27th November – 4th December 2013 Sri Lanka

The Challenge of Meeting the Increasing Demand for Drinking Water in the Mahaweli River Basin

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National Water Supply & Drainage Board

NATIONAL WATER SUPPLY & DRAINAGE BOARD

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Role of National Water Supply & Drainage Board

- **Operation and maintenance of urban and small town water supply and sewerage systems**
- **Project formulation and development**
  - **Identification**
  - **Planning and Master Planning**
  - **Pre-Feasibility & Feasibility Studies**
  - **Detailed Designs**
- **Execution and implementation of water supply and sewerage projects**
- **Providing technical assistance and guidance to Local Authorities and Community Based Organizations (CBOs)**

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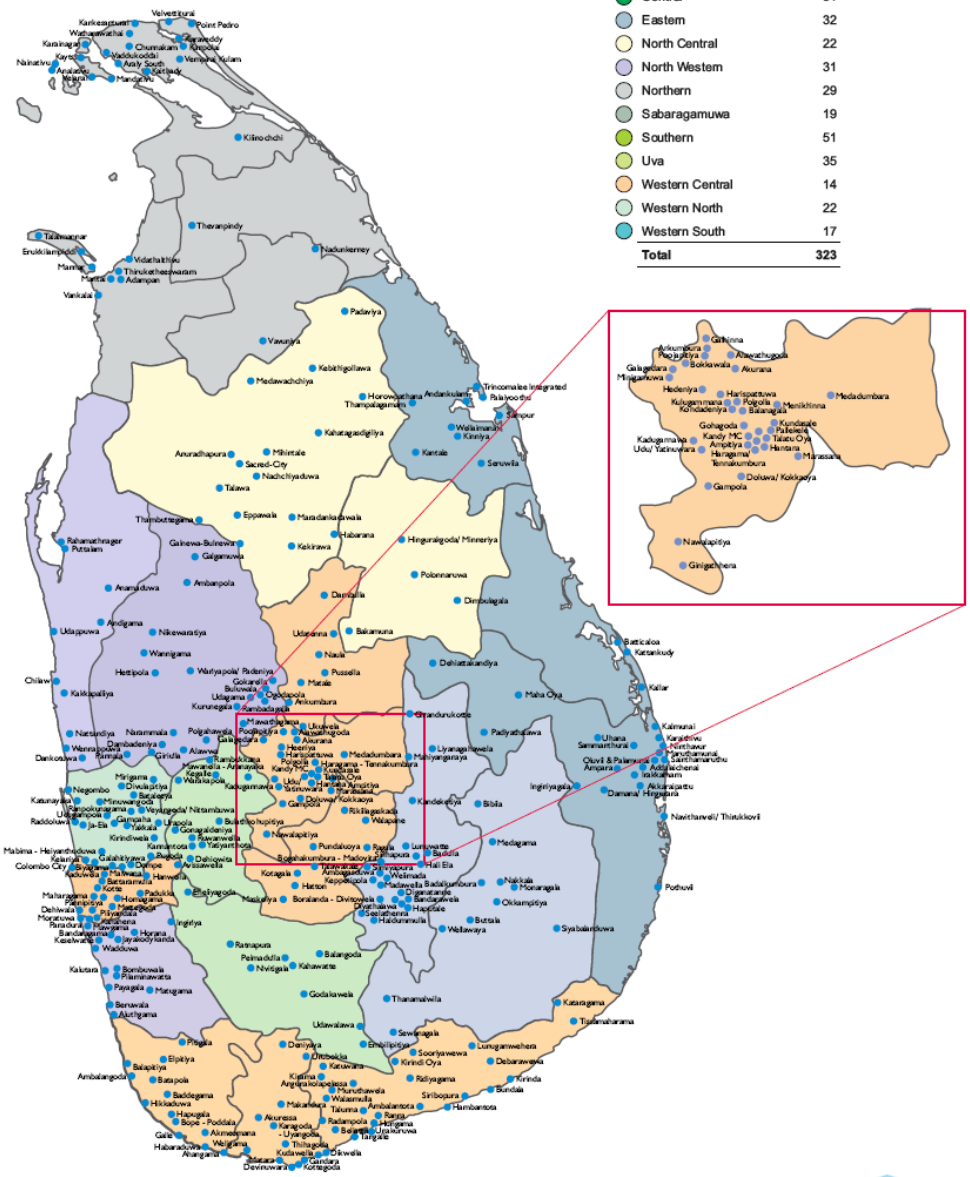
Existing Water Supply Schemes

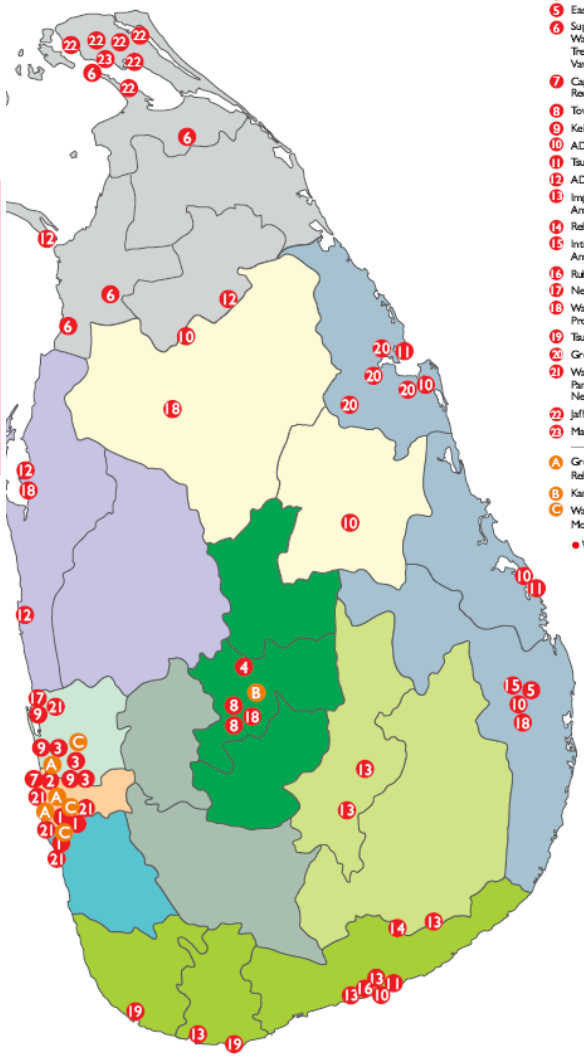
Province/ RSC	Number of WSS
Central	51
Eastern	32
North Central	22
North Western	31
Northern	29
Sabaragamuwa	19
Southern	51
Uva	35
Western Central	14
Western North	22
Western South	17
Total	**323**



