UNESCAP Experience on the Applications and Disaster Risk Reduction

TPCF1 Consensus Statement and Outlook JJAS 2024

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ESCAP
Economic and Social Commission for Asia and the Pacific

ESCAP's Mandate to support EW4All

Early Warnings for All

Mandated by Member States of Asia and the Pacific - including Third Pole members

1

Develop early warning systems for all at the regional level

ESCAP Resolution 79/1:Accelerating climate action foí sustainable development (May 2023)

2

Develop a regional strategy in support of the global and country-level implementation of the four pillars of multi-hazard early warning systems

ESCAP Committee on Disaster Risk Reduction (July 25-27, 2023)

3

Building of national capacities by leveraging innovations, including digital and geospatial applications for multi-hazard early warning systems

ESCAP Committee on Disaster Risk Reduction (July 25-27, 2023)

4

Financial contributions to the ESCAP multi-donor trust fund to achieve early warnings for all

ESCAP Committee on Disasteí Risk Reduction (July 25-27, 2023)

ESCAP
Economic and Social Commission for Asia and the Pacific

ESCAP's Offer of Support to Member States

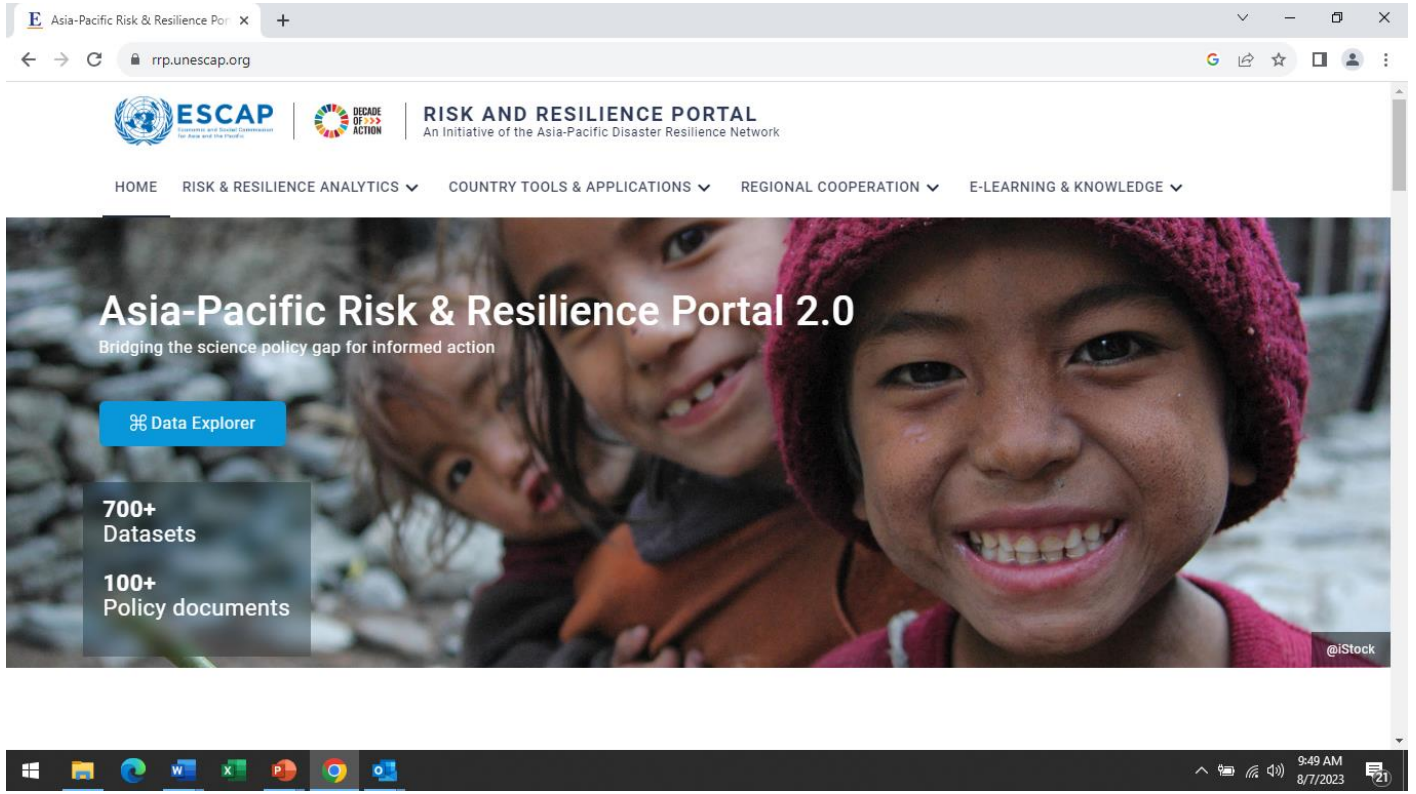
Risk knowledge and impact forecasting from transboundary EWS perspectives

Partnering with stakeholders –Governments, UN System, Global Leads, RIMES..

