flooding

An IDFC member is investing USD 250 million in water supply infrastructure in an area that is identified as at risk from sea-level rise and flooding. Measures are integrated into the project design in order to climate-proof the existing infrastructure against prospective sea-level rise and flooding. In this case, that involves raising the height of the piping, so it is unaffected by flooding, as well as adding infrastructure around the water supply system to capture and store floodwater.

These measures are Type 1 adaptation activities, yielding resilience *of* the water supply infrastructure (rather than resilience *through* it). Resilience is not the main goal of the activities; but the measures are implemented to protect against climate risks that threaten the project-financed assets. Adaptation finance here can be quantified by applying a Type 1 coefficient (i.e. less than 100%) to the exact cost (CAPEX; OPEX) of raising the height of the piping, and of adding infrastructure to capture and store floodwater. If these exact costs are not known, the same coefficient can be applied to estimated costs for the activity. These estimated costs can be calculated by taking a proportion of known costs, for example, by taking 10% of the overall cost of piping improvements as part of the project; this is a proportional approach.

CASE STUDY: Type 2 Adaptation

Enabling reduced water losses and supplementing existing water sources in a water supply infrastructure rehabilitation project

An IDFC member is investing USD 300 million for the upgrade and rehabilitation of existing water supply infrastructure. The broader objective is development of the water sector to increase access and enhance service delivery; however, one of the objectives is also to reduce water losses and supplement the existing water sources, since the area is identified as at risk from climate change-induced water shortage. In this case, reducing water losses is achieved through more efficient infrastructure and a leak detection system, while a groundwater reserve is added to the existing sources of water in the system. These activities both improve the overall performance of the water supply infrastructure, and help to manage climate-induced water shortage risks.

This is a Type 2 adaptation activity, yielding resilience *through* the enhanced water supply infrastructure (rather than resilience *of* it). Adaptation finance here can be quantified either by applying a pre-determined Type 2 coefficient (e.g., 40%) to the exact cost (CAPEX; OPEX) of the water preservation measures. If the costs associated with these measures are not known, the Type 2 coefficient could be applied to estimated costs that are calculated by taking a proportion of the overall infrastructure costs. Note, this 40% Type 2 coefficient is for illustrative purposes only; if in this particular project context, the adaptation and resilience objectives account for 1 out of 5 objectives for the activity, applying a 20% share would be more appropriate.

4.4 BIODIVERSITY

The water sector is an integral component of urban infrastructure, providing essential services such as clean water and wastewater management, to protect public health and environmental integrity. In addition, the sector is intrinsically connected with biodiversity since water is a core element of nature and a vital natural resource. Water is crucial for biodiversity as it sustains all life on earth, supports a vast array of ecosystems, and provides habitats for countless species. Therefore, the water sector can play a central role in the protection and restoration of biodiversity. Certain conventional activities of the sector can be complemented or even substituted by activities that can deliver the intended services while also providing additional benefits for nature biodiversity.

Biodiversity-related action in the water sector refers to one, or a combination, of the following key action areas:

1. Water supply
2. Wastewater treatment
3. Flood risk management

Table 4.5 lists several activities that can be implemented in the water sector to benefit nature and biodiversity. It also provides short guidance on interpreting eligible activities and on the types of screening criteria that should be used to determine whether an activity/project qualifies as biodiversity finance.

Table 4.5 Eligible activities for nature and biodiversity finance in the water sector

Action areas	Eligible activities	Guidance	Screening criteria
Water supply	Protection of water infiltration areas to enhance clean water supply	Conservation of natural ecosystems, particularly in areas crucial for water filtration, can minimize pollution and maximize natural water purification compared to built-up land or farmland. Natural water filtration can substantially reduce the costs of water treatment while delivering multiple biodiversity benefits. Woodlands play an additional critical role in regulating water flow and soil building, especially on slopes, where they ensure water infiltration into the soil, and prevent rapid runoff of rainwater into water courses- which is often linked to soil erosion and the reduced water quality of streams. Slower groundwater infiltration also supports a maintenance of seepage water flows in dryer periods. By creating, restoring, and effectively managing woodlands, watersheds can be protected, and wildfire risks reduced.	The activity needs to demonstrate: • That new or substantially additional land is designated as protected (not just the maintenance of existing areas); and • That the activity will increase groundwater recharge or quality; and • That the newly introduced water abstraction levels respect minimum ecological water flows required to maintain ecosystem functioning.

Action areas	Eligible activities	Guidance	Screening criteria
Water supply	Managed aquifer recharge	Aquifers are key water reserves but are sometimes over-exploited, which means water extraction is higher than the natural rate of recharge through water infiltration. Supporting the sustainable management of aquifers and investing in actions that stimulate their natural recharge is key to ensuring the resilience of water systems, both for people and nature. Aquifers can be an attractive alternative to lakes for water storage and supply, as they typically require less land, avoid water losses from evaporation, and act as natural filters to improve water quality. Managed aquifer recharge, or groundwater banking, complements natural recharge through rainfall and water bodies, and consists of artificial recharge techniques and water management methods to increase groundwater availability via the infiltration of external water into aquifers through surface or underground recharge practices. Managed aquifer recharge can be undertaken in three broad ways: 1. Grey infrastructure such as soakaways, infiltration basins, and sub-surface installation of wells 2. Artificial recharge by means of treated wastewater 3. Nature-based solutions such as habitat protection, improved agricultural practices, or creation and restoration of wetlands. Increased groundwater storage can contribute to the baseflow and surface water availability in rivers and wetlands connected to aquifers, as well as to water purification.	Nature-based aquifer recharge is eligible under any condition; for grey- and artificial recharge, the activity needs to demonstrate: • An identified water scarcity pressure on ecosystems in the aquifer in which the activity takes place; and • No possibility to achieve the same intended recharge outcome through a nature-based alternative.
Wastewater treatment	Construction, expansion, or upgrade of sewage and wastewater treatment systems	Sewage treatment aims to remove contaminants from grey water collected by a central sewage system to produce an effluent that can be discharged to the surrounding environment or reused, thereby preventing water pollution from raw sewage discharges. Untreated sewage not only poses a great threat to human health but can also dramatically affect animal and plant species living in or around water courses wherein untreated water is disposed of. Releasing untreated sewage in ecosystems can cause eutrophication in the receiving water bodies and lead wildlife and plant species living in or around contaminated water to accumulate pathogens, heavy metals, and chemicals (pharmaceuticals). This activity aims to address ecosystem damage from the disposal of untreated sewage by constructing, expanding, or upgrading sewage systems so that raw sewage discharges are completely eliminated. Processes can be low/high-tech, extensive/ intensive or mechanized/ nature-based - or a combination of these.	To be eligible: • The activity takes place in areas where it is proven that untreated sewage is disposed or leaked into ecosystems; and • The activity ensures that all generated sewage is treated; and • The effluents disposed into watercourses follow national (or, if absent, international) standards that incorporate biodiversity protection considerations.

Action areas	Eligible activities	Guidance	Screening criteria
Flood risk management; Water supply; Wastewater treatment	Integration of Sustainable Drainage Systems (SuDS) in urban surface water drainage and collection systems	SuDS comprise a set of measures that use natural features and processes to slow down and reduce the volume of surface water runoff in order to manage downstream flood risk, and reduce the risk of runoff-caused pollution. SuDS can be designed to convey surface water; attenuate and retain runoff before entering watercourses; and allow water to infiltrate into the ground to replenish the water table or enter the natural water cycle. SuDS can be implemented along with any type of infrastructure, and include a wide variety of components that follow different approaches to manage runoff flows, volumes, water quality, as well as provide amenity and biodiversity benefits. These components can be used separately to address one specific challenge, or used in combination to create a SuDS management train to function as a natural catchment that addresses issues across the stages of runoff management, starting from prevention (preventing runoff e.g., through permeable paving); conveyance (flow of runoff to a control site); and infiltration and retention sites (e.g., basins, ponds). These include: • Green roofs, rainwater harvesting, and permeable surfaces for runoff source control; • Swales, conveyance channels, and rills for runoff conveyance; • Filter strips, filter trenches, bioretention areas for filtration and removal of sediment or other particles from runoff; • Rain gardens, soakaways, infiltration trenches, and infiltration basins for capturing runoff and allowing it to infiltrate underlying soils or aquifers; • Detention basins and retention ponds for runoff storage or attenuation; and • Wetlands (natural or artificial) for the treatment of runoff water.	To be eligible: • The activity needs to demonstrate that the SuDS installed can simultaneously control water runoff volume, peak rate of runoff, and on-site flood risk; and • The activity needs to demonstrate that the SuDS can simultaneously prevent runoff from reaching watercourses or sewers and treat runoff close to source (if possible) to prevent pollution; and • The SuDS must maximize multifunctionality (flood risk mitigation, recreation, horticulture, etc.) and maximize amenity value; and • The SuDS should include structural variability (by using and combining various SuDS components) and biodiverse and resilient water features.
Flood risk management	Nature-based coastal protection	Nature-based coastal protection can be an attractive alternative to conventional, concrete-based coastal defense structures, which are not able to adapt to and compensate for sea-level rise, tending to cause unwanted erosion in other locations. Nature-based coastal protection reduces wave intensity and protects coasts from erosion, thereby stabilizing shorelines. In contrast to concrete-based solutions, nature-based coastal protection can grow with sea-level rise or, if necessary, can be easily adapted. Various types of nature-based coastal protection exist, including artificial coastal wetlands or salt marshes; beach- and dune nourishment; oyster reef creation; and mangrove re-establishment.	The activity needs to demonstrate that: • New or substantially additional coastal or marine areas are protected or restored; and • The expected level of flood defense provided by the activity is at least equivalent to related man-made structures; and • Protection or restoration activities are in line with local biodiversity conservation objectives.

Action areas	Eligible activities	Guidance	Screening criteria
Flood risk management	Natural flood management, wetland restoration, and improvement of the hydro morphology of water bodies	Natural flood control zones are natural areas into which flood water can flow during floods. This zone temporarily stores water and delays its release when flow rates are the highest. Wetland creation, conservation, and restoration play an important role in reducing flood risks by regulating stormwater and peak flows before they enter rivers, streams, and sewers or by retaining water in upper catchment areas, thereby reducing the risk of damaging floods downstream. Natural flood risk management approaches deploy nature-based solutions to mitigate the risk of flooding while providing co-benefits for the environment and communities. Measures include rewetting of formerly drained lands, water retention and attenuation techniques such as re-meandering of straightened rivers and measures to slow down the overland flow of rainwater; flood bypasses; reconnecting rivers to their floodplains to create more space for water; and restoration of habitats including wetlands and riparian woodlands.	The activity needs to demonstrate: ▪ Expected level of flood defense provided is at least equivalent to related man-made structures; and ▪ Coordination/alignment with local nature conservation objectives.

QUANTIFYING WATER SECTOR BIODIVERSITY FINANCE

The General Guidance document proposes two distinct types of approaches that can be followed to quantify biodiversity finance: incremental and proportional. The **incremental approach** can be used for projects that include precise information on budget allocations (CAPEX/OPEX)., To track a project's biodiversity finance in such cases, one would have to identify the exact budget items that refer to the project's biodiversity activities and sum the CAPEX/OPEX costs reported under these items to estimate the project's contribution to biodiversity. To identify the items that are biodiversity-relevant in projects related to the water sector, the list of eligible activities included in Table 4.5 can be used.

When a project's budget disaggregation is not at a level that allows the allocation of CAPEX/OPEX costs to specific budget items, the **proportional approach** can be followed. Under this approach, a coefficient is assigned to the total budget of a project according to its relevance to biodiversity, counting only a portion of the total project investment as biodiversity finance (or 100% of the total budget if the whole project is biodiversity-relevant). For instance, according to the Rio Markers system, two coefficients can be applied to screened projects—namely a 100% coefficient for projects that primarily target biodiversity, and 40% for projects that have a different target but benefit biodiversity as well. However, a different proportional approach could employ a greater number of coefficients which are lower or greater than 40%, and may be linked to:

- **Project objectives** – This involves looking at the project objectives to determine whether benefiting biodiversity is a primary or secondary objective of the project. When found to be primary, the total investment is tracked as biodiversity finance (i.e. a 100% coefficient is applied), while when secondary, only a portion of the investment is captured (e.g., 40% according to Rio Markers – can vary);
- **Project types of activities** – This refers to assigning higher coefficients to projects that include specific biodiversity-enhancing activities than to projects with activities that indirectly benefit nature. For instance, a 100% coefficient could be assigned to projects that include habitat restoration

activities, 50% to projects that include pollution mitigation activities, and 30% to projects that focus on environmental governance.

The information required to apply proportional approaches that link coefficients to project objectives, relates only to the objectives and targets of the project. For instance, if a project related to the water sector aims to protect infiltration areas to enhance the quality of groundwater in a specific location, then 100% of the project's total budget should be tracked as biodiversity finance since the objective of the project is related to habitat protection. If, on the other hand, the objective of another project is to reduce groundwater pollution, then a lower coefficient (say 40%) should be used as the activity will reduce biodiversity pressures (pollution), but the overall objective is not to enhance biodiversity. Similarly, approaches that link coefficients to types of activities would assign a 100% coefficient to the first project, since its main activity is habitat protection, but would need additional information to determine the coefficient of the second project, as groundwater pollution can be addressed through activities that enhance biodiversity (e.g., habitat protection) or activities that are biodiversity-neutral (e.g., man-made treatment plant). If the foreseen activities enhance biodiversity a 100% coefficient should be used; if not, a lower coefficient (say 40%) should apply.

While the proportional approach may be faster to apply, the incremental approach can provide more accurate estimations of the amount spent on biodiversity as it follows a more granular approach by analyzing each budget item separately. Therefore, the incremental approach should be used wherever feasible.

CASE STUDIES

Two examples of potential biodiversity activities related to the water sector are provided below, corresponding to one project that is tracked as 100% biodiversity finance. and one that is assigned a lower coefficient.

CASE STUDY: Fully biodiversity finance

Protection of water infiltration areas for enhancing clean water supply

An IDFC member is investing USD 100 million for the conservation of ecosystems that function as infiltration areas for groundwater reserves. The objective of the project is the protection of ecosystems from pollution (e.g., agricultural runoff), and from habitat alterations (e.g., from nature to agricultural land) to ensure natural water infiltration and prevent rapid runoff of rainwater into water courses.

To quantify biodiversity finance using an incremental approach, the exact costs (CAPEX/OPEX) of the project that relate to ecosystem conservation should be tracked and aggregated. Under a proportional approach that links coefficients to project objectives or activities, the project would qualify as 100% biodiversity finance (USD 100 million), since both the primary objective and the related activities focus on ecosystem conservation.

CASE STUDY: Partially biodiversity finance

Integration of SuDS in urban surface water drainage and collection systems

An IDFC member is investing USD 50 million in the surface water drainage and collection system of a city that is affected by pluvial flooding, in order to enhance its capacity to deal with excessive water runoff. Traditionally, drainage systems in or around built infrastructure manage surface water runoff using gullies, and a pipe system to collect runoff on the site, convey, and dispose it in a treatment facility or nearby water bodies. However, these systems cannot easily cope with runoff quantities from extreme weather events, often leading to flooding. Moreover, such drainage systems cannot control poor runoff quality and can transfer pollutants from urban areas, contaminating surface and groundwater, as well as other ecosystems. At the same time, water circulating in traditional drainage systems remains undervalued and underutilized for its multiple uses as a natural resource, its landscaping potential, and its potential to support habitats and ecosystems.

