Guidance Note on Counting Climate Finance in Urban and Water

I. Introduction

1. In September 2015, ADB pledged to double its annual climate financing to $6 billion by 2020, with $4 billion for climate mitigation and $2 billion for climate adaptation. Urban and water operations together are expected to contribute about $1 billion to climate adaptation.

2. This Guidance Note for urban and water sectors supplements the *Guidance Note on Counting Climate Finance at ADB* ("Umbrella Guidance Note") issued in October 2016 (Attachment 1) to support a consistent bank-wide approach to the measurement and reporting of ADB climate finance. As with the umbrella guidance note, this sector-specific note follows the approach to tracking and reporting climate finance that the multilateral development banks (MDBs)[1] have developed and used ("the joint MDB approach") for purposes of joint international reporting since 2012. It elaborates on the application of the joint MDB approach in urban and water operations including through illustrative examples and case studies. It provides more detailed guidance on adaptation finance tracking as this is where there are greater complexities and challenges in climate finance estimation in urban and water operations.

3. This Guidance Note briefly introduces the key principles of climate finance tracking (Section II), outlines the MDB common methodology for tracking mitigation (Section III) and adaptation finance (Section IV), then describes how it is estimated (specifically to adaptation) within the varying project contexts (Section V), how it may be captured in the project design and monitoring framework (DMF) in Section VI, and concludes with a summary of technical and financial resources available to support Operations Department (OD) in tracking and reporting on adaptation finance following the MDB common methodology.

4. For Agriculture, Natural Resources and Rural Development projects, where water resources is a part of the project, this note should be read along with the Guidance Note developed by the Thematic Group on Agriculture, Rural Development and Food Security.

II. Key Principles of the Joint MDB Approach to Climate Finance Tracking

5. The *Joint Report on Multilateral Development Banks' Climate Finance* contains detailed explanation on principles for tracking climate finance which has been summarized in the Umbrella Guidance Note. Amongst these guiding principles, the granular and conservative principle has emerged as particularly challenging when applied to development projects.

6. The **granularity principle:** The granular approach requires that project teams identify mitigation and/or adaptation activities at the lowest level of project disaggregation (e.g. project component, sub-component, activity, or output) that can be supported by budgetary and technical documentation. Mitigation and/or adaptation finance can be reported only for those relevant project elements that contribute to mitigation and/or adaptation. In the case of adaptation, the granular approach is not intended to capture the value of an entire project that may increase resilience as a consequence of specific adaptation activities within the project.

[1] The group of MDBs consists of the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Inter-American Development Bank Group (Inter-American Development Bank and the Inter-American Investment Group), and the World Bank Group (International Finance Corporation, Multilateral Investment Guarantee Agency and the World Bank (International Bank for Reconstruction and Development and the International Development Association)).

7. The **conservative principle:** The conservative approach requires that if data to support a detailed, granular analysis of mitigation and/or adaptation content are not available and mitigation and/or adaptation finance must be estimated on the basis of expert judgment, it is preferable to under-report rather than to over-report climate finance figures.

III. Climate Change Mitigation[2]

A. Determining Mitigation Activities

8. An activity is considered as climate mitigation if it promotes efforts to reduce or limit greenhouse gas (GHG) emissions or enhance GHG sequestration. The MDBs jointly agreed on a list of activities eligible for classification as climate mitigation. Urban and water activities that are included in the Joint MDB Mitigation Finance Reporting are:

- Wind or solar-driven pumping systems or similar applications;
- Treatment of wastewater if not a compliance requirement (e.g. performance standard or safeguard) as part of a larger project that reduce methane emissions (only if net emission reductions can be demonstrated);
- Waste management and waste-to-energy projects that demonstrably reduce methane emissions and/or generate energy (e.g. incineration of waste, landfill gas capture, and landfill gas combustion);
- Demand-side energy efficiency projects;
- Waste-recycling projects that recover or reuse materials and waste as inputs into new products or as a resource if net emission reductions can be demonstrated; and
- Retrofit of existing industrial, commercial and residential infrastructure to switch to a cooling agent with lower global warming potential.

9. The general principle agreed by the MDBs for brownfield energy efficiency activities involving the substitution of technologies or processes is that: (i) the old technologies are substituted well before the end of their lifetime and the new technologies are substantially more efficient; or (ii) new technologies or processes are substantially more efficient than those normally used in greenfield projects. Financing of greenfield energy efficiency investments is considered as climate mitigation finance if it prevents a long term lock-in to high carbon infrastructure.

B. Estimating Mitigation Finance

10. The financing for an activity included in the list above can be counted towards climate finance as the activity (and not the whole project) in its entirety supports reduction of GHG emissions. For example, the entire financing for a waste to energy project or that for a solar pumping station that is part of a larger drainage or wastewater project both qualify as climate finance.

[2] Of the $776.5 million in urban and urban water projects that were approved from 2010 to 2016, only $10.1 million was counted towards mitigation financing.

IV. Climate Change Adaptation

A. Determining Adaptation Activities

11. There are two main categories of adaptation activities: Type 1 adaptation activities are those associated with the need to manage climate risks to ADB-financed development projects (climate proofing) to ensure that the primary development objectives are not compromised. The climate adaptation investment typically accompanies or enhances a larger associated project output or activity. Type 1 activities have accounted for most ADB-financed adaptation activities. Type 2 adaptation activities are those predicated solely on the need to address climate change risks, and would not have taken place in the absence of global climate change.

