



# PARCC

Program for Asia's Resilience to Climate Change

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## Annual Report

July 2019 – June 2020

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# Acknowledgements

The 2019-2020 Annual Report for Program for Asia's Resilience to Climate Change (PARCC) was prepared by Debbie Menezes (Lead Author, M&E Consultant) with contributions received from the SARRE (South Asia Region's Regional Integration and Engagement) team led by Cecile Fruman, Director and from the World Bank's Global Practices and PARCC team.

The PARCC Program is managed by Janet Minatelli with Arati Belle as technical lead, and supported by a core PARCC secretariat whose team members include Debbie Menezes, Yinan Zhang, Taylor Henshaw, Julie Ann Vorman, Jane F. Kirby-Zaki, and Sarwat Batool. We particularly want to acknowledge the support and inputs provided by the following task teams of various activities funded by the PARCC Trust Fund: Christoph Pusch, Arati Belle, Haris Khan, Atishay Abbhi, Poonam Pillai (GPURL); Nazmus Khan, Manuela Francisco (MTI); Adnan Ashraf Ghumman, Charl Jooste, Gregor Schwerhoff (EMFMD), Emma Phillips Solomon, Vladimir Tsirkunov, Julie Dana, Stephen C. Miller, Tracy Thoman (GFDRR); Tapas Paul, Milen F. Dyoulgerov, Christophe Crepin (ENV); Muthukumara S. Mani (SARCE) as well as the World Bank's Regional Integration Program Committee (RIPC).

The PARCC team also extends its gratitude to the PARCC development partner, the United Kingdom's Foreign, Commonwealth & Development Office (FCDO) (previously DFID) for their valuable inputs to the report specifically the contributions received from Archana Shukla, Shan Mitra, Gemma Tanner, Asgar Qadri, Harjeet Kaur, Ken de Souza and Tim Sumner, as well as the UK Met Office and Oxford Policy Management.

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1818 H Street, NW

Washington, DC 20433, USA



Cover: PARCC's macro fiscal modeling work for Pakistan incorporates data to track crop production and destruction due to adverse weather and climate conditions.

Credit: Shutterstock

# Acronyms and Abbreviations

<b>ADM</b>	Accountability and Decision Making
<b>ADPC</b>	Asian Disaster Preparedness Centre
<b>ARG</b>	Ayeyarwady Regional Government
<b>ARRCC</b>	Asia Regional Resilience to a Changing Climate (Program)
<b>BE</b>	Bank-Executed
<b>CAPE</b>	Climate Action Peer Exchange
<b>CARE</b>	Climate Adaptation and Resilience for South Asia
<b>CDRI</b>	Centre for Disaster Resilient Infrastructure
<b>CES</b>	Consumer Technology Association
<b>CGE</b>	Computable General Equilibrium
<b>Covid-19</b>	Coronavirus disease
<b>DMH</b>	Department of Meteorology and Hydrology
<b>eMBeD</b>	World Bank's Mind, Behavior and Development Unit
<b>ESF</b>	Environment and Social Framework
<b>FCDO</b>	Foreign Commonwealth & Development Office (United Kingdom)
<b>FSA</b>	Fiscal Sustainability Analysis
<b>GBP</b>	British Pound
<b>GESI</b>	Gender Equality and Social Inclusion
<b>GFDRR</b>	Global Facility for Disaster Reduction and Recovery
<b>GSURR</b>	Global Practice for Social, Urban and Rural Development, and Resilience
<b>HEWCS</b>	(Regional) Hydromet, Early Warning and Climate Services (activity)
<b>ICT</b>	Information and Communications Technology
<b>IDA</b>	International Development Association
<b>IFC</b>	International Finance Corporation
<b>IMD</b>	Indian Meteorological Department
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IUCN</b>	International Union for Conservation of Nature
<b>M&amp;E</b>	Monitoring and Evaluation

<b>MDTF</b>	Multi-Donor Trust Fund
<b>MFU</b>	Macro-Fiscal Unit, Government of Pakistan
<b>MoF</b>	Ministry of Finance
<b>MS</b>	Macro-structural model
<b>MTI</b>	Macroeconomic Trade and Investment
<b>NCDDP</b>	National Community Driven Development Project
<b>NCRMC</b>	National Coastal Resources Management Committee
<b>NMHS</b>	National Meteorological and Hydrological Services
<b>NWP</b>	Numerical Weather Prediction
<b>PAKMOD</b>	Pakistan macro-model
<b>PARCC</b>	Program for Asia Resilience to Climate Change
<b>PPCP</b>	Peaceful and Prosperous Communities Project
<b>RCC</b>	Regional Consultative Committee
<b>RE</b>	Recipient-Executed
<b>RIMES</b>	Regional Integrated Multi-Hazard Early Warning Systems for Africa and Asia
<b>RIPC</b>	Regional Integration and Partnerships Committee (World Bank)
<b>SAHF</b>	South Asia Hydromet Forum
<b>SAR</b>	South Asia Region
<b>SARRE</b>	South Asia Region's Regional Integration and Partnerships
<b>SBP</b>	State Bank of Pakistan
<b>SCARP</b>	South Asia Climate Resilience and Adaptation Partnership
<b>SMS</b>	Short messaging service
<b>SOLAS</b>	Safety of Life at Sea
<b>SUPARCO</b>	Space and Upper Atmosphere Research Commission, Pakistan
<b>TF</b>	Trust Fund
<b>ToC</b>	Theory of Change
<b>TTL</b>	Task Team Leader
<b>UN</b>	United Nations
<b>USD</b>	United States Dollar
<b>VfM</b>	Value for Money
<b>WMO</b>	World Meteorological Organization

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# PARCC: Key Messages

1. **The FCDO-World Bank PARCC partnership is making good progress towards its objective of increasing resilience of South Asian countries to climate change** by supporting regional cooperation and dialogue; improving capability of countries in the forecast and use of information; and in promoting innovation to deliver useful weather and climate information services to vulnerable communities in South Asia.
2. **All nine activities in the PARCC portfolio are on-track; and a further two activities are in the pipeline.** PARCC's financial contributions are virtually fully allocated.
3. **In its second year, PARCC continued to build on the foundations of Year 1 which focused on engaging partners and establishing activities.** Year 2 made further in-roads by focusing on deepening engagement, facilitating dialogue, and supporting systems strengthening through capacity building, and the development of knowledge and critical tools.
4. **Positive results are emerging, tracked against four outputs:**
  - Output 1: Over 100 stakeholders benefitted from a series of **capacity building / trainings** on the use of macro-fiscal modelling tools for forecasting (Pakistan) and improving quality delivery of weather and climate information services for strengthening coastal resilience (Myanmar);
  - Output 2: Over 111 South Asian stakeholders participated in a **second South Asia Hydromet Forum (SAHF-2)** - an important platform towards fostering greater regional exchange and collaboration on hydromet, early warning and climate services;
  - Output 3: **Modelling and analytical tools** have been developed to assist the national governments of four countries (Pakistan, Bangladesh, Nepal, Myanmar) with bringing climate change in macro-fiscal modelling; and,
  - Output 4: Some nine **knowledge products** (including seven in progress) are bringing new information such as gap assessments and fiscal risks to help governments prepare for climate shocks and are promoting innovation to get timely climate and weather information to vulnerable communities. The launch of a new TechEmerge India Challenge Fund has received significant responses from entrepreneurs to pilot technology solutions to build resilience to climate change and meet disaster management needs amid Covid-19 in India.
5. **PARCC is making steady progress towards the three intermediate outcome indicators**, i.e., stakeholders value regional collaborative forums which enable them to share experience, new partnerships with regional institutions are set to address critical regional capacity and knowledge gaps, and there is growing regional interest in the use of improved forecasting tools and in potential scaled up investments.
6. **PARCC is not stand-alone: instead, the portfolio is linked with 19 World Bank investments** (est. US\$2.1 billion) in South Asia, enabling PARCC to extend its reach beyond Trust Fund resources. Moreover, the alignment of PARCC activities with other regional and international efforts is aimed at extending its reach more widely and remains important to ensure sustainability in the longer term.

7. **PARCC has focused on Value for Money in FY20** through: using wide platforms (e.g. SAHF-2) to convene stakeholders and by joining efforts with other collaborators (e.g. TechEmerge); initiating engagement with regional institutions to build momentum for collaboration and deliver capacity building; adopting a 'whole of finance' approach that shows that PARCC is part of a wider effort and draws on a range of funding; and keeping momentum despite Covid-19 related travel restrictions this year.
8. **Communications efforts have stepped up** as implementation is underway to increase awareness of key stakeholder groups about challenges and solutions and to generate wider support for a regional agenda. This has taken the form of a new website and communications materials around PARCC-supported events and linked operations.
9. **Covid-19 has impacted the PARCC portfolio due to travel restrictions and implementation challenges, but risks are being mitigated** by conducting virtual meetings/trainings and reviewing workplans to manage uncertainty. The pandemic has also demonstrated the need to build resilience; and the convergence of Covid-19 and weather-related risks is providing an opportunity for South Asian countries to move towards collaborative action.

# Overview Summary

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*The Program for Asia's Resilience to Climate Change (PARCC) aims to increase the resilience of select countries in Asia to climate change and extreme weather events by promoting regional cooperation on climate change and environmental resilience through analysis, capacity building and dialogue; improving forecast capability of countries and use of information in planning and decision making; and, supporting innovation to deliver useful weather and climate information services to vulnerable communities.*

*PARCC forms part of FCDO's overarching Asia Regional Resilience to a Changing Climate (ARRCC) program and is managed by the World Bank through a Trust Fund (TF) mechanism.*

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This Annual Report summarizes progress of the second year of implementation of the Program for Asia Resilience to Climate Change (PARCC) (GBP 10 million / ~US\$12.6 million) 2018-2022 since its launch in September 2018. This report covers progress of nine activities (US\$9.16 million)<sup>1</sup> that were operationally active in the reporting year, and two pipeline activities.

This year's report is presented in line with FCDO's Logframe and Theory of Change (ToC) which were revised and discussed with the World Bank and is structured around FCDO's annual reporting template. Following this Overview Summary, the report briefly sets out the Introduction to PARCC (Section 1), discusses progress towards the Intermediate Outcomes and the Outputs in FCDO's Logframe (Section 2), Program and Financial Management (Section 3), Risks to Delivery (Section 4), and ends with some Concluding Remarks (Section 5). Supporting Annexes include: Activity Snapshots (Annex 1) and Impacts of Covid-19 on Activity Implementation (Annex 2). The *names of the activities* are represented in purple font.

## Highlights of Progress for 2019/20

**The PARCC portfolio has continued to make steady progress in Year 2 against the four output areas, and early results show a positive progression towards the outcome of regional collaboration on hydromet and climate services.** However, it is important to reflect that progress towards the higher end objectives remains incremental and the results should be viewed within the complexity and diversity of the South Asian context, the disruptions caused by the pandemic in 2020, and as part of other larger efforts to support regional collaboration on climate change.

**Year 1 essentially focused on engaging partners, setting the parameters of the activities and early mobilization work.** It also focused on facilitating regional dialogue as a critical step in bringing stakeholders together and in helping to facilitate exchange of experiences among peers. This Year 2 has continued to build momentum by deepening and broadening engagement with regional stakeholders through a mix of dialogue, capacity building, and initiating knowledge and tools for system strengthening.

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<sup>1</sup> Amount reflects activities for SAR, not including Program Management and Administration costs.

**Portfolio implementation is on-track, although impacted by the Covid-19 pandemic.** There has also been a change in one on-going activity: the previously GFDRR-led *Challenge Fund* was reoriented as a Recipient-Executed grant under the Climate Adaptation and Resilience for South Asia (CARE) IDA project, with the funding mainly managed by Asia Disaster Preparedness Center (ADPC) and part to *TechEmerge India*, in partnership with the International Finance Corporation (IFC). However, other GFDRR coordinated analytical work is progressing in Sri Lanka and the Maldives.

**Two activities received endorsement by the World Bank SAR Regional Integration and Partnerships Committee (RIPC) in February 2020.** Of these, the *Regional Cooperation in Air Pollution Management* has begun implementation. The other activity is *Evaluating the Benefits of National and Regional Investments for the Whole Hydromet Value Chain* which is awaiting internal approvals<sup>2</sup>.

**While Year 1 of PARCC implementation focused on regional dialogue and convening stakeholders, in its second year, PARCC increasingly progressed towards systems building,** which is an important aspect in building preparedness of national agencies for larger hydromet programs. This approach also works in tandem with the World Bank's support to a new generation of projects that are potentially transformative – which are shifting the focus from data collection to service delivery and increasing focus on community resilience.

For example, in Myanmar, analytical studies are aimed at providing the knowledge base for strengthening national-level information systems for integrated management of coastal areas with recommendations for modernizing coastal disaster early warning systems. In parallel, risk assessment studies and analytical work are strengthening technical capacities of regional/state and local agencies to promote disaster and climate resilience of coastal communities. These activities are expected to lay the foundation for a long-term integrated investment program on coastal resilience in Myanmar.

**Dialogue and regional forums, such as the second South Asia Hydromet Forum (SAHF-2), supported by the World Bank, have not only been critical to engage stakeholders but have also helped to raise issues** – such as the need for sharing information services and envisioning innovations in product development and delivery.



**106** South Asian stakeholders participated in SAHF-2 in November 2019.

<sup>2</sup> This is on hold in light of funding requirements for the Afghanistan US\$2 million RE project.

## Box 1: Regional Collaboration Can Help Nations Manage Weather Risks

The second annual South Asia Hydromet Forum (SAHF-2) (Nepal, Nov. 19-21, 2019), combined support from PARCC and development partners to advance the regional agenda for resilience to severe weather. Meteorologists, hydrologists, data scientists, and other technical experts from all eight nations of South Asia gathered for the event. Participants exchanged ideas to improve weather, water, and climate information services.



South Asia needs to improve hydrology and meteorology (hydromet) services as the region is home to one-fourth of the global population and highly vulnerable to weather-related disasters. Since 2000, half of South Asians were affected by at least one natural disaster, such as floods, drought, landslides, and cyclones. Climate change will bring more volatile weather and rising sea levels, melting Himalayan glaciers, and deteriorating natural resources. The social and economic costs of weather hazards are staggering. For example, flooding alone will cost the region an estimated US\$215 billion annually by 2030, according to the World Resources Institute. International experience suggests that every dollar invested in strengthening weather and climate services results in benefits of US\$2-10. Regional collaboration can help national governments understand changing weather patterns and devise strategies to manage risks. Sharing sophisticated hydromet tools and data throughout a region is cost effective, especially for small nations.

Conceptualized in 2018, the forum in 2019 took a big step forward with all countries actively participating in panel discussions and agreeing on several important steps. Discussions focused on ways to scale up improvements in the quality of weather, water, and climate information. The following actions were among those discussed by forum participants to improve regional collaboration:

- Deepen relationships among national hydromet agencies through technical meetings;
- Expand dialogue with stakeholders in industry, government, and other key sectors;
- Focus on multi-hazard early warning systems;
- Assess each country's hydromet modernization targets and improvements over time;
- Create a regional hydromet portal for forecasters to exchange information;
- Hold regular meetings on Numerical Weather Prediction techniques that use mathematical models of the ocean and atmosphere;
- Adopt impact-based forecasting that uses clear language and actionable messages targeted at key sectors;
- Harmonize agencies' data standards, formats, and technical specifications to make the procurement process faster and to help forecasters communicate clearly with each other; and
- Continue to hold the South Asia Hydromet Forum with clearly defined objectives.

The event ended on a high note by partnering with RIMES, the [Regional Integrated Multi-hazard Early Warning System for Africa and Asia](#), to provide a regional training initiative in response to the need expressed by virtually all the countries in the region. The 2019 South Asia Hydromet Forum benefited from support from a number of regional organizations, permanent representatives to the World Meteorological Organization, and key advisors working in the region. Supporters included PARCC, UK Met Office, European Union's South Asia Capacity Building for Disaster Risk Management, Global Facility for Disaster Reduction and Recovery, International Center for Integrated Mountain Development, International Water Management Institute, and others.

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**key stakeholders (including 22 women) benefitted from training events from two PARCC activities in Pakistan and Myanmar**

**The World Bank, and thus PARCC, takes a demand-driven approach aligned with country priorities.** Systems building efforts include: (i) training and capacity building of national and regional stakeholders, for which feedback from client governments has been positive on the quality and appropriateness of the training; (ii) introducing new tools and models to help governments bring climate issues into policy making; and, (iii) in-depth technical work that is bringing new knowledge on a range of areas including economic costs and benefits (Pakistan; Bangladesh, Maldives, Nepal); climate data and capacity gap assessments (Bangladesh, Nepal, Pakistan); impacts on user behavior (Sri Lanka), assessing how remotely located communities can access hydromet information and climate services (Myanmar); recommendations for modernizing coastal disaster early warning systems, nature based solutions and community-based disaster risk management (Myanmar).

**Modest signs of PARCC's influence are starting to emerge.** A major outcome this year is that PARCC has helped to establish a strong multi-sectoral engagement on coastal resilience in Myanmar, coordinating across national level Ministries and agencies, and with the Ayeyarwady regional government. The advisory committee to the high-level, cross-agency National Coastal Resources Management Committee welcomed the initiative and confirmed that the focus of the study was fully consistent with national level priorities of strengthening disaster and climate risks in coastal areas, addressing marine plastics, nature-based solutions, land use policies in coastal areas and strengthening overall governance of the coastal region. It was agreed that the Bank study would build on and support ongoing efforts by IUCN to develop a national Integrated Coastal Management Plan.

