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# **Mainstreaming Climate Change in Food Security Investment Projects in Central and West Asia**

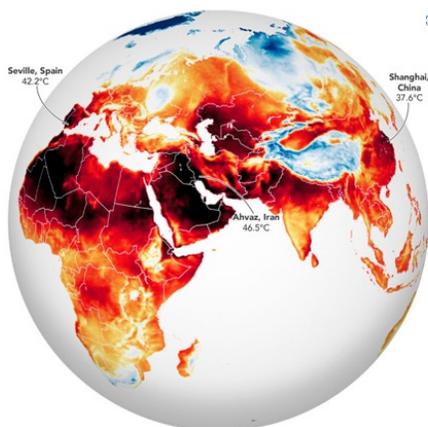
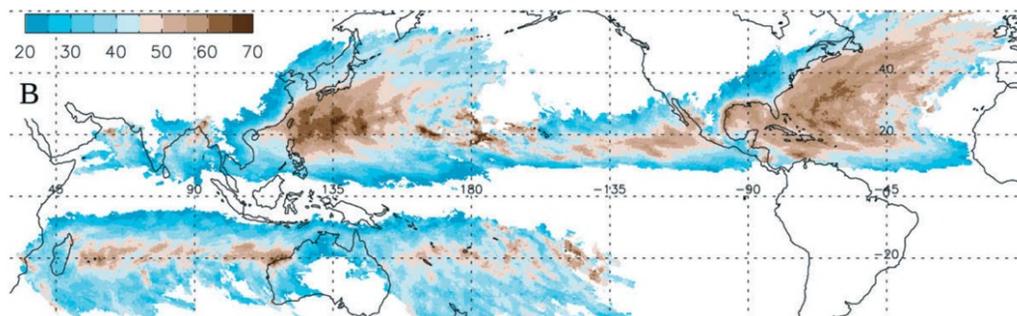
09 December 2023, ADB Pavilion

Presented by: Qingfeng Zhang, Senior Sector Director, SG-AFNR

Addressing **food security** is  
not possible without addressing  
**climate change** and **vice-**  
**versa..**

# Climate change is leading to extreme weather causing food production losses

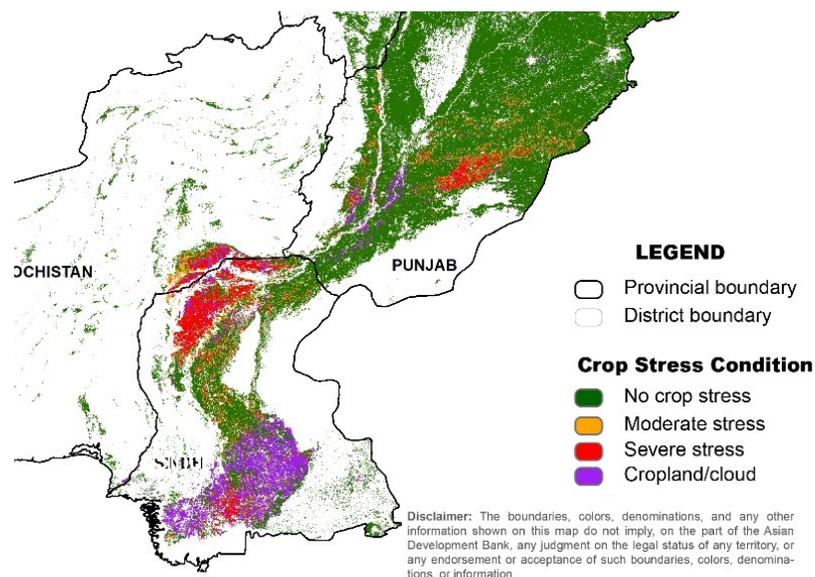
Wind speed during storms (in knots)



Heatwave across the world, 2022

Source: NASA Earth Observatory, [France24](#) and IBTrACS Data

Catastrophic Floods in Pakistan, 2022



Source:  
JFPR TA 6721: Using Frontier Technology and Big Data Analytics for Smart Infrastructure Facility Planning and Monitoring  
TA 6663: PAK – Strengthening Food Security Post-COVID 19 and Locust Attack