12. For OD teams, tracking climate adaptation finance is an integral part of the overall ADB climate risk management process.[3] ADB's current framework for climate risk management requires identification of climate change risks to project physical integrity, longevity and performance in the early stages of project development through the climate risk screening process, characterization of the nature of risks and identification of adaptation options through climate risk and vulnerability assessment (CRVA) for projects that are deemed medium or high risk by the risk screening process. Appendix 1 provides a sample term of reference for undertaking a CRVA.

13. A rigorous, context-sensitive CRVA process that not only identifies adaptation options but also carries out costing and economic evaluation of those options and enables the monitoring and reporting of the level of climate risk through the project DMF is essential to justify climate finance figures.

14. The MDB adaptation finance tracking methodology is designed to identify projects, project components and activities that conform to rigorous and accepted definitions of climate change adaptation. This enables the reporting of adaptation finance in a manner that is credible, transparent and consistent; and minimizes over-reporting of development activities as adaptation.

15. While mitigation finance reporting under the MDB common methodology is based on a list of activities (Section III) that qualify regardless of where they are implemented provided they would lead to net emission reductions, the adaptation finance reporting is by contrast context- and location- specific. What defines an adaptation activity is the documented presence of climate risks that the activity seeks to manage, a clearly articulated intent to manage these risks, and logical linkages between the climate risk(s) identified and the proposed activities. Activities driven by development objectives (e.g. provision of general education for local population within a project area) which might contribute to overall climate resilience are not counted as adaptation in the absence of these contextual elements.

16. The MDB common methodology for tracking adaptation finance is based on the following three steps that establish climate vulnerability context, provide a clear statement of intent, and articulate a clear and logical connection between climate risks and adaptation activities.

[3] http://www.adb.org/publications/climate-risk-management-adb-projects.

1. Establishing the *climate vulnerability context*

17. For the financing of a project, project component, sub-component, activity, or output to qualify as climate financing, the reasons why climate adaptation is necessary must be documented. The context of climate vulnerability must be established clearly and on the basis of robust evidence. This evidence can take a variety of forms, including material from existing analyses and reports, original project preceding climate assessments at city or regional level, or project-specific climate risk and vulnerability assessment carried out as part of the project preparation.[4]

18. Examples of good practice in the use of existing analyses or reports include the use of sources that are authoritative (preferably peer-reviewed), such as articles in academic journals, national communications to the United Nations Framework Convention on Climate Change (UNFCCC), reports of the Intergovernmental Panel on Climate Change (IPCC) and relevant assessment reports under the Strategic Programs for Climate Resilience. Other examples include project-specific CRVAs carried out as part of project preparation activities, such as those funded by ADB's Climate Change Fund since 2014.

19. After completing the Climate Checklist and running the Aware Tool, a summary of the results can be presented in the Concept Paper as the broad context of climate vulnerability for the project. The intention to identify and cost actions to address the climate vulnerability context of the project's vulnerability to climate change should be summarized in the RRP under the "rationale" section and further expanded in the "due diligence" and/or "risks and mitigation measures" section, and presented in an expanded form in a CRVA report appended to the RRP. Box 1 provides an example of how project climate vulnerability context is explicitly articulated within an RRP.[5]

Box 1: Establishing the project climate vulnerability context

PAK: Pehur High Level Canal Extension Project

"Climate change impacts. The climate change projections for Khyber Pakhtunkhwa (KPP) show that there is likely to be an average increase in precipitation of the order of 5 to 10%.17 Similarly temperatures are also expected to rise by about 3^{o}C on average up to year 2050. The effects of increased temperature can be partly mitigated due to increase in rainfall. The monthly distribution of rainfall and temperature will also change. The rainfall in monsoon period is likely to increase, while in other months (e.g., April-May) rainfall is likely to be less and temperatures will be higher. These changes will adversely affect areas under rainfed agriculture. In the immediate future, kharif season irrigation supplies could strengthen as global climate change melts glaciers of upper Indus River basin, which currently provide regular flows to the Indus River at an increasing rate. However, in the longer term, shortages will become more severe as the glaciers are depleted and higher temperatures result in increased evaporation from the storage reservoirs and due to significantly higher crop water requirements."

Source: RRP, paragraph 10.
See Appendix 2 for additional examples.

[4] When carrying out the CRVA, the timescale of the projected climate change impacts should match the intended lifespan of the planned assets, systems or institutions being financed through the project (e.g., time horizon of 2030, 2050, 2080, etc.).

[5] Examples of potential impacts of climate change on urban and water activates along with examples of adaptation activities can be found in Annex 3 of the Umbrella Guidance Note.

2. Including the statement of intent to address climate vulnerability as an objective of the project

20. Project documents should make clear that managing the climate risk(s) identified is a specific objective of, or rationale for project activities. Adaptation may be the primary objective of a project or technical assistance, or it may be only a component of the project. Climate risk management ("climate proofing") may be required to ensure that the primary objectives of a development project are not compromised.

21. In all cases, project documents must make clear how the context- and location-specific climate risks and vulnerabilities identified will be addressed within the scope of project activities. An explicit statement of intent is required to distinguish a development project containing specific activities designed to manage specific climate risks (thus qualifying as adaptation finance) from a standard 'good development' project, which may contribute to improved ability of communities or structures to cope with adverse climate change impacts as an ancillary benefit – this would not qualify as adaptation finance.

