



**ASIAN INFRASTRUCTURE  
INVESTMENT BANK**

PD000463-IND  
July 15, 2021

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**Project Document  
of the Asian Infrastructure Investment Bank  
Sovereign-backed Financing**

**Republic of India  
The Resilient Kerala Program**

**Currency Equivalents**  
(As at February 28, 2021)

Currency Unit – Indian National Rupee (INR)  
INR1.00 = USD0.01  
USD1.00 = INR 72.88

**Borrower's Fiscal year**  
April 1 – March 31

**Abbreviations**

AEZ	Agroecological Zone
AFD	Agence Française De Développement
AIIB	Asian Infrastructure Investment Bank
BC	Bitumen Coating
COVID-19	Coronavirus Infectious Disease of 2019
CRN	Core Road Network
DCAT	Disaster and Climate Action Tracker
DDMA	District Disaster Management Authorities
DLI	Disbursement Linked Indicator
DLR	Disbursement Linked Result
DoA	Department of Agriculture
DoF	Department of Finance
DoHFW	Department of Health and Family Welfare
DoR	Department of Revenue
DRM	Disaster Risk Management
DTCP	Department of Town and Country Planning
EHS	Environmental Health and Safety
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ES	Environmental and Social
ESP	Environmental and Social Policy
ESSA	Environment and Social Systems Assessment
FPO	Farmer Producer Organizations
GHG	Green House Gas
GoI	Government of India
GoK	Government of Kerala
GSDP	Gross State Domestic Product
IBRD	International Bank for Reconstruction and Development
IFSA	Integrated Fiduciary Systems Assessment
IVA	Independent Verification Agent
IWRM	Integrated Water Resources Management
KfW	Kreditanstalt für Wiederaufbau
KHRI	Kerala Highway Research Institute
KILA	Kerala Institute of Local Administration
KSDMA	Kerala State Disaster Management Authority
LSGD	Local Self Government Department
LSGI	Local Self-Government Institution
LSG	Local Self Government

O&M	Operations and Maintenance
PAP	Program Action Plan
PforR	Program for Result
PMU	Program Management Unit
PPM	Project-affected People's Mechanism
PPP	Public Private Partnership
PWD	Public Works Department
RA	Result Area
RBCMA	River Basin Conservation & Management Authority
RKDP	Rebuild Kerala Development Programme
RKI	Rebuild Kerala Initiative
RMMS	Road Maintenance Management System
SHM	State Health Mission
TA	Technical Assistance
TBD	To be determined
ULB	Urban Local Body
WB	World Bank
WRD	Water Resources Department
WRM	Water Resources Management

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**1. Summary Sheet**

Project No.	PD000463-IND
Project Name	Resilient Kerala Program
AIB Member	Republic of India
Borrower	Republic of India
Program Implementation Entity	The State of Kerala
Sector/Sub-sector	Others/Multi-sectors.
Program Objective	To enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.
Program Description	The proposed Program for Results (PforR) will support implementation of the two key government programs – the Rebuild Kerala Development Program (RKDP) and the State Health Mission (SHM). The Program will specifically support two Results Areas (RAs) that contribute to the overall outcomes of the government programs - RA1: Strengthening transversal systems for resilience; and RA2: embedding resilience in key economic sectors.
Implementation Period	July 2021 to June 2026
Expected Loan Closing Date	June 30, 2026
Cost and Financing Plan	Total Program is proposed for USD530 million. Financing Plan: (i) Asian Infrastructure Investment Bank (AIIB) Loan: USD125 million; (ii) World Bank's International Bank for Reconstruction and Development (IBRD) Loan: USD125 million; (iii) French Agency for Development (AFD) Loan: EUR100 million (USD120 million equivalent); and (iv) Government of Kerala: USD160 million.
Size and Terms of AIIB Loan	USD125 million AIIB's standard interest rate for sovereign-backed loans.
Cofinancing (Size and Terms)	World Bank's IBRD: USD125 million. AFD <sup>1</sup> : EUR100 million (USD120 million equivalent). KfW: EUR2 million (parallel financing for TA).
Environmental and Social Category	World Bank's Category "Substantial", (which is similar to AIIB's Category B if AIIB's ESP were applicable).
Risk (Low/Medium/High)	High
Conditions of Effectiveness	Effectiveness conditions are as follows: 1. Financing Agreement has been executed between World Bank (WB) and Government of India (GoI) and

<sup>1</sup> The proposed AFD co-financing of €100 million is subject to approval by the Department of Economic Affairs (DEA)

	<p>is effective;</p> <p>2. Co-Lenders' Agreement between AIIB and WB has been executed; and</p> <p>3. Program Agreement between AIIB and the State of Kerala has been executed.</p>
Key Covenants	1. The Borrower shall cause the Program Implementing Entity and the latter shall implement the Program Action Plan, in a manner satisfactory to the Bank.
Policy Waivers Requested	The proposed AIIB co-financing of the WB's PforR will require a derogation from: (i) AIIB's Environment and Social Policy and Procurement Policy; and (ii) the application of WB's Policy in lieu of AIIB's Policies.
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Program.

President	Jin Liqun
Vice President	D.J. Pandian
Director General	Rajat Misra
Team Leader	Toshiaki Keicho, Principal Investment Operations Specialist - Urban
Team Members	<p>Amy Chua, Environmental Specialist</p> <p>Ankur Agrawal, Young Professional</p> <p>Bernardita Saez, Senior Legal Counsel</p> <p>Mengmeng He, Finance Associate</p> <p>Tan Chee Wee, Senior Environmental and Social Specialist</p> <p>Yangzom Yangzom, Procurement Specialist</p> <p>Yogesh Malla, Financial Management Specialist</p> <p>Yuka Terada, Investment Officer (Urban)</p>

## 2. Program Description

### A. Program Overview

1. **Program Objective.** The Program objective is to enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.

2. **Program Description.** The State of Kerala is highly vulnerable to natural disasters and the changing climatic dynamics given its location along the coast and steep gradient along the slopes of the Western Ghats. With Cyclone Ockhi in 2017, floods and landslides in 2018, 2019 and 2020, and now the COVID-19 pandemic, Kerala has been experiencing major disaster events for four consecutive years. The 2018 floods - the worst in nearly a century - led to widespread loss of life, property, and habitats in Kerala, causing 498 casualties. The floods affected over 5.4 million people with loss of assets and property and 1.4 million people displaced, not to leave out financial losses of approximately USD3.74 billion. The impacts of the disaster highlighted the lack of preparedness of GoK to address natural disasters and climate change shocks.

3. Since Kerala experienced the first confirmed cases of COVID-19 in India on January 30, 2020, there have been 1,016,848 total confirmed cases and 4,032 deaths as of February 17, 2021. The ongoing COVID-19 pandemic has clearly demonstrated the vulnerabilities of Kerala to future disease outbreaks. Various factors such as high levels of urbanization and population density, tourist inflows, regular inward and outward travel of non-residents, and an aging population with co-morbidities made Kerala susceptible to infection and spread. To deal with the COVID-19 and other disease outbreaks in the future, the Government of Kerala (GoK) needs to further strengthen its disease outbreak warning and response systems and commence recovery from the current crisis amidst serious economic and fiscal constraints.

4. The proposed Program for Results (PforR) will support the implementation of the two key government programs – the Rebuild Kerala Development Program (RKDP) and the State Health Mission (SHM) – by adopting an integrated framework to enhance GoK's fiscal and institutional resilience against the impacts of climate change and natural disasters including disease outbreaks. The Program operates at two levels: across the State and in the districts adjoining the Pamba River. While system improvements, establishment of rules and norms and institutional building activities will apply to the entire State, activities that aim to demonstrate an integrated multi-dimensional resilience approach will focus on the Pamba River Basin and the districts along the river. The Program also supports the SHM, which aims to improve availability of and access to quality health care by people, especially for those residing in rural areas, the poor, women and children.

5. As a subset of the government programs covering the broad resilience agenda, the boundaries of the PforR have been defined to include the following high priority sectors - Health, Road, Urban, Water Resources Management (WRM), Agriculture, Disaster Risk Financing & Insurance, Disaster Risk Management (DRM) and Fiscal & Governance. The PforR will support two Results Areas (RAs) that contribute to the

overall outcomes of the government programs - RA1: Strengthening transversal systems for resilience; and RA2: embedding resilience in key economic sectors.

**Table 1. Program Boundaries**

Title	The Government programs		The Resilient Kerala PforR
	RKDP	SHM	
<b>Objective</b>	To enable GoK's resilient recovery and catalyze transformational shift towards risk-informed socio-economic development.	To improve the availability of and access to quality health care by people.	To enhance the GoK's resilience against the impacts of climate change, natural disasters and disease outbreaks and pandemics
<b>Duration</b>	2019 – 2027	2020 onwards and on annual basis	2021 – 2026
<b>Geographic Coverage</b>	Kerala	Kerala	Kerala
<b>Results Areas</b>	The RKDP aims to rebuild Kerala which ensures: (i) higher standards of infrastructure, assets and livelihoods for resilience against future disasters; and (ii) building individual, community and institutional resilience to natural hazards while fostering equitable, inclusive and participatory reconstruction that builds back better.	The SHM is composed of five key components: (i) reproductive, maternal, newborn, child and adolescent health; (ii) health systems; (iii) non-communicable disease control programs; (iv) communicable disease control programs; and (v) State health & family welfare society infrastructure maintenance.	The two RAs are: (i) strengthening transversal systems for resilience; and (ii) embedding resilience in key economic sectors.
<b>Overall Financing</b>	USD1,701.65 million <sup>2</sup>		USD530million

6. **Expected Results.** The Program Objective will be monitored mainly through the following results indicators: (i) population benefiting from local DRM plans and One Health Community Surveillance systems in the Pamba Basin districts (Number, Gender disaggregated); and (ii) population benefiting from flood early warning services and flood protection measures in the Pamba Basin districts (Number, Gender disaggregated).

7. **Expected Beneficiaries.** Since this is a multi-sector, multi-dimensional Program, it would benefit the entire population of Kerala (49.6 million)<sup>3</sup>. On the institutional side, the Program is expected to benefit multiple participating institutions and departments of the GoK through various Program components.

<sup>2</sup> Total amount of the Government programs may increase based on the completion of ongoing alignment of PforR activities with the GoK budget lines.

<sup>3</sup> The number is projected population of 2026 for the State of Kerala calculated using the 2001 and 2011 census data (<https://censusindia.gov.in/towns/town.htm>).



## B. Rationale

8. **Strategic fit for AIIB.** The Program is consistent with AIIB's mandate and thematic priority to promote green infrastructure as the Program will entail local environmental improvements and investments dedicated to climate action especially around the Pamba River Basin. The road sector pilot project under the Program will also contribute to climate change adaptation efforts of the Government of India (GoI). The Program is also consistent with the Water Strategy's investment focus as it aims to improve resilience to the impact of water-related disasters. In addition, the Program is aligned with the Digital Infrastructure Sector Strategy's investment focus as it also aims to develop and utilize various digital infrastructure systems, such as a Disaster and Climate Action Tracker (DCAT)<sup>4</sup>, to assess climate adaptation and mitigation investments. The Program will also strengthen partnership with the World Bank (WB), French Agency for Development (AFD), and Germany's Kreditanstalt für Wiederaufbau (KfW) in addressing highly dynamic and complex development challenges, especially in climate change and DRM.

9. **Value addition by AIIB.** The GoK has an on-going effort to implement the disaster recovery and resilience programs. The GoK's programs, however, have faced enormous fiscal and operational stress due to the on-going COVID-19. AIIB will help close the financing gaps in this essential Program focusing on cross-cutting and critical sectors where the impact on enhancing resilience will be the most significant value addition to GoK's effort. The Program has various components of infrastructure investments and DRM where AIIB will contribute to the Program implementation as our staff have gained skills and experiences from other disaster risk management projects. AIIB will also promote the integration of technologies and digital systems into the various Program activities. AIIB, together with the WB and AFD, will provide the necessary support to enhance the quality of Program implementation, such as environmental and social management aspects throughout the Program life cycle. Lastly, the Program will support Government of India to meet their environmental and related development goals, such as Sustainable Development Goals 9 (Industry, Innovation and Infrastructure) and 13 (Climate Action).

10. **Value addition to AIIB.** AIIB's engagement in the Program will provide a good opportunity to enhance climate and disaster resilience experiences through the implementation of this comprehensive Program. The Program is linked to the adaptation commitments under India's first Nationally Determined Contributions of 2016 and the Kerala State Action Plan on Climate Change of 2014. Climate and disaster resilience are major challenges across Asian cities. The learning from this Program can contribute significantly to the Bank's pipeline as well as future projects related to resilience. The Program will also provide an opportunity to experience and deepen the understanding of the One-Health approach as it is an area of interest for

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<sup>4</sup> DCAT tool will be on a digital platform and will be developed under the Program to evaluate local investments which are climate and disaster risk informed. The DCAT will be used by the Local Self Government Department (LSGD) to establish a performance and reward-based system for incentivizing Local Self-Government Institutions (LSGIs) that mainstream climate and disaster risk in their development and investment planning.

AIIB. Finally, the Program will provide an opportunity to deepen the understanding of PforR operations even further.

11. **Lessons learnt.** Some key lessons from AIIB's first PforR operation (Egypt Sustainable Rural Sanitation Services Program approved in 2018) include: (i) getting involved in Safeguards and Fiduciary Assessments is critical to better understand client's systems in which PforR operates; and (ii) aligning Disbursement Linked Indicators (DLIs), which AIIB finances, with those of the WB to the extent possible is also important for smooth program preparation and implementation. A lesson from AIIB's second PforR operation (Indonesia Emergency Response to COVID-19 Program) shows the effectiveness of the PforR instrument to support the existing government program under emergencies as the PforR provides disbursement linked incentives for the government to take swift actions needed to deal with such situations.

### C. Components

12. The Program is to be co-financed with the WB in accordance with the WB's Policy on the PforR. Under the PforR, the funds are released on achievement of results using DLIs and Disbursement Linked Results (DLRs) after an independent agency verifies the results achievement. The details on DLIs and DLRs for this PforR as well as AIIB's financing amount for the selected DLIs/DLRs can be seen in Annex 2.

13. The Program aims to support the GoK in a transformational shift to building long-term resilience to climate change, natural disaster, and disease outbreaks. The Program will specifically support two RAs: (i) strengthening transversal systems for resilience, and (ii) embedding resilience in key socio-economic sectors. The Program will contribute to the overall outcomes of the Government program, focusing on the most critical challenges in resilience. Details of the two RAs are described below.

14. **RA 1 will strengthen transversal systems for resilience (Total USD250 million: AIIB USD30 million).** The Program will support strengthening transversal systems both — foundational areas and crosscutting elements — of resilience to help the State prepare and respond systemically to a broad set of challenges posed by exogenous shocks from climate change, natural disasters or disease outbreaks. Key objectives under this RA include: (i) strengthening financial protection against disasters through sustainable fiscal and debt management; and (ii) enhancing disaster preparedness through mainstreaming climate and disaster risk informed urban and DRM planning.