Ongoing Projects

ajor Water Supply and Sewerage Projects Accomplishments

cation Map of Foreign-funded Projects under Construction/ Augmentation during 2011



	Project	Funding Agency
1	Kalu Ganga WSP - Phase I, Stage II	JICA
2	Greater Colombo Water Rehabilitation	JICA
3	Towns North of Colombo WS - Stage II	JICA
4	Greater Kandy WSP - Phase I, Stage II	JICA
5	Eastern Province Water Supply Development	JICA
6	Supply of Equipment for the Provision of Safe Water and Construction of Septage Treatment Plant for IDP Welfare Centres at Vavuniya	JICA
7	Capacity Development Project for NRW Reduction in Colombo City	JICA
8	Towns South of Kandy WS	DANIDA
9	Kelani Right Bank WTP	DANIDA
10	ADB 4th WS & Sanitation Project	ADB
11	Tsunami Affected Area Rebuilding Project	ADB
12	ADB 5th WS Project	ADB
13	Implementation of Hambantota, Amabalhtota, Weligama WSPs	Austrian
14	Reh. & Augmentation of Kirindi Oya WS	Austrian
15	Integrated WSS for the Unserved Areas of Ampara District - Phase III	Australia
16	Ruhunupura Water Supply	Korea
17	Negombo WS and Optimization Project	Netherlands
18	Water Sanitation and Hygiene (WASH) Programme	UNICEF
19	Tsunami Rehabilitation Project	IFRC
20	Greater Trincomalee Integrated WSP	French
21	Water Treatment Facilities to Moratuwa/ Panadura, WTPs located at Ambatale and Negombo	Spanish
22	Jaffna - Kilinochchi WS & Sanitation Project	ADB
23	Mandathivu Water Supply	UNICEF
A	Greater Colombo Wastewater Rehabilitation	ADB
B	Kandy City Wastewater Management	JICA
C	Wastewater Disposal for Ratmalana/ Moratuwa & Ja-Ela/ Ekala Areas	SIDA