To address these issues, the project integrates Sustainable Drainage Systems (SuDS), which are a set of measures that use natural features and processes to slow down and reduce the volume of surface water run-off in order to manage downstream flood risk and reduce the risk of run-off-caused pollution. Due to the integration of natural features into these systems, SuDS often give rise to significant biodiversity benefits, especially in urban settings where species and habitats are under significant stress.

To quantify the biodiversity finance of this project following an incremental approach, the budget items that refer to costs (CAPEX/OPEX) for the design, implementation, and operation of SuDS must be tracked and aggregated. Since the primary objective of this project is to cope with excessive runoff, when using a proportional approach that links coefficients to project objectives, only a portion of the total project value (e.g., 40%) would qualify as biodiversity finance. However, a proportional approach that links coefficients to project activities may result in attributing a greater share of the total project value to biodiversity, since many of the SuDS measures rely on habitat creation (e.g., ponds, green roofs, rain gardens, etc.), or other biodiversity-enhancing activities.

LINKS WITH CLIMATE FINANCE

Activities that have a positive impact on nature and biodiversity often benefit climate change mitigation and adaptation as well. As biodiversity-related actions usually improve the status of the ecosystem in which they are implemented, they also enhance ecosystem services that contribute to climate change mitigation and adaptation, such as the capacity of ecosystems to capture and store carbon, or their ability to act as buffers against climate extremes. Therefore, biodiversity finance can often overlap with climate mitigation and adaptation finance. To avoid double-counting, these flows should be tracked and reported separately and should not be aggregated.

All biodiversity-eligible activities for the water sector listed in the table above can entail climate co-benefits. Table 4.6 shows instances where these activities contribute to climate change mitigation and adaptation objectives. This overlap often depends on the context in which the activity takes place. For instance, ecosystem restoration in woodlands would enhance carbon sequestration, while restoration of dunes would not have a significant effect on emissions. Similarly, whether a biodiversity activity would have adaptation benefits depends on whether the area in which the activity takes place is vulnerable to a climate hazard and whether this activity addresses the said hazard.

Table 4.6 Comparison of nature and biodiversity finance with climate finance objectives

Eligible activity	Potential overlap with climate mitigation	Potential overlap with climate adaptation
Protection of water infiltration areas to enhance clean water supply	If nature-based water infiltration and purification leads to a reduction in the energy spent to treat groundwater which is translated to emissions reduction, or if the activity leads to an increase in the carbon sequestration capacity of the ecosystem in which it is applied (e.g., Woodland protection).	If the activity takes place in a water-stressed environment caused by climate change, then enhancing clean water supply would alleviate water stress.
Managed aquifer recharge	If the activity achieves a higher water table within the aquifer, then less energy would be needed for pumps to extract water, leading to a reduction in emissions. If the water supplied by the recharged aquifer substitutes an energy-intensive water source (e.g., desalination or water tankers), it will lead to lower energy use and, thus, lower emissions.	If the activity takes place in a water-stressed environment caused by climate change, then recharging groundwater aquifers would significantly reduce the water-stress risks.
Construction, expansion, or upgrade of sewage and wastewater treatment systems	N/A (sewage and wastewater treatment systems are likely to generate additional emissions).	If the activity takes place in a water-stressed environment caused by climate change, and the treated water can be reused in an application for which another water source is being currently used, then the activity would contribute to climate change adaptation.
Integration of Sustainable Drainage Systems (SuDS) in urban surface water drainage and collection systems	If the integration of SuDS substitutes the use of some or all conventional man-made drainage and collection systems, it would lead to energy savings that could reduce the systems' emissions.	If the activity takes place in a water-stressed environment caused by climate change, SuDS can alleviate this stress through the collection and storage of drained water.
Nature-based coastal protection	If nature-based protection involves the protection of carbon-absorbent ecosystems (e.g., mangroves, salt marshes, etc.), it would lead to enhanced carbon sequestration.	If the coast in which the activity takes place is vulnerable to flooding or erosion because of climate change, then this activity would contribute to adaptation.
Natural flood management, wetland restoration, and improvement of hydro morphology of water bodies	If the activity involves the protection or restoration of carbon-absorbent ecosystems (e.g., wetlands), it will lead to increased carbon sequestration.	If the area in which the activity takes place is vulnerable to flooding because of climate change, then this activity would contribute to adaptation.

5. AGRICULTURE, FORESTRY, AND OTHER LAND USE (AFOLU) AND FISHERIES SECTOR GUIDANCE

5.1 CONTEXT

Globally, the AFOLU and fisheries sector is a significant contributor to anthropogenic GHG emissions, accounting for 13-22% of total emissions in the period 2010-2019 (IPCC, 2022). As a major contributor to GHG, the AFOLU and fisheries sector offers a key opportunity for mitigation. The IPCC estimates that the AFOLU sector can provide 20-30% of global mitigation needed for a 1.5°C or 2°C pathway by 2050, with a mitigation potential of 8-14 gtOC_2e per year from 2020-2050[9] (IPCC, 2022). Conservation, improved management, and restoration of forests and other ecosystems offer the largest share of mitigation potential, followed by climate-smart agriculture,[10] and demand-side measures[11] (IPCC, 2022).

At the same time, financing adaptation measures is critical for the sector which is heavily impacted by the negative effects of climate change. Climate change-induced consequences, such as variations in seasons, drought, flooding, and extreme heat, have significantly impacted arable land and productivity, especially in developing countries (Carleton, 2022). This not only results in the loss of economic output from the AFOLU and fisheries sector, but also threatens food security and other complex socio-economic systems. Current assessments indicate that climate change has already reduced agricultural production and intensified biodiversity loss, which in turn has heightened the likelihood of human displacement, conflict, and malnutrition (Steiner et al., 2020). These effects are exacerbated by worsening climate risks and continued land-use change. Therefore, implementing adaptation measures and supporting climate-smart agriculture and resilient forests and ecosystems are vital to ensure the food security of a growing human population and global economic development (CPI, 2023b).

Improving and protecting biodiversity must also be considered and prioritized for climate finance investment in the AFOLU and fisheries sector, because of its integral role in providing essential ecosystem services, such as pollination and soil health, and maintaining the genetic diversity needed for the AFOLU and fisheries sector to thrive. The continued loss of biodiversity not only makes agricultural and forestry ecosystems less resilient to climate change extremes, but also threatens the mitigation potential of the sector. Many mitigation measures in the AFOLU and fisheries sector have co-benefits that improve biodiversity and human well-being, that are often referred to as 'nature-based solutions' (IPCC, 2022), or 'ecosystem-based approaches' (FAO, 2023), including 'ecosystem-based adaptation'. Due to the interlinked importance of different climate objectives in the AFOLU and fisheries sector, integrated responses and investments in solutions that contribute to mitigation, adaptation, and biodiversity can provide the opportunity

9 Based on a carbon price of USD 100/tCO_2e.
10 Examples of climate-smart agriculture include using drought-resistant crop variations, integrating digital platforms for better crop management, vertical farming or low-input crop production.
11 Demand-side measures include: shifts to sustainable healthy diets, reducing food loss and waste, and improved and enhanced use of wood products.

to achieve multiple climate benefits. However, this interlinkage of climate objectives also introduces risk and potential trade-offs for those investing in the sector. Mitigation measures implemented with misguided or inappropriate land management can negatively impact biodiversity, ecosystem functioning, and human well-being. For instance, afforestation, when not well planned, has the potential to lead to localized trade-offs such as reduced water yield or biodiversity (IPCC, 2022). Similarly, improved efficiency of wood-burning cookstoves - a mitigation measure - has the potential to lead to more wood energy consumption, reducing or even counteracting the effects of the initial mitigation measure.

Adaptive measures can also have risks and trade-offs, resulting in maladaptation. For example, increasing agricultural productivity can lead to the consumption of more resources and the expansion of agricultural land. Also, there are particular risks of maladaptation for the use of water in agriculture, given the prevalence of climate-related risks, vulnerabilities to water scarcity and drought for this sector. While increasing water access through irrigation measures can be an adaptive measure, in some cases it can prompt further water scarcity if irrigated lands are extended, or water withdrawal is increased. To avoid maladaptive measures, investors must consider the context of the investment, and design projects and investments to avoid negative impact on other sectors or climate objectives.

In all cases, it is critical for investors to consider and assess how the implemented measures in AFOLU may affect overall mitigation, adaptation or biodiversity impacts to minimize overall risk and trade-offs.

A large share of the world's most vulnerable populations depends on cropping, grazing, forestry, fishery, and agriculture for their lives and livelihoods (FAO, 2021). In this sectoral context, the Common Principles start from the premise that activities are only eligible if they neither conflict with, nor undermine, the objectives of the SDGs. Therefore, members must consider how projects may impact socioeconomic factors and human well-being. Projects that negatively impact local communities or lead to human rights violations are excluded.

5.2 MITIGATION

Mitigation in the AFOLU and fisheries sector is achieved through the implementation of at least one of the following key actions:

1. Energy-efficiency measures (in operations)
2. Carbon sequestration
3. GHG emissions reductions
4. Resource efficiency measures

Given that mitigation measures in the AFOLU sector encompass a wide range of land- and water-based interventions, eligible activities under the Common Principles are further broken down into the following components:

a. Agriculture
b. Livestock
c. Forestry

d. Marine and other water habitats

e. Fisheries and aquaculture

f. Food and diet

g. Biomass production (for biomaterials or bioenergy)

Table 5.1 seeks to simplify the positive list of ten AFOLU and fisheries mitigation activities, as documented in the Common Principles for Climate Mitigation Finance Tracking (2023), providing further guidance and explanation of key terms with screening criteria. Where screening criteria involve demonstrating a substantial increase in energy efficiency, or a substantial reduction in net GHG emissions, complying with either country- or sector-specific standards/benchmarks, these may be validated based on published sources or defined by the reporting institution itself.

Table 5.1 Eligible mitigation finance activities in the AFOLU and fisheries sector

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
Agriculture	5.1	**Energy efficiency**	Reduction in energy consumption in agricultural operations	Agricultural operations include, but are not limited to: • Traction • Irrigation • Pumping • Pest management • Harvesting • Host-harvest crop processing • Crop cooling and storage • Transport (see also transport sector guidance in Section 3 to ensure transport eligibility criteria are also met) A reduction in energy consumption is a change in agricultural operations that results in a substantial reduction of relative GHG emissions from energy usage, carbon intensity, or energy intensity.	To validate eligibility, there needs to be a demonstrated substantial reduction relative to current emissions, carbon intensity, or energy intensity (for existing operations), or a benchmark (for new operations). Energy-efficiency improvement can be measured as relative GHG emissions, carbon intensity, or energy intensity. Guidance on conducting GHG assessments for AFOLU and fisheries is provided later in this section.

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
				Potentially eligible activities include: • Increasing the energy efficiency of crop production (e.g., pumping and irrigation) • Increasing the use of energy-efficient agricultural equipment (e.g., powered by solar energy) used for processing and storage	
	5.2	**Carbon sequestration**	Agricultural projects that contribute to increasing the carbon stock in the soil or avoiding loss of soil carbon (e.g., through erosion control measures)	Increasing the carbon stock in soil involves implementing practices with the goal of accumulating and retaining carbon within the soil. These practices can also focus on avoiding loss of soil carbon, or preserving existing stocks through measures such as reduced tillage or cover cropping. Potentially eligible activities include: • Agroforestry • Peatland restoration and conservation (avoided emissions) • Degraded land rehabilitation • Erosion control measures • Reduced tillage intensity • Cover crops • Crop rotation • Organic matter soil inputs • Manure/digestate processing and application • Perennial cropping systems • Cultivation of deep-rooting species • Integrated fire management	To validate eligibility, there needs to be a demonstrated substantial increase in the above- or below-ground carbon stock relative to the current carbon stock, or a benchmark. Practices must be tailored to the specific soil or peat composition in each situation to optimize trade-offs, and avoid offsetting mitigation benefits of sequestration. Possible trade-offs include: • Increased carbon and nitrogen stock in soil can lead to increased nitrous oxide emissions from soil. • Rewetting peatlands for peatland restoration prevents carbon dioxide and nitrous oxide emissions and the release of carbon and other waterborne substances; improves ecosystem resilience; but leads to methane emissions in the initial years after rewetting. For peatland conservation projects, evidence of the project's contribution to the conservation of peatlands must be provided.

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
	5.3	**GHG emissions reduction**	Reduction of GHG emissions from agricultural practices or technologies	Reduction in GHG emissions can be achieved through a change in agricultural practices, such as improving resource management, or in technologies, such as replacing agricultural equipment with low-emission alternatives. Potentially eligible activities include: • Efficiency improvements to nitrogen fertilizer • Manure management • Drainage management • Improved crop breeds • Biotechnology • Alternate wetting and drying (Water management, e.g., with paddy rice) • Soil conservation practices • Replacing fossil fuel-based agricultural equipment with renewable-powered alternatives • Agro-ecological approaches • Sustainable intensification of mineral soil • Conservation agriculture	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions relative to current emissions or carbon intensity. Where it is not feasible to conduct calculations (due to lack of data, or a large number of farms), relevant proxies, such as fertilizer usage per unit of output, or internationally accepted sustainability certifications, can be used to show reduction in GHG emissions or carbon intensity). Guidance on conducting GHG assessments for AFOLU and fisheries is provided later in this Section.
Livestock	5.4	**GHG emissions reduction**	Projects that reduce methane or other GHG emissions from livestock	Methane emissions from livestock result primarily from their digestion process (enteric fermentation) and manure management. Reduction in methane emissions from livestock may refer to any decrease in emissions compared to current emissions levels along the value chain, commonly involving interventions to livestock feed or waste management. Potentially eligible activities include: • Manure management (biodigesters) • Wastewater management • Improved feeding practices • Improved feed production • Reducing feed losses along the value chain • Improved animal welfare and husbandry • Low-emission feeds • Feed additives for improved efficiency • Enteric methane inhibitors	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions relative to current emissions or carbon intensity. Where it is not feasible to conduct calculations (due to lack of data, or a large number of farms), relevant proxies, such as feed conversion ratios, or internationally accepted sustainability certifications, can be used to show reduction in GHG emissions or carbon intensity.

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
	5.5	**Carbon sequestration**	Livestock projects that improve carbon sequestration through rangeland management	Rangeland management involves controlling or enhancing how livestock interacts with land, in a way that optimizes carbon sequestration by the soil, minimizes carbon loss, and reduces erosion. Carbon stock in soil may be improved by grazing management, the spacing of livestock across land or time to avoid overgrazing. Silvopastoralism, or the introduction of trees and forage to grazing systems, also improves carbon sequestration and benefits livestock production. Potentially eligible activities include: • Improved pasture management • Improved grazing management • Circular or integrated activities that enhance carbon stock • Promotion of silvopastoralism • Nitrification-inhibiting practices in pastures • Phasing out the use of peatlands as pastures • Production of feed in wet conditions on restored peatlands.	To validate eligibility, there needs to be a demonstrated substantial increase in the above- or below-ground carbon stock relative to the current carbon stock, or a benchmark. Activities that improve the feed conversion ratio by converting grazing systems to intensive systems with off-farm feed inputs are excluded.
Forestry	5.6	**GHG emissions reduction; carbon sequestration**	Forestry or agroforestry projects that sequester carbon through sustainable forest management, avoided deforestation or avoided land degradation	Forestry projects may refer to practices that seek to enhance or restore forested areas in ways that improve forest carbon stock (including soil carbon stock), and maintain healthy, sustainable forests. Agroforestry projects include any land-management system that integrates trees or shrubs with agricultural crops to improve biodiversity, enhance soil health, reduce erosion, and promote carbon sequestration. Projects that aim to retain existing forested areas, avoid deforestation or land degradation, or prevent the intentional clearing or logging of forests are also eligible. Potentially eligible activities include: • Reforestation • Sustainable agroforestry supply chains • Restoration of habitats • Biosphere conservation • Policy interventions which explicitly protect carbon stocks • Changes in logging practices • Fire risk mitigation • Sustainable afforestation (plantations)	To validate eligibility, there needs to be a demonstrated substantial increase in the above- or below-ground carbon stock relative to the current carbon stock, or a benchmark. Activities that drain intact ecosystems or hydrological systems are not eligible. Evidence that the project intervention resulted in forest restoration or improvement must be provided.

