

National Water Supply and Drainage Board: Access to Safe Drinking Water and Sanitation to All



Welcome

The session will start soon

Time (SGT)	Agenda	Presented by
3:00 pm	Opening & Housekeeping	Singapore Water Association
3:05 pm	Welcome Address by NWSDB	Ms. Eng. Wasantha Illangasinghe AddlGM (Policy & Planning)
3:10 pm	Presentation by NWSDB	Mr. Eng. Thilina Wijetunga General Manager
3:45 pm	Q & A	NWSDB, Singapore Water Association
3:55 pm	Closing Remarks	Singapore Water Association



enquiry@swa.org.sg
T: (65) 6515 0812



24 March 2022
SGT: 3.00pm GMT: +8



Speakers



Dr Eng. Wasantha Illangasinghe
AddlGM (Policy & Planning)

Dr Eng. Wasantha Illangasinghe graduated from the University of Peradeniya with B. Sc. (Hons) in Engineering (Civil) in 1984. In 1999, she has obtained Master's Degree, M. Eng. (Infrastructure Management) from Yokohama National University, Japan. In 2019, she has obtained PhD in Civil Engineering from University of Moratuwa, specialized in water treatment.

She was appointed as the Director of Centre of Excellence for Water and Sanitation (cewas), a strategic business unit newly established by NWSDB to move forward the organisation functions, manpower development and training, research and development and water/ wastewater quality in collaboration with national and international organisations



Mr Eng. Thilina Wijetunga
General Manger

Mr Eng. Thilina S. Wijethunga is working as e General Manager of National Water Supply and Drainage Board. The National Water Supply Drainage Board which presently functions under the Ministry of Water Supply the principal authority providing safe drinking water and facilitating the provision of sanitation in Sri Lanka.

Mr Eng. Thilina S. Wijetunge obtained his basic degree in B.Sc (Civil Engineering) from the University of Peradeniya in 1985. He joined NWSDB in 1986 as a junior Engineer and went on to obtain the Membership of the Institution of Engineers (Sri Lanka) becoming a Chartered Civil Engineer in 1991.



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National Water Supply and Drainage Board: **Access to Safe Drinking Water and Sanitation to All**

Welcome Address



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WATER AS A LIFESOURCE SRI LANKA

DR. ENG. WASANTHA ILLANGASINGHE

MINISTRY OF WATER SUPPLY

NATIONAL WATER SUPPLY & DRAINAGE BOARD



A blue train is crossing a stone arch bridge over a lush green forest. The bridge has multiple arches and is surrounded by dense tropical vegetation. The train is moving from left to right. The background shows a steep, forested hillside with many palm trees. The sky is overcast.

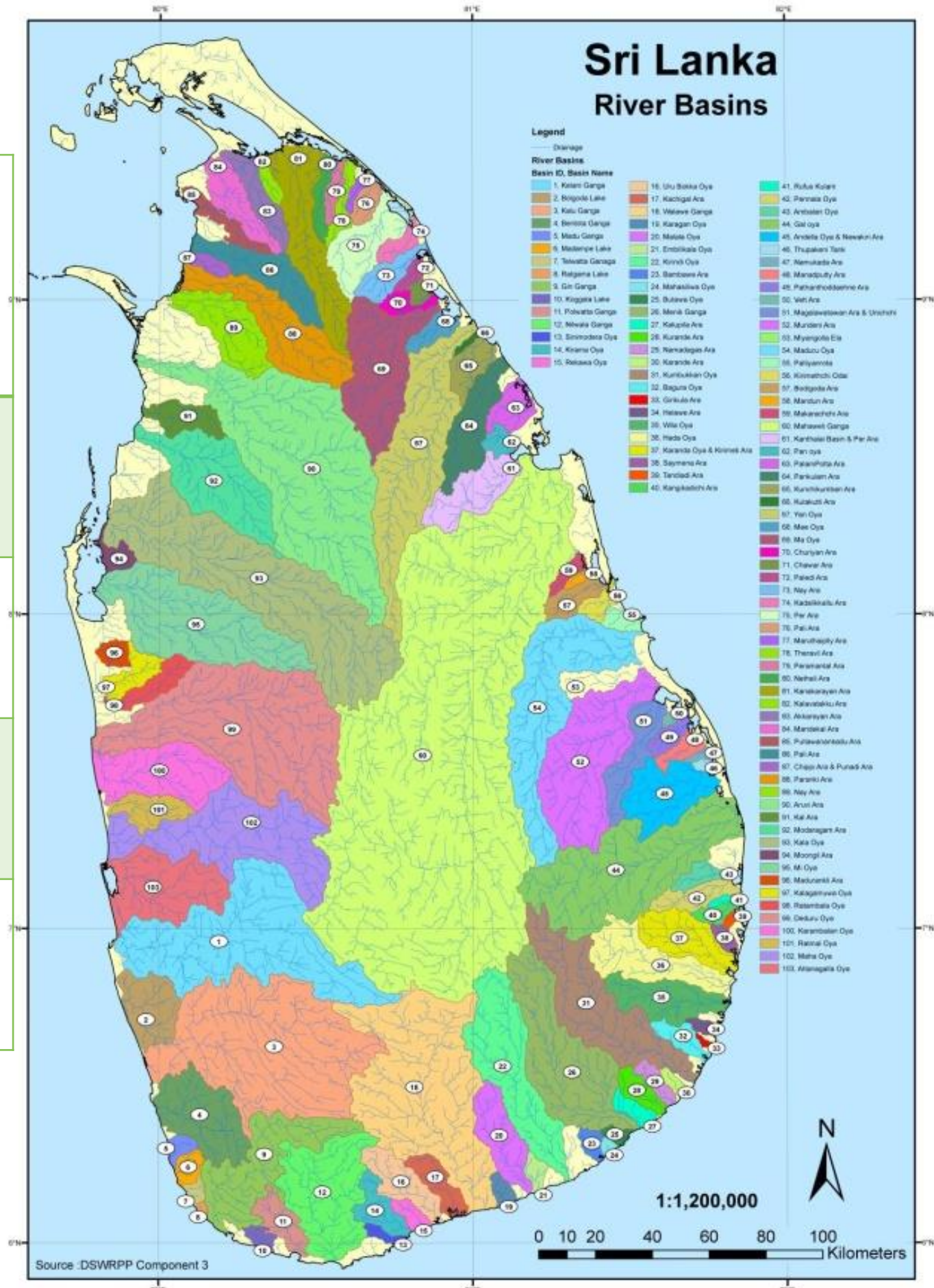
CONTENTS

- COUNTRY PROFILE
- CLIMATE CHANGE AND ITS EFFECTS
- PARIS AGREEMENT, SRI LANKA NDCs
- CASE STUDIES – SRI LANKA
- WAY FORWARD

POPULATION & WATER SOURCES

- 80 Km southeast to the Indian Subcontinent
North Latitude 5° 55' & 9° 50'
East Longitude 79° 31 & 81° 53'
 - Area 65,612 km²
Land 62,709 km²
Inland waters 2905 km²
 - Coastline 1585 km
- Mid year population (2020) - 21M
 - Population Density - 350 persons / sq.km
 - Average Household size - 3.8 persons
 - Expectation of Life at Birth (2017) - 75.5 years
 - Literacy Rate (2019) - 92.9 %

Water Source	No
River Basins	103
Ramsar Wetlands	06
Major Reservoirs	73
Medium Reservoirs	171

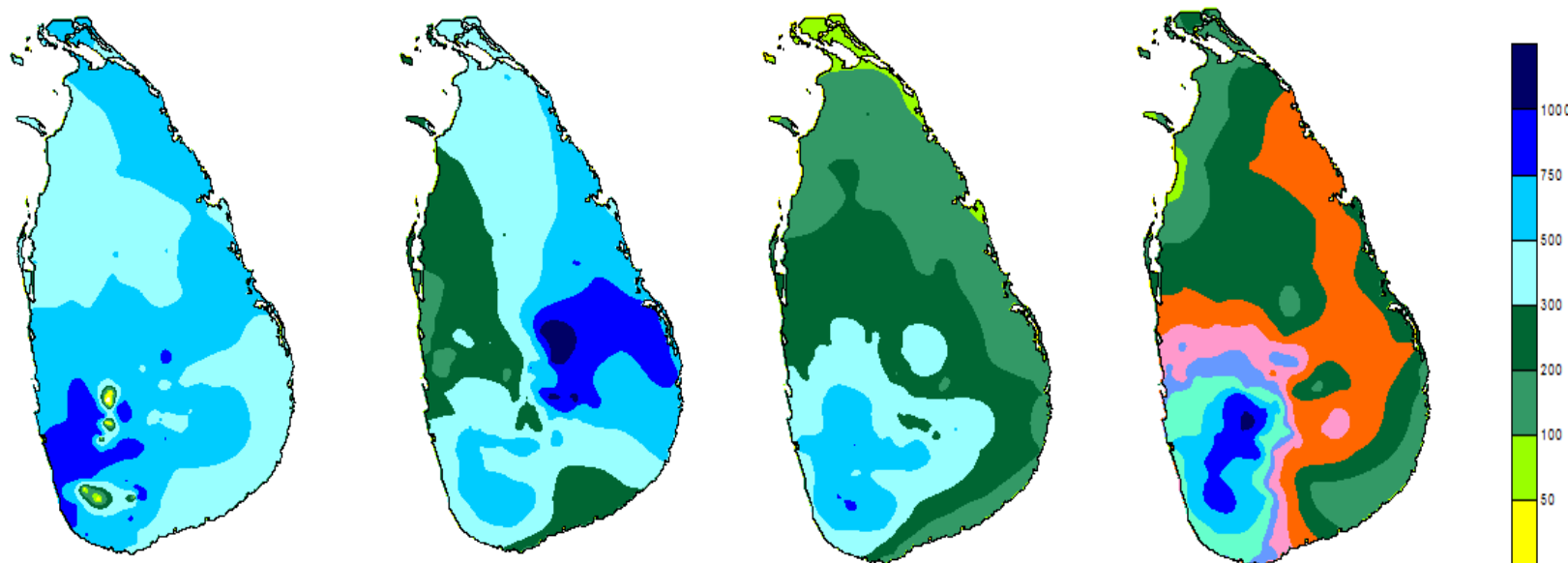
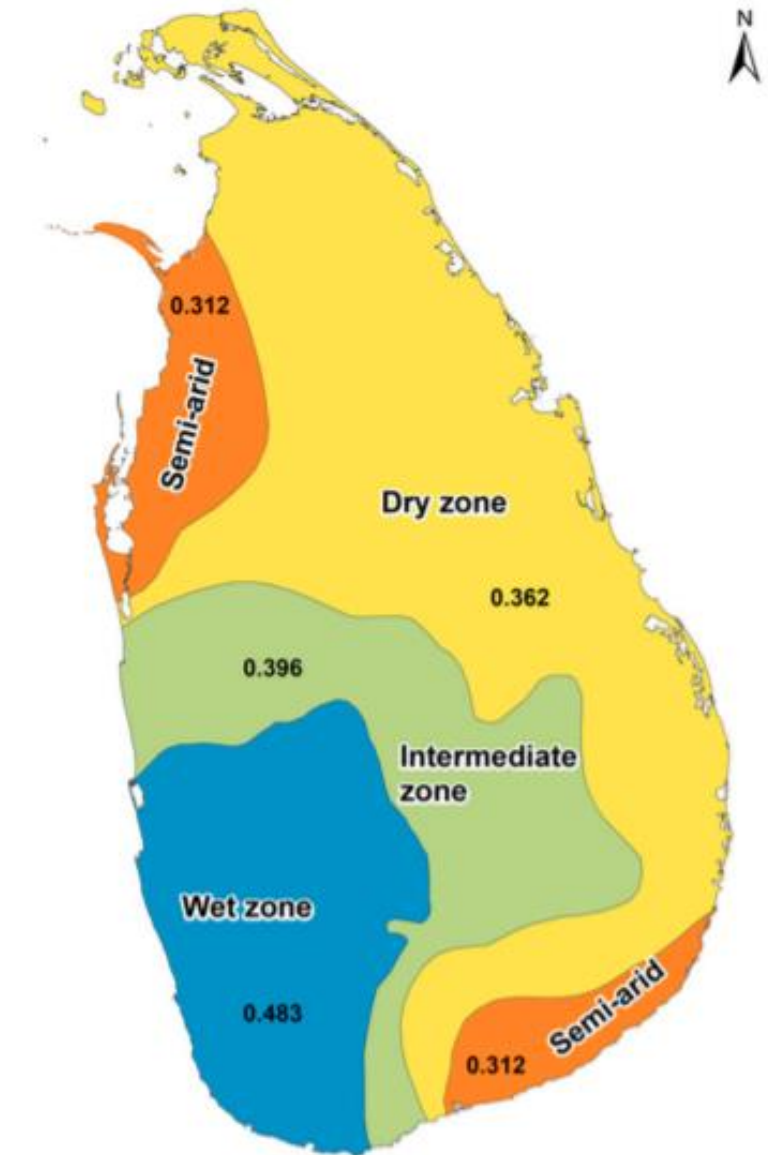


CLIMATE – TROPICAL WITH MONSOON RAINS

TOPOGRAPHY - FLAT WITH CENTRAL HILLS

- Four major climatic zones (Avg. rainfall/year mm)

1. Wet zone	: > 2500
2. Intermediate Zone	: 1900-2500
3. Dry Zone	: 1200-1900
4. Semi Arid Zone	: 800-1200



- | | | | |
|----|----------------------------|-----------------|------|
| 1. | First Inter Monsoon (FIM) | : March – April | 14 % |
| 2. | South West Monsoon (SWM): | May – Sept. | 30 % |
| 3. | Second Inter Monsoon (SIM) | : Oct. – Nov. | 30 % |
| 4. | North east Monsoon (NEM) | : Dec. – Mar. | 26 % |