# Food systems contribute a quarter of global GHG emissions leading to climate change

31%

Emissions from food systems as a percentage of global GHG emissions<sup>1</sup>

Individual GHG gas emission global share of food systems (%)

21%

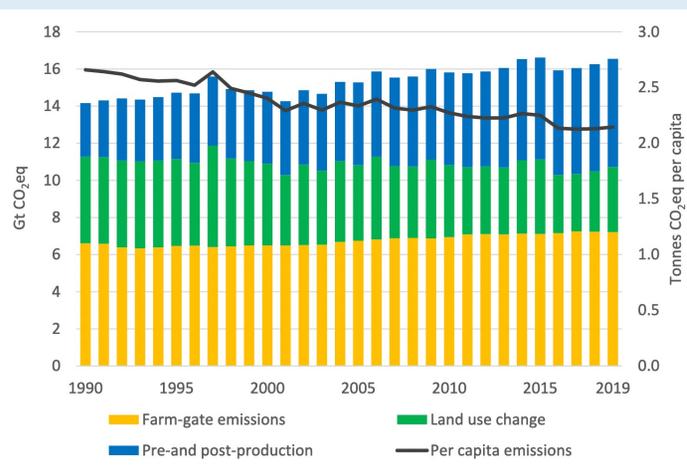
Carbon Dioxide  
(Mostly through energy inputs)

53%

Methane  
(Rice production and livestock)

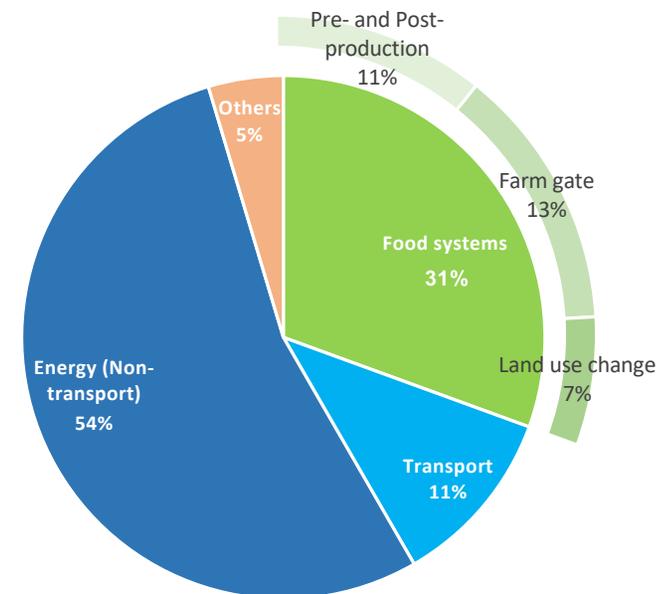
78%

Nitrous Oxide  
(Fertilizer overuse)



- World total GHG emissions from food systems systems increased by 16 percent between 1990 and 2019.
- The increase was largely driven by increase in GHG emissions upstream and downstream of farm production

## Emissions from food systems



<sup>1</sup>FAO. 2021. The share of agri-food systems in total greenhouse gas emissions Global, regional and country trends, 1990–2019

# Natural capital loss extends beyond loss of natural resources, it seriously hampers long-term food security



## Poor Water Management

Inefficient water use, especially for irrigation, results in withdrawals exceeding sustainable levels,



## Land degradation and desertification

Unsustainable farming, land, and livestock management practices and loss of forest and vegetation cover



## Saltwater intrusion and increased Salinization

Sea level rise and storm surges, land subsidence in coastal zones; saline soils that reduce crop yields.