● Water Supply Project ● Sewerage Projects

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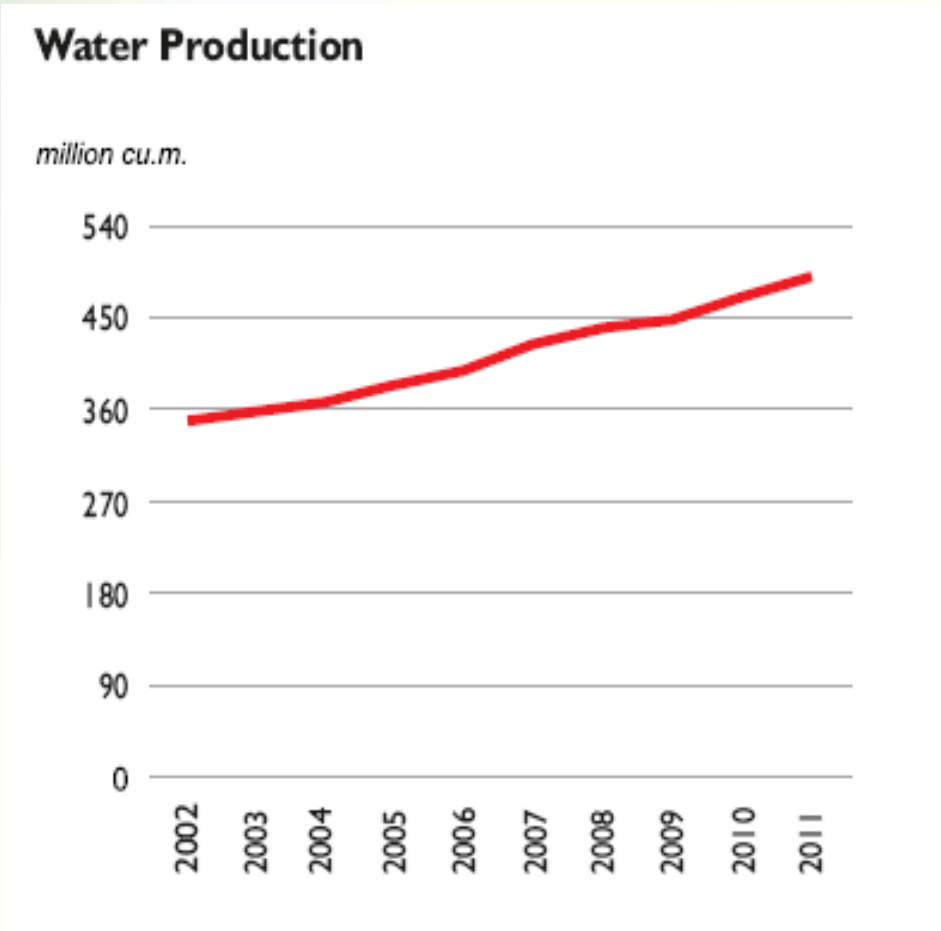
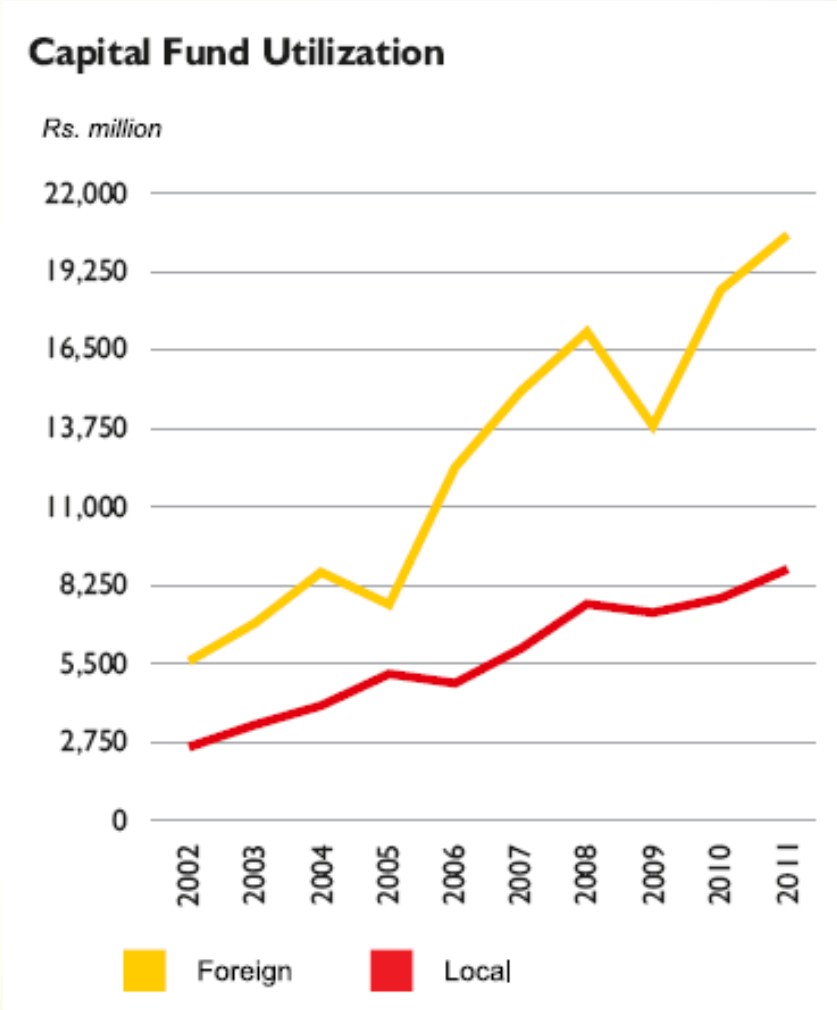
NWSDB Water Production & Investments





Millennium Development Goals (MGDs)

Goal 7

Ensure environmental sustainability

TARGET

Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

Safe Water Supply Remains a Challenge in many parts of the world ……including Sri Lanka …….

In the future, water quality will need to be considered when setting targets to access to safe water. Despite efforts to compile global and country water quality data, measuring safety of water can be difficult ……

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MAHINDA CHINTANA-VISION FOR THE FUTURE
THE DEVELOPMENT POLICY FRAMEWORK

Reaching the Households Island Wide

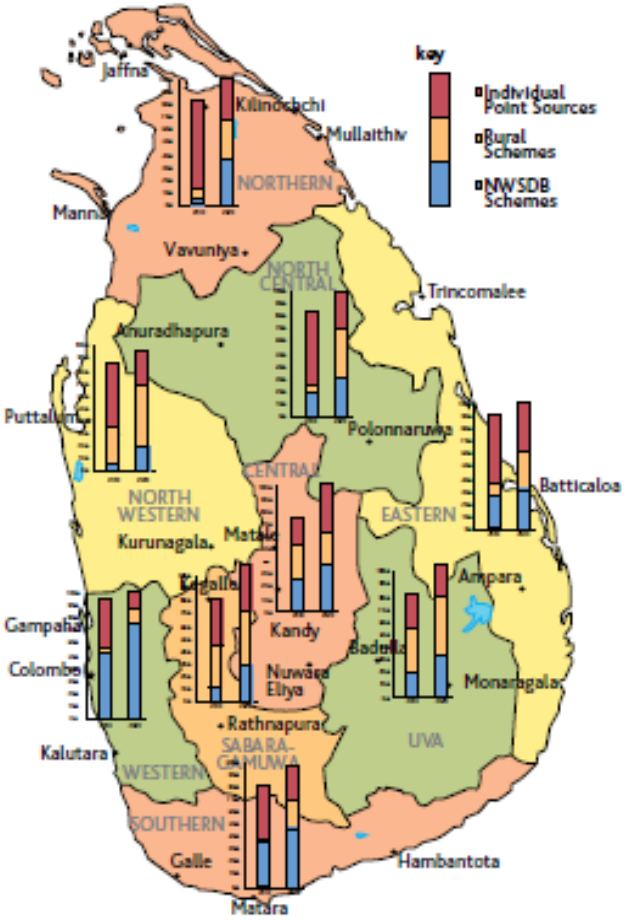
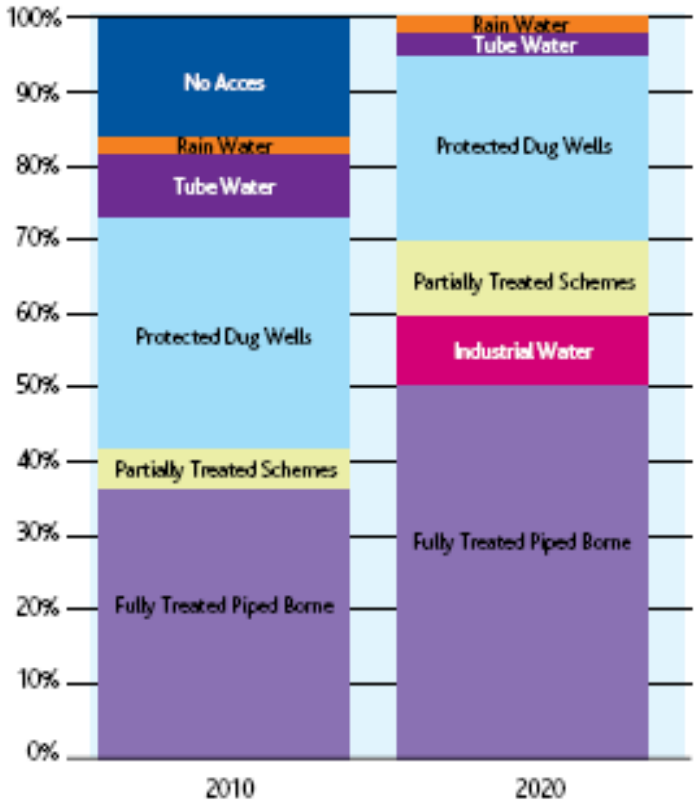


