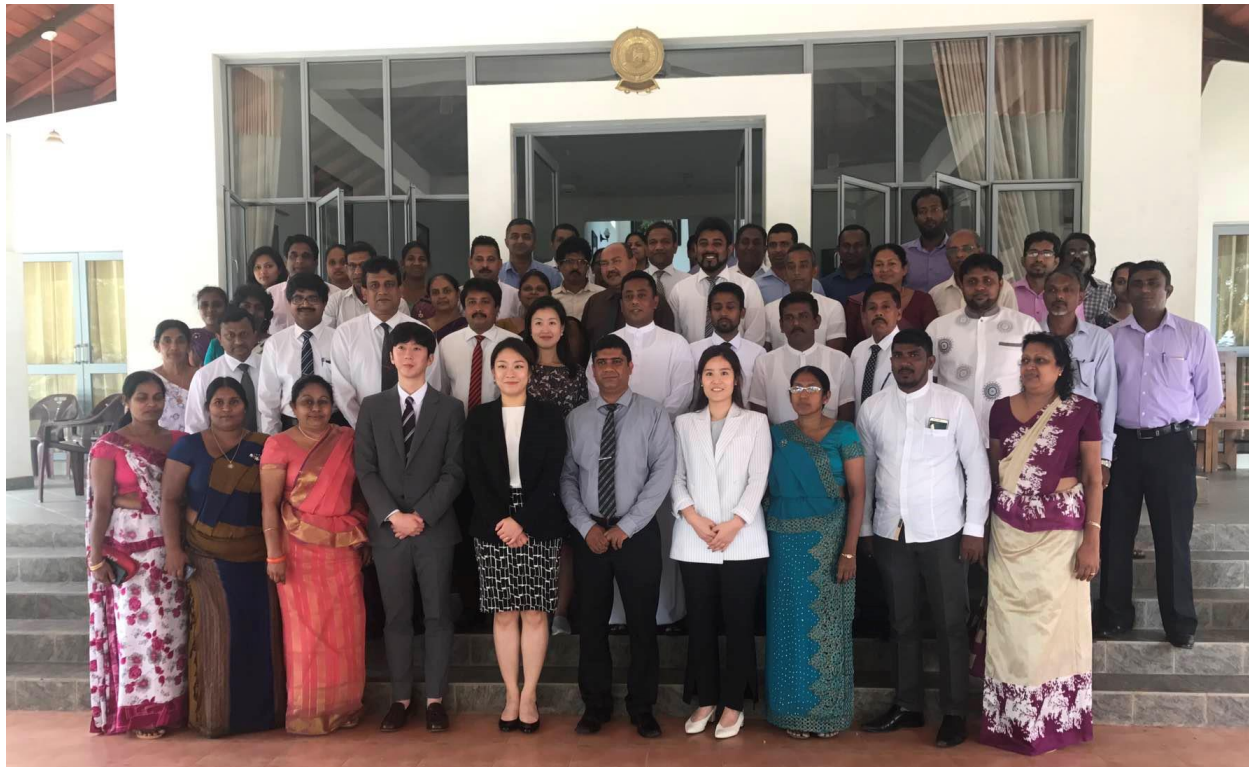


Climate Technology Centre and Network (CTCN) Technical Assistance
for the Development of an Urban Adaptation Plan for Kurunegala

Inception Workshop Report

“Report on the inception workshop, and city level kick-off meeting”



CTCN Request No. 2018000009

Vol.1

14-16 January 2019

Kurunegala, Sri Lanka



The Climate Technology Centre & Network (CTCN) has provided Technical Assistance through pro-bono support from Korea Environment Institute (KEI) Korea Adaptation Center for Climate Change (KACCC) and Green Technology Center (GTC) to prepare an Adaptation Plan and to assess climate change vulnerability and risk of the Kurunegala city.

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Executive Summary

Kurunegala city is one of the most intensively developing economic and administrative capitals, located in the North Western Province of Sri Lanka. Urban systems in Kurunegala city are facing climate vulnerabilities, the most crucial being extreme heat conditions, decrease in drinking water supply due to drought and gradually diminishing urban biodiversity. The city needs a broader range of feasible climate adaptation measures in terms of integrated planning for climate change adaptation. The current measures are limited by the existing governance system and lack of appropriate urban planning considering climate change adaptation measures.

To tackle these challenges, the Ministry of Mahaweli Development and Environment of Sri Lanka and Municipal Council Kurunegala requested CTCN Technical Assistance. The main climate change issues highlighted for Kurunegala city are heat stress and water scarcity. In this CTCN Technical Assistance (TA), heat stress and vulnerability due to water scarcity are prioritized among climate issues with key stakeholders in Sri Lanka.

In order to conduct the CTCN TA project, the inception workshop was held with the relevant government agencies and private stakeholders, and the presentations and discussions have been reported as proceedings. Due to financial and time constraints, it was decided to prepare an adaptation plan by formulating an urban action plan based on the result of the assessment. The monitoring mechanism has also been discussed considering necessary to assess the data availability and the assessment formula before implementation of the project.

This report describes the findings from the preparation phase and the visit phase.