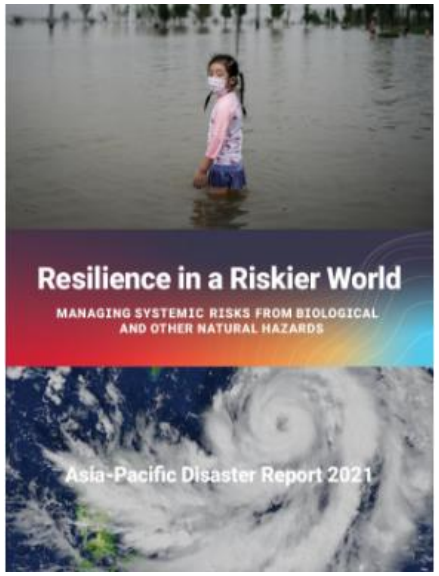
Analytical work: Asia-Pacific Disaster Report with specific focus on risk-impact-policy response and transboundary co-operation

Digitalization: Customization of ESCAP's Risk and Resilience Data platform to enhance risk knowledge, impact forecasting **organize specialist training**

Transboundary EWS: Strengthen building blocks of regional initiatives, integrate impact forecasting, anticipatory actions and South Asia SDG forum

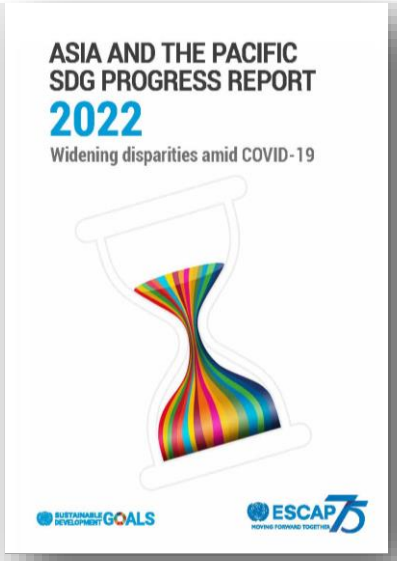


ESCAP's Support to Pillar 1: Analytical Research on Disaster Risk Knowledge



Asia-Pacific Disaster Report 2021

APDR Summary for Policymakers



Partner reports:
WMO State of Climate (2021) – Asia and Southwest Pacific Reports to launched @ COP27

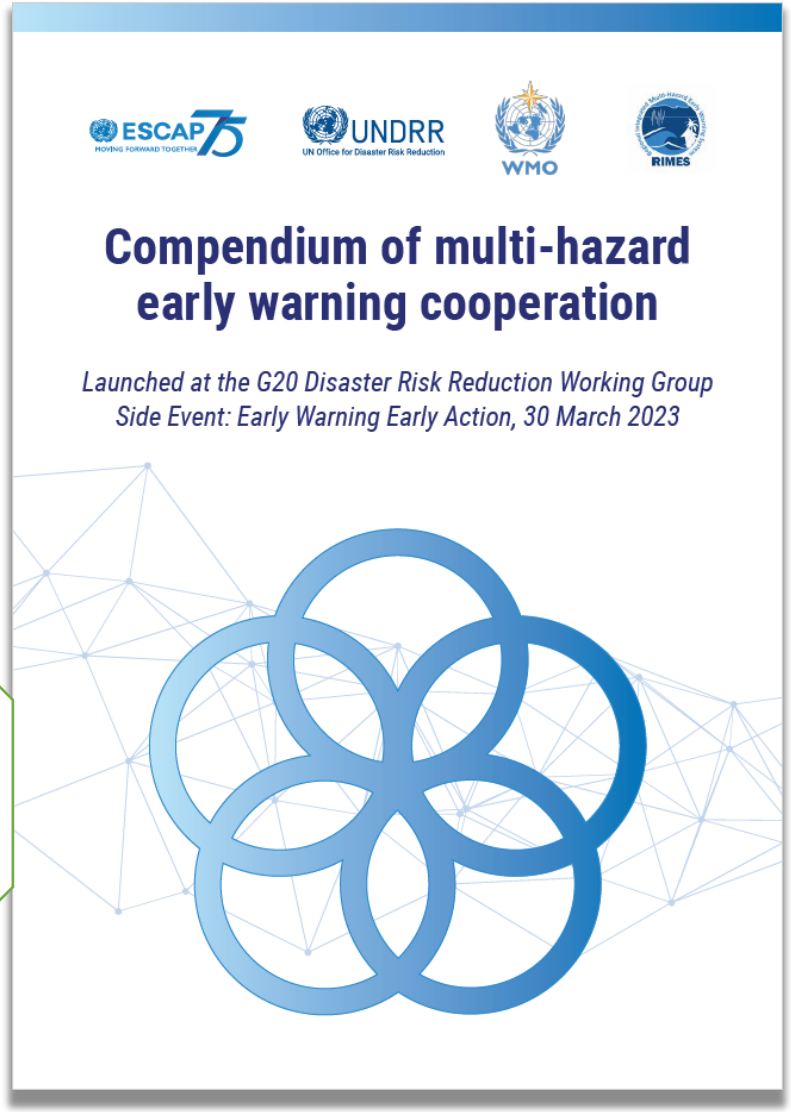
APDR Subregional Reports and other flagships