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
				Afforestation (plantations) need to follow the 'right tree at the right place' approach, and ensure that biodiversity considerations are taken into account.	
Marine and other water habitats	5.7	**GHG emissions reduction**	Projects that reduce GHG emissions from the degradation of marine ecosystems or other water-based ecosystems	Marine or water-based ecosystems refer to ecological systems in bodies of water (including freshwater ecosystems), encompassing oceans, seas, lakes, rivers, estuaries, and wetlands. Projects must protect or restore marine ecosystems in a way that results in a substantial reduction in GHG emissions. GHG emissions from marine ecosystem degradation occur through processes including, but not limited to: • Release of carbon from destroyed coastal vegetation • Changes in ocean temperature or chemistry, impacting organisms and their ability to store carbon • Reduction of eutrophication and reduction of pollution from the runoff waters flowing into mangroves • Release of marine sediments containing methane due to disturbances Potentially eligible activities include: • Mangrove and peatland restoration or protection • Seaweed or kelp conservation and restoration • Habitat protection programmes	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions relative to current emissions or carbon intensity. Activities that drain intact ecosystems or hydrological systems are not eligible. Evidence that the project intervention prevented degradation or resulted in marine ecosystem restoration must be provided.
Fisheries and aquaculture	5.8	**GHG emissions reduction**	Projects that reduce CO_2e intensity in fisheries or aquaculture	CO_2e intensity refers to the carbon dioxide equivalent of emissions produced per unit of output. Reduction in carbon intensity can be achieved through a change in fishing or aquaculture practices, such as improving resource management or fishing practices, or in technologies, such as replacing equipment with low-carbon alternatives. Potentially eligible activities include: • Energy-efficiency improvements • Low-carbon equipment and efficient fleets • Sustainable feeds • Sustainable aquaculture	To validate eligibility, there needs to be a demonstrated substantial reduction relative to current emissions, carbon intensity, or energy intensity (for existing operations), or a benchmark (for new operations). For existing operations where data is unavailable, reduction may be shown in comparison with a business-as-usual baseline. Relevant proxies, such as feed conversion ratios, or internationally accepted sustainability certifications, can be used to show reduction in GHG emissions or carbon intensity, where it is not feasible to conduct calculations (e.g., due to lack of data, or large number of farms).

Sub-sector	No.	Action areas	Eligible activities	Guidance	Screening criteria
Food and diet	5.9	**Resource efficiency**	Projects that reduce food loss or wastage, or promote lower-carbon diets	Projects may refer to reduction of food loss and wastage along the value chain, such as through improved handling and storage of food, or more efficient logistics that prevent crop or food spoilage. Lower-carbon diets refer to the integration of low-GHG products such as plant-based or alternative proteins, or other lower-GHG ingredients, into food and diets. Potentially eligible activities include: • Food waste utilization • Food recovery and redistribution schemes • Policies for reduced food loss and wastage • Loss prevention • Low-GHG food products • Demand-side interventions that focus on driving dietary shifts (e.g., policies promoting sustainable, healthy diets including fiscal policies)	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions relative to current emissions or carbon intensity.
Biomaterial	5.10	**GHG emission reduction**	Projects that contribute to reduction of GHG emissions through the production of biomaterials/ bioenergy from biomass	These projects involve production of biomaterials or bioenergy with lower GHG emissions, and substitution of more carbon-intensive materials or energy sources downstream with such biomaterials or bioenergy. Biomaterials include products such as bio-plastics, fibrous biomass products used for clothing, and wood-based products that can replace concrete, steel, or synthetic materials. Biomass materials are considered carbon sinks that substitute for fossil-based or energy- intensive materials. Bioenergy refers to renewable energy generated from organic materials such as crop residues, plants, wood, or organic waste via various processes (such as combustion, fermentation, or chemical conversion) to produce heat, electricity, or biofuels as an alternative to fossil fuel energy production. Potentially eligible activities include: • Bioenergy from biomass from unused residues • Production of bio-plastics from cereals by-products • Fibourous biomass production for plastic replacement	To validate eligibility, there needs to be a demonstrated substantial reduction in GHG emissions relative to current emissions or carbon intensity, or relative to a baseline. Scope 3 emissions, or emissions that occur in the value chain, such as emissions from transportation, product use, and disposal, must be considered in baseline emissions where they are expected to increase relative GHG emissions.

CONDUCTING (EX-ANTE) GHG EMISSIONS REDUCTION ASSESSMENT

As sectors primarily concerned with land management, emissions in the AFOLU and fisheries sector primarily result from direct (Scope 1) emissions. Examples of Scope 1 emissions include methane emissions from livestock, nitrous oxide emissions from soil, carbon emissions from burning biomass or agricultural waste, or released carbon from logging or deforestation. Indirect emissions from purchased electricity (Scope 2) or other indirect emissions along the value chain (Scope 3) are also relevant for GHG accounting in the AFOLU and fisheries sector. Scope 3 emissions may occur from upstream activities, such as emissions from production inputs (e.g., feeds, fertilizers), manufacture of equipment, or the transport of supplies needed for operations. Downstream Scope 3 emissions may include emissions from processing, packing, or transport and distribution of products (e.g., food packaging or processing of biomass) or the consumption and disposal of products (e.g., food waste).

In many cases, the screening and eligibility criteria for mitigation activities require a substantial relative reduction in GHG emissions (or reduction in carbon intensity, or energy intensity). In these cases, an ex-ante GHG emissions reduction assessment can and should be used to demonstrate eligibility.

An ex-ante GHG emission reduction assessment should assess both direct (Scope 1) and indirect (Scope 2 and 3) emissions, where measurable. Especially in the case where emissions along the value chain are likely to adversely impact emissions reduction from the project, Scope 3 emissions must be considered in the emissions reduction assessment. Where feasible, assessments should also consider the impact of carbon leakage.

The Common Principles allow for GHG reductions from AFOLU and fisheries operations to be measured either as relative GHG emissions (e.g., tCO_2e) or as carbon intensity (e.g., tCO_2e per unit of output). To validate energy-efficiency improvement, a reduction may be measured in relative GHG emissions, carbon intensity, or energy intensity (e.g. gigajoule per unit of output),

To demonstrate a substantial reduction in emissions resulting from a project, the expected emissions reduction must be compared to a baseline or benchmark. The baseline, per IFI GHG accounting guidance (2015; 2023), represents expected emissions in a 'without-project' scenario.[12]

- In existing operations, the 'without-project' scenario may be current emissions or expected emissions in a business-as-usual scenario. For instance, in the case of a project that seeks to implement energy-efficient irrigation equipment in an agricultural operation (eligible under Activity 5.1), the baseline would be defined as GHG emissions from energy usage in the current irrigation system.
- In new operations, the baseline or benchmark may be what an IFI defines as an 'alternative scenario', which reflects the most likely alternative means of achieving the same project outcomes, or level of service, without implementation of the said project. For instance, in the case of a project that involves a new agricultural operation with energy-efficient irrigation, the alternative scenario would be expected emissions from a similar size and scope of operations without the proposed energy-efficient irrigation system.

12 The 'without project' scenario considers emissions that would have created had the particular project not been implemented, and no other project had been implemented in its place (i.e., status quo remains). The 'alternative project' scenario considers emissions from the most likely alternative project that would achieve the same project outcomes, or emissions level, or service.

The ex-ante GHG emissions reduction assessment should be conducted using methodologies approved by the IPCC.

- The Ex-ante Carbon-balance Tool (EX-ACT) is a GHG accounting tool that covers all the AFOLU and fisheries' subsectors, including agriculture, forestry, other land use, inland and coastal wetlands, fisheries and aquaculture, agricultural inputs, and infrastructure. EX-ACT is based on IPCC methodology for GHG emissions inventories, and provides a consistent way of estimating and tracking the outcomes of interventions in the AFOLU and fisheries sector regarding GHG emissions.
- The Nationally Determined Contribution Expert Tool (NEXT) is a GHG accounting tool developed by the Food and Agriculture Organization of the United Nations (FAO), to support annual environmental impact assessments for the AFOLU sector. NEXT was developed using IPCC methodologies and with the IPCC 2013 Wetlands Supplement. The tool helps countries to interpret, track, and scale up the ambition of their National Determined Contributions, which could help to inform global stocktaking against the Paris Agreement.
- Specialized assessment tools specifically made for sectoral projects may also be used, such as the Global Livestock Environmental Assessment Model (GLEAM) or those of other reputed institutions, such as the Peat-GHG tools, based on the IPCC Wetlands Supplement.

In instances where GHG assessment is not feasible, due to factors such as lack of data, large farm size, or the complexity of GHG and diversity management in the agriculture sector, proxies can be used in lieu of GHG emissions calculations to show the reductions. Proxies may be used so long as the approach upholds the principle of conservativeness (per the General Guidance) and is in line with best international practices. Proxies may include:

- Improved feed conversion ratios for livestock or fisheries/aquaculture
- Improved fertilizer usage ratios
- Achievement of an internationally accepted sustainability certification

QUANTIFYING AFOLU AND FISHERIES MITIGATION FINANCE

As described in the General Guidance, only project costs that are directly integral to climate change mitigation are eligible to be counted as mitigation finance. In the case that all project expenditures contribute to the reduction or sequestration of GHGs, the **total cost** of the activity can be counted as mitigation finance.

For a project financing the implementation of cover crops within an agricultural operation, all project costs would be considered mitigation finance since they directly translate into GHG sequestration from the planted cover crop (Activity 5.2).

On the other hand, costs of a project that do not contribute to climate change mitigation cannot be counted as mitigation finance, even if they comprise a significant share of the total project costs. Some costs, such as the cost of purchasing or leasing land, may be required for the project, but are not eligible to be considered mitigation finance.

Where some costs are relevant to mitigation and others are not, only the exact cost of the mitigation-relevant activities can be counted. For instance, for a project financing a new aquaculture operation where some equipment is energy-efficient (Activity 5.8), and other equipment is not, only the costs of energy-efficient equipment may be considered mitigation finance.

Project costs should be assessed with the principle of conservativeness in mind to determine if they are integral to climate change mitigation.

LINKING WITH THE GFM TEMPLATE

After identifying one of the 10 eligible mitigation activities in the AFOLU and fisheries sectors, and quantifying the portion of relevant mitigation finance, the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the following sub-sectoral categories:

Agriculture, forestry and land-use and fisheries	Eligible Activity No.
Agriculture: energy efficiency, carbon sequestration, GHG emission reduction	5.1, 5.2, 5.3
Livestock: GHG emission reduction, carbon sequestration	5.4, 5.5
Forestry: GHG emission reduction and carbon sequestration	5.6
Marine and other water habitats: GHG emission reduction	5.7
Fisheries and aquaculture: GHG emission reduction	5.8
Food and diet: resource use efficiency	5.9
Biomaterial: GHG reduction through biomaterial production	5.10

ALIGNING WITH OTHER TAXONOMIES

Some IDFC members are obligated to follow national taxonomies, or to report to OECD DAC using the Rio Markers approach. Given this reality, Table 5.3 illustrates how to match the Rio Marker sector codes and the EU taxonomy with the corresponding GFM reporting rows for the AFOLU and fisheries sector. Recognising that IDFC members may be obligated to follow other national taxonomies (neither the EU taxonomy nor the OECD Rio Markers), this exercise nonetheless at least provides an illustration of how to conduct alignment.

Table 5.3 Taxonomy alignment for the AFOLU and fisheries sectors

Rio Marker CRS Purpose Code|Sector		**EU Taxonomy Activity** Sub-sector|Activities		**Corresponding GFM sub-sector** [Agriculture, forestry and land-use and fisheries]
311	Agriculture	N/A	N/A	Agriculture: Energy efficiency, carbon sequestration, GHG emissions reduction Livestock: GHG emissions reduction, carbon sequestration Biomaterial: GHG reduction through biomaterial production

Rio Marker CRS Purpose Code|Sector		EU Taxonomy Activity Sub-sector|Activities		Corresponding GFM sub-sector [Agriculture, forestry and land-use and fisheries]
312	Forestry	Forestry	Afforestation Rehabilitation and restoration of forests, including reforestation and natural forest regeneration after an extreme event Forest management Conservation forestry	Forestry: GHG emission reduction and carbon sequestration
41020 41030	Biosphere protection Biodiversity	N/A	N/A	Marine and other water habitats:34342144444321 GHG emissions reduction
313	Fishing	N/A	N/A	Fisheries and aquaculture: GHG emissions reduction
NA	N/A	N/A	N/A	Food and diet: resource use efficiency

5.3 ADAPTATION

Unlike mitigation, there is no exhaustive list of eligible adaptation finance activities in the AFOLU and fisheries sectors, because adaptation is highly context-specific. Since different geographies experience different impacts of climate change, a single intervention may not qualify as adaptation in all cases. Particularly for the AFOLU and fisheries sector – which are heavily impacted by climate change due to its inherent reliance on weather patterns – adaptation approaches vary depending on the local context. For instance, one adaptation measure for improving agricultural drought resistance may qualify in one region, whereas flood protection may be more applicable to another.

As outlined in the General Guidance document, adaptation relevance is determined by a 3-step process to validate that the financed project/activity demonstrates vulnerability, intent to reduce vulnerability, and a direct link between the project and the reduction of vulnerability.

Table 5.4 below describes the validation process of adaptation relevance per the General Guidance in more detail, and illustrates the process of validating an example adaptation project.

Table 5.4 Validation of adaptation relevance

Project example: Investment in an agribusiness that develops climate-resistant crops in sub-Saharan Africa			
Step	**Description**	**Validation**	**Example**
Step 1: Context of vulnerability, exposure, hazards – and the overall risk	The context of vulnerability is clearly demonstrated using a robust evidence base. There is significant exposure to climate impacts.	A robust evidence base could include primary data collection and analysis by the reporting institution, or make use of external published data/analyses. Climate risk assessment is conducted at this stage (see Box 5.1).	Among many other sources, WMO's State of the Climate in Africa Report (2022) has demonstrated that climate-exacerbated drought has reduced crop yields throughout Africa.

Project example: Investment in an agribusiness that develops climate-resistant crops in sub-Saharan Africa			
Step	**Description**	**Validation**	**Example**
Step 2: Intent	There is an explicit statement of intent to reduce the climate change vulnerability identified.	Intent may be demonstrated through project objectives, stated in project planning or appraisal documents.	The stated project objective in the project proposal is to improve crop yields by improving their drought resistance.
Step 3: Clear and direct link	There is a direct link between the project activities and reducing the identified climate change vulnerability, risks and/or exposure.	A clear and logical link can be articulated between project activities and the reduction of an identified vulnerability to climate change.	By financing the development of selected seeds that require less water and can withstand greater temperatures, the project improves the drought resistance of crops and reduces vulnerability to drought.

Box 5.1 Conducting a climate risk assessment for the AFOLU and fisheries sectors

A climate risk assessment establishes the context of vulnerability, validating Step 1 of determining adaptation relevance (Table 5.4), by determining whether particular sectors, geographies and/or clients are vulnerable to climate risks and how these risks will affect a proposed project.