**Another significant development is that PARCC is helping to strengthen collaboration between the Indian Meteorological Department (IMD) and Myanmar's Department of Meteorology and Hydrology (DMH),** and discussions between the Directors General of both these agencies indicate interest in regional collaboration in the Bay of Bengal region. For cyclone forecasting, DMH relies heavily on the IMD for forecasts, which it uses to tailor and issue cyclone warnings. There is significant potential to enhance coastal monitoring, impact-based forecasting and early warning systems. PARCC is also helping to identify new areas that need action, including ocean plastics and waste management, that could pave the way for collaborative activity.

**This year, several PARCC activities have focused efforts on developing climate information-based services for vulnerable communities.** PARCC is doing this through new knowledge, engaging with local level leaderships, and supporting innovation. Several of PARCC's activities are supporting analytical work to this effect across South Asian countries, all of which are highly prone to frequent and intense natural disasters and extreme weather events, impacting the lives of millions of people. In Myanmar, the World Bank team also undertook community consultations in over ten villages and townships in the Ayeyarwady Region, and community perspectives have subsequently been included in the analysis.

Notably, in Bangladesh, PARCC helped to facilitate early engagement between the Government of Bangladesh and technical agencies on developing technologies to get timely and accurate weather information out to artisanal fishers at sea – which was trialed during the Cyclone Amphan. Every year, thousands of fishers lose their lives at sea due to risks from extreme weather events, and small fishing vessels may not normally meet international Safety of Life at Sea standards. By identifying and offering practical solutions for tens of thousands of small artisanal vessels that are not normally covered by national/commercial vessel monitoring systems for the larger fishing fleets, PARCC proposes to fuel innovation and enable on-going World Bank projects in Bangladesh, Maldives and Sri Lanka to further increase resilience of fishing communities to climate change.

Another activity that has progressed is the **AdapTech Resilience Challenge**, recently launched by *TechEmerge*, that invites applications from entrepreneurs to pilot or deploy eligible solutions that will help address the needs of the most climate- and disaster-vulnerable populations. The Innovation Challenge Fund is supported by PARCC funds and has two tracks: Disaster Management during the Covid-19 pandemic (application deadline June 2020); and Resilience to Climate Change and Disasters (application deadline July 2020). These are supervised by the World Bank CARE project team, demonstrating the value of a joined-up approach within the Bank. The *TechEmerge* India Challenge is being done in collaboration with India’s National Disaster Management Authority (NDMA), IFC, GFDRR, CES, Nasscom, and with the support of PARCC. Winners have the opportunity to present at a CES2021 event in Las Vegas. The Innovation Fund initiative will also collaborate with India’s NDMA, including on challenges related to the priorities of the Coalition for Disaster Resilient Infrastructure – an international initiative (of which the UK is a founding member) launched by Indian Prime Minister Modi at the UN Climate Action Summit in New York, in September 2019.

Activities are linked to **19** World Bank operations **(US\$2.1B)**

**PARCC is not stand-alone: the portfolio aligns with larger World Bank investments in South Asia, enabling PARCC to extend its reach beyond Trust Fund resources.**

This happens in a number of ways: firstly, **PARCC is closely aligned with and informs the Bank’s investment programs.** For example, the Bank’s South Asia Regional Hydromet and Climate Services program – a multi-country program involving IDA and trust funded projects – supports participating countries and institutions to better respond to weather and water-related hazards and climate risks domestically and regionally. The World Bank’s national-level capacity building initiatives are being delivered in tandem with PARCC’s regional efforts to ensure complementarity of approaches.

Secondly, **PARCC is able to spotlight key issues in wider World Bank forums and in external discussions with partners.** Technical advice and analytical work undertaken through PARCC activities are bringing new knowledge, laying the foundations through inputs to design, and bringing a regional lens to critical issues. For example, in Myanmar, PARCC technical support has focused attention on coastal and river

flooding in vulnerable areas, helped facilitate discussions between national-level agencies and the Ayeyerwady regional government, and has included community participation.

**Finally, PARCC is leveraging other World Bank efforts to gain more visibility of the climate agenda and traction with regional stakeholders.** For example, the macro-fiscal modelling work in Pakistan builds on the Bank's support to a broader set of reform measures in Pakistan; including by engaging with the newly established Macro-Fiscal Unit (MFU) in the Ministry of Finance in this reporting year. PARCC is directly supporting the MFU by helping to build skills on macro-fiscal analysis with climate component and providing technical modelling support. Analytical work in Pakistan under PARCC serves as a catalyst for modelling the macroeconomics of climate change in other regions too. The prototype model is developed for analysts in the Ministry of Finance and the State Bank of Pakistan to highlight and quantify the economic costs and benefits of climate change. In addition to the strong policy implications, PARCC's work will also be complemented by a comprehensive engagement strategy to ensure buy-in and adoption of the developed tools by relevant stakeholders.

**By virtue of the World Bank's participation in external events, PARCC team members have been able to use these opportunities to promote the regional hydromet agenda.** For example, as an observer at the ADPC's 15th Regional Consultative Committee (RCC) in Bangkok, the World Bank team introduced Climate Resilience into the RCC<sup>3</sup>. This was a significant opportunity as the RCC comprised of National Disaster Management Offices of 26 Member Governments and serves as a mechanism for the development of actionable strategies for disaster risk reduction and to promote cooperative programs at regional and sub-regional levels.

**There is also increasing alignment of PARCC activities with other regional and international efforts, which is important for exerting wider-reaching influence and for ensuring sustainability in the medium to long-term.** PARCC is working with and through other regional institutions to help foster an enabling environment and to build capacity. This year, PARCC has made excellent progress in initiating an institutional partnership with the Regional Integrated Multi-Hazard Early Warning System for Asia and Africa (RIMES) to deliver regional capacity training and to manage the information portal. As an intergovernmental institution based in the region, RIMES is mandated to contribute to the generation and application of early warning systems and capacity building. The RIMES sub-committee has endorsed the concept and contractual processes are at an advanced stage of discussion.

**Another example is the Pakistan macro-fiscal model (under development), which is intended to be used as a blueprint for macro-climate modelling to the members of the Coalition of Finance Ministers for Climate Action<sup>4</sup>.** The coalition is aimed at driving stronger collective action on climate change and its impacts and has endorsed a set of six common principles (the Helsinki Principles) that call for the inclusion of climate policy in macroeconomic policy, fiscal planning, budgeting, public investment management, and procurement practices. In support of the Helsinki principles, PARCC is working with the World Bank's Coalition team to enhance the policy relevance and possibly use the Pakistan model as a blueprint for the modelling approach in other countries.

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<sup>3</sup> More information is at: <http://www.rccdm.net/rcc-meetings/>. The World Bank's address is available at: <https://www.youtube.com/watch?v=LQ8Zx8zWulc>

<sup>4</sup> This new coalition, launched at the Spring meetings of the World Bank Group and International Monetary Fund in April 2019, has representation of Finance Ministers from more than twenty countries. More information available at: <http://pubdocs.worldbank.org/en/646831555088732759/FM-Coalition-Brochure-final-v3.pdf>

## Context and Value Add of PARCC in South Asia

South Asia has a high disaster risk profile as it is prone to weather and water-related disasters such as flooding, drought, thunderstorms and cyclones. This year, South Asia faced the dual challenge of responding to the Covid-19 pandemic as well as coping with weather-related events. Super-cyclone Amphan caused devastation in India and Bangladesh in May 2020, while Cyclone Nisarga affected parts of western India in early June 2020. Climate change could increase the frequency and intensity of such events in the future.

**National capacities to tackle these challenges remains limited.** Hydrometeorological (hydromet) service delivery is usually managed by national public entities who tailor their services based on the needs of different users. While several countries are taking action to improve their forecasting and predictive ability to improve timely and accurate warnings for high-impact weather and climate events, most are constrained by limited policy response frameworks, weak systems and mechanisms for disaster preparedness, and their high disaster risk profiles. Consequently, without adequate systems or information services, disasters pose a direct threat to the lives and livelihoods of millions of people, coastal and vulnerable communities are particularly affected, and the resultant damage to infrastructure and ecosystems from extreme events can have severe fiscal losses and economic impacts. Post-disaster recovery is often costly and time-intensive, requiring a multi-sectoral response for which countries are often ill-equipped.

**World Bank studies show that countries in South Asia have benefitted from investments in hydromet services since the 1980s including: flood forecasting, forecasting to support agricultural productivity, and climate adaptation.** Bangladesh was one of the first to receive World Bank investment particularly in flood forecasting; India has invested in weather monitoring and forecasting and management of the risks of cyclones and flooding. Afghanistan, Pakistan, Nepal, and Sri Lanka are each undertaking system-wide modernization of their national hydromet agencies, and the Maldives has expanded weather monitoring.

**The rationale for a regional approach remains strong:** firstly, the transboundary nature of weather patterns and phenomenon mean that a regional perspective can help with better monitoring and prediction; secondly, regional centers – such as the Regional Specialized Meteorology Center (RSMC) located at the Indian Meteorological Department – can provide weather-related information that can benefit all countries in improving their forecasts; and thirdly, regional collaboration provides economies of scale by helping to build on existing information products and forecasts rather than invest in separate capacity, and by fostering learning and innovation in the development and delivery of weather, water and climate information-based services.

**There is increasing realization among South Asian stakeholders that the transboundary nature of weather patterns and climate risks require a sub-regional or regional response and that regional cooperation could help to improve the accuracy of forecasting and monitoring of extreme hydromet conditions.** Regional governments also recognise that they face common challenges and constraints, have similar data and hydromet information needs, and could benefit from collaborative action. This reporting year, India's Prime Minister launched the Coalition for Disaster Resilient Infrastructure at the UN Climate Action Summit (2019) signaling interest in wider partnership to promote resilience to climate and disaster risks. However, the political economy of South Asia has historically tended to constrain cooperation – for instance, there is limited scope to share satellite-based data and limited access to

regional Numerical Weather Prediction (NWP) products and services, and although there is regional interest and demand, there is significant opportunity towards regional collaborative frameworks.

**The Covid-19 pandemic has further demonstrated** the need to build resilience; and the convergence of the Covid-19 and weather-related risks is providing an opportunity for South Asian countries to move towards collaborative action. Stakeholders are appreciative of regional platforms, such as the SAHF, which enable them to participate in technical forums to share knowledge, lessons and experiences.

## Risks to Delivery

**Overall, the PARCC portfolio risk remains low-medium, particularly as activities are World Bank-executed and mainly analytical in nature.**

**The recent Covid-19 pandemic has raised two risks:** first, some activities have not been able to progress at intended pace due to travel restrictions from Covid-19. Consequently, some activities require a time extension to enable data collection and analysis, discussions with partners, training on the use of tools, and other dissemination events; second, it is as yet unclear to what extent Covid-19 will result in countries prioritizing national interests over regional ones, which could slow progress towards collaborative activity. Shifting regional and geo-politics continue to affect South Asia and are an important consideration in any efforts towards regional collaboration. Nevertheless, PARCC continues to actively seek opportunities to help national agencies in improving the effectiveness of their hydromet modernization investments through regional collaboration. By focusing on strengthening service delivery (e.g. capacity, systems, standards etc), PARCC is not only helping to build national capacities, but is also laying an important foundation towards a collaborative regional hydromet approach and investments in modernizing hydromet services in the region. The World Bank's South Asia Regional Hydromet Services and Resilience Program, and other pipeline investments are useful entry points to continue engagement with partners and build consensus for collaborative action.

**Limited access to reliable data and local capacity constraints continue to remain risks.** The Bank teams are addressing this issue by working with local partner institutions and local consultants who can gather information on-the-ground; by drawing on extensive literature; and by liaising with Bank Country Office teams. PARCC teams are also delivering training sessions with local agencies to help build their capacity and providing technical notes and policy recommendations that can be taken forward.

**An operational risk relates to the tranching allocation of funds throughout the life of the TF;** for instance, activities can only start implementation once funding has been received from FCDO, which may reduce the implementation time; or, if funds are released at the end of the program this leaves little time to spend. The risk increases with Recipient-Executed activities, as the amounts are generally higher than Bank-Executed, and the full amount of funding is needed in the parent TF account at the time of project appraisal and negotiations. The Secretariat continues to undertake adaptive program and cash flow management to manage this risk.

## Forward Look

**Recovery and resilience building are critical elements of the World Bank’s SAR Regional Strategy and the Regional Integration Strategy for South Asia, particularly following the Covid-19 pandemic.**<sup>5</sup> PARCC contributes to this strategic agenda and to the Bank’s Climate Action Plan. The PARCC Trust Fund remains an important part of the Bank’s regional efforts of supporting dialogue on business continuity and convergence of planning to build resilience and deal with shocks.

**The PARCC portfolio has been impacted by Covid-19.** Travel has been suspended, and more is being done to engage stakeholders remotely – including through remote discussions, webinars and awareness building, and lesson learning. PARCC proposes to convene regional events, including a SAHF-3 forum, to continue building momentum towards regional collaborative action. A number of PARCC technical products are under implementation, which are proceeding according to their implementation schedule. The two new activities will also be proceeding, and the Bank will continue to adapt to the changing situation, including as it pertains to Covid-19 developments.

**The World Bank welcomes learning and knowledge sharing opportunities.** As PARCC knowledge products are developed, these will be socialized internally within the Bank, primarily through internal knowledge sharing events and circulation. External dissemination of PARCC analytical and knowledge products will continue to rigorously follow standard World Bank practice as well as FCDO’s communication guidelines, and will be featured on the World Bank’s PARCC website (once final). The Bank has also participated in the knowledge sharing / case study development that was led by OPM / FCDO. Looking ahead, the World Bank will also work closely with FCDO, government stakeholders and other ARCC partners to identify opportunities to showcase relevant PARCC work.

**Collaboration remains a central approach of PARCC.** The World Bank continues to regularly meet with the UK Met Office to exchange ideas and information and to discuss opportunities for collaboration. Additionally, the proposed PARCC partnership with RIMES will pave the way for deepening collaborative ways of working with other regional institutions and partners in South Asia.

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<sup>5</sup> The SAR Regional Strategy highlights the need for stepping-up action on climate change and emphasizes improving weather and climate information services, and early warning systems to support adaptation and resilience as one of the most important actions to support adaptation. The business plan guides the Region’s climate dialogue and analytical and operational work with the goal of supporting a strategic shift in the portfolio towards climate-smart infrastructure investment from IBRD/ IDA lending, along with a partnership with the countries to access international climate finance. The SAR Regional Integration Strategy is being revised and prioritizes building resilience of the region to climate and weather risks, as well as to future shocks.

# Section 1: Introduction

## 1.1 Background

South Asia is highly vulnerable to the impacts of climate change, including climate-induced natural disasters, such as floods, drought, thunderstorms, heatwaves, landslides, cyclones, and change of patterns of precipitation and temperature. Cities in Asia, especially those in coastal or delta areas, are among the most vulnerable, and urban poor are disproportionately affected as they live in marginal areas and have limited access to assets or social safety nets. Coastal communities are also frequently exposed to weather extremes, such as cyclones, storm surges and sea level rise.

Climate change is expected to increase the intensity and frequency of extreme weather-related natural disasters, leading to loss of life and assets and threatening countries' fiscal sustainability. The Intergovernmental Panel on Climate Change (IPCC) 2018 report on 'Global Warming of 1.5°C' predicts that extreme weather events will continue to increase as the global mean temperature rises. The 'Global Climate Risk Index 2019'<sup>6</sup> compiled by Germanwatch e.V. shows that South Asian countries are among the most vulnerable globally to the impacts of climate change. However, the size and probability of materialization of these risks are often poorly understood, with potentially large and adverse implications for fiscal and debt sustainability.

In the past two decades, over 50 percent of South Asians, or more than 750 million people have been affected by at least one natural disaster. The social and economic costs of such hazards have been staggering, with almost 230,000 people dead and US\$45 billion in damages between 1970 and 2008. Almost 45 million people in the region are estimated to have been affected by the 2017

### South Asia

**Bangladesh** ranks 7<sup>th</sup> on the Global Climate Risk Index 2019 among countries most affected by extreme weather. Almost 80 percent of the country is prone to flooding; with severe cyclones in coastal areas; and high summer temperatures in the north/ north-western regions causing drought and affecting the most marginalized people. Changes in average weather could cost 6.7 percent of Bangladesh's 2018 GDP by 2050.

**Nepal** is highly prone to disasters and climate risks and ranks as the 11<sup>th</sup> most affected country in the last 20 years by the Climate Risk Index. Over 80 percent of Nepal's population is at risk of multiple natural hazards, such as floods, landslides, windstorms, hailstorms, fires, earthquakes and Glacial Lake Outburst Floods. In 2017 alone, Nepal had 164 deaths and loss of US\$1.9 billion due to natural disasters.

For the **Maldives**, climate change carries an existential threat. Over 80 percent of the land is less than one meter above mean sea level, and a rise in the sea level can have devastating consequences. Maldives is vulnerable to beach erosion and salt-water intrusion, and surrounding coral reefs are at risk due to gradual warming of sea water. Lives and livelihood of people, who mostly rely on tourism and fisheries, are threatened by climate change.

**Myanmar** is one of the least developed countries in South East Asia; its coastal and low-lying delta areas are vulnerable to cyclones, storm surges, flooding, coastal erosion, extreme temperature, drought and rainfall, with devastating impacts on the economy, livelihoods and chronic poverty.

**Pakistan**, according to the Global Climate Risk Index 2019, was the world's 8th most affected by climate-related events in 20 years; and the country experienced 145 events over this time period. Floods linked to climate change in Pakistan have resulted in more than US\$18 billion in losses since 2010 and future impacts are predicted to intensify.