Chart 3.4.1
Towards the Best Mix of Water Service Modes



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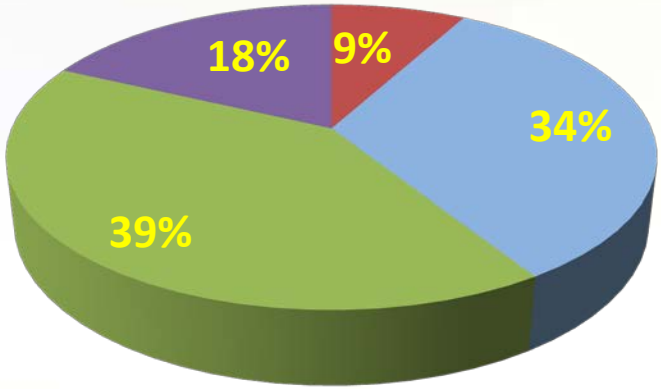
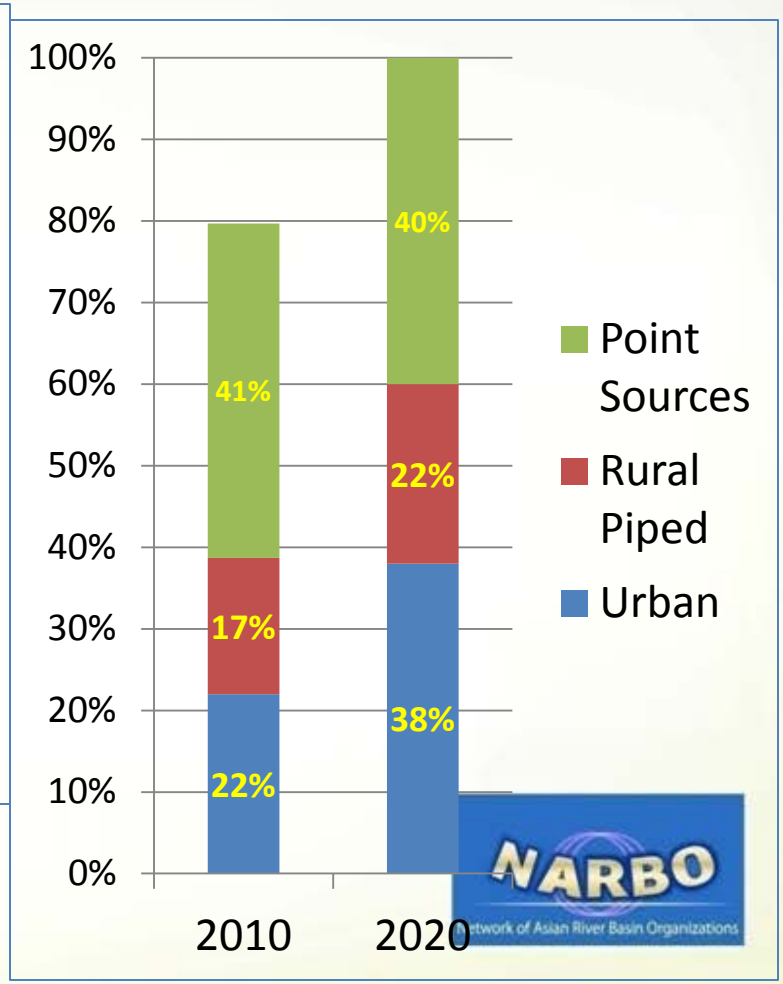
Domestic Water Supply Coverage and Targets