1. Background

The United Nations Framework Convention on Climate Change (UNFCCC) was ratified by Sri Lanka in 1993 and the Kyoto Protocol (KP) in 2002. The Ministry of Mahaweli Development and Environment is the national focal point to the UNFCCC. Furthermore, Sri Lanka ratified the Paris Agreement on 21st September 2016, where the country is committed to build resilience and take adaptive measures to combat the adverse impacts of climate change and reduce greenhouse gas emissions.

Subsequently, the country submitted its Intended Nationally Determined Contributions (INDCs) in October 2015 and its Nationally Determined Contributions (NDCs) in November 2016. Under the measures, 'Adaptation' became the sub sector of "Urban, City Planning and Human Settlements" which is closely connected to direct impacts of climate change. Local Authorities and their inhabitants are faced with droughts, floods, air pollution, land degradation, deforestation and rising sea levels. These impacts have a major repercussion on the basic living standards of the people.

It is already well-known that city is a cornerstone and a hub of a country's economic growth. With the global population expected to be 67% urban by 2050, it is no wonder that cities consume over two-thirds of the world's energy and generates over 70% of global emissions.

When cities are developed with unplanned and inadequately managed systems they are likely to cause a rapid sprawl, pollution and environmental degradation and display unsustainable production and consumption patterns. People are drawn to cities for employment, business and education opportunities, which usually lead to mass migration towards cities. The phenomenon has contributed to increasing physical and socioeconomic damage as well as accelerating climate change, which consequently lead to the loss of livelihoods.

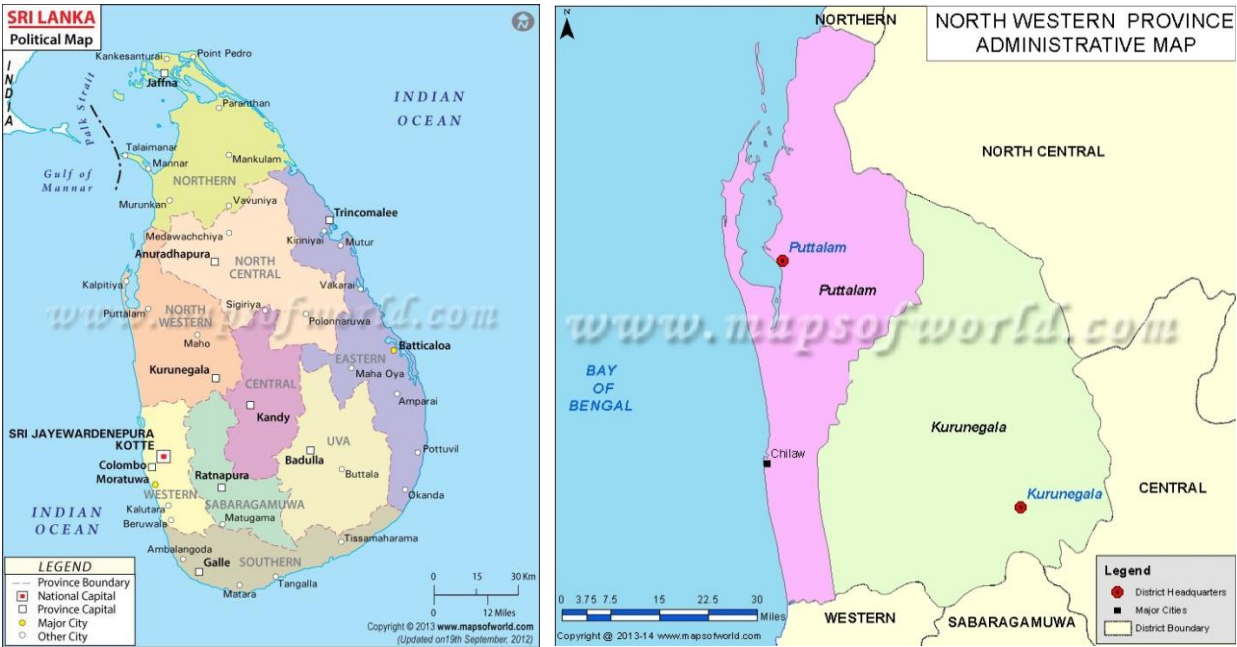
Sri Lanka has three levels of government which are national level, provincial level and local level (See Table 1, Figure 1, Figure 2 and Table2). The country has a population of 21 million people with only 18.5% residing in urban areas. In 2017, municipal councils alone collectively governed 2765, 533 people within a 698km² area. The cities are governed by the 24 Municipal Councils which are the legislative bodies that preside over the largest cities in the country and the peri-urban areas where exhibit urban characteristics are governed by the Pradeshiya Sabhas.

While trends in urbanization provide great opportunities for development, they also give rise to formidable challenges to social equity, environmental sustainability and governance as well as increasing the ecological footprint and vulnerability to natural hazards.