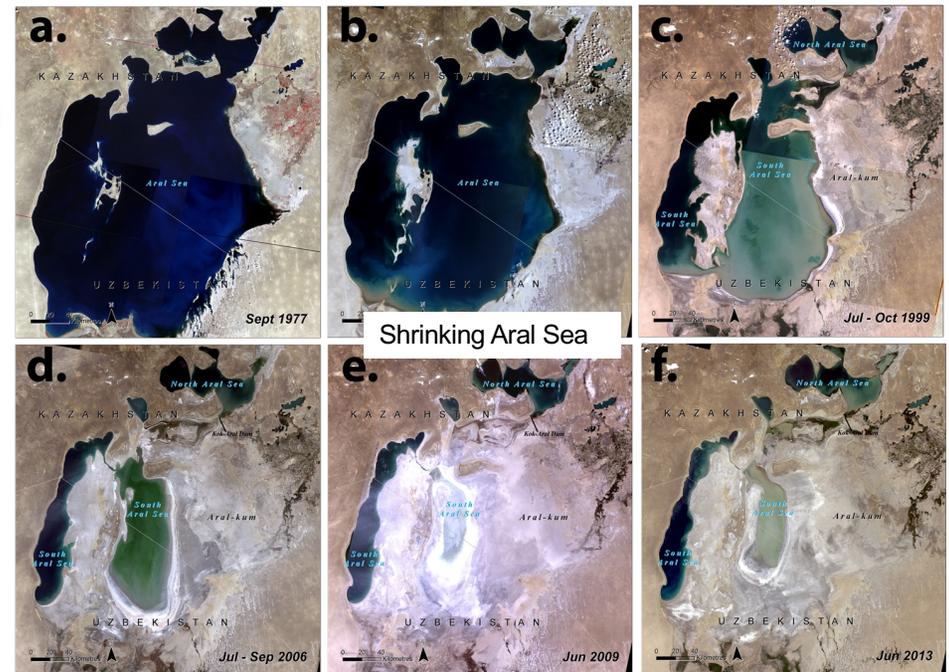
## Pollution and resources depletion

Excessive use of fertilizers and other chemicals, contribute to resource depletion and environmental degradation, pollution and GHG emissions.



