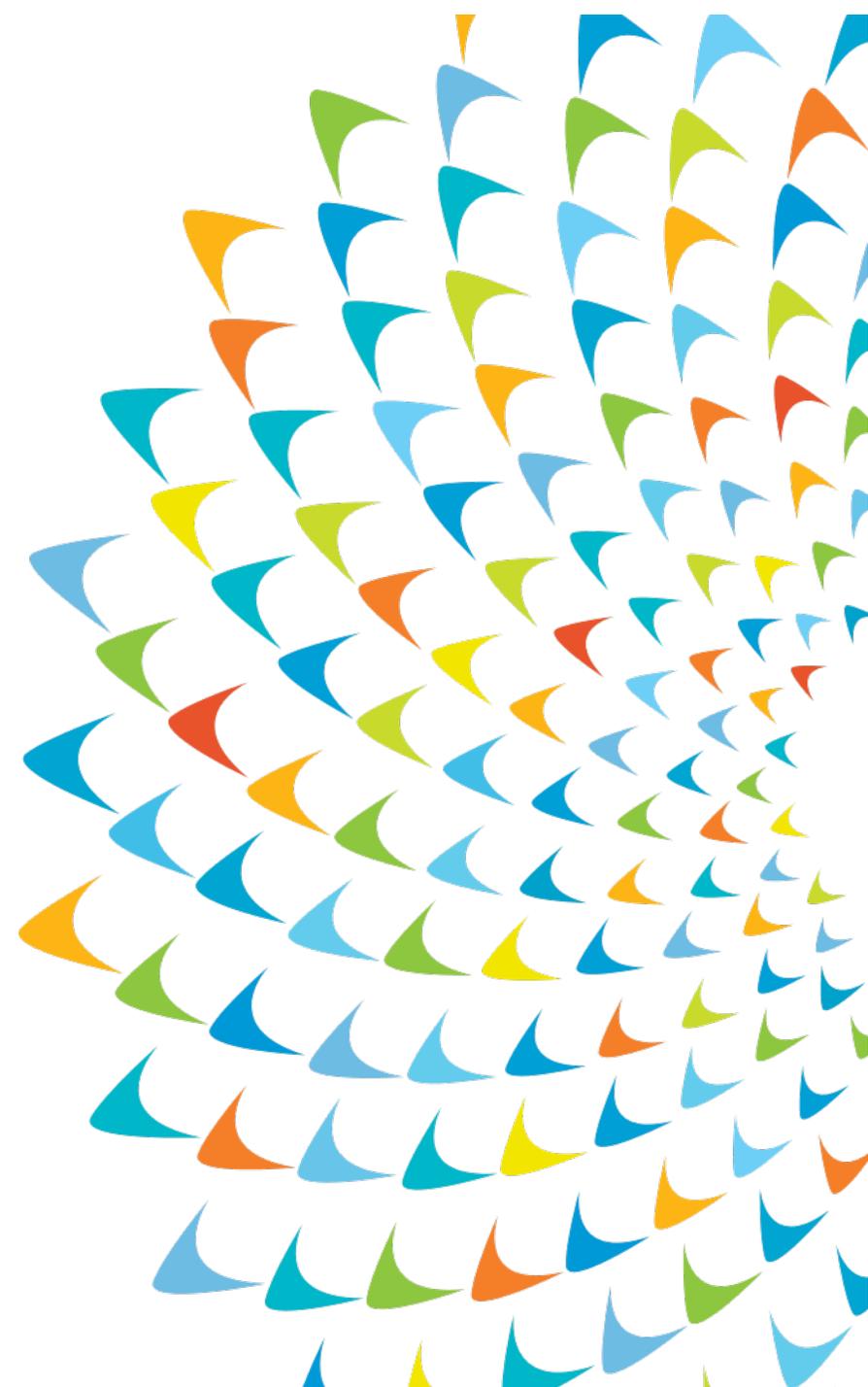


Indus Water Regulatory Eco System Pakistan

The views expressed in this presentation are the views of the author/s and do not necessarily reflect the views or policies of the Asian Development Bank, or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this presentation and accepts no responsibility for any consequence of their use. The countries listed in this presentation do not imply any view on ADB's part as to sovereignty or independent status or necessarily conform to ADB's terminology.



