RIVER BASIN

JHELUM

[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 basin (also indicate regional names)	Jhelum River
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.)	The Jhelum rises from the spring of Verinag, on the northwestern side of Pir Panjal and flows in a direction parallel to the Indus at an average elevation of 5,500 feet (Source: Pakistan Water Gateway)
1.4	Area (in Sq. Kms.),	33,334 sq. km (Source:Remote Sensing Techniques for Prediction of Floods in Jhelum River, Pakistan and the Significance of Kashmir Valley –The Pir Panjal Depression, NUSRAT. K. SIDDIQUI,http://www.segmite.org/Vol1/10v1.htm)
1.5	Population (in Millions); Name of population centers/ Cites (duely 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;	
1.7	Country and States (Province) in which the basin lies (indicate % area covered);	
2	**Hydrological and Land use Features:**	
2.1	Average annual rainfall (in mm);	Snowmelt accounts for 65% of the total runoff of the basin. Rainfall is torrential in the months of July-August and September. At some rain gauge stations, daily peaks of about 100 mm have been obtained.
2.2	Maximum-minimum temperatures in Degree Centigrade	Sub zero temperatures in the upper reaches(Jammu and Kashmir), while parts in Pakistan experience temperatures as high as 29 degrees Celsius.(Source: Conflicting signals of climate change in the upper Indus Basin, Fowler, H.J., 2006)
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	Average Annual Flow in Pakistan:11.85 MAF (8.2 kharif and 3.65 rabi) (Source: Pakistan Water Gateway)
2.4	Major tributaries	The Kishenganga (Neelum) River, the largest tributary of the Jhelum, joins it near Muzaffarabad, as does the next largest, the Kunhar River of the Kaghan valley. It is then joined by the Poonch river and ends in a confluence with the Chenab at Trimmu in District Jhang. The Chenab merges with the Sutlej to form the Panjnad River which joins the Indus River at Mithankot. (Source: http://en.wikipedia.org/wiki/Jhelum_River)

2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages-Convert intoTable (a.) Agriculture,	D N A
	(b.) Industries,	
	(c). Domestic,	
	(d). urban,	
	e). environmental flows.	
2.6	Major cropping pattern	In Jammu and Kashmir, the crop pattern changes according to the elevation. Important crops are maize, wheat, bajra, rice, jowar, rapeseed, mustard and pulses; fruits such as apple, guava, walnut, apricot, pear, plum, citrus and almonds; and vegetables such as potato, onion, garlic, turnip, bringal, radish and spinach. However, the sizes of area under these crops are changing, as are cropping patterns, and there is a visible trend towards vegetables, gram and jowar. (Source:FAO Corporate Document Repository. http://www.fao.org/docrep/005/Y4766E/y4766e05.htm) In Pakistan:
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 dams have been built on the Jhelum in Pakstan and India. Most of the dams that hve been constructed have a hydropower component.
3	**Ecosystem Features**	

3.1	Agro-climatic zones	D N A
3.2	Major sub ecosystems (zoogeographical zones)	Data not found
3.3	Major soil types	D N A
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Hokera Wetland in Jammu Kashmir has been recently designated as a Ramsar Wetland (Source: http://www.ramsar.org/wn/w.n.india_sixnew.htm), Wular Lake is also a Ramsar Site (J & K. Source: www.fatbirder.com)
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	The river does not meet the sea, but meets the River Satluj.
4	**Water Quality**	
4.1	Prevailing water quality standards (e.g. Class I, II, III.etc, indicating permitted uses)	Though the DO levels of Jhelum are good throughout, at places in Pakistan, groundwater was observed to be contaminated with Arsenic.**(Source:** http://www.pcrwr.gov.pk/water_quality.htm)
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on the map)	Average BOD: 50.05 mg/l, 16.58 NTU (desirable is less than 10 NTU)
4.3	Sources of Pollution, with data indicating quantum and/or severity.	D N A
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation,etc.	D N A
5	**Current status of the resource development & potential for development**	
5.1	Water availability: a. Per capita water availability (in lpcd)	D N A

	b. Per hectare water availability (in Cubic meters for cultivable command area):	D N A
	c. Availability of environmental flows (Current reserve, if any):	D N A
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	(Composite Data for the Indus River System as a whole) Before the introduction of a weir-controlled canal irrigation system, the groundwater table was relatively deep under most of the plain. As a result of the additional recharge introduced by irrigation, the water table started rising at a rate of 15-75 cm/year. The position of the water table before and after the introduction of the large canal networks in the upper part of the basin rose 20-30 m in 80-100 years. (Source:http://www.fao.org/docrep/005/y4502e/y4502e04.htm)
5.2	Structures: a. Major dams/barrages (with utilization categories):	Major dams and barrages on the Jhelum in Pakistan: Mangla Dam,Rasul Barrage (maximum capacity of 850,000 cusecs.), Trimmu Barrage (maximum design discharge of 645,000 cusecs.), Upper Jhelum Canal (Taken out from Mangla for a design discharge of 221 m3/s.), Rasul-Qadirabad (RQ) Link Canal (Taken out at Jhelum from Rasul barrage for a design discharge of 538m3/s.), Chashma-Jhelum (CJ) Link Canal (Taken out from Chashma Barrage for a design discharge of 615 m3/s.) (Source: Pakistan Water Gateway)
	b. Proposed dams:	India has prposed a string of five to six dams on the Jhelum
	c. Live storage of major dams:	For Pakistan: Please refer to 5.2.

	d. Live storage through proposed dams:	D N A
	e. Inter basin transfer systems:	Both India and Pakistan have diverted the waters of Jhelum at many places for irrigation and domestic use.Example: Rasul-Qadriabad link (19000 cusecs, 40 km) to transfer water from the Jhelum to the Chenab at the Qadribada barrage, built some distance below the old Marala Barrage.
	f. Any Other:	Data not found
5.3	Command area of major dams	Please refer to 5.2 (for data on Pakistan). For information on dams on the Jhelum in Pakistan, please refer to: http://www.waterinfo.net.pk/cwi.htm
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	Central Water Commission, Government of India, Ministry of Water and Power, Pakistan and respective state irrigation/ water resources departments.
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	D N A

7	Key Issues:	High rates of sedimentation due to deforestation in the upper reaches. THE WULAR BARRAGE ISSUE between India and Pakistan: Pakistan referred the Wular Barrage case to the Indus Waters Commission in 1986, which, in 1987, recorded its failure to resolve it.The issue of Wular Barrage was one of the disputes on the agenda highlighted for the Indo-Pak talks, both at the Lahore meeting in February 1999, and at the Agra Summit of July 2001. (Source: Pakistan Water Gateway)
8	Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin	Indus River System Treaty enshrined Indian right to store limited quantity of water on River Jhelum and this was for irrigating 3.6 million-acre area.(The Indus Water Treaty which was signed on September 19, 1960, divided the six rivers of Punjab between India and Pakistan. India got unrestricted use of the Beas, the Ravi and the Sutlej, and Pakistan got the three western rivers of Chenab, Indus and Jhelum. The Treaty also allows either country to have restricted access for domestic and agricultural use, generation of hydroelectric power through a "run-of-the-river" project, and non-consumptive use including navigation - provided the same quantum of water is returned to the river.). There were plans to initiate Jhelum River Conservation Plan. treating catchments area of the river from Veerinag to the Wullar Lake. Source:http://www.tribuneindia.com/2003/20030521/j&k.htm)

SCHEDULE B
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NIL

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