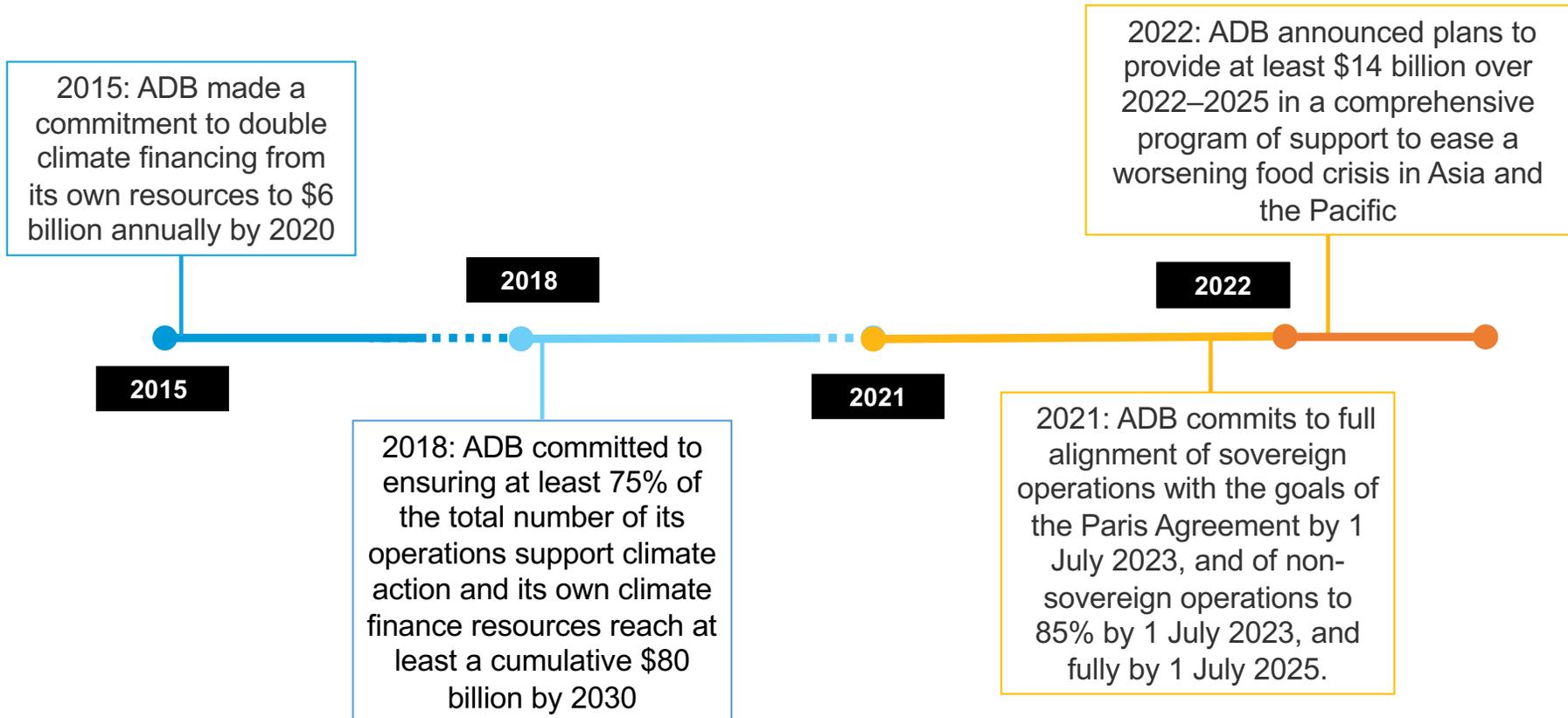
## Biodiversity Loss

Biodiversity degradation due to expanding cropland and over-utilization of resources, which in turn affects both agriculture productivity and the environment.



Source: NASA earth observatory, accessed 2023

# ADB is committed to be Asia and the Pacific's climate bank While elevating food security as a priority



# Climate risk Assessments for AFNR in CWRD

**REGIONAL** – Developing climate change strategy and action plan for Central and West Asia covering 9 countries

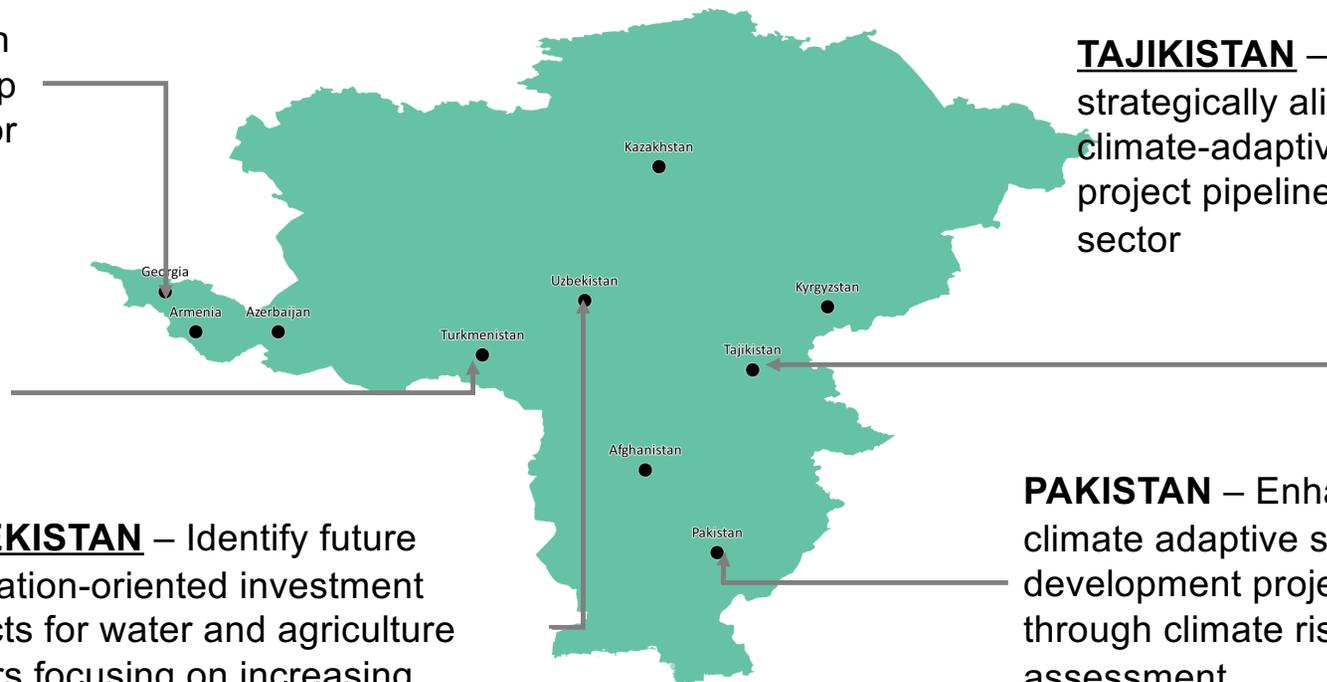
**GEORGIA** – Analysis of climate change impacts on water resources to develop the adaptation roadmap for the CAREC Water Pillar