22. Within the context of the ADB project cycle, the statement should appear in the TA Report, RRP or PFR Report, and other associated project documents. Box 2 provides an example of a statement of intent appearing in the RRP.

Box 2: Explicit statement of purpose or intent to address climate vulnerability within an investment project

PRC: Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project

"The overall design is geared toward climate resilience, and each project component's design incorporates a number of adaptation measures, including some based on the ecosystem, to withstand projected increases in rainfall intensity and temperatures. These include (i) increasing water systems' flood retention and drainage capacity, (ii) enhancing the design of flood protection barriers, and (iii) selecting climate-resilient materials and equipment in the wastewater and solid waste management systems. Incremental costs associated with the above measures are estimated at $10.8 million."

Source: RRP, paragraph 26.
See Appendix 3 for additional examples.

3. Articulating a clear and direct link between the climate vulnerability context and the specific project activities

23. Consistent with the granular approach, only specific project activities that explicitly address climate vulnerabilities as identified in the project documentation are reported as adaptation finance. This is essential in situations where project activities are driven by other objectives beyond reducing vulnerability to climate change impacts and/or enhancing climate resilience.

24. A brief description of the adaptation activities should be provided in the project TA Report, technical due diligence of the RRP or the PFR Report; and should be elaborated in the

CRVA, Project Climate Risk Assessment and Management Report and/or other linked documents (e.g., PAM) as appropriate. Box 3 provides an illustration of the risk-activity linkages.

Box 3: Climate risk and project activity linkages

PRC: Qinghai Haidong Urban-Rural Eco Development Project

The project takes a multidisciplinary approach to urban watershed management, which will play a critical role in enhancing environmental protection, ecological rehabilitation, and climate change adaptation capacities in the river catchment area, thereby benefitting not only Haidong, but also many downstream communities.

The CRVA conducted for the project found that regional water resources in the Qinghai Province will not change significantly in total volumes by year 2030, but seasonal and annual variability will increase, meaning the frequency, intensity or timing of rainfall will likely change rather than total annual rainfall. Hydrological modelling results have shown that river flow volumes will decline slightly under the low climate change scenario but will increase under medium and high scenarios. The mixed change signals are interaction results between projected rising temperature and increased precipitation across the Qinghai Province. However, there are increased climate risks due to increased seasonal and annual variability in precipitation and hence river flow volumes. Shrinking glacier areas caused by rising temperature is also posing risks to the river headwaters.

The adaptation measures that were considered necessary to address those risks and vulnerabilities are:

- Adjusting additional 0.1m increase in design flood height for the river rehabilitation component;
- Adjusting additional 0.2m increase in design flood height for the river rehabilitation component;
- Enlarging the storm water outlet size by 8% based on design storm discharge; and
- Adjusting the runoff depth in solid waste disposal (landfill) design due to an expected increase in the 50-year return storm from 32mm to 34mm; and adjusting the 100-year storm from 39 mm to 42mm.

Source: CRVA for TA 8846- PRC: Qinghai Haidong Urban-Rural Eco Development Project, Table 15: Engineering proofing/adaptation options recommended for relevant project components.
See Appendix 4 for additional examples.

V. Estimating Adaptation Finance

25. Adaptation finance reported for a project is the sum of the financing for all project activities aimed at addressing specific climate change risks. Adaptation finance is reported in the field provided in the Project-at-a-Glance/Tranche-at-a-Glance, along with the assessed level of climate risk to the project. Only climate financing supported by ADB's internal resources will count towards ADB's internal targets.[6]

[6] Climate finance should be reported and updated in the climate finance section of the project classification data entry sheet of eOps at project concept paper, RRP preparation, TA concept paper, and TA proposal preparation stages to generate Project at a Glance, which will be attached to concept papers, RRPs, and TA proposals. Project concept papers should provide details of climate finance in the financing plan section. RRPs should indicate the total climate finance in the financing plan section, distinguishing climate mitigation and climate adaptation finance, and separately identifying financing from ADB's own resources and ADB-administered funds. RRPs should also include a further itemized breakdown of the climate finance in the project (or facility) administration manual in accordance with the categories in Appendixes 1 and 3 of the Umbrella Guidance Note. TA concept papers and proposals should describe climate finance in the financing section.

26. ADB's own resources include loans, technical assistances (TA), equity, guarantees and any other financing originating with the Bank's own resources. External resources include all co-financing including bilateral donors and dedicated climate finance funds such as the Global Environment Facility, the Climate Investment Funds and the Green Climate Fund. In annual climate finance reports that ADB contributes to, internal and external resources are reported separately.

27. Adaptation related activities generally fall within one of two broad categories. In most cases, adaptation activities are associated with the need to manage climate risks to ADB-financed development projects ("climate proofing") to ensure that the primary development objectives are not compromised. These are Type 1 – climate proofing of development projects.

28. In some cases, adaptation to climate change is the sole or primary objective of a project or technical assistance. These are Type 2 – project or activities predicated on the need for adaptation to climate change. The majority of Type 2 activities to date have been TAs and other non-physical measures such as early warning systems.

29. The amount of financing that can be counted towards adaptation is not proportional to the climate risk rating of the project, i.e. a project rated high risk does not necessarily equate to a high percentage of adaptation finance. Addressing significant climate risks and vulnerabilities of projects can sometimes require a proportionally small cost depending on the project and what is required to increase resilience.