15. Proactive planning for risk reduction and preparedness and response will be achieved through the development of Master Plans for cities and towns and local level DRM plans for all the 263 Local Self-Government Institutions (LSGIs) in the Pamba River Basin districts. The DRM plans will integrate localized climate risk information. The Program will include developing technical tools and training in DRM and multiyear investment planning at the local level. The Program will support developing a scoring matrix, the DCAT, that can track local investments that are climate and disaster risk informed. The DCAT will be used by the Local Self Government Department (LSGD) to establish a performance and reward-based system for incentivizing LSGIs to

mainstream climate change and DRM considerations in their development and investment planning.

16. **RA 2 will embed resilience in key economic (Total USD280 million: AIIB USD95 million).** The Program will support embedding norms and practices of resilience in a sample of socioeconomic sectors in the Pamba River Basin: Health, WRM, Agriculture and Roads. Key objectives under this RA include: (i) strengthening public health systems against disease outbreaks and natural hazards; (ii) implementing integrated water resources management (IWRM) to mitigate water risks against floods and other natural disasters; (iii) achieving sustainable and resilient food systems through agroecological farming; and (iv) strengthening resilient core road network (CRN)<sup>5</sup>.

17. The Program intends to strengthen the public health systems of the GoK for disease outbreak preparedness and prevention. Specific activities include: (i) operationalizing integrated public health laboratories supporting disease surveillance and enhanced clinical case management in the Pamba River Basin districts; (ii) establishing an One Health platform to strengthen coordination, collaboration, networking, joint surveillance, preparedness and response to counteract health hazards; (iii) implementing community-based One Health surveillance practices by LSGIs and Kudumbashree<sup>6</sup> members in the Pamba River Basin districts. The local level Integrated Disease Surveillance Program and the One Health platform together with local level DRM plans, will form the vanguard of local level resilience planning and preparedness.

18. IWRM will be implemented through following activities: (i) establish the River Basin Conservation and Management Authority (RBCMA) with capabilities for integrated reservoir operations, water monitoring, data collection and management, flood forecasting and management, evaluation of environmental flows, and for ensuring more efficient and sustainable water allocation to agriculture, irrigation, domestic, industrial, and other uses; and (ii) support priority investments based on integrated river basin plans for the Pamba River Basin.

19. The Program will support the State to strengthen farmer resilience across 16 Agroecological Units of the Pamba Basin and complete systems-level efforts to reorient to an Agroecological Zone (AEZ)-based approach. This will include promotion and strengthening of Farmer Producer Organizations (FPOs) and insurance penetration in the Pamba Basin, full implementation of the Integrated Agricultural Management Information Systems to strengthen farmers' access to appropriate advisory, agri-inputs and financial support, and restructuring of crop-assistance schemes on AEZ basis. The Program will also support increased women's participation in agricultural activities, which has been on the decline in the State, by

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<sup>5</sup> CRN refers to an identified 7000 km of State road network that carries 70-80% of the total traffic on the state roads.

<sup>6</sup> It is one of the community-based organizations with a statewide footprint. State relies heavily on institutions such as the Kudumbashree for the empowerment of women and draws upon their support to expand the outreach of schemes and to deliver a large number of public services.

incentivizing the formation of at least 20 percent of FPOs that are women-only FPOs, with a focus on women from Scheduled Castes and Scheduled Tribes.

20. The Program will support achieving Climate Resilient Road Infrastructure through the following activities: (i) institutionalize the established GIS-based Road Maintenance Management System (RMMS)<sup>7</sup>; and (ii) support up-gradation and maintenance of up to 400 kilometers of CRN road infrastructure in Pamba River Basin districts through long-term output and performance-based management contracts. The CRN would entail enhanced budgetary provisions, improved climate and disaster resilient standards and output and performance-based road maintenance contracts. While the development of institutions and systems will have statewide coverage, investments in climate resilient CRN will be focused on the Pamba Basin.

#### D. Cost and Financing Plan

21. This Program supports part of the GoK's programs (RKDP and SHM). AIIB and WB's IBRD will finance an equal share of USD125 million each and AFD plans to finance EUR100 million (USD120 million equivalent). Germany's KfW will provide parallel financing of EUR2.0 million grant to GoK for technical assistance and capacity building to support Program implementation<sup>8</sup>.

**Table 2.** Indicative Program Cost and Financing Plan (USD million)

Item	Program Cost (USD m)	PforR Financing (USD m and %)			
		AIIB	IBRD	AFD <sup>9</sup> (indicative)	GoK
PforR (Total)	530	125 (23.58%)	125 (23.58%)	120 (22.64%)	160 (30.19%)

#### E. Implementation Arrangements

22. **Implementation period.** The Program is expected to be implemented from July 2021 to June 2026.

23. **Implementation Management.** The Program will rely on the GoK systems for the implementation of its constituent activities. The State departments and agencies such as the Department of Health and Family Welfare (DoHFW), Department of Agriculture (DoA), DoF, Department of Revenue (DoR), Kerala State Disaster Management Authority (KSDMA), LSGD, Public Works Department (PWD) and Water Resources Department (WRD) have the primary responsibility to implement the Program activities. The main body to coordinate the implementation will be the Rebuild Kerala Initiative (RKI) which was established following the 2018 floods, to better

<sup>7</sup> The RMMS system is designed to host all related road inventory, pavement quality, traffic and pavement crust data collected and project on GIS map. The RMMS is proposed to be hosted in state data server and will be a decision-making tool for PWD.

<sup>8</sup> KfW will provide TA grant supporting RKI and relevant sectors focusing on resilience-related policies and institutional reforms as an accompanying measure to its on-going support. However, details of the TA are still subject for further discussion.

<sup>9</sup> The proposed AFD co-financing of €100 million is subject to approval by the Department of Economic Affairs (DEA).

prepare the State against future disasters and act as a vehicle to operationalize the RKDP. The RKI will collaborate with and coordinate across departments and technical agencies to implement the Program. The RKI will be supported in the field by District Disaster Management Authorities (DDMA), which are statutory units headed by the District Collector and include LSGIs and line departments, to coordinate and oversee implementation in the four districts. The DDMA will ensure coordination across departments and with LSGIs and help address implementation issues, as they come up, in its respective district. The roles and responsibility of various institutions involved in this PforR are described in the table below.

**Table 3.** Institutional Responsibilities in the AIIB-financed DLIs of PforR

<b>DLI</b>	<b>Principal agency</b>	<b>Institutional Responsibility in the PforR</b>
Program management	RKI	The RKI will be responsible for program management and coordination, fiduciary/environmental/social safeguards oversight, monitoring and evaluation, reporting, liaison with High-Level Empowered Committee <sup>10</sup> and higher levels of the Government, communications, public outreach, coordination with Gol and development partners, etc.
<b>DLI 1:</b> Fiscal sustainability	DoF	The DoF will be responsible for carrying out a fiscal sustainability analysis, developing a debt management plan, establishing adequate institutional arrangements, and executing the debt management plan.
<b>DLI 4:</b> Risk-informed Master Plans	LSGD	The LSGD will coordinate the rollout of risk-informed master planning by Urban Local Bodies (ULBs). The Town & Country Planning Department, which operates under the LSGD, will be responsible for developing norms and guidelines for risk informed Master Plans, technical coordination with ULBs, review and oversight of the Master Plan preparation process and compliance. KSDMA will provide relevant risk information for Master Plans, while Kerala Institute of Local Administration (KILA), which is under LSGD, will coordinate training and capacity building efforts. Selected ULBs in the four Pamba river basin districts will be responsible for developing and notifying their respective Master Plans.
<b>DLI 5:</b> Local level DRM plans	LSGD	The LSGD will be responsible for the development and implementation of local level DRM plans by LSGIs.
<b>DLI 6:</b> One Health platform	DoHFW	DoHFW will be coordinating the establishment and operationalization of One Health platform in the four Pamba Basin districts. It will work closely with the Department of Animal Husbandry and the LSGIs in the four districts.
<b>DLI 7:</b> Integrated River Basin Management	RBCMA/WRD	The WRD will be the implementing agency until RBCMA is operationalized. Upon RBCMA is operationalized it shall work closely with the DoF and interface its system with all other relevant line, as required from time to time.
<b>DLI 8:</b> Resilient agriculture	DoA	The DoA will be the lead implementation of Agroecological Units operations, formation of FPOs and shall ensure roll out of Integrated Agricultural Management Information Systems. Kerala Agriculture University shall support DoA and LSGIs at field level in implementing

<sup>10</sup> High-level Empowered Committee is headed by the departments Chief Secretary, will act as the Steering Committee for the Program

<b>DLI 9:</b> Resilient Core Road Network	PWD	The PWD will work with the Kerala Highway Research Institute (KHRI), the KSDMA, and the Kerala State Transport Project to roll out CRN standards and systems across the State and will directly manage the contracting and monitoring of the 400 kms of upgraded CRN in the four districts.
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24. **Procurement.** The WB's PforR policy will be applied for this Program, and being the lead co-financier, the WB will be responsible for appraising the implementing agencies' procurement system. RKI will be responsible for overall coordination, management, and oversight of the Program and the participating departments will be responsible for procurement under the Program. Rules and regulations under the Gol and GoK's fiduciary systems will be used where applicable and includes Kerala Financial Codes, Kerala PWD Manual, Kerala Stores Purchase Manual, State delegation of financial powers, the government orders issued from time to time, and Kerala Government Servants Conduct Rules. The implementing agencies will use the same e-tendering system (the National Informatics Centre e-portal for procurement), their own standard bid documents, Government e-Marketplace portal of the Central Government and Government of Kerala e-governance IT procurement portal.

25. **Financial Management.** GoK will be responsible for the overall Program financial management. The Program shall be implemented by RKI and other government departments and institutions. RKI shall be responsible for overall coordination, management, and oversight of the Program. The Bank funds will be annually budgeted based on the approved Program plan. The GoK will pre-finance Program expenditures using its own budgetary resources through the identified budget lines of the Program Expenditure Framework. RKI shall prepare and submit a biannual Program progress report, including a fiduciary progress report to WB /AIIB. The Internal Audit Wing in the DoF will conduct the Program's internal audit with support from the Internal Audit Wings of the six participating departments as per the agreed ToR with the WB/AIIB. The annual financial statements of the Program will be prepared by the RKI, and the audit will be conducted by Comptroller and Auditor General. The audit report will be submitted by the RKI to the WB/AIIB within 12 months from the end of the financial year.

26. **Disbursement.** The Program funds will be disbursed by the WB/AIIB to Gol on the satisfactory achievement of the DLRs, as verified by an Independent Verification Agent (IVA), following the agreed verification protocols. In turn, the funds will be released by the Gol to GoK as per the agreed financing norms between the Central and State Governments. The applicable disbursement method will be Reimbursement. Where actions are not achieved in any particular year, the allocated amount will be carried over to the subsequent year. In case of achievement of targets before respective deadlines, early disbursement claim may be submitted. Disbursement and Financial Information Letter shall detail out the authorized signatories, the process of submitting claims, other terms and conditions of disbursements related to the Program.

27. **Monitoring and Evaluation.** A Program monitoring will comprise standard progress monitoring, verification of results by IVA, and impact evaluations. The RKI will be responsible for reporting progress on Program implementation and achievement of

results, while the participating departments will be responsible for tracking progress related to their respective result areas. The RKI has put in place a robust management information system to oversee the implementation of a diverse set of investments supported by RKDP, allowing program activities and investments to be tracked. The RKI, with inputs from the departments, will prepare biannual progress reports.

28. The IVA will conduct annual/biannual assessments and prepare a consolidated report furnishing evidence concerning the achievement of agreed DLRs and providing recommendations for a drawdown of funds. This report will be submitted to RKI for review and further action. WB/AIIB will monitor the status of implementation through biannual implementation support missions and tracking of results indicators.

29. **AIIB's Implementation Support.** WB will be the lead co-financier and will supervise the program and serve as the focal point for the AIIB vis-à-vis the Borrower. A Co-Lenders' Agreement will detail the services to be provided by the WB. WB also plans to sign another Co-lenders' Agreement with AFD.

30. An experienced in-country WB team will provide regular implementation support to the GoK with additional support from staff located internationally. AIIB's team will work closely with the WB team and will: (i) provide technical and operational inputs to support the implementation of the Program; (ii) periodically join the WB's Program supervision missions (virtually or otherwise) as necessary; and (iii) ensure the resources are used appropriately. AIIB will use the opportunity to learn about the implementation of such a program from WB. The WB/AIIB teams may carry out more frequent implementation support missions and supervision of the design, construction, and environmental and social management activities in the early stages of Program implementation. The WB will provide AIIB with copies of all relevant documents, reports, recommendations, no-objections, and communications (whether external or internal) received or sent by the WB in connection with any Program activity. If travel restrictions continue, AIIB will consider hiring a local consultant based in Kerala to help monitor implementation progress, focusing on those components which AIIB will be financing. This will be complemented by remote monitoring using available technologies. This joint WB/AIIB collaborative approach has been successfully implemented in the ongoing co-financed projects with WB in India.

### 3. Program Assessment

#### A. Technical

31. **Program Design.** The PforR financing was determined to be the most appropriate instrument to deliver the resilience agenda because sustainable recovery from natural disasters and disease outbreaks requires a concerted effort with equal focus on public institutions, sectoral plans, social protection, and infrastructure investments. The PforR financing will enable linking policy and institutional shifts at the policy level with real expenditures and verifiable results on the ground. The PforR supports GoK's own commitments on the ground through the RKDP and other ongoing sector programs while recognizing GoK's strong ownership of the Program. It provides disbursement linked incentives for a range of stakeholders at multiple levels, from state level departments and technical agencies to local level institutions and

communities, to converge on an integrated and multi-sectoral resilience framework and platform. It also facilitates collaboration towards achieving an agreed set of results.

32. The Program's design is based on a solid technical foundation of RKDP, which was developed based on extensive analytical work and consultations, and the Joint Rapid Damage and Needs Assessment that carried out after the 2018 floods. The Program also draws on extensive outreach with a broad spectrum of stakeholders in the State on key issues, both crosscutting and sector specific, related to resilience, climate change, natural disasters, and disease outbreaks. Furthermore, the Program is informed by relevant global good practices and experiences in DRM, climate change, DRF and adaptive safety nets, as well as in other sector specific areas.

33. As noted earlier, Kerala is highly vulnerable to multiple natural hazards and climate change, given its mountainous topography and geo-hydrological features. Climate models predict that, by 2050, extreme temperatures will increase; the intensity of rainfall will increase, accompanied by an increase in surface runoff during monsoons, causing floods and a decrease in the summer flow. The long coastline of the State is susceptible to sea level rise and are prone to severe sea erosion. These changes are likely to impact a multitude of sectors. Given the multisectoral nature of climate and disaster risks, the Program is taking a systemic approach to address these risks. The integrated approach will go a long way in enhancing systems, institutional and human resources capacities that extend from the State to the local level (including communities) to manage risks from climate change and natural disasters. These will be coupled with strategic investments in key socioeconomic sectors (e.g., Health, Agriculture, Water, and Road sectors) mainly in the form of resilient infrastructure and services.

