

RIVER BASIN

MAHAVELI

[SRI LANKA]

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);	Mahaweli Ganga
1.2	Relief Map and Index Map of RB with Country/ State/ Province boundary marked to be attached.	Map 1- relief map Map 2 - index map
1.3	Geographical location of the place of origin (Country/District.)	Map 3 - river basin map
1.4	Area (in Sq. Kms.),	10448 km ² (1/6 of sri Lanka)
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	2.8 million (15% of country population) - Thambuttegama, Kalawewa, Welikanda, Manampitiya, Aralaganwila, Dehiattakandiya, Girnadurukotte, Embilipitiya, Suriyawewa
	(c) More than 10 Million	

1.6	Approximate areas of upper regime, middle regime and lower regime;	Upper regime - 3118 km ²
1.7	Country and States (Province) in which the basin lies (indicate % area covered);	Central - N'Eliya (1341 km ² - 12.9%), Kandy (1496 km ² - 14.3%), Matale (1379 km ² - 13.2%) Uwa - Badulla (1990.4 km ² - 19%) North central - Polonnaruwa (2563 km ² - 24.5%) Eastern - Trincomalee (1389 km ² - 13.3%), Ampara (124 km ² - 1.2%), Batticaloa (166 - 1.6%)
2	Hydrological and Land use Features:	
2.1	Average annual rainfall (in mm);	2524 mm
2.2	Maximum-minimum temperatures in Degree Centigrade	Min. - 9 ⁰ c Max. - 37 ⁰ c
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	17717 mcm
2.4	Major tributaries	Kotmale Oya, Dic Oya, Uma Oya, Madula Oya, Badula Oya, Maduru Oya, Kuda Oya, Ualhitiya Oya, hangaran Oya, Hatton Oya, Hulu Ganga, Loggal Oya, Amban Ganga, Ulhiti Oya, Kaudulu Oya

2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages-Convert into Table (a.) Agriculture,																
	(b.) Industries,	**															
	(c). Domestic,	** <table><tr><td>NWS&DB</td><td rowspan="2">Domestic Consumption per day</td><td rowspan="2"></td></tr><tr><td>Matale</td></tr><tr><td>Scheme 1 (Ukuwela)</td><td>19</td><td></td></tr><tr><td>Scheme 2 (Halangoda)</td><td>18.5</td><td></td></tr><tr><td>Scheme 3 (Haywood)</td><td>54.2</td><td></td></tr></table>			NWS&DB	Domestic Consumption per day		Matale	Scheme 1 (Ukuwela)	19		Scheme 2 (Halangoda)	18.5		Scheme 3 (Haywood)	54.2	
NWS&DB	Domestic Consumption per day																
Matale																	
Scheme 1 (Ukuwela)	19																
Scheme 2 (Halangoda)	18.5																
Scheme 3 (Haywood)	54.2																
	(d). urban,	**															
	e). environmental flows.	Mean annual discharge to sea - 8141 mcm															