Climate risk is generally thought of as the interaction of a hazard (e.g. flooding) with exposure (the extent to which the project is exposed to, or likely to be affected by, the identified hazard) and vulnerability (susceptibility, sensitivity, or lack of capacity of the exposed system to cope with and adapt to the hazard).

Examples of climate risk in the AFOLU and fisheries sectors include:

- Slow on-set temperature increase and extreme heat impacting crop yields
- Flooding as a result of extreme weather events or sea-level rise leading to ecosystem loss
- Wildfires impacting farms, plantations, forests, and peatland areas
- Changes in ocean temperatures and ocean acidification impacting fisheries and marine ecosystems.

In screening for climate hazards relevant to the AFOLU and fisheries sectors, institutions may use past and current weather/disaster records, and use model-based climate forecasts. Climate risk assessments should consider the severity and frequency of prospective hazards in the particular project location to assess the level of **exposure** to climate risk; that is, the extent to which the project components and infrastructure are likely to be affected by the identified hazard.

Assessing **vulnerability** to identified hazards requires an account of socioeconomic conditions in the project area (income level; employment status; industrial structure); the state of the surrounding natural environment; and existing legal policies and planning relevant to adapting to climate change. Vulnerability can also stem intrinsically from AFOLU and fisheries sector activities, particularly for agriculture where certain crops or varieties may be more vulnerable to specific climate impacts or environment.

Various existing tools can be used by IDFC institutions seeking to conduct a climate risk assessment on prospective projects in the AFOLU and fisheries sectors, such as:

- World Bank's Climate and Disaster Risk Screening Tool, has a specific in-depth screening assessment for agriculture
- WB Country Climate Risk Profiles and WB CSA Country Profiles provide high-level assessments of physical climate risks and agricultural challenges
- WB Think Hazard provides a general view of the hazards for a given location, that should be considered in project design and implementation to promote disaster and climate resilience.
- GCA Adaptation Exchange Country Profiles provides profiles on adaptation strategies in response to climate challenges in various countries.
- Climate Vulnerability Assessment in Agricultural Supply Chain Adaptation Facility focuses on assessing climate vulnerability in agricultural supply chains.
- FAO's Climate Risk Toolbox (CRTB) allows users to conduct climate risk screenings to support climate-resilient design of agricultural investment projects and programs.
- FAO's Climate and Agriculture Risk Visualization and Assessment (CAVA) tool permits an instant calculation of climate hazards for developing climate risk assessments and guiding the development of tailored climate change adaptation policies.

A project that passes the three-step validation process above is considered an eligible adaptation activity. The activity is then classified as Type 1, Type 2 or Type 3 adaptation, as per the (2023) Common Principles for Climate Change Adaptation Finance Tracking, and further elaborated on via the decision trees in the General Guidance document. Examples of Type 1, Type 2, and Type 3 adaptation activities in the AFOLU and fisheries sector are provided in Table 5.5 below.

The classification of the adaptation type also provides some indication of the amount of adaptation finance embodied in the project. While there is no universal approach to calculating adaptation finance, for activities where adaptation is the primary objective (Type 3), the **total cost** of the relevant activities is considered adaptation finance. Where adaptation is not the primary objective (Types 1 or 2), less than 100% of the cost of the adaptation-relevant activities is counted as adaptation finance.

An **incremental approach** can be used to estimate these costs. This involves estimating the additional costs of activities relating to adaptation relative to a hypothetical baseline for a scenario in which the project does not address any physical climate risks. However, this type of analysis may not be possible in every case. Alternative approaches for quantifying adaptation finance could include:

- Efforts to isolate the costs of the adaptation-relevant activities, taking as granular an approach as possible. Institutions can then track a proportion of these adaptation-relevant activity costs or the costs in entirety, depending on the type of adaptation activity (see Table 2.4).

- Applying fixed shares to wider costs to estimate adaptation-relevant costs; this constitutes a **proportional approach** (see General Guidance).

Table 5.5 Examples of adaptation activities for AFOLU and fisheries sectors

Type	Description	Example	Quantification
Type 1: Adapted activities	'Adapted activities' integrate measures to manage physical climate risks to ensure the project's success; these can be thought of as enhancing the resilience of the project.	• Fire-resistant landscaping (see first case study in the next section	<100% total activity cost
Type 2: Shared objectives	Activity that directly reduces climate risk but has adaptation as a joint objective (alongside wider development objectives), these can be thought of as enabling resilience through the project.	• Water management (e.g., irrigation) to improve water access and reduce drought risk (provided irrigation is not depleting scarce resources) • Crop diversification to improve food security and improve crop resilience (see second example in the next section)	<100% total activity costs
Type 3: Primary objective	Adaptation is the primary objective. The activity is expected to have a transformational impact on one or some of the underlying causes of vulnerability at the systemic level; that is, the system's susceptibility, sensitivity and/or lack of capacity to deal with relevant climate hazards. The activity is likely to have been identified by assessing the physical climate risks of the wider system in which the project takes place.	• Early warning systems (flood, weather, fire etc.) for agribusinesses (see the third case study in the next section) • Capacity-building programs for smallholder farmers for climate-resistant crops	100% total activity costs

LINKING WITH THE GFM TEMPLATE

After identifying an eligible adaptation activity in the AFOLU and fisheries sector, and quantifying the portion of adaptation finance, the reporting institution completes the GMF survey template (inputting mitigation finance amounts in US dollars) according to the following sub-sectoral categories:

Agriculture, natural resources, and ecosystem-based adaptation
Investment in retrofitting existing assets
Investment in new physical assets
Investment in capacity building, climate risk assessment, etc.
Miscellaneous (mix of the above)

CASE STUDIES

To align with the updated adaptation tracking methodology, three examples of potential AFOLU and fisheries adaptation activities are provided below, corresponding to Type 1, Type 2, and Type 3 adaptation, respectively.

CASE STUDY: Type 1 Adaptation

Adapting an agroforestry project to wildfire risk

An IDFC member is investing USD 150 million in an agroforestry project where trees are to be planted alongside an agricultural operation with the goal of increasing carbon sequestration. The project is being implemented in an area that, due to increased temperatures and drought, is at a high risk of wildfires. Therefore, measures are integrated into the project design to protect the agricultural operation against potential wildfires. In this case, the measures include incorporation of fire-resistant plants alongside planted trees to decrease the risk of wildfires spreading.

The planting of fire-resistant plants is considered a Type 1 adaptation activity because it yields resilience *of* the project assets (rather than achieving resilience *through* the project). As this is a Type 1 activity, less than 100% of the costs of the adaptive measure are quantified as adaptation finance. Adaptation finance may be quantified here by applying a pre-determined Type 1 coefficient to the exact cost (CAPEX; OPEX) of the fire-resistant landscaping.

CASE STUDY: Type 2 Adaptation

Promoting the use of diversified crops

An IDFC member is providing a loan of USD 250 million to an agribusiness to implement diversification of crops in its operations. This includes support for the operation to diversify crops grown to better adjust to seasonality, and to expand the operation's market potential by growing different varieties. The area where the agribusiness is located has experienced increased temperatures and drought. Therefore, part of the diversification of crops includes the introduction of climate-resistant crop breeds that require less water and can withstand higher temperatures.

This is a Type 2 adaptation activity, as the introduction of climate-resilient breeds can both increase the resilience of the agribusiness' crops and widen its range of products, boosting its market potential. Adaptation finance here should be quantified by applying a pre-determined Type 2 coefficient to the exact cost of growing the climate-resilient crops.

CASE STUDY: Type 3 Adaptation

Improving the resilience of cattle farming through an early warning system

An IDFC member is investing USD 50 million for the implementation of an early warning system for cattle farmers in an area that has been experiencing climate change-induced extreme weather events and flooding. The early warning system uses remote sensing and machine learning to detect and alert cattle farmers of potential extreme weather events. The primary objective of the investment is to reduce vulnerability to extreme weather events and subsequent flooding that negatively impacts cattle farmers in this area, enabling anticipatory actions such as moving cattle to safe higher ground areas.

This is a Type 3 adaptation activity, yielding resilience *through* the early warning system. Adaptation finance is quantified here as 100% of the total cost i.e. USD 50 million.

5.4 BIODIVERSITY

The AFOLU and fisheries sectors are an important source of pressure for ecosystems and biodiversity. While the sectors play a vital role in providing food, livelihoods, and economic growth, their activities can have significant negative impacts on natural habitats and biodiversity. Agricultural practices such as deforestation, habitat conversion, and pesticide use contribute to habitat loss, land fragmentation and degradation, threatening numerous plant and animal species. Similarly, unregulated fishing practices, overexploitation of fish stocks, and habitat destruction in marine and freshwater ecosystems can lead to the decline or loss of aquatic biodiversity. Therefore, the AFOLU sector has a crucial role to play in the protection and restoration of biodiversity.

Table 5.6 lists several eligible activities that can benefit nature and biodiversity, and can be implemented by the AFOLU and fisheries sectors. The table also provides short guidance on the interpretation of eligible activities, as well as on the types of screening criteria that should be used to determine whether an activity/project qualifies as biodiversity finance.

Given that biodiversity activities in the AFOLU and fisheries sectors encompasses a wide range of measures, eligible activities are broken down into the following subsectors:

1. Agriculture
2. Livestock
3. Forestry
4. Marine
5. Fisheries

Table 5.6 Eligible activities for nature and biodiversity finance in the AFOLU and fisheries sectors

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
Agriculture	**Agricultural pollution**	Pesticide risk reduction	This activity addresses the use of pesticides and hazardous chemicals at the farm level. Risks posed by the use of these plant protection products could be reduced through Integrated Pest Management (IPM). IPM is 'the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations. It combines biological, chemical, physical and crop specific (cultural) management strategies and practices to grow healthy crops and minimize the use of pesticides' (FAO, 2023).	The activity needs to demonstrate effective reduction of hazardous pesticide use below a specified threshold, through the development of a comprehensive management plan. The plan should include: • A baseline that shows current levels of use • The definition of a scientifically sound threshold • The description of the proposed measures • The estimation of the reduction potential of hazardous pesticide use • Adaptive management based on monitoring and assessment.
	Agricultural pollution	Nutrient pollution risk reduction	This activity addresses nutrient leaching from farms, which has a significant negative effect on biodiversity and ecosystems, causing eutrophication, acidification, and other ecosystem damage. It refers to the implementation of farm-based actions that can limit additional nutrient inputs (nutrient management plans) or capture nutrients before being leaked into the environment (e.g., catch crops, ponds/wetlands).	The activity needs to demonstrate that a nutrient management plan (or equivalent) is put in place. The plan should include: • A baseline that shows current levels of pollution • The definition of a scientifically sound threshold • The description of the proposed measures • The estimation of the effectiveness of the measures • Adaptive management based on monitoring and assessment.
	Restorative farming	Agricultural practices for soil conservation	This activity addresses soil degradation through the use of soil conservation practices in agriculture. Measures that can contribute to soil conservation are: no-tillage or conservation tillage; permanent soil organic cover; or crop diversification. Conservation- and no-tillage practices can minimize soil disturbance, reduce soil erosion, and limit nutrient leaking, maintaining soil and environmental viability. Moreover, organic soil cover through cover crops and crop residues can improve soil properties and increase biodiversity in agro-ecosystems. Crop diversification through crop rotation can support soil micro-organisms, balance water and nutrients through the soil profile, and lead to diverse flora and fauna.	The activity needs to demonstrate that at least one of the following is met: • Implementation of no-till, strip till, ridge till, mulch till, non-inverting tillage, reduced tillage, or direct drill techniques across the agricultural holding • Maintenance of biomass cover of the soil of agricultural holding with either mulch of crop residue or cover crops • Cultivation of at least three different plant species in the same agricultural land or rotation of crops.

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
	Restorative farming	High-diversity landscape features in agricultural land	Maintaining or restoring a certain share of high-diversity landscape features in agricultural land such as field buffer strips, hedges, solitary trees or treelines, and ponds, would not only provide habitat to multiple species, but also help ensure nature benefits farming—such as through pollination and natural pest control. Therefore, the installation or reintroduction of biodiversity-rich landscape features in agricultural land can have great potential to enhance nature and biodiversity while also bringing some benefits to farmers. Such features could include buffer strips (grass, trees, or shrubs), hedgerows, individual or clusters of non-productive trees, rotational or non-rotational land, ditches, streams, or small ponds/wetlands.	The activity needs to demonstrate that: • The area covered by high-diversity landscape features is at least 5% of total agricultural land; and • The features are integrated into the broader landscape.
	Restorative farming	Agroforestry	Agroforestry can be defined as land-use systems where trees are managed in combination with crops and/or animal production systems. According to the FAO, there are three broad categories of agroforestry: i) Agrisilvicultural systems—trees combined with crops; ii)Silvopastoral systems—trees and pastures or animals; iii) Agrosilvopastoral systems—animals, trees and crops. These systems promote management alternatives that offer synergetic benefits for agricultural production, ecosystem services, and biodiversity. They can also increase efficiency in land use, enhance soil conservation and carbon sequestration, and promote income diversification.	The activity needs to demonstrate: • A heterogeneous agricultural landscape is created; and • Trees are maintained or planted; and • Linear landscape features (e.g., riparian vegetation) are restored or created to avoid pollution; and • Adaptive management based on monitoring and assessment.
	Sustainable intensification of agriculture	Sustainable intensification of agriculture within currently converted lands	The sustainable intensification of agricultural production on existing agricultural land has the potential to increase the production of food, while avoiding further agricultural conversion of the remaining natural and wilderness areas. Intensification refers to the increase of agricultural output per unit of input. Although sustainable intensification is a highly contested term, it could be defined as the process of increasing the productivity of agriculture on existing farmland while reducing its environmental impact. Sustainable intensification considers impact on overall farm productivity, profitability, resilience, environmental pollution, and resource use, and could also include social concerns such as rural livelihoods and equity. It encompasses a wide range of methods and approaches—from soil conservation and traditional management techniques to high-tech solutions with drones and data to target fertilizers and pesticides.	As agricultural intensification could increase pressure on nature, for an activity to be considered sustainable intensification, it needs to demonstrate: • The ratio of input per unit of agricultural output should decrease by a specified percentage; and • No expansion of agricultural land; and • Mitigation measures are in place to ensure that no additional pollution is generated at farm level.

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
Livestock	**Restorative farming**	Grazing in areas where it is beneficial for biodiversity	Grazing in specific areas and under specific circumstances can be beneficial for biodiversity and nature. In terms of habitats, permanent grasslands can offer a range of ecosystem services when not degraded, and appropriate grazing in semi-natural habitats can conserve and restore biodiversity, prevent degradation, and protect adjacent habitats. This activity refers to the transition from conventional grazing to one that takes place at a place and scale that creates benefits to ecosystems and biodiversity.	The activity needs to demonstrate that: • The grazing system is managed in an integrated way where it balances pasture services with the provision of other ecosystem services; and • Does not lead to overgrazing; and • Does not cause a change in the physical, chemical, and biological ecosystem processes; and • Is adapted to the breeding and rearing seasons, and wildlife habitats within grasslands; and • Minimizes the use of mechanical treatments against weeds.
	Agricultural pollution	Nutrient pollution risk reduction	This activity addresses nutrient leaching from livestock farms. It refers to setting maximum farm nitrogen balance limits (depending on different soil, climate, production type, slope, nutrient pollution from other sectors in the region, capacity of local ecosystems in buffering nitrogen pollution, and regionally specific denitrification rates); adoption of compliance measures by the farmer; and inspecting the adherence to limits.	The activity needs to demonstrate that a nutrient management plan (or equivalent) is in place. The plan should include: • A baseline that shows current levels of pollution • The definition of a scientifically sound threshold • The description of the proposed measures • The estimation of effectiveness of measures • Adaptive management based on monitoring and assessment.
Forestry	**Forest creation**	Afforestation that supports biodiversity	Afforestation is the establishment of forest through planting and/or deliberate seeding on land that, until then, was under a different land use. While afforestation can have multiple benefits, this activity focuses on afforestation that can be beneficial for nature and biodiversity. This means that certain extractive activities are prohibited to provide living space for species and enhance ecosystem functioning. For example, while afforestation for climate change mitigation could allow the extraction of timber and deadwood from afforested land, afforestation that supports biodiversity would not allow such activities.	For the activity to be beneficial for nature and biodiversity, it needs to demonstrate that an afforestation plan is in place, including: • The objectives of the afforestation • A clear link between the afforestation practices and the conservation of habitats that are sensitive to biodiversity loss or of high conservation value • Afforestation follows the 'right tree in the right place' approach • Types of tree species used that are native and adapted to current and future climate conditions.