Analytical Research on Disaster Risk Knowledge

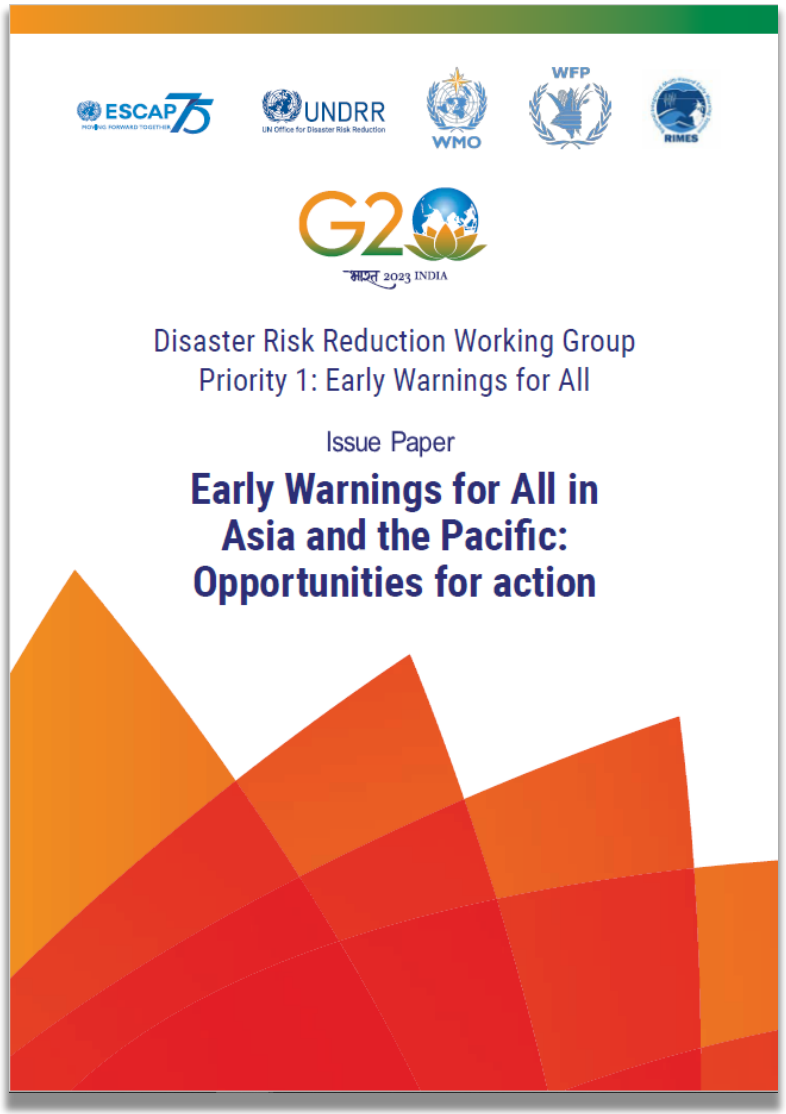
Connects risk-impact-policy response - transboundary co-operation to SDGs/Sendai

EW4All on G20 outcomes

China, India, Japan, Republic of Korea, and contributed to G 20 DRR WG



Launched at Working Group Meeting, Side event – 30 March 2023



To inform WG discussions, to be published following Summit in September

ESCAP
MOVING FORWARD TOGETHER

The Impact-Based Forecasting Tool

Transforming Data into Action: AI-Driven Disaster Preparedness

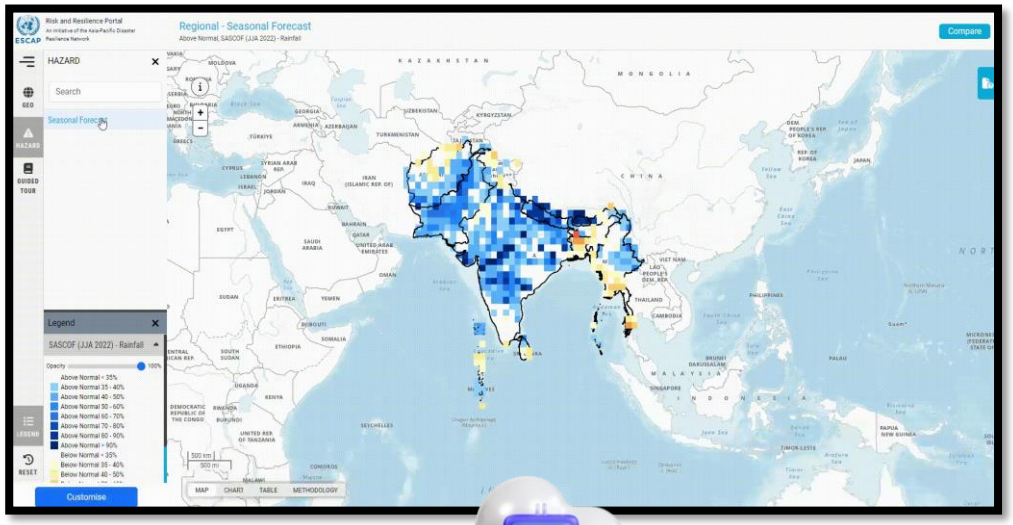
ESCAP Economic and Social Commission for Asia and the Pacific | DECADE OF ACTION