ANCIENT WATER CULTURE 367 BC
COMMUNITY CENTERED, HOLISTIC, TECHNOLOGY RICH



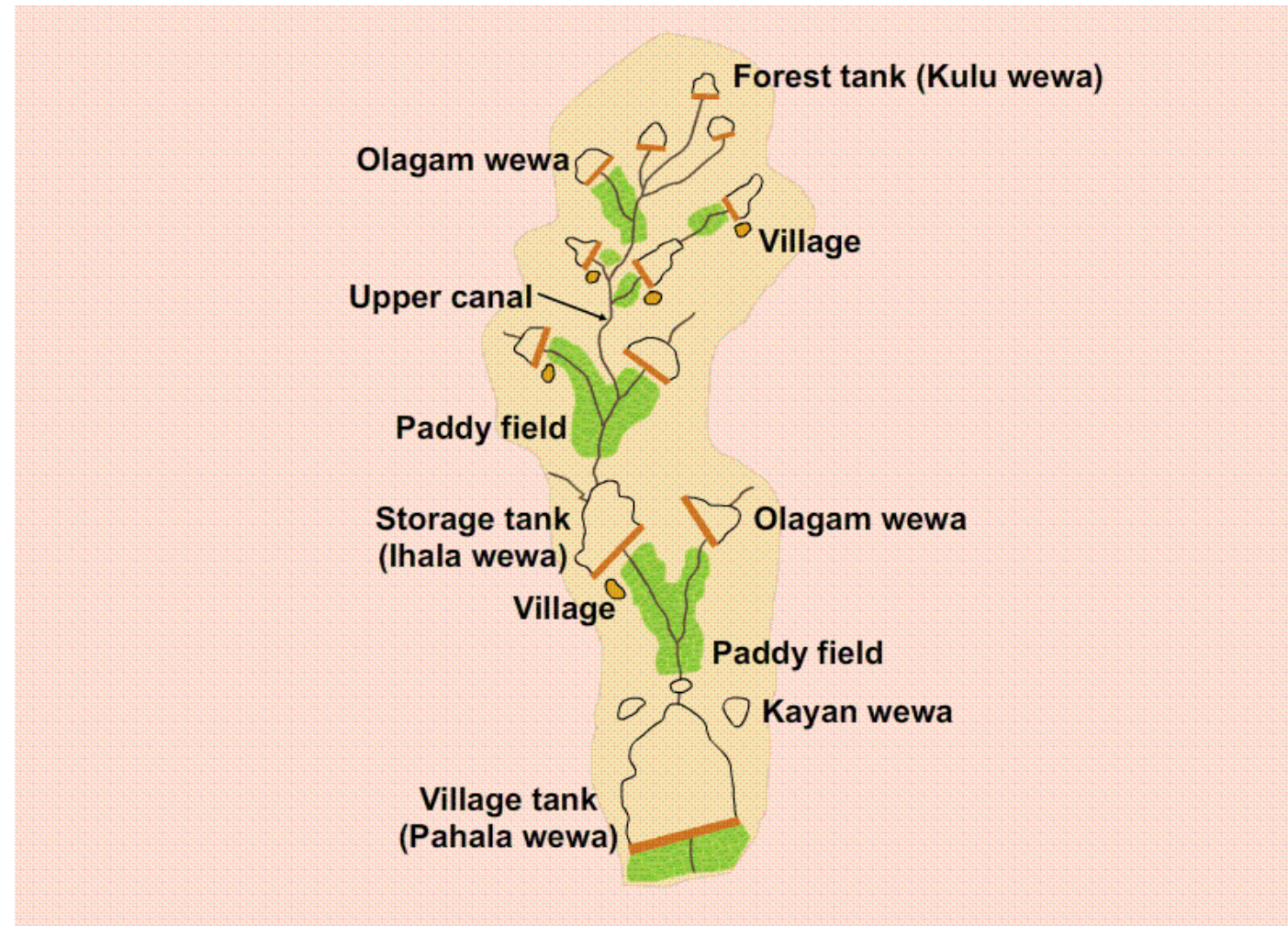
Abaya wewa Anuradhapura

437 BC to 367 BC

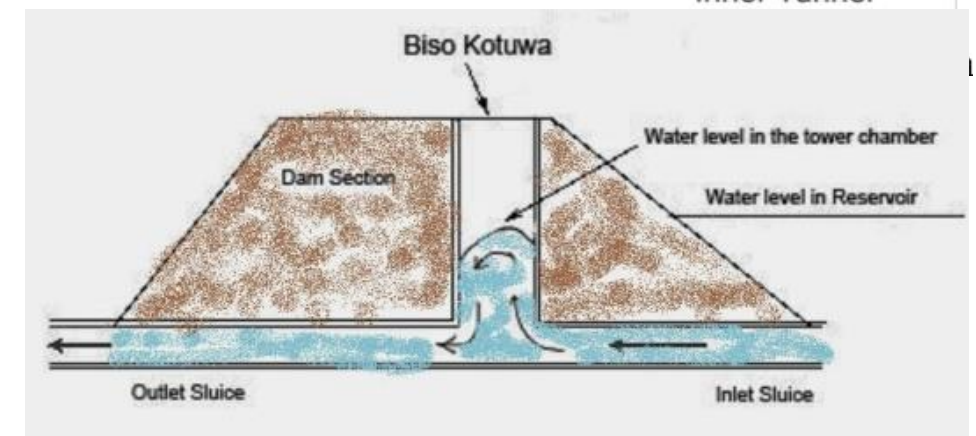
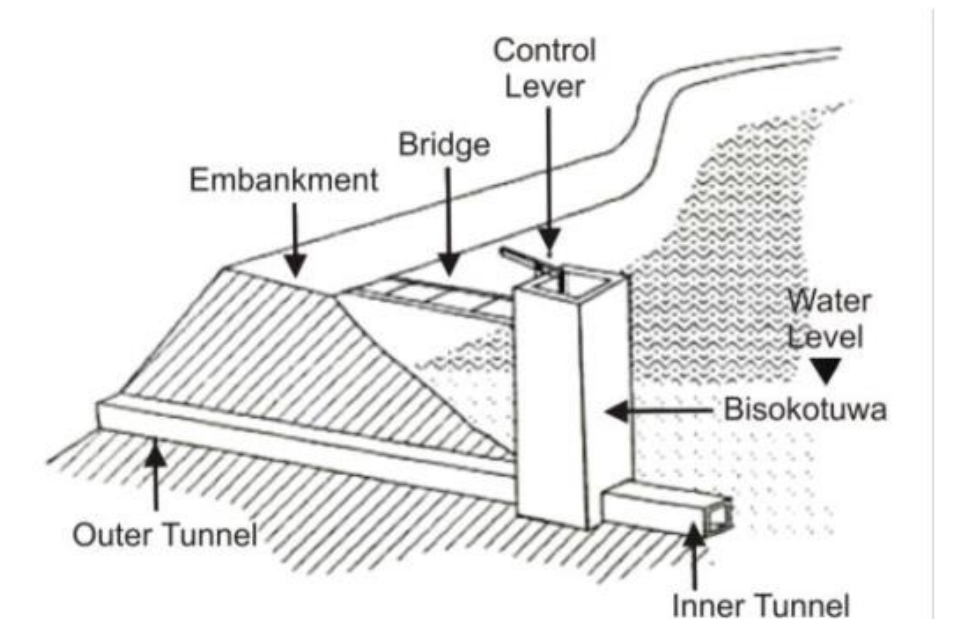


Yoda Ela (Jaya Ganga) 459 AD

**A trans basin diversion from Thisa wewa to Kala wewa
- 87 km - gradient of ~ 10 cm/ km**



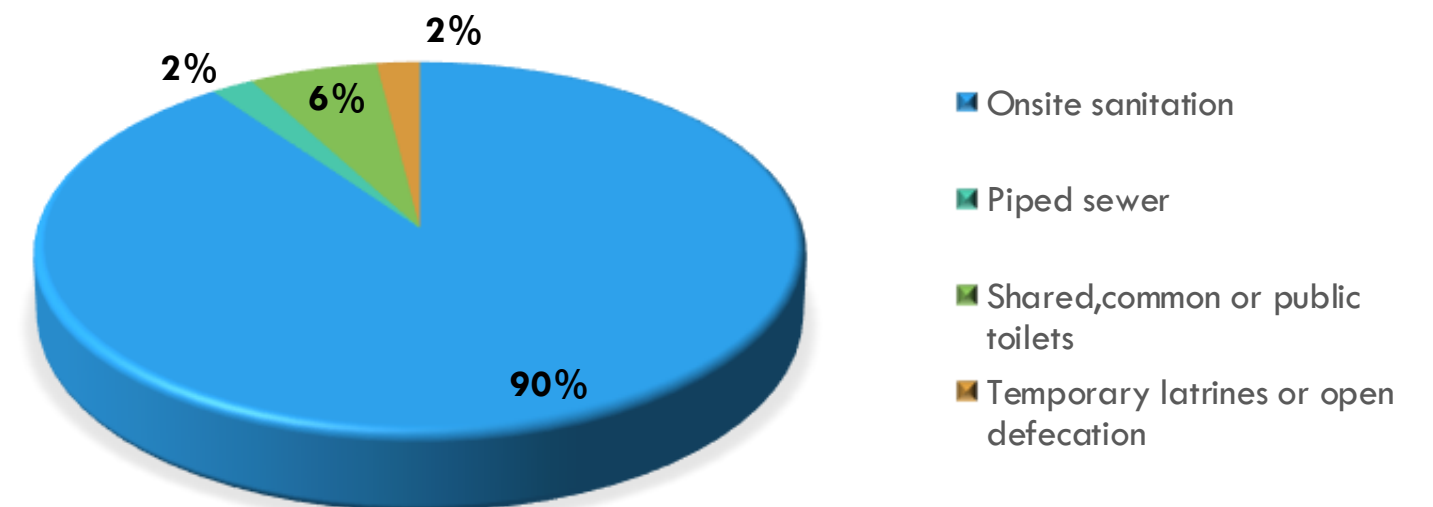
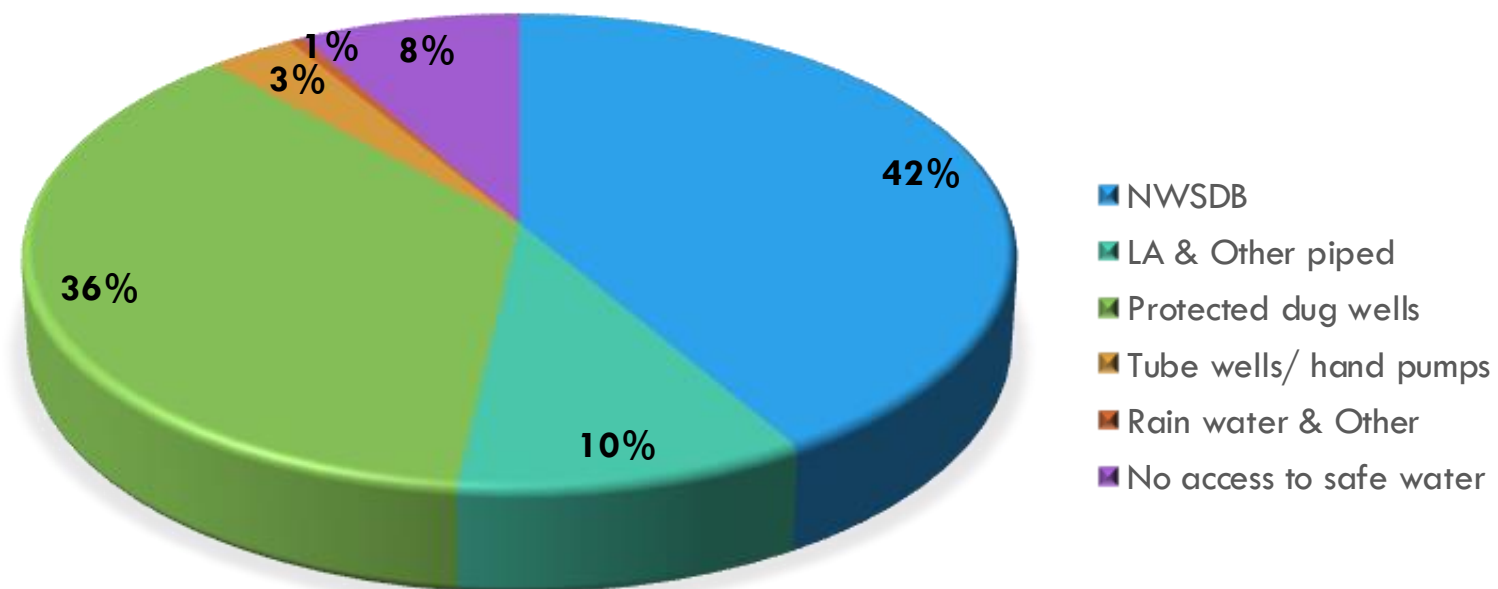
Cascade Tank System



**Biso Kotuwa 300 AD
equivalent of the modern
valve-pit**

ACCESS TO WATER AND SANITATION 2020

- **Piped water coverage** – 53% (NWSDB 43%, LA and other 10%)
- **Sanitation coverage** – 90% onsite, 2% piped sewer