2.6	Major cropping pattern	**																																																																									
2.7	Cultivable area under irrigation	Yala - 1820 km2 Maha - 3640 km2																																																																									
2.8	Cultivable area not under irrigation	**	<table><tr><th colspan="4">2006 - yala (Apr. - Sep.)</th></tr><tr><th rowspan="2">Irrigation scheme</th><th rowspan="2">Total cultivable land extend (km²)</th><th colspan="2">Cultivable extend under irrigation (km²)</th></tr><tr><th>Crop</th><th>Extend</th></tr><tr><td>Kantale</td><td>88.6</td><td>Paddy</td><td>88.6</td></tr><tr><td>Kaudulla</td><td>53.4</td><td>Paddy</td><td>53.4</td></tr><tr><td>Minneriya</td><td>109.3</td><td>Paddy</td><td>109.3</td></tr><tr><td>Giritale</td><td>48.6</td><td>Paddy</td><td>48.6</td></tr><tr><td>Elahara</td><td>54</td><td>Paddy</td><td>37.8</td></tr><tr><td>Parakrama samudraya</td><td>104.2</td><td>Paddy</td><td>104.2</td></tr><tr><td>Allai</td><td>70.5</td><td>Paddy</td><td>70.5</td></tr><tr><td>Ulhitiya / Rathkida</td><td>214.55</td><td>Paddy</td><td>212.45</td></tr><tr><td></td><td></td><td>OFC</td><td>2.1</td></tr><tr><td>Sorabora</td><td>8.1</td><td>Paddy</td><td>8.1</td></tr><tr><td>Mapakanda</td><td>5.5</td><td>Paddy</td><td>5.5</td></tr><tr><td>Dambarawa</td><td>6.1</td><td>Paddy</td><td>6.1</td></tr><tr><td>Minipe L/B</td><td>75.25</td><td>Paddy</td><td>60.25</td></tr><tr><td></td><td></td><td>OFC</td><td>15</td></tr><tr><td>Total</td><td>838.1</td><td></td><td>821.9</td></tr></table>			2006 - yala (Apr. - Sep.)				Irrigation scheme	Total cultivable land extend (km ²)	Cultivable extend under irrigation (km ²)		Crop	Extend	Kantale	88.6	Paddy	88.6	Kaudulla	53.4	Paddy	53.4	Minneriya	109.3	Paddy	109.3	Giritale	48.6	Paddy	48.6	Elahara	54	Paddy	37.8	Parakrama samudraya	104.2	Paddy	104.2	Allai	70.5	Paddy	70.5	Ulhitiya / Rathkida	214.55	Paddy	212.45			OFC	2.1	Sorabora	8.1	Paddy	8.1	Mapakanda	5.5	Paddy	5.5	Dambarawa	6.1	Paddy	6.1	Minipe L/B	75.25	Paddy	60.25			OFC	15	Total	838.1		821.9
2006 - yala (Apr. - Sep.)																																																																											
Irrigation scheme	Total cultivable land extend (km ²)	Cultivable extend under irrigation (km ²)																																																																									
		Crop	Extend																																																																								
Kantale	88.6	Paddy	88.6																																																																								
Kaudulla	53.4	Paddy	53.4																																																																								
Minneriya	109.3	Paddy	109.3																																																																								
Giritale	48.6	Paddy	48.6																																																																								
Elahara	54	Paddy	37.8																																																																								
Parakrama samudraya	104.2	Paddy	104.2																																																																								
Allai	70.5	Paddy	70.5																																																																								
Ulhitiya / Rathkida	214.55	Paddy	212.45																																																																								
		OFC	2.1																																																																								
Sorabora	8.1	Paddy	8.1																																																																								
Mapakanda	5.5	Paddy	5.5																																																																								
Dambarawa	6.1	Paddy	6.1																																																																								
Minipe L/B	75.25	Paddy	60.25																																																																								
		OFC	15																																																																								
Total	838.1		821.9																																																																								

2.9	State other Water Uses- eg. Navigation, power, recreation etc.	Highest provider of irrigation water, substantial hydro-power generation (500 Mw), meeting other water needs of townships and, claiming for large part of natural resource base of Sri Lanka, and providing shelter for large section of the population, Fish industry in tanks
3	Ecosystem Features	
3.1	Agro-climatic zones	Map 4 - Agro ecalogycal map Wet zone, Intermediate zone, Dry zone,
3.2	Major sub ecosystems (zoogeographical zones)	Map 4 - Agro ecalogycal map WU2a, WU2b, WU3, WM1,WM2a, WM2b, WM3a, WM3b, IU1, IU2, IU3b, IU3c, IU3d, IU3e, IM1a, IM1b, IM1c, IM3a, IM3b, IL2, DL1c, DL2b
3.3	Major soil types	Map 5 - Soil map of Sri Lanka Red yellow podsolic, Reddish brown latasolic, Reddish brown earth, Immature brown loam, low humic clay soil, lithosol, Mountain regosol, non calcic brown, Old alluvial, Regosol, Solodized-solonetz
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Reservoir - Upper uma oya, Lower uma oya, Loggal oya, Moragahakanda, Angamadilla, Lakes - Kalawewa, Minipe, Kaudulla, Giritale, Kantale, Topawewa, Parakrama Samudra, Nikawewa, Minneriya, National parks - Wasgamuwa, Habarana, Minneriya, Seruwavila, Triconamadu, Somawathi
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	Irrigate by Elahera, Angamedilla, Kalinga Ela, Gothami Ela and Allai Channels