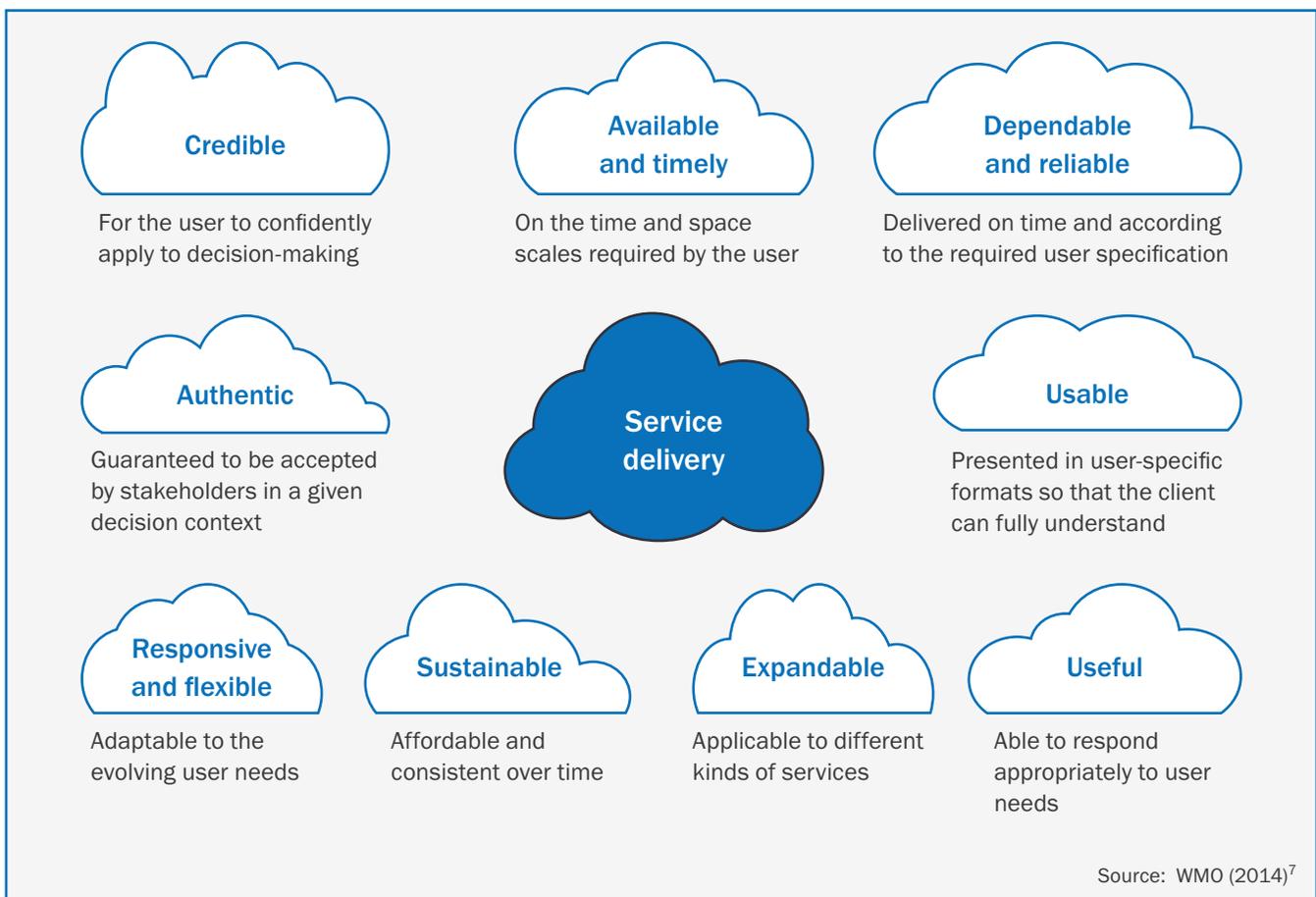
**Afghanistan** ranks 2<sup>nd</sup> among low-income countries on the Global Climate Risk Index in terms of fatalities from natural disasters between 1980 and 2015. Droughts and floods cause economic damage and affect a significant proportion of the population. Without action, climate change related impacts could push an additional 62 million people in the South Asia Region into extreme poverty by 2030, with the risk of more than 40 million internal climate migrants by 2050.

<sup>6</sup> [https://germanwatch.org/en/16046#:~:text=The%20Global%20Climate%20Risk%20Index,%2C%20heat%20waves%20etc.\).&text=Loss%20and%20damage%20appears%20as,used%20as%20a%20negotiation%20chip.](https://germanwatch.org/en/16046#:~:text=The%20Global%20Climate%20Risk%20Index,%2C%20heat%20waves%20etc.).&text=Loss%20and%20damage%20appears%20as,used%20as%20a%20negotiation%20chip.)

floods. The scale is only expected to increase. A World Resources Institute estimate indicates that losses in the region can amount to US\$215 billion each year by 2030. World Bank estimates suggest that climate change could drag an estimated 62 million people below the extreme poverty line in the SAR region by 2030, mostly due to agricultural impacts of a changing climate.

**Development of hydromet services can make a critical contribution to enhancing the performance of weather-dependent sectors (i.e. agriculture, aviation, water, urban infrastructure, hydropower and tourism) and improve the livelihoods of local communities.** Investments in disaster early warning systems can be critical in saving lives and assets and strengthening the resilience of vulnerable communities.

**Figure 1: Qualities of Effective Service Delivery**



**However the region faces particular challenges**, such as: mixed technical capacity of hydromet agencies; limited data quality and monitoring systems; limited attention and ability to convert data into services for users; poor system integration and coordination among providers of services and user agencies; limited policy, and regulatory frameworks; limited ICT systems to allow better access to data and services; limited financial resources; poor coordination with sub-national levels; and geopolitics, which constrain data and information sharing among regional neighbors.

<sup>7</sup> The WMO Strategy for Service Delivery and Its Implementation Plan. WMO-No. 1129. Geneva, Switzerland (2014).

## 1.2 PARCC's Strategic Objectives

The program development objective of PARCC is to increase the resilience of SAR countries to climate change by fostering regional cooperation, supporting delivery of improved weather and climate information services and increasing the use of such services in planning and decision making across climate affected sectors, and promoting innovation.

PARCC contributes to FCDO's Asia Regional Resilience to a Changing Climate (ARRCC), which aims to increase the resilience of vulnerable groups and of economic growth to current and future climate and environmental impacts in Asia. This is intended to be achieved by the use of better climate forecasts and services in planning and decision making, delivering new technologies and innovative approaches to get climate warnings and forecasts to vulnerable groups, and accelerating regional cooperation to build climate resilience.

Efforts to strengthen resilience through improvements in disaster early warning systems and weather services require national-level modernization efforts but also have a regional dimension. The Trust Fund was designed so that its activities complement the Bank's larger investment programs at the national and regional levels. Activities fall within priority themes, which include: Regional Cooperation to Strengthen Disaster and Climate Resilience; Strengthening Hydromet, Early Warning and Climate services to improve resilience to disasters and climate impacts; Managing the macroeconomic and fiscal impact of climate change; and, Innovation for Resilience.

PARCC is one of five regional trust funds managed by the World Bank's South Asia Region's Regional Integration and Engagement (SARRE) team that collectively supports work towards a more integrated and resilient Asia. PARCC is strongly relevant to South Asia. The Trust Fund remains part of a cohesive effort towards delivering the World Bank's Regional Integration Strategy for South Asia, which strongly prioritizes climate change. Additionally, PARCC activities align with and complement the World Bank's Country Strategies and investments in South Asia, thus enabling a more integrated approach to tackle these key regional issues.

## 1.3 PARCC Portfolio

The PARCC portfolio currently consists of nine on-going activities, plus two new activities that were endorsed by the RIPC but are yet to fully begin implementation. A majority of activities continue to be strategically linked to World Bank lending operations in South Asia. A full list of PARCC activities is in [Annex 1](#).

PARCC's activities mainly fall into the two categories: (i) Bank-Executed activities, for which the World Bank has implementation responsibility, such as analytical services, technical assistance, project preparation, including provision of technical, advisory and analytical services; and (ii) Recipient-Executed activities, for which Recipients have implementation responsibility, including activities which complement and leverage World Bank-financed operations, analytical work and TA in support of improved development outcomes.

The PARCC portfolio has been impacted by Covid-19. Covid-19 has impacted PARCC activity implementation in terms of travel, and in a few cases, delivery timing. Of the nine active PARCC activities, two have been granted an extension. *Managing Fiscal Risks Associated with Climate Change* has been

extended to June 2021. Travel restrictions have placed a joint workshop to discuss activity findings with officials from each of the Ministries of Finance on hold. The activity team is exploring ways to conduct this workshop virtually. *Innovation for Resilience Analytics* has been extended to September 2021. Travel restrictions have made certain field-based activities impossible in the near-term. Cost savings will enable the Myanmar team to conduct three additional capacity building activities (based on stakeholder request). Other PARCC activities do not require an extension as of June 2020, but activity implementation is affected. Remote engagement (e.g. teleconference, phone consultations, written questionnaires, surveys and online communications platforms, local rather than international consultants) will be the modus operandi until travel restrictions are lifted. There are no significant changes to start-up plans for the new activities, as they have been designed within the Covid-19 operating context. Some activities may be able to respond to the Covid-19 crisis. (See Annex 2 for more information on impact of Covid-19).

**Table 1: PARCC Portfolio**

Activity	Start Date	End Date	Focus	Amount USD
Macro-Fiscal Model for Pakistan with a Climate Change Module	Dec 2018	Dec 2020	Pakistan	500,000
Managing Fiscal Risks Associated with Climate Change	Apr 2019	Jun 2021	BG, MD, NP	200,000
SAR Hydromet, Early Warning and Climate Services Program	Oct 2019	Oct 2022	SAR	1,500,000
SAR Climate Adaptation and Resilience Partnership	Jun 2019	Jun 2022	SAR	1,500,000
Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar	Jun 2019	Jun 2021	Myanmar	400,000
SAR Blue Resilience	Dec 2019	Jun 2022	BN, IN, MD, SL	560,000
Innovation for Resilience Analytics	Jan 2019	Sept 2021	SAR, Myanmar	600,000
CARE Project: Climate Adaptation and Resilience (Challenge Fund)	May 2020	July 2022	SAR	3,500,000
Promoting Regional Cooperation in Air Pollution Management	May 2020	Dec 2020	SAR	400,000
<b>Subtotal Active Portfolio</b>				<b>9,160,000</b>
Evaluating the Benefits of National and Regional Investments for the Whole Hydro-met Value Chain	Pipeline	-	SAR	500,000
SAR Collaboration for Preparedness and Resilience to Disaster and Climate Risks: Hydro-met and Early Warning Services	Pipeline	Sept 2020	Afghanistan	2,000,000
<b>Subtotal Pipeline</b>				<b>2,500,000</b>
<b>Total Active and Pipeline</b>				<b>11,660,000</b>

In terms of PARCC delivery, the program is managed by a team led by the Program Manager, under the direction of the Director of Regional Integration and Engagement (SARRE). A technical lead provides sectoral knowledge and the link with the Global Practice for the Program. PARCC activities are delivered or supervised by Task Team Leaders, supported by technical teams. To assure strategic alignment and efficiency, allocations are endorsed for all SAR Regional Trust Funds by a Regional Integration Programs Committee (RIPC) chaired by the Director, SARRE and represented by Country Management Units and Global Practices. This exploits complementarities between the five regional Trust Funds, leverages the wider relationships and networks, and aligns with the Bank's investments in the region. The endorsed activities then go through the Bank's normal clearance, and Accountability and Decision Making (ADM) and quality control processes.

# Section 2: Logframe Progress Reporting - Intermediate Outcomes And Outputs

This section reports PARCC progress against the ARRCC Logframe. This includes three indicators against the Intermediate Outcomes and five indicators against the four Output areas.



Intermediate Outcomes:	Annual Progress
<p><b>Regional Collaboration measures:</b> Number of collaborative measures fostered. [e.g. joint studies, analytical research, partnerships, other collaborative activities]</p>	<p><b>Three.</b></p> <p>(i) <i>South Asia Regional Hydromet and Early Warning Systems (HEWCS)</i>: the second <b>South Asia Hydromet Forum (SAHF-2)</b>, was convened from November 19-21, 2019 in Nepal, with strong interest from participants to continue with similar forums.</p> <p>(ii) The same activity has also initiated a <b>partnership with RIMES</b> for the delivery of a regional training services and an action plan will be developed. RIMES had their council meeting in Jan and the sub-council on SAR agreed to use this mechanism to promote hydromet regional collaboration.</p> <p>(iii) <i>The Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar</i> activity is helping to <b>facilitate collaboration</b> between the Indian Meteorological Department (IMD) and the Department of Meteorology and Hydrology (DMH) in Myanmar, and early discussions between the Directors General of both organizations indicate interest in regional collaboration in the Bay of Bengal region. For cyclone forecasting, DMH relies heavily on the IMD for forecasts, which it uses to tailor and issue cyclone warnings. There is significant potential to enhance coastal monitoring, impact-based forecasting and early warning systems. PARCC is also helping to identify new areas that need action, including ocean plastics, that could pave the way for collaborative activity.</p>

<p><b>Client Governments adopt PARCC tools / systems:</b></p> <p>ii. Number of policy or operational measures identified and/or taken up by client governments, including for vulnerable groups and women</p>	<p><b>One, in progress.</b></p> <p>(i) The use of the Fiscal Sustainability Analysis (FSA) tool, in the <i>Managing Fiscal Risks Associated with Climate Change</i> activity, has buy-in of the three client governments and has been used to analyze the impacts of climate change on fiscal variables.</p> <p><b>Additional:</b></p> <p>(ii) <i>South Asia Regional Hydromet and Early Warning Systems (HEWCS)</i>: Although not counted as a result, it is worth noting that there is growing interest in Numerical Weather Prediction and Impact based forecasting among SAR countries. PARCC technical support contributed to the development of a draft regulatory framework for Bhutan, which is with government for internal consultation.</p>
<p><b>Forecasting / EWS tools in operation:</b></p> <p>iii. Number of regional / sub-regional pilot forecasting/early-warning systems or tools, providing targeted information on the impacts of weather events such as floods and storms</p>	<p><b>Two in progress.</b></p> <p>(i) <i>Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar</i>: The Risk Assessment tool has highlighted gaps in institutional capacity, coastal monitoring, forecasting and early warning systems, in disaster preparedness and in resilient infrastructure and nature-based solutions. There is strong ownership from government and interest from the Ayeyarwady Regional Government and from national level agencies, including Department of Meteorology and Hydrology, Department of Disaster Management and Forest Department (Secretariat for NCRMC) for Bank support for a coastal resilience program in Myanmar.</p> <p>(ii) <i>SAR Blue Resilience</i>: Across the three countries, and in Bangladesh in particular, PARCC is fueling innovation and enabling WB projects further increase fishing communities resilience to climate change impacts by identifying/offering practical SOLAS solutions for tens of thousands of small artisanal vessels that are not normally covered by national/commercial vessel monitoring systems for the larger fishing fleets. More detailed information is available under Output 3.</p>

## Output 1: Capacity Enhanced



### Training on Modeling for Macro-fiscal Analysis in Pakistan October 9-11, 2019 - Islamabad



Output indicator	WB Milestone for FY19-20	Actual Progress
(i) No of key stakeholders benefitting from capacity building / training (disaggregated by gender), including Ministries of Finance	Over 100 people trained.	<p>Milestone met. Some 111 key stakeholders (including 22 women) benefited from training sessions from two PARCC activities, in Pakistan and in Myanmar</p> <p><i>(i) A Macro-fiscal Model for Pakistan with a Climate Change Module:</i></p> <ul style="list-style-type: none"> <li>• 15 participants (including 2 women) attended a “Training on Modelling for Macro-Fiscal Analysis in Pakistan” (9-11 October 2019, Islamabad).</li> <li>• 7 participants from the State Bank of Pakistan attended a second follow-up training on PAKMOD (the macrostructural model with a climate-aware module for Pakistan) from 17-21 February 2020.</li> <li>• 17 participants (including 5 women) participated in a training on February 25-28, 2020.</li> <li>• 2 participants attended three online workshops on April 28, 29, 2020, and May 5, 2020.</li> </ul>

*(ii) Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar*

- **Some 70 people** (40 people at the national level; 30 officials in Ayeyarwady) benefitted from trainings on improving coastal resilience. These included 15 women from the national level.

Institutional capacity of regional stakeholders is limited in terms of producing and using climate and weather information at scale. PARCC is helping to strengthen country-level capacity by engaging key decision makers and practitioners in the use of modelling tools for forecasting and improving quality delivery of weather and climate information services and strengthening coastal resilience. This year, efforts have largely focused on national and sub-national level stakeholders in Pakistan (macro-fiscal models), and in Myanmar.

(i) The activity, *A Macro-fiscal Model for Pakistan with a Climate Change Module*, contributes to a broader set of reform measures in Pakistan; including by engaging with the newly established Macro-Fiscal Unit (MFU) in the Ministry of Finance in this reporting year. The PARCC activity is directly supporting the MFU by helping to build skills on macro-fiscal analysis with a climate component and providing technical modelling support.

This year, the activity remains on-track and has delivered a total of six trainings: three in-person trainings, followed by three remote / on-line trainings (due to Covid) to Pakistani officials. The first training in October 2019 helped to introduce and provide a basic understanding of the proposed macro-fiscal model to relevant officials (e.g. baselines, designing policy experiments, policy simulations). The process involved sharing the World Bank's standardized model with government and taking on board their feedback to ensure that the model would be suited to their needs. Participants included staff from the Ministry of Finance, Planning Commission, State Bank of Pakistan, Pakistan Institute of Development Economics, and the Sustainable Development Policy Institute.

The second and third trainings, in February 2020, were delivered by Bank team members to officials in the modelling and research department of the State Bank of Pakistan. The trainings consisted of lectures and applied exercises (such as the impact of the removal of energy subsidies, economic costs of climate events) using the model. The trainings discussed the various trade-offs (e.g. prices, unemployment, consumption, budgets and economic growth) when removing the energy subsidies. After the formal lectures, the authorities used PAKMOD (the macro-model developed) to shed light on two aspects: (i) the impact on prices and output when removing the large energy subsidies and (ii) the potential economic costs of climate events. The mission also discussed other macroeconomic shocks (e.g. GST harmonization and trade shifts). Due to Covid-19 travel restrictions, the Bank team continued to provide on-line support to the Macro-fiscal unit on the use of the tool, through three remote trainings.