Table 1 Distribution of councils and population

Provincial Councils	Districts	Local Authorities			Total	Population (2011 Census)	Population (2017) est	%rural, including tea estates (2010)
		Municipal Councils	Urban Councils	Pradeshiya Sabhas				
Central	3	4	6	38	48	2,571,557	2,722,000	89.4
North Western	2	1	3	29	34	2,380,861	2,508,000	95.9
North central	2	2	0	25	27	1,266,663	1,349,000	96.0
Uva	2	2	1	25	28	1,266,463	1,349,000	94.5
Sabaragamuwa	2	1	3	25	29	1,928,655	2,028,000	94.0
Western	3	7	14	27	48	5,851,130	6,081,000	61.2
Southern	3	3	4	42	49	2,477,285	2,611,000	89.4
Northern	5	1	5	28	34	1,061,315	1,119,000	83.3
Eastern	3	3	5	37	45	1,555,510	1,677,000	74.9
TOTAL	25	24	41	276	342	20,359,439	21,444,000	91.8

Figure 1 Provincial and District map of Sri Lanka

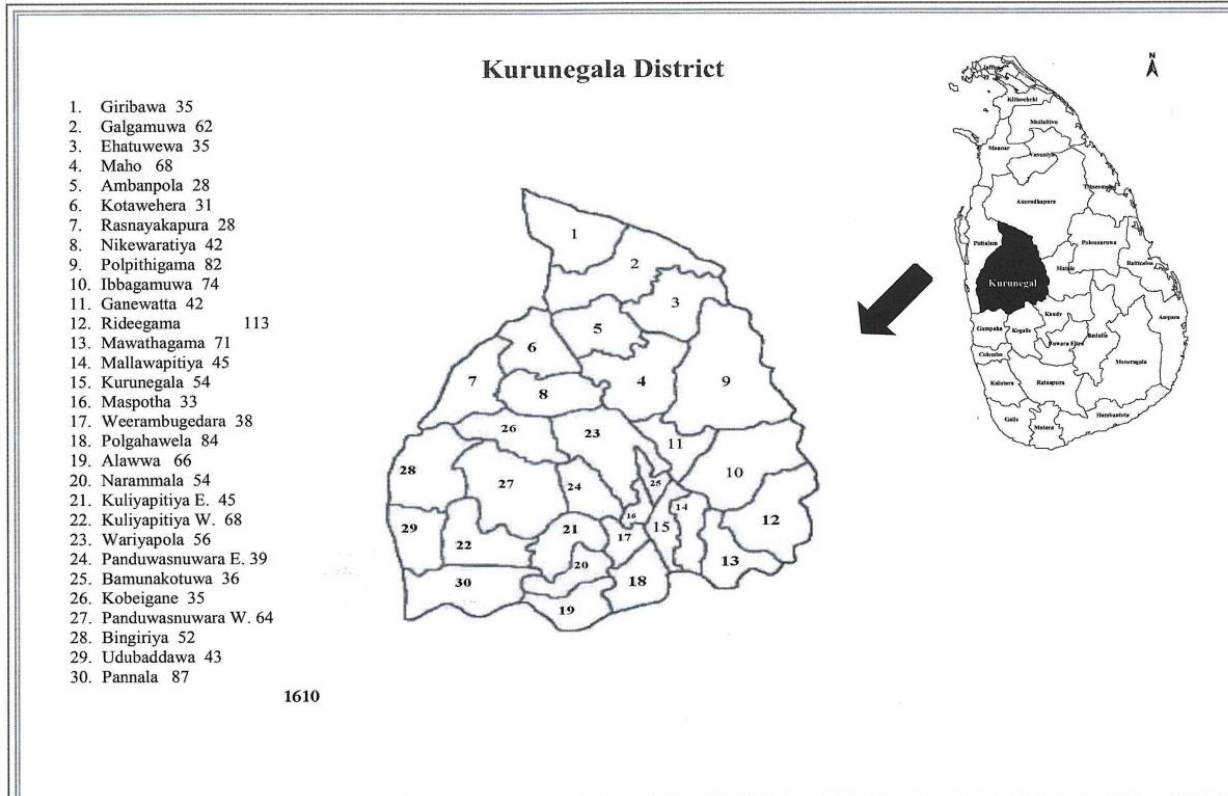


Left: Provincial Map of Sri Lanka

Right: Map showing the district boundaries of North Western Province (Kurunegala and Puttalam)

Figure 2 Divisional Secretariats in the Kurunegala District

1.7 District Plan



* No.54 is the Divisional Secretariat Division to which the Kurunegala City belongs

Table 2 Summary table of the divisions of the Kurunegala District

Administrative Boundaries	Local Authorities
Divisional Secretariat Divisions =30	Municipal Council
Grama Niladhari Divisions (GND) =25	Urban Council
	Pradeshiya Sabha

* Under the Kurunegala Municipal Council are 12 GND.

** Data is collected from these 12 GND for the survey.

2. Justification

Sri Lanka has embarked on the first Climate Smart City in Kurunegala. The Climate Smart City envisages a city with built resilience to adapt to the adverse effects of climate change and includes mitigation strategies to reduce greenhouse gas emissions through low carbon pathways ensuring a sustainable, healthy and comfortable lifestyle for the urban population.