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
	Forest conservation	Reforestation, forest restoration, and landscape restoration of forests	Ecosystem restoration is defined as the active or passive intervention in an ecosystem to allow its recovery from a degraded state. This activity includes processes that assist the restoration of forest ecosystems and their associated conservation values, that have been degraded, damaged, or destroyed. As such, the activity must also contribute to restoring converted forest land and work at the landscape level.	The activity needs to demonstrate that a restoration plan (or equivalent) is in place. The plan should include: • A baseline that shows current ecosystem status • The description of the types of measures to be implemented • Measures to address causes and drivers of deforestation and forest degradation • The expected results and outcomes of the activity • Adaptive management based on monitoring and assessment The activity should also demonstrate that logging in the restored areas is prohibited.
	Forest conservation	Protection of forests	The activity addresses the protection of forests with the main objective of conservation of biodiversity and/or protection of soil or water. Protection refers to activities that aim to maintain the current status and conditions of (natural) ecosystems by, for example, establishing protected areas. This activity also addresses the protection of primary and old-growth forests, which harbor numerous species and are important for carbon sequestration. Primary forests are defined as 'naturally regenerated forests of native tree species, where there are no clearly visible indications of human activities, and the ecological processes are not significantly disturbed' (FAO FRA).	The activity needs to demonstrate that a conservation plan (or equivalent) is in place. The plan should include: • A baseline that shows current ecosystem status • The description of clearly defined conservation objectives • The activities that contribute to maintaining good ecosystem status (including those that address causes and drivers of deforestation and forest degradation) • Adaptive management based on monitoring and assessment The activity should also demonstrate that logging in the protected areas, especially primary forests, is strictly prohibited.

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
	Sustainable management	Sustainable forest management	Sustainable forest management is defined by FAO as 'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.' This activity refers to the transition to a sustainable forest management regime according to the definition above.	For the management of a forest to be sustainable, according to the FAO definition, the following requirements need to be met: • The forest is covered by a long-term forest management plan (or equivalent) • A share of the forest is set aside and excluded from exploitation of any kind (these are high-biodiversity forest areas) • Diversity of horizontal and vertical structures (e.g., uneven age, amount of deadwood) is promoted • Diversity of species, habitats, and genetic resources is maintained and enhanced • Timber and non-timber harvest should not exceed sustainable levels • Pests and diseases are actively prevented and/or controlled • Forest is protected from illegal and unauthorized activities • Access to forest, water, and other natural resources, especially for vulnerable populations, and their tenure aspects are considered; and other safeguards and measures applied to reduce the risk of generating vulnerability.
	Forest conservation	Forest ecosystem monitoring	Monitoring of (natural) forests is important for data collection, which can be used in the assessment of the current state of ecosystems and in the evaluation of the implemented activities aimed at their conservation. Such information can support decision-making and adaptation of current management practices. Monitoring refers to software, remote sensing, and fieldwork.	The activity needs to demonstrate that: • Data collected are relevant to monitoring biodiversity in the implementation area • Data collected are at a spatial and temporal disaggregation that can be used to provide relevant information • Monitoring tools used can collect the intended data.
Marine	**Marine and coastal area conservation**	Restoration of marine and coastal ecosystems	Ecosystem restoration is defined as the active or passive intervention in an ecosystem to allow its recovery from a degraded state. This activity includes processes that assist the restoration of marine and coastal ecosystems, and their associated conservation values that have been degraded, damaged, or destroyed.	The activity needs to demonstrate that a restoration plan (or equivalent) is in place. The plan should include: • A baseline that shows current ecosystem status • The description of the types of measures to be implemented • The expected results and outcomes of the activity • Adaptive management based on monitoring and assessment. The activity should also demonstrate that fishing in the restored areas is prohibited or under strict regulation.

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
	Marine and coastal area conservation	Protection of marine and coastal ecosystems	The activity addresses the protection of marine and coastal ecosystems with the main objective of conservation of biodiversity. Protection refers to activities that aim to maintain the current status and conditions of (natural) ecosystems by, for example, establishing Marine Protected Areas. This activity also addresses the protection of the seabed, which supports a diverse array of marine life, including various species of fish, invertebrates, and plants. Protecting seabeds helps preserve biodiversity by safeguarding critical habitats such as coral reefs, seagrass beds, and deep-sea ecosystems. These habitats serve as nurseries, feeding grounds, and breeding areas for marine species, contributing to overall marine ecosystem health and resilience.	The activity needs to demonstrate that a conservation plan (or equivalent) is in place. The plan should include: • A baseline that shows current ecosystem status • The description of clearly defined conservation objectives • The activities that contribute to maintaining good ecosystem status • Adaptive management based on monitoring and assessment. The activity should also demonstrate that fishing in Marine Protected Areas is prohibited or under strict regulation.
	Marine and coastal area conservation	Marine and coastal ecosystem monitoring	Monitoring of marine and coastal ecosystems is important for data collection, which can be used in the assessment of the current state of ecosystems and in the evaluation of the implemented activities aimed at their conservation. Such information can support decision-making and adaptation of current management practices. Monitoring refers to software, remote sensing, and fieldwork.	The activity needs to demonstrate: • Data collected are relevant to monitoring biodiversity in the implementation area • Data collected are at a spatial and temporal disaggregation that can be used to provide relevant information • Monitoring tools used can collect the intended data.
Fisheries	**Sustainable management**	Sustainable fisheries management	This activity aims to ensure that fishing operations do not take place in overfished stocks or stocks undergoing overfishing. To achieve this, fishing of targeted species should remain below Maximum Sustainable Yield (MSY) levels[13] and the stocks of associated and dependent non-targeted species are well above the levels at which their reproduction is threatened. These levels need to be set and managed at the ecosystem level by a competent authority. To manage stocks and fishing activities effectively, data collection and reporting are also necessary. Therefore, reporting processes for registration of catches must also be in place. Finally, fishing activities should take place in areas where targeted and/or non-targeted species are not threatened or endangered.	The activity needs to demonstrate: • Fishing takes place in fisheries with established catch limits for targeted species that are set below MSY by a competent authority; and • Associated and dependent non-targeted species stocks are above levels that could threaten their reproduction capacity; and • Reporting processes for catch registration are in place; and • No operation in fisheries where species are threatened or endangered.

13 Fishing below MSY ensures that harvest takes into account biomass needs for the reproduction of targeted stocks and for food for other predators (seabirds, mammals, larger fish etc.).

Sub-sector	Action areas	Eligible activities	Guidance	Screening criteria
	Sustainable management	Fishing by-catch is minimized or eliminated	By-catch refers to unwanted catches of non-target species while fishing. Despite the availability of alternative methods and new technologies that can reduce incidental capture of non-target species, by-catch is still an important threat to biodiversity and ecosystems across the world. This activity aims at minimizing and eliminating by-catch of non-target species through the establishment of and adherence to mortality rates of non-target species, use of selective fishing gear only, and consistent reporting and inspection.	The activity needs to demonstrate that fishers: • Adhere to limits of mortality rates of non-targeted species; and • Use only selective fishing gear.
	Marine pollution	Reduction of marine litter from fishing activities	While the fishing sector is not the primary source of marine litter pollution, fishing activities still represent one major source of marine litter. The main litter resulting from fishing is discarded, lost, or abandoned fishing gear, which can flow freely in the open sea or on seabeds, entangling and eventually killing ocean life, including endangered species such as sea turtles and sharks, as well as smothering habitats and ecosystems, such as coral reefs. This activity aims to address marine litter resulting from fishing activities through the minimization and elimination of fishing gear loss and abandonment. To achieve this, fisheries management plans should set and implement measures to minimize loss of gear and manage the impact of lost gear through monitoring of lost gear, gear retrieving programs, use of biodegradable materials, gear waste facilities, and ban of single-use equipment.	The activity needs to demonstrate that: • Fisheries management plans include measures for prevention and reduction of marine litter from fishing activities; or • A competent authority is registering and tracking fishing gear; or • There are collection and recycling operations in place for fishing gear.

QUANTIFYING AFOLU BIODIVERSITY FINANCE

The General Guidance document proposes two distinct types of approaches that can be followed to quantify biodiversity finance: an "incremental" and a "proportional". The **incremental approach** can be used for projects that include precise information on budget allocations (CAPEX/OPEX). In that case, to track a project's biodiversity finance, one would have to identify the exact budget items that refer to the project's biodiversity activities and sum the CAPEX/OPEX costs reported under these items to estimate the project's contribution to biodiversity.

To identify the items that are biodiversity-relevant in projects related to the AFOLU sector, the list of eligible activities included in the table above can be used.

When projects' budget disaggregation is not at a level that allows the allocation of CAPEX/OPEX costs to specific budget items, the **proportional approach** can be followed. Under this approach, a coefficient is assigned to the total budget of a project according to its relevance to biodiversity, counting only a portion of the total project investment as biodiversity finance (or 100% of the total budget if the whole project is biodiversity-relevant). For instance, according to the Rio Markers system, two coefficients can be applied to screened projects, namely a 100% coefficient for projects that primarily target biodiversity and 40% for projects that have a different target but benefit biodiversity as well. However, a different proportional approach could employ a greater number of coefficients (lower or greater than 40%) and may be linked to:

- **Project objectives**: involves looking at the project objectives to determine whether benefiting biodiversity is a primary or secondary objective of the project. When found to be primary, the total investment is tracked as biodiversity finance (i.e. a 100% coefficient is applied), while when secondary, only a portion of the investment is captured (e.g. 40% according to Rio Markers – can vary);
- **Project types of activities**: refers to assigning higher coefficients to projects that include specific biodiversity-enhancing activities than to projects with activities that indirectly benefit nature. For instance, a 100% coefficient could be assigned to projects that include habitat restoration activities, 50% to projects that include pollution mitigation activities, and 30% to projects that focus on environmental governance.

The information required to apply proportional approaches that link coefficients to project objectives relates only to the objectives and targets of the project. For instance, if a project related to the AFOLU sector aims to protect a marine ecosystem through the designation of a Marine Protected Area, then 100% of the project's total budget should be tracked as biodiversity finance since the objective of the project is related to habitat protection. If, on the other hand, the objective of another project is to reduce groundwater pollution from agricultural runoff, then a lower coefficient (say 40%) should be used as the activity will reduce biodiversity pressures (pollution), but the project's overall objective is not to enhance biodiversity. Similarly, approaches that link coefficients to types of activities would assign a 100% coefficient to the first project, since its main activity is habitat protection, but would need additional information to determine the coefficient of the second project, as pollution from agricultural land can be addressed through activities that enhance biodiversity (e.g., buffer strips) or activities that are biodiversity-neutral (e.g., collection and treatment of agricultural runoff). If the foreseen activities enhance biodiversity a 100% coefficient should be used and if not, a lower coefficient (say 40%) should apply.

While the proportional approach may be faster to apply, the incremental approach can provide more accurate estimations of the amount spent on biodiversity as it follows a more granular approach by analyzing each budget item separately. Therefore, the incremental approach should be used wherever feasible.

CASE STUDIES

Two examples of potential biodiversity activities related to the AFOLU sector are provided below, corresponding to one project that is tracked as 100% biodiversity finance and one that is assigned a lower coefficient.

CASE STUDY: Fully biodiversity finance

Restoration of an oyster reef habitat

An IDFC member is investing USD 20 million for the restoration of an oyster reef habitat. The objective of the project is to create 50 hectares of an oyster reef and reintroduce species important for the functioning of the ecosystem to enhance recreational fishing, benefit economically important fish species, and reduce shoreline erosion.

To quantify biodiversity finance using an incremental approach, the exact costs (CAPEX/OPEX) of the project that relate to the restoration project should be tracked and aggregated. Under a proportional approach that links coefficients to project objectives or activities, the project would qualify as 100% biodiversity finance since both the primary objective and the related activities focus on habitat creation.

CASE STUDY: Partially biodiversity finance

Establishing a circular economy system for the reuse and recycling of fishing gear

An IDFC member is investing USD 50 million in a project in a coastal region that aims to establish a system that promotes circularity in fishing. The overall objective of the project is to collect all abandoned or lost fishing gear, and install collection points in all ports of the area for fishers to dispose of their fishing nets and related gear once these reach the end of life, and develop eco-innovative solutions for their reuse and recycling. As part of the project, the minimization of fishing-related marine litter is foreseen.

To quantify the biodiversity finance of the project following an incremental approach, the budget items that refer to costs (CAPEX/OPEX) for the clean-up of seas from discarded and lost fishing gear, as well as the facilities for the collection of end-of-life fishing gear, should be tracked and aggregated. Since the primary objective of this project is to promote circularity in the fishing sector, when using a proportional approach that links coefficients to project objectives, only a portion (say 40%) of the total project budget would qualify as biodiversity finance. Similarly, a proportional approach that links coefficients to project activities would result in attributing a similar coefficient to the total project budget, since only some of the activities implemented under the project refer to biodiversity-protecting measures.

LINKS WITH CLIMATE FINANCE

Activities that have positive impacts on nature and biodiversity often contribute to climate change objectives as well. As biodiversity-related actions usually improve the status of the ecosystems in which they are implemented, they also enhance ecosystem services that relate to climate change mitigation and adaptation, such as an ecosystem's capacity to capture and store carbon, or its ability to act as a buffer against climate hazards. Therefore, biodiversity finance can often overlap with climate mitigation and adaptation finance. To avoid double-counting climate and biodiversity finance, these flows should be tracked and reported separately, and should not be aggregated.

Some of the biodiversity-eligible activities for the AFOLU sector listed in the table above can entail climate co-benefits. Table 5.7 shows instances where some of these activities can contribute to climate change mitigation and adaptation objectives.