1. Type 1: Climate Proofing of Development Projects

30. As the name suggests, the majority of activities/outputs that are part of ADB investment projects will fall under this category. All investment projects that did not originate with an explicit intent to address climate change impacts, which is the majority of activities that make up ADB projects, fall under this category. When in doubt, project officers should assume that an activity is Type 1 when quantifying climate adaptation financing.

31. The CRVA related to Type 1 activities are usually carried out during the project development stage. In most cases, the CRVA would identify key climate risks of projected climate change to the project or project components, and it would recommend adaptation options to manage these risks, including through adjusting the design of project components (e.g. enlarging the storm water outlet size) that should be properly estimated during the project preparation technical assistance (PPTA). For all project loans, sector loans and MFFs, estimating the incremental cost of climate proofing for an activity during project preparation is necessary to identify the amount of money that can be counted as adaptation finance. Box 4 provides an example of deriving incremental cost of adaptation.

32. For financial intermediary (FI) loans or policy-based loans, for which it is not possible to estimate incremental cost of climate proofing, a proportion of the loan corresponding to the adaptation activities may be used to represent the incremental amount. Determining the proportion of an FI or policy-based loan that can be counted towards adaptation finance is a matter of collective expert judgment of a group comprising the project officer, SDCD and the Sector Group Secretariat.

Box 4: Deriving incremental cost of adaptation

TAJ: Water Resources Management in Pyanj River Basin Project

The CRVA for the project found that out of 66 inter-farm canals, 55 (83%) have capacity sufficient to meet the increased irrigation requirements under likely changed climate conditions during the next 50 years. Thus, the head regulators and the capacities of only 11 (17%) inter-farm canals require remodeling to meet the climate-proofed discharge requirements. Fund for remodeling of these eleven canal head regulators and canal capacities have been provided in the cost estimate for modernization of inter-farm canals. The total cost of climate proofing of irrigation distribution network is estimated at $385,200. Details are given in the table below.

District	Total number of interfarm canals, No	Canals with sufficient capacity, No	Canals with insufficient capacity, No	Estimated cost of climate proofing, $
Hamadoni	27	19	8	288,900
Farkhor	35	34	1	48,150
Vose	3	1	2	48,150
Kulob	1	1	0	0
Total	**66**	**55**	**11**	**385,200**

Source: CRVA for TA 8647-TAJ: Water Resources Management in Pyanj River Basin, Table 3: Estimated cost of climate proofing of irrigation distribution network.
See Appendix 5 for an additional example.

2. Type 2: Project or Activities predicated on climate change adaptation

33. If a project or activity/output is selected based on climate assessment or the climate related vulnerability of a targeted community or sector, then the activity/output may be considered predicated on addressing climate change impacts. There needs to be sufficient and verifiable documentation for this.

34. The evidence that an activity is Type 2 is that a climate assessment was carried out prior to the selection of the activity/output. The climate assessment and the intention to support people in adapting to the projected impacts of climate change that were identified in the assessment should be the basis of activity/output selection.

35. For Type 2 activities, 100% of the activity or output costs may be attributed to climate adaptation finance. In order to further strengthen the case for allocating the complete cost of an activity or output to climate adaptation finance, the project DMF could include indicators aimed at measuring progress towards adaptation at the outcome and output levels.

36. Adaptation finance is equivalent to entire project cost when a project is predicated on climate change (Box 5). For Type 1 projects that include an activity that is predicated on climate change, the cost for climate adaptation is the total of the incremental cost of climate proofing and the full cost of the project activity that is predicated on climate change, plus the prorated amount of the project's other costs, including contingencies and financing charges (commitment fees and interest during construction), as applicable (Box 6).

37. ADB's experience in designing and implementing projects that are predicated on climate change is recent and evolving; through learning by doing and from experience of other MDBs. Therefore, exceptional rigor and consultation is required from an early stage of project planning when a project officer believes that 100% of a project cost could be counted as adaptation finance. In such cases, the project officer engages with SDCD and the Sector Group Secretariat before finalizing the project concept, and in addition to the other steps mentioned above, the rationale for classifying the project as Type 2 should be documented as a supplementary appendix to the RRP.

Box 5: Example of a Project Predicated on Climate Change Adaptation

Example 1: VIE - Loan Water Efficiency Improvement in Drought Affected Provinces

The Proposed Loan Water Efficiency Improvement in Drought Affected Provinces in Vietnam qualifies as a project that is predicated in climate variability and change and therefore 100% of ADB lending, or an expected $120 million, can be counted as adaptation financing.

The project, which aims to improve water productivity in Viet Nam's agriculture sector, was requested by the Vietnamese government after the 2015 El Niño effect caused severe drought conditions requiring the provinces in Central Highland and South Central Coastal Regions (Binh Thuan, Dak Lak, Dak Nong, Khanh Hoa, and Ninh Thuan) to declare a state of emergency. Rainfall in the 2015 wet season was 32% less than in an average year and an estimated 60,000 ha of agricultural land in the Central Highlands was subject to varying degrees of crop failure in 2015.

The likely long term climate scenario for the region is warmer conditions (annual mean air temperature increases of $0.8^{o}C$ – $0.9^{o}C$) with little change in rainfall, which increases the country's vulnerability to climate change.

This project is intended to support the Government of Vietnam's mission to enhance the "Productivity and competitiveness, climate resilience and disaster preparedness in the agriculture sector" Government's Agriculture Restructuring Plan, Prime Minister's Decision No. 899/QĐ-TTg of 10 June 2013).