The activity has faced two challenges: first, government attention has shifted to economic impacts of the Covid-19 shock, and climate change has therefore become a less of an immediate priority. It should be noted that the authorities requested support on modelling Covid-19. A second challenge

relates to the lack of verifiable macro-data, which was required for modelling. The World Bank team was therefore involved in a process of working closely with government to collect this information, incorporate it into the standard model, test this with MoF staff to ensure that it met their needs, develop a customized version for Pakistan, and then provide training in its use. Additional data, such as crop production and destruction due to adverse weather, were collected from several sources. To date, the model also reflects the economic impacts of pollution. The state of the model currently reflects the latest data, it includes a detailed energy module with various energy types, and it includes various channels of climate shocks – all of which are connected to the fiscal-monetary policy and economic landscape. The model is fully functional, but will be further refined by October 2020, and a wrap up workshop with government is planned as the activity draws to a close.

(ii) ***Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar***. A capacity building event was delivered in November 2019 for 70 participants from national and sub-national levels. The topics focused on international experience and best practices on coastal resilience; findings from risk analysis and other technical analysis. These were identified following a consultation mission in May 2019. The mission also used the opportunity to consult with stakeholders and surface key issues related to hydromet and disaster risk reduction.

Participants represented the Department of Metrology and Hydrology (Ministry of Transport and Communication); Department Disaster Management (Ministry of Social Welfare, Relief and Resettlement); Forest Department; Environment Conservation Department (Ministry of Environment Conservation and Forestry); Department of Highways (Ministry of Construction); Mawlawmyine University; International Union for Conservation for Nature; Danish International Development Agency; Wildlife Conservation Society, Myanmar.

#### Lessons:

- The process of developing and customizing tools in consultation with the end-users is important as it is suited to their needs and is more likely to be taken up and used.
- Providing institutions with hand-holding support following the delivery of analytical tools and models is important – otherwise there is a risk that these are not fully taken up or used by stakeholders. In Pakistan, PARCC's training support to the MFU is an important prior action to a larger budget support program (US\$500 million under development), and this approach is proving to be effective in terms of engaging the same sets of stakeholders and building their readiness and capacity to engage on larger reforms.
- It is important to view the macro-fiscal tool as one of several in the MFU's toolkit, which is equipping them to undertake different types of analyses. This is consistent with practice adopted by advanced institutions globally.

Looking ahead, the ***South Asia Regional Hydromet and Early Warning Systems (HEWCS)*** has completed design of a regional training hub, and negotiations are underway with RIMES to deliver these services to regional stakeholders. A Hydromet information Portal (accessing regional and national information and products) is yet to be initiated.

## Output 2: Collaboration Facilitated



**Figure 2: World Bank Facilitated Discussion on Regional Collaboration at SAHF-2**

Output indicator	WB Milestone for FY19-20	Actual Progress
(ii) Number of regional activities (forums, peer-to-peer, knowledge events, capacity building etc.,) for regional stakeholders	One regional event	<p><b>Milestone met.</b></p> <p>The second annual South Asia Hydromet Forum (SAHF-2) was held in Kathmandu on Nov. 19-21, 2019 and brought together <b>over 106 high-level representatives</b> (women – 24; men: 82) from government agencies and development institutions working on hydromet, early warning, and climate services.</p> <p>More information available at:  <a href="https://www.worldbank.org/en/events/2019/11/19/south-asia-hydromet-forum-ii">https://www.worldbank.org/en/events/2019/11/19/south-asia-hydromet-forum-ii</a></p>

Fostering regional engagement and collaboration form a critical part of the World Bank’s approach in South Asia – one of the least integrated regions in the world. These platforms become even more important in the absence of formal regional organizations mandated to promote integration and collaboration.

(i) In this context, the *Strengthening Disaster Early Warning Systems and Climate Services* activity helped to establish the South Asia Hydromet Forum (SAHF) in Geneva in 2018 to promote a peer network for exchange of knowledge on enhancing resilience to climate and disaster risks in South Asia.

The World Bank and the Government of Nepal, in technical partnership with the World Meteorological Organization (WMO), co-hosted the second South Asia Hydromet Forum (SAHF-2), from November 19-21, 2019. The Forum brought **together 106 participants: 24 females and 82 males**. The participants included leadership and representatives of National Meteorological and Hydrological Services (NMHS) agencies and representatives of key user sectors from the countries of South Asia – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka. Key development partners: United

Kingdom's FCDO through their ARRCC programme, RIMES and the European Union (EU) through the GFDRR. Other development partner organizations include: (JICA, UKMET, WFP, USAID, Red Cross).

In addition to regional, inter country dialogue, the forum also supported engagement with the private sector and academia, critical elements of the equation for hydromet dialogue. This enabled public and private sector representatives to have informal discussions in the margins of the meeting. As such, the forum could potentially become a platform for such regular interactions to foster innovation.

The forum was organized over three days, with a fourth day for technical training for selected participants.

- Day 1 – November 19 - identified priorities for regional training and joint activities where country representatives shared their views.
- Day 2 – November 20 - focused on service delivery and technological innovations including the use of remote sensing, geo-spatial and other tools that provide more reliable and timely information. It also included a deliberative session on regional collaboration.
- Day 3 – November 21 – included site visits to Nepal's National Agricultural Research Council and the Government of Nepal's new building for the Department of Hydrology and Meteorology to showcase Nepal's experience in modernizing its hydromet services.
- Day 4 – November 22 – included technical training.

SAHF-2 continued to serve as a platform for regional exchange, collaboration, and fostering innovation on hydromet, early warning and climate services. The forum sought to build momentum for more regional collaboration to protect lives and livelihoods from extreme weather. The key motivation for the SAHF was to: share information on strategic visioning; exchange ideas and innovative approaches to improve forecasting skills in all timescales with special emphasis on high-impact weather events; provide hazard information for risk assessments, prevention, response and recovery, and risk transfer across sectors; deliver user-oriented services in key weather-dependent economic sectors; address common implementation challenges; prioritize areas to strengthen regional collaboration; and, discuss pathways to sustain and scale up national and regional efforts in improving the quality and delivery of weather, hydrological and climate services.

The response has been positive and high levels of participation from South Asian stakeholders signals their interest in coming together to share knowledge and best practice on improving Hydromet, Early Warning and Climate Services in South Asia.

*Several participants noted that the Hydromet Forum is helping them keep up with rapid advances in technology and move toward impact-based forecasting that gives an estimate of the severity of the forecasted weather event so emergency workers can prepare for the impact*

Participant feedback was positive, with high level of satisfaction reported in feedback forms: Of the 50 responses received, 90 percent of respondents rated the event as 'Most Useful', providing a rating of 8 - 10 (on a scale of 1-10). Participants noted that the forum could be used as a platform for regional collaboration, and brought value by: enabling South Asian experts to come together to find common solutions to similar problems; facilitating exchange of best practice and learning; promoting work through regional institutions (such as RIMES); and learning from regional actors working on Disaster Management.

Participants also called for regular knowledge exchanges to share information about technical issues such as numerical weather prediction models and impact-based forecasting; suggested the establishment of an online tool or portal for agencies to share technical information, and help forecasters build confidence with complex models; and for harmonization of data standards and data sharing formats among hydromet agencies.

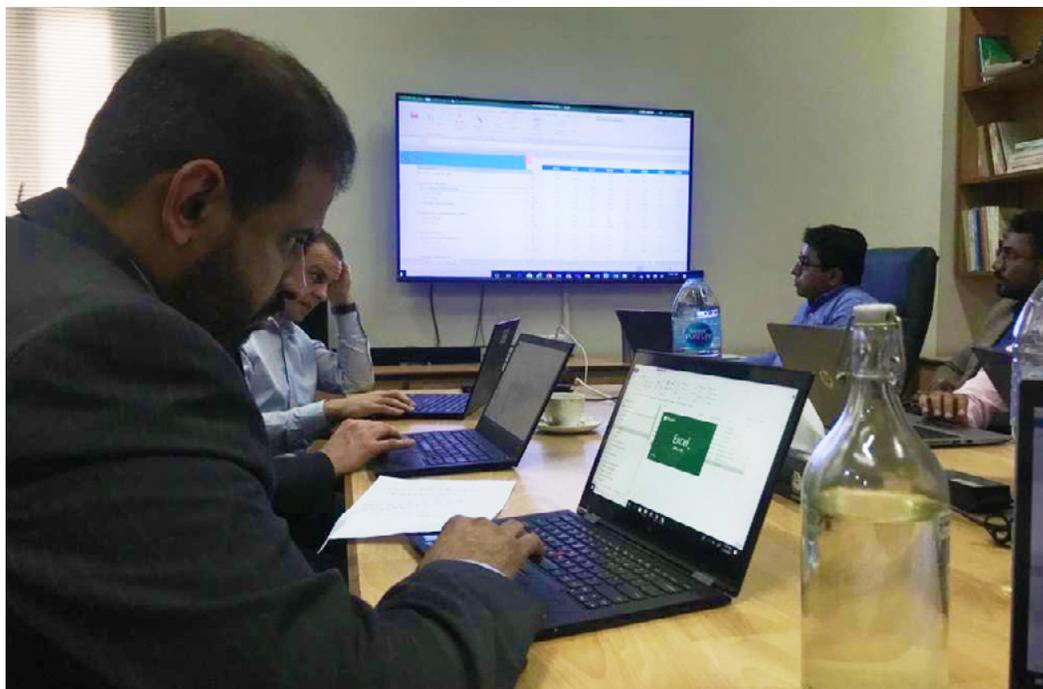
The forum's outcome included a continued commitment to regional collaboration and priority actions. These action items discussed during the SAHF-2 have since been integrated into the Terms of Reference for the regional training hub and a contract with RIMES is expected to be finalized by July. RIMES had its council meeting in January and the sub-council on SAR agreed to use this mechanism to promote hydromet regional collaboration, but the immediate next steps are to put in place the contract with RIMES and to develop the action plan.

### Lessons

- Knowledge exchange and relationship building happens in the margins of regional forums, such as SAHF-2. These informal exchanges help to take the discussions a step further towards national contributions to regional agenda and tangible collaborative action in South Asia.
- Climate change and hydromet provide an entry point for broadening discussions on other critical issues – for instance, the challenges on getting high quality and reliable data and using these for forecasting.
- Technical meetings (such as SAHF-2) enable national hydromet agencies to benefit from a support network, raise new ideas and learn from each other's experiences.

**Looking ahead,** PARCC proposes to have at least two technical meetings, including taking forward plans for reconvening a SAHF-3 event. Other activities have also planned regional meetings, but these plans will be subject to Covid-19.

## Output 3: Innovative and Improved System Enhancements and Tools Developed



Output indicator	WB Milestone for FY19-20	Actual Progress
(iii) Number of tools (e.g. fiscal risk assessments, modelling techniques) for Finance Ministries on fiscal and macro-economic impacts of climate change.	3 tools in progress	<p><b>Milestone met, on-track. Three tools (CGE, MS, FSA) are in use by the World Bank team as part of progressing the analytical work with Ministries of Finance in Pakistan; and in Bangladesh and Nepal, with the target end user being the respective Ministry of Finance.</b></p> <p><i>(i) Macro-fiscal Model for Pakistan with a Climate Change Module:</i> Draft Technical papers and model documentation have been developed by the WB task team using each of the <b>two models, namely CGE and MS</b>. This is work in progress in Year 2 and has not yet been finalized.</p> <p><i>(ii) Managing Fiscal Risks Associated with Climate Change:</i> Initial draft reports were prepared for Bangladesh and Nepal, using an existing spreadsheet-based FSA tool developed by the World Bank to estimate the impact of climate change shock on fiscal variables. Work on Maldives has been delayed due to Covid-19.</p>
(iv) Number of innovative risk information tools introduced to deliver climate warnings and forecasts to vulnerable groups.	One	<p><b>Milestone met. One Risk Analysis Tool (Myanmar). Additionally, one TechEmerge Innovative Mechanism designed and launched.</b></p> <p><i>(iii) Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar:</i> A Risk Analysis Tool and system enhancement has been developed for coastal areas and also for the Ayeyarwady administrative region (vulnerable to coastal and river flooding). The Bank PARCC team has made presentations on the emerging findings to stakeholders in Myanmar, which evoked interest of government in taking action.</p>

(iv) **CARE Project - Climate Adaptation and Resilience (Challenge Fund)**: design and launch of a tool – the innovative Challenge to encourage entrepreneurs to find solutions to meet the climate needs of vulnerable populations. The facility has been launched in collaboration with NDMA, a Government of India agency.

(v) **SAR Blue Resilience** – in progress (see description below)

The Bank team has initiated work on two innovative activities to strengthen linkages between climate change and macro-economic and fiscal analysis – which are intended to support policy choices of governments in South Asia. The rationale for looking at these linkages remains strong. Climate-induced extreme weather events damage the capital stock and cause a sharp drop in economic output. In addition to human, infrastructure and productivity loss, there is loss of tax revenue and increased public spending for relief and reconstruction that strains government budgets. High public debt levels could prevent countries from accessing international capital markets even in the face of an extreme event.

(i) The **Macro-fiscal Model for Pakistan with a Climate Change Module** activity is oriented to enable Pakistan's Ministries of Finance and Planning to strengthen their understanding of the co-benefits from environmental and fiscal policies, including the negative effects on productivity, revenues and consumer welfare of climate change and the economic benefits that may accrue to different adaptation and mitigation strategies. The models are mainly focused on the areas of water availability, carbon pricing, energy, and the impact of natural disasters.

The team has built on the detailed literature review, done last year, that identified key approaches with regards to modelling and climate change in Pakistan and which was used to refine the activity. Accordingly, the World Bank task team conducted a mission to Pakistan (October 2019) to initiate a dialogue with senior policymakers in the Ministry of Finance (MoF), Planning Commission, and the State Bank of Pakistan (SBP) around capacity building for macro-fiscal framework development. The mission jointly identified modelling priorities with government and addressed technical questions for model development, including data collection and validation. Meetings held with SBP, MoF, Ministry of Climate Change and the Space and Upper Atmosphere Research Commission (SUPARCO) enabled the team to gain access to data and resources for the modelling work. A second mission to Pakistan (February 2020) included visits to the modelling and research department of the SBP in Karachi and the MoF in Islamabad.

This model goes beyond the standard forecast and policy models in finance ministries and central banks. The model includes the impacts of climate adaptation policies on economic output, household welfare, government revenues, deficit and government debt. The model includes detailed channels through which climate change can adversely affect economic growth, by: negatively impacting health and labor productivity; reducing productivity across sectors (increased incidence of drought, disruptive weather); speeding the pace at which the existing capital stock depreciates as it becomes increasingly less appropriate for the changing climate; and, increases in the incidence of climate-related events that destroy productive capacity.

The final deliverable (anticipated December 2020) will include a dynamic Recursive Computable General Equilibrium (CGE) model with a core focus on quantifying the effects of adaption and mitigation

for Pakistan, and a macro-structural (MS) model that can be extended to include climate change. Additionally, the World Bank is preparing technical and policy notes to illustrate the use of the models for the Ministry of Finance and the Ministry of Planning in Pakistan.

(ii) Under the *Managing Fiscal Risks Associated with Climate Change* activity, three separate reports are advancing for Bangladesh, Nepal and the Maldives, with policy recommendations for governments – using the World Bank’s FSA tool. These reports (in various stages of draft) investigate transmission channels through which natural disasters of different magnitude and severity affect the debt, expenditure and other fiscal variables, and the impact on the overall economy. They also outline steps taken by governments so far and policy recommendations.

The reports are structured into four sections, including: the country context and country actions to overcome climate change related challenges; analysis of the fiscal channels through which the economy can be affected after climate shocks, with a 'fiscal risk matrix' and a 'fiscal hedge matrix'; predicting responses of different fiscal variables using the FSA tool in three scenarios; and, policy recommendations.

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## Box 2: Putting Fiscal Sustainability Analysis (FSA) Into Use

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Model simulations can provide information to facilitate the design of appropriate policy measures to mitigate fiscal risks from climate change.

The FSA tool, developed by the World Bank’s Macroeconomics, Trade and Investment (MTI) Global Practice, has already been piloted in the Dominican Republic and Jamaica and is now being rolled out to other countries, including to Bangladesh, Nepal and Maldives.

For PARCC, the tool is being applied to assess the sustainability of the countries fiscal policies under a baseline scenario based on the schedule of disbursement and amortization of the government’s contracted debt and expected path of other macroeconomic variables.

The tool can provide alternative scenarios of the impacts of different channels through which climate change can affect the fiscal variables. Climate disruptions can be introduced in the tool via a reduction in total factor productivity (TFP), reduction in the labor force, a negative shock to GDP and changes in various other macro variables.

Although there is no direct focus on gender and people with disability, the activity has an inclusive lens built in. By discussing different fiscal shocks arising from climate change (i.e. supply shock to agricultural products causing inflation) the analysis extends to how marginalized sections of the population can be disproportionately affected.

For the Maldives, initial data was collected, and a literature review conducted. However, work to finalize these reports has been delayed due to the Covid-19 outbreak. A workshop with government officials, planned for May 2020, has been postponed due to travel restrictions. The activity has been extended by one year (to June 2021) to enable the Bank team to discuss and finalize the draft reports with each of the respective countries. Looking ahead, the activity plans to train MoF officials in the use of the FSA tool. Subject to Covid-19 travel restrictions lifting, the intent is to bring together Ministry of Finance officials from all the three countries to share their experiences. This will help them to learn from each other and take policy decisions that can benefit the region as a whole.