34. The Program selected the Pamba River Basin as the area to demonstrate integrated resilience. The River, approximately 176 km long, encompasses a basin area of about 2,235 sq.km and stretches over four key districts of the State. The Basin was also one of the most affected by the 2018 floods, with 34 percent of fatalities recorded in the catchment area, in addition to significant losses in agriculture, livestock, houses, and public infrastructure. More importantly, the area is a microcosm of the State, with dense tropical forests, semi urbanized settlements and with the rice bowl of Kerala in its lowlands, and thus, a canvas where a multi-sectoral resilience approach can have a multiplier impact. Lessons learned from the Program will allow GoK to extend the model to other sensitive river basins in the State.

35. **Expenditure Framework.** The eligible expenditure framework for the Program will include: (i) TA and capacity building activities<sup>11</sup>; (ii) infrastructure investments and their operations and maintenance (O&M)<sup>12</sup>; and (iii) goods and works for systems

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<sup>11</sup> Technical assistance expenditures would include those related to critical technical studies and capacity building activities, such as capacity building on integrated River Basin planning, flood forecasting and integrated reservoir operation systems, and study on climate enhancement for State roads.

<sup>12</sup> Infrastructure investments would include upgrading the district health centers/hospitals, climate proofing of core road networks, flood protection and implementation of climate-resilient investments under the LSGI's DRM plans or ULB's masterplans. Eligible O&M expenditures would include those for delivery of public health services, staffing, performance-based management contracts for road asset management, staffing cost for preparing local DRM plans and risk informed Master Plans, etc.



development<sup>13</sup>. High-priority investments to demonstrate integrated multisector resilience and strengthening capacity of human resources towards achieving the Program Objective are critical elements of the Expenditure Framework. The summary Program Expenditure Framework is provided in Table 4.

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<sup>13</sup> Systems development expenditures would include goods and equipment for the integrated disease surveillance system, a flood forecasting and early warning system, hydro information system, a unified online registry for disaster assistance and social welfare benefit payments, an evaluation system for local investments which are climate and disaster risk informed, and an agriculture information system.

**Table 4: Expenditure Framework**

<b>Particulars</b>	<b>Estimated Amount (USD million)</b>
Infrastructure Investments (including systems development)	240.68
Consulting Services	71.81
Operational Expenditure	201.58
Others	15.92
<b>Total</b>	<b>530.00</b>

36. **Operational sustainability.** The Program will enhance resilience of critical infrastructure systems against future natural disasters and climate change shocks. This means there will be significantly less costs of repairs and reconstruction for these systems after future natural disasters. The Program will improve the State's fiscal situations, which will also enhance overall sustainability of the Program. The Program will be implemented through the GoK's existing institutional modalities and systems. Thus, the sustainability of the Program would largely depend on the institutional capacity of GoK, and targeted State departments and agencies. The Program will provide TA which would strengthen overall institutional capacity of GoK, leading to operational sustainability. Furthermore, the Program will develop and adapt digital platform and tools, such as DCAT for assessing climate resilience investment and GIS-based RMMS for road maintenance and management, which are expected to contribute to operational sustainability.

## **B. Economic and Financial Analysis**

37. **Economic Analysis.** The Program supports actions to strengthen institutions statewide for attaining multidimensional resilience across key socioeconomic sectors in Idukki, Kottayam, Pathanamthitta and Alappuzha districts. The Program generates the following key benefits, not all of which are quantifiable.

- (i) More sustainable State and local government finances through debt management and revenue enhancement measures.
- (ii) Speedier economic recovery through social safety nets, disaster risk planning and COVID-19 response.
- (iii) Reduced incidence of deaths and illnesses through preparedness for disease outbreaks.
- (iv) Reduced vehicle operating costs, commuter time and money savings through rehabilitation and maintenance of vulnerable roads to resilient standards.
- (v) Reduced damages from floods to human settlements, infrastructure, agriculture and other socioeconomic activities through improved WRM practices, flood forecasting, and urban master plans and local DRM plans.
- (vi) Increased farmer incomes through targeted support for new and existing FPOs, strengthened crop insurance programs, granular flood forecasts and improved WRM practices.

(vii) Employment creation through labor-intensive construction works.

38. As a lead co-financier, WB has undertaken economic analysis of the program. It focuses on the pilot investments in the four sectors (Roads, Health, WRM and Agriculture) under RA2. The quantitative economic analysis of the road sector pilot (comprising of 8 roads of 174 kms of roads in the four districts of the Pamba River Basin) assessed the economic viability in terms of Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV). A Cost-Benefit Analysis was carried out to assess the economic viability of the investment comparing “with” and “without-project” scenarios. The considered costs include economic cost of initial construction costs and economic O&M costs. The expected quantifiable benefits include reductions in vehicle operating costs, and time savings in moving passengers and freight. The unquantified benefits include increased road safety, reductions in Green House Gas (GHG) emissions, job creation, and reductions in disease and disaster response times. The economic analysis is conducted using WB Highway Development and Management Model and based on the applicable guidelines from the Indian Road Congress. The road sector pilot investments are expected to provide an EIRR of 15-38 percent and ENPV of USD65.7 million. Sensitivity analysis was carried out to assess viability with changes to the assumptions used in the base case. These included (i) 15% increase in the capital costs; (ii) 15% decrease in motorized traffic growth rate, (iii) 15% increase in vehicle operating costs, (iv) 15% reduction in the value of travel time saved for passengers and freight and (v) changes in all the assumptions (i) through (iv), representing the worst-case scenario. EIRR remained above the 12% for all roads sections in all scenarios except in the worst-case scenario where three sections of the roads had EIRR of less than 12% but still more than 10% indicating the robustness of the economic viability of the road sector investments.

39. The health component of PforR aims to increase resilience to outbreaks of zoonotic diseases using the One Health approach. One Health refers to the collaborative efforts of multiple disciplines to attain optimal health for people, animals and our environment. Case studies show that the collaboration across service providers in multiple disciplines introduces efficiencies in service delivery, resulting in cost savings of 10 percent to 15 percent. Worldwide experience suggests that upfront disease surveillance and diagnosis investments can mitigate the need for subsequent treatment costs about three or more times larger if a disease outbreak occurs. The costs are much higher should the disease turn into a pandemic. Controlling disease outbreaks also has several indirect benefits. These include fewer economic disruptions and hence losses in economic growth, decreased poverty and inequality, decreased productivity losses and decreased service delivery costs.

40. The water sector pilot focuses on operationalizing an IWRM for the Pamba Basin including a flood forecasting and warning system. The direct benefit of the program would come from water allocation efficiencies, reduced economic damages, reduced loss of life and people affected from floods and extreme precipitation events. An incremental cost benefit analysis was conducted just for the flood forecasting portion of this component. The costs in this portion of the investment focus on existing deficiencies in the four districts of the Pamba River Basin. The analysis uses an approach which analyses the proportion of damages and losses that are preventable and the proportion of those preventable losses that are avoidable with the hydromet

system for different sectors<sup>14</sup>. As a conservative estimate, the analysis assumes that only 50% of lives are saved from a 24-hour forecast. The statistical value of a life saved is estimated at USD0.26 million. This yields an average annual benefit of USD3.18 million. The analysis indicates that the flood forecasting and warning part of the IWRM component investments deliver EIRR of 4 to 34 percent and ENPV of USD10 million using a discount rate of 12%.

41. The agriculture program is targeted toward crops with high potential for value addition and toward increasing the incomes of the vulnerable poor. The Program aims to increase farmer incomes by supporting and strengthening of existing FPOs in the four districts. The analysis is focused on the targeting of crops for support through the Program and the value addition of a similar WB-funded program in Tamil Nadu. The results indicate that the FPO support program is targeted to crops with high potential for adding value and supporting the poor. The economic analysis carried over a period of 20 years indicates that the Program would generate ENPV of USD21 million and EIRR of 43% at a discount rate of 12%.

42. **Financial Analysis.** The financial analysis focuses on the road sector investments as AIIB will finance a bigger amount for this sector than the other sectors. Financial analysis was also conducted to assess the State's financial resources to meet incremental financial burden on account of the Program. Overall, this is a multi-sectoral PforR targeting different levels of government and the Program outputs primarily comprise of public goods. The public good characteristics and the externalities associated with them reduce their attractiveness to the private sector and merit public and government financing.

43. GoK will provide counterpart funding of USD160 million as part of this PforR Program. GoK has sufficient financial resources to contribute the required counterpart funds and service the debt incurred under the Program. The counterpart funds constitute less than one percent of the State's total budget revenues and less than two percent of the State's total capital expenditures on annual basis.

44. The scope of the financial analysis is investments for building climate resilience in the 8 roads spanning 174 km and associated assets in the Pamba River Basin for an estimated total cost of USD110 million which includes civil construction works, land cost, utility shifting costs, environmental safety and employee costs. All roads are assumed to be constructed over a 24-month period with 40% of the costs incurred in the 2021 and 60% in 2022 and to begin delivering full benefits starting in 2023. The analysis was carried out over a 25-year period reflecting the useful life of the road asset. The design and cost for each road was based on the expansion of the roads, as needed, to accommodate projected traffic volumes for the next 30 years and the upgrading of bridges to accommodate a 100-year return flood and culverts and drainage systems to accommodate discharges following a 24-hour rainfall intensity with 25-year return periods in urban areas and 10-years in rural areas. Projected traffic

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<sup>14</sup> Using this approach, benefits can be measured without the need for detailed data and complex models that would be required for the conditional probability approach while retaining the still grounded in the local context.

volumes were estimated from base year (2020) traffic volumes and traffic growth rate projections. Likewise, return periods for rainfall intensity and flooding were estimated from an analysis of historical data climate data. The financial analysis includes both annual routine maintenance and periodic maintenance bitumen coating (BC) overlay with tack coat, slab replacement and joint sealing every five years). The annual routine maintenance is assumed to be carried out even in the absence of the new investment and hence does not constitute significant annual burden on the State's finances (25 mm BC tack coat applied every 5 years at a cost of USD3.8 per sqm while with the new investment it is assumed as 30 mm BC tack coat applied every 5 years at a cost of USD4.5 per sqm). The annual routine maintenance costs for 2-lane road paved shoulder are assumed as USD3,864 per km per year in 2020-2021. The costs for other roads configuration were estimated applying equivalence factors to this cost. It is estimated that the annual average O&M cost for 174 km road development would be USD4.95 million which is fully manageable from the State's budget.

### C. Fiduciary and Governance

45. The PforR Policy requires an assessment of the fiduciary systems to judge whether the borrower's existing systems provide reasonable assurance that the financing proceeds will be used for intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency, and accountability. The PforR procurement systems are assessed as to the degree to which the planning, bidding, evaluation, contract award, and contract administration arrangements and practices provide reasonable assurance that the PforR will achieve intended results through its procurement processes and procedures. The PforR financial management systems are assessed as to the degree to which the relevant planning, budgeting, accounting, internal controls, funds flow, financial reporting, and auditing arrangements provide reasonable assurance on the appropriate use of PforR funds and safeguarding of its assets. The fiduciary assessment also considers how the borrower's systems handle the risks of fraud and corruption, including by providing complaint mechanisms, and how such risks are managed and/or mitigated. Activities that involve procurement of works, goods, and services under contracts whose estimated value exceeds specified monetary amounts (high-value contracts) are normally not eligible for the PforR Financing, and are excluded from the PforR programs.<sup>15</sup>

46. **Procurement.** The Integrated Fiduciary Systems Assessment (IFSA) conducted according to the WB's PforR Policy Financing policy/directive concludes that the Program's fiduciary systems are adequate and provide reasonable assurance that the financing proceeds will be used for intended purposes, whereas some areas for further strengthening are proposed to mitigate the fiduciary risks under the Program (see Annex 5). The fiduciary risk is rated as Substantial. The IFSA reviewed the capacity of the implementing agency to manage the PforR Program covering procurement, financial management and governance aspects including planning, budgeting, procurement, budget execution, recording, controlling and producing timely, relevant, and reliable financial information.

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<sup>15</sup> WB's PforR Policy, Sections III.8, 10

47. Procurement under the state-financed programs are largely guided by General Financial Rules, Delegation of Financial Powers; Store Purchase Rules; PWD Works Manual and Department specific policies and rules. There are multiplicity of rules and procedures, tenders and documents, directives and orders issued by the departments. However, as per IFSA, the overarching framework of procurement across the participating departments are similar with slight variations in application of rules and regulations in practice. The main procurement activities include: (i) Goods: machinery, equipment, materials and supplies for Health, IT hardware, software and office equipment required by the participating departments, provisions for the Centre of Excellence at the KHRI; (ii) Works: upgrading of CRN, performance-based management contracts, system establishment and incremental program support for the WRD, and post-flood projects under the RKI; and (iii) Consultants: for modernization of DoF and training of staff, support for Unified Database and DRM, training support for Institute of Health and Family Welfare, modernization of WRD, consultancy/capacity building for WRD, and support for the Centre of Excellence at KHRI and other Program activities. No large contracts valued at or above the WB's thresholds (USD75 million for works, USD50 million for goods and non-consulting services, and USD20 million for consultant services) are expected under the Program. IFSA covers assessment of procurement planning, bidding, evaluation, contract award and contract administration arrangements and practices. As per the assessment, the procurement staff strength is adequate and processes and procedures under the procurement systems of the participating departments were found to be effective and together with the mitigation measures proposed, it will ensure due attention to the principles of economy, efficiency, effectiveness, transparency and accountability during the implementation of the Program. Further, as per IFSA, procurement under the Program is of relatively smaller value compared to that carried out by the participating departments under government financing.

48. **Financial Management.** IFSA conducted according to the WB's PforR policy concludes that the Program's fiduciary systems are adequate and provide reasonable assurance that the financing proceeds will be used for the intended purpose. Based on the IFSA and subsequent discussions, the fiduciary risk of the Program is assessed as 'High.' Given the decentralized nature of the Program, with activities being implemented by multiple agencies at the state, district, and sub-district levels, there is an inherent risk associated with variations in fiduciary capacity and compliance to agreed FM processes. If any significant issues come to the knowledge of WB/AIIB during the Program implementation, additional mitigation measures will be put in place in consultation with RKI and GoK.

49. Institutional arrangements for Program activities will follow the existing scheme for implementing GoK's constituent functions and is reliant on the use of country systems. At the apex level, the RKI will serve as the Program Management Unit (PMU) and shall be responsible for management, coordination, monitoring and evaluation under the Program. The six participating sector departments shall be the Program implementing agencies and shall fulfill the fiduciary requirements. GoK and RKI have prior experiences managing MDBs financed projects and are familiar with MDB's financial management requirements. The financial management systems in GoK are well established and have undergone several reforms over the last decade such as development and roll out of Integrated Financial Management Information System

(budget formulation, budget execution, payments and account preparation), implementing an e-payment system to ensure quick and transparent disbursements, strengthening financial reporting to make them real time and support decision making etc.