Source: PPTA Concept Paper.

Box 6: Combining incremental cost of adaptation with project activities predicated on climate change

Example 1: PRC: Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project

One of the key objectives of this project is to increase resilience to climate change, which is particularly relevant for design of the flood management system and drainage network. The project therefore needed to consider the likely impacts that climate change would have on design rainfall intensities and flows. Based on the climate change projection in Xinyu, it can be seen that different climate models give different estimates of the changes in rainfall intensities under RCP4.5, RCP6.0, and RCP8.5. RCP4.5 is a mid-range forcing scenario and provides a credible set of assumptions concerning future conditions. The three different climate models under RCP4.5 show the changes in rainfall intensity ranging from -2% to +12%.

In enhancing flood retention capacity of rivers and lakes, projected increase in rainfall due to climate change is offset with an additional safety factor (accounting for 15% increase in flows) in the design of all the relevant infrastructures such as levees, canal embankments, storm water network, and wetland area. The incremental cost of these infrastructure measures is estimated to be $4 million as detailed in the table below:

Table 1.1: Infrastructure adaptation measures for climate change in the Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project

No.	Calculated changes increase in design flows of 15% for climate change	Changes in design	Additional cost (USD Million)
1	Increase in the water level of canals (0-0.15m)	Increase of the top of canals reinforcement 0-0.2m; and increase in depth/width	1.5
2	General increase in flood levels (about 0.28m)	Increase of the top of channel embankment 0.27m	0.05
3	Increase in stormwater flow (15%)	Increase in of rainwater sub-surface utility tunnel from 1.8 m to 2.4m	1.74
4	Increase in stormwater treated by wetland (1633 t/d)	Expanding wetland area by 1.93 ha	0.68
Total			3.97

Additional "hard" adaptive measures are as follows:

In the storm water network component, climate change adaptation measures include consideration of possible ground subsidence and structural deformation due to increase in temperatures in the sub-surface utility tunnel design. Resulting additional costs related to increased thickness of the pipes are estimated at $0.95 million.

In the wastewater network to be financed within the project, (a) material selection for sewage network and pump station considers the resistance to leakage caused by potential ground subsidence; and (b) pump stations are designed with self-cleansing capacity as an adaptation to increased precipitation variability, and to account for drought conditions. Resulting additional costs related to above measures are estimated at $0.98 million.

In addition to the abovementioned costs to climate-proof the infrastructure investment, an additional project activity was added predicated on climate change impacts will also be undertaken as part of the project: awareness raising on climate change and capacity building activities targeting flood forecasting and emergency response. Due to the fact that this activity was predicated on climate change, the entire cost of these measures will be accounted for as part of climate finance.

The combination of the incremental cost of climate proofing planned infrastructure investments ($5.9 million) and the costs of the project activities predicated on climate change ($4.9 million) equals the project related costs that can be considered climate finance, which in this case is $10.8 million.

$10.8 million represents 7.5% of the base costs for the project. Because the financing charge of the project was $6.15 million, 7.5% of these costs, or $0.45 million, can be allocated to climate finance. The final climate finance figure for this project is therefore:

$5.9 million for incremental costs for climate proofing (Type 1 activities)
+ $4.9 million for costs of project activities predicated on climate change (Type 2 activities)
+ $0.4 million for pro-rated financing charges
$11.2 million

Source: Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project, Draft Final Report SD 6 – Technical Notes on Climate Change, excerpt from Table 6.1.

38. Financing charges of a project will be allocated to climate finance on a prorated basis, i.e. the same percentage of base costs that are considered for climate finance will be applied to the financing charges.

VI. Capturing climate finance in the project DMF

39. Table 2 provides an illustrative list of adaptation indicators that may be included the DMF of both Type 1 and Type 2 projects and Box 7 provides an example.

Table 2: Examples of adaptation indicators

Subsector	Adaptation indicators
All/ cross-sectors	• Reduction of climate related damages reduced by at least xx% • All newly built urban infrastructure integrate green and climate resilient design features. • At least xx no. community-led initiatives that improve climate resilience completed • Maintenance and emergency plans that factor in climate risk considerations prepared
Drainage	• flood damages reduced by xx%/ $xx in coverage areas • Drainage canals introduced over xx ha where previously there were no drainage facilities
Irrigation	• All irrigation infrastructure includes climate resilient design features like additional freeboard • Water productivity increased from xx m3/ha to xx m3/ha
Flood management	• Storage capacity of xxm^3 reservoir is increased by xx m^3 • Flood embankments elevation increased from xxm to xxm • Area of land protected from flood inundation increased from xx ha to xx ha • xx km of porous paving constructed to reduce the volume of storm water runoff • Diameters of pipes increased by xx% to better cope with increased precipitation and extreme weather events • no of stand by pumps available for emergency situations increased from x pumps to x pumps
Coastal flood management	• Measures to protect coastal dune complex from erosion are implemented • xx km2 of mangrove forests have been restored
Institutional development	• Knowledge and skills of at least xx staff are strengthened in integrating climate change resilience into urban planning (at least xx% of participants are women) • XX number of farmers (of which xx% are women) are trained in land and water management response to increased climate variability. • Knowledge and skills of at least xx water resources department staff are strengthened in climate resilient infrastructure design/ planning (at least xx% of participants are women) • Early warning system for flood risk management designed, installed and implemented.
Roads	• xx km of road is elevated to create a flood evacuation route for xx (no.) people
Solid waste management	• Monitoring equipment for potential flooding at landfill sites installed and made operational • Planning of landfill sites considered future flooding areas due to climate change.
Water supply	• Diversity of water supply sources are utilized
Wastewater	• Increased effluent treatment (including cooling) to address increasing surface water temperatures of receiving water bodies (whose long-term ecological health will be compromised under climate change) implemented. • Pump stations raised and levees built to avoid rising sea levels from rendering the plants inoperable.
Urban renewal	• Newly developed area will contain green surface area of xx million sq. m