4.3	Sources of Pollution, with data indicating quantum and/or severity.	Agro-chemicals - Eutrofication Untreated wastewater discharge (industries, domestic, urban)
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation,etc.	**
5	Current status of the resource development & potential for development	
5.1	Water availability: a. Per capita water availability (in lpcd)	6328 m ³ / person / Yr
	b. Per hectare water availability (in Cubic meters for cultivable command area):	48673 m ³ / ha / Yr
	c. Availability of environmental flows (Current reserve, if any):	Mean annual discharge to sea - 8141 mcm
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	**

5.2	Structures: a. Major dams/barrages (with utilization categories):	
	b. Proposed dams:	-
	c. Live storage of major dams:	
	d. Live storage through proposed dams:	
	e. Inter basin transfer systems:	From Mahaweli to KBO diversion(annually - 510 mcm),
	f. Any Other:	-
5.3	Command area of major dams	-

Dam / Reservoir	Live Storage (mcm)	Command Area
Dam		
Victoria	688	-
Randenigala	558	-
Ratambe	18	-
Kotmale	150	-
Ulthiya	82	-
Rathkinda	82	-
Bowatenna		
Barrage		
Polgolla		
kandakuda		

5.4	<p>Agencies functioning in the basins:</p> <p>a. Public agencies/ CSOs which construct/ implement the infrastructures projects:</p> <p>b. Private agencies/ CSOs involved in infrastructure development</p>	<table><tr><th>Name</th><th>Year of construction/ restoration ('n'- new 'a'- ancient)</th><th>Full Supply Level (m)</th><th>Catchment Area (km²)</th><th>Reservoir Area (ha)</th><th>Maximum Depth (m)</th><th>Volume (mcm)</th><th>CA:RA</th></tr><tr><td>Rantembe</td><td>1992 n</td><td>152.0</td><td>1095</td><td>200</td><td>30.0</td><td>7</td><td>548.0</td></tr><tr><td>Uthitiya/ Rathkinda</td><td>1968 n</td><td>106.7</td><td>367</td><td>2270</td><td>6.3</td><td>145</td><td>16.0</td></tr><tr><td>Bowatenna</td><td>1963 n</td><td>251.0</td><td>382</td><td>606</td><td>-</td><td>52</td><td>63.0</td></tr><tr><td>Nalanda</td><td>1982 n</td><td>367.0</td><td>118</td><td>304</td><td>21.3</td><td>15</td><td>38.8</td></tr><tr><td>Giritale</td><td>1905 a</td><td>92.0</td><td>24</td><td>308</td><td>12.3</td><td>24</td><td>7.8</td></tr><tr><td>Minneriya</td><td>1906 a</td><td>93.6</td><td>386</td><td>2557</td><td>12.6</td><td>135</td><td>15.0</td></tr><tr><td>Kaudulla</td><td>1958 a</td><td>73.2</td><td>348</td><td>1765</td><td>7.6</td><td>128</td><td>20.0</td></tr><tr><td>PSamudraya</td><td>1952 a</td><td>59.1</td><td>841</td><td>2266</td><td>6.7</td><td>134</td><td>37.0</td></tr></table> <p>Network of Asian River Basin Organizations (NARBO), Asian Development Bank (ADB), Japan Water Agency (JWA), Asian Development Institute (ADB)</p>	Name	Year of construction/ restoration ('n'- new 'a'- ancient)	Full Supply Level (m)	Catchment Area (km ²)	Reservoir Area (ha)	Maximum Depth (m)	Volume (mcm)	CA:RA	Rantembe	1992 n	152.0	1095	200	30.0	7	548.0	Uthitiya/ Rathkinda	1968 n	106.7	367	2270	6.3	145	16.0	Bowatenna	1963 n	251.0	382	606	-	52	63.0	Nalanda	1982 n	367.0	118	304	21.3	15	38.8	Giritale	1905 a	92.0	24	308	12.3	24	7.8	Minneriya	1906 a	93.6	386	2557	12.6	135	15.0	Kaudulla	1958 a	73.2	348	1765	7.6	128	20.0	PSamudraya	1952 a	59.1	841	2266	6.7	134	37.0
Name	Year of construction/ restoration ('n'- new 'a'- ancient)	Full Supply Level (m)	Catchment Area (km ²)	Reservoir Area (ha)	Maximum Depth (m)	Volume (mcm)	CA:RA																																																																			
Rantembe	1992 n	152.0	1095	200	30.0	7	548.0																																																																			
Uthitiya/ Rathkinda	1968 n	106.7	367	2270	6.3	145	16.0																																																																			
Bowatenna	1963 n	251.0	382	606	-	52	63.0																																																																			
Nalanda	1982 n	367.0	118	304	21.3	15	38.8																																																																			
Giritale	1905 a	92.0	24	308	12.3	24	7.8																																																																			
Minneriya	1906 a	93.6	386	2557	12.6	135	15.0																																																																			
Kaudulla	1958 a	73.2	348	1765	7.6	128	20.0																																																																			
PSamudraya	1952 a	59.1	841	2266	6.7	134	37.0																																																																			
6	<p>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</p>	<p>**</p>																																																																								