Present Status

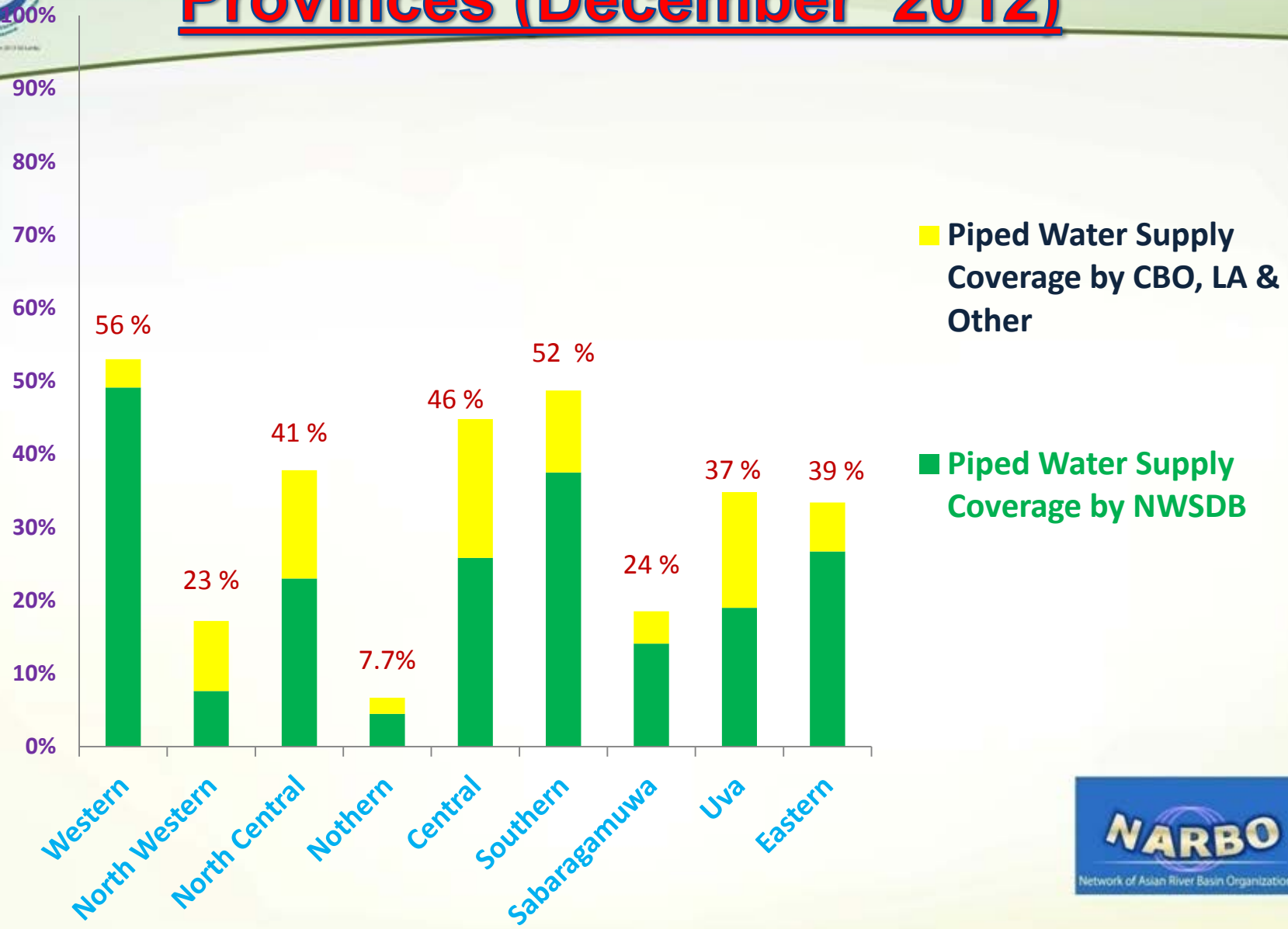


MDG Target for Safe Water Supply for Sri Lanka in 2015 is 85% and **it is on track**

Future Targets 2020 Compared with 2010



Piped Water Supply Coverage in Provinces (December 2012)



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National Policy on Drinking Water

Goal

The Government of Sri Lanka, while recognizing that access to safe drinking water is a basic right of every citizen, is committed to the provision of adequate quantity of safe drinking water to the entire population at an affordable cost and in an equitable, efficient and sustainable manner.

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National Policy on Drinking Water - Principles

- Access to safe drinking water is a basic human need
- The Government will act as the custodian of the water resources
- People centered, participatory and demand responsive planning approach
- Water for domestic purposes will receive priority
- Investment will be based on priority needs

- Pipe borne water supply option is the last resort
- The operational responsibilities will be decentralized

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Domestic Water Sector Demands and Projections – Central Province

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT EXTRACTION	FUTURE EXTRACTION
Nuwara Eliya District				
		MC Scheme	10,000	
Kothmale Reservoir		River Side		3,200
Ragala	Tributary to Halgran Oya>Uma Oya>Rantembe	Ragala	1,650	
Mul Oya	Tributary to Ma Oya > Vic. Reservoir	Rikillagaskada	4,800	
Kurundu Oya	Randenigala Reservoir	Walapane/ Nildandahinna	3,600	

Domestic Water Sector Demands and Projections Central Province

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT	FUTURE
Kandy District				
Halgran Oya	Tributary	Nawalapitiya	4,000	
Nanu Oya	Tributary	Thalawakele		2,500
Para Deka & New F	Tributary	Gampola	6,000	
Ulapane	Tributary	Gampola	8,000	
Nillambe Oya	Tributary	Udunuwara	11,000	
Meewathura	Direct	University	6,500	
Meewathura	Direct	Udu - Yatinuwara	32,000	
Getambe	Direct	KMC	34,000	
Katugastota	Direct	Greater Kandy	50,000	175,000
Polgolla	Direct	Polgolla	10,000	100,000
Victoria Reservoir-Gonawatta	Direct	Haragama	800	90,000
Victoria Reservoir	Direct	Balagolla	8,000	14,000
Hulu Ganga	Tributary	Kundasale	13,500	
Kota Ganga	Tributary	Meda Dumbara	3,400	
Ma Oya	Tributary	Marassana	2,500	