Table 5.7 Comparison of nature and biodiversity finance with climate finance objectives

Sub-sector	Eligible activity	Potential overlap with climate mitigation	Potential overlap with climate adaptation
Agriculture	Pesticide risk reduction	Pesticides contribute to climate change through emissions produced during their lifecycle—manufacturing, packaging, transportation, application, and even through environmental degradation and disposal. In addition, 99% of all synthetic chemicals, including pesticides, are derived from fossil fuels. Therefore, abstaining from/phasing out these chemicals/pesticides will have a positive mitigation impact by reducing emissions.	N/A
	Nutrient pollution risk reduction	N/A	N/A
	Agricultural practices for soil conservation	If the soil conservation practices increase CO_2 sequestration, or if the practices (reduced use of fuel, fertilizers, and water) reduce energy consumption and thereby reduce emissions, this would be considered as an activity that contributes to mitigation.	If the soil conservation practices take place in a climate change-induced water-stressed region, and those practices work to increase the efficiency of water use/reduce water consumption and increase the water retention capacity of soil, thereby alleviating vulnerability to water stress, this would be considered an activity that contributes to adaptation.
	High-diversity landscape features in agricultural land	If the high-diversity landscape features include elements that increase carbon sequestration (e.g., tree planting), this would be considered an activity that contributes to mitigation.	A highly diverse farmland ecosystem is more resilient to climate shocks and stresses.
	Sustainable intensification of agriculture within currently converted lands	N/A	Sustainable intensification of agriculture can significantly increase food security, and avoid pressure on forests, wetlands, and other natural ecosystems, which also support resilience and adaptive capacity.
Livestock	Grazing in areas where it is beneficial for biodiversity	If the grazing system works to increase carbon sequestration, this would be considered an activity contributing to mitigation.	N/A
	Nutrient pollution risk reduction	N/A	N/A

Sub-sector	Eligible activity	Potential overlap with climate mitigation	Potential overlap with climate adaptation
Forestry	Afforestation that supports biodiversity	Afforestation always increases carbon sequestration and therefore would be considered an activity that contributes to mitigation.	If the afforestation project takes place in a climate-induced water-stressed region and the afforestation is strategically planned to increase water retention, regulate the microclimate, and reduce evaporation, thereby alleviating vulnerability to water stress, this would be considered an activity that contributes to adaptation. In addition, if the afforestation project takes place in an area that suffers from climate change-induced slope instability and the afforestation is expected to increase stability with the establishment of deep-rooted vegetation, soil binding, and erosion control, this would also be considered a project that contributes to adaptation.
	Restoration of forests	Forest restoration usually involves extensive tree planting, which increases carbon sequestration; therefore this would be considered an activity that contributes to mitigation.	If forest restoration takes place in an area that suffers from slope instability (induced by climate change) and the restoration is expected to increase slope stability, this would be considered a project that contributes to adaptation.
	Protection of forests	Degraded forests can become net sources of carbon emissions. Forest protection contributes to mitigation by maintaining forests as net carbon sinks.	If forest protection alleviates the risk of climate-induced wildfires, this would be considered a project that contributes to adaptation. If forest protection leads to increased water conservation in an area that is water-stressed (because of climate change), this would be considered a project that contributes to adaptation.
	Sustainable forest management	The sustainable forest management approach is expected to increase carbon sequestration in above-ground biomass (e.g., through selective logging) and deadwood. In these cases, the activity is considered to contribute to mitigation.	If forest management alleviates the risk of climate-induced wildfires, this would be considered a project that contributes to adaptation. If forest management leads to increased water conservation in an area that is water-stressed (because of climate change), this would be considered a project that contributes to adaptation.
	Forest ecosystem monitoring	N/A	If the monitoring leads to a reduction in, or alleviates risk from, climate change-induced wildfires, this would be considered a project that contributes to adaptation.

Sub-sector	Eligible activity	Potential overlap with climate mitigation	Potential overlap with climate adaptation
Marine	Restoration of marine and coastal ecosystems	If the restoration project increases carbon sequestration (e.g., mangrove restoration), this would be considered an activity contributing to mitigation.	If this activity takes place in coastal areas that are prone to climate-induced coastal flooding; and the result is to restore ecosystems that act as buffers to coastal flooding, this activity would be considered to contribute to climate adaptation. In addition, if the activity takes place in an area where marine and coastal ecosystems are degraded due to climate-induced ocean warming; and the result is to restore ecosystem functions, this activity would be considered to contribute to climate adaptation.
	Protection of marine and coastal ecosystems	If the protected ecosystem has a significant carbon sequestration capacity, its protection is considered to contribute to mitigation.	N/A
	Marine and coastal ecosystem monitoring	N/A	N/A
Fisheries	Sustainable fisheries management	N/A	If this activity contributes to a sustained provision of fish to local communities, then it contributes to future food security and thus the resilience of food systems.
	Fishing by-catch is minimized or eliminated	N/A	N/A
	Reduction of marine litter from fishing activities	N/A	N/A

6. URBAN SECTOR GUIDANCE

6.1 CONTEXT

Cities are, and must be, a major focal point for climate action. Over half of the world population, or 4.4 billion people, live in cities (World Bank, 2023), accounting for over 70% of global CO_2 emissions (World Bank, 2022), 75% of all natural resource use, and 50% of all waste produced (CCFLA, 2021). At the same time, cities and their inhabitants are on the front line of the climate crisis, exposed to a variety of climate-related shocks and stresses (sea-level rise, flooding and extreme temperatures, among others). With urbanization and industrialization rising rapidly in the global South – including in many IDFC countries of operation – it is imperative that urban interventions, and key sectors therein, integrate mitigation and adaptation strategies to ensure low-emissions, climate-resilient development. Indeed, climate action is an essential aspect of meeting SDG 11, which aspires to 'make cities and human settlements inclusive, safe, resilient and sustainable.' Importantly, this includes over 1 billion people living in informal settlements, largely in South and Southeast Asia, Sub-Saharan Africa, and Latin America.

This urban sector guidance starts from the premise that urban climate finance refers to resources directed to activities limiting city-induced GHG emissions, or aiming to address climate-related risks faced by cities, contributing to resilience and low-carbon development (CCFLA, 2021). The mitigation component of this document focuses on the *buildings* and *solid waste management* sectors respectively, given that the other key urban sectors (energy; transport; water) have been discussed in earlier dedicated chapters. It is estimated that buildings are responsible for 37% of energy-related GHG emissions globally, the third highest sector after energy and transport (UNEP, 2021; Ritchie et al., 2020). Meanwhile, solid waste treatment and disposal is estimated to contribute approximately 5% of global GHG emissions, primarily arising from a lack of landfill gas collection systems (World Bank, 2018).

The adaptation component of this urban sector guidance takes a holistic, rather than sectoral lens, providing illustrative case studies of eligible urban adaptation activities. Importantly, in the urban context, green and blue infrastructure, or nature-based solutions, can help to deliver adaptation and resilience-building while simultaneously delivering a variety of co-benefits (whether in relation to carbon sequestration and mitigation, biodiversity, or health). Indeed, bringing back (local) nature into the concrete urban jungle can work to restore ecosystem services while providing a foundation for essential climate functions such as flood control or carbon sequestration (World Bank, 2022).

6.2 MITIGATION

Urban climate mitigation may be defined as projects and interventions contributing to reducing or avoiding GHG emissions from sources located within city boundaries, or from those produced as a consequence of activities occurring exclusively in the city (CCFLA, 2021). Noting that urban mitigation includes activities already listed in the energy, transport, and water sector chapters, this section unpacks the remaining urban-relevant sectors detailed in the mitigation Common Principles: namely, buildings and solid waste. Mitigation in the buildings sector involves one, or a combination, of the following key action areas:

1. (End-use) energy efficiency
2. On-site renewable energy
3. CO_2e-emissions reduction
4. Carbon sinks

Similarly, mitigation in the solid waste management sector involves one, or a combination, of the following key action areas:

1. Waste collection and transport
2. Waste storage and transfer
3. Waste treatment
4. Material recovery
5. Product reuse
6. Valorization[14] of biowaste
7. Landfill gas capture, abatement, and utilization
8. Energy efficiency

In this sectoral context, the Common Principles start from the premise that activities are only eligible if they neither conflict with, nor undermine, the objectives of SDG 11. Tables 6.1 and 6.2 seek to simplify the positive list of five *buildings, public installations and end-use energy-efficiency* mitigation activities, and 13 *solid waste management* mitigation activities, as documented in the Common Principles for Climate Mitigation Finance Tracking (2023), providing further guidance and explanation of key terms with screening criteria.

14 i.e. composting, anaerobic digestion etc.

Table 6.1 Eligible mitigation activities in the urban sector: buildings, public installations, and end-use energy efficiency

No.	Action areas	Eligible activities	Guidance	Screening criteria
9.1	**Energy efficiency; on-site renewable energy; CO_2e-emissions reduction; carbon sinks**	Measures that reduce net energy consumption, resource consumption, or CO_2e emissions, or increase plant-based carbon sinks in existing or new buildings and associated grounds.	Reducing net energy consumption or CO_2e emissions could be from enhanced building design, lower energy consumption/ GHG emissions from building operations and maintenance. Reducing CO_2e emissions could be from the use of building materials with lower embedded GHG emissions (e.g., low-carbon cement; sustainable timber). Reducing net energy consumption could be achieved through energy efficiency measures, improving the efficiency of existing assets in buildings (e.g., Heating, Ventilation, and Air-conditioning, or HVAC), or through the building structure itself (e.g., windows with low-emissivity glass). Reducing CO_2e emissions could be achieved through the addition, and use of, on-site renewable energy sources (e.g., solar PV). Plant-based carbon sinks could include green roofs and green walls, partially or completely covered with vegetation.	Measures must substantially reduce net energy consumption, resource consumption, or CO_2e emissions. A good example of a substantial reduction in GHG emissions for this activity, and similar ones that follow, would be 20-30% energy savings/reduced energy demand.
9.2	**Energy efficiency; on-site renewable energy; CO_2e-emissions reduction; carbon sinks**	Measures that reduce net energy consumption, resource consumption, or CO_2e emissions, or increase plant-based carbon sinks in existing or new buildings and associated grounds, enabling certification standards to be met	Examples of internationally-recognized green building certifications include: Building Research Establishment Environmental Assessment Method (BREEAM) and Leadership in Energy and Environmental Design (LEED). Meeting certification standards must include quality control by at least two independent experts from certifying entities and a final certification, post-construction.	A local benchmark may serve as the baseline for energy, resource, or GHG emissions intensity. If the activity comprises a number of small buildings, certification of a representative sample of the buildings may suffice.
9.3	**Energy efficiency; on-site renewable energy; CO_2e-emission reduction; carbon sinks**	Measures that reduce net energy consumption, resource consumption or CO_2e emissions, or increase plant-based carbon sinks in public areas or installations	Public areas or installations include, among others, (efficient) lighting in streets and public areas, public parks, and local vegetation (serving as carbon sinks).	Measures must substantially reduce net energy consumption, resource consumption, or CO_2e emissions.
9.4	**End-use energy efficiency**	Energy-efficiency improvement or CO_2e emissions reduction in existing (building) appliances or equipment	Appliances could include, for example, more efficient computers or IT equipment.	Measures must substantially reduce net energy consumption, resource consumption, or CO_2e emissions.

No.	Action areas	Eligible activities	Guidance	Screening criteria
9.5	**End-use energy efficiency**	New or replacement energy-efficient appliances or equipment	Appliances could include, for example, highly efficient refrigerators with refrigerants of low global warming potential.	The best available technology should be used, or technology that matches or surpasses country-appropriate technology benchmarks in performance. Where a highly efficient new appliance/equipment uses fossil fuel for its energy source, it must be demonstrated that it is the development solution with the least GHG emissions and does not create carbon lock-in (i.e., the product lifetime is short), supplemented with documentation proving neither electric nor lower-carbon alternatives are feasible. The electrification of appliances/equipment previously combusting fossil fuel is eligible without the need to demonstrate a substantial reduction.

Table 6.2 Eligible mitigation activities in the urban sector: solid waste management

No.	Action areas	Eligible activities	Guidance	Screening criteria
7.1	**Waste collection and transport**	Separate collection and transport of source-segregated waste fractions	Waste collection equipment (e.g., bins and containers). Waste collection and transport vehicles Technological equipment and application of ICT systems (e.g., product tracking and take-back systems) Construction or operation of infrastructure for separate waste collection (e.g., civic amenity centers)	The activity shall support the recovery of eligible materials for reuse or recycling (including recovery and valorization of biowaste). Separately collected/source-segregated waste shall not be subsequently mixed where doing so may affect their potential for subsequent recovery, reuse, or recycling. Only the portion of the investment associated with eligible material recovery activities is eligible. If there is no specialized equipment (e.g., the same vehicle is used for both residual waste collection and separate waste collection), mitigation financing is apportioned according to the proportion of the waste that is separately collected for eligible recovery/reuse activities.

No.	Action areas	Eligible activities	Guidance	Screening criteria
7.2	**Waste storage and transfer**	Temporary storage, bulking, or transfer of a separately collected, source-segregated waste fraction	Construction or operation of temporary storage, bulking, or transfer facilities and ancillary equipment and vehicles.	The activity shall support the recovery of eligible materials for reuse or recycling (including recovery and valorization of biowaste). Separately collected/source-segregated waste shall not be subsequently mixed where doing so may affect their potential for subsequent recovery, reuse, or recycling. Only the portion of the investment associated with eligible material recovery activities is eligible. If there is no specialized equipment (i.e., the same vehicle is used for both residual waste collection and separate waste collection), mitigation financing is apportioned according to the proportion of the waste that is separately collected for eligible recovery/reuse activities.
7.3	**Product reuse**	Repair and reconditioning of products or product components to enable their reuse	Repair and reconditioning involve restoring a product to a usable state by fixing or replacing faulty parts (e.g., financing the construction/ operation of a workshop to check/ clean/ recondition/ repair recovered products).	It must be demonstrated that the products would otherwise have been discarded; products are not intended for reuse in any activity contrary to the Common Principles; the repaired product is still recoverable/repairable at the end of its product lifetime.
7.4	**Material recovery**	Material recovery from separately collected waste involving mechanical processes	Recovering secondary materials from waste in preparation for reuse or recycling (e.g., metals, glass, plastics, paper, cardboard, wood, textiles, bricks). Construction or operation of a new material recovery facility that applies mechanical processes (e.g., separation, sorting, crushing) to process waste. Modification, replacement, or upgrading of an existing facility enabling higher rates of material recovery or improved output quality.	Recovered materials shall be suitable for reuse or recycling.
7.5	**Material recovery**	Material recovery from separately collected or pre-sorted waste involving processes other than mechanical processes	Applying physico-chemical, chemical, or thermochemical processes (e.g., solvent-based purification). Modification, replacement, or upgrading of existing facilities that enable higher rates of material recovery or improved output quality.	Where technically and economically viable, mechanical recycling should be given preference to chemical recycling. Where the non-mechanical recovery process requires a significant amount of energy input (e.g., gasification), there must be a demonstrated substantial reduction in GHG emissions relative to a relevant baseline scenario, including Scope 3 emissions where material, to the extent possible.

No.	Action areas	Eligible activities	Guidance	Screening criteria
7.6	**Recovery and valorization of biowaste**	Anaerobic digestion of separately collected biowaste	Anaerobic digestion of biowaste will produce biogas, which shall then be used productively (e.g., construction or operation of a biogas plant). Biowaste means biodegradable garden and park waste; food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers, and retail premises; and waste from food processing plants.	Productive use of biogas includes fuel for electricity and heat generation, cooling, cooking, and vehicles; it may also be upgraded to bio-methane for injection into the natural gas grid. Digestate byproduct shall be used as natural fertilizer or other purposes (e.g., as backfilling or cover material) but shall not be incinerated. Mitigation measures shall be put in place to control methane leakages from relevant processes in industrial-scale facilities, with technically/ economically feasible mitigation measures for small-scale units (e.g., on small farms).
7.7	**Recovery and valorization of biowaste**	Composting of separately collected biowaste	Compost produced shall be used as natural fertilizer or soil conditioner, or, where there is no market for such use, shall be used for other purposes such. as backfilling or cover material; it shall not be incinerated. Biowaste means biodegradable garden and park waste; food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers, and retail premises; and waste from food processing plants.	Where technically and economically viable, anaerobic digestion should be given preference to composting. National legislation requirements on fertilizing products must be met. Mitigation measures shall be put in place to control methane leakages from relevant processes in industrial-scale facilities, with technically/ economically feasible mitigation measures for small-scale units (e.g., on small farms).
7.8	**Recovery and valorization of biowaste**	Other types of recovery and valorization of biowaste	The production or extraction of bio-based materials, biofuels, nutrients, or chemicals from biowaste (e.g., production of biodiesel from vegetable oils; production of food and feed ingredients; fertilizer manufacture from urban biowaste).	Where the material recovery and valorization process or connected (upstream and downstream) processes require significant energy input, there must be a demonstrated substantial reduction in GHG emissions relative to a relevant baseline scenario, taking into account Scope 3 emissions where these are expected to be material.
7.9	**Waste treatment**	Mechanical or biological treatment of mixed residual waste	Mechanical-biological treatment plants are designed to treat mixed municipal waste and similar residual waste streams. Plant configurations always combine mechanical sorting (upstream and downstream) with biological treatment of the biowaste (anaerobic treatment; biogas recovery).	Where the treatment outputs are to be landfilled, biological treatment shall be compulsory to minimize methane emissions from landfills. Where there is anaerobic digestion, the biogas produced shall be used productively (see Activity 7.6). Where the material recovery and valorization process or connected (upstream and downstream) processes require significant energy input, there must be a demonstrated substantial reduction in GHG emissions relative to a relevant baseline scenario, taking into account Scope 3 emissions where these are expected to be material.