Hydrologic Units

Indus Basin

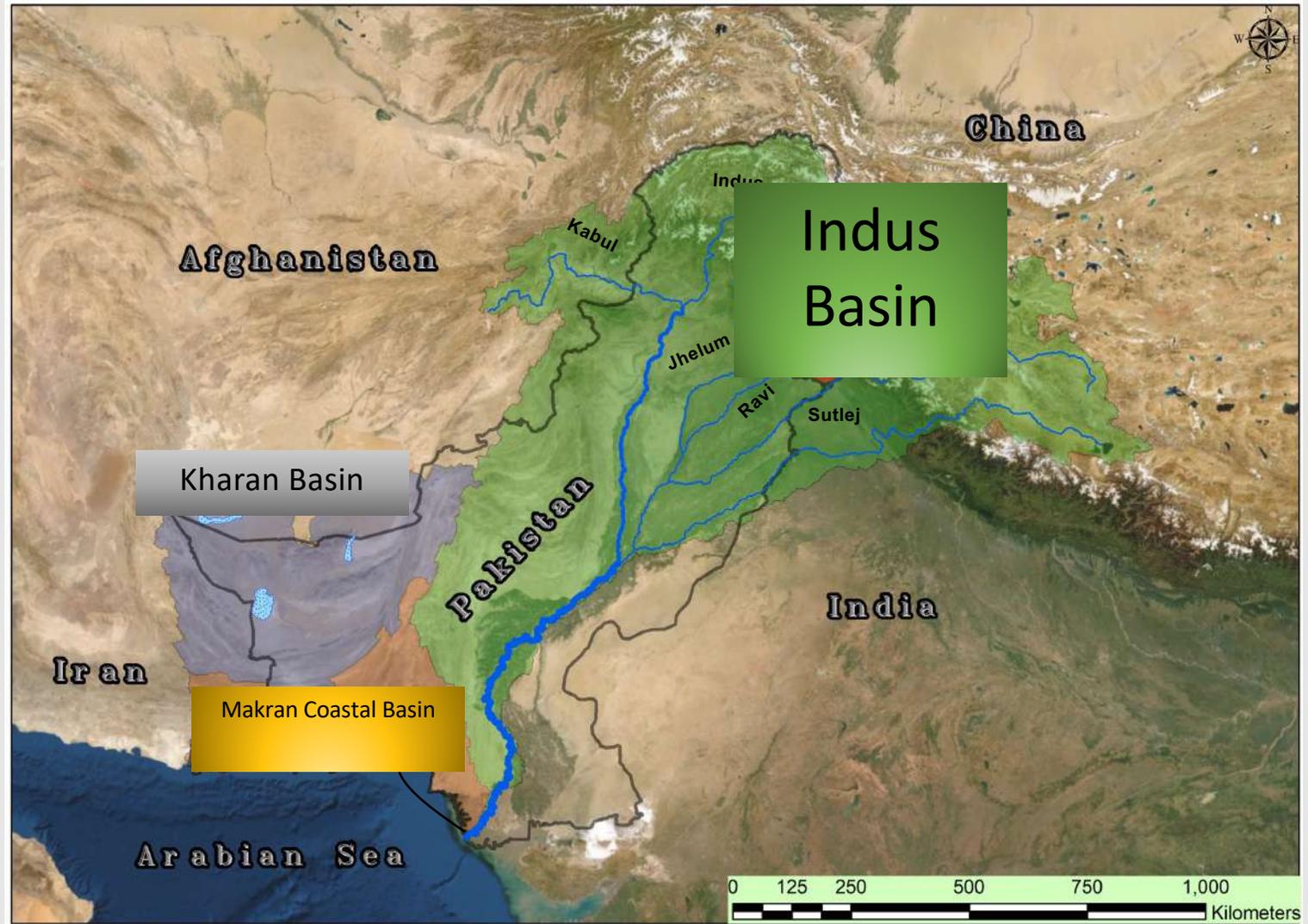
863,700 km²

Kharan Basin

213,000 km²

Makran Coastal

Basin 123,000 km²

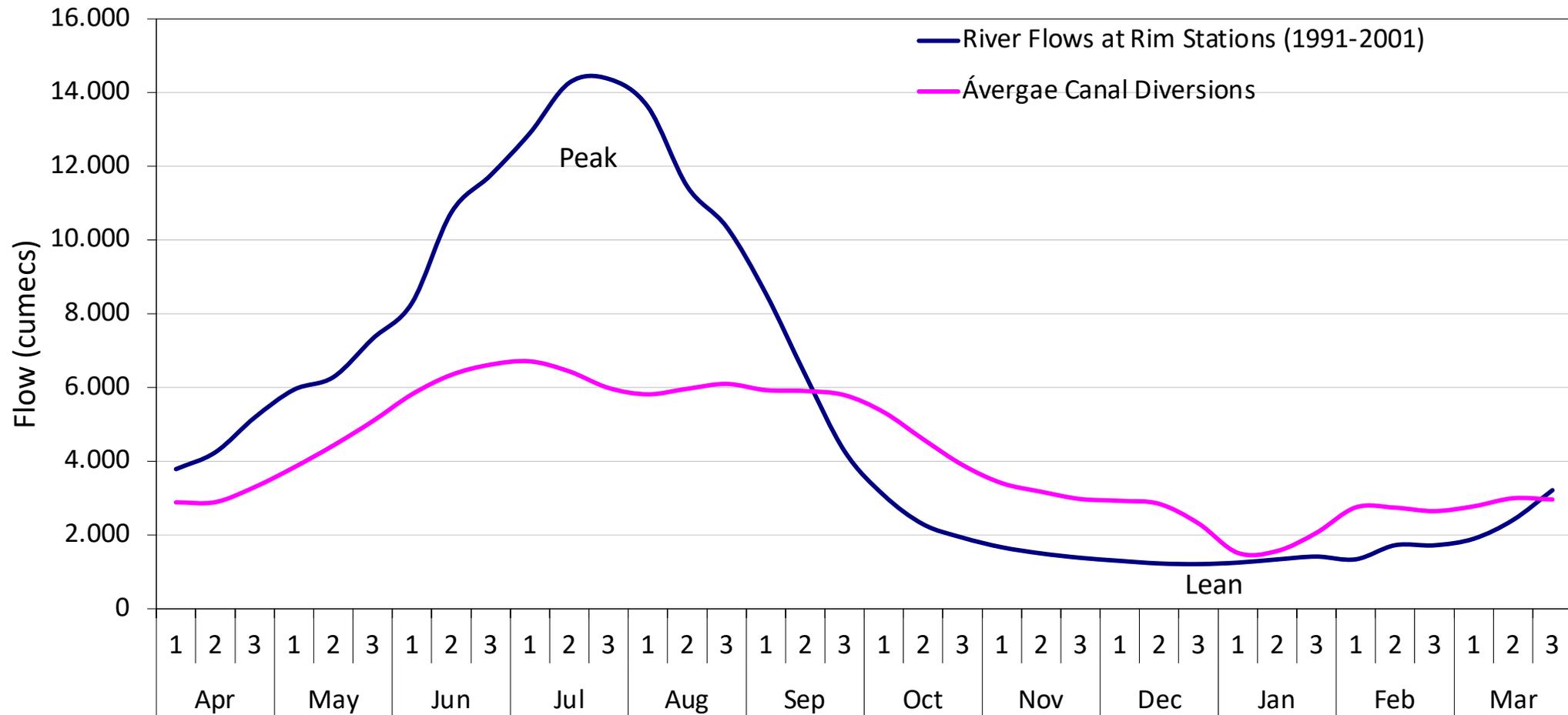


Indus River System in Pakistan

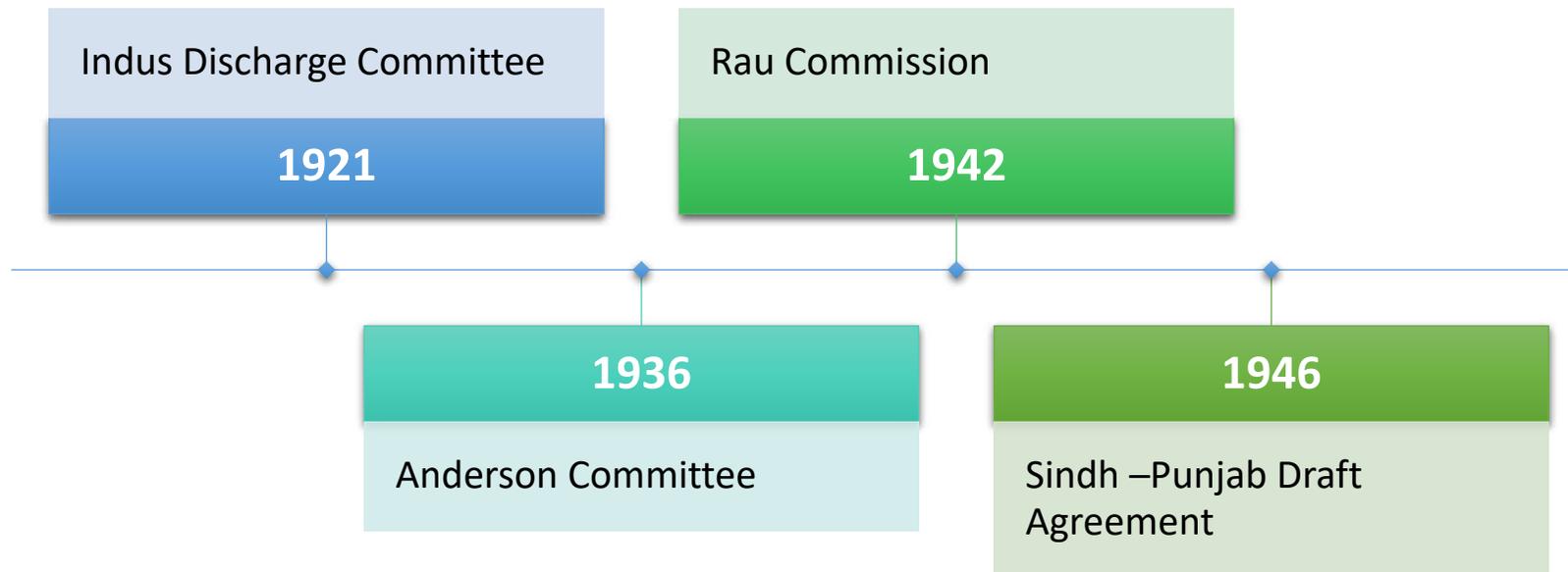
- 3 Major Storages
- 19,400 MCM
- 19 Barrages
- 12 Inter-River Link Canals
- 51 Canal Commands
- >60,000 km canals
- 8,200 *cumecs* canal withdrawals capacity



Typical Flow and Average Canal diversions *requires better regulation*



Deliberations for Regulation - Before 1947



Deliberations for Regulation 1960-1991

1960

Indus Waters Treaty – India and Pakistan

1970

Akhtar Hussain Committee

1971

Fazal-e-Akbar Committee

1977

Indus Waters Commission (Anwar-ul-Haq)

1983

Haleem Commission

1991

Water Apportionment Accord – Inter Provincial

Water Scenario 1947-1960

1947: River inflow in Pakistan >200,000 MCM

Total irrigated land in Pakistan was 10 million hectares acres
(Potential 30 million hectares)

All upstream control structures on Ravi, Beas and Sutlej
were in India. 12 years of regulation discussions.

1960: Settlement through World Bank. Initial effort was for
co-operative use. Ultimately division of waters. *Pakistan:*
Indus, Jhelum and Chenab (Western Rivers) India: Ravi,
Sutlej and Beas (Eastern Rivers)

Transfer of Water from Western to Eastern rivers was necessitated.

Water Accord and Indus River System Authority

Water Apportionment Accord 1991 - *A consensus document*

IRSA 1992

- regulating and monitoring the distribution of water sources of Indus Rivers.
- Five members one each from Province + one from Federal Government