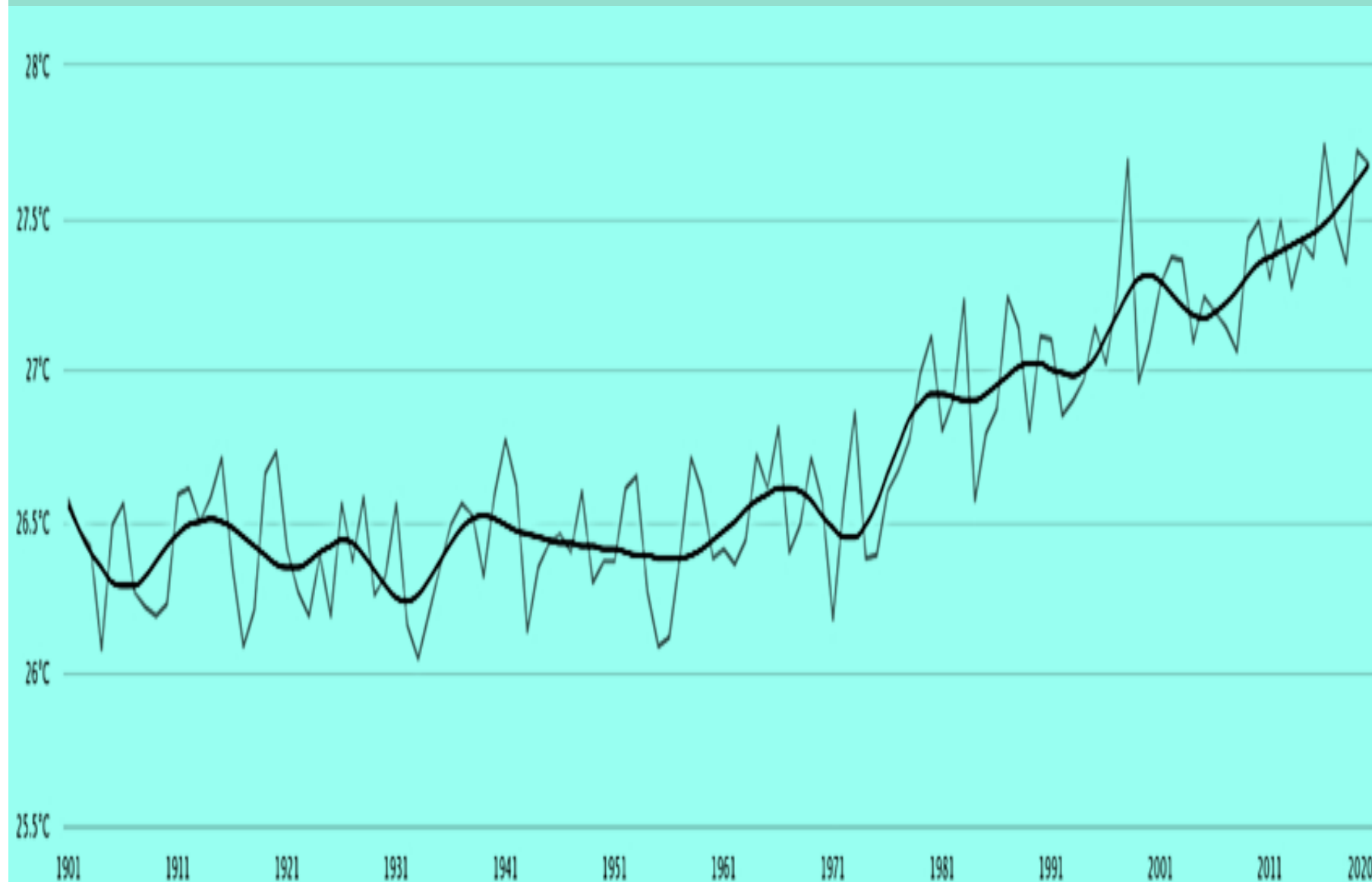


CLIMATE CHANGE AND ITS EFFECTS

CLIMATE CHANGE IN SRI LANKAN CONTEXT

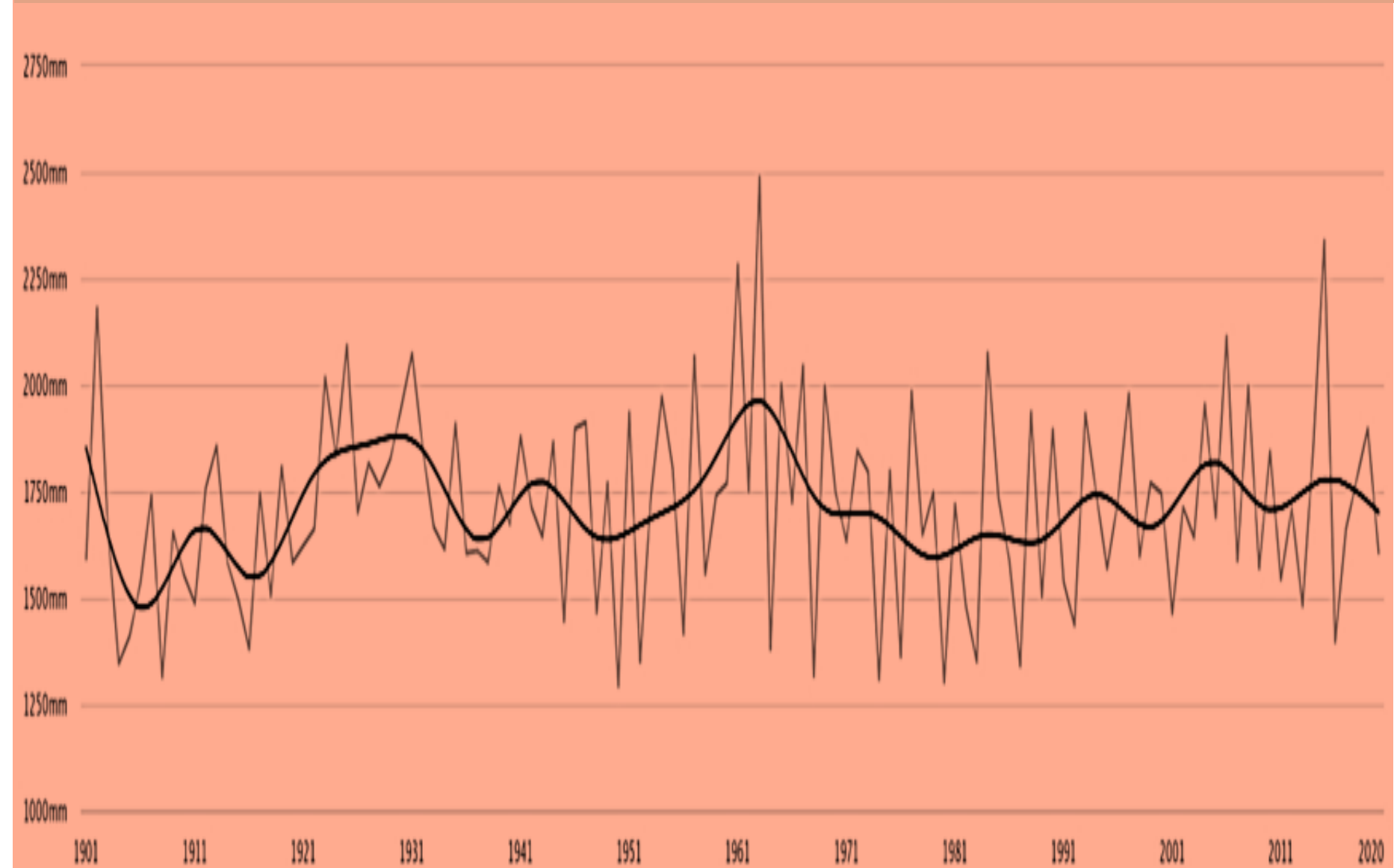
IS IT REAL?

Observed Average Annual Temperature of Sri Lanka 1901-2020



Temperature Rise – 0.8°C

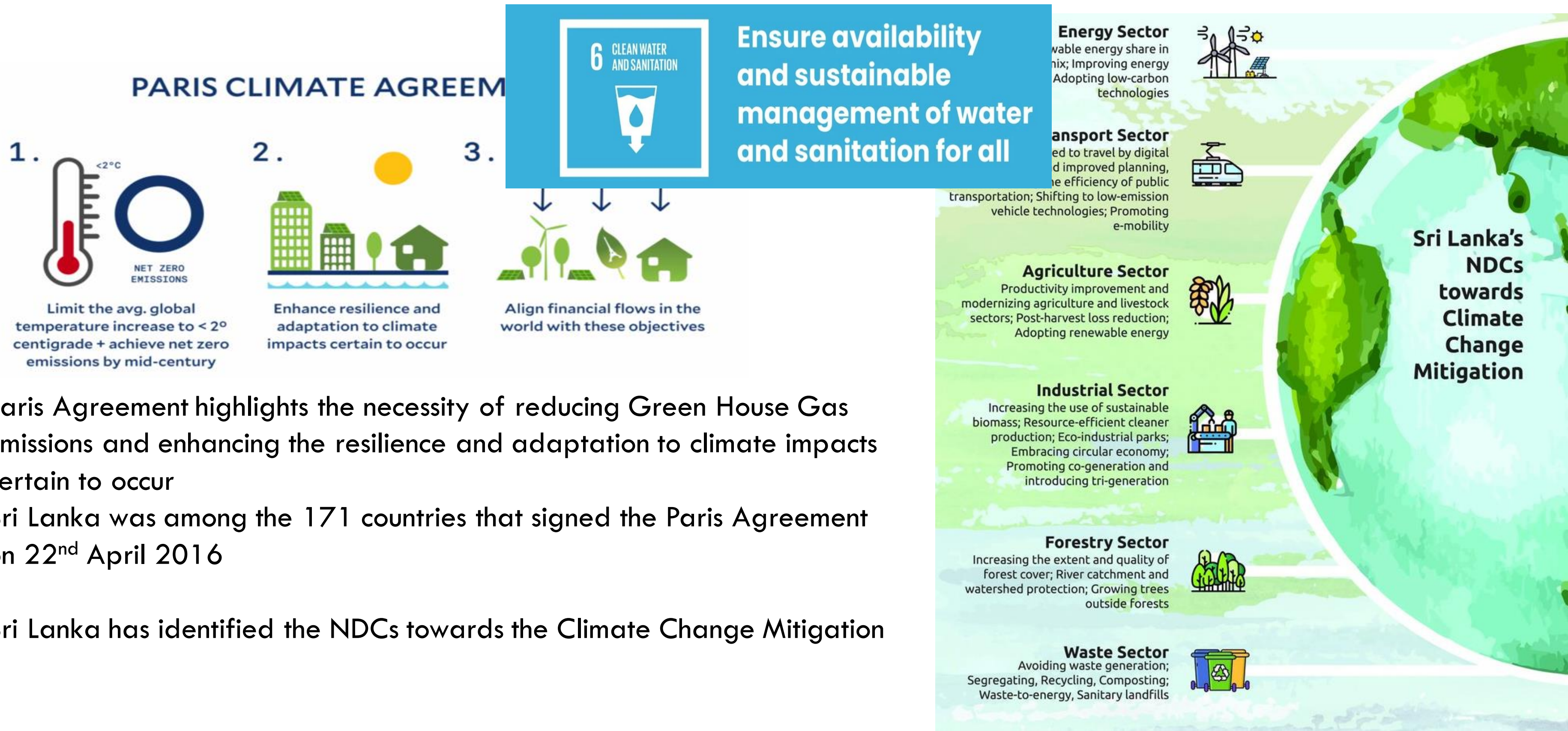
Observed Average Annual Rainfall of Sri Lanka 1901-2020



Decrease of Rainfall 7%

- The number of consecutive dry days has increased
 - Consecutive wet days has decreased
- Frequency of extreme events (Floods and droughts) has increased

PARIS AGREEMENT AND SRI LANKA'S NDCs TOWARDS CLIMATE CHANGE MITIGATION



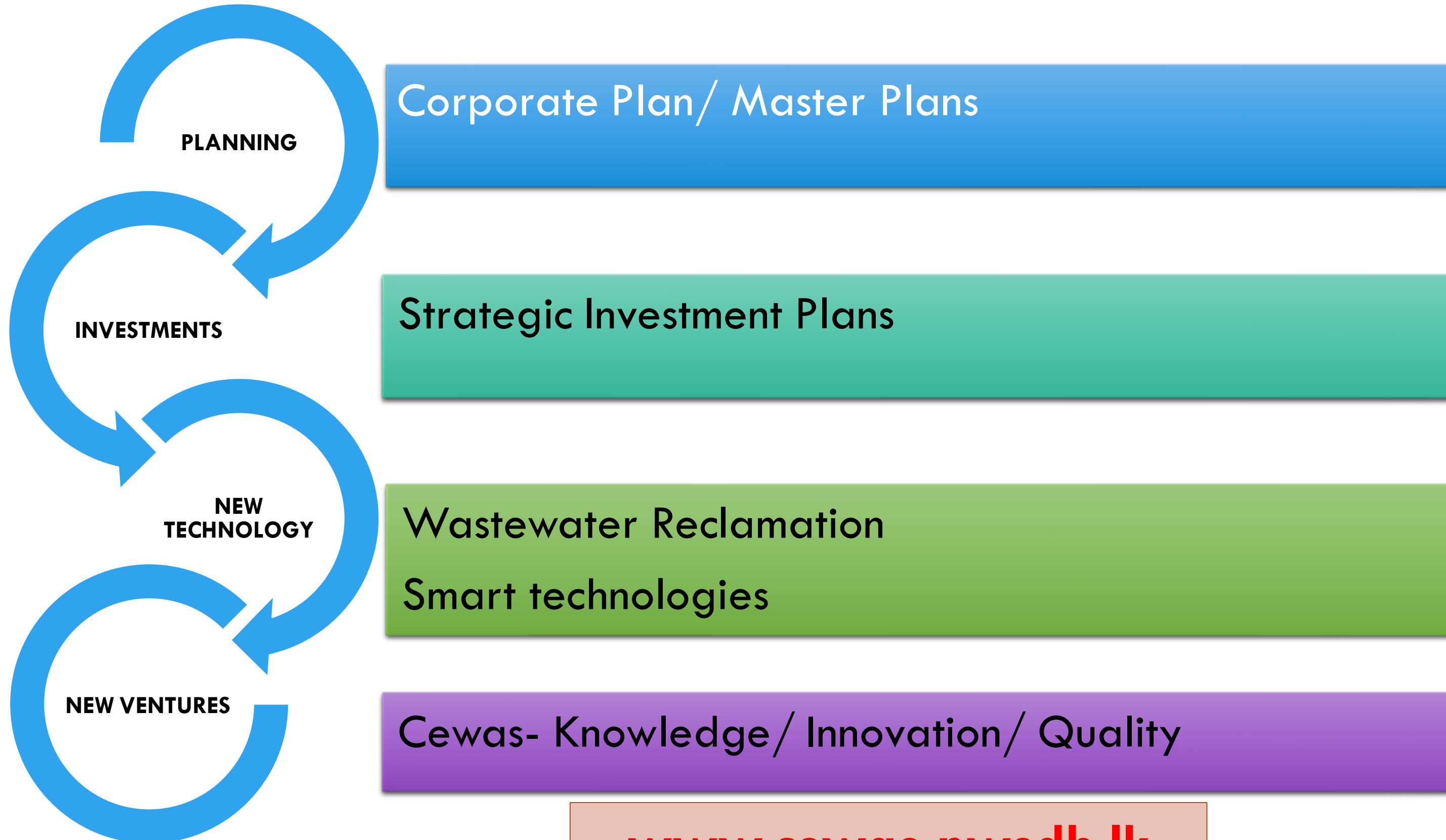
- Paris Agreement highlights the necessity of reducing Green House Gas Emissions and enhancing the resilience and adaptation to climate impacts certain to occur
- Sri Lanka was among the 171 countries that signed the Paris Agreement on 22nd April 2016
- Sri Lanka has identified the NDCs towards the Climate Change Mitigation

CLIMATE CHANGE CASE STUDIES IN SRI LANKA

- **CASE 01** - Aranayake landslide due to ROANU Cyclone (May 2016)
- **CASE 02** - Floods and Droughts - Kelani River basin
 - Impacts by YAAS and TAKUKTAE cyclones (May / June 2021- 355mm in 24 hrs.)
 - Oil spill at Sapugaskanda due to flooding
 - Droughts (2017 February)



NEW DIMENSIONS FOR NWSDB



www.cewas.nwsdb.lk





THANK YOU

National Water Supply and Drainage Board: **Access to Safe Drinking Water and Sanitation to All**

Speaker



Mr Eng. Thilina Wijetunga
General Manager



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SWA Water Utilities Series Webinar - March 2022

Access to Safe Drinking Water and Sanitation to All



Eng. Thilina S Wijetunge,

B.Sc.Eng., C.Eng., FIE(SL), MBA, MA(Financial Economics), MIM(SL), Pg. Dip(Finance), ICA(SL), Dip(Mgt)-DK

**General Manager,
National Water Supply & Drainage Board, Sri Lanka**

Content

Journey towards water and sanitation for all

Water Supply coverage in Sri Lanka Present and Future

Cooperate Plan – Water for all 2020 – 2025

Comprehensive Strategic Investment Plan

Improvement Efficiency Strategies

Challenges

Sanitation Master Plan

Present and Future forecast on Sanitation

Technical Solutions

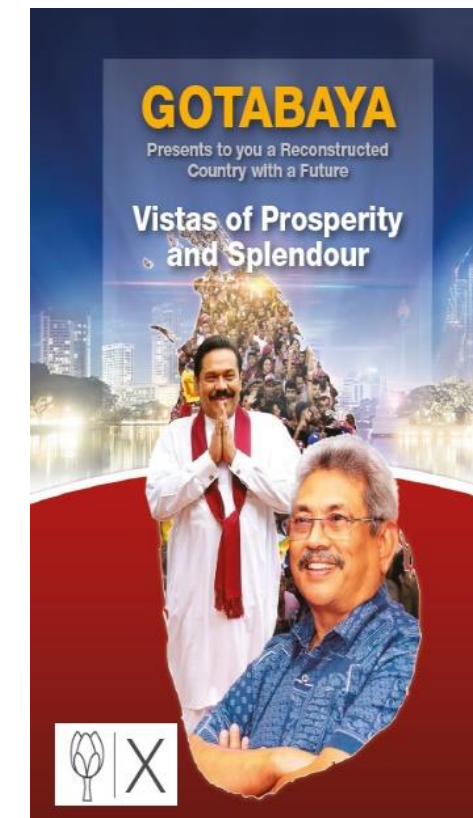
Commendable Works done during the COVID Pandemic



NWSDB Journey towards Water and Sanitation for All

- NWSDB Corporate plan –
“water for All “
- Implementation Strategy
- Budget Allocations
 - *Budget 2021 – LKR 1 Trillion for Water Supply for next three years*