50. **Program Budget and Fund Flow:** The Program expenditure will be budgeted in annual State budget across the multiple budget heads, operated by the Program implementing departments. The GoK makes public the annual budget allocations and utilizations details of the State Budget on adoption by the State legislature. The Program budget allocation and fund flow system will follow dual approach, and thereby ensure adequate fund availability for the Program activities.

51. **Funding predictability is high.** Risks to the Program Expenditure Framework arising out of budget constraints are low. The RKP Program cost constitutes a relatively small portion of the overall budgeted departmental spending of the program participating departments and is well aligned with the GoK's priorities both at overall state and departmental level. There is a high level of commitment and ownership within GoK.

52. **Budget Execution:** GoK has implemented an end-to-end Integrated Financial Management System (IFMS) for strengthening financial management including treasury operations of the State. The IFMS implementation is under way since April 2016 and major application modules for expenditure management and treasury bill processing in IFMS have fully rolled out and are fully functional. This also supports monitoring/tracking timeliness in government payments and pro-actively implementing measures for reducing delays in payment. The GoK Treasury framework and functioning is considered adequate for associated functions under this Program. The expenditure under the Program will be incurred both at the RKI (PMU) and the participating departments including district and sub-district offices and LSGI. All Program expenditures units will follow GoK's Treasury channel for incurring expenditure along the Program expenditure framework.

53. **Accounting and Financial Reporting:** The framework, prescriptions and procedures on accounting, book-keeping and financial reporting by the State departments are contained in the State Accounts Code/Manual. The accounts of the GoK are compiled by the Accountant General, Kerala.

54. GoK initiative of online reconciliation of accounts is expected to reduce process delays, and this will be monitored during the Program life for effectiveness in implementation. Consequently, in respect of the budget heads of account included in the expenditure framework, the expenditure reported in the monthly accounts prepared by the Accountant General, Kerala will be shared by RKI with the AIIB and WB along with the status of Treasury and Accountant General reconciliation on a bi-annual basis.

55. **Internal Controls:** There exists appropriate controls on transaction-level expenditure, which are largely exercised. The oversight arrangements for the district and sub-district level operations are exercised by the District Administration of the participating departments. Overall, there is adequate control over and stewardship of Program funds, with well-defined delegation of authority.

56. GoK has also instituted a monthly performance audit system for Panchayati Raj Institution and ULBs. Annual Audit is conducted using the Audit Information Management Software application and annual financial statements are submitted electronically by LSGIs for audit by Kerala State Audit Department. Annual Audit stands completed till FY2018-19 and individual audit reports of each LSGI issued in local language are accessible on the Kerala State Audit Department website. Based on the assessment, LSGI have established system of functioning and a well-defined fiduciary framework.

57. **Internal Audit:** GoK has an Internal Audit wing functioning in various departments for conduct of audit in the department offices with an Internal Audit cell in the Finance department to supervise and oversee the internal audit operations. However, the internal audits are not regular or timely. In addition, the function is short of skilled staff and uses antiquated audit techniques not conducive for audit in a highly automated environment. Therefore, as the Program mitigation measure it has been agreed that a separate internal audit will be conducted for the expenditure forming part of the Program framework. The audit will be conducted by the central Internal Audit housed in Department of Finance in collaboration with the respective Internal Audit wings in the six Program participating Departments as per the agreed ToR with the WB/AIIB.

58. **Program Audit:** The financial statements of the Resilient Kerala Program budget lines will be prepared by RKI within four months from the end of each fiscal year. The Program consolidated audit will be conducted by State Accountant General and the audit report will be submitted by RKI to the WB/AIIB within 9 months from the end of each fiscal year.

59. **FM staffing:** The existing FM staff strength in RKI and the participating departments are assessed to be adequate for managing the FM aspects of the Program. However, a nodal official for FM needs to be engaged at the overall Program level at the RKI (PMU). The appointments will be based on the ToR agreed with the WB/AIIB. Also, the arrangement of functional responsibilities of existing department's (at RKI and participating departments) finance and accounts staff for supporting the Program needs to be clearly established and shall be reviewed as part of the first supervision mission.

60. **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in its financing. It places the highest priority on ensuring that the projects it finances are implemented in strict compliance with AIIB's Policy on Prohibited Practices or Public Private Partnership (PPP) (2016). To the extent that the WB's "Guidelines on Preventing Fraud and Corruption in Program-for-Results Financing" dated Feb. 1, 2012 and revised July 10, 2015 (Anti-Corruption Guidelines) are similar to AIIB's PPP, the WB's Anti-Corruption Guidelines will apply to the Program activities financed in whole or in part by the proceeds of AIIB and the WB loans. AIIB reserves the right to undertake investigations regarding the Prohibited Practices not covered under the WB's Anti-Corruption Guidelines. Detailed requirements will be specified in the Loan Agreement.



61. **Institutional Capacity.** Institutional capacity of each implementing agency for Program implementation varies. Capacity strengthening including technical assistance, consultants support and training will be provided under the Program. In the long term, the Program is expected to significantly develop the capacity of each of the participating institutions. Institutional building activities will be aligned with the DLIs/DLRs.

62. **Reporting and Monitoring.** RKI has the overall responsibility for reporting and monitoring the Program but the primary responsibility for implementation lies with the participating departments. Systems and procedures will be developed to ensure that each participating department is equipped to properly provide reporting and monitoring information as and when required.

#### **D. Environmental and Social**

63. **Categorization.** This Program will be co-financed with the WB as lead co-financier, and its environmental and social (ES) risks and impacts have been assessed in accordance with the WB's PforR Policy. AIIB's Environmental and Social Policy (ESP) was designed to apply to investment projects and has no provisions for its application to PforR operations. The World Bank's PforR Policy will therefore apply to this operation in lieu of AIIB's ESP. This will enable a harmonized approach to addressing the ES risks and impacts of the program.

64. The WB has categorized the ES risks of this program as "Substantial", which is similar to Category B if AIIB's ESP were applicable. As required under the WB's PforR Policy, the program excludes activities that are likely to have significant adverse ES impacts that are sensitive, irreversible, or unprecedented (equivalent to Category A if AIIB's ESP were applicable). As required under the WB's PforR program, an Environmental and Social Systems Assessment (ESSA), which involves assessing the country and state's systems for managing the ES and impacts of the PforR program, has been conducted by the WB and has been the subject of consultations with different stakeholders by the WB. The ESSA is complemented by a Program Action Plan (PAP) in Annex 5 at the operational level which aims to minimize gaps through strengthening systems and capacities.

65. **ES Provisions of the WB's PforR Policy.** The WB's PforR Policy requires that the ESSA consider "as may be applicable or relevant in a particular country, sector, or PforR Program circumstances, to what degree the PforR Program Systems: (a) promote environmental and social sustainability in the PforR Program design; avoid, minimize, or mitigate adverse impacts, and promote informed decision-making relating to the PforR Program's environmental and social impacts; (b) avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the PforR Program; (c) protect public and worker safety against the potential risks associated with: (i) construction and/or operations of facilities or other operational practices under the PforR Program; (ii) exposure to toxic chemicals, hazardous wastes, and other dangerous materials under the PforR Program; and (iii) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards; (d) manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement, and assist the affected people in improving, or at the

minimum restoring, their livelihoods and living standards; (e) give due consideration to the cultural appropriateness of, and equitable access to, PforR Program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups; and (f) avoid exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes.”

66. Moreover, under the PforR Policy, activities that are likely to have significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or affected people are excluded from the Program.

67. **Environmental Aspects.** The potential environmental impacts from the Program’s investment activities are related to physical road infrastructure, new or expanded public health laboratories, and water resource management which may have construction related Environment, Health and Safety (EHS) impacts such as air, noise, safety, waste and debris management. All of these were assessed to be minor, localized, generic and reversible, and can be mitigated effectively through appropriate management measures. Contractors will be required to follow national laws and legislation such as to obtain consents prior to the commencement of civil works. Standard bidding or contract documents for civil works will include EHS provisions. There will be no environmental impacts from the other related investment activities related to fiscal, debt management, social protection, agriculture or DRM components. Overall, the Program would bring positive environmental benefits through mainstreaming environmental management for the Pamba River Basin area. For instance, in both DRM and urban sectors, introducing risk-informed planning will result in upfront consideration of environmental risks. The Program also provides implementation support which will focus largely on strengthening environmental management capacity in the field of water resource management.

68. **Climate Change and Disasters.** Kerala is highly vulnerable to multiple natural and anthropogenic hazards such as cyclones, monsoon storm surges, coastal erosion, sea level rise, tsunamis, floods, droughts, lightning, landslides and land subsidence and earthquakes. Floods are the most common type of disaster, nearly 14.8% of the state is prone to flooding. Kerala is also experiencing biological disasters which include outbreaks of zoonotic diseases and viruses such as bird flu (Avian influenza), Nipah virus and also ongoing Covid-19 pandemic. The Program is aimed at strengthening resilience through interventions in specific sectors to address the above issues, which include climate resilient development in infrastructure sectors such as WRM, agriculture/food systems, health, transport, and roads. These interventions include the preparation of risk-informed urban master plans for cities and towns, risk-informed local DRM plans, integrated and sustainable WRM for Pamba River Basin, resilient public health system by incorporating the use of One Health Coordination structure and IT-enabled Prevention of Infectious and Epidemics cells for monitoring, and resilient road infrastructure and maintenance. Following the joint MDB methodology for tracking climate finance, AIIB’s financing for some portions of these components to the extent of USD75 million can be considered as climate adaptation finance and USD7.5 million can be considered as climate mitigation finance.

69. **Social Aspects.** The Program is likely to have overall positive social impacts, especially in the areas where interventions are planned. Fiscal sustainability of GoK

will be strengthened to cope with disease outbreaks and disasters. Investments in the health sector are likely to help the poor and vulnerable, who are largely dependent on public health services. Targeted investments in key sectors — agriculture, water resources, and roads are also expected to have beneficial impacts in improving access to basic services and in community level resilience.

70. Key social risks arise due to the likely risk of exclusion of a set of vulnerable groups, including: (i) small and marginal farmers, as they have limited resources for farm innovations (or insurance) promoted through AEZ approaches and less access to water compared to those owning larger lands; (ii) tribal and female farmers, who are mostly landless tenants or agricultural laborers and are denied agricultural incentives that usually go to landowners; (iii) poor and socially marginalized from ULB-led development or DRM plans that fail to recognize their peculiar vulnerabilities; and (iv) tribal communities, whose habitations are remote and upland and are usually the last to receive road access. However, none of these are irreversible risks that cannot be mitigated using effective social management practices of participation, community engagement, accountability, and transparency.

71. Substantial risk of physical and economic displacement of squatters, encroachers and vendors has been identified in the roads sector. The Program will exclude any road repair and maintenance works requiring resettlement and removal of structures (on a single alignment/ package) impacting more than 50 persons. In addition, the treatment of non-titleholders (e.g., squatters and encroachers) who may be impacted and/or displaced will be aligned with WB's Policy.

72. **Gender Aspects.** Climate shifts, depleting water resources and frequently occurring coastal disasters affect women in coastal states more adversely as compared to men. The Program is well placed to include gender interventions across health, DRM, WRM, agriculture and roads sectors. The agriculture interventions will focus on improving women's workforce participation in rural areas and promoting women's entry into formal and advanced farmers' organizations, while social protection interventions will aim at financially empowering poor and vulnerable women. Decision making capabilities of women will be enhanced through strengthening community-level support systems for gender-based violence (GBV) prevention and providing referral support to victims of domestic violence. The Program will also rely on Theeramythri<sup>16</sup> program, to support self-employment and empowerment of fisherwomen

73. **Project Grievance Redress Mechanism (GRM)** Grievance management mechanisms relevant to the Program are considered for their appropriateness across various agencies. The ESSA study, through its PAP, has proposed to establish a Program level GRM to complement and strengthen existing ones, and to make them more transparent and responsive. This will improve citizen access and build the trust in registering grievances.

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<sup>16</sup> The Theeramythri program is the flagship program of Society for Assistance to Fisherwomen (SAF) that encourages, facilitates and handholds fisherwomen to engage in gainful alternate self-employment for their economic and social emancipation.

74. **Indigenous Peoples.** The Program intends to adopt a basin-wide approach along the Pamba River Basin, which is home to several Indigenous / Scheduled Tribe communities. The Program will exclude any town/city to be selected for risk informed master planning, if this spatial planning is likely to adversely impact existing settlements or resources accessed by Indigenous/Scheduled Tribe communities residing within or near municipal limits. In addition, measures will be put in place for effective screening of activities proposed in the basin.

75. **Institutional Capacity.** The ESSA has identified that capacities in the state Kerala institutions are generally adequate while capacities in the sector institutions need to be augmented through greater sensitization and capacity building of field staff and extension workers. Specific areas for enhancing include: (i) citizen's engagement to make the scheme participation more inclusive and with norms simplified; (ii) raising awareness on schemes, eligibilities and process for accessing; and (iii) accountability.

76. **Occupational Health and Safety, Labor and Employment Conditions.** The health and safety of the healthcare workers and construction workers may be impacted by activities of the Program. They are at higher risk to contacting COVID-19 due to the nature of their work. It is expected that such risks will be reduced in the medium term with the roll out of vaccination program. The Program will build resilience explicit objectives and targets, for example improving disease surveillance, referral care and case management at district level through integrated public health laboratories. In addition, the implementing departments will include in their bidding/contract documents to have sufficient EHS provisions, including monitoring and supervision.

77. **Stakeholder Engagement, Consultation and Information Disclosure.** A total of 11 state consultations were conducted with departmental/agency representatives and their teams, with another 32 community consultations at 16 different locations in the 4 Pamba Basin districts covering more than 328 community members across social and economic groups. It also included 8 dedicated consultations with women and 8 exclusive consultations with poor and socially vulnerable. The draft ESSA summary report in English and Malayalam has been disseminated through a State-level Disclosure and Consultation Workshop. The final ESSA report, after incorporating stakeholder comments will be disclosed on the RKI and WB websites.<sup>17</sup> AIIB will include a link to the WB's website<sup>18</sup>.

78. **Applicable Independent Accountability Mechanism.** The WB's Policy on PforR will apply to this Project instead of AIIB's ESP. Pursuant to AIIB's agreement with WB, the WB's Policy on PforR will apply to this Project instead of the AIIB's ESP. The WB's corporate Grievance Redress Service (GRS) and its Independent Accountability Mechanism, the Inspection Panel, which reviews the WB's compliance with its policies and procedures, will handle complaints relating to ES issues that may arise under the Project. In accordance with AIIB's Policy on the Project affected

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<sup>17</sup> <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/815221613600961705/draft-environmental-and-social-systems-assessment-essa-the-resilient-kerala-program-for-results-p174778>

<sup>18</sup> [India: Resilient Kerala Program for Results - Projects - AIIB](#)

People’s Mechanism (PPM), submissions to the PPM under this Project will not be eligible for consideration by the PPM.