Kurunegala city is one of the most intensively developing economic and administrative capitals, located in the North Western Province of Sri Lanka. However, most urban systems in the

Kurunegala city is facing climate vulnerabilities in that the most crucial being extreme heat conditions, periods of flooding, decrease in drinking water supply, and gradual diminishing urban biodiversity. The most challenging problem of the city in terms of integrative planning for climate change is the range of feasible adaptation measures that is limited by the existing governance system.

3. Objectives of the Project

The overall objective of this Inception Workshop is to identify current climate change issues in Kurunegala city and discuss next step for the CTCN TA. Specific objectives are as follows:

- (a) To facilitate mutual understanding of the CTCN TA (e.g. relevant activities/method/expected outcome, etc.)
- (b) To collect the environmental issues and stakeholders' opinions to capture the national and local conditions especially Kurunegala city
- (c) To prioritize several urgent sectors between those of Kurunegala UDA development plan (e.g. housing, electricity, water supply, health facilities, etc.)

To tackle the above challenges, the Ministry of Mahaweli Development and Environment of Sri Lanka and Municipal Council Kurunegala requested the CTCN to provide technical assistance. The CTCN TA aims to;

- i) Identify the current effects of climate change in Kurunegala city
- ii) Assess climate change vulnerability and risk to prioritized issues, heat stress and water scarcity
- iii) Propose an adaptation action plan for addressing heat stress and water management
- iv) Build the capacity of city planners and policy makers in order to transform Kurunegala city into a climate-smart city.

By providing an action plan and capacity building training for Kurunegala Municipality Officers, The adaptive capacity of government officers and other stakeholders, and climate resilience will be enhanced in the long-term.

The duration of this project is 10 months.

4. Proceedings of the Workshop

[Day 1] Inception Workshop for CTN Technical Assistance 2019

- **Date:** 14th January 2019
- **Venue:** Mahagedara Hall, Kurunegala City, Sri Lanka
- **Participating Organizations:**
 - Korea Environment Institute (KEI) : Hanna Cho, Gibong Yer
 - Green Technology Center (GTC) : Rywon Yang, Inhye Park;
 - Ministry of Mahaweli Development and Environment (MMDE) : Sunimal Jayathunga and 10 related ministers;
 - Kurunegala Municipal Council (KMC) : 60 related members;



Left: Opening Session of the Inception Workshop



Right: KEI Presentation by Dr.Hanna Cho

Welcome Address

Presented by Mr. Thushara Sanjeewa Vitharana (Hon. Mayor of Kurunegala)

The Hon. Mayor welcomed the KEI and GTC representatives and stakeholders. He said that he was happy to be able to launch the first Climate Smart City project for Kurunegala City in Sri Lanka. Kurunegala is one of the central cities in Sri Lanka which is directly connected to a number of major capital cities and towns of the island. The main highways connect it to Colombo, Kandy, Dambulla, Negombo, Anuradhapura and Kegalle. Despite the small size of area (11km²), the population of the district is relatively high in numbers (3000/km²), and intensively growing at the rate of 4% per year. The city is a densely built residential, business and commercial area, with constantly increasing volume of traffic and significantly decreasing rate of green spaces per capita.

He stated that Kurunegala City was having problems of droughts and floods due to climate change.

He has commenced a programme for greening the city and welcomed the Technical Assistance provided by the CTCN to enhance adaptive capacity of the city.

Opening remarks of the programme

Presented by Dr. Sunimal Jayathunga (Director, Climate Change Secretariat, Ministry of Mahaweli Development & Environment)

Dr. Jayathunga stated that as a commitment to being a Party to the UNFCCC, Sri Lanka has ratified the Paris Agreement and submitted its Nationally Determined Contributions (NDCs). Therefore, Sri Lanka is committed to fulfil the targets of the NDCs which capture the mitigation, adaptation and loss and damage categories.

Kurunegala city is one of the most intensively developing economic and administrative capitals, located in the North Western Province of Sri Lanka. However, most urban systems in the Kurunegala city is facing climate vulnerabilities in that the most crucial being extreme heat conditions, periods of flooding, decrease in drinking water supply, and gradual diminishing of urban biodiversity.

Therefore, a proposal was submitted by the Climate Change Secretariat (CCS) of the Ministry of Mahaweli Development and Environment in collaboration with the Kurunegla Municipal Council (KMC) in order to transform the Kurunegala city into a Climate Smart City.

The Climate Technology Centre and Network (CTCN) approved the proposal as a pilot to develop the first Climate Smart City for Sri Lanka with the technical and financial support of the Korean Adaptation Centre for Climate Change (KACC), Korean Environment Institute (KEI) and Green Technology Center (GTC).

Dr. Jayathunga further stated that he hoped that KEI and GTC will be able to provide financial assistance for the implementation of the city adaptation plan as well as mitigation activities, with emphasis on adaptation.

While enumerating the objectives of the workshop he stressed that it is necessary to appoint a monitoring committee chaired by the Hon. Mayor and consisting of the relevant stakeholders representing adaptation, mitigation and loss and damage sectors so that this committee will be able to oversee the progress of the CTCN project as well as the other future projects related to climate change.