Box 7: Example of adaptation indicators

Example 1: VIE: Urban Environment and Climate Change Adaptation Project

Outcome: "People's access to climate change resilient urban infrastructure in Dong Hoi and Hoi An improved"

Selected output indicators:
"Hoi An: Damages by coastal flooding reduced by $2.0 million per year (2009–2013 average: $2.5 million) benefiting 15,600 urban households"
"New urban area development plan is finalized incorporating climate change resilience consideration"
"Measures to protect coastal dune complex from erosion are implemented"

Source: Project Administration Manual.

VII. Tracking Climate Finance and Support

40. The Project Officers are responsible for ensuring that climate finance is estimated and reported in the RRP at the project level using the approach provided in this guidance note. The Urban and Water Sector Groups, through the Secretariats and the Climate Finance Tracking Teams, are responsible for tracking climate finance at the sector level.

41. In addition to providing required technical support, they will collect and regularly update climate finance data for approved operations and future project pipelines in their respective sectors, drawing upon eOps and other databases available from ODs and Strategy and Policy Department (SPD); and assess and report upon progress towards the delivery of sector-specific climate finance targets. These will be reviewed by SDCD and compiled for internal and external reporting. The SPD will undertake corporate-level reporting on progress towards corporate targets.

42. The Sustainable Development and Climate Change Department (SDCC) can provide technical support to the project officers through the Secretariat of the Urban and Water Sector Groups. SDCC can also support project officers with financial support from ADB internal or external resources allocated for climate risk and vulnerability assessment (e.g. CCF) and also potentially for some of the identified adaptation options from the Urban Financing Partnership Facility (UFPF), the Water Financing Partnership Facility (WFPF), the Green Climate Fund (GCF), etc.

43. This Guidance Note will be updated as needed to provide more clarity and updates based on project examples within ADB and other MDBs.

44. The project classification system[7] will form the basis for estimating and tracking climate finance, based on:

(i) **Agriculture, Natural Resources, and Rural Development:** Irrigation, agricultural drainage, rural flood protection, rural water supply services, rural sanitation, rural solid waste management, rural market infrastructure, agricultural production, livestock, agro-industry, marketing, and trade, agriculture research and application, fishery, forestry, land-based natural resources management, water-based natural resources management, agricultural policy, institutional and capacity development, and rural water policy, institutional and capacity development.

(ii) **Water and Other Urban Infrastructure and Services:** urban water supply, urban sewerage, urban sanitation, urban flood protection, urban solid waste management, urban hazardous waste management, urban housing, urban slum development, renovation and protection of cultural heritage, other urban services, and urban policy, institutional and capacity development.

[7] ADB. *The Project Classification System: Towards Strategy 2020 (A User Guide)*. 2014. Manila.

Appendix 1
Terms of Reference for Climate Risk and Vulnerability Assessment
(at project preparation stage)

Climate change specialist (national, 1.0 pm)

The specialist will have (i) a graduate degree in hydrology, water engineering, ecology or environment, or equivalent; (ii) at least 10 years of experience in water engineering and climate change; and (iii) demonstrated expertise in evaluating potential impacts of climate change and making recommendations for adaptation in the water sector. The specialist will collect and analyze information related to climate change impacts (environmental, economic, and social impacts) and projections (projected changes in temperature and precipitation) in the project area. The specialist will use simple climate models such as "Climate 1-Stop" (http://arcserver4.iagt.org/climate1stop/) to make projections, if data are not available. The specialist will assess the risks posed by climate change to the project viability, and will identify and help integrate specific adaptation measures as needed into the project design.

The work of the specialist will include the following.

i. Gather available historical and recent climate data for the project area, including variables especially relevant to the project area and design, such as flooding history.
ii. Calculate projected water availability and sensitivity of the project components to climate change impacts including, but not limited to: (a) resilience of the designs for the reservoirs, water tanks, and erosion control structures to projected climate change; and (b) location of re-vegetation activities and vegetation species, and vulnerable to the projected climate change.
iii. Using these results, conduct a climate risk vulnerability assessment (CRVA) for the project which complies with ADB requirements, and assesses overall climate risk to the project over the operational life of the project facilities.
iv. Assess whether the project is feasible under anticipated regional climate change.
v. Propose adaptation and/or mitigation measures for the identified risks.
vi. Strengthen climate resilience of the project design by working with the project engineers to ensure that all water infrastructure, including the reservoir dam and spillway, and pipelines, are designed to cope with the anticipated impacts of climate change (e.g. higher flood volumes). As far as possible, seek to have the recommended climate measures incorporated into the project feasibility study reports and domestic budgets.
vii. Discuss and review the results with the other PPTA specialists to ensure that climate change is included and incorporated in the project designs and safeguards.
viii. Estimate the construction and operational costs of the adaptation measures to be implemented by the project.
ix. Estimate the potential greenhouse gas emissions to be produced during project construction and operation, and the overall net emissions.
x. Prepare a written report describing these outputs. Work with the other team specialists to ensure the findings are prepared in a manner which can be integrated into the domestic feasibility study reports, project EIA, and other documents as needed.