(iii) A Risk Assessment Tool has been developed under the *Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar* activity. The tool was used to undertake a rapid assessment of coastal and riverine flood risk in Ayeyarwady region. A presentation of emerging findings was made to Myanmar stakeholders. The tool brings value add as there is very limited monitoring of risks faced by coastal areas in Myanmar, and agencies have limited capacity and data for forecasting and early warning systems.



The Ayeyarwady Region is particularly vulnerable to flooding and erosion. The Risk Assessment Tool identifies hotspots and quantifies the impacts of flooding. In particular, the analysis focuses on impacts of coastal and riverine flooding in the Ayeyarwady region, using exposure indicators of population density, built-up areas, cropland/rice paddies, and main road infrastructure.

The analysis has brought new information to the attention of policy makers. For example, an estimated 1.9 million people could be affected by a coastal storm surge; while damages to crops and road infrastructure from coastal flooding could amount to US\$18 million and US\$13 million respectively. By identifying priority areas and estimating the magnitude of risk, the analysis can potentially be used to inform future investment decisions, including in building resilient infrastructure, coastal protection and disaster preparedness. The Bank team also expects that the risk analysis will be of use more widely to other Global Practices within the Bank, particularly in bringing a multi-sectoral perspective and in prioritizing activities in the most vulnerable areas.

(iv) PARCC is supporting innovative work under the *Climate Adaptation and Resilience for South Asia*, (IDA, US\$36 million) that was recently approved by the World Bank Board in May 2020.<sup>8</sup> Under CARE, PARCC has initiated support to innovative tech solutions toward saving lives and livelihoods.

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### Box 3: TechEmerge Resilience India

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A call for technology solutions was launched by the World Bank Group, in partnership with CES and India's National Disaster Management Authority (NDMA).

This Challenge facility will involve the most promising disruptive technology (DT) innovators in the disaster management sector in two tracks: A Covid-19 Fast track and the Resilience Track (<https://www.techemerge.org/resilience>).

Selected entrepreneurs' solutions will receive grant funding and implementation support, with the opportunity to work with Disaster Management Authorities (DMAs) to pilot and deploy their solutions for disaster preparedness and resilience in the highly volatile and limiting Covid-19 scenario.

PARCC financial support is enabling the Challenge facility to be taken forward in partnership with several agencies. The Challenge is being organized by the World Bank, in partnership with CES and the National Disaster Management Authority (NDMA), and *TechEmerge*, an award-winning matchmaking program from the International Finance Corporation (IFC) the World Bank's private sector arm. *TechEmerge* routinely brings together technology companies worldwide with leading organizations in emerging markets.

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<sup>8</sup> <https://www.worldbank.org/en/news/loans-credits/2020/05/12/south-asia-climate-adaptation-and-resilience-for-south-asia-care-project>.

A notable development has been the design and launch of *TechEmerge Resilience India* in June 2020. PARCC is providing US\$3.5 million for Challenge Fund activities. The Challenge invites applications from entrepreneurs to pilot or deploy eligible solutions that will help address the needs of the most climate- and disaster-vulnerable populations. As reported separately under Output 4 in this report, this work replaces the initial plan for the Challenge Fund to be managed by the Global Facility for Disaster Risk Reduction (GFDRR) due to changes in Bank operational guidance.

The facility includes two tracks: Disaster Management during the Covid-19 Pandemic (application deadline June 2020); and Resilience to Climate Change and Disasters (application deadline July 2020). The Government of India is working to build greater resilience to climate change and disasters to reduce vulnerability of at-risk communities. The World Bank Group is mobilizing technology solutions that will aid disaster management authorities in India to redefine preparedness, response and resilience amidst the Covid-19 challenge. These innovative solutions will bring most benefit to India's migrant populations and the vulnerable dealing with recurring disasters.

CARE will help to develop an open Regional Resilience and Data Analytics platform to inform climate planning and investments, and fund innovative and disruptive technology to support resilience in South Asia. It will also assess climate impacts in districts across Bangladesh, Nepal, and Pakistan to support agriculture, livestock, water, and transport. CARE will also work with two regional organizations: RIMES and ADPC.

(iv) The **SAR Blue Resilience** activity began work in January 2020 following internal approvals, and largely coincided with the start of the Covid-19 pandemic. The activity aims to strengthen regional collaboration and knowledge exchange and increase resilience of fishermen and their dependent coastal fishing communities to climate and disaster risks. A key feature is that the PARCC-funded activity is closely linked to, and informing, the World Bank's Blue Economy portfolio and investments in Bangladesh, Maldives and Sri Lanka.

Bangladesh is keen to progress early warning systems to get information to fishers at sea. Several technical institutions are experimenting with new technologies and approaches – for example, the University of Chittagong has set up a mobile early warning prototype to provide fishermen with real-time warning as cyclonic storms approach.

So far, the activity remains in its initial mobilization period, and, depending on pandemic-related restrictions, may require some adjustment in sequencing the actions in its workplan. In the interim, the Bank team has initiated consultations with the governments of the three countries alongside on-going work in the larger World Bank investments. During mobilization, PARCC helped to initiate dialogue with government and technical institutions, thus opening up the space for exploring new technologies and for collaborative technical partnerships. Although these discussions and issues have been taking place, there has been limited progress in the development of appropriate technologies to get information to small artisanal fishers at sea. PARCC's inputs form a critical part of informing the World Bank's broader programming in Bangladesh, Sri Lanka and the Maldives, and opens up the space for exploring and testing approaches that could potentially be scaled up and that could save the lives of thousands of fishermen at sea.

The mobilization phase coincided with the super cyclone Amphan in May 2020, and PARCC's support has started to show early successes of this approach. The World Bank team was able to draw on

initial baseline analysis and Safety of Life at Sea (SOLAS) initiatives, which helped partners to organize, generate, and provide targeted early warning information to artisanal fishermen, as Super Cyclone Amphan approached Bangladesh waters in May 2020. While at this early stage, government was able to communicate this information through existing media channels, future such targeted early warning for fishermen at sea will be further standardized and institutionalized as implementation of PARCC and its linked projects progress. Cross-country learning and communication enabled by this activity will be an important factor in helping save fishermen's lives at sea across the region.

An early reflection is that, as with other major disasters, protecting food security and natural resource/livelihood access for vulnerable coastal communities can pose major challenges with the onset of the crisis' recovery phase, when natural resource extraction and harvesting (legal and illegal) will pick up significantly. The cross-country dialogue is expected to further catalyze both regional collaboration and more concerted national-level action to this end.

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#### **Box 4: Saving Lives at Sea**

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Over 68,000 small artisanal Bangladeshi fishers face great risks from inclement weather conditions while at sea. PARCC is supporting the government to bring innovative technology and approaches to get critical information services to small artisanal fishers in a timely manner.

Big fishing fleets have access to communications technology, which enables them to be tracked and to send distress signals while at sea (part of standard SOLAS protocols). However, small fishers are at a great disadvantage, as current technology is neither practical for small boats, nor is it affordable for poor fisherfolk. Bangladesh uses mobile technology and social media platforms to inform these fishermen, but limited mobile tower coverage and weak signals mean that early warning messages are unlikely to reach the end users especially when they are fishing in deep waters away from the coastline.

Evidence from elsewhere shows that dual-use technological solutions for improving early weather warning / search and rescue at sea for small fisheries have been found to play significant role in enabling better resource use monitoring and improving information/transparency for government and community actions. PARCC proposes to work with government to enable the development and application of dual-use technology standards: this includes a transponder that allows fisherman in distress to send an SoS signal while at sea; but also enables receivers to identify the location of the boats at all times i.e., it allows the boat "to be seen", including at night. It also enables bigger vessels and trawlers to see smaller fishing boats that might be in their path, thus reducing the risk of collision at sea.

The main value addition of this approach is that currently there is no marketable technological solution to address the needs of the small, subsistence-level fishers. PARCC's analytical work is addressing a critical gap by helping government to analyze and assess the potential feasibility of new technological approaches, and to establish its efficacy, thus laying the essential groundwork that paves the way for private sector to take these technologies to market and for approaches to be mainstreamed (including through World Bank investments). This is an essential first step to enable governments to demonstrate the potential of such technologies, and to establish a standard before it can seek competitive procurement from the market.

The activity has an important regional dimension. Bangladesh lags behind the Maldives and Sri Lanka in terms of technology that is appropriate to its large numbers of artisanal fishers. Regional approaches will help to deliver a cross-pollination of experiences and approaches to effectively reaching small fishers at sea and therefore saving lives. Additionally, when the data is aggregated, it could enable the capture of data on volumes of fish catches – therefore helping to inform policy responses to managing fisheries and overfishing by larger vessels.

## Lessons:

- Drawing from the Pakistan activity's experience, fiscal tools and models are useful mechanisms to highlight key issues to policy and decision makers, to provide data and evidence-based analysis, and to spur action across agencies and departments. Using a fully integrated modelling framework with climate assists in adequate planning for climate disasters and climate policy. The numerical outputs help to track progress towards greening the economy and understanding the pros and cons of various climate policies.
- Amid the constraints of Covid-19, innovative solutions such as crowd-sourcing of technological solutions to tackle disasters and climate change (e.g. TechEnergie) can be a useful way to bring in new ideas and help to facilitate action.
- Although PARCC's analytical work addresses shocks relevant to climate change, situations like Covid-19 can cause a national emergency, as do climate-related events. There will be many policy recommendations and transposable lessons arising from PARCC's work that can help governments adopt preparatory measures for similar shocks in the future. The activity proposes to facilitate South-South knowledge exchange in weather information, search and rescue of fishermen (including artisanal fishermen), and reduce fishing gear debris and marine plastic litter. PARCC will also enable community-level engagement and knowledge exchange across all three countries for risk reduction in marine fishing and development of alternative livelihood pathways.

**Looking ahead**, as Covid-19 restrictions lift, all activities will look to step up engagement with national and regional stakeholders to agree on the analytical work, and to socialize this with partners and promote their uptake into systems.

## Output 4: Knowledge Generated

Output indicator	WB Milestone for FY19-20	Actual Progress
(v) Number of knowledge and analytical products developed (including gender-informed) providing new evidence	2 analytical products	<p><b>A. Milestones met. Two draft final reports developed but finalization was delayed due to Covid-19. One set of training slides delivered.</b></p> <p><i>(i) Managing Fiscal Risks Associated with Climate Change</i> Two draft reports on Bangladesh and Nepal have been generated and are yet to be finalized in discussion with Government (delayed due to Covid-19).</p> <p><i>(ii) Macro-fiscal Model for Pakistan with a Climate Change Module:</i> One set of training products and draft macrostructural developed and delivered to Pakistani stakeholders.</p>
	7 products under development	<p><b>B. Other products under development (but not counted in the results for this year) include the following:</b></p> <p><i>(iii) Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar:</i> Two main outputs are under progress and include (i) a national-level report on coastal and delta resilience; and (ii) a (sub) regional-level report focusing on the Ayeyarwady administrative region which identifies multi-sector investment options to strengthen resilience of coastal and delta communities.</p>

**(iv) Innovation for Resilience Challenge Fund and Analytics:** Two reports are under development on user behavior insights for disaster protection action (Sri Lanka) and strengthening resilience and collaboration for disaster preparedness and response (Myanmar)

**(v) South Asia Climate Adaptation and Resilience Partnership (SCARP):** Two knowledge products under development include capacity needs assessment for Bangladesh, Pakistan and Nepal; and asset profiles of climate change hazards and impacts.

**(vi) Promoting Regional Cooperation in Air Pollution Management:** This flagship work, led by the SAR Chief Economist's Office, has recently begun. It builds on previous Phase 1 work that developed source apportionments for PM2.5 population exposure for all countries/regions for the emissions and meteorological conditions of 2015. This is the first of its kind database created for the region.

(i) **Managing Fiscal Risks Associated with Climate Change:** The economies of Bangladesh, Nepal and the Maldives are highly vulnerable to climate shocks. As Ministries of Finance in the respective countries have limited capacity to undertake this type of quantitative analysis themselves, the PARCC activity is bringing new insight and understanding on the fiscal channels of climate change shock (usually absent in climate change related discussions).

The new analytical work has progressed significantly for two of the three countries (Bangladesh and Nepal), and the third study (Maldives) has been delayed due to Covid-19. Using simulations and the FSA tool, developed by the World Bank's Macroeconomics, Trade and Investment (MTI) Global Practice, the analysis draws on macro, fiscal, financial and borrowing, and debt data. Once complete, the studies are expected to help governments use alternative financing strategies to make efficient resourcing decisions, thereby helping to minimize future fiscal losses from climate shocks. The studies are not directly addressing gender issues but discuss fiscal impacts which adversely affect marginalized section of the population.

(ii) **Macro-fiscal Model for Pakistan with a Climate Change Module:** The World Bank team delivered a set of training slides on: the theoretical elements that underpin the model, and on the operation of the model; the current state of the user-interface; and the set of programs and data to generate the model and to generate simulation experiments. This information is now available with Pakistani stakeholders and the Bank team is developing further detailed guidance on the operation of the model, which will be shared with government in FY20/21.

A priority theme of PARCC is to get climate and weather information to vulnerable communities and individuals through bringing new knowledge and by supporting innovation. Several of PARCC's activities are supporting analytical work to this effect across South Asian countries – most notably Bangladesh, Maldives, Myanmar, and Sri Lanka – all of which are highly prone to frequent and intense natural disasters and extreme weather events, impacting the lives of millions of people. Emerging findings from all of these studies are informing government stakeholders, local communities, and World Bank investment programs to which they are linked. Furthermore, as analytical work is finalized, the knowledge is also intended to facilitate South-South cooperation and knowledge exchange between regional peers.

(iii) The *Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar* is drawing funding from PARCC and other resources. It is developing recommendations on how to strengthen resilience of coastal communities to weather and climate extremes in the country. The activity is focused on strengthening the capacity of the Government of Myanmar to improve disaster and climate resilience of coastal and delta communities and provide the analytic foundation for a long-term program on coastal resilience in Myanmar.

Myanmar lacks a policy and regulatory framework for managing its coastal areas, which are prone to extreme weather events (cyclones, floods, tsunamis etc). The Government of Myanmar recognizes that a legal and regulatory foundation and capacity strengthening of existing agencies is essential. In 2016, the National Coastal Resources Management Committee (NCRMC) was formed. This high-level Committee is chaired by Vice Minister, with representation from regional/state and sectoral Ministers, and has the Forest Department as Secretariat. Numerous agencies have activities in coastal areas that are guided by sectoral laws and policies, which in some cases are contradictory and lead to inconsistencies in coastal management. Without a legal framework there is limited oversight of how coastal/delta areas are being used.

In November 2019, the task team undertook a follow up visit to Myanmar to progress discussions on the PARCC-supported studies on resilient coastal planning in Myanmar and to undertake data collection. A consultation workshop with the Advisory committee of the National Coastal Resources Management Committee was held on November 18, 2019. Participants included over 40 representatives from sector agencies, development partners, universities and NGOs. The workshop provided an opportunity for the NCRMC chair to share high-level priorities. The mission also had two consultation workshops organized in collaboration with Ayeyarwady Regional Government in Patheingyi, and in coordination with the National Coastal Resources Management Committee (Forest dept Secretariat) in Nay Pyi Taw.

Community consultations were also undertaken in over 10 villages and townships in the Ayeyarwady Region, and community perspectives have subsequently been included in the analysis. Community consultations conducted as part of this activity has encouraged the participation of women and emphasized the need for increased awareness at the level of local communities, in schools and during stakeholder meetings. Female community members and government staff have been encouraged to participate in the technical meetings, and workshops have actively sought their inputs.

The on-going studies are progressing well and are expected to help identify multi-sector investment options to manage coastal and delta areas in Myanmar, with focus on the Ayeyarwady administrative region. By bringing new insights into impact-based forecasting in coastal areas, PARCC will help to strengthen capacity for disaster preparedness and response, which will bring benefits for highly vulnerable communities. This is an area of high priority for the Government of Myanmar, and the Bank's multi-sectoral approach is closely aligned with the Government's Sustainable Development Plan 2018-2030 and key policy documents, such as the Myanmar Action Plan for Disaster Risk Reduction. As such, there is strong interest from Government counterparts in operationalizing the recommendations of these studies. In particular, the Ayeyarwady Regional Government and national-level agencies, including DMH, DDM and Forestry Department (Secretariat for NCRMC), are working with the Bank team to identify future Bank support for a coastal resilience program in Myanmar.

(iv) This year, there were changes to the *Innovation for Resilience Analytics* activity, that were to have been managed by GFDRR. The Challenge Fund component, intended to develop and test innovative

pilots to identify what works / does not work to build resilience to climate, weather and natural hazard-related problems was transferred as a US\$3.5 million recipient-executed activity under the **Climate Adaptation and Resilience (CARE) program**<sup>9</sup>. GFDRR continues to administer the related component on analytical work in support of innovation, which involves two studies in Myanmar and Sri Lanka: (i) analysis of how communities in remote and conflict affected regions of southeast Myanmar can be provided with improved hydromet information and climate services; and, (ii) the use behavioral insights to understand end-user experience of early warning systems to help improve disaster protective actions in Sri Lanka. These studies have been delayed due to the Covid-19 pandemic due to travel restrictions hampering data validation and in-person training. Given the uncertainties, the teams have adapted their workplans accordingly.