#### **E. Derogation from AIIB Policies and Application of WB's PforR Policy**

79. **Co-financier’s Policies in Lieu of AIIB Policies.** Given that this PforR is being co-financed with the WB as lead co-financier, the Program is being prepared in accordance with the WB's Policy on PforR. The WB's PforR Policy is separate and distinct from its Procurement Policy and Environmental and Social Framework (ESF) that govern conventional investment project financing, and with which AIIB’s Procurement Policy (PP) and ESP are materially aligned. Given the differences in approach between the WB's and AIIB's policies, the WB's PforR Policy cannot be considered to be materially consistent with AIIB’s ESP and PP. Nevertheless, for the reasons noted above in Section 3.C relating to the approach adopted for procurement and in Section 3.D relating to the approach adopted for addressing ES risks, Management considers the WB's PforR Policy to be appropriate for use in this type of operation.

80. Therefore, Management requests: (a) a derogation from the application of AIIB’s ESP and PP; and (b) the application of the WB's PforR Policy to this Program in lieu of AIIB’s ESP and PP.

#### **F. Risks and Mitigation Measures**

81. The overall project risk is rated “High” (see Table 5).

**Table 5: Summary of Risks and Mitigation Measures**

<b>Risk Description</b>	<b>Assessment (H/M/L)</b>	<b>Mitigation Measures</b>
<b>Political and Governance Risks</b> Uncertain political environment resulting from upcoming state elections, and fraud and corruption risk.	Medium	The Program contents have broad appeal across stakeholders, in part derived from wide ranging consultations undertaken during the formulation of RKDP. Further, at the political level, through the RKI, the Government has held consultations with various political groups on key reforms and planned activities in the past. Adequate systems shall be built to mitigate corruption and fraud risk. AIIB’s board presentation will take place after the elections.
<b>Macroeconomic Risks</b> Kerala’s high fiscal-deficit due to low own-source revenues and high committed expenditure.	Medium	In addition to an explicit focus on fiscal sustainability under the Program, the WB will be providing a Programmatic TA to the DoF to strengthen their capacities to assess and manage macroeconomic and fiscal risks.
<b>Institutional Capacity Risks</b> Implementation capacity varies across the participating	High	The Program will provide the required technical assistance and training to strengthen institutional capacity of

departments and agencies.		implementing agencies.
<p><b>Fiduciary Risks</b></p> <p><b>Procurement:</b></p> <ul style="list-style-type: none"> <li>a) Absence of Comprehensive Procurement Guidance for Goods and Services and model bidding documents for goods and services.</li> <li>b) Lack of staff capacity related to procurement and contract management.</li> <li>c) Inadequate complaint management system.</li> <li>d) access to debarment provisions and information</li> <li>e) Except for information on contracts awarded, the participating departments currently do not disclose procurement information such as procurement plans, contract performance, complaints redressal, audit reports, appeals and their disposal etc.</li> </ul> <p><b>Financial Management:</b></p> <ul style="list-style-type: none"> <li>a) Appropriate Budget Heads for new category of Program incremental activities expected to be underway by end of first year of effectiveness.</li> <li>b) Delays in Internal Audit and Internal Audit not commensurate to size of business.</li> <li>c) Requirement for comprehensive guidelines for eligibility of incremental Performance Incentive Grants under the Program to select Local Self Governments (LSGs) and ULBs.</li> </ul>	<p>High</p>	<p><b>Procurement:</b></p> <ul style="list-style-type: none"> <li>a) RKI to develop general guidance on procurement process for Goods and Services and model bidding documents for procurement of goods and services for consistency.</li> <li>b) RKI to hire a fulltime procurement specialist and organize regular training programs on procurement and contract management for procurement staff of Internal Audits</li> <li>c) RKI to develop standard procedures for handling procurement complaints including timelines for (i) submission of complaints and appeals; (ii) decision of institution in charge and appeals body; and (iii) public disclosure in an effective manner</li> <li>d) comprehensively specify the debarment process at one place for ready reference by Internal Audits. Make list of debarred firms and individuals readily accessible to procuring officials as well as bidders/ contractors/ suppliers for consistent application.</li> <li>e) implement disclosing of (i) preparation and publication of procurement plans; (ii) audit of sample of contracts by auditors; and (iii) disclosure policy covering procurement information like procurement plans, contract award, contract performance, complaints redressal, audit reports, appeals and their disposal etc.</li> </ul> <p><b>Financial Management:</b></p> <ul style="list-style-type: none"> <li>a) Within 6 months from date of effectiveness, RKI in consultation with respective PDs, finalize the budget and fund flow procedure for these expenditures.</li> <li>b) Within 6 months from date of effectiveness, finalize ToR and the composition of Internal Audit team (for IA department) for conducting the Program internal Audit covering all Program participating departments.</li> <li>c) Within 6 months from date of effectiveness, finalize evaluation guidelines for Performance Incentive Grant including requirement of up-to</li> </ul>

		date external audit with no 'disclaimed' or 'adverse' external audits report .
<p><b>Environmental and Social Risks</b></p> <p>a) The potential environmental and social risks associated to this Program is related to the physical road infrastructure, new or expansion of public health laboratories and WRM sector.</p> <p>b) Sector institutional capacity for ensuring proper social management to reduce exclusion during project implementation.</p>	Medium	<p>a) Proposed mitigation measures have been addressed in the ESSA's Program Action Plan. The Program will exclude any road repair and maintenance works requiring resettlement and removal of structures impacting more than 50 persons.</p> <p>b) Capacities in the sector institutions need to be augmented through greater sensitization and capacity building of field staff and extension workers. Specific areas for enhancing include; (i) citizen's engagement to make the scheme participation more inclusive and with norms simplified; (ii) raising awareness on schemes, eligibilities and process for accessing; and (iii) accountability.</p>
<p><b>Stakeholder Risks</b></p> <p>Planned actions in some sectors, such as Transport, WRM, Agriculture and Urban Planning, may have direct implications to local communities and Civil Society Organizations.</p>	Medium	<p>While the outcome of the operations will be beneficial to the state as a whole, it would be critical for RKI and State Departments to ensure that a consultative process as defined in the RKDP are followed in both preparation and implementation stages. The Bank will ensure through the ESSA and broader engagement process that the GoK has put in place robust consultative and grievance redress mechanisms.</p>

## Annex 1: Results Monitoring Framework

<b>Program Objective:</b>	To enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.								
<b>Indicator Name</b>	<b>Unit of measure</b>	<b>Base-line Data Year</b>	<b>Cumulative Target Values</b>				<b>End Target</b>	<b>Frequ ency</b>	<b>Respon sibility</b>
			<b>YR1</b>	<b>YR2</b>	<b>YR3</b>	<b>YR4</b>			
Program Development Objective Indicators									
RA1: Strengthening transversal systems for resilience									
People are benefiting from local DRM plans and One Health Community Surveillance systems in Pamba Basin districts	Number (gender disaggregated)	State level DRM plans and emergency response protocols are in place, but local level preparedness to disasters and disease outbreaks is low.					3.9 million people are benefiting from local DRM plans and One Health Community Surveillance systems in Pamba Basin districts.	Once	RKI (PMU)
RA2: Embedding resilience in key economic sectors.									
People are benefiting from flood early warning services and flood protection measures in Pamba Basin	Number (gender disaggregated)	0.0					4.8 million people are benefiting from flood early warning services and flood protection interventions in Pamba Basin districts.	Once	RKI (PMU)
Intermediate Results Indicator									



<b>Program Objective:</b>		To enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.							
<b>Indicator Name</b>	<b>Unit of measure</b>	<b>Base-line Data Year</b>	<b>Cumulative Target Values</b>				<b>End Target</b>	<b>Frequ ency</b>	<b>Respon sibility</b>
			<b>YR1</b>	<b>YR2</b>	<b>YR3</b>	<b>YR4</b>			
RA1: Strengthening transversal systems for resilience									
ULBs developed and sanctioned risk-informed Urban Master Plans and Priority Action Plans	Number	Urban Master Plans are not risk-informed; many are not sanctioned; and few are implemented.	Department of Town and Country Planning (DTCP) and KILA have developed and notified guidelines and training program for risk-informed master planning for ULBs.		DTCP and KILA have provided training to at least 9 ULBs in Pamba Basin districts on risk-informed urban master planning.		At least 4 ULBs in Pamba Basin districts have developed and sanctioned the final urban master plans and priority action plans.	Bi-Annual	LSGD
Climate risk Information is integrated into local DRM plans	Number	There is a lack of integration and use of local level climate risks to strengthen local level preparedness.	KSDMA has downscaled climate models and provided this information to all LSGs in the State.	200 LSGs in Pamba Basin districts have integrated climate information into the local body disaster risk management plans.	100 LSGs in Pamba Basin districts have been assessed through DCAT and achieved the target of 30% co-benefits.	150 LSGs in Pamba Basin districts have satisfactorily completed local level emergency management exercises coordinated by KSDMA as per the updated local body disaster risk management plans	150 LSGs have been assessed through DCAT and achieved enhanced target of 50% co-benefits.	Annual	LSGD
DCAT tool is developed and adopted for assessing climate adaptation and	(Yes/No)	No					Yes	Once	RKI (PMU)

<b>Program Objective:</b>		To enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.							
<b>Indicator Name</b>	<b>Unit of measure</b>	<b>Base-line Data Year</b>	<b>Cumulative Target Values</b>				<b>End Target</b>	<b>Frequ ency</b>	<b>Respon sibility</b>
			<b>YR1</b>	<b>YR2</b>	<b>YR3</b>	<b>YR4</b>			
mitigation investments									
Capacity of GoK is enhanced in disaster and climate risk-informed urban and DRM planning	Number	GoK lacks capacity to integrate DRM and climate risk into planning and tools to enforce Urban and DRM plans as well as to monitor climate change co-benefits.	200 LSG resource persons and functionaries are trained in climate-informed DRM investment planning, DCAT, and risk-informed urban master planning.	700 LSG resource persons and functionaries are trained in climate-informed DRM investment planning, DCAT, and risk-informed urban master planning.	1200 LSG resource persons and functionaries are trained in climate-informed DRM investment planning, DCAT, and risk-informed urban master planning	1700 trained LSG resource persons and functionaries are mobilized for climate-informed DRM investment planning, DCAT, and risk-informed urban master planning.	1700 trained LSG resource persons and functionaries are mobilized for climate-informed DRM investment planning, DCAT, and risk-informed urban master planning.	Annual	RKI (PMU)
RA2: Embedding resilience in key economic sectors.									
Capacity to track and respond to zoonotic disease outbreaks of human importance in a timely manner is strengthened through the enhanced One Health platform at the local level	a) Number b) Percentage	No formal district level One Health coordination platform. No community based One Health surveillance protocols and systems.	DoHFW has operationalized district level One Health coordination platform with trained and certified staff in Pamba Basin districts.	DoHFW has provided training to 250,000 LSG and Kudumbashree members on protocols for community based One Health surveillance in Pamba Basin districts.	DoHFW undertakes routine joint disease outbreak investigations and inspections in 4 Pamba Basin districts.	At least 150 LSGs are implementing community based One Health surveillance in Pamba Basin districts.	DoHFW has identified and controlled at least one zoonotic disease outbreak of human importance in Pamba Basin districts in a year.	Annual	RKI (PMU)

Program Objective: To enhance the State of Kerala's resilience against the impacts of climate change and natural disasters, including disease outbreaks and pandemics.									
Indicator Name	Unit of measure	Base-line Data Year	Cumulative Target Values				End Target	Frequency	Responsibility
			YR1	YR2	YR3	YR4			
Integrated River Basin Management Plan is developed and implemented for Pamba Basin	(Yes/No)	No Integrated River Basin Management Plan has been developed for Pamba Basin.	WRD has developed flood forecasting and integrated reservoir operation systems for Pamba Basin.	RBCMA is fully operational with technical and operational staff.	WRD has adopted and operationalized integrated River Basin plan for Pamba Basin.	WRD has interfaced the WRM systems with KSDMA, DoA, PWD and LSGD.	WRD has implemented at least two critical investments identified in the Integrated River Basin Management Plan for Pamba Basin.	Annual	WRD
CRN is rehabilitated and/or maintained to meet resilient service standards in the Pamba Basin	(Yes/No)	Zero km of CRN is meeting resilient service standards in the Pamba Basin.	CRN is rehabilitated and/or maintained to meet resilient service standards in the Pamba Basin		Forward Works Program is generated for at least 6000 km of CRN with budgetary allocation.		At least 400 km of CRN is meeting resilient standards in Pamba Basin with sustainable asset management practices established.	Bi-Annual	PWD

## Annex 2: Detailed Program Description

1. The table below summarizes the proposed DLIs and DLRs forming part of this Program. Achievements of these DLIs/DLRs will be verified by an independent agency before disbursements will be made.