18 November 2020



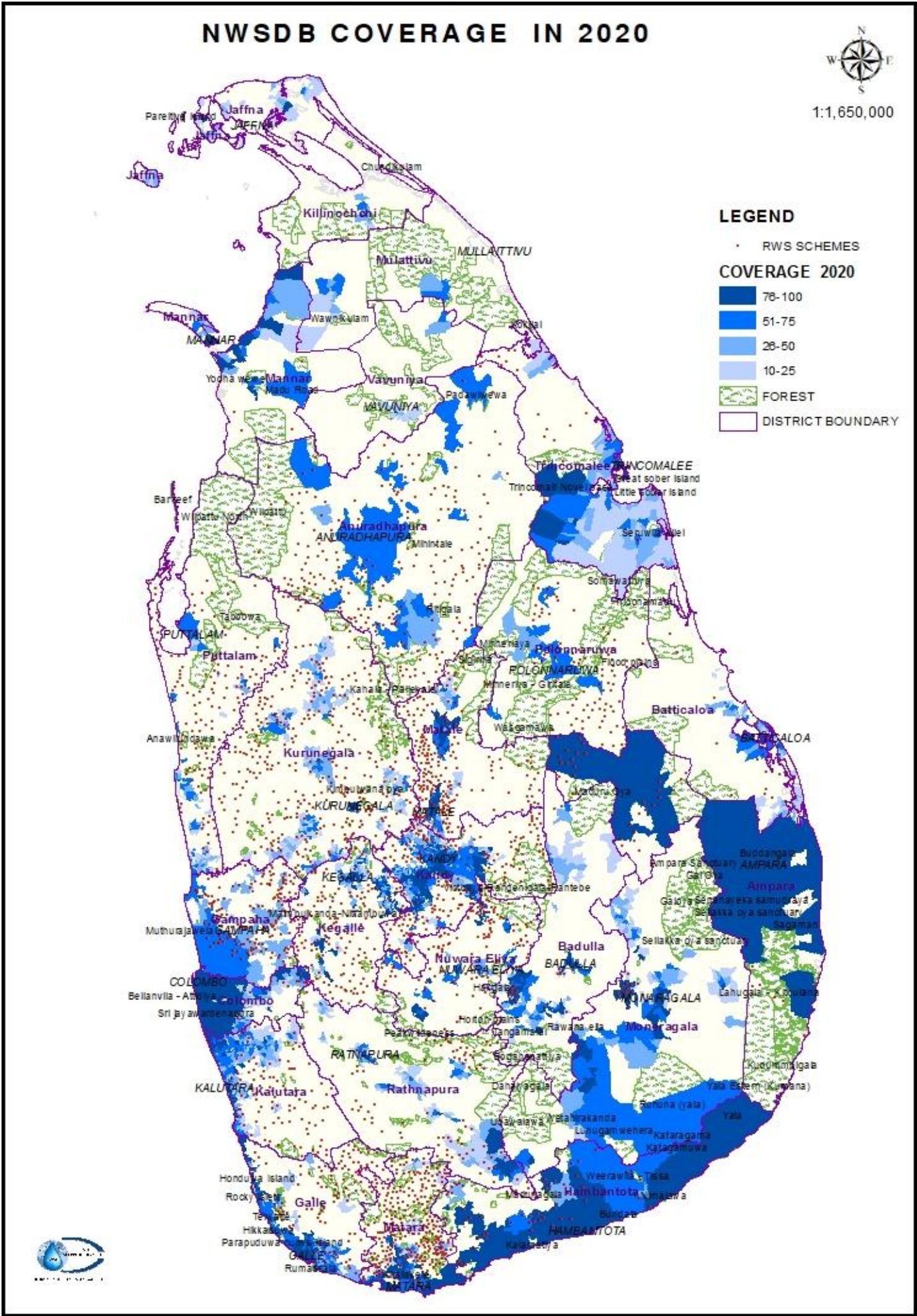
Water

Water resource management has become an important discussion point, and is vital for economic development. Only 45% of the population has access to the water supply. Water ways have also been polluted thereby compounding the problem of providing safe drinking water to all. It is our intention to meet this challenge and thereby ensure 100% of the population is provided with clean, safe pipe borne water.