Ongoing and future development projects, programmes, plans for Kurunegala City

Presented by Mr. D.P.S.Kumara (Deputy Municipal Commissioner, Kurunegala Municipal Council) on behalf of Mr. Pradeep Thillekeratne (Commissioner, Kurunegala Municipal Council)

The Deputy Municipal Commissioner gave a brief introduction to the administrative structure of the KMC and the administrative boundaries of the KC. The KMC area is 12 km² and contains 12 Grama Niladhari Divisions (GND) and 4 PHI divisions.¹ It is further divided into 12 waste collection zones. The residential population of the KC is 28,552 with a floating population of 250,000-300,000 people. The main issues identified in the area is the extreme heat, water scarcity, traffic congestion, lack of proper clinical waste and solid waste collection and disposal facilities and unplanned development.

He expressed his concern towards developing the Kurunegala City as a Climate Smart City with the ability to mitigate and adapt to climate change impacts.

CTCN TA Pro-bono support of Korea NDE: GTC's approaches for climate technology corporation

Presented by Ms. Rywon Yang (GTC) on behalf of Ministry of Science and ICT, Korea NDE

Ms. Rywon Yang gave a brief introduction on the GTC and the previous projects of the center. She stated that Korean NDE supports to design and develop green projects such as GCF and MDB projects in collaboration with partner countries' NDE or NDA based on bilateral cooperation including feasibility studies and technology demonstrations. She further stated that GTC promotes the accelerated transfer of climate technologies and that the Korean NDE has been mobilizing its financial resources for providing TA pro-bono basis to three partner countries in 2018, which are Ethiopia, Serbia and Sri Lanka.

The CTCN Pro-bono TAs are;

- Financing strategy for Transit Oriented Development (TOD) – Addis Ababa Light Rail Transit (LRT)
- Technical assistance for development of a framework for Climate Smart City Kurunegala

¹ Grama Niladhari Divisions (GND) is the smallest administrative divisions of the KMC, and also used as the basic unit of the election purposes. One PHI divisions consist couple of GNDs. GND is headed by Garama Niladari Officer who manages all inhabitants in GND and Inspector Officer who is responsible for Environment health.

- Incorporating renewable and waste heat technologies in Belgrade's District Heating (DH) System

Process of the development of climate adaption action plan for Kurunegala Smart City

Presented by Dr. Cho Hanna (KEI)

A brief introduction was given on the KEI, KACCC and the Korean Adaptation Plan. They expressed that not much information could be found on the website with regards to the Kurunegala city. The objective of the CTCN was to develop Kurunegala city's urban development plan as the groundwork for the Climate Smart City in the context of climate change adaptation. The expected outcome of the program is to support the establishment of the climate change adaptation plan by formulating an urban action plan based on vulnerability and risk assessment of the prioritized issues. The four steps for Technical Assistance were defined as follows:

- i) Collection of basic information and identification of methodologies for the assessment
- ii) Assessment of climate change vulnerability and risk based on the available data
- iii) Development of action plan focusing on adaptation with the results of assessments
- iv) Capacity building of city planners on the integration of climate-resilient aspects into city development plans

The intended contribution of the KEI is to provide the necessary information to consider climate change adaptation aspects and to guide policymakers and relevant stakeholders how to increase the climate resilience of the city infrastructure, urban landscapes and urban community in the face of adverse impacts of climate change. It is also expected to conduct a vulnerability assessment for the Kurunegala city, define the linkage between adaptation measures and urban planning, suggest climate change technology and follow up on the implementation aspects. The timeline for the 10 months project was also outlined.

Future development plans for Kurunegala City

Presented by Mr. K.M.Senarathna (Deputy Director, Planning Urban Development Authority, Kurunegala City)

The Urban Development Authority has identified three major issues that the Kurunegala city faces. They are 'issues related to mobilization', 'issues related to development pattern' and 'character diminishing'.

To overcome these issues, they have proposed a transport plan (mobility plan), water supply plan, storm water drainage improvement plan, sewerage network plan, and electricity and data line plan. City regeneration plans were also discussed in order to improve the economic development of Kurunegala city. The plans for the expansion of Kurunegala city were also discussed.

[Day 2] City level kick-off meeting with KMC

- **Date:** 15th January 2019
- **Venue:** Meeting room, Kurunegala Municipal Council
- **Participants:**
 - (KEI) Hanna Cho, Gibong Yer;
 - (GTC) Rywon Yang, Inhye Park;
 - (MMDE) Sujith Ratnayake;
 - (KMC) Shishiroda Ratnayake, Abdul Saththar

The GTC, KEI, MMDE and KMC participants gathered to discuss the draft of the CTCN TA Response Plan, workshop result, and details of the project.