No.	Action areas	Eligible activities	Guidance	Screening criteria
7.10	**Waste treatment**	Waste incineration with energy recovery (waste-to-energy) from mixed residual waste, refuse-derived fuel, or solid-recovered fuel	Where waste incinerators recover energy (renewable and fossil) from mixed waste streams, financing shall be apportioned according to the plant's renewable and fossil energy generation capacities. Refuse-derived fuel may be produced by anaerobic digestion of organic waste. Solid-recovered fuel may be produced by anaerobic digestion of organic waste.	There must be a demonstrated substantial reduction in GHG emissions relative to a relevant baseline scenario (e.g., an alternative of waste management and disposal), taking into account Scope 3 emissions where these are expected to be material.
7.11	**Landfill gas capture, abatement, and utilization**	Landfill gas capture, abatement, or utilization as part of the closure of old landfills, landfill cells, or dumpsites	Captured landfill gas may be used productively or, where doing so is not economically viable, it may be flared. Productive use of landfill gas includes fuel for electricity and heat generation, cooling, cooking, and vehicles; it may also be upgraded to bio-methane for injection into the natural gas grid.	Mitigation measures shall be put in place to control methane emissions from the landfill and possible leakages from the landfill gas management facilities.
7.12	**Landfill gas capture, abatement, and utilization**	Landfill gas capture, abatement, or utilization in new sanitary landfills or landfill cells	Installation or operation of landfill gas capture (extraction wells and piping systems), treatment and utilization systems (facilities that produce energy or upgrade the captured landfill gas to bio-methane).	The new landfill will result in a substantial reduction in GHG emissions relative to a relevant baseline scenario for waste management and disposal. Mitigation measures shall be put in place to control methane emissions from the landfill and possible leakages from the landfill gas management facilities.
7.13	**Energy efficiency**	Improving energy efficiency in existing waste management facilities	Modification, retrofitting, or upgrading of existing plant equipment yielding increased energy efficiency.	There must be a demonstrated substantial reduction in GHG emissions (due to the energy-efficiency improvement) relative to the baseline scenario. The activity will not result in long-term lock-in of existing equipment that will deter waste prevention and/or efficient resource management.

CONDUCTING (EX-ANTE) GHG EMISSIONS REDUCTION ASSESSMENT

Emissions released by the buildings sector include direct (Scope 1) emissions – for example, gas combustion in a boiler, or in cooking appliances – and indirect (Scope 2) emissions largely from grid-level electricity consumption.[15] Additional indirect (Scope 3) emissions are largely captured as embodied carbon, present throughout the building's entire lifecycle, from material extraction, processing, and construction, to maintenance, renovation, and demolition (Building Innovation Hub, 2024). In the urban tracking context, such buildings must be located within the boundaries of the city in question.

Emissions released by the solid waste management sector include direct (Scope 1) emissions – largely methane (CH_4) and carbon dioxide (CO_2) – arising from processes or equipment owned and used by the waste management facility; and indirect (Scope 2) emissions arising from the use of electricity and/or heat during waste management processes. Additional indirect (Scope 3) emissions include, for example, emissions from waste transport vehicles that are not owned or controlled by the waste management facility. In the urban tracking context, such waste management facilities must be located within the boundaries of the city in question, or they must function primarily as a response to waste produced by or in the city. An ex-ante GHG emissions reduction assessment to establish eligibility of a mitigation activity in the buildings or solid waste management sector should cover direct and indirect emissions, taking into account Scope 3 emissions where they are measurable and material. If the relative GHG emissions are already substantially negative even without accounting for Scope 3 emissions, then Scope 3 emissions may be omitted and replaced with qualitative analysis.

As per IFI GHG accounting guidance (2015; 2023), pre-project baselines represent a reasonable scenario of what would occur in the absence of the project – whether that is a 'without project' scenario or an 'alternative project' scenario.[16] The boundary for the accounting exercise may be limited to the single activity, facility, or entire infrastructure dependent upon the particular project context (i.e., is it a greenfield project constructing an entirely new waste management facility/building or rather a brownfield project at (or part of) an existing facility/building).

QUANTIFYING MITIGATION FINANCE

As outlined in the General Guidance document, for an activity that qualifies as mitigation, only costs that are directly integral to climate change mitigation are eligible to be counted as mitigation finance. In the case that all project expenditures contribute to the reduction of GHGs, the **total cost** of the activity can be counted as mitigation finance.

On the other hand, costs of a project that do not contribute to climate change mitigation cannot be counted as mitigation finance, even if they comprise a significant share of total project. Some costs, such as land costs or other costs, may be required for the project overall, but do not directly lead to the reduction of GHG emissions.

15 Since electricity may be generated by multiple sources – renewable and non-renewable – the associated GHG emissions from electricity consumption in buildings can vary substantially depending upon the building's location, the time of data and even the time of year (Building Innovation Hub, 2024).

16 The 'without project' scenario considers emissions that would have created had the particular project not been implemented, and no other project had been implemented in its place (i.e., status quo remains). The 'alternative project' scenario considers emissions from the most likely alternative project that would achieve the same project outcomes, or emissions level, or service.

Project costs should be assessed with the principle of conservativeness in mind to determine if they are integral to climate change mitigation. Only the exact cost of a mitigation-relevant activity can be counted as mitigation finance. Where separation of mitigation finance from non-mitigation finance is not possible, financing can be apportioned according to reasonable assumptions; for example, in the case of mitigation via a mechanical sorting plant (solid waste management), financing shall be apportioned according to the percentage of relevant sorting process output as a share of the entire waste throughput capacity.

LINKING WITH THE GFM TEMPLATE

After identifying one of the five eligible mitigation activities in the *buildings, public installations and end-use energy efficiency* sector, and/or one of the 13 eligible mitigation activities in the s*olid waste management* sector, and quantifying the portion of relevant mitigation finance, the reporting institution completes the GFM survey template (inputting mitigation finance amounts in US dollars) according to the following sub-sectoral categories:

Buildings, public installations, and end-use energy efficiency	Mitigation activity no.
Energy efficiency, renewable energy, CO_2e -emissions reduction, and carbon sinks in buildings and public areas	9.1, 9.2, 9.3
End-use energy efficiency	9.4, 9.5

Solid waste management	Eligible activity No.
Waste collection, transport, storage and transfer	7.1, 7.2
Product reuse and material recovery from solid waste	7.3, 7.4, 7.5
Recovery and valorization of biowaste	7.6, 7.7, 7.8
Treatment of mixed residual waste	7.9, 7.10
Landfill gas capture, abatement, and utilization	7.11, 7.12
Energy efficiency	7.13

ALIGNING WITH OTHER TAXONOMIES

Some IDFC members are obligated to follow national taxonomies, or to report to OECD DAC using the Rio Markers approach. Given this reality, Table 6.3 and 6.4 illustrate how to match the Rio Marker sector codes and the EU taxonomy with the corresponding GFM reporting rows (for *buildings, public installations and end-use energy efficiency* and *solid waste management*, respectively). Recognising that IDFC members may be obligated to follow other national taxonomies (neither the EU taxonomy nor the OECD Rio Markers), this exercise nonetheless at least provides an illustration of how to conduct alignment.

Table 6.3 Taxonomy alignment for the urban sector: buildings, public installations, and end-use energy efficiency

Rio Marker CRS Purpose Code|Sector		**EU Taxonomy** Sub-sector|Activities		**Corresponding GFM sub-sector** [Buildings, public installations, and end-use energy efficiency]
323	Construction	Construction and real estate activities	Renovation of existing buildings Construction of new buildings Installation, maintenance, and repair of energy-efficient equipment Installation, maintenance, and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings) Installation, maintenance, and repair of renewable energy technologies Acquisition and ownership of buildings Installation, maintenance, and repair of instruments and devices for measuring, regulating, and controlling the energy performance of buildings	Energy efficiency, renewable energy, CO_2e emissions reduction, and carbon sinks in buildings and public areas

Table 6.4 Taxonomy alignment for the urban sector: solid waste management

Rio Marker CRS Purpose Code|Sector	**EU Taxonomy** [Water Supply, sewerage, waste management and remediation] Sub-sector|Activities		**Corresponding GFM sub-sector** [Solid waste management]
N/A	Solid Waste	Collection and transport of non-hazardous waste in source-segregated fractions	Waste collection, transport, storage and transfer
N/A	Solid Waste	Material recovery from non-hazardous waste	Product reuse and material recovery from solid waste
N/A	Solid Waste	Anaerobic digestion of biowaste Composting of biowaste	Recovery and valorization of biowaste
N/A	Gas / CCUS	Landfill gas capture and utilization	Landfill gas capture, abatement, and utilization

6.3 ADAPTATION

Urban climate adaptation may be defined as projects and interventions that aim to maintain or increase the adaptive capacity and resilience of cities and urban communities in response to climate-related risks directly affecting cities (CCFLA, 2021). Unlike mitigation, there is no exhaustive taxonomy of eligible adaptation activities in the *urban* sector. This is because adaptation is highly context dependent and, therefore, the same intervention (e.g., heat-proofing buildings) may only qualify in one particular geography (that is experiencing heat stress) and not in another. Adaptation in the urban sector covers an assortment of activities (including, for example, climate-proofing buildings and roads or establishing flood defenses for a coastal city), some of which may also be covered within the waste, water, energy, and transport sectors.

As outlined in the adaptation finance decision trees in the General Guidance document, adaptation relevance is determined by a three-step process to validate that the financed project/activity is directly linked to the reduction of an identified vulnerability to climate change.

Table 6.5 below describes the validation process outlined in the General Guidance document in more detail and illustrates the process of validating an example adaptation project.

Table 6.5 Validation of adaptation relevance

Project example: Heat-proofing residential buildings			
Step	**Description**	**Validation**	**Example**
Step 1: Context of vulnerability	The context of vulnerability is clearly demonstrated using a robust evidence base.	A robust evidence base could include primary data collection and analysis by the reporting institution, or make use of external published data/ analyses. Climate risk assessment is conducted at this stage (see Box 6.1).	Climate change-induced urban heat is well documented. The project may use projections on heat stress (extreme temperature) as validation for this step.
Step 2: Intent	There is an explicit statement of intent by the project proponents to reduce the identified climate change vulnerability.	Intent may be demonstrated through project objectives stated in project planning or appraisal documents.	A stated project objective in the project proposal is to adapt residential buildings to the increasing incidence of urban heat stress.
Step 3: Clear and direct link	There is a direct link between the project activities and reducing the identified climate change vulnerability.	A clear and logical link can be articulated between project activities and the reduction of an identified vulnerability to climate change.	By financing heat-proofing measures, residential buildings are made resilient to the increasing incidence of urban heat stress.

Box 6.1 Conducting a climate risk assessment for the urban sector

Climate risk is generally thought of as the interaction of a hazard (e.g. flooding) with exposure (the extent to which the project is exposed to, or likely to be affected by, the identified hazard) and vulnerability (susceptibility, sensitivity, or lack of capacity of the exposed system to cope with and adapt to the hazard).

In screening for climate hazards relevant to *urban* areas, institutions may use past and current weather/disaster records and use model-based forecasts. An important consideration is to evaluate the severity and frequency of prospective hazards in the particular project location. This then helps to assess exposure, that is, the extent to which the project components (infrastructure, assets, etc.) are likely to be affected by the identified hazard.

Various existing tools can be used by IDFC institutions seeking to conduct a climate risk assessment on prospective urban projects. For example, C40 Cities have developed an open-access, Excel-based Rapid Climate Change Risk Assessment Module that can guide cities to use non-technical information and data to produce (i) a qualitative overview of relevant climate hazards, including historical trends and projects; (ii) a prioritized list of impact across the city's sectors; and (iii) a summary of the key climate risks across the city's sectors.

A project that passes the three-step validation process above is considered an eligible adaptation activity. The activity is then classified as Type 1, Type 2 or Type 3 adaptation, as per the (2023) Common Principles for Climate Change Adaptation Finance Tracking, and further elaborated on via the decision trees in the General Guidance document. Examples of Type 1, Type 2, and Type 3 adaptation activities in the urban sector are provided in Table 6.6.

The classification of the adaptation type also provides some indication of the amount of adaptation finance embodied in the project. While there is no universal approach to calculating adaptation finance, for activities where adaptation is the primary objective (Type 3), the **total cost** of the relevant activities is considered adaptation finance. Where adaptation is not the primary objective (Types 1 or 2), less than 100% of the cost of the adaptation-relevant activities is counted as adaptation finance.

An **incremental approach** can be used to estimate these costs. This involves estimating the additional costs of activities relating to adaptation relative to a hypothetical baseline for a scenario in which the project does not address any physical climate risks. However, this type of analysis may not be possible in every case. Alternative approaches for quantifying adaptation finance could include:

- Efforts to isolate the costs of the adaptation-relevant activities, taking as granular an approach as possible. Institutions can then track a proportion of these adaptation-relevant activity costs or the costs in entirety, depending the type of adaption activity (see Table 2.4).
- Applying fixed shares to wider costs to estimate adaptation-relevant costs; this constitutes a **proportional approach** (see General Guidance).

Table 6.6 Examples of adaptation activities for the urban sector

Type	Description	Example	Quantification
Type 1: Adapted activities	'Adapted activities' integrate measures to **manage physical climate risks** to ensure the project's success; these can be thought of as enhancing the resilience of the project.	• Adapting a data center to extreme heat • Adapting roads to flooding.	<100% total cost
Type 2: Shared objectives	Activity that directly reduces climate risk but has adaptation as **a joint objective** (alongside wider development objectives); this can be thought of as enabling resilience through the project.	• Informal settlement upgrading scheme with adaptation and resilience components.	<100% total cost
Type 3: Primary objective	**Adaptation is the primary objective.** The activity is expected to have a transformational impact on one or some of the underlying causes of vulnerability at the systemic level; that is, the system's susceptibility, sensitivity, and/or lack of capacity to deal with relevant climate hazards. The activity is likely to have been identified by assessing the physical climate risks of the wider system in which the project takes place.	• Construction and installation of flood defences for a coastal city at risk of climate change-related sea-level rise. • Capacity-building program for municipal governments to assess and develop solutions in response to urban climate risk.	100% total costs

CASE STUDIES

Three examples of potential urban-relevant[17] adaptation activities are provided below, as per the updated adaptation tracking methodology.

CASE STUDY: Type 1 Adaptation

Adapting a data center to extreme heat

An IDFC member is investing USD 75 million in the development of an urban data center that includes servers that may malfunction in extreme heat. The building design is, therefore, adapted to heat stress through an assortment of measures, including fitting reflective material on the roof and planting green vegetation on the façade, as well as installing (efficient) cooling systems.