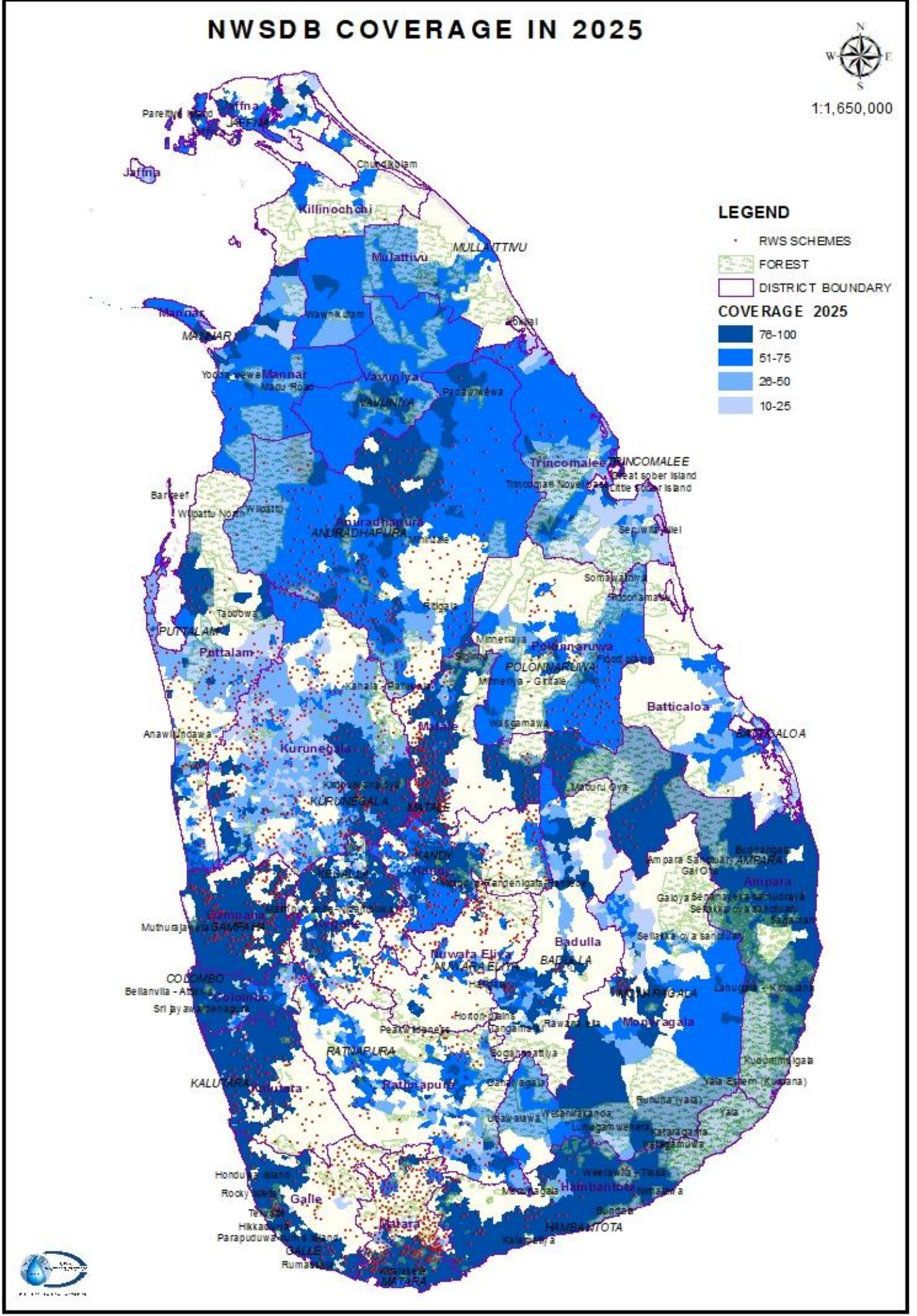
16 November 2019



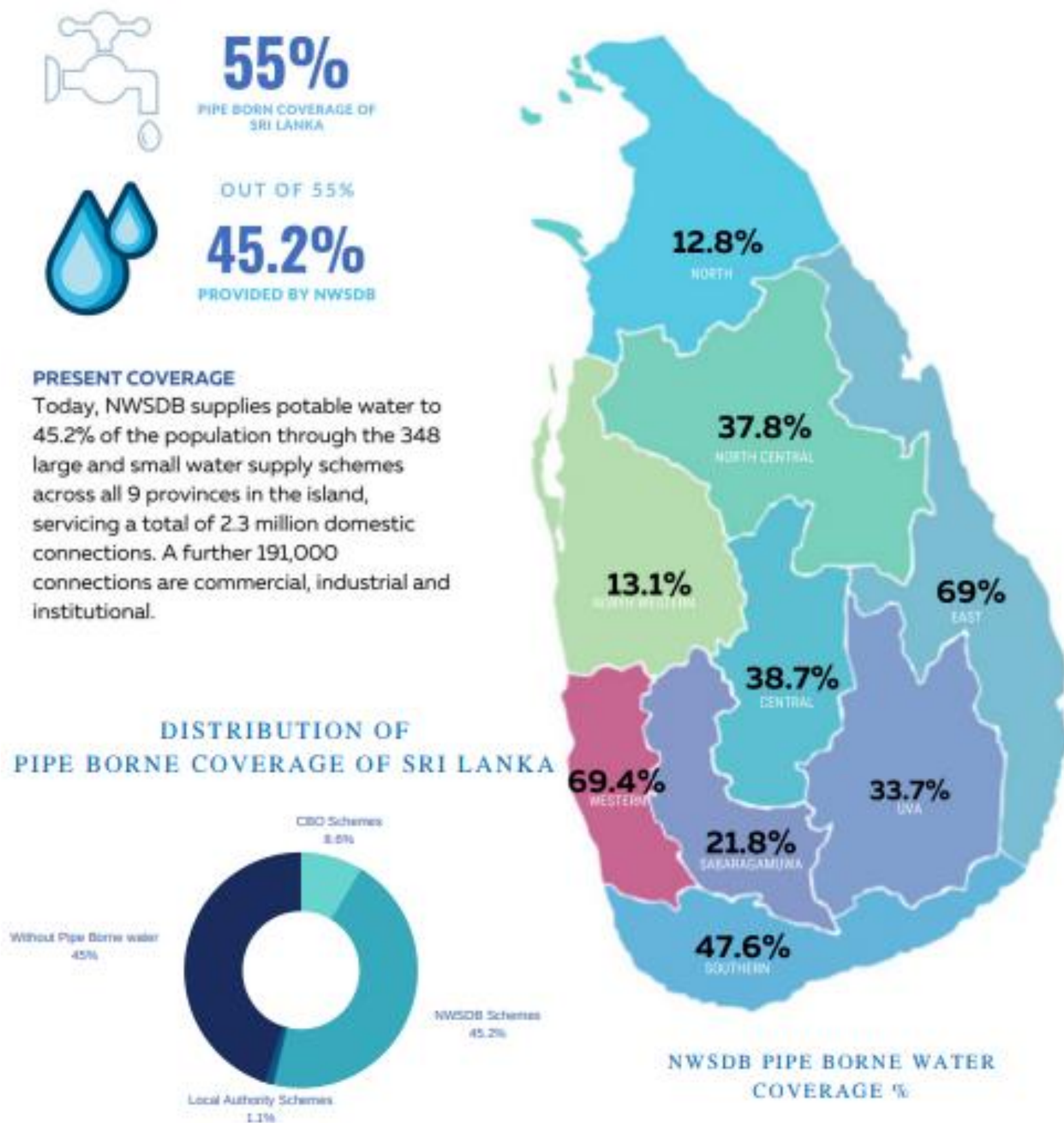
Present Coverage



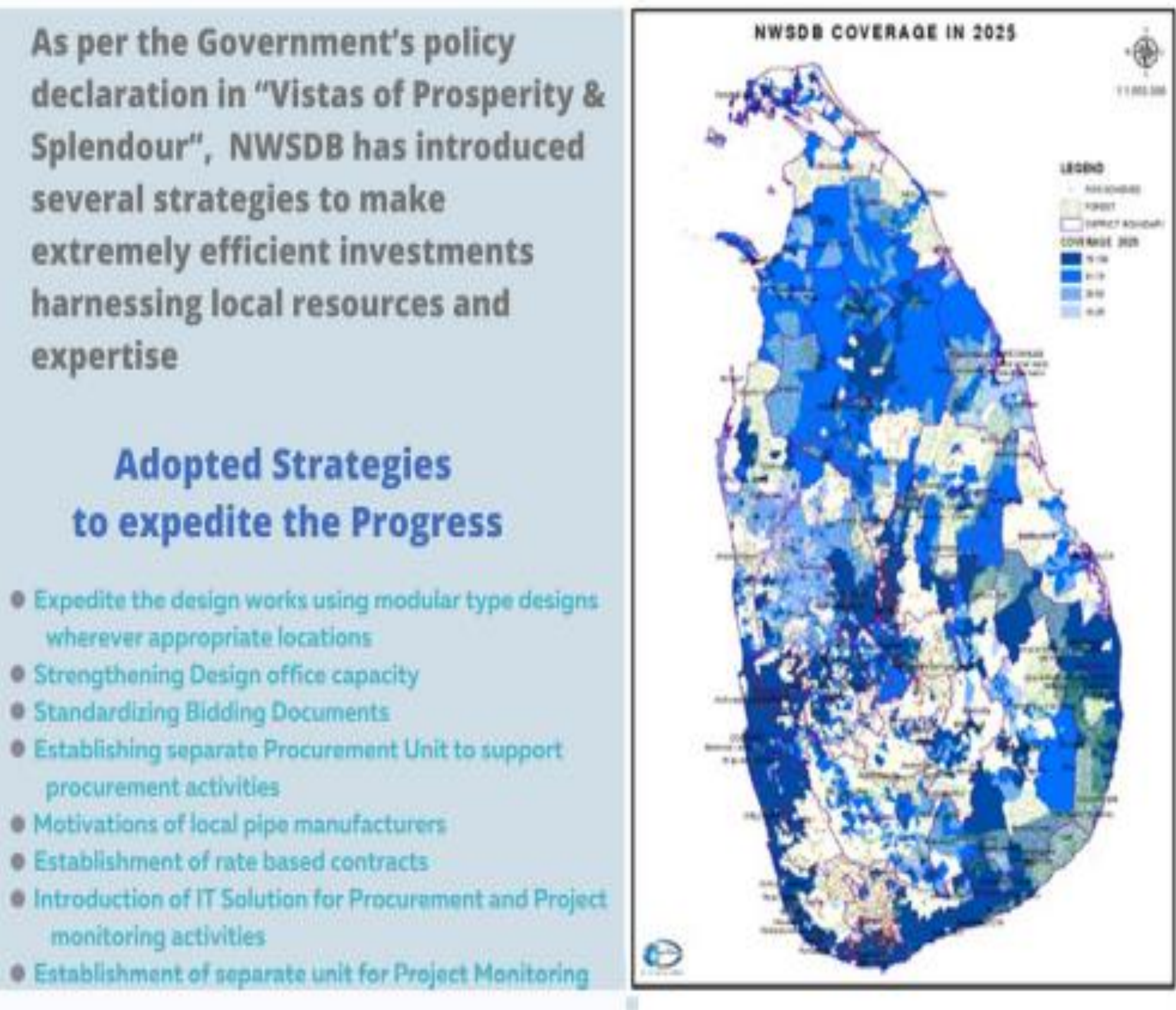
Coverage - 2025



Water Supply Coverage in 2021

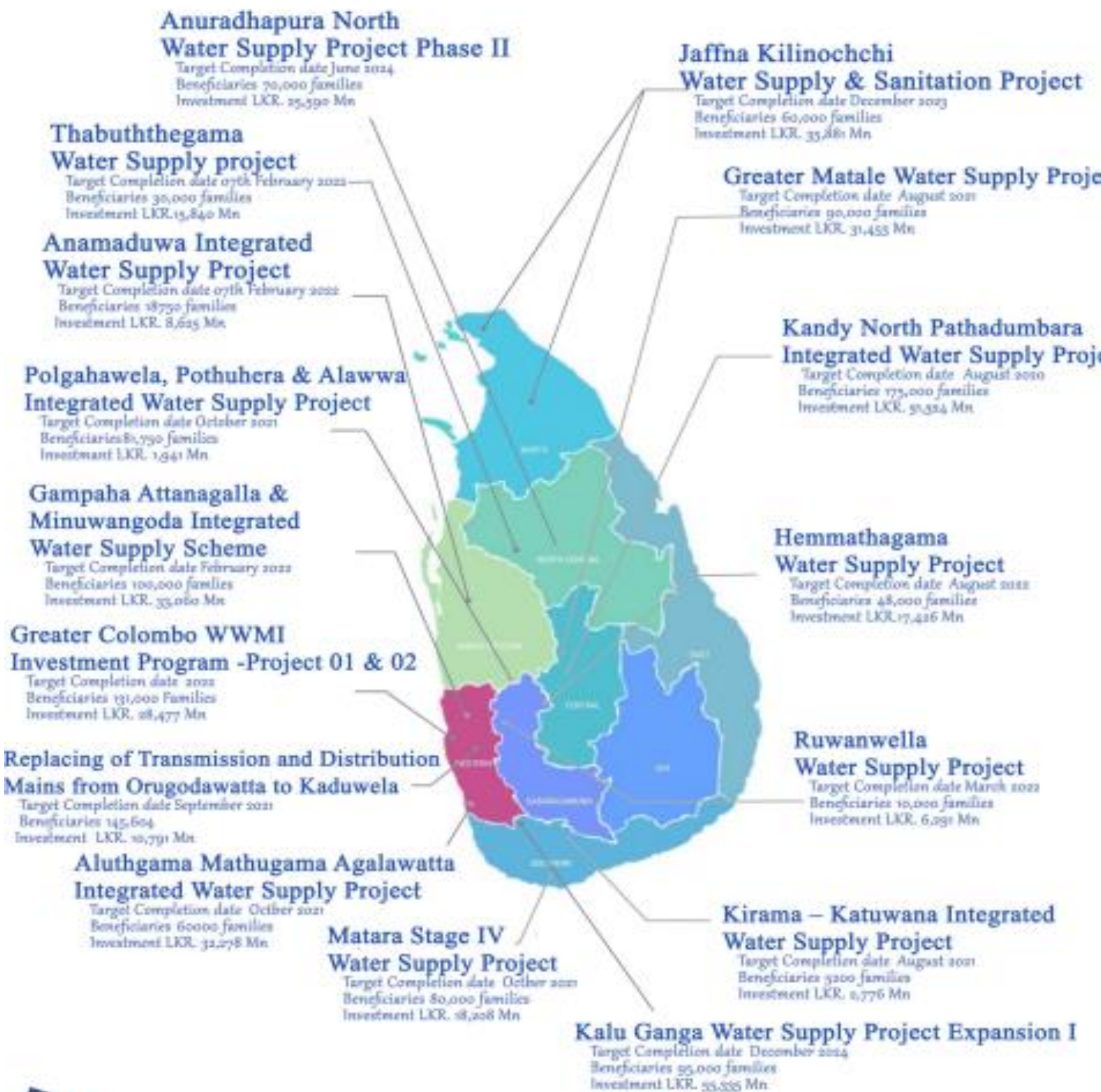
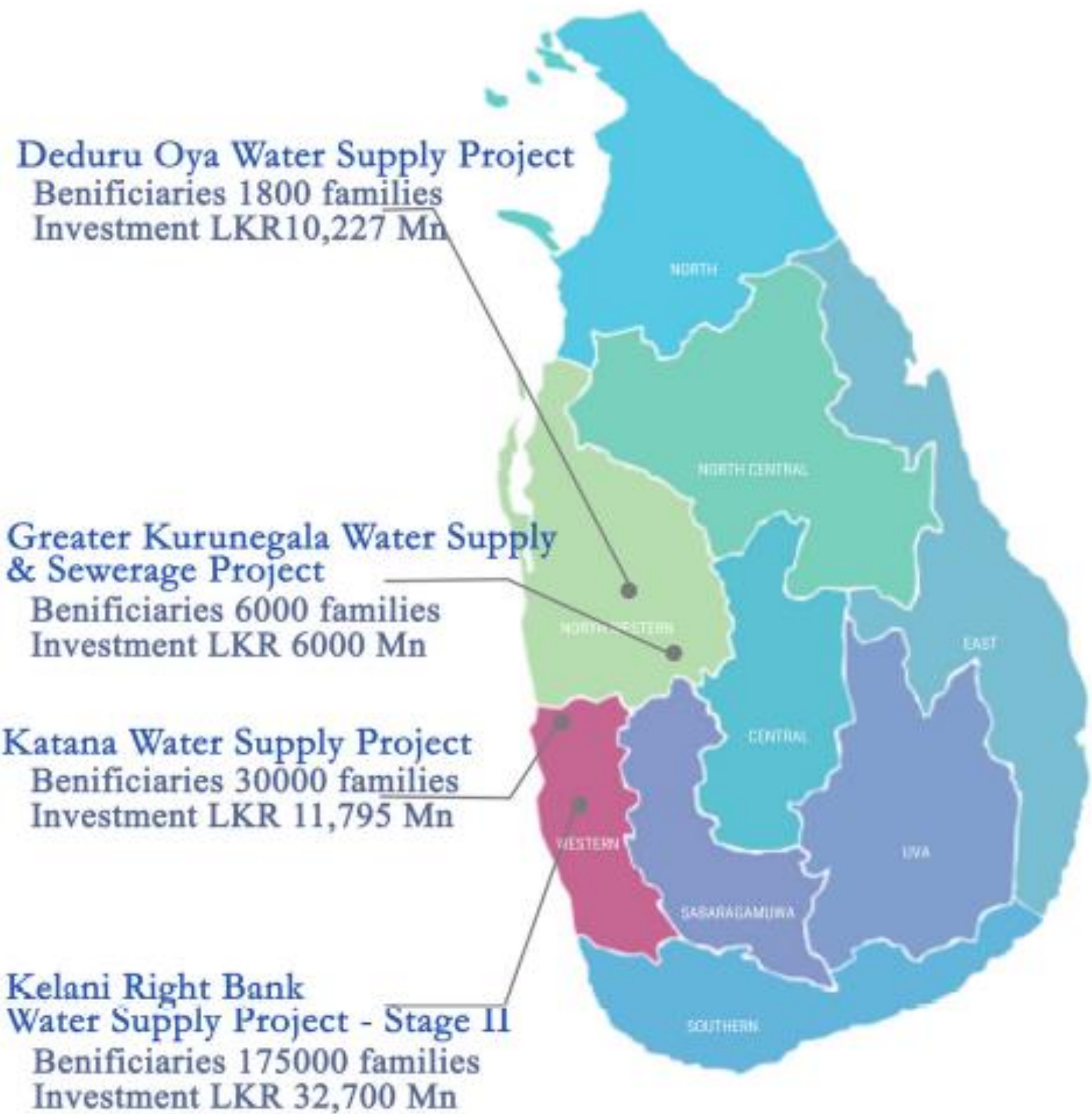


Water for All Programme



Completed Water Supply Projects

Ongoing Water Supply Projects



INVESTMENT
LKR 427,317 Mn

Recently Completed Water Supply Projects

Greater Dambulla & Greater Kurunegala Water Supply Projects



Recently completed Kalani Right Bank Water Supply Project



Recently completed Daduru Oya Water Supply Project



Deduru Oya Water Supply Project
Beneficiaries 18000 families

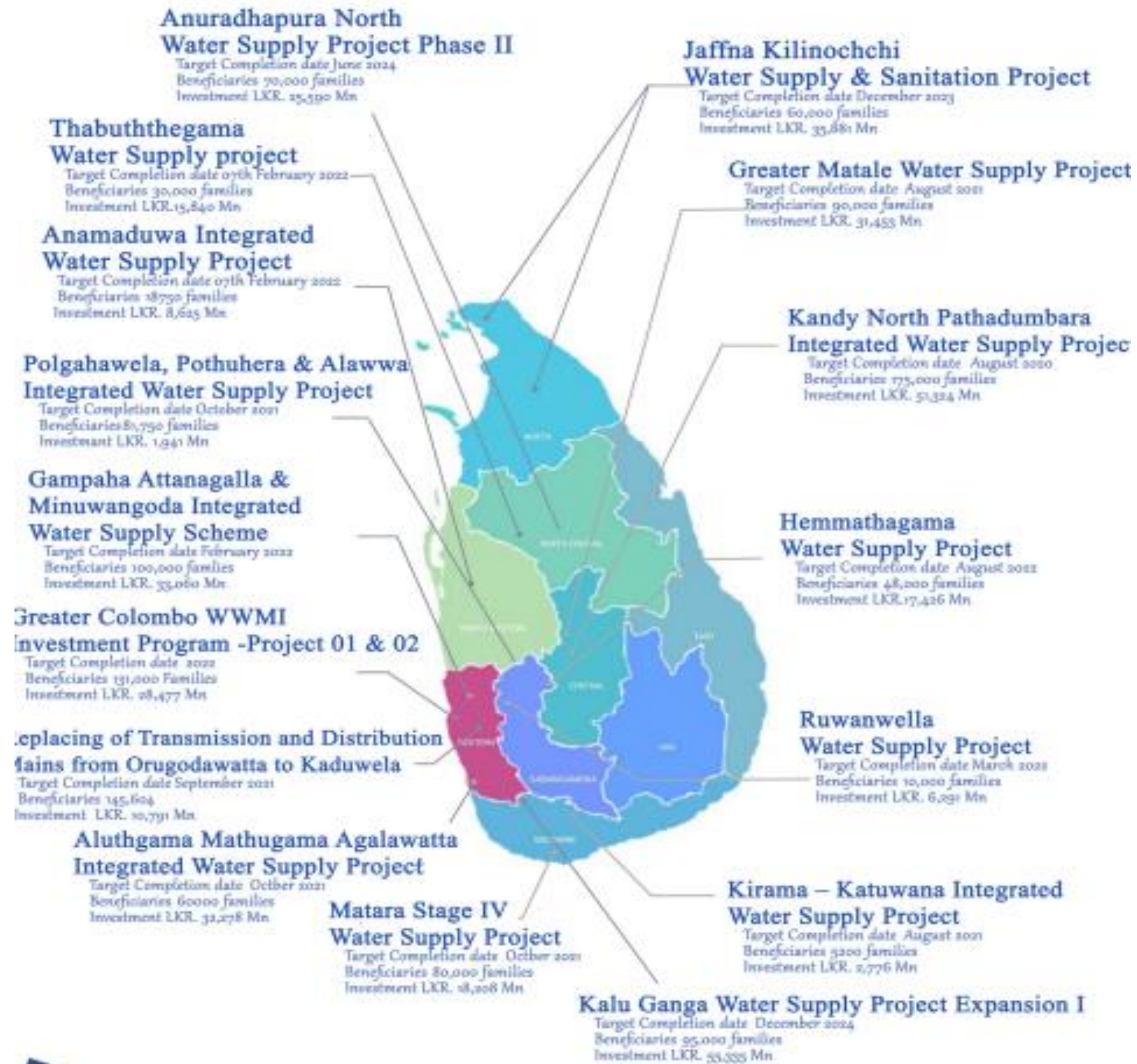
Recently completed Siyamabalanduwa Water Supply Project



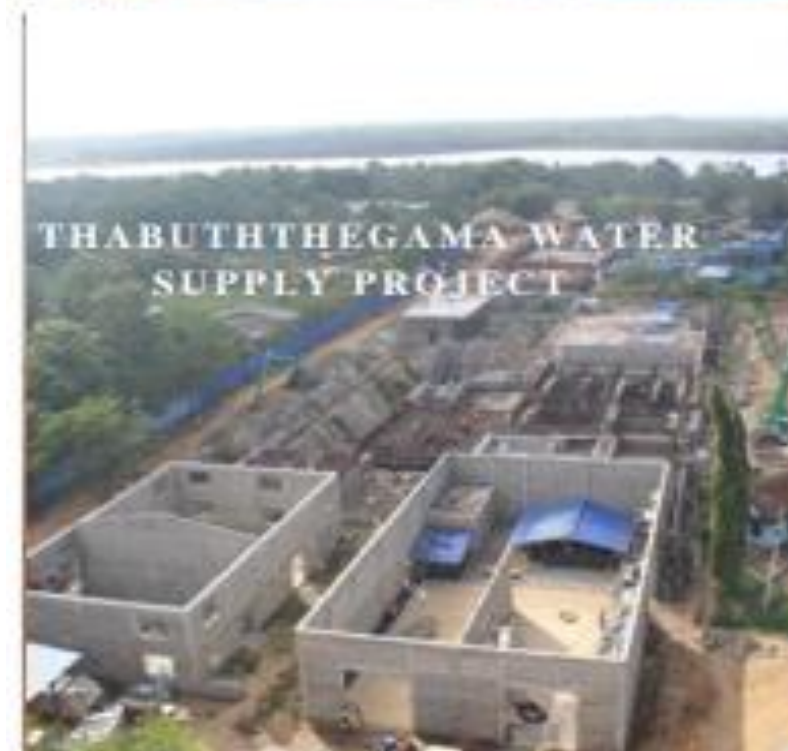
Recently completed Greater Galigamuwa Water Supply Project



Ongoing Water Supply Projects



INVESTMENT
LKR 427,317 Mn



Future Challenges

No	Description	2020	2025
1	Water Production (M ³ / day) ('000)	2,089	4,445
2	No. of families in the Country	5,764,834	5,946,352
3	No. of families (Covered) (NWSDB-Direct and Bulk with LAs)	2,305,933	4,685,725
4	Coverage (NWSDB)	40.0%	79 %
5	No. of families (Covered) (CBOs) (LAs & Others)	789,782	1,260,627
6	Coverage (CBO & Improved Domestic Water Sources)	13.7 %	21.2%
7	Length of distribution network (Km)	44,200	84,200



Final Report (Volume I)
Comprehensive Strategic Investment Plan
and Road Map for the
Water Supply and Sanitation Sector in Sri Lanka

Component MCPWS/WASSIP/C/QCBS/04

Comprehensive Strategic Investment Programme for Water Supply & Sanitation Sector - 2020



Water Supply and Sanitation Improvement Project
Ministry of Urban Development, Water Supply & Housing Facilities

Ratmalana, June 20, 2020

Comprehensive Strategic Investment Programme for Water Supply & Sanitation Sector (CSIP)

Objective:

- Identify the critical gaps in the water supply & sanitation service delivery in Sri Lanka and provide information, tools and the knowhow to strategically guide the sector towards universal water supply & sanitation coverage by 2030 and provide water supply and sanitation perspective up to 2050.

Main Tasks:

- Assessment of existing demand & capacities in water supply & sanitation sector
- Demand projection for 2025, 2030 & 2050 based on development plans & policy guidelines
- Water Resource identification & development
- Identification of upgrading the existing WSS
- Identification of existing sanitation facilities and need improvements
- Prioritization of water supply & sanitation projects
- Preparation of investment plan for water supply & sanitation sector
- Assessment of present institutional arrangement of the sector and proposed new structure that will be required to achieve the sector targets

Province wise Coverage Improvements

Province	2020	2021	2022	2023	2024	2025
Western	64.0%	69.4%	73.4%	79.3%	86.0%	91.8%
NW	11.9%	17.6%	23.9%	33.7%	50.3%	65.8%
NC	34.0%	39.8%	47.8%	58.2%	66.2%	80.3%
Northern	14.6%	19.1%	24.4%	34.8%	57.4%	59.6%
Central	37.5%	42.6%	48.7%	59.2%	68.4%	75.7%
Southern	44.1%	45.7%	51.1%	64.4%	74.6%	84.6%
Sabaragamuwa	23.5%	27.4%	35.1%	39.5%	51.3%	64.2%
Uva	30.9%	34.7%	40.7%	51.1%	61.3%	74.8%
Eastern	62.0%	65.5%	69.4%	74.9%	78.5%	81.4%
Total	41.3%	45.8%	51.3%	59.8%	69.7%	78.8%

CSIP Forecasted Water Supply & Sanitation - Coverage and Investments

Water Supply Coverage

	2020	2025	2030	2050
NWSDB	44%	57.2%	68%	72%
CBO/LA	12%	13.2%	12.4%	11.7%
Total Piped	56%	70.4%	80.4%	83.7%
Self Supply	37.7%	29.6%	19.6%	16.3%
Total Served	93.7%	100%	100%	100%
Unserved	6.3%	0%	0%	0%

Proposed Investment for Water Supply

Ongoing WSP 2020-2024 – LKR 235 Bn
Immediate Actions – LKR 53 Bn
Batch I (2022-2026) – LKR 360 Bn
Batch II (2026-2030) – LKR 450 Bn

Sanitation Coverage

	2020	2025	2030	2050
Sewerage	2.3%	3.2%	6.3%	10.8%
House Hold (Onsite)	93.2%	93.8%	93.7%	89.2%
Coverage Total	95.5%	97%	100%	100%
Unserved	4.5%	3%	0%	0%
House Hold (FSM & WWTP)	9%	29%	43.5%	64%
Total Served	11.3%	32.2%	49.8%	74.8%
Unserved	88.7%	67.8%	50.2%	25.2%

Proposed Investment for Sanitation

Batch I (2022-2030) – LKR 183 Bn
Batch II (2030-2045) – LKR 314 Bn

NATIONAL WATER SUPPLY & DRAINAGE BOARD
CORPORATE PLAN
2020 - 2025

**Journey Towards
Corporate Plan
“Water for All”
2020 - 2025**



GOVERNMENT OF DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF WATER SUPPLY

Corporate Plan – 2020-2025 – “Water for All”

- First workshop at Miloda Academy of Financial Studies” to decide upon goals and framework on 14th & 15th Feb. 2019
- Site visit to Southern & Eastern Zone and North Central and Central Zone etc. with Secretary / Chairman and NWSDB Team.
- Consultative meetings with Secretary and Chairman on the Way Forward and Strategy.
- Second workshop in Kandy to present the plans developed by RCSs
- Launching of corporate plan on 18th Nov. 2020 to achieve 78.8% pipe born water coverage by 2025.