ESTIMATION OF WATER AVAILABILITY BEFORE THE CROP SEASON



APPROVAL BY THE TECHNICAL COMMITTEE / ADVISORY COMMITTEE



PROVINCIAL SHARES DETERMINED BY ADVISORY AS PER WATER APPORTIONMENT ACCORD 1991

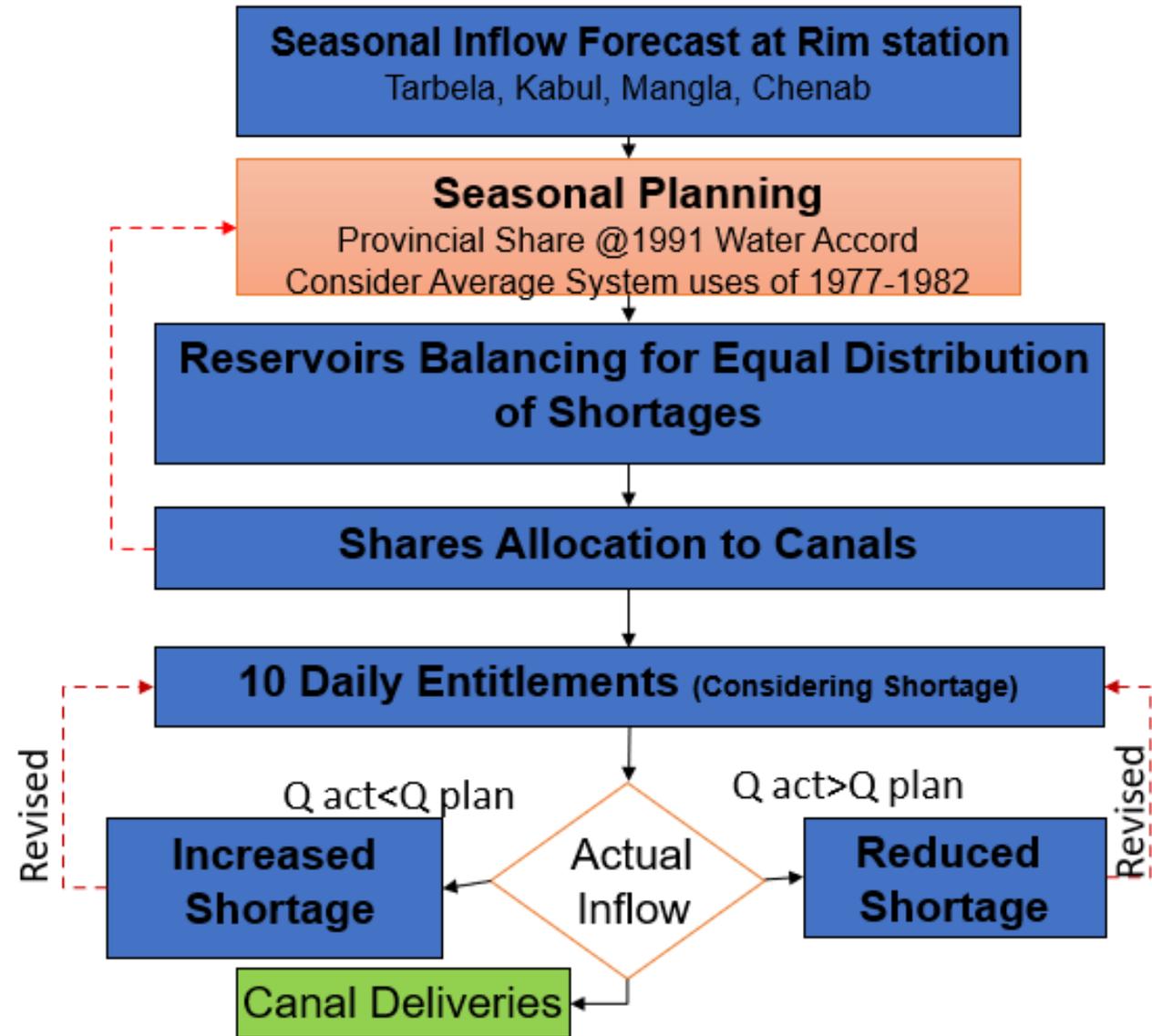


CRITERIA FOR RESERVOIRS OPERATION

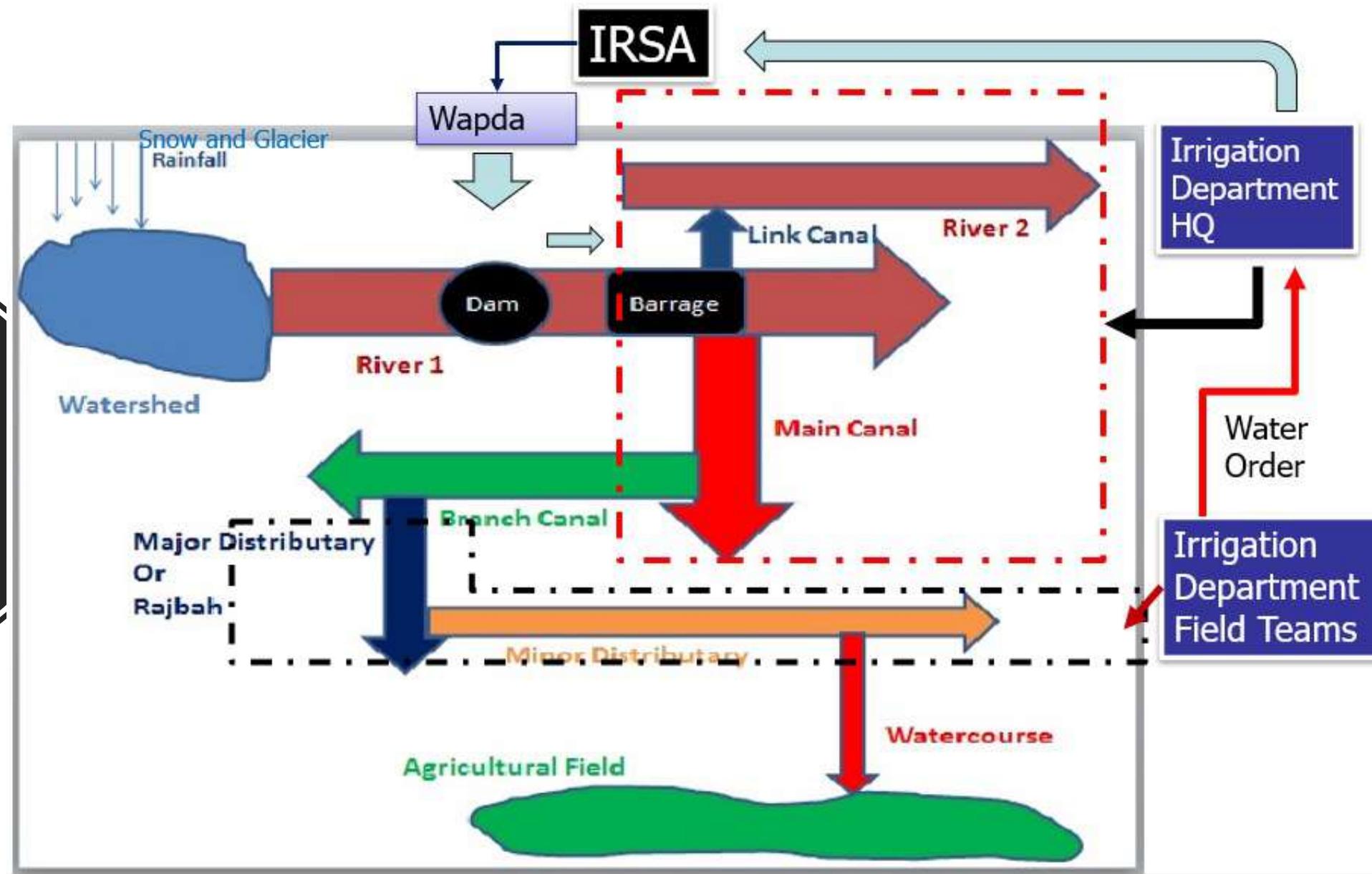


PROVINCES PREPARE THEIR CANAL WITHDRAWAL PLANS AS PER THEIR ALLOCATED SHARES

