

RIVER BASIN

CHENAB

[INDIA]

SCHEDULE A
ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA

Sr. No.	Details	Response
1	Physical Features :- General Information	
1.1	Name of River;	Chenab (Moon river). The river was known to Indians in the Vedic period as <i>Ashkini</i> (Sanskrit:) or <i>Iskmati</i> and as <i>Acesines</i> to the Ancient Greeks.In its upper reaches it is also known as the <i>Chandrabhaga</i>
1.2	Relief Map and Index Map of RB with Country/ State/ Province boundary marked to be attached.	Refer Annexure 1
1.3	Geographical location of the place of origin (Country/District.	It is formed by the confluence of the Chandra and Bhaga rivers at Tandi located in the upper Himalayas in the Lahul and Spiti District of Himachal Pradesh, India
1.4	Area (in Sq. Kms.),	26,035 Square miles. The total catchment area of the river is about 26,035 miles ² , of which 10,875 miles ² lie in the State of Jammu and Kashmir, 1,735 miles ² in India and 13,469 miles ² in Pakistan. The hilly catchment area above Marala Barrage is about 12,610 miles ² The total length of the Chenab is approximately 960 kilometres.Length of River Chenab in Pakistan: 453 miles. Source: Pakinfo gateway

1.5	Population (in Millions); Name of population centers/ Cites (duly marked on the map: refer 1.2) having Population - (a) More than 0.5 Million - 1 Million	
	(b) More than 1 Million – 10 Million	
	(c) More than 10 Million	
1.6	Approximate areas of upper regime, middle regime and lower regime;	D N A
1.7	Country and States (Province) in which the basin lies (indicate % area covered);	The total catchment area of the river is about 26,035 miles ² , of which 10,875 miles ² lie in the State of Jammu and Kashmir, 1,735 miles ² in India and 13,469 miles ² in Pakistan. The hilly catchment area above Marala Barrage is about 12,610 miles ² .
2	Hydrological and Land use Features:	
2.1	Average annual rainfall (in mm).	D N A
2.2	Maximum-minimum temperatures in Degree Centigrade	D N A
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	Annual Average Flow: 12.38 MAF (10.07 Kharif and 2.31 Rabi) (Source: Pakinfo gateway) Discharges of the Chenab starts rising in the later part of May and pass the 50,000 cusecs mark in June. A high flow above 50,000 cusecs continues till the middle Sept, the peak discharge months being July & August.

2.4	Major tributaries	The Chenab has twelve major tributaries namely: Chandra, Bhaga, Bhut, Nallah, Maru, Jammu Tawi, Manawar Tawi, Doara.Nullah, Halse Nallah, Bhimber Nullah, Palkhu Nullah and Aik and Bhudi Nullah. The last eight tributaries join the Chenab in Pakistan.
2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages-Convert intoTable (a.) Agriculture	The basin does not support considerable agriculture due to hilly terrain . (Source: links.jstor.org/sici?sici=0276-4741(199702)17%3A1%3C49%3AEOSAGC%3E2.0.CO%3B2-9)
	(b.) Industries,	D N A
	(c). Domestic,	D N A
	e). environmental flows.	None
2.6	Major cropping pattern	The basin does not support considerable agriculture due to hilly terrain . (Source: links.jstor.org/sici?sici=0276-4741(199702)17%3A1%3C49%3AEOSAGC%3E2.0.CO%3B2-9)
2.7	Cultivable area under irrigation	D N A
2.8	Cultivable area not under irrigation	D N A
2.9	State other Water Uses- eg. Navigation, power, recreation etc.	Hydropower
3	Ecosystem Features	
3.1	Agro-climatic zones	Chenab originates 9000 feet above the sea level, in Himachal. From Kishtwar to Thathri (about 50 km) the Chenab runs through class V and VI gorges.After traversing about 400 miles of mountainous regions and flowing at nearly 39 feet per mile, the Chenab opens out into the plains near Akhnur.
3.2	Major sub ecosystems (zoogeographical	Himalayan high altitude ranges, temperate forests, flood plains

	zones)	
3.3	Major soil types	D N A
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Kishtwar National Park: Jammu
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	Does not form a delta , but joins Indus
4	Water Quality	
4.1	Prevailing water quality standards (e.g. Class I, II, III.etc, indicating permitted uses)	D N A
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on the map)	D N A
4.3	Sources of Pollution, with data indicating quantum and/or severity.	Major pollution caused by agricultural fields and industries. Pollution mainly caused by pesticide and fertiliser runoff, domestic sewage. Arsenic traces found in Pakistan stretch of Chenab. For more information, please refer to: http://www.environment.gov.pk/PRO_PDF/PositionPaper/Water%20Pollution.pdf
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation,etc.	Data not found
5	Current status of the resource development & potential for development	
5.1	Water availability:	Individual data for Chenab not found. Please refer to Indus sheet for consolidated data
	a. Per capita water availability (in lpcd)	Individual data for Chenab not found. Please refer to Indus sheet for consolidated data
	b. Per hectare water availability (in Cubic meters for cultivable command area):	Individual data for Chenab not found. Please refer to Indus sheet for consolidated data