Domestic Water Sector Demands and Projections – Central Province

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT EXTRACTION	FUTURE EXTRACTION
Matale District				
Sudu Ganga	(Polgolla Diversion)	Matale	15,000	50,000
Ukuwela Penstock	(Polgolla Diversion)	Ukuwela	900	9,000
Amban Ganga	Mahaveli Diversion	Greater Matale		18,000
Ibbankatuwa	Mahaveli Diversion	Greater Dambulla	3,000	Stage I. - 2014 - 33,000
				Stage II - 2024 - 65,000

Domestic Water Sector Demands and Projections – North Central Province

POINT OF EXTRACTION	Type	SCHEME	PRESENT EXTRACTION	FUTURE EXTRACTION
Polonnaruwa District				
Mahaweli River	Direct	Plonnnaruwa	13,500	60,000
Parakrama Samudraya	Irrigation Tank	Polonnaruwa	6,000	6,000
Mahaweli River	Direct	Lankapura		9,000
Anuradhapura District				
Amban Ganga	Tributary	Elehara-Bakamuna	1,000	9,000
Galnewa Wewa	Tributary	Galnewa-Bulnewa	1,300	12,000
Nallachchiya	Irrigation Tank	Thambuttegama	1,600	12,000
Nuwara Wewa	Irrigation Tank	Anurahapura	13,500	19,000
Tissawewa	Irrigation Tank	Anurahapura	4,500	11,500
Thuruwila	Irrigation Tank	Anurahapura	21,000	42,000
Mahakandarawa/ Wahalkada	Irrigation Tank	Anurahapura North		28,000

Domestic Water Sector Demands and Projections – Uva Province

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT EXTRACTION	FUTURE EXTRACTION
Badulla District				
Bomburuella	Intake dam	Ambagasdowa	2500	500
Madawela	Intake dam	Madawela	1000	
Silmiyapura	Collecting Chamber	Silmiyapura	500	
Bogahakubura	Intake dam	Bogahakumbura	500	500
Daragala	Intake dam	Welimada	600	2000
Lunuwaththa	Intake dam	Lunuwaththa	500	500
Aluthwela	Intake well with Dam	Diyathalawa	6000	1000
Ellethota	Intake dam	Bandarawela	3000	
Ohiya	Intake dam	Boralanda & Divithotawela	1500	
Mathatilla-Kurukude	Impounding reservoir Under Uma oya project	Bandarawela Project	0	20000
Puhulpola end	Intake dam	AtampitiyaProject	0	3000

Domestic Water Sector Demands and Projections – Uva Province (Contd…)

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT EXTRACTION	FUTURE EXTRACTION
Badulla District				
Demodara	Impounding reservoir	Badulla,Hali ela,ella Intigrated project	0	15000
Morethota	Collecting Chamber	Haliela	1000	
Madiriya	Intake dam	Badulla	13000	
Kumarasingha mawatha	Intake dam			
Wewassa	Collecting Chamber			
Thelbadda	Collecting Chamber			
Thaldena	Intake dam	Proposed Thaldena, Meegahakiula Project	0	3000
Kandekatiya	Intake dam	Proposed Kandekatiya Project	0	3000
Mahiyanganaya	Intake well	Mahiyanganaya	2500	12,000
	Intake dam	Proposed Mahiyanganaya Ridiimaliyadda project		6500
Girandurukotte	Lake fed from Mahaweli river	Girandurukotte	1500	1000

Domestic Water Sector Demands and Projections – Eastern Province

POINT OF EXTRACTION	Type	SCHEME	QUANTITY - m^3/day	
			PRESENT EXTRACTION	FUTURE EXTRACTION
Trincomalee District				
Allai Bridge	Siphon intake with Jhoanson screen with wet well	Trincomalee integrated WSS	12,000	30,000
Gangai Bridge	Siphon/well		Proposed	45,000
Neelapala	Wet well	Muthur WSS & balance Serunuwera area	Ongoing	40,000
Verugal	Siphon	Eachalampathu WSS & Serunuwera WSS	Ongoing	6,000
Ampara District				
DehiattaKandiya	Dry well	Dehiattakandy	2000	5000

Total Domestic Water Sector Demands and projections From Mahaweli River Basin

PROVINCE	DISTRICT	QUANTITY - m^3 / day		QUANTITY - m^3 / sec
		PRESENT EXTRACTION	FUTURE EXTRACTION	FUTURE EXTRACTION
Central	Nuwara Eliya	20,050	23,250	0.3
	Kandy	189,700	571,200	6.6
	Matale	18,900	160,900	1.9
North Central	Anuradhapura	42,900	105,500	1.2
	Polonnaruwa	19,500	75,000	0.9
Uva	Badulla	34,100	90,100	1.0
Eastern	Ampara	2,000	5,000	0.1
	Trincomalee	12,000	126,000	1.5
Northern	Jaffna/ Killinochchi		27,000	0.3
Total		339,150	1,183,950	13.7

Lessons Learned

- Scarcity and impacts on quality during adverse and extreme weather conditions ; specially prolonged droughts
- Detrimental Flow patterns, changes to flow regimes and quality issues due to sand and gem mining

Lessons Learned (Contd..)

- Detrimental Flow patterns, changes to flow regimes and quality issues due to sand and gem mining

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Lessons Learned (Contd..)