RISK AND RESILIENCE PORTAL

MOVING FORWARD TOGETHER

INPUT*

- Population data
- Infrastructure data
- Hazard data
- Digital map
- Boundary data



OUTPUT

- Exposure and intensity zone of hazards
- Map & exportable table

The Impact-Based Forecasting Tool

GEOSPATIAL PRE-PROCESSING → PROCESS IDENTIFICATION → GEOSPATIAL EXPOSURE ANALYSIS

- Setting Coordinate Reference Systems
- Setting resolution
- Classifying hazard (based on intensities, create different hazard intensity zones)

- Auto recognize type of infrastructure / population data

- Calculate exposure to all infrastructure and population
- Overlay & count exposure

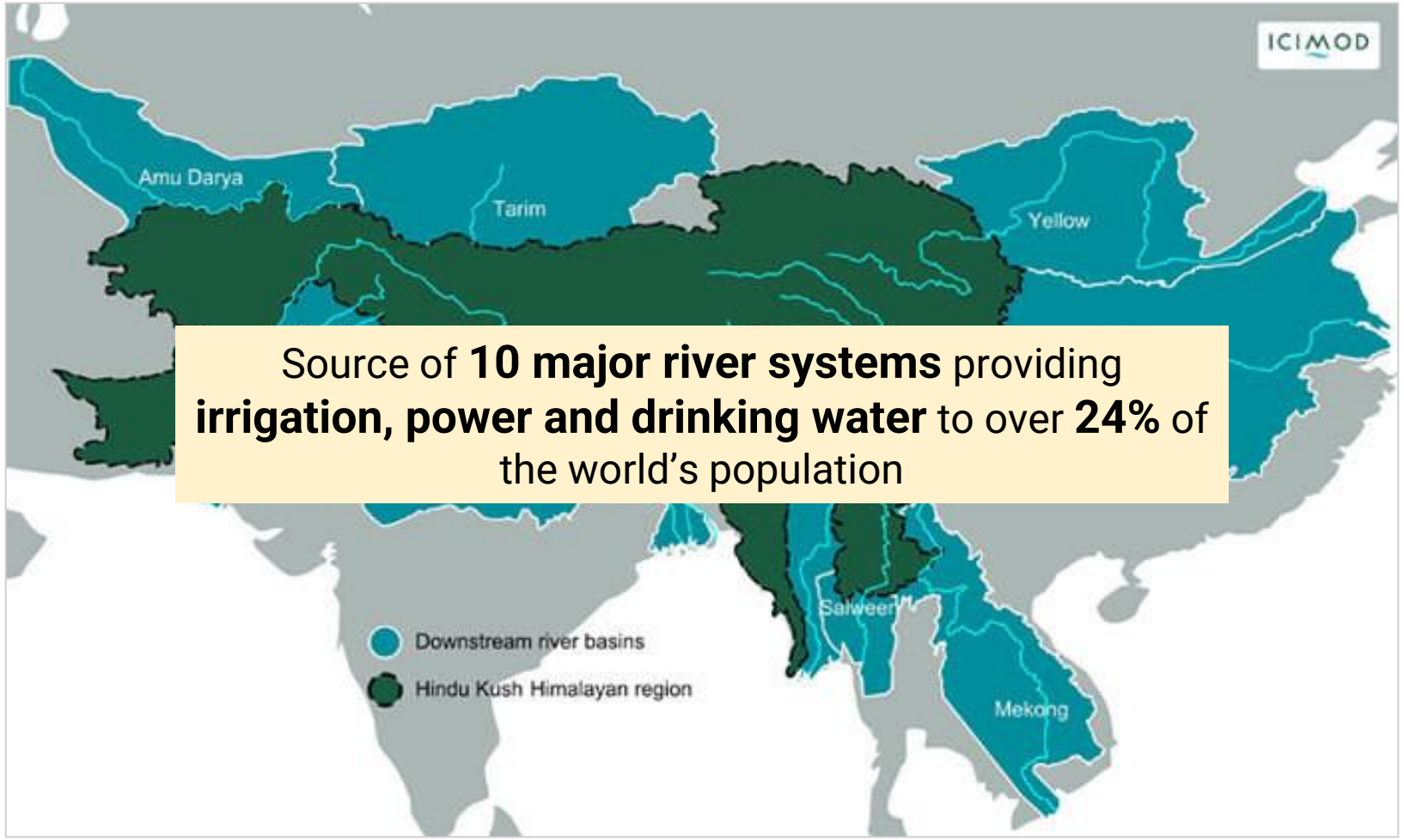
*Georeferenced raster data

Scaling up of ESCAP and WMO Partnership beyond Typhoon Committee and Panel on Tropical Cyclone to RCOFs in Asia and the Pacific

What ESCAP can offer to TPCF and TPCF Network

1. A member of the TPRCC-Network and contribute to risk, impact and policy actions
2. Analytical work on vulnerability and exposure in the Third Pole
3. Impact-based forecasting
4. Capacity development training
5. Resource mobilization