**TURKMENISTAN** - Climate risk assessment on water resources to identify concept for an adaptation investment project

**UZBEKISTAN** – Identify future adaptation-oriented investment projects for water and agriculture sectors focusing on increasing resilience to climate change impacts

**TAJIKISTAN** – Develop strategically aligned and climate-adaptive investment project pipeline in the ANR sector

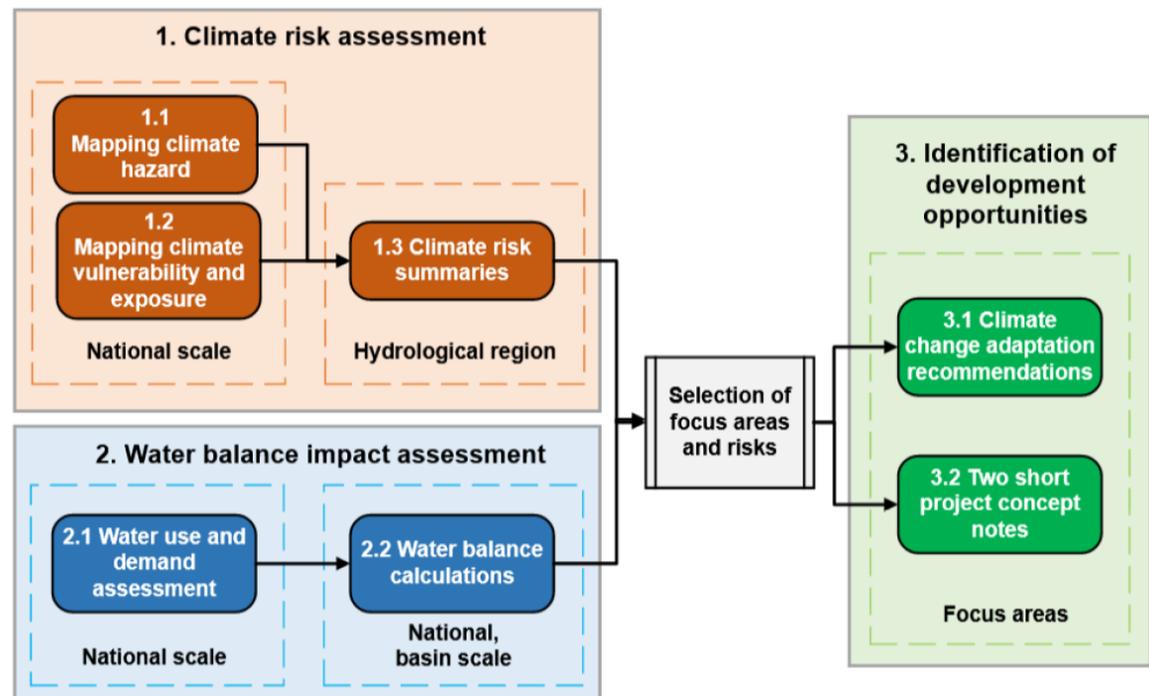
**PAKISTAN** – Enhancing climate adaptive sector development projects through climate risk assessment



# Example climate risk assessment – Republic of Georgia

## KEY FEATURES:

- Approach used data analytics to identify climate risks, vulnerabilities, and adaptation strategies at various scales (national and basin scale)
- Prioritized climate risk hotspots where water supply and demand gap is highest
- Develop investment concept notes looking at holistic (landscape level) approach for adaptation

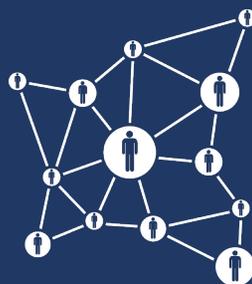


# ADB will address the Climate-Food-Nature Nexus in Central and West Asia through Key Focus Areas

## Key Areas of Focus



Integrated River Basin Management



Green and Inclusive Agriculture Value Chains



Natural Capital and Ecosystems



Disaster Risk Management in AFNR

## Cross-cutting



Policy and Institutional Support



Private sector engagement

# Integrated river basin management

## Strengthening water governance

- CWRD has pioneered upstream climate risk-based approach - ARM, GEO, PAK, TAJ, UZB to drive pipeline development
- IWRM, data collection, archiving, and disclosure; river basin planning and allocation;
- Modelling, water accounting and productivity;
- Flood and drought forecasting and warning system;
- Separate water resources management function from service delivery organizations;
- SOE governance reforms for increased transparency and improving service delivery