Appendix 2
Establishing the project climate vulnerability context
(additional examples)

Example 1: BAN: Coastal Towns Environmental Infrastructure Project

"Climate change is a critical development issue for Bangladesh. The country's low-lying coastal zone … is highly vulnerable to cyclones, storm surges, sea level rise, and salinity intrusion. A 1.5°C increase in temperature and 4% increase in precipitation (the median projections for Bangladesh from general circulation models) would potentially result in sea levels in the Bay of Bengal rising by 27 centimeters or more by 2050. Warmer temperatures would result in more frequent and intense cyclones and storm surges, damaging roads and bridges and rendering existing drainage, water supply, and sanitation systems ineffective, as well as threatening public health and safety.…The poor and women are disproportionately affected and have the lowest capacity to cope with losses. There is a high demand for climate-resilient infrastructure and disaster preparedness to improve the wellbeing of residents and reduce migration to larger cities."

Source: RRP, paragraph 4.

Example 2: PRC: Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project

"The climate risk and vulnerability assessment indicated that climate change impacts on water systems in the Kongmu River basin are expected to be substantial and long-lasting. In the basin, it is expected that the annual average temperature will increase by 11.2%, and rainfall will increase by 12.0% during 2020–2049."

Source: RRP, paragraph 26.

"Climate change poses some risk to this project. Projected temperature increases in Xinyu may stress physical structures, degrading materials (particularly plastic) and affect piping through subsidence due to fluctuating soil moisture levels. Precipitation changes are highly uncertain, with both small increases and decreases in total precipitation annually projected. However, the increase in rainfall variability and increase in the intensity of extreme rainfall events will potentially increase flood risk. Sudden intense storms following a drought may lead to flash flooding due to poor absorbent capacity of soils (hard pan). It should be noted, however, that a number of factors besides climate change influence flood risk, including increasing hardscape, conversion of wetlands, and inappropriate dumping of trash leading to clogged pipes."

Source: SD 6 – Technical Notes on Climate Change, paragraph 43.

Appendix 3
Explicit statement of purpose or intent to address climate vulnerability within an investment project
(additional examples)

Example 1: BAN: Coastal Towns Environmental Infrastructure Project

"The project is prioritized in the government's Strategic Program for Climate Resilience (2010) under the Pilot Program for Climate Resilience, and will demonstrate new approaches for integrating climate resilience into urban development in coastal pourashavas. The government's Sixth Five-Year Plan, 2011–2015 targets assistance to vulnerable coastal populations requiring investments in climate-resilient infrastructure and urban planning. The project is consistent with the Bangladesh country partnership strategy, which targets assistance to vulnerable coastal areas in adapting to the risks of climate change, and is consistent with the ADB Urban Operational Plan to promote climate-change-resilient cities."

Source: RRP, paragraph 3.

Example 2: TAJ: Water Resources Management in Pyanj River Basin Project

"Output 2: Modernized and climate-proofed Chubek Irrigation System water resources management infrastructure fully operational. This includes (i) modernization and rehabilitation of I&D infrastructure and its climate proofing, (ii) construction of a sediment- excluding basin, (iii) modernization and rehabilitation of pumping units, and (iv) capacity development of ALRI staff. The first component will cover the Chubek main canal including head regulator, escape structure, cross regulators, offtake structures, and interfarm and on-farm I&D canals and associated structures. The sediments along the main and interfarm canals will be removed by ALRI using machinery to be procured under the project, while WUAs and farmers will remove the sediment along on-farm I&D canals. The capacities of canals have been checked against the climate change risks anticipated during the next 50 years and augmented where required. With modernization and rehabilitation, irrigation conveyance efficiency will increase from the present 60% to 66% for gravity-fed systems and 82% for pump-fed systems."

Source: RRP, paragraph 15.

Example 3: PAK: Pehur High Level Canal Extension Project

"The project was found to be at high risk on climate change impact. A climate risk and vulnerability was assessed based on the climate change risk simulation using the result of global circulation models. Adaptation measures were incorporated in the project design to reduce the risks resulting from increased flood events."

Source: RRP, paragraph 28.

Appendix 4
Climate risk and project activity linkages
(additional examples)

Example 1: PRC: Jiangxi Xinyu Kongmu River Watershed Flood Control and Environmental Improvement Project

Based on the climate change projection in Xinyu, different Representative Concentration Pathways (RCPs) give different estimates of the changes in rainfall. The CRVA for Jiangxi used a mid-range scenario considered to be a reasonable estimate of likely future outcomes. The three different climate models under a mid-range scenario (RCP4.5) show the changes in rainfall intensity ranging from -2% to +12%.

In enhancing flood retention capacity of rivers and lakes, projected increase in rainfall due to climate change is offset with an additional safety factor (accounting for 15% increase in flows) in the design of all the relevant infrastructures such as levees, canal embankments, storm water network, and wetland area.

To address these climate impacts, the project includes the following adaptation measures:

- Increasing the top of canals reinforcement by 0-0.2m;
- Increasing the top of channel embankment by 0.27m to 56.77m;
- Increasing the width of rainwater sub-surface utility tunnel from 1.8 m to 2.4m;
- Expanding wetland area by 1.93ha to 14.78ha; and
- Raising awareness on climate change and capacity building activities targeting flood forecasting and emergency response.