Result Area (RA)	Disbursement Linked Indicators	Disbursement Linked Result (as applicable)			Amount of the WB Financing (USD million)	Amount of the AIIB Financing (USD million)	Amount of the AFD Financing (USD million)
		Period	Value	Allocated Amount of AIIB (USD m.)			
RA1: Strengthening transversal systems for resilience	DLI#1 Fiscal sustainability of GoK strengthened to cope with disease outbreaks/disasters	Baseline	GoK's debt to Gross State Domestic Product (GSDP) ratio is 37.3 percent in FY20/21 (WB Estimates)	-	4.6875	4.6875	15
		Year 1	A debt management plan is adopted	0.6875			
		Year 2		-			
		Year 3	Priority actions in debt management plan are implemented	-			
		Year 4		2.5			
		Year 5	GoK's debt to GSDP ratio is below 35 percent	1.5			
	DLI#2 Strengthened disaster-related adaptive safety net system of GoK	Baseline	No Unified Database of beneficiary households for Direct Benefit Transfer payments	-	10	0	15
		Year 1	Unified Database is developed and populated with beneficiary data using clear data protection protocols.	-			
		Year 2		-			
		Year 3	Up to 500,000 beneficiary households are registered in the State under the Unified Database.	-			
		Year 4		-			
	Year 5	Up to 100,000 beneficiary households are receiving social protection benefits (adaptive safety net /insurance) through Direct Benefit Transfers linked to the Unified Database.	-				
	DLI#3 Improved disaster risk	Baseline	State Disaster Response Fund is the primary source of disaster financing for GoK; Zero USD mobilized through market-based disaster risk financing mechanism in	-	10	0	25

Result Area (RA)	Disbursement Linked Indicators	Disbursement Linked Result (as applicable)			Amount of the WB Financing (USD million)	Amount of the AIIB Financing (USD million)	Amount of the AFD Financing (USD million)	
		Period	Value	Allocated Amount of AIIB (USD m.)				
	financing and insurance capacity of GoK and vulnerable households in the State.		Pamba Basin. Low uptake of insurance by households: 27,578 farmers insured (less than 2 percent of farmers in Pamba Basin).		7.5	7.5	15	
		Year 1	DoA has developed and notified guidelines on payment norms, modalities, administrative rules, and monitoring arrangements for crop insurance.	-				
		Year 2	DoA has adopted and notified institutional mechanism and implementing arrangements for disaster risk financing.	-				
		Year 3	At least 33,000 farmers from all Pamba Basin Districts are enrolled in crop insurance	-				
		Year 4		-				
	Year 5	DoA has mobilized \$50 million using market-based disaster risk financing instrument to complement the State Disaster Response Fund / Chief Minister's Distress Relief Fund	-					
	DLI#4 ULBs with sanctioned risk-informed Master Plans and Priority Action Plans	Baseline	Urban Master Plans are not risk-informed; many are not sanctioned; and few are implemented.	-				7.5
		Year 1	DTCP and KILA have developed and notified guidelines and training program for risk-informed master planning for ULBs.	1.35				
		Year 2		-				
		Year 3	DTCP and KILA have trained at least 9 ULBs in Pamba Basin districts on risk-informed urban master planning.	3.15				
Year 4								

Result Area (RA)	Disbursement Linked Indicators	Disbursement Linked Result (as applicable)			Amount of the WB Financing (USD million)	Amount of the AIIB Financing (USD million)	Amount of the AFD Financing (USD million)
		Period	Value	Allocated Amount of AIIB (USD m.)			
	DLI#5 Climate risk Information integrated into local DRM plans	Year 5	At least 4 ULBs in Pamba Basin districts have developed and sanctioned the final urban master plans and priority action plans.	3	17.5	17.5	30
		Baseline	There lacks integration and use of local level climate risks to strengthen local level DRM.	-			
		Year 1	KSDMA has downscaled climate models and provided this information to all LSGs in the State.	2			
		Year 2	200 LSGs in Pamba Basin districts have integrated climate information into the local body disaster risk management plans.	2			
		Year 3	100 LSGs in Pamba Basin districts have been assessed through DCAT and achieved the target of 30% co-benefits.	4.5			
		Year 4	150 LSGs in Pamba Basin districts have satisfactorily completed local level emergency management exercises coordinated by KSDMA as per the updated local body disaster risk management plans.	3			
		Year 5	150 LSGs have been assessed through DCAT and achieved enhanced target of 50% co-benefits.	6			
<b>RA2: Embedding resilience in key economic sectors</b>	DLI#6 Capacity of GoK to track and respond to zoonotic disease outbreaks of	Baseline	No formal district level One Health coordination platform. No community based One Health surveillance protocols and systems.	-	15	15	5
		Year 1	DoHFW has operationalized district level One Health coordination platform with trained and certified staff in Pamba Basin districts.	3			

Result Area (RA)	Disbursement Linked Indicators	Disbursement Linked Result (as applicable)			Amount of the WB Financing (USD million)	Amount of the AIIB Financing (USD million)	Amount of the AFD Financing (USD million)
		Period	Value	Allocated Amount of AIIB (USD m.)			
	human importance in a timely manner through the One Health platform enhanced at the local level	Year 2	DoHFW has provided training to 250,000 LSG and Kudumbashree members on protocols for community based One Health surveillance in Pamba Basin districts.	3			
		Year 3	\$12 for each member trained on protocols for community based One Health surveillance	3			
		Year 4	\$750,000 for each district undertaking routine joint disease outbreak investigation and inspection	3			
		Year 5	DoHFW has identified and controlled at least one zoonotic disease outbreak of human importance in Pamba Basin districts in a year	3			
	DLI#7 Integrated River Basin Management Plan for Pamba Basin developed, and implementation commenced	Baseline	No Integrated River Basin Management Plan has been developed for Pamba Basin	-	10	10	15
		Year 1	WRD has developed flood forecasting and integrated reservoir operation systems for Pamba Basin.	1			
		Year 2	RBCMA is fully operational with technical and operational staff.	3			
		Year 3	WRD has adopted and operationalized integrated River Basin plan for Pamba Basin.	1.5			
		Year 4	WRD has interfaced the WRM systems with KSDMA, DoA, PWD and LSGD.	2			
		Year 5	WRD has implemented at least two critical investments identified in the Integrated River Basin Management Plan for Pamba Basin.	2.5			
	DLI#8 FPOs have increased access to new and organized	Baseline	12 FPOs exist across all Pamba Basin	-	15	25	0
		Year 1	Agri-Business Promotion Agencies are contracted to support FPOs in Pamba Basin	5			
		Year 2		-			
Year 3		12,500 farmers have been mobilized into at-least 25	8.3				

Result Area (RA)	Disbursement Linked Indicators	Disbursement Linked Result (as applicable)			Amount of the WB Financing (USD million)	Amount of the AIIB Financing (USD million)	Amount of the AFD Financing (USD million)
		Period	Value	Allocated Amount of AIIB (USD m.)			
	markets		FPOs				
		Year 4					
		Year 5	15 FPOs have increased access to new and organized markets	11.7			
	DLI#9 Number of KMs of CRN rehabilitated and/or maintained to resilient standards in Pamba Basin	Baseline	Zero km of CRN is meeting resilient service standards in the Pamba Basin.	-	35	45	0
		Year 1	PWD has launched the climate compatible RMMS.	2.6			
		Year 2		-			
		Year 3	Forward Works Program is generated for at least 6000 km of CRN with budgetary allocation through a separate climate works budget head.	7.7			
		Year 4		-			
		Year 5	At least 400 km of CRN is meeting resilient standards in Pamba Basin with sustainable asset management practices established.	34.7			
	Front-end Fee					0.31	0.31
<b>TOTAL</b>					125	125	120



### Annex 3: Economic and Financial Analysis

#### A. Economic Analysis

**1. Methodology and approach:** A cost-benefit analysis was carried out to assess the economic viability of the four sector pilots (Roads, Health, WRM and Agriculture) under RA2 comparing “with” and “without-project” scenarios. The EIRR and ENPV of the road and water sector investments were estimated based on a discounted cashflow analysis considering costs and benefits. Sensitivity Analysis was performed for the road sector investments taking into consideration: (i) 15% increase in the capital costs; (ii) 15% decrease in motorized traffic growth rate, (iii) 15% increase in vehicle operating costs, (iv) 15% reduction in the value of travel time saved for passengers and freight and (v) changes in all the assumptions (i) through (iv), representing the worst-case scenario.

#### 2. Economic analysis of Road sector investments

(i) **Scope:** The scope of the economic analysis is investments for building climate resilience in the 8 roads spanning 174 km and associated assets in the Pamba River Basin for an estimated total cost of ~USD110 million. The details of the investment stretches are as follows:

Road No.	District	Section	Road length(km)	Total inv. (USD m.)
1	Kottayam	Gandhinagar-Medical College-Babu Chazhikadan Rd Kottayam- Parippu Rd-Athirampuzha Liessue-Kaippuzha Mannanam- Pulikkuttissery-Parolickal- Muttappally Rd	20.2	14.93
2	Kottayam	Vadayar Chandappalam- Mulakkulam Rd and Vadayar Kallattippalam Muttuchira Rd	22.5	13.53
3	Pathanam thitta	Pathanamthitta Ayroor – Muttukudukka Illathupadi – Muttukudukka Prakkanam – Prakkanam Elavumthitta – Kulanada Ramanchira – Thannikkuzhy Thonnamala Rd	28.2	14.15
4	Pathanam thitta	Mallapally, Komalam Paduthodu Kalloopara Chengaroor Komalam Kavungumprayar Pattakala, TMV Rd	23.1	14.27
5	Pathanam thitta	Malamekkara Kunnathukala Chala Puthenchanda factory Junction Azad Junction Rd	7.9	4.04
6	Idukki	Neyyassery - Thokkumbansaddle Rd (MDR)	31.9	20.60
7	Alappuzha	Thattarambalam – Michel Junction - Kochalummood Rd Mangankuzhy – Pandalam Rd	18.7	15.56
8	Alappuzha	Veeyapuram - Edathua Rd Kuttanad Alappuzha Edathua – Puthukkary - Mambuzhakkary Rd Kidangara-Kunnamgary-Kumarangary-Valady Mulakkamthurrthy Rd	21.5	14.97

#### (ii) Assumptions:

- The analysis is based on the overall guidelines stipulated by the Indian Roads Congress and use the World Bank’s HDM-4.
- The benefits of the road are computed relative to a baseline situation without the new investment when the road is maintained with minimum maintenance.

- All costs and benefits are evaluated in economic prices and exclude taxes and grants and reflect adjustment to wages that would prevail in a competitive labor market.
- The analysis assumes that all roads would be constructed over a 24-month period (2021-22) with 40% of the costs incurred in the 2021 and 60% in 2022, and that the roads would commence providing the added benefits starting in 2023.
- The total construction costs are assumed to include 70% of non-traded items which are revalued using a standard conversion factor of 0.90. Unskilled labor is assumed to comprise 30% of the construction costs and revalued using a shadow wage rate factor of 0.9.
- The analysis is carried out over a 25-year period reflecting the useful life of the road asset.
- The design and cost for each road is based on the expansion of the roads, as needed, to accommodate projected traffic volumes for the next 30 years and the upgrading of bridges to accommodate a 100-year return flood and culverts and drainage systems to accommodate discharges following a 24-hour rainfall intensity with 25-year return periods in urban areas and 10-years in rural areas. Projected traffic volumes were estimated from base year (2020) traffic volumes and traffic growth rate projections. Likewise, return periods for rainfall intensity and flooding were estimated from an analysis of historical data climate data.
- Base year traffic volumes are estimated for homogenous sections of each road for different vehicle categories based on classified traffic volume counts averaged over the three-day survey period.
- The different vehicles categories were aggregated to the Passenger Car Unit (PCU) using standard conversion factors recommended in the IRC Guidelines IRC-106-1990 for the seven roads situated in semi-urban roads and IRC-102-1988 for Road no 6 situated in rural area. The PCU was used to estimate peak traffic flows and to assess the need for capacity augmentation.
- Traffic volumes on each road over the investment lifetime were projected based on estimated growth rates in the annual average traffic volumes. The growth rates for the 2020-2025 period were estimated separately for passenger and freight vehicles in the state based on the road transport demand elasticity, population/passenger growth rates, growth rates in relative per capita state incomes and overall state domestic product. The demand elasticity and the traffic volume projections were reduced by 10% for each subsequent 5-year period relative to the prior 5-year period. The growth rates for two axle trucks were held to approximately 50% of the growth rate of trucks for the 2020-2025 period and held constant at 2% per year from 2026 onwards to circumvent negative growth rates in this category.

**Summary of Projected Growth Rates in Average Annual Daily Traffic**

Vehicle Category	2020-25	2026-30	2031-35	2036-40	2041-45	2046-50
2 & 3 Wheeler	6.22	5.59	5.03	4.53	4.08	3.67
Car/Jeep/taxi	5.53	4.97	4.48	4.03	3.63	3.26

Minibus/ Standard bus	3.00	2.7	2.43	2.19	2.00	2.00
LMV/LCV	6.96	6.27	5.64	5.08	4.57	4.11
2-axle Truck	2.70	2.00	2.00	2.00	2.00	2.00
All Trucks	5.55	5.00	4.5	4.05	3.64	3.28

- (iii) **Economic costs:** The capital costs for 8 roads spanning 174 km in the Pamba River Basin is estimated at USD110 million. It includes civil construction works, land cost, utility shifting costs, environmental safety and employee costs. For economic analysis, these financial capital costs are adjusted to exclude taxes.
- (iv) **Economic benefits:** The direct benefits accruing from the proposed road projects include reduced vehicle operating costs (VOC) and reduced travel time for passengers and transit time for freight. Motorized vehicle performance predictions include average speed with the free flow of traffic and under congested conditions and the consumption of various inputs for vehicle operations. These include predictions of the quantity and costs of fuel, oil, tire and parts, crew and maintenance labor, vehicle depreciation, finance, and overhead. The HDM4 model estimates the average speed in km/hr by vehicle type for the road condition and traffic volumes. The time savings for passengers were valued in accordance with IRC SP 30, 2009. The estimates were based on an average occupancy of 4 persons for car/taxi and 45 persons for bus in accordance with the traffic survey results. The value of travel time saved (VOTT) worked out to USD1.09 per hour for the average car passenger, USD0.55 per hour for 2-wheeler, and USD0.69 per hour for the bus passenger. The reduced transit time for goods were valued using the inventory method. The VOTT worked out to USD1.97 per hour for an LCV, and USD6.1 per hour for 2 axle, 3 axle trucks and MAV.
- (v) **EA Results and Sensitivity Analysis:** The EIRR was estimated at 15-38 percent and the ENPV at USD65.7 million. The NPV for all roads except road no 6 were calculated using a 12% discount rate. The discount rate used for Road number 6 in Idduki was 9% and is justifiable given the districts higher incidence of poverty, tribal population and proportionately higher damages during the 2018 floods. Sensitivity analysis was carried out to assess project viability with changes to the assumptions used in the base case. These included (i) 15% increase in the capital costs; (ii) 15% decrease in motorized traffic growth rate, (iii) 15% increase in vehicle operating costs, (iv) 15% reduction in the value of travel time saved for passengers and freight and (v) changes in all the assumptions (i) through (iv), representing the worst-case scenario. EIRR remained above the 12% for all roads sections in all scenarios except in the worst-case scenario where three sections of the roads had EIRR of less than 12% but still more than 10% indicating the robustness of the economic viability of the road sector investments. The EIRR and ENPV of each section of the road in the base case and in the worst case is summarized in the following table:

Road Number	Base case		Worst case	
	EIRR%	ENPV (USD million)	EIRR%	ENPV (USD)

				million)
1	17.5%	6.52	12.5%	0.55
2	17.5%	6.48	12.2%	0.19
3	15.8%	4.23	10.9%	-1.31
4	14.8%	3.27	10.3%	-2.10
5	16.5%	1.39	11.6%	-0.13
6	37.9%	26.29	27.2%	18.51
7	16.8%	5.69	12.1%	0.07
8	19.9%	11.87	14.4%	3.54

**3. Economic analysis of health sector investments** - The health component of PforR aims to increase resilience to outbreaks of zoonotic diseases using the One Health approach. One Health refers to the collaborative efforts of multiple disciplines working together to attain optimal health for people, animals and our environment. Case studies show that the collaboration across service providers in multiple disciplines introduces efficiencies in service delivery resulting in cost savings of 10 percent to 15 percent. Worldwide experience suggests that upfront disease surveillance and diagnosis investments can mitigate the need for subsequent treatment costs about three or more times larger, if a disease outbreak were to occur. The costs are much higher should the disease turn into a pandemic. Controlling disease outbreaks also has several indirect benefits. These include fewer economic disruptions and hence losses in economic growth, decreased poverty and inequality, decreased productivity losses and decreased service delivery costs.