- River basin is No body's child ?? Lack of a coherent water policy ??
- Competing demands during droughts(Drinking water, Irrigation, power, recreation, environmental concerns)
- Depletion of catchments/ watersheds due to human activities

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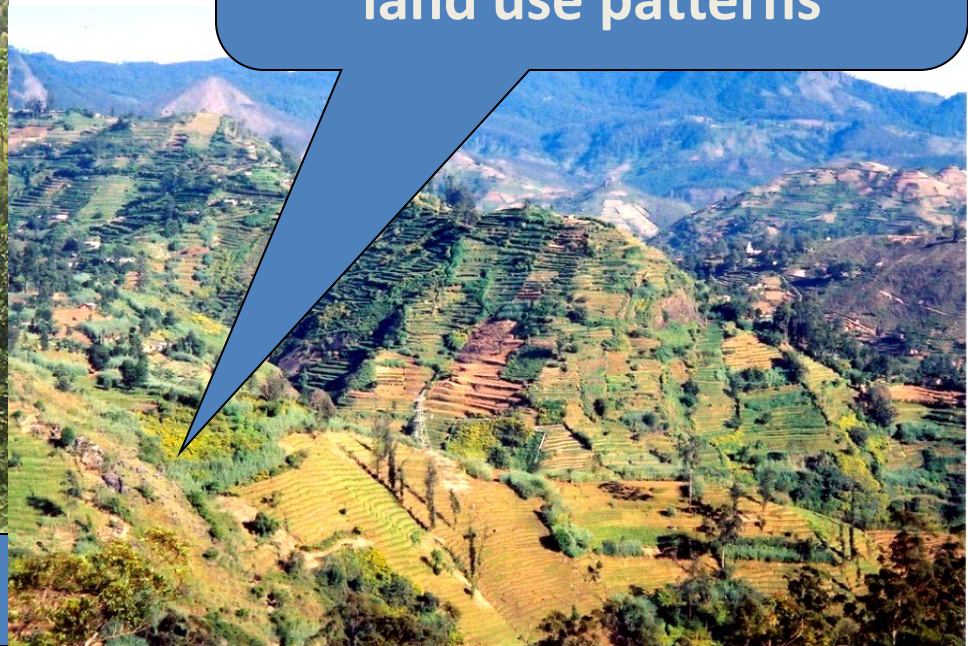
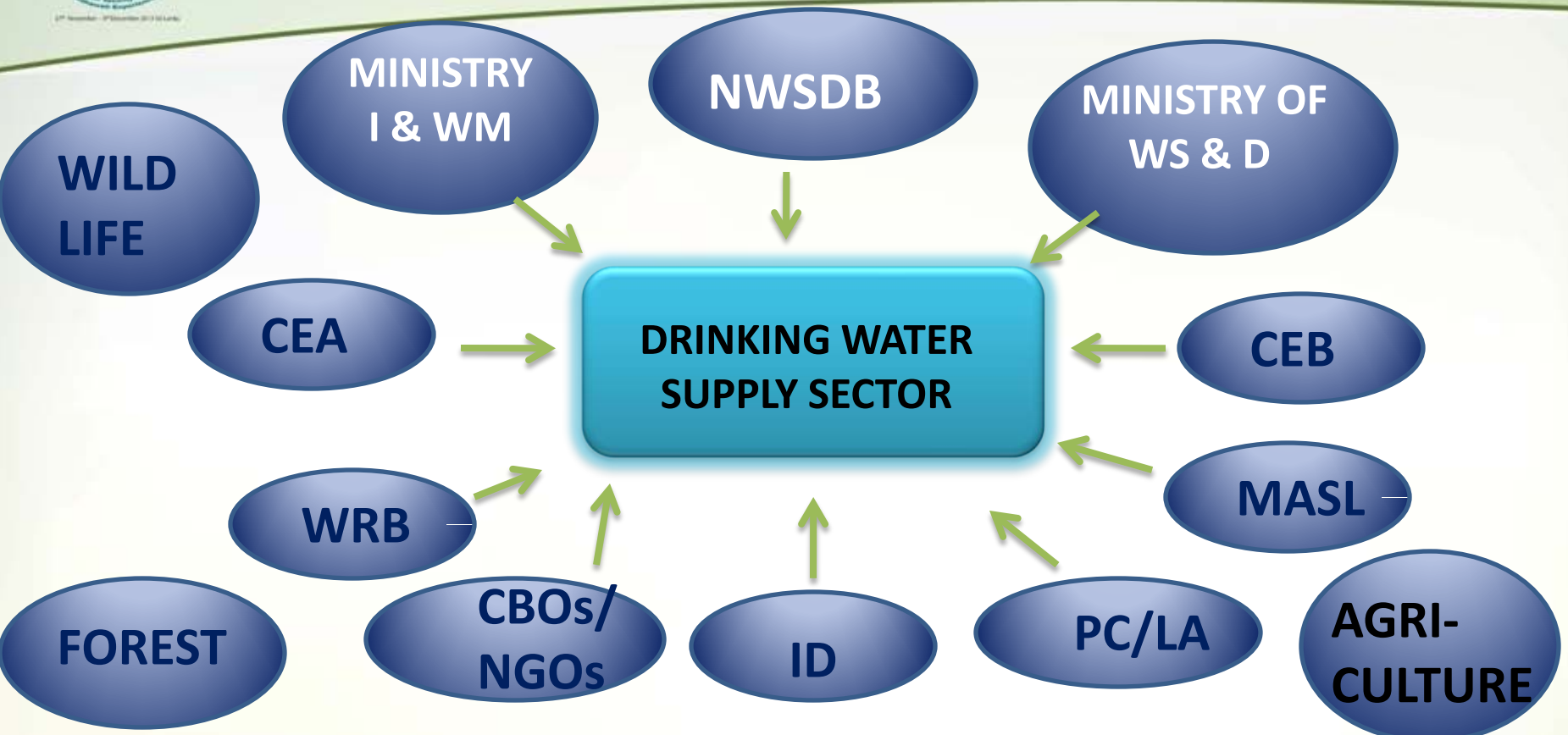
Destroying vegetation cover in the riparian zone