Seasonal Forecast and Entitlement



Typical Flow Regulation

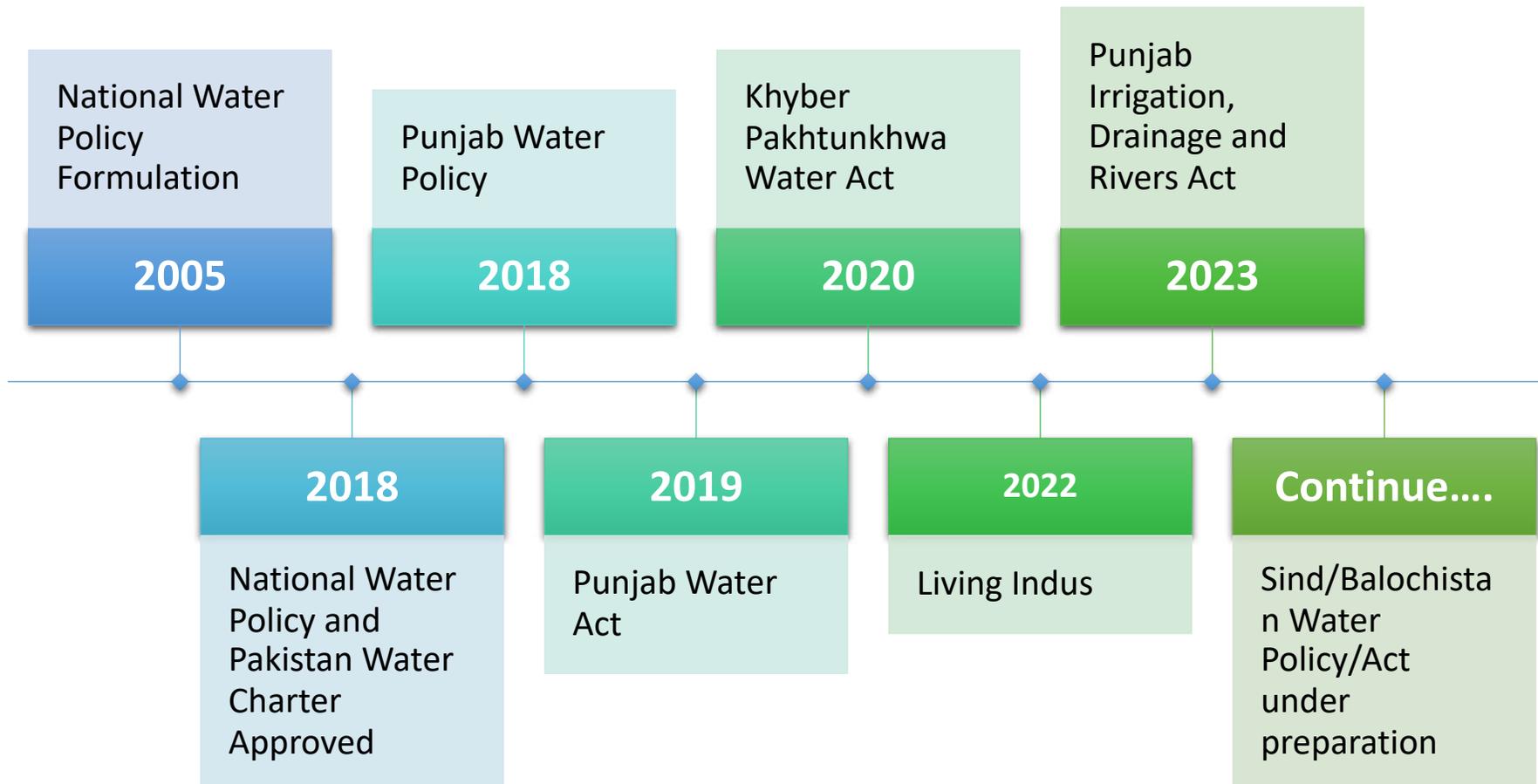


Water Accord Challenges – Present and Future

- water accounting
- operating rules
- demographic change
- socioeconomic change
- climate change
- infrastructure development
- monitoring and reporting



Changing Water Architecture – will change Indus Basin regulations



.... new policies and act resulted in

New Institutions

- new national and provincial commissions
- national steering committees for policy
- provincial water regulatory authorities
- water resources zones

Provincial **Regulations** of Water and Sewerage Services

Defining **rules for Undertakers**

Abstraction and Disposal Licenses *critical for groundwater, quality and environment*