Left: City level kick-off meeting at the head office of the Water Supply and Drainage Board , Kurunegala City

Right: Observation of Sundarapola waste dumping and recycling project during the field visit

Field Visit

- **Venue:** *Meeting room, Kurunegala Municipal Council*
- **Participants:**
 - *(KEI) Hanna Cho, Gibong Yer;*
 - *(GTC) Rywon Yang, Inhye Park;*
 - *(MMDE) Sujith Ratnayake;*
 - *(KMC) Thushara Sanjeewa Vitharana and relative staffs*

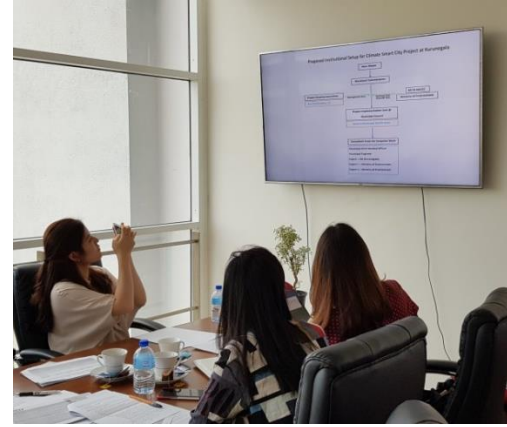
The field visit was held following the schedule:

- a. A drive through the Kurunegala City to observe the layout of the buildings and infrastructure.
- b. Site visit to the *Sundarapola* waste disposal and composting facility.
- c. Project site with regards to sewerage and water supply.
- d. Site visit to *Thanpana reservoir*, a small reservoir with natural spring located outside of the KMC boundary which supplies drinking water to residents.

[Day 3] City level Kick-off Meeting with MMDE

- **Date:** *17th January 2019*
- **Venue:** *Climate Change Secretariat in Ministry of Mahaweli Dvelopment and Environment (CCS, MMDE)*
- **Participants:**
 - *(KEI) Hanna Cho, Gibong Yer;*
 - *(GTC) Rywon Yang, Inhye Park;*
 - *(MMDE) Sunimal Jayathunga, Sujith Ratnayake, Ruwan Weerasooriya, Hasula Wickaramsinghe, Ambika Tennakoon, Shyamali Priyanthi, Jagath Vithanage, Susantha Udagedra*
 - *(KMC) Shishiroda Ratnayake*

The GTC, KEI, MMDE and KMC participants gathered to discuss the followings based on the draft of the CTCN TA Response Plan, and result of the workshop.



Left: City level Kick-off Meeting at Climate Change Secretariat, MMDE,
Right: Discussion

Management arrangement (core group meeting)

A meeting was held at the Climate Change Secretariat, Ministry of Mahaweli Development and Environment together with the senior officials from the Kurunegala Municipal Council to finalize the proposed activities.

5. Key Outputs and Discussions

5.1. Stakeholder consultation

As a result of the inception workshop, the participating organizations discussed that the expansion of the city including various development projects was occurred without coordination among the implementing institutes, resulting in unplanned development and unprecedented climate change impacts.

In order to mitigate the negative impacts of expansion of the city and climate change, participants discussed and summarized the needs of action and conditions which should be taken for resolution at this stage.

Briefing of the discussion is as follows:

- The need to appoint a planning and monitoring committee.
- The need to coordinate with institutions in order to plan activities at urban infrastructure (e.g. Roads, installation of cable and water lines, and etc.).

- The need to consider non-motorable service roads alongside sewerage system and water supply pipes.
- The need to prepare precautionary measure for shortage of water in future, since Kurunegala water supply is obtained from Deduru Oya located one hour away from Kurunegala city by car.
- The need to consider issues of garbage segregation, collection, and disposal.
- The need to proper management system of clinical waste.
- High humidity and temperature of Kurunegala city, which cause difficulty at work and harm to children and elderly people.
- High demand in housing.
- Difficulty of filling marsh and paddy lands.
- Difficulty of planting trees because of lack of space on side of roads.
- The need to consider location of businesses and popular schools which are centered in the city.
- The need to consider approval of the Master Plan prepared by the Urban Development Authority (UDA) in order to secure funding from policy and political changes.

At the City level kick-off meeting with KMC, the GTC, KEI, MMDE and KMC participants gathered to discuss the draft of the CTCN TA Response Plan, workshop result, and details of the project. The participating organizations discussed as followings:

(1) Discussion on the CTCN TA Response Plan;

- At the Stakeholder Consultant Workshop, the decision was made to invite governmental officers in Kurunegala City as many as possible.
- However, in case of the Capacity Building Workshop, the workshop should be restricted at main stakeholders of climate change vulnerability and risk assessment.
- After conducting CTCN TA project, MMDE and KMC require the guideline and training manual for the local stakeholders to conduct vulnerability and risk assessment.

(2) Discussion on climate change vulnerability and risk assessment;

- As a result of the workshop, stakeholders decided to conduct vulnerability and risk assessment on the area of heat stress and water management.

- An urban planning in context of the climate change adaption will be also conducted focusing on the area of heat stress and water management.

(3) Discussion on the role of local consultancy team;

- Candidates of the local consultancy team are MMDE member: two members from Climate Change Secretariat (CCS); three members from Industrial Services Bureau (ISB); one professor from Rajarata University.
- The local consultancy team will conduct data collection, literature review, survey conduction, indicators reviewing, capacity building gap reporting etc.

At the City level kick-off meeting with MMDE, The GTC, KEI, MMDE and KMC participants gathered to discuss the followings based on the draft of the CTCN TA Response Plan, and result of the workshop.