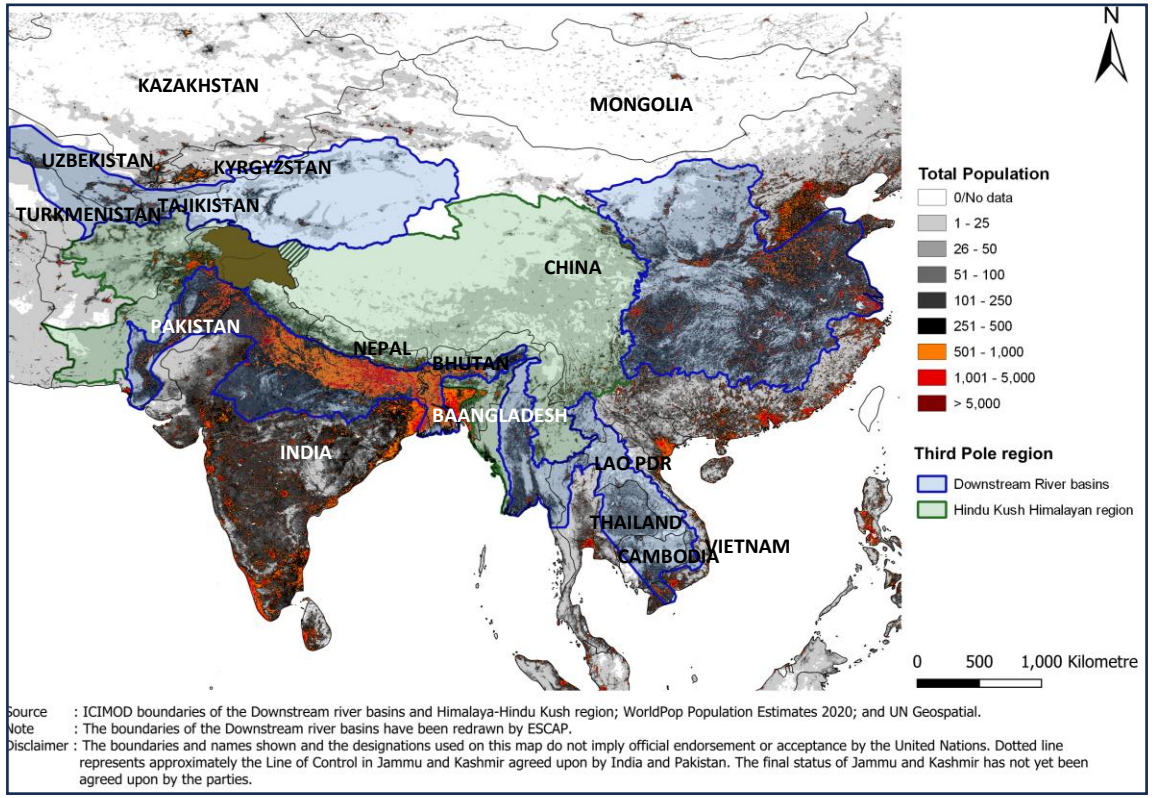
Vulnerability and Exposure



Source of **10 major river systems** providing **irrigation, power and drinking water** to over **24%** of the world's population