7	<p>Key Issues: Critical issues in water resources development and management in the basin- that constrain economic and social development. (e.g. Water Rights, Need for Negotiations, Levels of participation, disaster management, Equity, Water sharing, Allocations, Conflicts, etc). Kindly provide copies or abstracts</p>	<p>Using Climate Information for <i>Mahaweli</i> River Basin Management in Sri Lanka , (Lareef Zubair, Ruvini Perera, and Herath Manthirithillake -World Water and Environmental Resources Congress 2003) - Abstract - We report on an ongoing demonstration project on applying climate information and prediction for river basin management in the <i>Mahaweli</i> basin in Sri Lanka. This project is a collaborative effort between the International Research Institute (IRI) for Climate Prediction, USA and the <i>Mahaweli</i> Authority of Sri Lanka. The IRI works towards the worldwide advancement of the application of seasonal climate prediction. The <i>Mahaweli</i> Authority is responsible for river basin management in the <i>Mahaweli</i> and adjacent rivers. This river basin provides half of Sri Lanka's electricity requirements, rice and tea production respectively. Climate information has entered into basin management in terms of historical statistics. Recently, however seasonal climate predictions up to a year in advance have become available. Such predictions provide an opportunity for adaptive basin management</p>
8	<p>Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin</p>	<p>MASL Parliamentary Act No. 23 of 1979 and other Gazetted Regulations, National Environment Act of 1988, Irrigation Ordinance, Flood Protection Ordinance National Water Supply & Drainage Board Law No. 2 of 1974, Agricultural Land Law No. 42 of 1973, Forest Ordinance, Ceylon Electricity Board Act No. 17 of 1969</p>

		<p>National Water Recourses Policy (NWRP) -The National Water Resources Policy (NWRP) should adopt effective measures to regulate water allocations, prepare plans for integrated water resources development, management and conservation of water resources while introducing legislation to recognize the rights of water users and grant water rights to them. The national water resources policy should be based on following principles.</p> <ul style="list-style-type: none"> a) Water is a basic need for all living beings b) Need to assure safe water for the present and future generation as a fundamental right of all citizens c) Water is a limited and invaluable resource d) Water for domestic needs will be given priority in allocating water from existing resources and developing and managing new water resources e) River Basin, Sub Basin, Connected Basins will be the hydrological unit for planning and management of water resources f) Water rights will be recognized with regulations and governing allocations in line with national priorities g) Groundwater extraction will be monitored and appropriately regulated through the relevant institutions including in groundwater sensitive areas h) Management of water resources will be developed or decentralized as provided in the constitution i) All developers including state agencies need to obtain the approval of National Water Resources Authority (NWRA) for development of water resources j) The state will promote the integration of gender concerns in policies plans and programs in water sector activities <p>Through this process, the NWRP anticipate empowering stakeholders in the decision making process for sharing the harnessed resources. The proposed Water Act is harmonized with the existing legislations and it has to be improved to cover the constitutional, organizational and operational functions in achieving the sustainable development through integrated water resources management and it should ensure that the agreed policies would be implemented</p>
--	--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>SCHEDULE B</p> <p>ASSESSMENT OF RIVER BASINS ORGANISATIONS (RBs) IN SOUTH ASIA</p> <p>Nil</p>

<p>SCHEDULE C</p> <p>ASSESSMENT OF CIVIL SOCIETY ORGANISATIONS IN RIVER BASINS (CSOs) IN SOUTH ASIA</p> <p>Nil</p>