IWRM

.... **Also new challenges in implementation...**

National Water Policy

Strategic Priority

Conservation & Efficiency

Storage

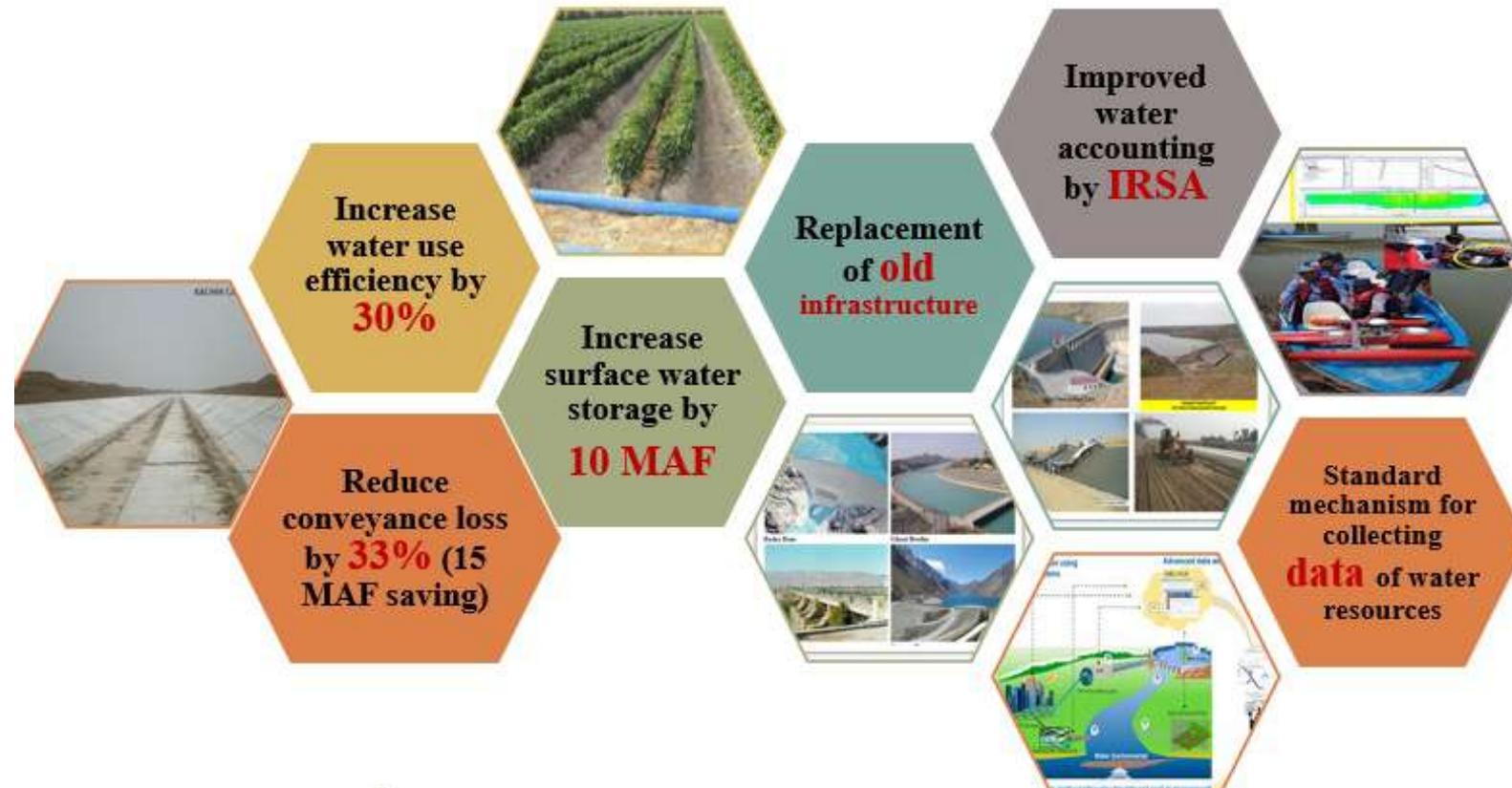
Leveraging Technology

Renewable Energy

IWRM

Regulatory Framework

National Targets



~\$30 billion till 2030

Living Indus is as an umbrella initiative call to action to restore the ecological health of the Indus

- Menu of 25 preliminary interventions
- USD 11 billion to USD 17 billion over the next 5 to 15 years

The Living Indus Initiative flows from two sources:

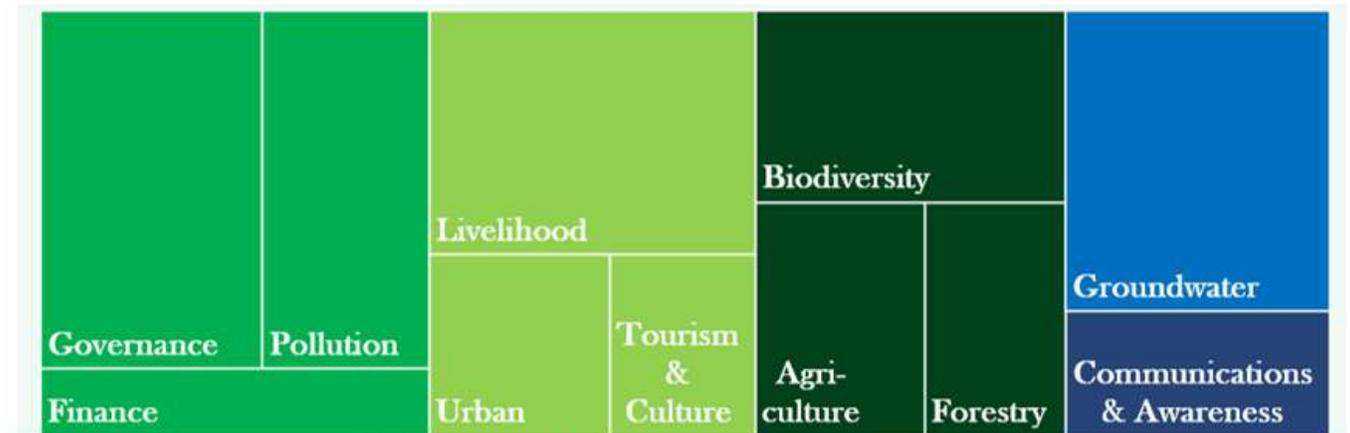
1st Poor Health of the Basin

The Indus and its ecosystems are under pressure from the seemingly inexorable changing climate, temperature fluctuations and the disruption of rainfall patterns.

2nd Growing Demand for Action

Citizens of Pakistan want to act, as,

- There is no cohesive effort to reverse the ecological degradation of Indus Basin
- Very existence of future depends on the state of the Indus Basin



the area covered indicates the degree of focus across all interventions