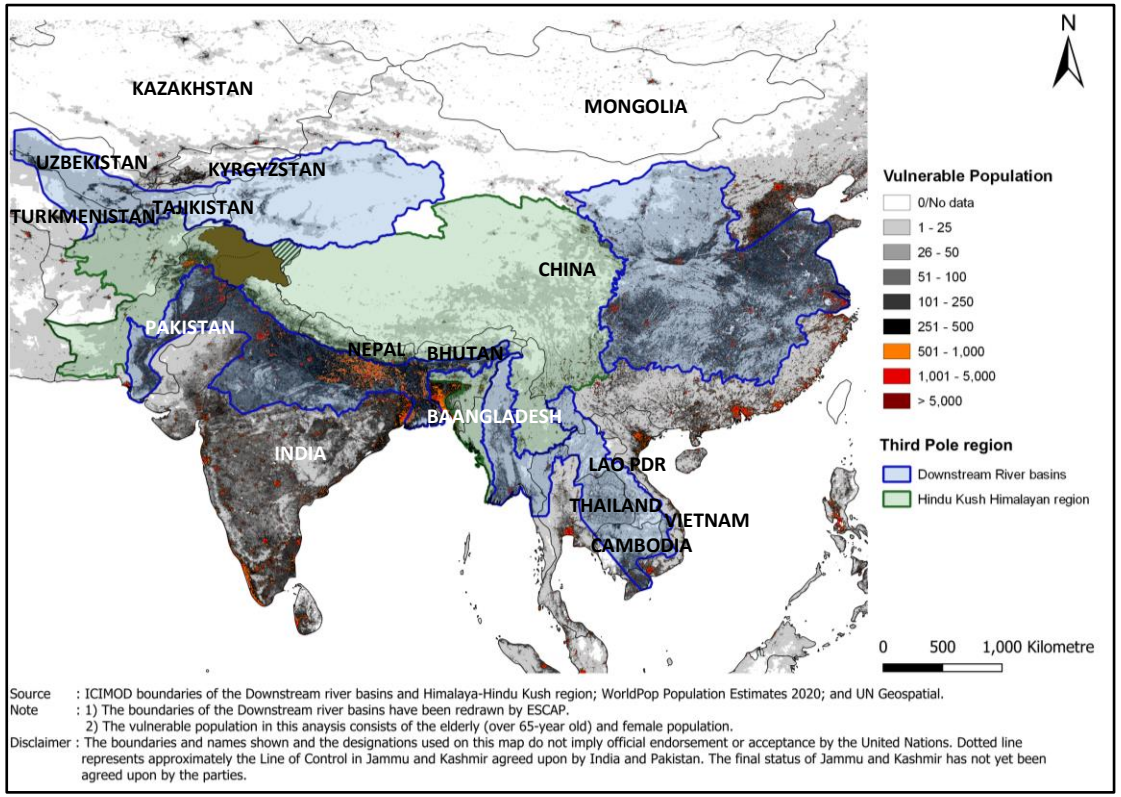
Vulnerability and Exposure: People

Population exposure to Downstream River Basin of TP region



Source : ICIMOD boundaries of the Downstream river basins and Himalaya-Hindu Kush region; WorldPop Population Estimates 2020; and UN Geospatial.
Note : The boundaries of the Downstream river basins have been redrawn by ESCAP.
Disclaimer : The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Vulnerable population exposure to TP region



Source : ICIMOD boundaries of the Downstream river basins and Himalaya-Hindu Kush region; WorldPop Population Estimates 2020; and UN Geospatial.
Note : 1) The boundaries of the Downstream river basins have been redrawn by ESCAP.
2) The vulnerable population in this anaysis consists of the elderly (over 65-year old) and female population.
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Vulnerability and Exposure: People

Number of population exposed to the Downstream River Basins and the HKH region

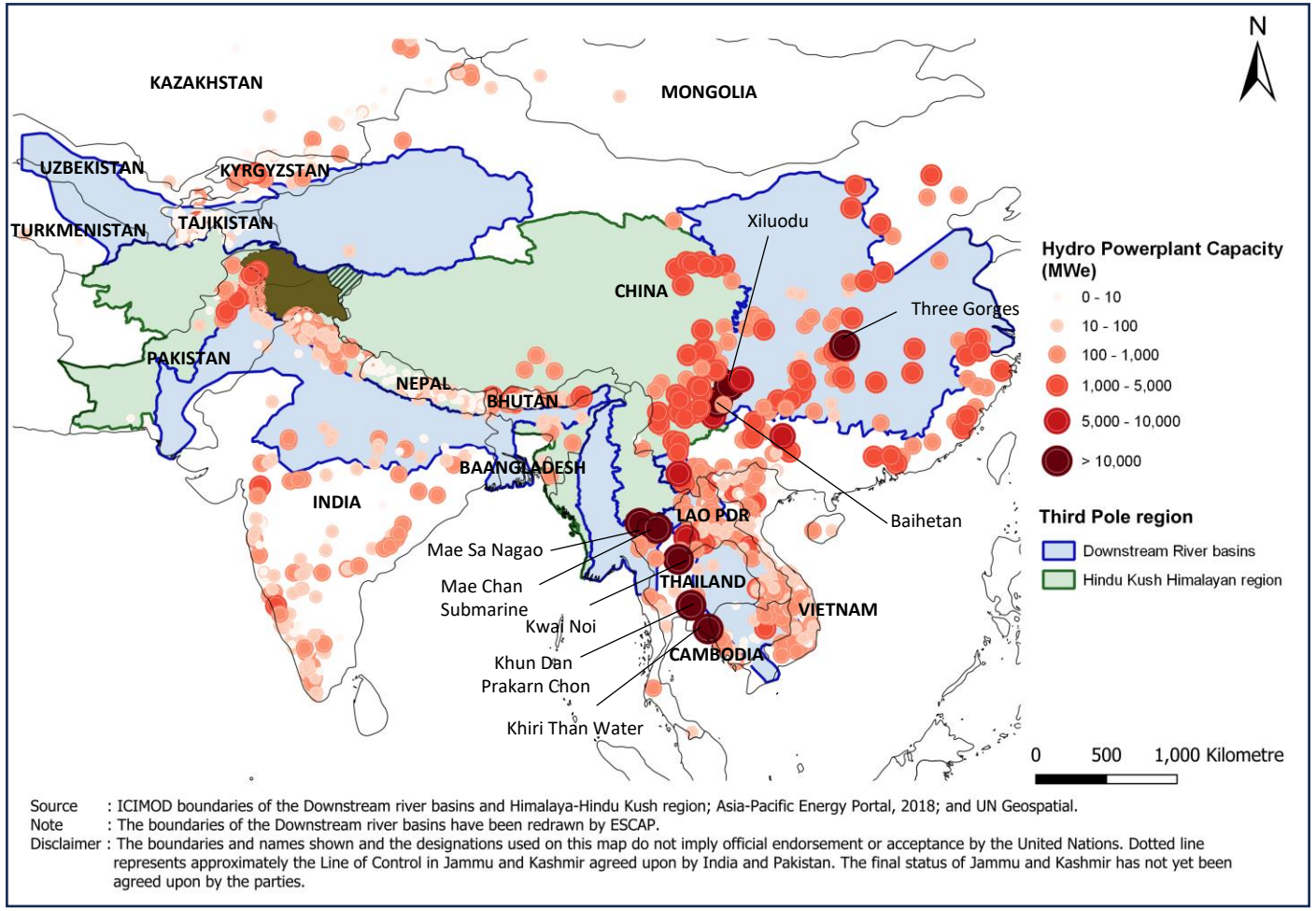
Country		India	Kyrgyzstan	China	Bangladesh	Bhutan	Lao PDR	Thailand	Cambodia
Absolute	Downstream River Basin	613,274,547	138,638	768,323,903	74,203,141	101,235	6,788,010	20,689,907	13,934,390
%	Downstream River Basin	45%	2%	54%	49%	11%	92%	30%	85%
Absolute	Hindu Kush Himalaya	39,909,887	0	38,265,834	4,433,628	787,439	9,341	16,962	0
%	Hindu Kush Himalaya	3%	0%	3%	3%	89%	0%	0%	0%
Absolute	Downstream + HKH	653,184,433	138,638	806,589,737	78,636,768	888,674	6,797,351	20,706,869	13,934,390
%	Downstream + HKH	48%	2%	57%	52%	100%	92%	30%	85%
TOTAL NUMBER		1,348,364,408	6,798,136	1,420,814,700	151,154,699	888,674	7,361,254	69,022,455	16,387,985