**4. Economic analysis of water sector investments** - The water sector pilot focuses on operationalizing an integrated water resource management for the Pamba basin including a flood forecasting and warning system. The direct benefit of the program would come from water allocation efficiencies, reduced economic damages, reduced loss of life and people affected from floods and extreme precipitation events. The analysis is carried over 10 years the lifetime of the equipment. Avoided damages from using flood forecasts are estimated from historical (last 20 years) annual average losses and projecting them into the future.<sup>19</sup> The baseline damages are estimated using the expected value of damages from historical floods. The average annual damages are estimated at USD43 million based in the limited historical data for the floods since 2000. This likely is under estimation of the losses given added risks from climate change. An incremental cost benefit analysis was conducted just for the flood forecasting portion of this component. The costs in this portion of the project focus on existing deficiencies in the 4 districts of the Pamba River Basin. The analysis uses an approach which analyses the proportion of damages and losses that are preventable and the proportion of those preventable losses that are avoidable with the hydromet system for different sectors.<sup>20</sup> As a conservative estimate the analysis assumes that only 50% of lives are saved from a 24-hour forecast. The statistical value of a life

<sup>19</sup> Historical data is sparse creating significant uncertainties around these estimates. Sensitivity analysis is used to test the robustness of the analysis results to different assumptions for deriving these annual loss estimates.

<sup>20</sup> Using this approach, benefits can be measured without the need for detailed data and complex models that would be required for the conditional probability approach while retaining the still grounded on the local context.

saved is estimated at USD0.26 million. This yields an average annual benefit of USD3.18 million. The Central Water Commission attributed much of the 2018 floods to high precipitation. Under those circumstances, the full extent of the damages are “preventable” with a reliable forecast and a sufficient lead time. Reliable 24-hour forecasts and warnings have been shown to reduce damages by 10 to 35 percent (Hallegate 2012). As a conservative estimate, the analysis assumes that only 5% of the preventable damages are avoided through the early warning. The analysis indicates that the flood forecasting and warning part of the IWRM component investments deliver EIRR 4 to 34 percent and ENPV of USD10 million using a discount rate of 12%.

**5. Economic analysis of Agriculture sector investments.** The GoK initiated broad transformative programs to build agriculture resilience through the RKDP under three pillars: adoption of an agro-ecological (AEZ) based model, strengthening support to farmer producer organizations (FPOs), and re-engineering institutional framework for last-mile delivery. The pilot programs under RA2 of the PforR support the creation of 13 new FPOs and the strengthening of 13 Farmer Producer Organizations (FPOs) in the four districts of the Pamba Basin. Conventional ex-ante cost benefit analysis is not applicable for them because of the demand driven nature of these programs. The analysis is focused on the targeting of crops for support through the Program and the value addition of a similar World Bank-funded program in Tamil Nadu. The results indicate that the FPO support program is targeted to crops with high potential for adding value and supporting the poor. The Program is focused on supporting farmers, so the base case number assumes the beneficiaries from the value chain with only farmers. The benefits are computed using the incremental net benefits and valuing the added employment generated at the opportunity cost of labor by converting the prevailing rural wages in Kerala by a conversion factor of 0.8. The scheme is assumed to be effective for 70% of the beneficiaries. The economic analysis carried over a period of 20 years indicates that the Program would generate ENPV of USD21 million and EIRR of 43% at a discount rate of 12%.

## **B. Financial Analysis**

**6. Methodology and approach:** The financial analysis focuses on the road sector investments as AIIB will finance a bigger amount for this sector than the other sectors. Financial analysis was also conducted to assess the State’s financial resources to meet incremental financial burden on account of the Program.

**7. Financial analysis of State’s financial resources.** GoK will provide counterpart funding of USD160 million as part of this PforR Program. GoK has sufficient financial resources to contribute the required counterpart funds and service the debt incurred under the Program. The counterpart funds constitute less than one percent of the State’s total budget revenues and less than two percent of the State’s total capital expenditures on annual basis.

	<b>GoK budget 2020-21 (USD million) [1]</b>	<b>Counterpart funding as a proportion of [1] {Aggregate basis}</b>	<b>Counterpart funding as a proportion of [1] {Annual basis}</b>
<b>Revenue Receipts</b>	15,729.42	1.02%	0.17%
<b>Total Expenditure</b>	19,794.87	0.81%	0.13%
<b>Capital Expenditure</b>	1,979.69	8.08%	1.35%
<b>Allocation to roads and bridges</b>	712.62	22.45%	3.74%

8. Financial analysis of the road sector investments. The scope of the financial analysis is investments for building climate resilience in the 8 roads spanning 174 km and associated assets in the Pamba River Basin for an estimated total cost of USD110 million which includes civil construction works, land cost, utility shifting costs, environmental safety and employee costs. All roads are assumed to be constructed over a 24-month period with 40% of the costs incurred in the 2021 and 60% in 2022 and to begin delivering full benefits starting in 2023. The analysis was carried out over a 25-year period reflecting the useful life of the road asset. The design and cost for each road was based on the expansion of the roads, as needed, to accommodate projected traffic volumes for the next 30 years and the upgrading of bridges to accommodate a 100-year return flood and culverts and drainage systems to accommodate discharges following a 24-hour rainfall intensity with 25-year return periods in urban areas and 10-years in rural areas. Projected traffic volumes were estimated from base year (2020) traffic volumes and traffic growth rate projections. Likewise, return periods for rainfall intensity and flooding were estimated from an analysis of historical data climate data. The financial analysis includes both annual routine maintenance and periodic maintenance bitumen coating (BC) overlay with tack coat, slab replacement and joint sealing every five years). The annual routine maintenance is assumed to be carried out even in the absence of the new investment and hence does not constitute significant annual burden on the State's finances (25 mm BC tack coat applied every 5 years at a cost of USD3.8 per sqm while with the new investment it is assumed as 30 mm BC tack coat applied every 5 years at a cost of USD4.5 per sqm). The annual routine maintenance costs for 2-lane road paved shoulder are assumed as USD3,864 per km per year in 2020-2021. The costs for other roads configuration were estimated applying equivalence factors to this cost. It is estimated that the annual average O&M cost for 174 km road development would be USD4.95 million which is fully manageable from the State's budget.

### Annex 4: Climate Finance

The following are the climate resilient interventions proposed in the Program.

Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
<p><b>DLI 4:</b> ULBs developed and sanctioned risk-informed Urban Master Plans and Priority Action Plans</p>	7.50	<p><i>Intent to address identified vulnerabilities:</i> Detailed risk information and geospatial data will strengthen the Kerala Town and Country Planning Act which permits regulation of natural hazard prone areas and risk-informed urban planning to adapt and mitigate current and projected climate and disaster vulnerabilities. Multi-year municipal infrastructure investments are critical for sectors like drainage, sanitation and solid waste management for resilient infrastructure development and sustainable service delivery during disasters.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> Preparation and notification of risk-informed master plans, and multiyear municipal infrastructure investment planning and budgeting will ensure resilient recovery to Kerala 2018 floods and ensure that the State is well equipped to face any climate or disaster shocks in the future.</p>	<p>The Master plans developed under this DLI includes features such as solar powered facilities, rainwater harvesting, environmentally responsive building (efficient and sun responsive envelope, natural ventilation, passive cooling), green spaces, integrated transport network which reduces the need for motorized conveyance, energy efficient lighting and appliances, efficient modes of public transportation, etc. that contributes towards mitigation actions.</p>
<p><b>DLI 5:</b> Local Governments have integrated disaster and climate risk in investment planning</p>	17.50	<p><i>Intent to address identified vulnerabilities:</i> The State will adopt the amended State Disaster Management Plan as required by the National Disaster Management Act of 2005 and update Local Disaster Management Plans. These plans will include vulnerability and disaster risk profiles for each local body with draft State level hazard and vulnerability grid maps using downscaled climate models. These plans will ensure improved capacity for inclusive emergency, disaster, and climate risk management at local level. This will result in a paradigm shift from a relief centric approach to</p>	

Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
		<p>a proactive and comprehensive futuristic disaster management covering all aspects from prevention, mitigation, preparedness to response and recovery to projected disaster and climate risks. KILA will provide the necessary training to the local bodies for effectively using the climate information in their planning and development process.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> Downscaling climate models can help provide data on granular atmospheric features such as cloud cover, airborne particles, and local pollution sources that can have a big impact on local climate. Such granular data paired with localized temperature, precipitation, wind speed and other climatology data can help inform the planning authorities and policy makers take informed steps for various sectors. This information can help identify extreme weather events on the smaller scale that are specific to that area such as storms, high intensity rainfall that can lead to flash floods, heat stress, etc. Such datasets are also helpful to identify urban heat island effects specific to urban or metropolitan areas and provide important information for local adaptation decisions. Temperature and rainfall data at higher resolution can help inform cropping pattern for agriculture sector, specifically for rainfall- dependent farmers. Local day-to-day temperature and precipitation conditions can help better understand how these conditions influence the spread of vector borne diseases such as malaria and dengue. These climate projections can also help inform projections of water availability which impacts several sectors such as agriculture, industries, power plants, drinking water and sanitation, etc.</p>	



Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
<b>DLI 7:</b> Integrated River Basin Management Plan is implemented for Pamba Basin	10.00	<p><i>Intent to address identified vulnerabilities:</i> RBCMA Act will conserve and regulate water resources within the State to ensure improved River Basin planning and water infrastructure operations management for climate and disaster resilience.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> RBCMA will facilitate and ensure its sustainable management, allocation and utilization for different sectors such as agriculture, industrial, drinking, inland transport, commercial and others.</p>	
<b>DLI 9:</b> CRN is rehabilitated and/or maintained meeting resilient standards in Pamba Basin with sustainable asset management practices established	40.00	<p><i>Intent to address identified vulnerabilities:</i> Adopting resilient standards and performance-based management contracts for the CRN as well as by streamlining sector institutional frameworks will enhance resilience of the road sector to increasing vulnerability to natural hazards and climate change. This includes interventions on drainage systems, landslide risk mitigation to maintain enhanced resilient standards and strengthening institutional capacity and systems to address climate change risks.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> Establishment of web and GIS based RMMS with a climate module will support systems for better sector planning and budgeting, adopt innovative approaches to climate and disaster resilient road maintenance and management. The project will support resilient road infrastructure pilots and maintenance program in Pamba Basin, develop sector climate resilience strategy, manuals and guides for sustainable design and resource conservancy efforts including nature-based solutions.</p>	

## Annex 5: Program Action Plans

S. no	Sector	Description	By	Timeline	Indicator for completion
1	Project Management	Notify Program, geographical coverage, institutional and fiduciary arrangements for implementation.	RKI	Within one month of loan Effectiveness	Government Order/ Gazette notification issued
2		Continuance of Project Management Support Services support to RKDP.	RKI	Duration of the Program	Progress reports/monitoring and evaluation reports from RKI with Project Management Support Services support
3	Financial Management	Finalize the ToR and team composition (from Internal Audit departments) of Program Internal Auditors for conducting the Program internal Audit covering all Program participating departments.	RKI	Within six months form the date of loan effectiveness	Program Internal Audit team in place for submission of semi-annual internal audit reports for the Program to RKI
4		Include 'Financial Audit' review clause in the comprehensive guidelines for eligibility of incremental Performance Incentive Grants under the Program. The clause will detail the requirement and procedure for review of annual audited Financial Accounts and audit opinion for continuity and material misstatement.	LSGD	Within six months form the date of loan effectiveness	Guidelines for incremental Performance Grants issued to LSGs
5	Procurement	Develop and implement guidance to address issues of transparency and accountability in procurement, including streamlining complaint handling and debarment processes.	GoK	Within six months form the date of loan effectiveness	Notification issued to implementing agencies, providing guidance on transparency and accountability in procurement
6	Environment & Social safeguards	Mainstreaming of environmental and social management through plans and / or bid documents in civil works / investments, and integration of environmental and social safeguards content in all training & capacity building programs.	RKI and implementing agencies	Continuous. To commence within three months of loan effectiveness	Incorporation of environment and social safeguards compliance in plans, bid documents for the civil works / investments, Inclusion of environment and social safeguard modules in training & capacity building programs
7		Strengthen existing grievance redress mechanism at state, department and local levels to enhance transparency and responsiveness by enabling creation of an open log of grievances and redressal actions.	GoK	Within one year from the date of loan effectiveness	Data detailing grievances received and resolved maintained by the depts/RKI

## Annex 6: Member and Sector Context

### A. Country context

1. The Indian economy grew at a healthy rate of 7.4 percent per annum on average between FY2014 and FY2018, but growth has been steadily slowing down in recent years.<sup>21</sup> Weak economic growth in the rural sector, sluggish external demand, and stresses in corporate and financial sector balance sheet further dented growth to 4.2 percent in FY2019. COVID-19 pandemic and the associated social distancing measures have significantly impacted growth in FY2020, with the economy contracting by 10.4 percent in the first nine months of the year. The economy has started showing signs of recovery in the second half of the fiscal year and is expected to shrink by 8.0 percent in FY2020.<sup>22</sup>

2. The contraction in the economy is expected to impact significantly some of the most vulnerable sections of the economy and reverse many of the impressive socioeconomic gains made by India over the last two decades. Between 2004-05 and 2011-12 India is estimated to have pulled 170 million citizens out of poverty, with the poverty rate declining from 39.9 percent of population in 2004-05 to 22.5 percent in 2011-12. Poverty rates are estimated to have further fallen to values ranging between 8.1 to 11.3 percent between 2012 and 2017.<sup>23</sup> More recent household data by the Centre for Monitoring Indian Economy indicate that the job losses due to COVID-19 pandemic is likely to have pushed up poverty rates to levels last seen in 2016, implying around 4 years of setback in its poverty reduction effort.

3. According to the Periodic Labour Force Survey 2017-18 estimates, 77.1 percent of employment in India is non-regular—either self-employed or casual workers with another 13.7 percent in regular jobs that are lacking in social protection. Thus between 364 and 473 million workers face the risk of being adversely affected by the disruptions caused by the pandemic. High frequency employment survey indicates a sharp increase in unemployment rate from 7.9 percent during January to March 2020

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<sup>21</sup> Fiscal year in India begins on April 1 and ends on March 31 of the next year. Thus FY2020 runs from April 1, 2020 to March 31, 2021.

<sup>22</sup> World Economic Outlook Database, January 2021, International Monetary Fund

<sup>23</sup> South Asia Economic Focus, Fall 2020: Beaten or Broken? Informality and COVID-19, World Bank

i.e., the quarter preceding the lockdown, to 18.5 percent during April to June 2020 when the lockdown policy measures were most stringent. Moreover, there was a sharp drop in the labour force participation rate in mid-2020 compared to the months preceding the lockdown.

4. The Indian economy is expected to recover strongly from the current pandemic growing by over 11.5 percent in FY2021.<sup>24</sup> The growth is expected to be assisted by improvement in business climate as evidenced by India's ranking rising from 130 to 63 in recent years in World Bank's Ease of Doing Business. Other factors which are expected to drive growth include rapid urbanization, unified tax regime and favorable demographics. At the same time, achieving high rate of growth will be contingent on addressing key bottlenecks and emerging challenges including creating job opportunities by raising the competitiveness, resolving infrastructural bottlenecks, bridging the skill deficit, improving institutional capacities, and addressing environmental degradation.