- **Methodology**
- **Duration of the capacity building workshop**
- **Scope of the data collection**
- **Consultant wage**

Regarding the methodology, it will be conducted with the vulnerability assessment based on the concept of the risk written in the 5th IPCC Assessment Report. The details are as follows:

- **Vulnerability:** the weighting factor for indicators in context of Kurunegala city should be discussed on the process.
- **GIS mapping:** the KMC wanted GIS mapping at scale of 1:5,000. However, this agenda was postponed because of the limited budget and the need of discussion with GIS experts.
- **Risk assessment:** the KEI shared experience and knowledge of 2018 KEI Vietnam Can-Tho project which included qualitative analysis.
- **Capacity Building Workshop:** the duration of the workshop is decided to be conducted for two days instead of one day, and therefore budget was amended as the adjustment.
- **Data collection:** the data collection will be conducted by consultant and the meteorological data should be bought from Sri Lanka Meteorological Agency, which can cause an increase in the total budget.
- **Consultant wage:** all participating organizations agreed to give considerable amount of wage to consultant within the total budget.

5.2. Field visit

A discussion took place focusing on the current issues and the need for preparing an adaptation plan of the Kurunegala city. Based on the stakeholder information and field observations, the sectors were prioritized for action as followings;

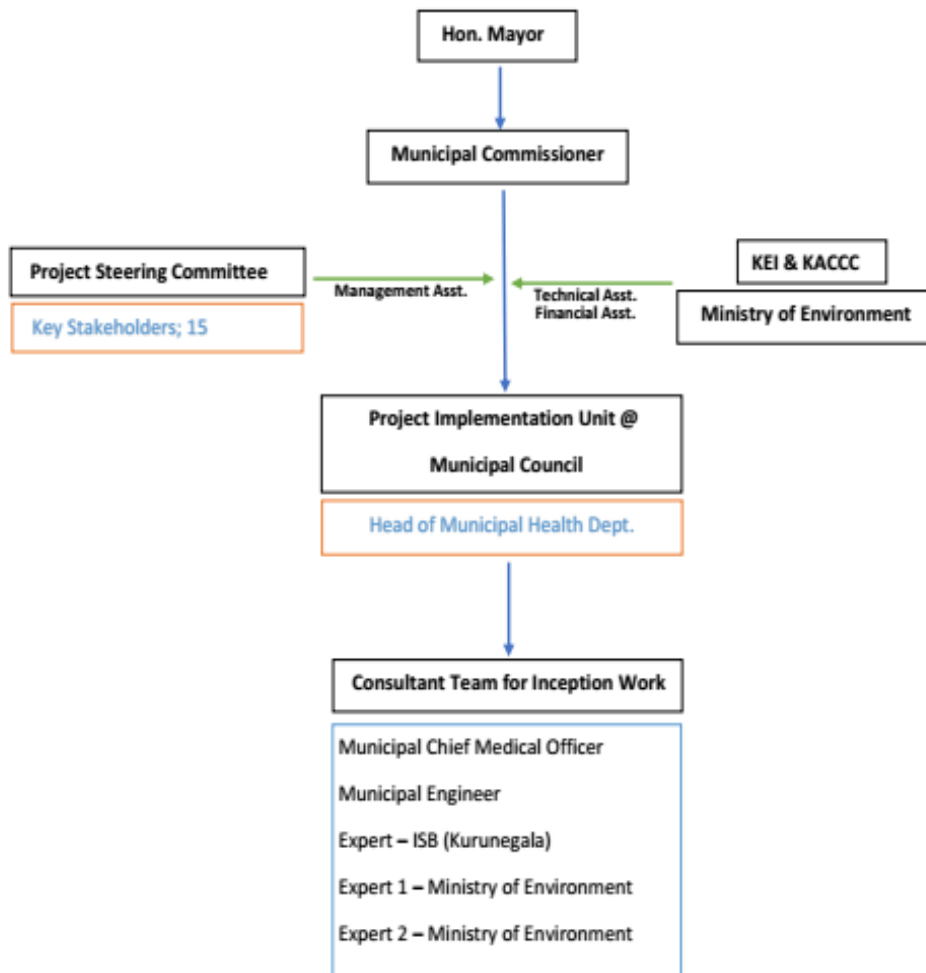
- a. Water
- b. Heat
- c. Waste
- d. Mobility

5.3. Management arrangement

It was decided to formulate adaptation plans for water and heat, due to financial and time constraints to assess adaptation measures. Relevant sub-activities were discussed with the proposed response plan and tentative budget.