The first study, **Myanmar Strengthening Resilience and Collaboration for Disaster Preparedness and Response** (US\$59,000; December 2019 – March 2021), is co-financed with the Bank's DRM-FCV Nexus program<sup>10</sup>. The study analyzes how communities in remote regions of southeast Myanmar can be provided with improved hydromet information and climate services. Parts of these regions are under the control of “ethnic armed organizations” (EAOs) that are engaged in conflict with the government. The study will identify strategies so that government can ascertain these communities' needs and provide services to meet those needs. The Bank team conducted field work (January to March 2020) and developed training materials. However, planned workshops (mid- to late-March) were postponed due to Covid-19. Deliverables will include a set of recommendations for collaboration between the Government and Ethnic Armed Organizations for disaster preparedness and early warning, and a Guidance Note for the Government-EAO Joint Township Disaster Management Plan (TDMP).

PARCC-funded research is also intended to inform the design of two World Bank operations as follows: (i) A planned DRM operation to enable work under the National Community-Driven Development Project (NCDDP). The Bank team is preparing to pilot Community-Based DRM in one township in collaboration with the disaster risk management team under the Myanmar Coastal and Delta Resilience Program to integrate community-based disaster risk management approaches into participatory planning and implementation of small-scale community infrastructure sub-projects; and (ii) The Peaceful and Prosperous Communities Project (PPCP) for conflict-affected areas in Myanmar. The project is under preparation (delayed due to Covid-19) with four main components: 1. Mechanism for Trust Building; 2. Improving basic services and infrastructure; 3. Enhancing rural livelihoods; and, 4. Implementation support.

A second study, **Using Behavioral Insights to Improve Disaster Protective Actions in Sri Lanka** (US\$100,000; December 2019 – December 2020), has also been initiated. Led by the World Bank's behavioral economics team (eMBeD), the study uses mixed methods research in Sri Lanka to better understand end-user experience of early warning systems from a behavioral sciences perspective.

This work is important, as anecdotal evidence suggests that people in Sri Lanka do not seek protective action in a timely manner in the face of natural disasters. The study asks, for example, how stress impacts end users' decision-making with regard to hydromet information and early warning systems. The work will help to better understand structural and behavioral barriers limiting protective actions. This could range from individuals not receiving the early warning alert, down to an inability to transport

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<sup>9</sup> CARE project, which was prepared by the Disaster Risk Management (DRM) team and received Board approval on May 12, 2020.

<sup>10</sup> Component 1 is funded by the DRM-FCV Nexus program (managed by GFDRR and the FCV unit); Component 2 is funded by PARCC.

oneself out of the flood area. The diagnostic will also suggest concrete actions based on behavioral insights – for instance, recommendations could be used in communications from the government, such as an SMS.

The study is directly linked to the ongoing Climate Resilience Multi-Phase Programmatic Approach (P160005), and research is being conducted in the project area (Kelani Ganga River Basin). It will directly inform work on operationalizing an impact-based forecast and warning system to provide people with better weather forecasts and early warning messages.

So far, the task team have conducted a literature review and stakeholder mapping, drafted data collection instruments, and is currently exploring the possibility for a local firm to administer an online or phone survey to safely and responsibly capture quantitative data during the Covid-19 pandemic.

Both of these analytical works for Myanmar and Sri Lanka are addressing gender, social inclusion, and people with disabilities. The Myanmar study proposes to include a specific set of recommendations to ensure important roles for women and other vulnerable groups of people (disabled people, elderly people, migrants, community living in ethnic-controlled areas) as well as their participation in collaboration platforms. Additionally, the team will work to ensure that the TDMP addresses gender and social inclusion issues in a comprehensive manner. In areas where ethnic armed groups hold considerable influence, the team will provide recommendations for how ethnic service providers can contribute to inclusive disaster preparedness and response according to their capacities, building on their relationship with communities. The Sri Lanka behavioral diagnostic will specifically examine the experiences of women/girls and persons with disabilities, uncovering behavioral insights that may be particular to those two groups. Beyond these two groups, if there are other individuals from excluded or vulnerable communities that are further illuminated in the study, these are planned to be discussed in the diagnostic and included in recommendations. Additionally, the overall program supports and identifies differences in gender as being important to include in the development of weather forecasts and early warning alerts.

(v) The ***South Asia Climate Adaptation and Resilience Partnership (SCARP)***, is largely focused on identifying critical knowledge gaps and providing technical inputs to allow for transformational shifts in how Bank-funded investments are designed and capacity enhanced. This year, SCARP has progressed two knowledge products (which have not been counted in the PARCC results table, as these are work in progress).

The first report is an interim climate data and capacity gap assessment for Bangladesh, Nepal and Pakistan. This assessment uses model-based projections, climate data parameters, historical weather-based data, earth-observed data, and a host of socio-economic variables that are key to defining climate vulnerability. The report then identifies key gaps and needs in existing sectoral policies, capacities and data availability in relevant sectors (such as climate smart agriculture, water and transport) for undertaking key climate resilience and adaptation reforms and capacity building. The draft report is under review and has been delayed due to Covid-19. Once finalized, the report will be made available to client countries to help inform policy planning and investment development.

The second knowledge product (under progress) is developing selected asset profiles of climate change hazards and their impacts across different sectors for each of the three countries. The purpose of the work is to develop and explain the methodology that underpins the modelling exploring the costs

and benefits of adaptation options to reduce climate-related damages to roads in Pakistan and from flood events in Bangladesh. As such, a vital first stage in the modelling work is to understand what the current climate-related damages are, and how they would be expected to change into the future, under different climate and adaptation scenarios. Eventually, the goal is to create a tool and provide it to governments for them to undertake this analysis themselves.

Significantly, SCARP informed the design of interventions to be undertaken by the CARE project – such as decision-support tools, regional climate data and analytic platform and capacity building. In particular, PARCC funds contributed to the following: (i) Identification of critical data and analytic gaps that could be addressed through development of the Regional Resilience Data and Analytics Service (RDAS) Platform under CARE; and, (ii) Identification of capacity and policy gaps in focus sectors where resilient policy planning and development will be supported by CARE through development of decision support tools in each country: Bangladesh, Pakistan and Nepal.

(vi) **Promoting Regional Cooperation in Air Pollution Management:** Previous work under Phase 1 developed source apportionments for PM2.5 population exposure for all countries / regions for the emissions and meteorological conditions of 2015. This is the first of its kind database created for the region. Consultations were held with various stakeholders in India and revealed a strong demand for updated estimates for 2018, to facilitate validations with the many new PM2.5 monitoring data that became available after 2015, and to track impacts of recent policy interventions.

Phase 2 has now begun (PARCC-funded), and the study on air pollution is intended to bring deeper insight into air quality management issues in India, Pakistan, Bangladesh and Nepal through various projects and TA activities. This activity will inform the policy dialogue and technical assistance projects. Emerging evidence suggests that climate change and air pollution adversely impact women and the poor. This study will further elaborate on the issue by looking specifically at gender differentiated health impacts across various age groups and demographics.

South Asia is at the epicenter of the continuing threat to public health from ambient air pollution. Air pollution contributes to around 11 percent of all deaths and approximately 40 million disability adjusted life years. Nearly 95 percent of South Asians live in areas where ambient fine particulate matter concentrations exceed the World Health Organization's Air Quality Guidelines. There is now emerging evidence linking Covid-19 fatality rates and air pollution exposure. Sharing many challenges related to air pollution, data related to regional air pollution is limited and there are currently inadequate efforts among countries in the region to jointly deal with this transboundary issue.

Air pollution and climate change are closely related. As well as driving climate change, the main cause of CO2 emissions – the extraction and burning of fossil fuels – is also a major source of air pollutants. Many air pollutants in fact contribute to climate change by affecting the amount of incoming sunlight that is reflected or absorbed by the atmosphere.

The key objectives are to (i) develop first of its kind information on pollution sources and impacts at the scale of different “airsheds” in the region; and (ii) to ascertain and incorporate cross country PM2.5 emissions into national Air Quality Management plans and policies. In addition, building on the findings, a network of regional policy makers and agenda-setting research groups is proposed to facilitate regional cooperation on these challenges. The activity will thus be used to stimulate regional cooperation on air pollution and climate change.

## Lessons

- The flexible use of Trust Fund resources is helping PARCC analytical work to inform critical aspects of design of larger World Bank investments and to ensure that this knowledge is embedded within systems.
- Some of these knowledge products also bring transferable learning that is applicable to the Covid-19 situation. For example, SCARP's capacity gap analysis identifies support areas for strengthening the capabilities of emergency response agencies that are at the frontline of Covid-19 response.

**Looking ahead,** fiscal study reports will be finalized in consultation with governments. Other on-going work will also be progressed in discussion with partners. There are also plans to initiate work on the Regional Hydromet assessment and valuation of benefits. This study will bring new knowledge as there is a lot of information in SAR on the importance of hydromet services in disaster and climate resilience, and the benefits are not fully realized at operational levels. A deeper analysis of valuing the benefits will help to inform policy dialogue with Ministries of Finance, Planning and Administration to find ways of tackling institutional bottlenecks to service delivery.

# Section 3: Program Management

## 3.1 Governance

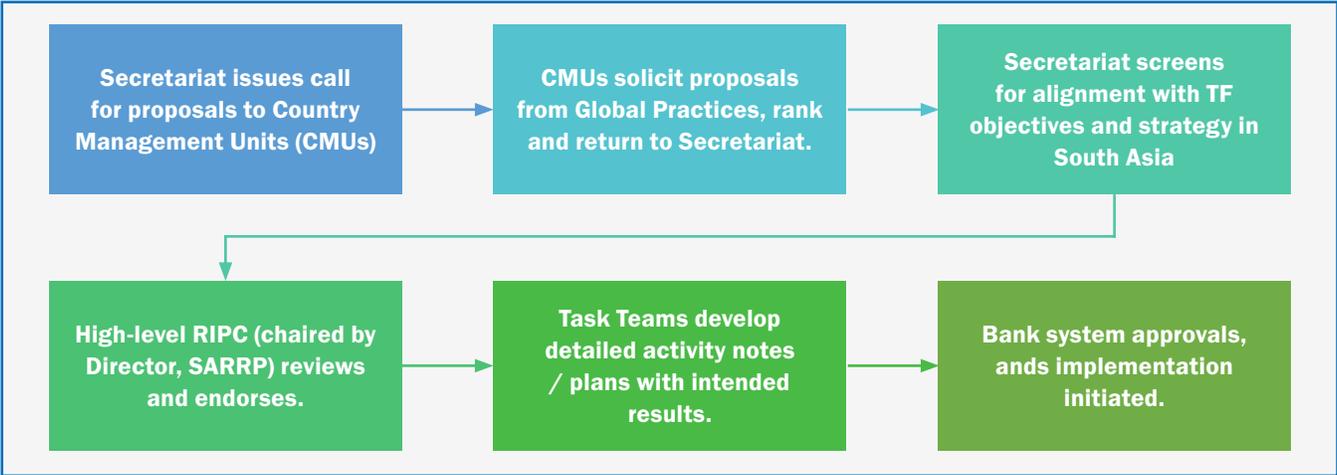
PARCC is managed by the World Bank’s South Asia Regional Integration and Engagements (SARRE) team, headed by a Director who maintains strategic oversight and ensures alignment with the Bank’s strategy and investments in South Asia. A DC-based Program Manager leads a core team (consisting of M&E, Communications, Operations and Trust Fund specialists) to manage PARCC, while individual activities are managed by Task Team Leaders (TTLs) who report to their respective Global Practices (GPs).

The Administration Arrangement between the World Bank and FCDO (signed September 2018) and the PARCC Project Concept Note lays out the management and governance arrangements of the PARCC Trust Fund. An Operations Manual includes further information on the Bank’s procedures as applicable to PARCC and reflects PARCC working modalities.

In terms of governance, the Partnership Coordination Council between the World Bank and FCDO meets annually and includes senior-level representation. A PARCC Annual Meeting was held in July 2019 and a mid-year check-in between FCDO and the World Bank was held in February 2020. FCDO, the UK Met Office, the World Bank and Oxford Policy Management have also met throughout the year to ensure coordination among FCDO’s ARRCC partners.

As part of the World Bank’s Trust Fund reform pilot initiated in 2018, a process has been established for endorsing the overall portfolio of SAR regional TF activities. The RIPC meets at least once a year to review proposals under all of the five regional Trust Funds (including PARCC). Allocations for SAR Regional Trust Funds are done in alignment with the World Bank’s business planning process to ensure that the entire portfolio is oriented towards delivering strategic priorities, activities are adequately resourced, and that there is a comprehensive and complementary effort towards the Bank’s work in South Asia. A process map is given below:

**Figure 3: Internal Processes for Approval of PARCC Activities**



As part of the World Bank’s Trust Fund Reform, the South Asia Region is also working on designing and establishing the Regional Integration and Cooperation Umbrella Trust Fund, to support efforts in promoting regional integration, cooperation, and engagement and addressing important transboundary issues. The Umbrella will be anchored in a new Multi-Donor Trust Fund (MDTF) and associate the five existing SAR regional trust funds, including PARCC. The Umbrella will have a Partnership Council as the governing body, streamlined reporting, and an annual meeting. The South Asia Regional Integration and Engagement team is in consultation with the development partners regarding the design of the Umbrella.

## 3.2 Financial Management

PARCC’s allocation and disbursements are on track and are closely monitored. As of May 31, 2020, the Bank has received GBP 6 million (US\$7.6 million) of funding from FCDO. The total amount to be received for PARCC is GBP 10 million (~US\$12.6 million). As of May 31, 2020, US\$12.4 million has been set aside for 11 activities and for Program Management and Administration costs (US\$762,000).

So far, US\$10 million has been allocated for the active portfolio, of which US\$6.8 million has been transferred to the respective activity accounts. The Secretariat also applies a prudent cash management approach of tranching funds on the basis of activity implementation needs, disbursement progress, and actual funds received from FCDO.

**Table 2: Financial Snapshot (up to mid-June 2020)**

	TOTAL (US\$)
a. Total PARCC contribution from FCDO (USD equivalent of GBP 10m):	12,599,025
b. Total Funds set aside to Activities (over the lifetime):	12,422,000
c. Funds received by World Bank (to date):	7,646,225
d. Allocations made to active portfolio:	9,922,000

PARCC grants are subject to the World Bank’s Anti-Corruption Guidelines, the Procurement and Consultant Guidelines, and the Standard Conditions for Trust Fund Grants, which delineate standard operating procedures for any fraud issues. The Anti-Corruption Guidelines provide for certain actions to be taken by grant recipients to prevent and combat fraud and corruption, and the Standard Conditions provide for suspension and/ or cancellation of disbursements, as well as the refund of disbursed grant proceeds in the event that fraud and corruption does occur. Standard audit procedures and value for money protocols are followed.

## 3.3 Value for Money

### Background and Approach

By virtue of its design, PARCC has been set up to offer Value for Money – both within individual activities themselves in terms of how they are conceptualized and delivered, as well as across the program and portfolio as a whole, which takes an integrated systems-wide approach and is strategically aligned with the Bank’s investments in the region to promote usability and uptake by partners.

PARCC is one of the Bank's South Asia regional integration Trust Funds participating in the World Bank Trust Fund reform. The objectives are to:

- (i) increase strategic alignment of trust-funded activities to improve country ownership and feed into broader operational priorities and the lending program; and
- (ii) enhance efficiency and simplification by combining allocation processes among multiple TFs (through the RIPC).

This new process reduces transaction costs while increasing alignment with the Bank's budget planning cycle to optimize the use of TFs with budget-financed activities. A lessons-learned exercise in April 2019 found that the reform process to date emphasized focus on substance of proposals and reduced transactions and administrative TF requirements. Ad-hoc requests have been reduced and Bank country units were able to rank and prioritize tasks. The timing is aligned with the World Bank's corporate strategic planning and budgeting cycle to facilitate integration of activities financed by SAR Regional Integration Trust Funds into country work program agreements – rather than a parallel track for trust funded activities.

The Bank's Secretariat also uses VfM and financial spend data to make resource allocations and build in flexibility using an adaptive management approach – i.e., based on financing needs of the activity, absorptive capacity and spend performance, results, and balancing this with other emerging priorities.

#### VfM Reporting

The World Bank presents its VfM reporting for PARCC in accordance with FCDO's VfM framework which uses four dimensions, namely: Economy (Spending Less), Efficiency (Spending Well), Effectiveness (Spending Wisely), and Equity (Spending Fairly). VfM is also presented in line with the logframe, to ensure alignment with overall program objectives. VfM data is drawn from the World Bank's financial systems and activity reporting.

#### **Economy**

The main cost drivers are expert fee rates, travel, consultation expenses, events and management costs. PARCC follows the World Bank's standard technical, legal and fiduciary procedures to establish activities and commits funds. Where the Bank needs to source external consultants, it uses established guidelines for procurement of TA and fee rates, which are benchmarked against standard arrangements. International and local expertise is sourced for highly specialized technical work, and as offers value on the ground. All trust fund beneficiaries and bidders are required to observe the World Bank policies and procedures for World Bank-financed grants and contracts. Travel guidelines are also applied according to the Bank's established procedures and systems.

(i) **Modality:** Nine of the eleven activities in the PARCC portfolio are Bank Executed (BE), which means that the World Bank is responsible for procurement of goods and the employment and supervision of consultants in accordance with its established policies and procedures. The other two relate to the Innovation facility (now under CARE), and support to Afghanistan's Met Department (yet to begin, so not counted this year). For RE activities, Bank guidelines provide specific instructions for selection of activities and the use of World Bank documents (standard bidding documents, requests for proposals, contract forms), conflict of interest, advance contracting, co-financing, fraud and corruption. Funds are disbursed according to the grant agreements and financing plans.

(ii) **Drawing on in-house expertise, and not re-inventing the wheel, thus saving costs:** The Bank has used four models, developed in-house, to progress its analytical work thereby reducing costs. These include the use of the CGE and MS tools (Pakistan), the FSA (Bangladesh, Sri Lanka, Maldives), and the Risk Assessment Tool in Myanmar. Similarly, the problem statements developed under the previous Challenge Fund helped to inform the CARE design of the Innovation Facility.