Implementation Strategy

- Standardization of Bidding Documents
- Pipe stock assessment and computerized stock control system
- Rate Contracts for Supply of Materials
- Award of 1st Batch of Unit Rate Contract for Pipes
- In-house designs of Modular type Treatment Plants and other structure
- Rate Contract for Pipe Laying
- Short listing of construction contractors including rates for pipe laying
- Organizational reforms for Project Implementation and connections programme.

Way Forward – Implementation of Corporate Plan

	Number of Projects	Value LKR . Bn	Connections
Short term strategy Projects	139	231	876,000
Medium term strategy Projects	76	71.5	261,784
New Projects	93	687.2	1,569,005
Total	318	989.7	2,706,789

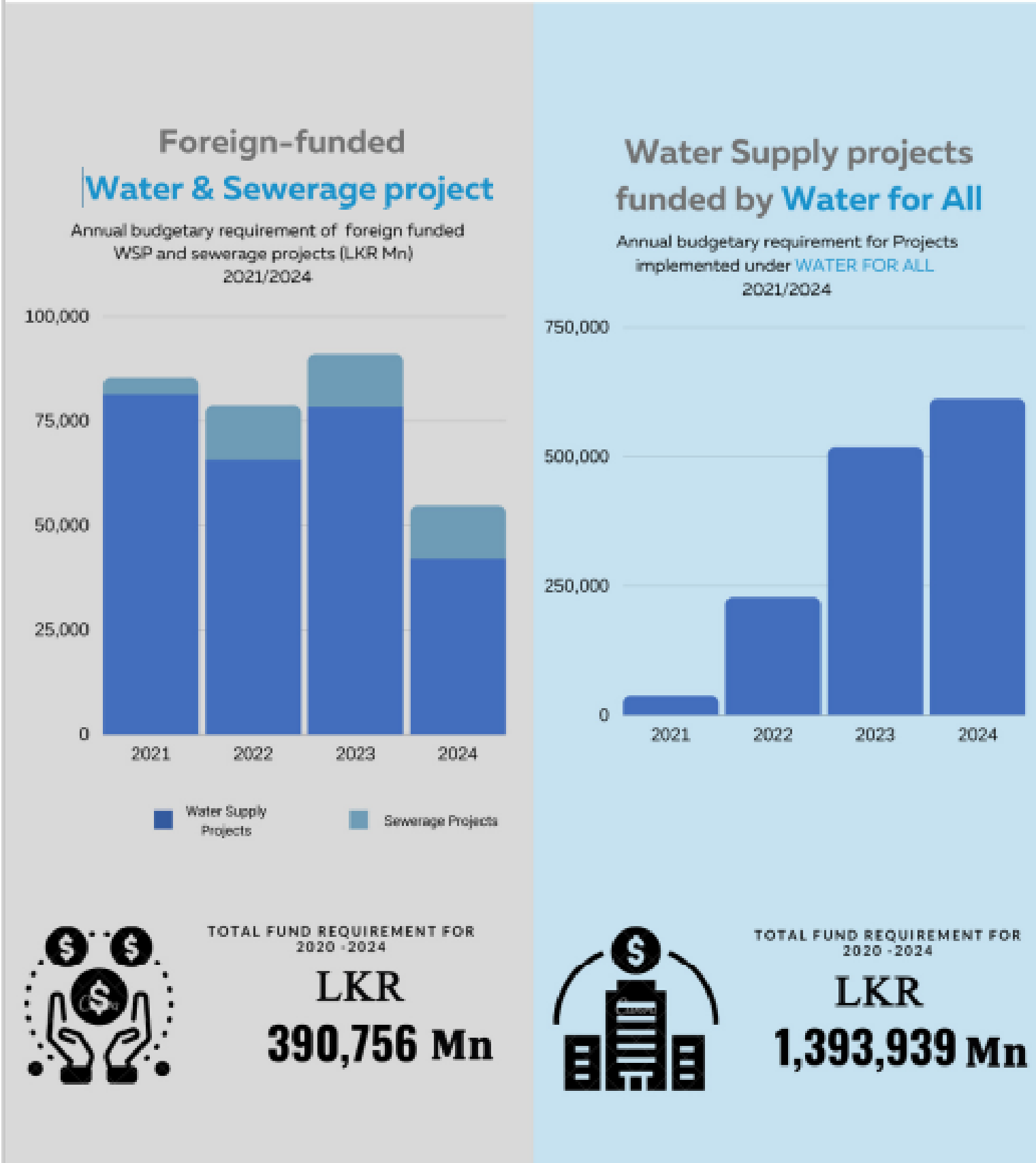
Operational Efficiency Improvements

- Improvements to consumer complaints management system/ Call Centre
 - Simplified new connection procedure
 - Strengthening NWSDB capacity to handle the core business
 - Inhouse capacity for new connections
 - Inhouse capacity for leak repair
 - Establish a multi disciplinary labour pool
 - Improvements to vehicle policy
 - Procurement of crew cabs- Pilot Project
 - Island wide NRW reduction programme
 - Procurement of good quality water meters
 - Moving towards smart meters
 - Plan for water quality improvement of existing schemes
- Integration of IT systems
 - Establishing Job Descriptions for Senior Management
 - Establishment of Procurement Cell
 - Establishment of Contract Administration & Legal Advisory Panel
 - Hiring Vehicle Policy and GPS installation
 - Manpower from President Task Force
 - Establishment of fully owned subsidiary
 - Usage of Drone Technology in Management

Challenges

- Water resource allocation ?
- Farmer issues ?
- Land acquisition ?
- Road authority approvals ?
- Local Contractors capacity?
- DI pipes importation ?
- Pipe suppliers production capacity ?
- Connection Promotion Programme
- Cash flow according to implementation programme
- Unforeseen environmental conditions
- Unprecedented local/ global events (like COVID-19)

Annual Budgetary Requirement For 2021 - 2024



STATUS OF WATER SUPPLY SCHEMES AND WATER TREATMENT

TOTAL WATER PRODUCTION 2,371,055 M3/D
78% - SURFACE WATER COVERAGE
22% - GROUNDWATER COVERAGE

Type of Water Source	
Type	No.
River Intakes	21
Streams	72
Lakes	38

Status of Water Treatment Plants	
Type of Treatment	No.
Full	127
Full or partial	196
Partial	69
Chlorine only	106

- THERE ARE 35 NO. OF LABORATORIES THROUGHOUT THE COUNTRY TO MONITOR WATER QUALITY IN WATER SOURCES, WATER TREATMENT PLANTS AND DISTRIBUTION SYSTEM AS PER THE SLS 614 AND SLS 722
- ANALYSIS DONE FOR THE PHYSICAL, CHEMICAL, MICROBIOLOGICAL AND TOXIC SUBSTANCES. THE AVERAGE NUMBER OF SAMPLES DONE IS 7000 PER MONTH TO VERIFY THE SYSTEM.
- THE 6.5% OF WATER PRODUCED AND TREATED DOES NOT CONFORM TO SLS STANDARDS.

SANITATION MASTER PLAN

'For Cleaner Water Environment'

2021-2030



NATIONAL WATER SUPPLY & DRAINAGE BOARD
MINISTRY OF WATER SUPPLY



Journey Towards Sanitation Master Plan 2020 - 2030

Sanitation Master Plan

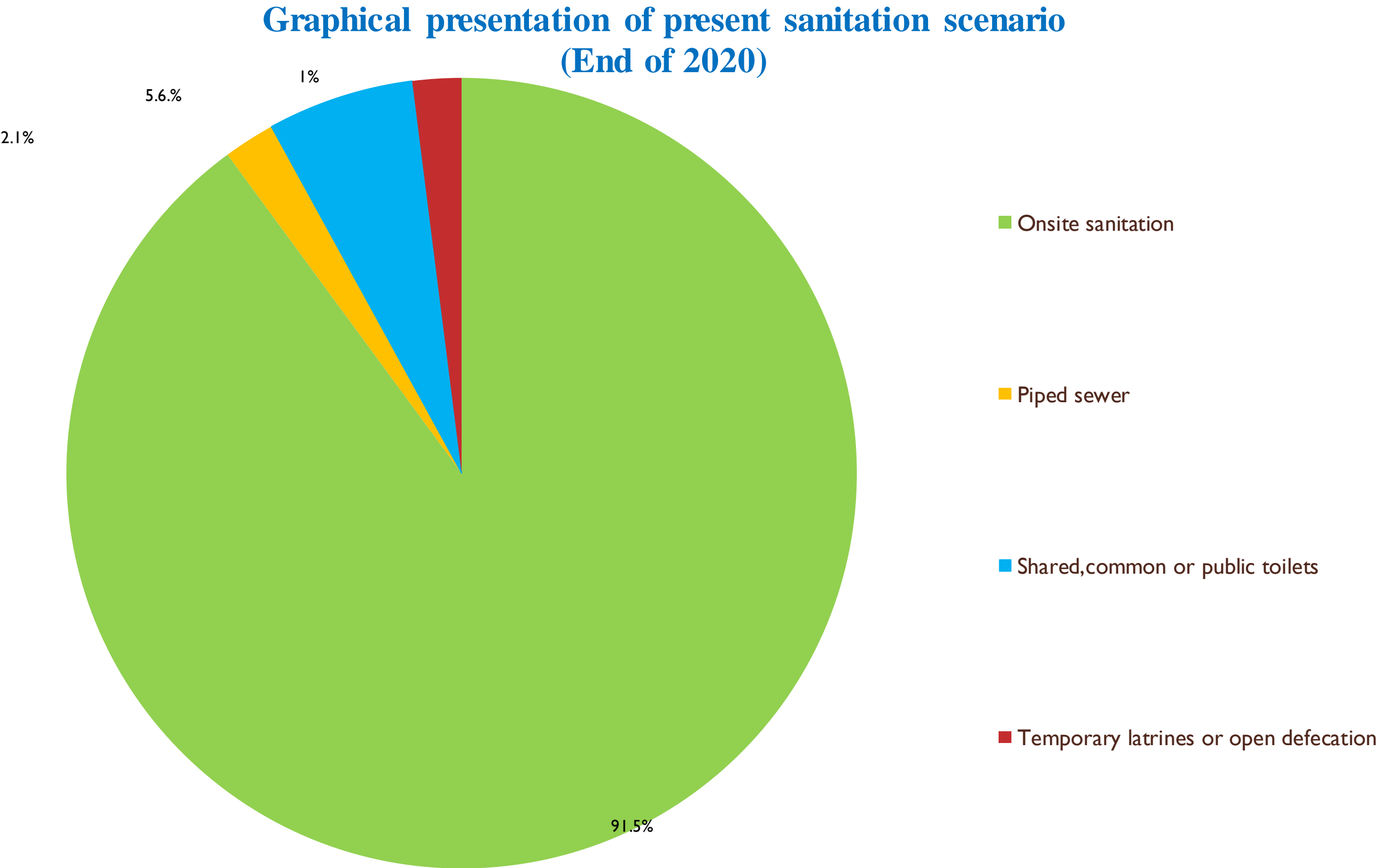
Objective

To identify priority sanitation solutions and optimize the investments to achieve safe sanitation coverage in an incremental approach.

Island wide Existing and Expected Sanitation Coverage

Year	2020	2025	2030
Connected to sewer network (Sewer systems)	2.1%	3%	4.4%
Onsite Sanitation Systems	91.5%	94.3%	95.6%
Total Basic Sanitation coverage	93.6%	97.3%	100%
Improved Onsite Systems + FSM	9.0%	38%	53.0%
Total Safe Sanitation coverage	11.1%	41%	57.4%

PRESENT SANITATION STATUS





WATER RECLAMATION STATUS

Year	2020	2025	2030
Piped sewer coverage	2.1%	3%	4.4%
Household (basic sanitation)	91.5%	94.3%	95.6%
Total coverage	93.6%	97.3%	100%
Un-served(Shared + Open Defecation)	6.4%	2.7%	0%
FSM and Sewer Coverage	11.1%	41%	57.4%



Planning and designing new wastewater management systems for urbanized cities

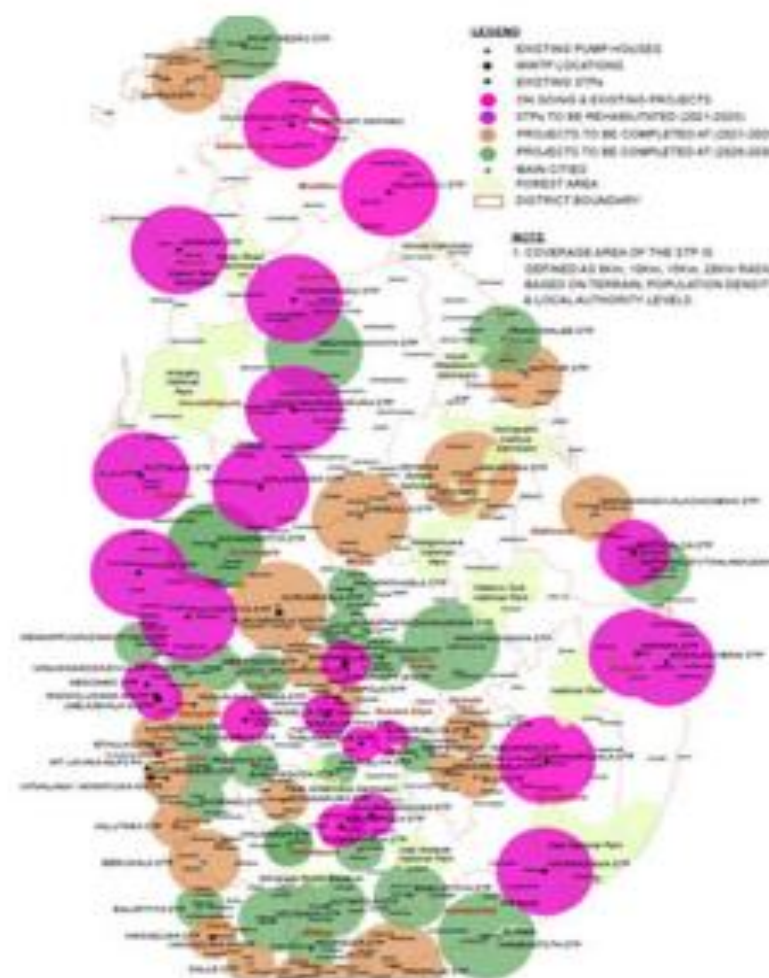


Planning and designing new wastewater management systems for Industrial Zones, Hospitals, local authorities etc