## Improving water use efficiency and water productivity

- modernizing irrigation (MMI) systems to improve overall WUE to meet future cropping and climate requirements;
- Replacement of open canals with pressurized piped systems;
- Promote use of water efficiency irrigation technologies such as drip and micro-irrigation where applicable;
- support WUA strengthening;
- crowd-in private sector for irrigation system and
- mainstream climate resilient agriculture practices.

## New and/or modernization of water infrastructure

- Completion of outstanding surface reservoirs (large dams and smaller check dams/water harvesting structures) e.g. ARM and UZB;
- New and upgraded infrastructure to manage flood flows e.g. PAK;
- Optimize reservoir and canal management with digital technologies;
- Reuse treated wastewater e.g. Ravi project, PAK

## Trans-boundary water resources management

- Many CWA countries are depending on water resources outside from the countries, however, there is a need to improve information sharing and integrated management of shared river basins. ADB is leading CAREC water pillar develop project pipelines to develop and conserve sustainably the shared water resources;
- Climate risk assessment at a regional and subregional context, for regional investment projects

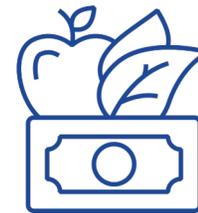
# Green and Inclusive Agriculture Value Chains

Widen and deepen ADB's engagement in agriculture value chain development with increased private sector participation, use of digital technologies, decarbonized logistics, and support for climate vulnerable farmers.

Promotion of sustainable agriculture practices



Promote agribusiness development and access to finance



Agricultural Diversification



Enhance employment opportunities for women and youth



Development of post-harvest facilities and value addition



Advance digital solutions for agriculture



Regional co-operation through CAREC food security program



# Natural Capital and Ecosystems



**Scaling up biodiversity protection and environmental restoration** through integrated ecosystem approach across different landscape types to strengthen vital ecosystem services, disaster risk management, and climate change adaptation and mitigation (forest, rangeland, wetland, riverine, coastal and island).



**Nature-based business opportunities** to link ecosystem conservation to nature positive economic growth, such as regenerative agriculture, aquaculture, agroforestry, non-timber forest products, and eco-tourism



**Lakes, water courses, and marine and coastal program** combined with livelihoods, disaster risks reduction, and coastal management (PAK) to boost balance in economic development and nature, protect people and environment for sustainable development



**Identification of innovative and sustainable financing opportunities** with upstream-downstream governments (such as eco-compensation cost sharing approaches) and private sector, supported by priorities under UNCBD Post-2020 Global Biodiversity Framework and UN Decade of Restoration for effective management of protected areas.

# Disaster risk management through AFNR operations

	Afghanistan	Armenia	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Rep.	Pakistan	Tajikistan	Uzbekistan
<b>Natural Disasters in Central and West Asia, 2000- present</b>									
Drought	6	1	1	1	1	1	1	2	1
Landslide	21	1	1	0	1	8	15	10	1
Extreme temperature	6	1	1	0	2	3	11	3	0
Flood	85	1	3	16	13	3	83	26	3
Storm	8	5	0	3	0	2	16	1	0
Insect infestation	0	0	0	0	0	0	1	0	0
Wildfire	0	0	0	0	1	0	1	0	0

(source: EM-DAT)

## TAJ- National Disaster Risk Management Project

- Strengthen disaster risk management in Tajikistan and reduce economic losses due to climate change and disasters caused by natural hazards.
- Support government's efforts to mainstream disaster risk management in development planning.

## PAK – Sindh Coastal Resilience Sector Project (proposed)

The project will support resilience coastal regions degraded by a confluence of environmental factors, resulting in land subsidence, flooding, erosion, and saline intrusion.

## KGZ – Landslide Risk Management Sector Project

- Implement landslide mitigation engineering measures
- Improve landslide monitoring systems,
- Strengthen capacity for landslide risk management



**Thank you**