Country		Nepal	Viet Nam	Pakistan	Uzbekistan	Turkmenistan	Tajikistan	Kazakhstan	Mongolia	TOTAL
Absolute	Downstream River Basin	961,036	15,410,962	154,873,133	16,080,746	2,358,955	7,214,359	130	0	**1,694,353,092**
%	Downstream River Basin	3%	16%	72%	48%	38%	76%	0%	0%	**49%**
Absolute	Hindu Kush Himalaya	28,140,595	0	41,851,100	5,549	31,148	78,438	0	0	**153,529,921**
%	Hindu Kush Himalaya	97%	0%	19%	0%	1%	1%	0%	0%	**4%**
Absolute	Downstream + HKH	29,101,632	15,410,962	196,724,233	16,086,295	2,390,103	7,292,797	130	0	**1,847,883,012**
%	Downstream + HKH	100%	16%	91%	48%	39%	77%	0%	0%	**54%**
TOTAL NUMBER		29,101,632	96,190,765	215,563,966	33,176,711	6,162,623	9,449,890	18,762,446	3,270,149	**3,432,470,492**

Vulnerability and Exposure: Hydropower

Major rivers:

- Indus
- Brahmaputra
- Ganges
- Yellow
- Yangtze
- and 900+ hydro electronic dam of various size and capacity



A list of mega hydro powerplants (>10,000 MWe)

1. Mae Sa Nagao, Thailand
2. Mae Chan Submarine Power Plant, Thailand
3. Baihetan Dam, China
4. Xiluodu Dam, China
5. Three Gorges Dam Hydroelectric Power Plant, China
6. Khun Dan Prakarn Chon Dam, Thailand
7. Kwai Noi Dam, Thailand
8. Khiri Than Water Hydropower Project, Thailand

Vulnerability and Exposure: Hydropower

Hydro PP capacity (MWe) exposed to the Downstream River Basins and the HKH region