This is a Type 1 adaptation activity, yielding resilience *of* the data center (rather than resilience *through* it). Resilience is not the main goal of the project, but these measures are implemented to protect it against heat-related climate risks. Adaptation finance here may be quantified by applying a pre-determined Type 1 coefficient (i.e., less than 100%) to the exact cost (CAPEX; OPEX) of heat-proofing the data center.

17 Since 'urban' is not a sector as such, these examples are urban-relevant but would fall under other adaptation categories in the GFM reporting template e.g., coastal protection.

CASE STUDY: Type 3 Adaptation

Extreme heat preparedness program for informal settlements

An IDFC member is investing USD 5 million in a program focused on addressing heat stress risks in informal settlements. The primary objective of this program is to provide informal settlements across a region with both the materials and knowledge to better deal with climate-induced heat waves and avoid the negative health impacts associated with heat stress. This involves both providing heat-reflecting materials for the settlement structures, planting vegetation on and around the housing (to deliver a cooling effect), and delivering in-person informational sessions on using available materials and resources to keep cool during heat waves.

The heat-proofing and capacity-building measures are Type 3 activities, with adaptation as their primary objective. These measures can help reduce the settlement's residents' vulnerability to heat wave hazards. Adaptation finance here should be quantified by taking the exact cost (CAPEX; OPEX) of the heat-proof materials, the added vegetation, and the running of the informational sessions.

CASE STUDY: Type 3 Adaptation

Flood defences for a coastal city

An IDFC member is investing USD 200 million in flood defences for a coastal city identified as at risk from sea-level rise and flooding. The primary objective of the investment is to reduce vulnerability to climate change-induced sea-level rise and flooding through the establishment of effective flood defences.

This is a Type 3 adaptation project, yielding resilience *through* the flood defence structures. It has potential for transformational impact through reducing vulnerability to climate risk at a systemic level, that is, at the broader urban level. Adaptation finance is quantified here as 100% of the total project cost, i.e. USD 200 million.

In determining that this is a Type 3 project, the IDFC member used the following checklist:

1. Is adaptation stated as the primary objective at the initial project planning stage?
2. Has a climate risk assessment been conducted for the wider system within which the project takes place, i.e., the city, the region, the country?
3. Does the project address underlying causes of vulnerability (such as susceptibility, sensitivity, or capacity of the exposed system to cope with and adapt to identified hazards) for this region?
4. Is there a commitment to monitor the impact/performance of the project with metrics relating to adaptation and resilience?

6.4 BIODIVERSITY

As cities continue to expand and evolve as centers of economic and social activity, it is crucial to understand the intricate relationship between urban environments and biodiversity. While urban areas serve as vital socioeconomic hubs, offering opportunities for innovation, commerce, and cultural exchange, urban ecosystems often face significant challenges. Rapid urbanization, habitat destruction, pollution, and fragmentation threaten biodiversity within cities, underscoring the urgent need for strategic interventions to enhance and preserve urban biodiversity. Urban planning can play a key role in integrating biodiversity conservation into urban landscapes. From the integration of green spaces and wildlife corridors to alleviating pressures on nature, cities can enhance biodiversity while simultaneously addressing other urban priorities (e.g., climate change impacts, social integration, recreation opportunities, etc.), promoting environmental sustainability, resilience, and human well-being.

The biodiversity component of this urban sector guidance focuses on two distinct areas of action:

1. Green Infrastructure

2. Urban pollution

Table 6.7 lists a range of activities that benefit nature and biodiversity, which can be implemented in an urban environment. The table also provides short guidance on the interpretation of the eligible activities, as well as on the types of screening criteria that should be used to determine whether an activity or project qualifies as biodiversity finance.

Table 6.7 Eligible activities for nature and biodiversity finance in the urban sector

Action areas	Eligible activities	Guidance	Screening criteria
Green infrastructure	Integration of Nature-based Solutions (NBS) in urban planning	The International Union for Conservation of Nature (IUCN) defines NBS as 'actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits'. NBS are instrumental to sustainable urban development, helping biodiversity to thrive, while meeting climate adaptation and mitigation goals and increasing the 'liveability' of cities.	NBS are eligible under any condition; however, to ensure that NBS are properly implemented, the activity needs to demonstrate that NBS installation follows global standards (e.g., IUCN's Global Standard for Nature-based Solutions - Criterion 3, or IUCN's Nature-based Solutions certification).

Action areas	Eligible activities	Guidance	Screening criteria
		This activity refers to the implementation of NBS to address urban challenges (such as heat island effect, flooding, water and drainage management) that can simultaneously give rise to biodiversity and ecosystem benefits. Such NBS include but are not limited to: • Urban parks • Urban and peri-urban forests • Green roofs and green facades • Urban gardens • River and coastal restoration • SuDS (systems that use NBS to manage surface water and rainwater in cities in a way that mimics nature) • Infiltration basins and retention ponds, filter strips • Swales and soakaways.	
Green infrastructure	Interventions that increase species permeability and habitat connectivity	While green spaces may exist in cities, they often are small, isolated, and poorly integrated into the broader landscape. As a result, cities remain an obstacle to biotic movement, limiting the permeability of the urban matrix, and creating barriers between urban areas and the surrounding countryside. This activity addresses the connectivity of existing green spaces in urban areas, with the aim to increase the permeability of the urban matrix. This can be achieved by increasing vegetation cover and diversity across cities; creating green 'corridors' (street tree lines, green patches) that connect green spaces within cities and with the peri-urban areas; and creating blue 'corridors' around water bodies (rivers, ponds, lakes, wetlands).	The activity needs to demonstrate: • A thorough analysis of the connectivity needs of green areas in and around the city; and • A management plan to guide the design, implementation, and monitoring of the interventions, and describe the expected contribution to biodiversity.
Green infrastructure	Restoration of habitats in urban areas	While human activity has changed the state of natural habitats in which cities and towns are built, they still constitute ecosystems whose condition affects both human well-being and the liveability of cities. Urban ecosystems are usually degraded due to extended soil sealing, pollution, and waste generation. However, healthy and functioning urban ecosystems can help clean air and water, mitigate heat, protect from hazards, provide recreation opportunities, and host a great amount of biodiversity. This activity captures restoration and remediation activities that take place in degraded, damaged, or polluted ecosystems found in urban areas. Restoration refers to processes that passively or actively assist an ecosystem to recover.	The activity needs to demonstrate an established restoration plan that describes clear restoration goals, baseline and native reference, description of current status and pressures, description of restoration activities, consideration of social issues, monitoring and maintenance activities, as well as the governance of the restoration project itself.

Action areas	Eligible activities	Guidance	Screening criteria
Green infrastructure	Tree planting in urban and peri-urban areas	Tree planting is defined as planting a single or small cluster of trees. Trees in urban environments can play a central role in bringing nature back to cities while mitigating air pollution, boosting resilience and climate change adaptation, enhancing cultural heritage, and improving human well-being. They can also improve connectivity between green spaces. Trees can be planted in urban and peri-urban vacant areas, parks, and along streets.	The activity needs to demonstrate that: • Native and locally occurring tree species are used; and • A plan is in place for the management, monitoring, and maintenance of the urban areas planted with trees.
Urban pollution	Ecosystem remediation	Ecosystems in urban areas can be heavily polluted or contaminated by human activities. Ecosystem remediation refers to the process of stopping and cleaning up pollution that threatens human and ecosystem health. In an urban context, this activity includes remediation of contaminated soil, groundwater, surface water (rivers, lakes, transitional waters), marine water, sediment and coasts, and terrestrial ecosystems.	The activity needs to demonstrate that: • Contaminants are controlled and removed using compatible methods according to the type of pollution and area (land, marine, freshwater, or other), based on national regulatory standards and following best practices; and • A monitoring plan is established and approved by a competent authority; and • A restoration plan of the remediated area is established following the criteria described in the activity 'Restoration of habitats in urban areas'.

QUANTIFYING URBAN BIODIVERSITY FINANCE

The General Guidance document proposes two distinct types of approaches that can be followed to quantify biodiversity finance: an "incremental" and a "proportional". The **incremental approach** can be used for projects that include precise information on budget allocations (CAPEX/OPEX). In that case, to track a project's biodiversity finance, one would have to identify the exact budget items that refer to the project's biodiversity activities and sum the CAPEX/OPEX costs reported under these items to estimate project's contribution to biodiversity. To identify the items that are biodiversity-relevant in projects related to the urban sector, the list of eligible activities included in Table 6.7 can be used.

When projects' budget disaggregation is not at a level that allows the allocation of CAPEX/OPEX costs to specific budget items, the **proportional approach** can be followed. Under this approach, a coefficient is assigned to the total budget of a project according to its relevance to biodiversity, counting only a portion of the total project investment as biodiversity finance (or 100% of the total budget if the whole project is biodiversity-relevant). For instance, according to the Rio Markers system, two coefficients can be applied to screened projects, namely a 100% coefficient for projects that primarily target biodiversity and 40% for projects that have a different target but benefit biodiversity as well. However, a different proportional approach could employ a greater number of coefficients which are lower or greater than 40% and may be linked to:

- **Project objectives** – i.e. This involves looking at the project objectives to determine whether benefiting biodiversity is a primary or secondary objective of the project. When found to be primary, the total investment is tracked as biodiversity finance (i.e. a 100% coefficient is applied), while when secondary, only a portion of the investment is captured (e.g. 40% according to Rio Markers – can vary);

- **Project types of activities** – i.e. This refers to assigning higher coefficients to projects that include specific biodiversity-enhancing activities than to projects with activities that indirectly benefit nature. For instance, a 100% coefficient could be assigned to projects that include habitat restoration activities, 50% to projects that include pollution mitigation activities, and 30% to projects that focus on environmental governance.

The information required to apply proportional approaches that link coefficients to project objectives relates only to the objectives and targets of the project. For instance, if a project related to the urban sector focuses on the restoration of a city's peri-urban woodland, then 100% of the project's total budget should be tracked as biodiversity finance since the objective of the project is related to ecosystem conservation. If, on the other hand, the objective of another project is to enhance a city's resilience to climate hazards through the use of NBS, then a lower coefficient (say 40%) should be used since the overall objective of the project is not about enhancing biodiversity. Similarly, approaches that link coefficients to types of activities would assign a 100% coefficient to the first project, since its main activity is ecosystem restoration, but would need additional information to determine the coefficient of the second project, as most NBS involve activities related to ecosystem restoration, which would entail a 100% coefficient.

While the proportional approach may be faster to apply, the incremental approach can provide more accurate estimations of the amount spent on biodiversity as it follows a more granular approach by analyzing each budget item separately. Therefore, the incremental approach should be used wherever feasible.

CASE STUDIES

Two examples of potential biodiversity activities related to the urban sector are provided below, corresponding to one project that is tracked as 100% biodiversity finance and one that is assigned a lower coefficient.

CASE STUDY: Fully biodiversity finance

Green belt around a metropolitan region

An IDFC member is investing USD 120 million to create a green belt around a metropolitan region to allow wildlife movement between protected areas. The project's objectives are to protect and enhance biodiversity in urban environments, create a greener urban landscape through the increase of vegetation cover, and restore native species while removing alien ones.

To quantify biodiversity finance using an incremental approach, the exact costs (CAPEX/OPEX) of the project related to green belt creation should be tracked and aggregated. Under a proportional approach that links coefficients to project objectives or activities, the project would qualify as 100% biodiversity finance since both the primary objective and the related activities focus on habitat creation.

CASE STUDY: Partially biodiversity finance

Noise pollution reduction through tree planting

An IDFC member is investing USD 30 million in a city's noise pollution reduction strategy. Noise pollution in cities can have serious detrimental effects on their inhabitants, from increasing stress levels to raising the risk of heart attack or stroke. Part of the strategy involves the planting of trees in strategic areas that can function as noise buffers. Hard surfaces amplify noise in cities by reflecting the sounds from sources like traffic, construction, and machinery. Tree planting has an important noise mitigation potential since their leaves and branches deflect and defuse sound waves, while the soil absorbs some of them. Buffer strips of trees or dense scrub vegetation are able to dampen noise significantly, while they can help create desirable natural sounds—from birds, insects, and the wind blowing through branches and leaves.

To quantify the biodiversity finance of this project following an incremental approach, the budget items that refer to costs (CAPEX/OPEX) for the design and implementation of the strategic components that refer to tree planting must be tracked and aggregated. Since the primary objective of this project is to mitigate noise pollution, when using a proportional approach that links coefficients to project objectives, only a portion (say 40%) of the total project budget would qualify as biodiversity finance. Similarly, a proportional approach that links coefficients to project activities would result in attributing a similar coefficient to the total project budget, since only some of the activities implemented under the project refer to biodiversity-enhancing measures.

LINKS WITH CLIMATE FINANCE

Activities that have a positive impact on nature and biodiversity often contribute to climate change mitigation and adaptation objectives as well. As biodiversity-related actions usually improve the state of ecosystems in which they are implemented, they also enhance ecosystem services that relate to climate change mitigation and adaptation, such as an ecosystem's capacity to capture and store carbon, or its ability to act as buffer against climate hazards. Therefore, biodiversity finance can often overlap with climate mitigation and adaptation finance. To avoid double-counting climate and biodiversity finance, these flows should be tracked and reported separately, and should not be aggregated.

All the biodiversity-eligible activities for the urban sector listed in the table above can entail climate co-benefits. Table 6.8 shows the cases where these activities contribute also to climate change mitigation and adaptation objectives. This overlap often depends on the context in which the activity takes place. For instance, ecosystem restoration in woodlands would enhance carbon sequestration, while restoration of dunes would not have a significant effect on emissions. Similarly, whether a biodiversity activity would have adaptation benefits would depend on whether the area in which the activity takes place is vulnerable to a climate hazard and whether this activity addresses the hazard.

Table 6.8 Comparison of nature and biodiversity finance with climate finance objectives

Eligible activity	Potential overlap with climate mitigation	Potential overlap with climate adaptation
Integration of NBS in urban planning	If the selected NBS lead to energy savings (e.g., green roofs have insulation properties that reduce energy use for cooling during summer) or to carbon sequestration (e.g., urban parks), the project contributes to mitigation.	NBS are usually implemented to address climate-related hazards (e.g., heat island effect, flooding, etc). Therefore, as long as they do not increase the use of water for irrigation purposes in arid zones, such projects almost always contribute to climate adaptation.
Interventions that increase species permeability and habitat connectivity	If the selected interventions lead to additional carbon sequestration (e.g., street tree lines)), the project contributes to mitigation.	If the interventions selected are implemented in heat-stressed urban areas, and the green and blue corridors provide shade/have cooling effects, while they do not increase the use of water for irrigation purposes, then this activity contributes to climate adaptation.
Restoration of habitats in urban areas	If the restored habitat leads to enhanced carbon sequestration (e.g., woodland), the activity contributes to climate change mitigation.	If the activity takes place in a heat-stressed and/or water-stressed urban environment or area prone to flooding, and the habitat restored provides cooling, water saving, or flood protection, then it contributes to climate adaptation.
Tree planting in urban and peri-urban environments	Tree planting increases carbon sequestration, thus this activity contributes to climate change mitigation.	If the activity takes place in a heat-stressed urban area, and the tree planting provides shading/cooling effect, then it contributes to climate adaptation.
Ecosystem remediation	Since this activity also involves the restoration of the remediated ecosystem, if the ecosystem provides carbon sequestration (e.g., woodland) and the restoration activity enhances this ecosystem service, then the activity contributes to climate change mitigation.	If the activity takes place in a heat-stressed and/or water-stressed urban environment or area prone to flooding, and the ecosystem restored as part of the remediation provides cooling, water saving, or flood protection, then it contributes to climate adaptation.

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