Planning and designing new Septage Treatment Plants for Local authorities

PROPOSED SEPTAGE TREATMENT PLANTS



NEW
65
SEPTAGE TREATMENT PLANT



INCREASE SAFE
SANITATION
COVERAGE
UPTO BY 2030
53%



RS
Mn.7800
INVESTMENT

CONNECTION ENHANCEMENT PROJECT

Name of the Scheme	Number of Connections	Total Cost Estimate (LKR Mn)
Dehiwala/Mt. Lavinia Wastewater Disposal System	1500	1114
Kolonnawa Wastewater Disposal System	2205	1408
Kurunegala Wastewater Disposal System	3400	923
Kataragama Wastewater Disposal System	450	694
Hikkaduwa Wastewater Disposal System	500	980

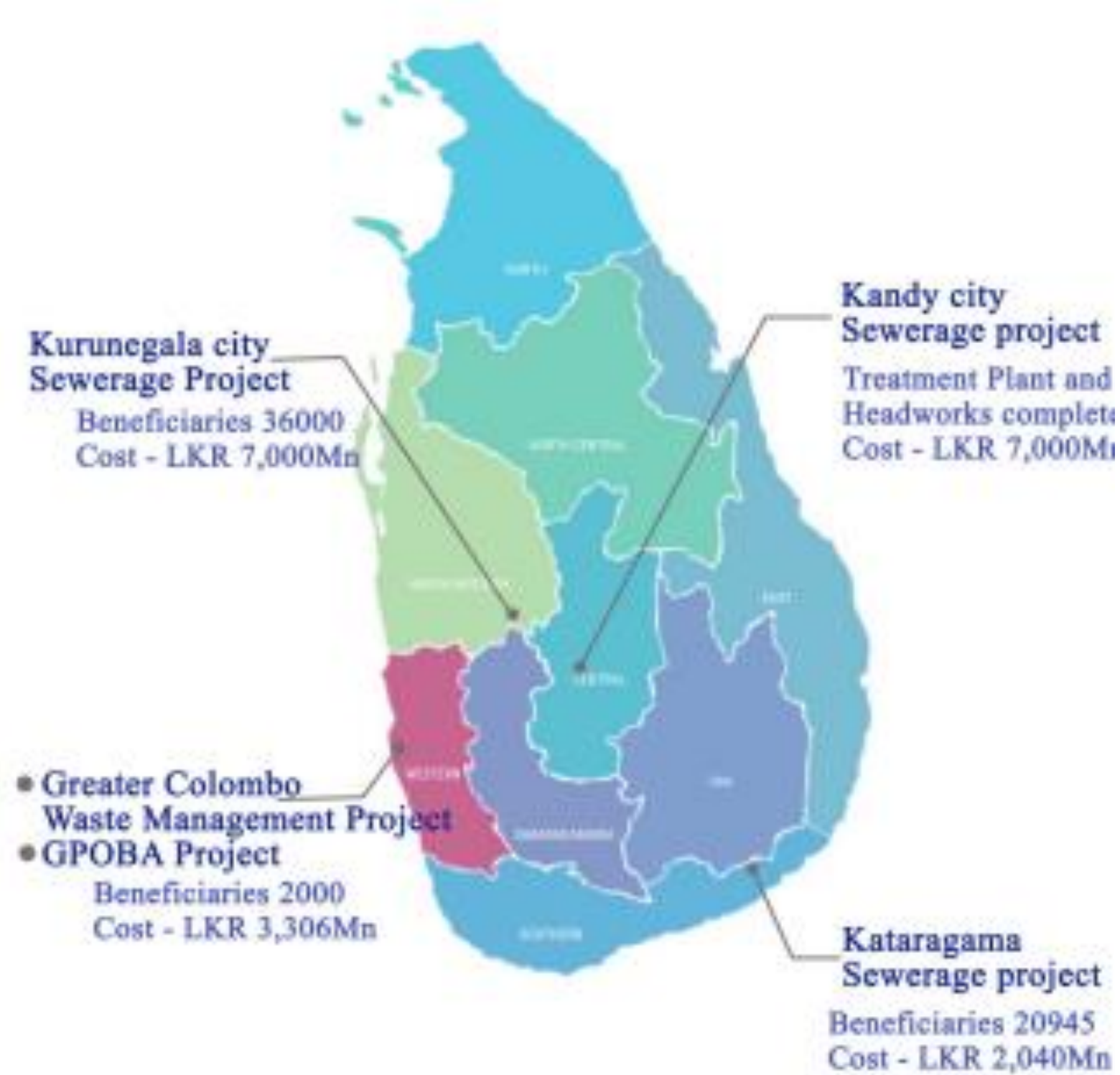


NEW
CONNECTIONS
8055

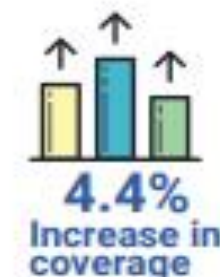
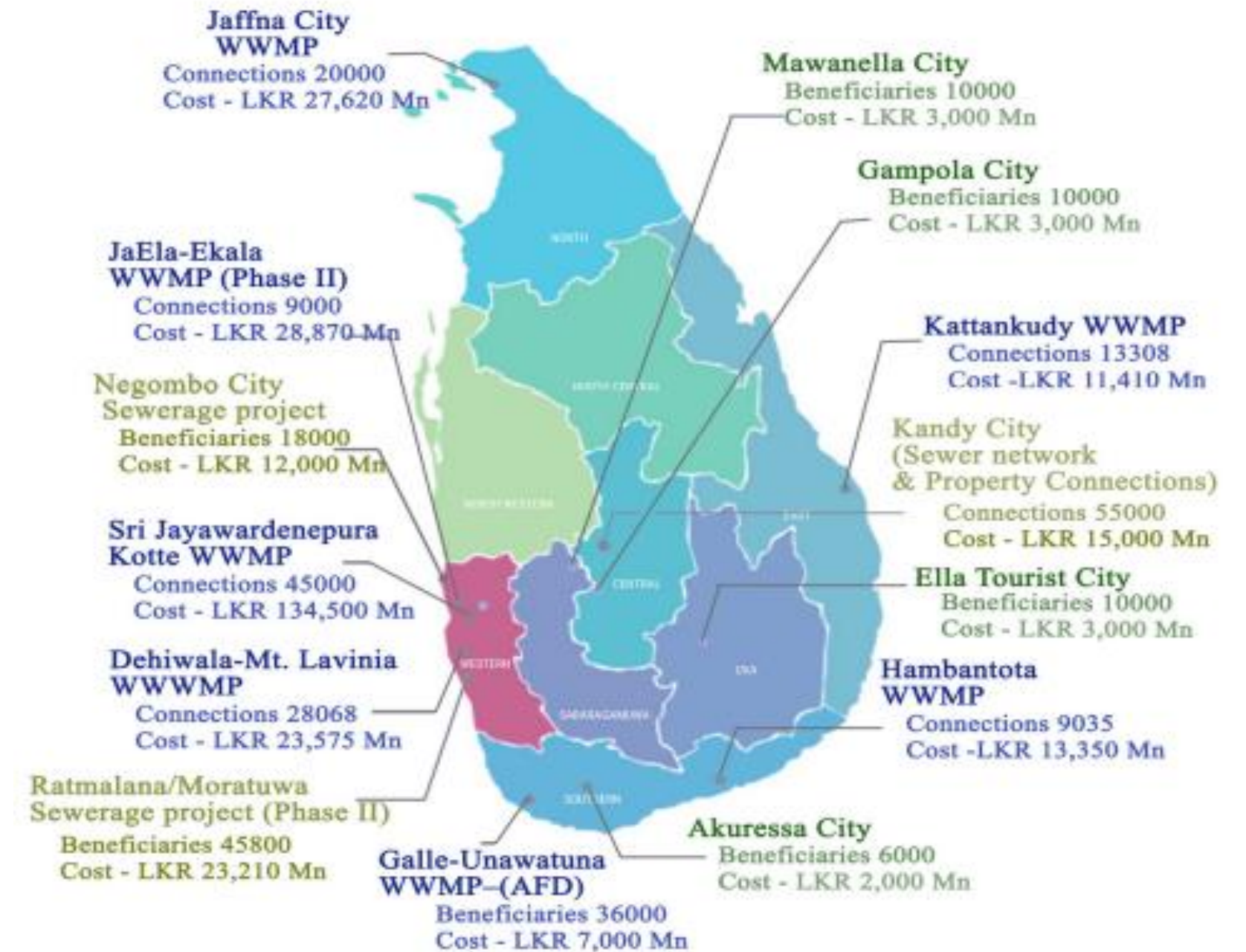


LKR
5119 Mn
INVESTMENT

Recently Completed Pipe Sewerage Projects



Proposed and Ongoing Pipe Sewerage Projects



Plan to increase the pipe sewerage coverage upto 4.4% by 2030



Recently completed Kandy City Waste Water Management Project



Recently completed Sewerage Treatment Plants



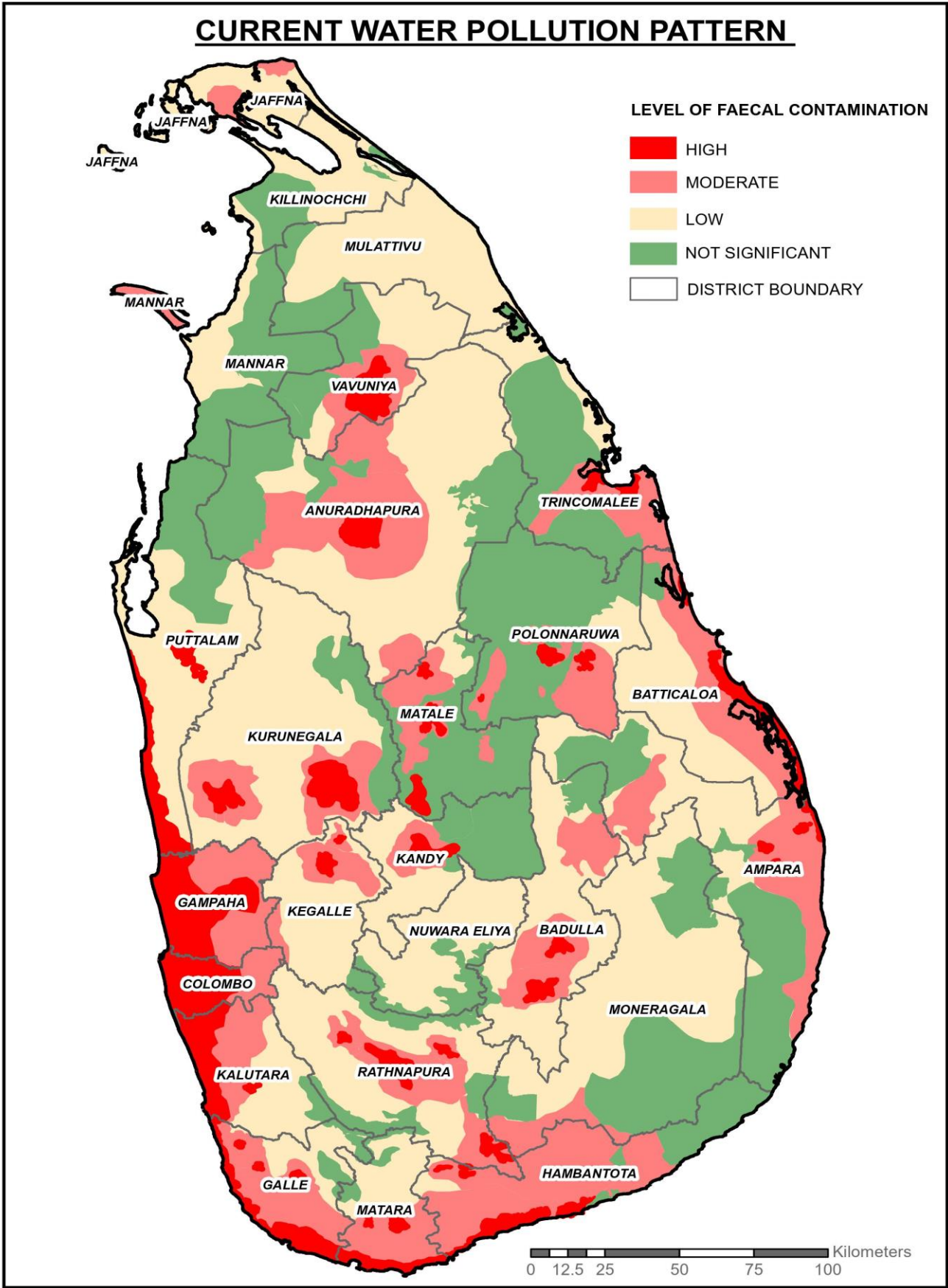
Recently completed Fecal Separate Treatment Plant (FSTP)