	c. Availability of environmental flows (Current reserve, if any):	None
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	Individual data for Chenab not found. Please refer to Indus sheet for consolidated data
5.2	Structures: a. Major dams/barrages (with utilization categories):	In India: India has constructed a Dam at Salal for hydro electric in Jammu territory about 40 miles upstream of Marala Barrage. In Pakistan: Marala Barrage has a maximum design discharge of 1.1 million cusecs., Khanki Barrage:has a maximum design discharge of 800,000 cusecs., Panjnad Barrage with a design discharge of 700,000 cusecs. and Trimu Barrage Has a maximum design discharge of 645,000 cusecs.-at the confluence of river Jhelum.Qadirabad Barrage has a maximum design discharge of 900,000 cusecs. Marala-Ravi (MR) Link Canal:design discharge of 623 m ³ /s and falls into Ravi
	b. Proposed dams:	
	c. Live storage of major dams:	Please refer to cell 51
	d. Live storage through proposed dams:	Please refer to cell 51
	e. Inter basin transfer systems:	D N A
	f. Any Other:	
5.3	Command area of major dams	
5.4	Agencies functioning in the basins:a. Public agencies/ CSOs which construct/ implement the infrastructures projects:b. Private agencies/ CSOs involved in infrastructure development	Irrigation Departments and Ministries of Public works of Government of India and Pakistan

6	Existence of National/State/Provincial Laws or Notifications relating to water-Management / use/development/opportunity for private sector participation or for privatization of water resources	Indus Water Treaty
7	Key Issues:	Flood Management, especially in Pakistan. Water Conflicts between Pakistan and India over the Baghliar Dam in Jammu. IRBM issues related to coordinated water releases between India and Pakistan
8	Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin	Indus Water Treaty

SCHEDULE B
ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA

Sr. No.	Details	Response
1	Legal / Political Mandate	
1.1	Is there any RBO? If yes, Give Name.	No RBO constituted specifically for Chenab, but water allocations between India and Pakistan governed by the Indus water Treaty and the Indus River Commission
1.2	How has it been constituted? (Statutory/ Voluntary/ Any other form).	
1.3	State objectives and organizational structure of the RBO in outline & enclose brochures	
1.4	Functioning level of the RBO	
1.5	What are the major activities carried out by the RBO since inception?	
1.6	What are the proposed activities of the RBO?	
1.7	Details of Contact person/s (Name, designation and contact numbers, address, & emails).	

1.8	Presence of a regulatory framework wherein national or regional supra basin authority regulates the functioning of the RBO.	
1.9	Legal/political mandate wherein stakeholders can appeal for redress/decision and conflict resolution	
1.10	Does the RBO have an appellate authority?	
1.11	Is the RBO an autonomous body?	
1.12	Is it regulated by a supra basin authority, if so, how?	
1.13	Is the RBO authorized to raise capital for management and/or implementation in open market?	
1.14	Does the RBO receive direct budgetary grants? (From Govt./ Statutory Bodies/ Public donations/ Any Other Agencies.)	
1.15	Nature of mandate for delegation of powers and/or functions (within RBO's constitution) to the lowest possible scales so as to encourage stakeholder participation. (Kindly elaborate the mode of delegation).	
1.16	Policy of the RBO on – (i) Water allocation between users/sectors/sub-basins; and	

	(ii) Procedures and processes for determining the above. (Kindly elaborate upon the above).	
1.17	Presence of Trans-boundary Water Agreement or Treaty in case of a trans-boundary basin.	
1.18	Presence of a 'Tribunal' appointed in case of intra basin or inter basin.	
1.19	Is the RBO responsible for preparing Basin Management Plan.	
2	Processes of community/stakeholder participation in the functioning of the RBO	
2.1	Are the stakeholders from the basin included in the governing body of the RBO?	
2.2	Elaborate the nature and frequency of public consultation initiated by the RBO	
2.3	Elaborate efforts at outreach/communication by the RBO.	
2.4	Elaborate efforts made for creation of participatory platforms at minor/major tributary or watershed levels for encouraging participation .	

2.5	Interaction of the RBO with organizations working in water management at different watershed/ micro basin, sub-basin or basin level	
2.6	Stakeholder participation sought by the RBO for preparing Basin Management Plan	
3	Conflict resolution and negotiations	
3.1	Involvement of the RBO in negotiations between stakeholders at various levels through an appellate authority mentioned above;	
3.2	Negotiation and participation encouraged at mini/micro basins for consensus building and/or conflict management.	

SCHEDULE C

ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA

Nil