5. Bridging the infrastructure gap is vital for India to achieve rapid and inclusive growth in a sustainable manner. According to Global Infrastructure Outlook, India needs USD 4.5 trillion investment in infrastructure between 2015 and 2040.<sup>25</sup> Similarly, the Report of the Task Force on National Infrastructure Pipeline has projected total infrastructure investment of about USD 1.4 trillion over the period 2020 to 2025 for India to become a USD 5 trillion economy. Of this, nearly 40 percent of the projects is expected to be implemented by the States, with 39 percent by the federal government and 21 percent by private sector. Majority of the projects are in energy (24 percent), roads (18 percent), urban (17 percent) and railways (12 percent).

6. Kerala's economy grew by an average of 6.3 percent between FY2011 and FY2018, slightly lower than the national average of 6.9 percent. However, like rest of the country, the COVID-19 pandemic and the associated lockdown is expected to dent Kerala's growth significantly with the nominal GSDP in FY2020 estimated to being 3.8 percent lower than FY2019. Kerala remains one of the leading large States in terms of per capita income and is also the top State based on progress on the SDGs. Kerala

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<sup>24</sup> World Economic Outlook Database, January 2021, International Monetary Fund

<sup>25</sup> Global Infrastructure Outlook, Oxford Economics and Global Infrastructure Hub, 2017

has made impressive progress on SDG 3 (good health and well-being), SDG 9 (industry, innovation, and infrastructure) and SDG 15 (life on land). However, it trails the national average in case of SDG 6 (clean water and sanitation), SDG 8 (decent work and economic growth), SDG 11(sustainable cities and communities) and SDG 13 (climate action).

7. Kerala has experienced high fiscal deficit in recent years, which has resulted in the debt to GSDP increasing steadily from 24.6 percent in FY2011 to 30.5 percent in FY2019. The high fiscal deficit is driven by tepid average annual growth in the State's own revenue, which at 10.4 percent, trailed the State's nominal GSDP growth. Moreover, sizeable committed expenditure in the form of salary, pension and interest payments leaves small space for capital expenditure. Consequently, capital expenditure, after rising from 1.1 percent in FY2011 to 1.8 percent in FY2016, has dropped back to 1.1 percent in FY2019 and is below the national average.

## **B. Sector and Institutional Context**

8. The vulnerability of our health, social, economic and environmental institutions has been heightened by the COVID-19 pandemic. As the pandemic prolongs and the global economy largely remains suppressed, there is greater awareness of how the confluence of social, economic and institutional factors affect environmental risks, including global warming, disaster impact and public health.

9. India is one of the world's most vulnerable countries to natural disasters considering its geo-physical and climatic characteristics. It is susceptible to a wide range of climate risks. From extreme heat to floods and heavy rain, the country's economic losses from meteorological events have doubled over the last 30 years. Losses grew from USD 20 billion over the period 1997 – 2008 to a staggering USD 45 billion from 2008 – 2017<sup>26</sup>.

10. For over four decades, floods accounted for over half of India's natural disasters, affecting more than 750 million people and causing USD 58 billion of

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<sup>26</sup> [Acclimatize News 3 Sept 2019 From droughts to floods: the cost of climate change for India continues to mount | Acclimatise – Building climate resilience](#)

losses<sup>27</sup>. Global warming and climate change are likely to exacerbate the frequency and intensity of such disasters and the respective financial impacts are likely to be more significant with a growing economy and population.

11. Most Indian cities are also not built to manage annual monsoons, having limited and suitable drainage buffers to cope with major rainfall. Typically, the urban poor will be the most exposed and affected by floods.<sup>28</sup> The vulnerability of urban communities is compounded by these underlying socio-economic attributes and trends: poverty and inequality, demographic change, infrastructure investments and the unsustainable use of natural resources and eco-systems.

12. Recognizing the disaster hazards induced by climate change, India enacted a Disaster Management Act in 2005 and adopted its first National Policy on Disaster Management in 2009. The Act led to the establishment of the National Disaster Management Agency which is responsible for providing a comprehensive framework to enable various institutions to respond cohesively to Disaster Risk Reduction (DRR). The framework would also provide the relevant tools and mechanisms for these institutions to collectively deal with disaster threats.

13. The Government of India took a step further in 2015 by adopting three landmark international agreements in relation to DRR:

- a. The Sendai Framework for Disaster Risk Reduction (SFDRR) in March;
- b. Sustainable Development Goals (SDGs) in September and
- c. Paris Agreement on Climate Change at the 21st Conference of Parties in December.

14. These international agreements set the scene for the Government to view development in a sustainable, climate resilient manner. What followed suit was a National Disaster Management Plan launched in 2016, and subsequently updated in 2019. The 2019 version outline new dimensions and approaches in addressing the challenges of DRR facing multiple Government agencies at federal, State and urban local bodies.

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<sup>27</sup> ADB Blog 5 Sept 2019 [Five disaster resilience lessons we can learn from India \(adb.org\)](https://www.adb.org/blogs/5-sept-2019-five-disaster-resilience-lessons-we-can-learn-from-india)

<sup>28</sup> WRI India, 19 Oct 2020 <https://www.wricitiesindia.org/content/urban-flooding>

15. Sandwiched between the Arabian Sea and Western Ghat, The State of Kerala was once known for its moderate and comfortable climate where extreme weather conditions were a rarity and more common in other parts of India. However, climate change has wrought heavy rains, floods, droughts and heat wave to this rustic coastal State. Two watershed events illustrated the devastating impact on Kerala and her people.

16. In 2017, the Cyclone Ockhi which hit the Kerala-Tamil Nadu coasts wrought havoc on marine fisheries sectors of the two States. The cyclone caused a loss of about 35,000 tonnes of fish with an estimated economic loss of USD 24.9 million based on retail price estimates<sup>29</sup>.

17. In 2018, heavy rainfall and floods devastated Kerala, causing 498 casualties with over 5.4 million people affected with property losses and 1.4 million people displaced. Financial losses were estimated at about USD 3.74 billion. Up to one percent of the State's GDP was reportedly lost, with many of the industrial sectors recording a slowdown from the impact of floods<sup>30</sup>.

18. In response to the 2018 floods, the Kerala State Disaster Management Authority, a statutory body formed under the Disaster Management Act 2005 in 2007, issued an inaugural document i.e. its monsoon preparedness and emergency response plan in 2019. This plan identifies the roles of the various State organs and agencies in monsoon season disaster mitigation<sup>31</sup>

19. Right after the 2018 flood, the World Bank and Government of Kerala laid the foundations to the launch of the First Resilient Kerala Development Policy Operation (DPO1) in June 2019. This program supports the Rebuild Kerala Development Program (RKDP), a State Government roadmap for recovery, rebuilding and resilience.

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<sup>29</sup> Deccan Chronicle India 27 June 2018\_ [Cyclone Ockhi causes a loss of Rs 821 crore \(deccanchronicle.com\)](http://deccanchronicle.com)

<sup>30</sup> The Hindu.com 27 Sept 2019 [Kerala flood of 2018 in list of world's worst extreme weather events in five years - Frontline \(thehindu.com\)](http://thehindu.com)

<sup>31</sup> The Hindu.com 7 June 2019 [Kerala Disaster Management Authority issues new guidelines for preparedness - The Hindu](http://thehindu.com)

20. In the RKDP, a few key riverine factors linked to the 2018 floods were identified.

They concentrated on:

- a. The basins and reservoirs upstream;
- b. Rapid development of cities and towns mid-stream; and
- c. Farms and livelihoods downstream.

21. To address the underlying causes of floods, solutions can be categorized along the course of the river, i.e.:

- a. Integrated water resource and reservoir management at upstream;
- b. Improved land use planning and management at midstream; and
- c. Ecologically sound agriculture and irrigation practices downstream.

22. Resolving these require systematic improvements to the Government of Kerala's capacity to execute in an integrated manner a set of policies, institutional and budgetary changes over time. Political will must be accompanied with institutional strengthening and public support in tandem with a change process. It is clear that RKDP should introduce multi-dimensional resilience approaches across multiple stakeholders.

23. Together with another coordinating document i. e. the Rebuild Kerala Initiative, the DPO1 and RKDP were implemented across the various Government agencies, civil organizations and private enterprises, which served as a useful tool as the Government addressed 2019 and 2020 floods and landslides with diminished losses of lives, property and assets.

24. On January 30, 2020 Kerala reported its first confirmed cases of COVID-19. Rapid urbanization, population density, tourist inflows, and an aging population all made Kerala susceptible to the pandemic. The Government responded with a response plan, at the early onset of the disease. An early spike of new COVID-19 cases in late March 2020 was successfully contained by mid-May. A second surge in mid-May was largely caused by returning works from other States and overseas, as a lockdown was lifted. Although Kerala is one of the top three States in terms of new case rate and with a high test positivity rate (14% vs. national average of 8 %), its mortality rate (0.4) and transmission rate (1.55) are on the lower side.





## Annex 7: Sovereign Credit Fact Sheet

### A. Recent Economic Development

1. India is a lower-middle-income country, with a GDP per capita at USD 2,104 and a population of 1.34 billion<sup>32</sup>. It is the world's third largest economy by purchasing power parity. India's economy grew at an average annual rate of 7.4 percent between FY2014 and FY2018 but has slowed down in recent years<sup>33</sup>. Growth slowed down further to 4.2 percent in FY2019 due to sluggish growth in private consumption, investment and exports, owing to weak rural income growth, stress in the financial sector, and sluggish global demand. Growth in the last quarter of FY2019 (January to March 2020) and first quarter of FY2020 (April to June 2020) was significantly dented by COVID-19 outbreak and associated lockdown introduced by the government<sup>34</sup>. The Indian economy contracted by 23.9 percent in the first quarter of FY2020.

2. Low food prices contributed to a decline in inflation, from 4.5 percent in FY2016 to 3.4 percent in FY2018. This allowed the central bank to reduce key policy rates by 135 basis points between February 2019 and October 2019. Inflation inched up during the second half of FY2019 on account of higher food prices and rise in retail oil prices. Inflation averaged around 6.0 percent in the first quarter of FY2020 due to supply side disruptions. In spite of this, the central bank reduced the repo and reverse repo rates by 115 and 155 basis points to 4.0 and 3.35 percent respectively, to stimulate aggregate demand, which had declined due to the lockdown. The central bank also introduced a series of measures to reduce the borrowing cost, bolster liquidity, improve credit flow to the productive sectors and offer loan moratorium.

3. After rising for two years, the current account deficit shrank to 1.1 percent of GDP in FY2019. Slowdown in economic activity led to a contraction in merchandise imports while exports remained weak as global demand turned sluggish. Services'

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<sup>32</sup> The income group classification for fiscal year 2019 is based on World Bank criteria, details seen: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>; Population and GDP per capita data use World Bank 2019 data.

<sup>33</sup> Data is based on fiscal years. Fiscal year 2019 (FY2019) begins on 1 April 2019 and ends on 31 March 2020.

<sup>34</sup> On March 24, the government announced a nationwide lockdown till April 14, subsequently extended to May 30. Lockdown was eased beginning June 1

trade surplus improved in FY2019. A drop in oil prices and weak economic activity resulted in merchandise imports contracting by more than 50 percent in the first quarter of FY2020 while exports declined by 37 percent.

4. General government fiscal deficit at 7.9 percent of GDP remained high in 2019, reflecting tepid growth in revenue and higher recurrent expenditure. A downturn in revenue due to economic slowdown and higher spending on the stimulus package resulted in the fiscal deficit in the first quarter of FY2020 being 20 percent higher than previous year.

## B. Economic Indicators

### Selected Macroeconomic Indicators (FY2015-FY2021)

Economic Indicators#	FY 2016	FY 2017	FY 2018	FY 2019*	FY 2020*	FY 2021*
Real GDP Growth	8.2	7.0	6.1	4.2	-4.5	6.0
Inflation (% change, average)	4.5	3.6	3.4	4.5	3.3	3.6
Current account balance (% of GDP)	-0.6	-1.8	-2.1	-1.1	-0.6	-1.4
General government overall balance (% of GDP)	-7.1	-6.4	-6.3	-7.9	-12.1	-9.4
Nominal gross public debt (% of GDP)	68.8	69.4	69.6	72.2	84.0	85.7
Public gross financing needs (% of GDP) 1	11.1	11.0	10.5	11.4	16.4	13.8
External debt (% of GDP) <sup>35</sup>	20.6	20.0	18.9	19.1	19.9	20.4
Gross external financing need (% of GDP) <sup>36</sup>	9.3	9.6	10.4	10.0	10.0	11.3
Net Foreign Direct Investment Inflow (% of GDP)	1.6	1.1	1.1	1.3	1.2	1.3
Gross reserves (USD billion) **	370.0	424.5	412.9	434.0	537.5	...
Broad money (M2, % change)	10.1	9.2	10.5	9.7	11.3	11.6
Exchange rate (Rupee/USD, EOP) **	67.9	63.7	69.6	76.6	73.3	...

Note: # Data is based on fiscal years.

\* denotes projected figures.

\*\* FX data from Thomson Reuters. FX rate as of September 03, 2020 while Reserves data pertains to August 2020.

<sup>35</sup> For FY2020 and FY 2021, AIIB Staff Estimates based on IMF Data

Source: IMF, World Economic Outlook Database, April 2020, IMF Country Report No. 19/385, December 2019 and Ministry of Statistics and Program Implementation, Government of India.

<sup>36</sup> Same as above

7. Recognizing that an expansionary fiscal policy is required to mitigate the economic effect of COVID-19 pandemic, the central government has already announced a \$22.5 billion economic relief package including a \$2 billion package to strengthen the health sector at a fiscal cost of 1.0 percent of GDP. Various States have also announced additional relief measures. The anticipated growth slowdown in FY2020 will also negatively impact tax collections while a subdued equity market will make it difficult to raise revenue from disinvestment. The fiscal deficit is expected to significantly increase to 12.1 percent of GDP in FY2020. Public debt is also estimated to rise sharply to 84.0 percent of GDP in FY2020, levels last witnessed in early 2000s. Despite being high, India's public debt remains sustainable given favorable debt dynamics and the projected increasing economic growth trend in the medium term. Furthermore, with public debt having a long and medium maturity, being denominated in domestic currency and primarily held by residents, the debt profile is favorable. India's external debt, currently at 20.6 percent of GDP, remains sustainable.

8. The current account deficit is expected to narrow in FY2020 on account of weak domestic demand. Sluggish domestic economic activity will result in import bill declining significantly, but a weakening of the rupee and a rise in oil prices could increase the import bill. Exports of goods and services are likely to contract given the decline in global demand. Remittances are also expected to decline as lower oil prices in Middle East and spread of the COVID-19 pandemic in advanced economies reduce economic activity in these countries, where most migrant Indian workers are employed.