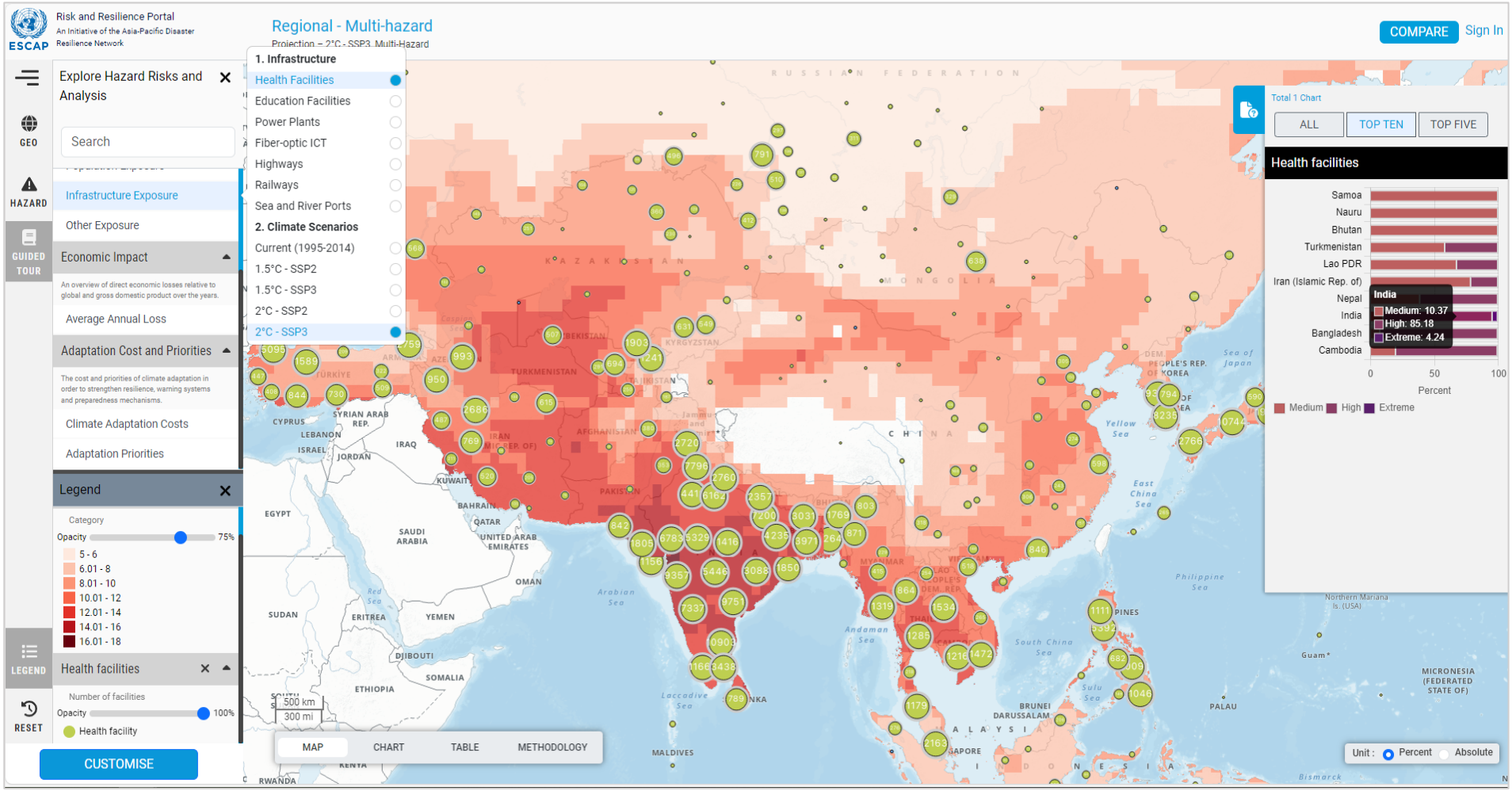
Country		India	Kyrgyzstan	China	Bangladesh	Bhutan	Lao PDR	Thailand	Cambodia	Nepal	Viet Nam	Pakistan	Uzbekistan	Turkmenistan	Tajikistan	Kazakhstan	Mongolia	TOTAL
Absolute	DS	4,090.2	0.0	97,458.5	0.0	0.0	2,1941.9	29,192.0	9,604.0	0.0	3,121.7	7,116.6	0.0	0.0	8,436.6	0.0	0.0	**180,961.5**
%	DS	8%	0%	41%	0%	0%	99%	29%	85%	0%	18%	32%	0%	0%	99%	0%	0%	**37%**
Absolute	HKH	23,989.5	0.0	96,950.1	230.0	6,139.7	0.0	0.0	0.0	1,064.9	0.0	14,902.0	0.0	0.0	0.0	0.0	0.0	**143,276.1**
%	HKH	50%	0%	40%	100%	100%	0%	0%	0%	100%	0%	68%	0%	0%	0%	0%	0%	**29%**
Absolute	DS+HKH	28,079.7	0.0	194,408.6	230.0	6,139.7	21941.9	29,192.0	9,604.0	1,064.9	3121.7	22,018.6	0.0	0.0	8,436.6	0.0	0.0	**324,238**
%	DS+HKH	58%	0%	81%	100%	100%	99%	29%	85%	100%	18%	100%	0%	0%	99%	0%	0%	**66%**
TOTAL CAPACITY		48,413.4	6,708.3	240,386.5	230.0	6,139.7	22,105.9	101,836.6	11,244.1	1,064.9	17,364.6	22,022.1	0.0	16.7	8,564.6	2,792.5	23.3	48,8913

Hydro PP number exposed to the Downstream River Basins and the HKH region

Country		India	Kyrgyzstan	China	Bangladesh	Bhutan	Lao PDR	Thailand	Cambodia	Nepal	Viet Nam	Pakistan	Uzbekistan	Turkmenistan	Tajikistan	Kazakhstan	Mongolia	TOTAL
Absolute	DS	37	0	64	0	0	110	166	31	0	47	12	0	0	91	0	0	**558**
%	DS	10%	0%	38%	0%	0%	96%	90%	63%	0%	24%	36%	0%	0%	86%	0%	0%	**39%**
Absolute	HKH	137	0	45	2	40	0	0	0	100	0	20	0	0	0	0	0	**344**
%	HKH	38%	0%	27%	100%	100%	0%	0%	0%	100%	0%	61%	0%	0%	0%	0%	0%	**24%**
Absolute	DS+HKH	174	0	109	2	40	110	166	31	100	47	32	0	0	91	0	0	**902**
%	DS+HKH	49%	0%	65%	100%	100%	96%	90%	63%	100%	24%	97%	0%	0%	86%	0%	0%	**63%**
TOTAL NUMBER		357	27	167	2	40	114	184	49	100	197	33	0	4	106	50	5	1,435

ESCAP RRP: IBF using CMIP6 Climate model

Health facility exposure to CMIP6 – SSP3 (2℃) forecast on multi-hazard risks



Top 10 affected

1. Samoa
2. Nauru
3. Bhutan
4. Turkmenistan
5. Lao PDR
6. Iran (Islamic Rep. of)
7. Nepal
8. India
9. Bangladesh
10. Cambodia

THANK YOU

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