Ruwanwella, Mulathive & Kilinochchi Districts

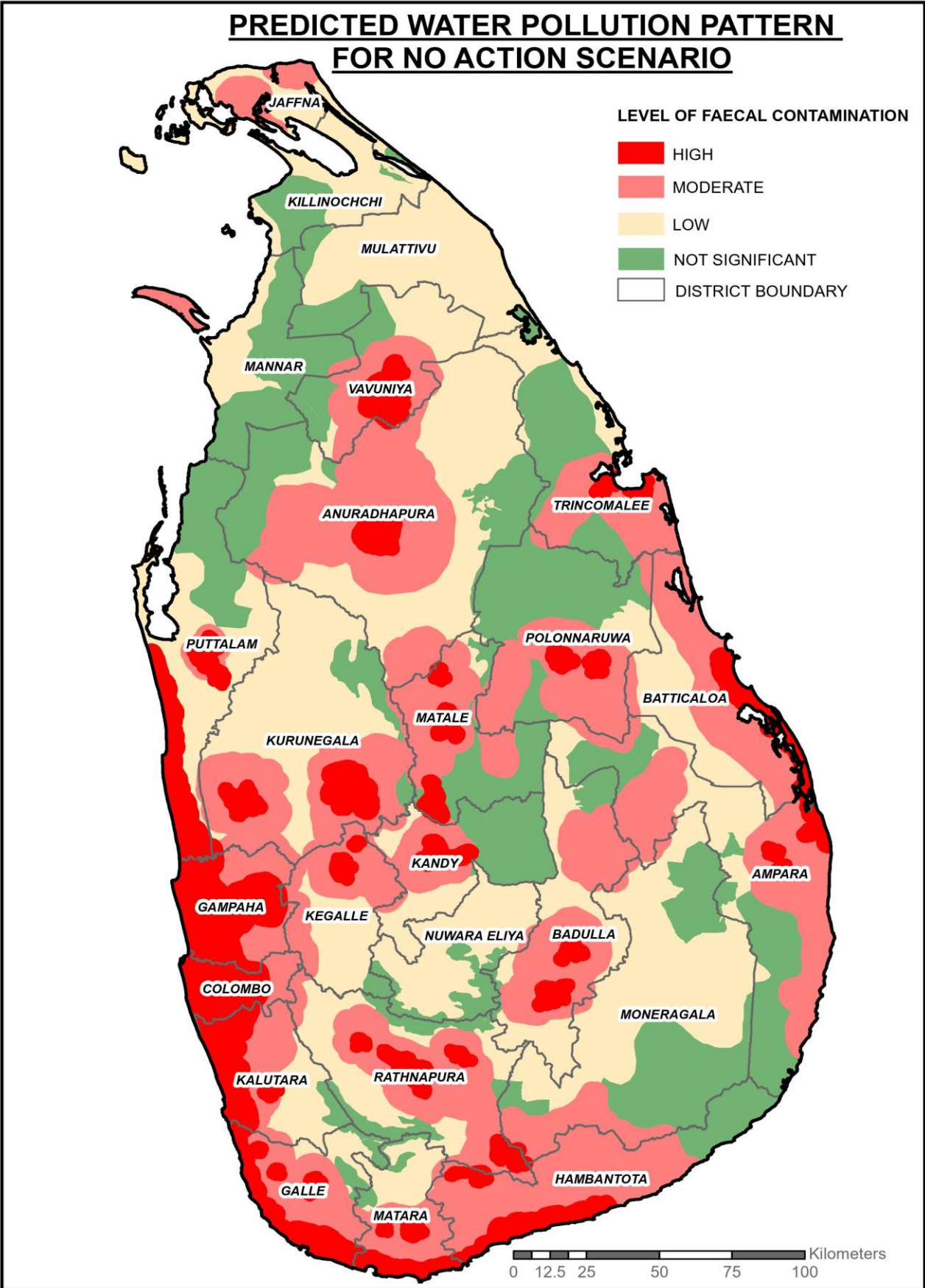


WATER POLLUTION MAPS

Current Water Pollution Map -2021



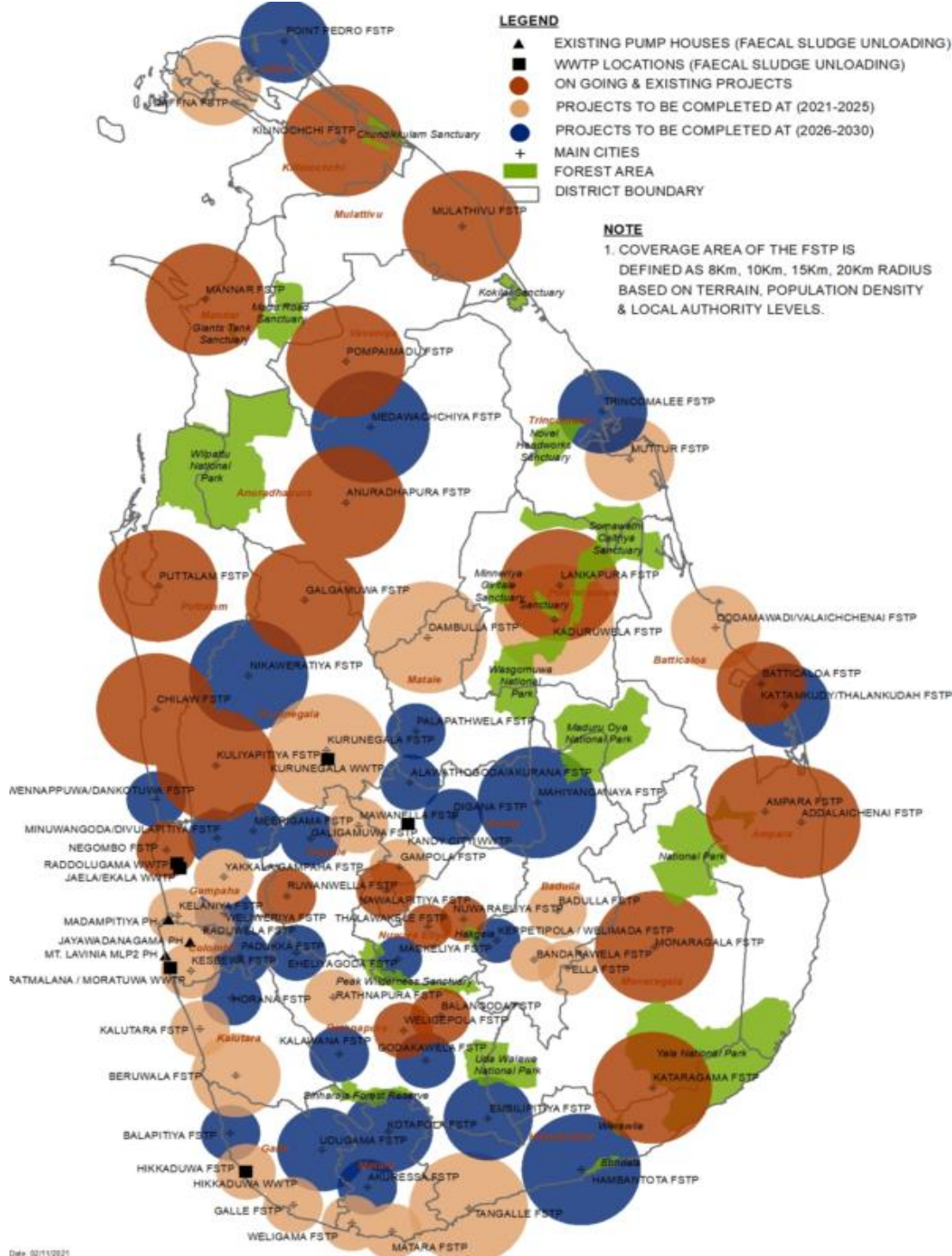
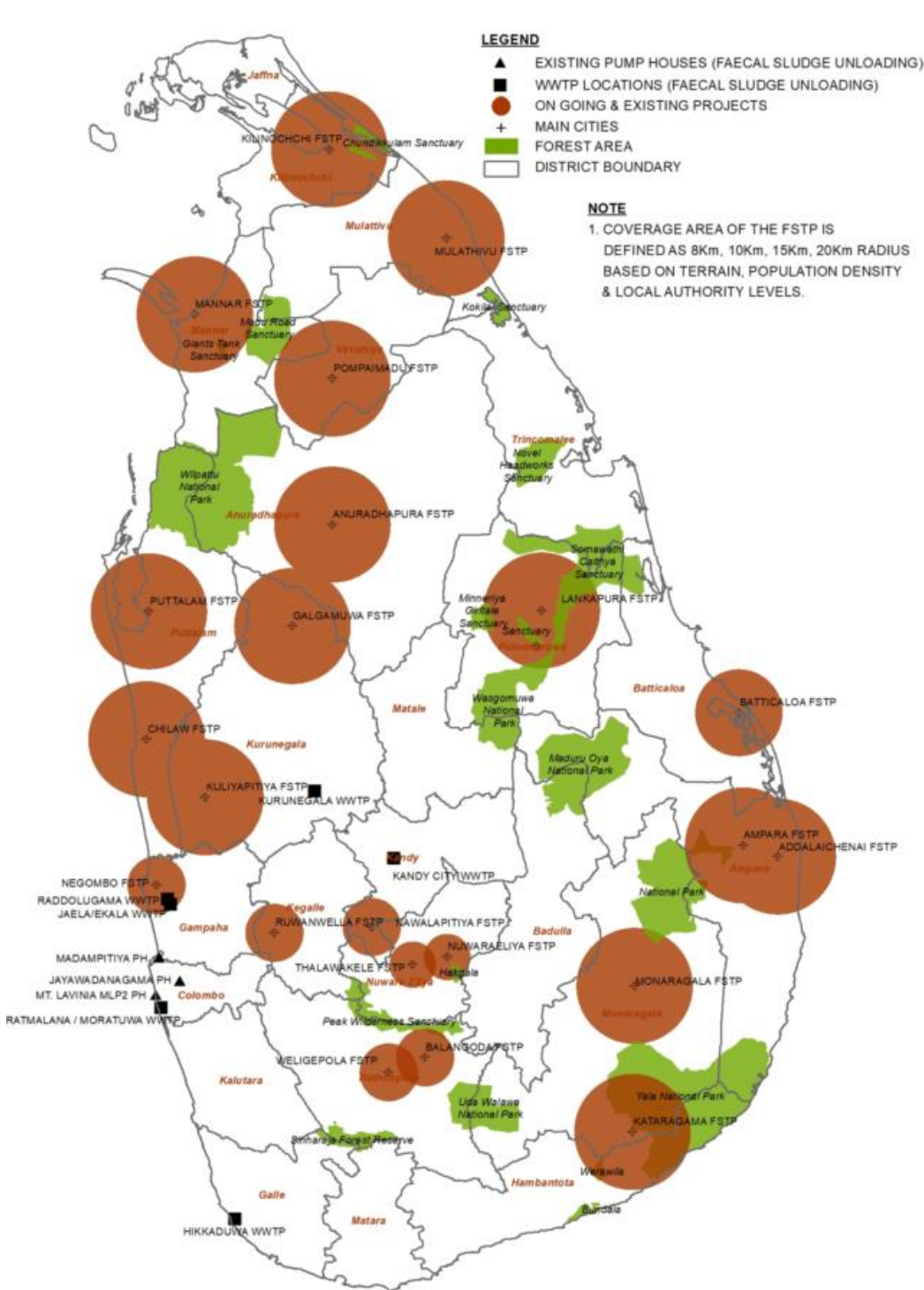
Predicted Water Pollution + Pattern for no Action
Scenario - 2030



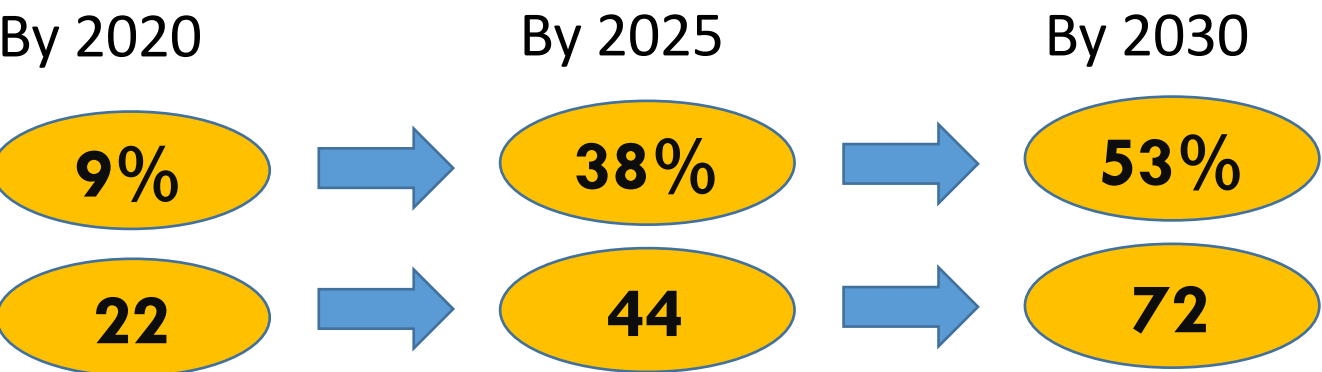
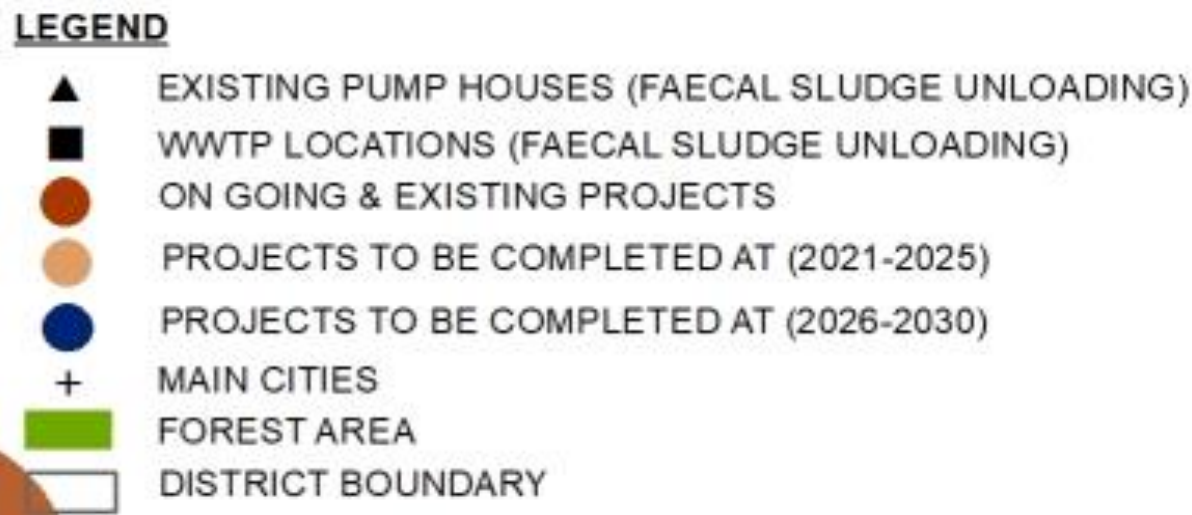
Ongoing & Existing Projects at 2020

Projects to be completed at 2030

Fecal SLUDGE MANAGEMENT



FSTPs are required to complete the onsite sanitation service chain



Circles with radius 8km, 10km, 15km, and 20km were considered as the service areas of the STP based on the geography, accessibility and current septage disposal demand

TECHNICAL SOLUTIONS

1. Onsite Systems – to meet 100% basic sanitation target & increase safe containment of faecal sludge

- ✓ Onsite systems improvements
 - (i) Construction of new latrines
 - (ii) Improving existing septic tank systems

2. Faecal Sludge Management - to meet 53% safe sanitation by facilitating safe disposal of faecal sludge from septic tanks

- ✓ Required FSTP projects identified based on;
 - (i) Gulley bowser operations
 - (ii) MC/UC/PS areas
 - (iii) Pollution map etc.

3. Decentralized Wastewater Treatment (DEWATS) systems - to minimize pollutions at source points

- ✓ Identify point pollution sources
 - (i) Hospitals
 - (ii) Schools & Educational Institutes
 - (iii) Prison/ Rehabilitation centers
 - (iv) Condominiums/Housing Schemes
 - (v) Industrial zones
 - (vi) Public toilets in major cities

4. Centralized Wastewater Treatment Systems - to meet 4.4% piped sewer coverage for highly urban areas

- ✓ Projects selected in cities based on
 - (i) Colombo & suburbs
 - (ii) Coastal belt & tourist areas
 - (ii) pollution map
 - (iv) river polluting locations
 - (v) Urban/isolated commercial and housing clusters

COMMENDABLE WORK DURING COVID 19 PANDEMIC



ACTIVITIES DONE

- Providing Bulk Supply to COVID Centre
- Upgrading Internal Water Supply Network of COVID centre
- Construction of Waste Water System in COVID Centre
- Ground water investigation for burial of death bodies due to COVID 19 at Puttalam
- Continuous Bowser supply to COVID Centre
- Construction of Sanitary Facilities for COVID 19 Treatment Centre
- Mobile service of Consumer Bill Collection
- Upgrading Internal Water Supply Network at COVID Hospitals
- RO Plant Installation for Quarantine Centre
- Established a Mobile RO Plant at Quarantine centre
- Upgrading the RO Plant at Hospital
- Provide Water Bowsers for Quarantine Centres

Per Day Salary of NWSDB Employees given to Covid - 19 Fund -



Thank You

National Water Supply and Drainage Board: **Access to Safe Drinking Water and Sanitation to All**

Q & A



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24 March 2022
SGT: 3.00pm GMT: +8



National Water Supply and Drainage Board: **Access to Safe Drinking Water and Sanitation to All**

Upcoming Events

25 Mar 2022 3pm – 5pm [Visit]	Technical Site Visit to TAKEDA Pharmaceutical Plant
27 Mar 2022 8am - 12pm [NTUC Ctr]	Singapore World Water Day : HIIT It Up! <i>Event Sponsor : Sembcorp & Jacobs</i>
31 Mar 2022 3pm - 4pm [Webinar]	PUB's Coastal Protection Department (CPD) Strategies and Plans



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Thank You

For further queries on the event, please contact :



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