Soil erosion due to improper land use patterns

Deforestation



Key Water Sector Stakeholders



WS &D - *Water Supply & Drainage*
I&WM - *Irrigation & Water Management*
MASL - *Mahaweli Authority of Sri Lanka*
CEB - *Ceylon Electricity Board*
ID - *Irrigation Department*

WRB - *Water Resources Board*
CEA - *Central Environmental Authority*
CBOs - *Communication Base Organizations*
PC - *Provincial Councils*
LA - *Local Authorities*
NGOs - *Non Government Organizations*

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Algae in Kalawewa, Nuwara wewa and Turuwila reservoirs in Anuradhapura District

	Kalawewa	Nuwara wewa	Thuruwila
Cyanobacteia	5 species	5 species	6 species
Chlorophyta	9 species	7 species	6 species
Diatom	2 species	-	2 species
Dianoflagel.	1 species	-	
Dominant	*Melosira* sp.	*Anabaena* sp.	*Anabaena* sp.
	20278 cells/ ml	165000 cells/ ml	1710000 cells/ ml
Co-dominant	*M. aeruginosa*	*M. aeruginosa*	*M. aeruginosa*

Lessons Learned (Contd..)

- Overuse of chemical fertilizers and pesticides; present in detectable levels
- Quality issues in Ground Water resulting in more priority for surface water.
- Haphazard discharge/ disposal of toxic industrial waste, human waste and solid waste to water bodies; acute and chronic diseases .
- Non- availability accurate low flow measurements ; dilemma for planning
- Lapses in Regional, urban and land use planning.

Diverted wastewater and sewer outlets directly to the water bodies

The Way Forward

- A National Water Policy or a Mahaweli River Basin Policy !
- Ensuring minimum environmental flows based on real-time flow and demand data.
- Continuous Water Quality Monitoring and Surveillance by MASL along the river basin together with all stakeholders . (To Establish a baseline.)

The Way Forward (Contd…)

- Identifying, locating and mapping urban/domestic waste, industrial waste and solid waste pollution sources along the river basin using a practical mechanism.
- Introducing and maintaining new/dedicated reservoirs for extreme events (Climate Change)
- New Projects to Cover Water Stressed Areas

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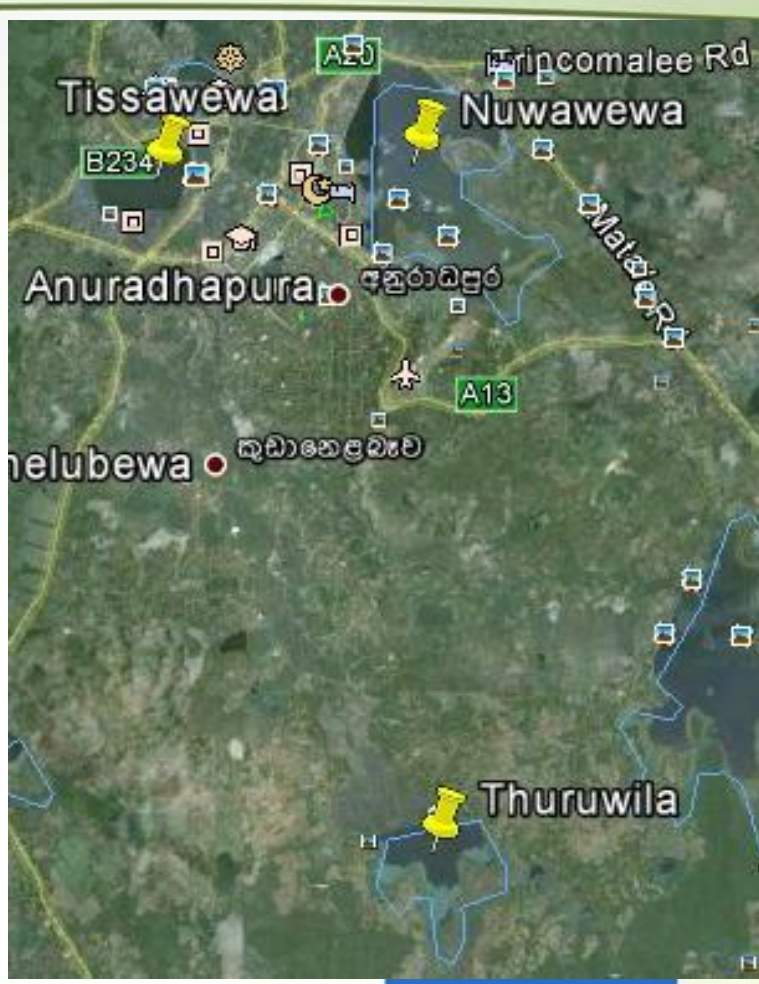
The Way Forward (Contd..)

- Launching of catchment/ watershed protection programs in selected priority catchments and watersheds of the river basin
- Per capita demand reassessment and management including incentives for Water Re-use and Re-cycling for all sectors
- Participatory Regional/Urban physical planning along the river basin in consultation with stakeholders .



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The Way Forward (Contd..)

- Strengthening the capacities of regional/ local stake holders for better river management.
- Adequate minimum surface water for the provision of safe drinking water to CKDu prevalent areas.

Summary

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THANK YOU !

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