(iii) **Ways of working:** PARCC activities continue to be cross-disciplinary, which enables the Bank to take an integrated approach in responding to evolving client demand. The process of endorsement of activities by the Bank's internal RIPC helps to ensure synergies of PARCC activities with country programs – thus reducing the risk of duplication or of engaging in non-strategic activities. Individual activities are led by relevant GP teams, drawing on World Bank knowledge, resources, and in-country presence.

## Efficiency

(i) **Allocation efficiency:** The Bank's strategic RIPC continues to bring a holistic and strategic approach to resource allocation across all five SAR Trust Funds in a single exercise. This also helps to ensure strategic alignment with the Bank's investments in the region and in-country and resource allocation efficiency.

(ii) **With its convening power, PARCC has engaged with external stakeholders and forums to spotlight attention on key issues.** In Myanmar, PARCC technical support has focused attention on coastal and river flooding in vulnerable areas, helped facilitate discussions between national-level agencies and the Ayeyerwady regional government, and has included community participation. In Bangladesh, PARCC is bringing real value addition by helping government and technical institutions to come together to realize innovative technology that could eventually become marketable and bring benefits to vulnerable fishing communities. By virtue of the World Bank's participation in external events, PARCC team members have been able to use these opportunities to promote the regional hydromet agenda. For example, as an observer at the ADPC's 15th RCC in Bangkok, the World Bank team introduced Climate Resilience into the discussions.

(iii) **Efficiency gains are also being realized as PARCC joins efforts with other collaborators** – for example the TechEmerge Innovation Challenge Fund is being done in partnership with the IFC, thus helping to extend broader reach and application of the innovations. The forthcoming institutional partnership with RIMES will also help support specialized and targeted capacity building in the region and is likely to be sustainable in the long-term.

(iv) **Several activities draw on other funds which signals part of a wider joined-up effort and offers value for money.** This is part of a Whole of Finance approach that emphasizes the importance on the substance of these activities rather than the funding source, and that PARCC is able to contribute to a much wider effort. There is also complementarity with the Bank's overall work program in South Asia – for instance with other hydromet activities under the South Asia Water Initiative (SAWI).

(v) **Keeping momentum despite travel restrictions:** There have been some savings on events and in-person consultation resulting from Covid-19-related travel restrictions. Instead, Bank teams have helped to keep momentum with partners through virtual meetings and trainings, and by using locally-based consultants for data collection and for discussion with local partners.

## Effectiveness:

(i) **Strategic Alignment and Leverage:** All of PARCC's activities are aligned with the Bank's South Asia Regional Strategy and investments, and with the respective country portfolios, thereby ensuring greater return on investment. By virtue of their design, PARCC activities offer the potential for upscaling and replicability – both within the region and worldwide.

**PARCC activities are linked to or informing 19 World Bank investments of US\$2.1 billion (design and on-going).** This is closely associated with the UK's International Climate Finance (ICF) KPI 11 – “Volume of Public Finance mobilized for climate change purposes as a result of ICF”. However, given the nature of linked World Bank investments, it is not possible to attribute this to PARCC alone. The Trust Fund is critical to seeding and supporting the Bank's wider regional effort in South Asia and building climate resilience is a core part of the South Asia Regional Integration strategy. As part of a wider program approach (and not stand-alone), PARCC helps to ensure that regional activities are well aligned with national incentives / priorities – thus offering a complementary set of activities and delivering value for money.

(ii) **Shifting the needle towards regional collaboration (Intermediate Outcome 1.1):** PARCC is achieving VfM at three levels: (a) through using larger Track-2 forums, such as SAHF, to convene stakeholders in dialogue; (b) engage with regional institutions (e.g. RIMES) to build longer-term sustainable capacity building; and, (c) facilitate multi-country collaborative opportunities – for instance between Myanmar and India. Furthermore, PARCC delivers VfM by working on common issues across countries (such as Blue Resilience and macro-economic models) that can deliver new insights and best practice for the benefit all regional stakeholders.

(iii) **Uptake of PARCC outputs (Intermediate Outcomes 1.2 and 1.3):** A small investment in PARCC modelling work is likely to bring significant improvements in government systems and policy making processes, with multiplier effects on the economy and people's lives – thereby offering VfM. So far, there is positive evidence of client governments' acceptance of PARCC tools, particularly on macro-fiscal and macro-economic modelling, which are oriented towards bringing wider system improvements in the longer-term.

Risk Assessment Tools in Myanmar have identified hotspots where economic damage could run into billions of dollars from coastal and river flooding, and, where millions of people could be directly affected. The evidence has been effectively used in discussions with national and sub-national governments on developing forward plans to reduce vulnerability from climate and disaster risks.

## Equity

Gender and Social Inclusion continue to be integrated into activity workplans; however, the approach is differentiated according to the particular objectives and emphasis of the activity.

(i) Gender is mainstreamed for upstream activities, such as the macro-fiscal and macro-economic modelling, where it is more challenging to specify gender targets. The working assumption is that by looking at aspects of climate vulnerability, this would help governments to take appropriate policy action that benefitted the most vulnerable.

(ii) Several PARCC activities are linked to World Bank investments, which are required to meet internal Environmental and Social Framework guidelines and Gender Tagging standards. This requires PARCC's work to be consistent and aligned with GESI approaches in larger Bank lending.

(iii) Some of PARCC's activities are starting to show specific approaches to gender and inclusion across all four outputs. For instance, regional events and training programs have female participation (Outputs 1 and 2); activities (e.g. Myanmar) have undertaken community-level consultation to inform the PARCC knowledge products and linked World Bank programming towards building resilience for vulnerable communities; analytical work by GFDRR is bringing new insights into user behavior in Sri Lanka; the Blue Resilience activity is supporting government to progress action towards innovation technology for artisanal fishermen; and the recent air pollution study is looking specifically at gender-differentiated health impacts of air pollution across age groups and demographics (Outputs 3 and 4).

### 3.4 Monitoring and Evaluation, Communications

For **Monitoring and Evaluation**, this report draws on Bank monitoring tools including implementation status and results reports, progress reviews and input from Bank task teams. It monitors progress against FCDO's new logframe instead of the PARCC results framework in order to track the same indicators as FCDO's program, ARCCP.

A mid-year check-in of PARCC was held in February 2020 between FCDO and the World Bank and with the UK Met Office and FCDO's monitoring, evaluation, and learning consultant, OPM, to take stock of progress of the PARCC program and share information.

Before Covid-19 hit globally, FCDO and Bank staff, UK Met Office, and FCDO's consultant OPM participated physically in PARCC-supported events (e.g. SAHF2, November 2019). FCDO's senior climate adviser met with Bank staff administering and delivering PARCC during a visit to the World Bank in Washington DC in February 2020.

On **communications**, the Bank stepped up efforts over the year to communicate the South Asia Trust Funds work, including that of PARCC activities. The purpose is to increase awareness of key stakeholder groups about challenges and solutions and to generate wider support for a regional agenda. A public website, [OneSouthAsia](http://www.worldbank.org/OneSouthAsia) at [www.worldbank.org/OneSouthAsia](http://www.worldbank.org/OneSouthAsia), was redesigned to highlight success stories, reports, analyses, and videos about regional integration and collaboration. The site's content now focuses on regional work in five major areas: water, climate, trade, transport and energy.

The One South Asia site features the Bank's work with trust fund partners and the Bank's own investments to build stronger regional ties to improve preparedness for natural disasters and extreme weather, and resilience to climate change. Blogs, reports, and other communications products about specific PARCC activities include language crediting the trust fund's support. Additionally, the Bank's website has a new [page dedicated to PARCC](#)<sup>11</sup> that describes the trust fund and links to analyses, events, and activities it has funded.

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<sup>11</sup> <https://www.worldbank.org/en/programs/south-asia-regional-integration/brief/program-for-asia-resilience-to-climatechange#:~:text=PARCC%20was%20launched%20in%202018,%2C%20Pakistan%2C%20and%20Sri%20Lanka.&text=The%20trust%20fund%20is%20part,involves%20the%20UK%20Met%20Office>.

## Section 4: Risks

Delivery risks of the overall PARCC portfolio are considered to be **low-medium**, particularly as activities are World Bank-executed and analytical in nature. Risks have been identified in the Bank's Concept Note and the Bank has cross-referenced these with FCDO's Risk Register for ARRCCP (Ref: 203185) and its proposed mitigation measures.

This year the three main risks are as follows:

(i) **Covid-19 and climate risks:** Several of PARCC activities have slowed down due to travel restrictions from Covid-19, and due to World Bank and client attention focused on addressing the crisis. The occurrence of a major natural disaster is another risk that could disrupt activity and divert partner attention. This year, Bangladesh experienced one cyclone and India was hit by two cyclones. So far, PARCC activities have not faced major disruptions due to these events. Virtual meetings and trainings are being conducted, and workplans reviewed to manage uncertainty and ensure that these are practical and achievable.

(ii) **Regional Political Risks:** The political economy of the region remains dynamic, which could have some implications for regional relationships and collaboration going forward. Some of these are external risks, which are being managed by working closely with client partners, consulting broadly with partners, and using the approach of identifying solutions to common problems and lesson learning to help facilitate regional interest. There remains strong demand from client partners for World Bank investments and for PARCC technical and analytical work (links to Risks 2 and 3 of FCDO's ARRCC Risk Register). As PARCC activities are linked to World Bank investments, this risk is managed through the larger programs.

(iii) **Financial Risks could arise due to tranching payments into PARCC.** The Administration Arrangement has set out a resource schedule of six-monthly tranche disbursements to PARCC. The Secretariat forecasts cash flows and makes allocations to Task Teams for their activities. This risk increases for Recipient Executed activities, which need to be fully available at the time of project appraisal/negotiations. If the full amount of funding is not available in the parent Trust Fund at the time needed, this creates risks for both the activity as well as the investment project. Also, given that the last payment into the Fund is scheduled for FY22, those funds would need to be rapidly spent to avoid undisbursed balances. Any unpredictability in cash flows could impact the pace of delivery of activities within the portfolio.

Other risks include the following:

(iv) **Innovation:** The innovative nature of PARCC activities, including the Challenge Fund, mean that there may be a time-lag in uptake of approaches by partners, or that some projects may fail to take off. Design of the activities is taking account of these risks by including user groups and building a bottom-up approach, by undertaking extensive consultations with key stakeholders, and by drawing on lessons from previous work (links to Risk 7 of FCDO's ARRCC Risk Register).

(v) **Challenge Fund - Insufficient high-quality proposals received in response to calls.** This risk is being mitigated by communications and partnering efforts to ensure that the information about the Challenge Fund is broadly shared. So far interest in the TechEmerge call has been high – and 240 applications have been received by the Bank team as of June 2020.

(vi) **Communication Risks:** The primary risk is a long history of political sensitivity in all eight South Asian countries about regional integration, trust issues, and shared data and information. As reported in Section 3.4 of this report, SARRE has stepped up its communications efforts, including through a refreshed website and regular newsletters, and is ensuring that communications are carefully nuanced to mitigate risk to regional connectivity efforts.

(vii) **Quality and availability of reliable data:** This remains a key risk particularly where trend data is required for modelling and analytical work. The World Bank has tackled this by consulting widely with partners, collecting data while on missions, and by working with local institutions and expert to test some of the assumptions. As such, careful attention will be paid to assumptions made (links to Risk 4 of FCDO's Risk Register).

(viii) **Capacity constraints:** Limited capacity of partner clients may reduce the success of efforts to transfer models to the authorities. The World Bank team is engaging with Ministry of Finance counterparts who are part of the larger reform program. Elsewhere, targeted training and outreach with stakeholders across sectoral ministries and agencies is helping to build understanding and capacity (links to Risk 7 of FCDO's ARRCC Risk Register).

## Section 5: Conclusion

**This year, South Asia is grappling with the twin challenges of the Covid-19 pandemic as well as climate and weather-related disasters, many of which are transboundary.** The Covid-19 outbreak has placed vulnerable populations and existing disaster management resources in South Asian countries under severe pressure. South Asia, a region already highly vulnerable to impacts of climate change, is predicted to experience a significant negative impact on its economic performance (projected between 1.8 and 2.8 percent this year, down from the projected 6.3 percent<sup>12</sup>), with increased risks for vulnerable populations as disaster response protocols have to conform to lockdown and social distancing guidelines.

**Looking ahead, the convergence of risks threatens to stall the region's long-term developmental gains, but also offers opportunities for regional agencies to collaborate in finding solutions to common problems.** As part of South Asia's recovery efforts from Covid-19, this provides an opportunity for stepping up investment in climate-resilient development. Building resilience will also be a critical part of the recovery efforts. PARCC regional collaboration, backed by knowledge, capacity and finance, can help to: improve collective understanding of weather and climate variability, find effective strategies, and take climate action to scale.

**This year, PARCC's emphasis on systems building is laying the essential groundwork for larger investments and collaborative partnerships that can deliver benefits for the region as a whole.** The approach of working with existing regional institutions (such as RIMES) for regional capacity building is likely to deliver economies of scale; while aligning with World Bank investments is helping PARCC to stretch beyond what its resources would otherwise be able to achieve.

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<sup>12</sup> "World Bank. 2020. South Asia Economic Focus, Spring 2020 : The Cursed Blessing of Public Banks. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/33478> License: CC BY 3.0 IGO."

# Annex One: Activity Snapshots

## A Macro-Fiscal Model for Pakistan with a Climate Change Module

**Scope:** Climate change and climate policies can have large macroeconomic impacts. Such impacts are largely missing from most macro fiscal tools used by policymakers in Pakistan. This activity will integrate a climate change module into existing macro-fiscal tools, calibrate macroeconomic forecasting and analysis models that capture the potential impact of climate change to Pakistan's economy, and provide training to relevant ministries in Pakistan on the use of the models. The macroeconomic model will support Pakistan's Ministries of Finance and Planning to better understand the co-benefits from environmental and fiscal policies, including the negative effects on productivity, revenues and consumer welfare of climate change and the economic benefits that may accrue to different adaptation and mitigation strategies.

**Timeframe:** Dec 2018 - Dec 2020 | **Focus:** Pakistan | **Amount:** US\$500,000

## Managing Fiscal Risks Associated with Climate Change

**Scope:** Given the central role played by Finance Ministries in policy, it will be important to embed the climate change agenda into fiscal discussions, which typically focus on traditional revenue and expenditure measures. Through a model tool developed by the World Bank for assessing fiscal sustainability, this activity will analyze the fiscal risks associated with climate change-related events in Bangladesh, Nepal and the Maldives. The model tool can be used to construct probable paths of key fiscal variables, including the budget balance, debt stock and debt service costs in the face of climate-related shocks and under alternatives strategies for financing responses to climate shocks. Simulations will aim to provide information to facilitate the design of appropriate policy measures in the three countries to mitigate fiscal risks from climate change.

**Timeframe:** Apr 2019 - Jun 2021 | **Focus:** Bangladesh, Maldives, Nepal | **Amount:** US\$200,000

## South Asia Regional Hydro-met, Early Warning and Climate Services Program

**Scope:** This activity will support regional engagement under the South Asia Hydro-met Forum to promote collaboration and enhance capacity toward improving hydro-met, early warning and climate services in South Asia. It will provide technical assistance and capacity building, including through regional trainings and twinnings, to help countries develop tailored weather and climate data, products, information and services to improve planning and decision-making in key sectors, such as agriculture, urban, health, and disaster risk, and to mitigate the adverse effects of weather and climate variability and change. A regional training hub will be designed and established to provide operational training toward enhancing improvement in service delivery and quality, last mile connectivity, use of innovation in product development and communication, and capacity enhancement at the institutional and university level for strengthening technical expertise within countries.

**Timeframe:** Oct 2019 - Oct 2022 | **Focus:** South Asia Region | **Amount:** US\$1,500,000

## SAR Climate Adaptation and Resilience Partnership

**Scope:** This activity will provide technical assistance to enable South Asia's transformational shift toward climate resilient policies, planning and investments. A regional multi-sectoral platform will be developed for enabling mainstreaming of climate resilience and adaptation across the region and sectors. This platform will facilitate regional knowledge sharing on climate-resilient best practices; identify synergies across countries and policy and technical standard gaps; strengthen institutional capacity; and support the rapid risk assessment of cities in South Asia in terms of climate risk exposure, vulnerability and adaptive capacities. The activity will also provide technical support for the development of a comprehensive financial disaster resilience program for the region (which includes elements such as cost-benefit analyses of investing in resilience infrastructure and post-disaster

funding mechanisms to provide for liquidity post-disaster to fund reconstruction efforts) and technical assistance through feasibility studies and workshops to help countries utilize innovative and disruptive technologies for climate resilience.

**Timeframe:** Jun 2019 - Jun 2022 | **Focus:** South Asia Region | **Amount:** US\$1,500,000

### Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar

**Scope:** Myanmar possesses a 2000-km coastline that is highly exposed to a range of hazards, including cyclones, storm surge, extreme temperature, drought and rainfall. Climate change and variability are expected to compound the effects of extreme weather events along the coastline, through expected increases in event frequency and intensity. Existing research and consultations show significant gaps in resilient infrastructure, response capacity, coastal monitoring and forecasting and access to disaster early warnings. This activity aims to strengthen government capacity for hydro-met monitoring, forecasting, disaster early warning systems and climate services for coastal and delta communities in Myanmar. In doing so, the activity will assess national coastal and marine information systems; conduct technical studies for the development of cross-sectoral interventions (including for resilient infrastructure, nature-based solutions, and disaster risk reduction); and promote regional collaboration to address climate extremes in the Bay of Bengal. This work provides the foundation for a long-term coastal resilience program in Myanmar.