Source: SD 6 – Technical Notes on Climate Change, excerpt from Section 1.3 and Table 6.1.

Example 2: TAJ: Water Resources Management in Pyanj River Basin Project

The CRVA for the project analyzed historic data and used established climate modeling techniques to make several climate change projections including:

- Air temperatures in the Vakhsh and Pyanj River Basins will increase by approximately 1.7oC between 2010 and 2050 and by 3.5oC between 2010 and 2100;
- Mean annual evapotranspiration will increase in line with air temperature;
- Mean annual precipitation is unlikely to change, but due to higher mean temperatures, annual rainfall is likely to increase while annual snowfall is likely to decrease;
- The magnitude of extreme daily precipitation is likely to increase;
- Annual mean river flow is likely to increase in glacial sub-basins for the next 50-60 years due to the increase in the air temperature and the resulting increase in snow and ice melt rate. Towards the end of the 21st century, annual flow may decrease in some sub-basins as smaller glaciers start to disappear; and
- The magnitude and frequency of mudflows (sudden floods of sediment and water caused by intense rainfall and snowmelt, usually in spring) and floods is likely to increase.

These expected impacts of the changes are expected to increase annual water demand at system level by an additional (incremental) 23.8 million m3. In addition, due to higher water demand, and resulting higher water intake; higher volumes of sediments will flow into and get deposited in Cubek Irrigation System.

To address these impacts the project has, among other activities, provided for the remodeling of 11% of the effected inter-farm canals to meet the climate-proofed discharge requirement as well as the construction of a sediment excluding basin that will facilitate removal of large volumes of sediments partly resulting from frequent mudflows due to climate change.

The project also includes non-infrastructure measures to address climate change impacts, such as the provision of drip irrigation systems to promote use of high efficiency irrigation system and better coordination among the actors in the watershed.

Source: CRVA for TA 8647-TAJ: Water Resources Management in Pyanj River Basin.

Appendix 5
Deriving incremental cost of adaptation
(additional example)

PRC: Qinghai Haidong Urban-Rural Eco Development Project

During the PPTA, the incremental costs for the specific adaptation measures that were included in the project was calculated to be $9.44 million. This covers the cost of:

- Adjusting additional 0.1m increase in design flood height for the river rehabilitation component;
- Adjusting additional 0.2m increase in design flood height for the river rehabilitation component;
- Enlarging the storm water outlet size by 8% based on design storm discharge; and
- Adjusting the runoff depth in solid waste disposal (landfill) design due to an expected increase in the 50-year return storm from 32mm to 34mm; and adjusting the 100-year storm from 39 mm to 42mm.

Source: CRVA for TA 8846- PRC: Qinghai Haidong Urban-Rural Eco Development Project, Table 15: Engineering proofing/adaptation options recommended for relevant project components.

Appendix 6
Monitoring and Reporting of Climate Finance within the Project Preparation and Approval Process – Tasks and Responsibilities

Preparation Stage	Task	Responsible
1. Pre-Concept Stage	1.1 Identify project scope	Project Team
	1.2 Conduct climate risk screening	Project Team, SDCD for guidance
2. Concept Paper	2.1 Draft project scope	Project Team
	2.2 Prepare preliminary estimate of climate finance for identified mitigation and/or adaptation activities and indicate this in Project at a Glance	
	2.3 Input climate finance details in e-Ops, including in the climate finance section of project classification data entry sheet.	
	2.4 Sector-/Thematic-focused Peer Review* (interdepartmental review for private sector projects) conducts quality assurance of preliminary climate finance estimate. Climate Change and Disaster Risk Management Division (SDCD) participates in peer reviews* of projects with complex climate finance estimation.	Sector Group/Thematic Group/ and SDCD
3. Project Preparation	3.1 For projects identified as having medium to high climate risk, determine adaptation activities for integration in project design	Project Team
	3.2 Prepare detailed project cost estimates, with separate estimates for climate mitigation/adaptation activities	
4. RRP	4.1 Provide climate finance estimate in Project at a Glance and financing plan section of main text.	Project Team Sector Group/Thematic Group, and SDCD
	4.2 Provide climate finance estimate in the financing plan section of the Project/Program/Facility Administration Manual, including breakdown of each eligible activity	
	4.3 Update climate finance details in e-Ops (see item 2.3)	
	4.4 Sector-/Thematic-focused Peer Review* provides quality assurance of RRP climate finance estimate. SDCD participates in peer* reviews of projects with complexities in climate finance estimation.	
5. Approval	5.1 Incorporate approved climate finance in department-level climate finance tracking and reporting; collect and monitor data regularly	.Operations Department
	5.2 Incorporate approved climate finance in sector-level climate finance tracking and reporting; collect data and monitor against sector-specific targets regularly	Sector Group/Thematic Group
	5.3 Incorporate approved climate finance in corporate level climate finance tracking and reporting; collect and monitor data regularly	SPD (DeFR), SDCD (joint MDB reporting, internal reports)
6. Others	6.1 Future project pipeline monitoring at department, sector, and corporate levels	Operations Department, Sector Group/Thematic Group, and SDCD/SPD, respectively

Source: Umbrella Guidance Note.
*Interdepartmental review for private sector projects