**Timeframe:** Jun 2019 - Jun 2021 | **Focus:** Myanmar | **Amount:** US\$400,000

### SAR Blue Resilience

**Scope:** This activity aims to strengthen regional collaboration and increase resilience of fishermen and their dependent coastal fishing communities to climate and disaster risks. Building on technology innovation investments under ongoing Bank operations, the activity will support south-south knowledge exchange on adoption of cutting edge (dual use) technological solutions for improving weather warning and search and rescue at sea that are only now becoming available for small scale artisanal and semi-industrial coastal fisheries. In parallel, it will engage established regional partners to initiate interagency/intergovernmental dialogue and information sharing protocols and agreements to facilitate joint fishing vessel monitoring and search as rescue, as well as for monitoring and reduction of fishing gear debris and plastic pollution. On the land side, the activity will support community engagement across Bangladesh, India, Maldives and Sri Lanka to harness traditional knowledge for climate and disaster risk reduction and avoidance. In turn, this will inform the development of a comparative assessment and model identification for scaling up under the growing World Bank blue economy portfolio in the South Asia Region.

**Timeframe:** Dec 2019 - Jun 2022 | **Focus:** Bangladesh, India, Maldives, Sri Lanka | **Amount:** US\$560,000

### Innovation for Resilience Analytics

**Scope:** This activity will deliver two analytical studies for Myanmar and Sri Lanka to provide evidence on behavior, needs, and capacity to act on risk information, focusing on vulnerable populations, and will support efforts to improve the communication of hydrometeorological information to support better preparedness in South Asia.

\*In February 2020, the Challenge Fund which was originally planned under this activity, was incorporated as a component of the Climate Adaptation and Resilience for South Asia (CARE) Project, as a US\$3,500,000 recipient-executed activity.

**Timeframe:** Jan 2019 - Sept 2021 | **Focus:** South Asia Region, Myanmar | **Amount:** US\$600,000

## CARE Project - Climate Adaptation and Resilience (Challenge Fund)

**Scope:** The Climate Adaptation and Resilience for South Asia (CARE) Project will help develop a public platform to inform climate planning and investments, and fund innovative and disruptive technology to support resilience in South Asia. PARCC will fund two activities under a sub-component of the CARE Project. The Climate Innovation Challenge activity will promote innovation and adoption of disruptive technology in the South Asia Region through award of grants to eligible and qualifying innovators. The Challenge will aim to facilitate innovative solutions for their application and scale-up across different sectors, and tiers (national, sub-national and local/community) for greater impact. The TechEmerge Resilience Challenge activity aims to crowd in private sector expertise and market-based innovation for resilience through use of disruptive technologies to address climate and disaster resilience challenges. After a comprehensive needs assessment, an open global call will be launched to source relevant proven well-tested solutions that can be customized for the region. With the support of a network of technical advisors, the most relevant innovators will be selected and matched with beneficiary users to adopt and implement local pilot projects and form new partnerships. Grant funding will be provided to winning innovators and provide appropriate support for field testing/pilot activities.

**Timeframe:** May 2020 - July 2022 | **Focus:** South Asia | **Amount:** US\$3,500,000

## Evaluating the Benefits of National and Regional Investments for the Whole Hydro-met Value Chain

**Scope:** The importance of hydro-met and climate services and early warning systems in disaster and climate resilience is widely acknowledged, but the benefits are not fully realized at operational levels in South Asia. It is critical therefore to have a deeper analysis of valuing the benefits and developing policy dialogue with ministries of finance, planning and administration to find ways of unknottling the complex institutional problems besetting service delivery. This activity will evaluate and demonstrate to the governments the whole set of socioeconomic benefits provided throughout the hydro-met value chain (observations, forecasting, warnings and tailored services) on the national and regional levels. The potential outputs are expected to include a methodology to measure the costs and benefits of the whole value chain of hydro-met services, including tailored services and monitoring user satisfaction with service delivery; an assessment of how to optimize investment in the hydro-met value chain to maximize the benefit to those at risk, to inform future investment decisions by development partners; a national assessment of socio-economic benefits of the full hydro-met value chain in two or three countries; and an assessment of regional socioeconomic benefits provided by hydro-met services.

**Timeframe:** Pipeline | **Focus:** South Asia (selected countries to be determined) | **Amount:** US\$500,000

## South Asia Regional Collaboration for Preparedness and Resilience to Disaster and Climate Risks: Hydro-met and Early Warning Services

**Scope:** This activity aims to strengthen the capacity of provider and user agencies for the development and delivery of weather, water and climate-related early warning services in Afghanistan. The activity will serve as a critical component of a programmatic approach toward the implementation of the Strengthening Hydro-met and Early Warning Services in Afghanistan Roadmap. It will provide technical assistance, through training and improvements in information communications and technology, to strengthen the capacity of the Afghanistan Meteorological Department to enhance coordination on, and improve service delivery of, weather and climate services in the country. The activity will link with the pipeline Agro-Water Management and Climate Resilience Project, aimed to improve land and water productivity and climate resilience of agricultural systems in selected areas of Afghanistan. This linkage will reduce administrative burden. Expected Board Date is October 2020.

**Timeframe:** Pipeline (expected Nov 2020 - Sept 2022) | **Focus:** Afghanistan | **Amount:** US\$2,000,000

## Promoting Regional Cooperation in Air Pollution Management

**Scope:** Many air pollutants contribute to climate change by affecting the amount of incoming sunlight that is reflected or absorbed by the atmosphere, with some pollutants warming and others cooling Earth. Nearly 95 percent of South Asians live in areas where ambient fine particulate matter concentrations exceed the WHO Air Quality Guidelines. Problematically, data related to air pollution is limited, and there are inadequate efforts among countries in the region to jointly deal with this transboundary issue. Air pollution and climate change are closely related. As well as driving climate change, the main cause of CO2 emissions – the extraction and burning of fossil fuels – is also a major source of air pollutants. Many air pollutants in fact contribute to climate change by affecting the amount of incoming sunlight that is reflected or absorbed by the atmosphere. This activity seeks to fill an important information gap by highlighting low-cost yet effective and accessible opportunities and actions for reducing air pollution concentrations across South Asia, and illustrating ways policymakers, communities, and NGOs can readily engage. In doing so, the activity will develop an information base on pollution sources and impacts at the scale of different “airsheds” in the region (including the level and composition of air pollution concentration in each of them); identify population exposure and health damage across the region; and assess various cost-effective strategies to reduce pollution concentration, including cooperative solutions. Building on the findings, it aims to create a network of regional policymakers and agenda-setting research groups to facilitate regional cooperation on air pollution management challenges.

**Timeframe:** May 2020 - Dec 2020 | **Focus:** South Asia Region | **Amount:** US\$400,000

# Annex Two: Impacts Of Covid-19 On Activity Implementation

Activity	Planned Activity Deliverables by Closing Date	Extension Required	Changes to Activity Delivery Due to Covid-19	Can Activity Respond to the Covid-19 Crisis? If so, is Restructuring Needed?
<p><b>A Macro-Fiscal Model for Pakistan with a Climate Change Module</b></p> <p>Closing Date: Dec 2020</p>	<p>Identify and communicate all data needs to the client; develop a first draft of the CGE model with a climate change module and a core focus on quantifying the effects of adaptation and mitigation for Pakistan; develop a first draft MS model with a climate change module that builds in the climate change features of the CGE model (conditional on data availability); deliver a preliminary technical paper and model documentation using each of the two models; and conduct a regional workshop reviewing the models and preliminary outcomes, and seeking inputs from stakeholders for model improvement.</p>	No	<p>Mission travel to Pakistan is restricted and the activity team cannot enter or move about the country. The team is working remotely via video conference to provide organized trainings to Pakistani authorities on model usage. Remote engagement will continue until travel restrictions are lifted.</p>	<p>These activities focus on addressing shocks relevant to climate change. Since the Covid-19 situation presents a national emergency akin to a climate change-related event, the models and policy recommendations coming out of these activities will be useful for Covid-19, should the pandemic continue over the long-term.</p>
<p><b>Managing Fiscal Risks Associated with Climate Change</b></p> <p>Closing Date: Jun 2021</p>	<p>Prepare individual reports on Bangladesh, Nepal and the Maldives that analyze the fiscal risks associated with climate-related events (which will provide important quantitative analysis of how natural disasters of different magnitude and severity can affect the debt, expenditure and other fiscal variables, and what policy measures can be implemented to reduce the risks arising from these shocks); conduct a workshop with Ministry of Finance officials from each of the three countries to discuss activity findings and recommended actions.</p>	Yes. Activity has been extended to June 2021.	<p>The activity was on track before Covid-19 hit—the initial draft reports for the Bangladesh and Nepal analyses were near finalization, and data was collected and a literature review conducted for the Maldives analysis. Completion of the reports is now on hold. The activity team is considering bringing in an international consultant to support the completion of this work. The joint in-person workshop was scheduled for May 2020, but could not take place due to travel restrictions. If the physical workshop cannot proceed, the logistics of a joint virtual format will be explored. If the joint virtual format is not feasible, virtual workshops may be conducted separately for each country.</p>	

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<p><b>Strengthening Disaster Early Warning Systems and Climate Services for Coastal Communities in Myanmar</b></p> <p>Closing Date: Jun 2021</p>	<p>Complete the national-level report on coastal and delta resilience and the regional-level report focusing on the Ayeyarwady Administrative Region, which identifies multi-sector investment options to strengthen resilience of coastal and delta communities.</p>	<p>No</p>	<p>Completion of the reports is delayed, as mission travel to Myanmar for data collection and consultation is suspended. Draft reports will be prepared based on data and information already collected. The activity team is working with national consultants to carry out outstanding data and information collection by phone. A virtual consultation with government counterparts is planned for early FY21.</p>	<p>The activity team will discuss Covid-19 response with the government counterparts and, if the activity can respond appropriately, activity deliverables may be adjusted accordingly.</p>
<p><b>SAR Blue Resilience</b></p> <p>Closing Date: Jun 2022</p>	<p>Support South-South knowledge exchange on adoption of cutting edge (dual use) technological solutions for improving weather warning and search and rescue at sea that are only now becoming available for small scale artisanal and semi-industrial coastal fisheries; engage established regional partners to initiate interagency/intergovernmental dialogue and information sharing protocols and agreements to facilitate joint fishing vessel monitoring and search and rescue, and monitoring reduction of fishing gear debris and plastic pollution; support community engagement across the four countries to harness traditional knowledge for climate and disaster risk reduction and avoidance; develop a comparative assessment and model for scaling up blue resilience measures in South Asia under the World Bank's blue economy portfolio.</p>	<p>No</p>	<p>Activity implementation started largely coinciding with the Covid-19 emergency outset, and therefore remains in initial mobilization. The activity team is working to identify alternative delivery mechanisms to carry out the south-south knowledge exchange and intergovernmental dialogue components, including via e-consultations and e-conferences. The activity team is also considering modalities to implement the community engagement component of the activity, including through innovative social media for cross-community engagement. This activity pillar will need to be revised should the pandemic's impact on mobility extend beyond the coming months.</p>	<p>Protecting food security and natural resource/livelihood access for vulnerable coastal communities may pose major challenges in the crisis recovery phase, when natural resource extraction and harvesting (legal and illegal) pick up significantly. The dual use technological solutions under the activity can play a significant role in enabling better resource use monitoring and improving information and transparency for government and community actions. The cross-country dialogue supported under the activity is expected to further catalyze both regional collaboration and more concerted national-level action to this end</p>
<p><b>SAR Climate Adaptation and Resilience Partnership</b></p> <p>Planned Closing Date: Jun 2022</p>	<p>Conduct a preliminary stocktaking and capacity assessment through stakeholder engagement in Bangladesh, Nepal and Pakistan; prepare a detailed sectoral analysis in key infrastructure sectors, such as transport in Pakistan and water in Bangladesh; identify adaptation and resilience options for existing and new assets; undertake incremental cost analyses for adaptation and climate resilience investments.</p>	<p>No</p>	<p>Stakeholder engagement and consultations are key components of the activity. Due to the persistent constraints to organize face-to-face meetings and interviews, the mode of engagement will be adjusted to include written questionnaires and surveys, and individual interviews via phone and online communication platforms. Local consultants will be mobilized for stakeholder consultations rather than previously planned international consultants, who are required to travel from overseas.</p>	<p>Yes. The activity's climate data and capacity gap assessment identifies support areas for strengthening the capabilities of emergency response agencies that are at the frontline of Covid-19 response. The activity is also supporting crowdsourcing of innovative solutions to address disasters and climate change amidst Covid-19 constraints.</p>

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<p><b>Innovation for Resilience Analytics</b></p> <p>Closing Date: Sept 2021</p>	<p>Prepare two analytical studies in Sri Lanka and Myanmar. The Sri Lanka study will use behavioral insights to understand end-user experience of early warning systems to help improve disaster protective actions in the country. The Myanmar study will analyze how communities in remote and conflict-affected regions of southeast Myanmar can be provided with improved hydro-met information and climate services. (See inputs under the <i>Changes to Delivery Due to Covid-19</i> column for information on additional activities).</p>	<p>Yes</p>	<p>The activity teams implementing the analytical work in Myanmar and Sri Lanka require revised workplans and postponement of deliverables.</p> <p>The Myanmar-based team is not able to travel within the country to conduct fieldwork. Because the pandemic has made certain field-based activities impossible, cost savings will enable the Myanmar team to conduct three additional activities, based on stakeholder request: (1) collaboration with the Department of Disaster Management for improved preparedness; (2) technical assistance to an Ethnic Service Provider to develop a disaster preparedness plan and support to strengthen collaboration with other stakeholders; and (3) technical assistance to the Department of Rural Development on rolling out the community-based disaster risk management pilot in the National Community-Driven Development Project, with focus on conflict sensitivity and do-no-harm principles.</p> <p>The Sri Lanka team does not reside in-country, and mobility restrictions have slowed fieldwork. The team is exploring the possibility of hiring a local firm to conduct the qualitative component of the study through an online or phone survey to safely and responsibly capture quantitative data. The activity team is attempting to design a new survey to be conducted via telephone or online—and which may be implemented during the pandemic without endangering health of participants or enumerators.</p>	<p>No. This activity's scope does not allow for Covid-19 response actions.</p>

Activity	Planned Activity Deliverables by Closing Date	Extension Required	Changes to Activity Delivery Due to Covid-19	Can Activity Respond to the Covid-19 Crisis? If so, is Restructuring Needed?
<p><b>CARE Project - Climate Adaptation and Resilience (Challenge Fund)</b></p> <p>Closing Date: Jul 2022</p>	<p>The activity is not yet under implementation. It will fund a sub-component of the CARE Project, including the Climate Innovation Challenge and the TechEmerge Resilience Challenge.</p>	<p>No</p>	<p>The CARE Project was designed within the Covid-19 operating context. No changes to activity delivery are therefore expected.</p>	<p>The CARE Project workplan reflects Covid-19 responsiveness.</p>
<p><b>Evaluating the Benefits of National and Regional Investments for the Whole Hydro-met Value Chain</b></p> <p>Closing Date: Pipeline</p>	<p>Prepare a methodology to measure the costs and benefits of the whole value chain of hydro-met services; undertake an assessment of how to optimize investment in the hydro-met value chain to maximize the benefit to those at risk, to inform future investment decisions by development partners; conduct a national assessment of socioeconomic benefits of the full hydro-met value chain in two or three countries; and conduct an assessment of regional socioeconomic benefits provided by hydro-met services.</p>	<p>No</p>	<p>This activity is being designed within the Covid-19 operating context. No changes to activity delivery are therefore expected.</p>	<p>The activity is being reviewed in terms of linkages to Covid-19 to make it more responsive. Such actions include providing technical assistance to ensure that weather and early warning services are delivered under Covid-19-related conditions, through business continuity planning, and an exploration of the use of services' dissemination channels to transmit advisories and information on Covid-19 response, which is critical with the likely severe weather in the upcoming monsoon season.</p>
<p><b>Promoting Regional Cooperation in Air Pollution Management</b></p> <p>Planned Closing Date: Dec 2020</p>	<p>Gather information on pollution sources and impacts at the scale of different "airsheds"; conduct an analysis of linkages between Covid-19 and air pollution in the South Asia Region; undertake a policy analysis contrasting the benefits of achieving air quality objectives in different locations using only policies within the relevant jurisdiction versus policy combinations reflecting policy co-ordination in the control of cross-jurisdictional pollution sources; prepare a final report and undertake regional consultations on the report findings.</p>	<p>No</p>	<p>This activity was designed within the Covid-19 operating context. No changes to activity delivery are therefore expected.</p>	<p>Yes. Researchers around the world are building the case that air pollution has significantly worsened the Covid-19 pandemic and could lead to more deaths than if pollution-free skies were the norm. Among various potential risk factors facing Covid-19 patients initially, medical specialists and researchers are finding predominant vulnerabilities related to respiratory ailments such as asthma and chronic lung disease. Thus, by predisposing the people who have lived with polluted air for decades, scientists are propounding that air pollution particles may be acting as vehicles for viral transmission.</p>

Activity	Planned Activity Deliverables by Closing Date	Extension Required	Changes to Activity Delivery Due to Covid-19	Can Activity Respond to the Covid-19 Crisis? If so, is Restructuring Needed?
				<p>The association between Covid-19 and air pollution is being closely looked at now by this activity from the point of view of the higher risk of existing respiratory and heart diseases in areas of higher pollution. No restructuring is necessary at this point as this is being integrated into the ongoing analysis.</p>
<p><b>South Asia Regional Hydro-met, Early Warning and Climate Services Program</b></p> <p>Closing Date: Oct 2022</p>	<p>Design and implementation of the training hub; organization and implementation of SAHF-3.</p>	<p>No</p>	<p>Scheduled in-person trainings over the coming months may need to be held virtually instead. Other sub-activities should be able to proceed as planned.</p>	<p>Due to the activity's commitments through the South Asia Hydro-met Forum and to clients, it will not be possible to re-allocate activity funds to Covid-19 response.</p>