The proposed management arrangement is as follows;

Figure 3 Management arrangement



Appoint Project Steering Committee headed by Hon Mayor of the KMC (hold regular meetings)

- a. Establish Project Implementation Unit (attached to Health Dept. of KMC)
- b. Established and function a “Climate Smart City Project Office” in KMC
- c. Facilitate coordination between key partners of the project;
 - a) Ministry of Environment (MoE)
 - b) KEI & KACCC
 - c) Municipal Council management & Steering Committee
 - d) Technical working group Consultancy team for Inception work
 - e) Operate dedicated account at the KMC for the Project
 - f) Ensure meeting set deliverable targets

Annex A: Workshop Program

Inception Workshop for CTCN Technical Assistance 2019

14 January 2019
at Mahagedara, Kurunegala, Sri Lanka

TIME	EVENT	PRESENTER
[Session I] Opening		
09:30 – 09:45	Welcome Address <ul style="list-style-type: none"> ▪ Hon. Mayor of Kurunegala (KMC) 	(KMC) Mr. Thushara Sanjeewa Vitharana
09:45 – 10:05	Objectives of the programme <ul style="list-style-type: none"> ▪ Climate Change Secretariat, Ministry of Mahaweli Development & Environment 	(CCS, MMDE) Dr. Sunimal Jayathunga
[Session II] Introduction on CTCN TA & Kurunegala city		
<i>Current Issues of Kurunegala city (*Presenter from Sri Lanka) : *This will provide an overview of issues related to urban planning and climate change (environment) in Kurunegala city</i>		
10:05 – 10:20	Ongoing and future development projects, programmes, plans for Kurunegala City <ul style="list-style-type: none"> ▪ Kurunegala Municipal Council (KMC) 	(KMC) Mr. Pradeep Thillekeratne
10:20 – 10:30	CTCN TA Pro bono support of Korea NDE <ul style="list-style-type: none"> ▪ Green Technology Center (GTC); on behalf of Ministry of Science and ICT, Korea NDE) 	(GTC) Ms. Yang Rywon, Ms. Bak Inhye
10:30 – 11:00	Process of the development of climate adaption action plan for Kurunegala city Smart <ul style="list-style-type: none"> ▪ Korea Environment Institute (KEI) 	(KEI) Ms. Cho Hanna, Mr. Yer Gibong
11:00 – 11:10	Break Time	
11:10 – 11:30	Future development plans for Kurunegala City <ul style="list-style-type: none"> ▪ UDA, Kurunegala 	(UDA) Director
[Session III] Discussion for CTCN TA		
<i>- How to develop the Response Plan for Kurunegala city</i>		
<i>- To Prioritize urgent sectors between those of development plan for Kurunegala city</i>		
11:30 – 12:30	Stakeholder Consultation, Group Discussion <ul style="list-style-type: none"> ▪ Chaired by: Commissioner, KMC and KEI 	
12:30 – 13:30	Lunch Time	
13:30 – 16:30	Stakeholder Consultation, Group Discussion (contd.) <ul style="list-style-type: none"> ▪ Chaired by: Commissioner, KMC and KEI 	
[Session IV] Closing		
16:30 – 16:45	Way forward: KEI Vote of thanks	(KEI) Ms. Cho Hanna (KMC) Dr. Shishiroda Ratnayaka

Annex B: List of Workshop Participants

Core participants

No	Institute Name	Position	Name
1	Climate Change Secretariat (CCS), Ministry of Mahaweli Development and Environment (MMDE)	Director (Climate Change)	Sunimal Juyathunga
2	"	Assistant Director (Climate Change)	R.S.Sujith Ratnayake
3	"	Programme Assistant	Hasula Wickremasinghe
4	Kurunegala Municipal Council (KMC)	Chief Meical and Environmental Officer	R.M.Shishiroda Rathnayake
5	"	Programme Assistant	Abdul Saththar
6	Third National Communication Project, MMDE (Local Consultancy Team)	Vulnerability and Adaptation Measures Technical Coordinator	Susantha Udagedara
7	"	Mitigation and GHG Inventory Technical Coordinator	Jagathdeva Vidanagama
8	Green Technology Center (GTC)	Senior Researcher	Rywon Yang
9	"	Researcher	Inhye Bak
10	Korea Environment Institute (KEI)	Senior Researcher	Hanna Cho
11	"	Researcher	Gibong Yer

General participants

No	Institute Name	Position	Name
1	Climate Change Secretariat (CCS), Ministry of Mahaweli Development and Environment (MMDE)	Environmental Management Officer	Ambika Tennakoon
2	"	Environmental Management Officer	Shyamali Priyanthi
3	"	Air Pollution and Ozone Division	Nandana Senaratne
4	Kurunegala Municipal Council	Public Health Inspector	R.D.D Rajapaksha
5	"	Technical Officer,	Konara
6	Mahaweli Water Security Investment Programme, MMDE	Environmental Specialist	Padmasiri Moonamale
7	MMDE	Consultant	Gamini Senanayake

* Attached: Participants (Total: 75)

Annex C Local Advisory and Expert team

Local Advisory Team:

- Hon Mayor KMC
- Director CCS,MMDE
- Divisional Secretary Kurunegala Divisional Secretariat Division
- Commissioner KMC
- Chief Medical Officer KMC
- Chief Engineer KMC
- Assistant Director CCS
- Heads of Departments city level offices (Water, Land Use, Transport, Waste, Electricity, Forest, wildlife , Survey, etc)

Local expert* (consultancy) Team:

- Dr. Shiroada Ratnayake , Head Health Department KMC (Team leader)
- Mr. R Nalaka Arjuna Bandara (KMC Engineer)
- Eng. I R Gamage (Head Water supply and sewerage project)
- All heads of technical divisions of the city level stakeholder offices
- Dr Manjula Ranagala (Rjarata University) (Heat stress vulnerability and UHI study)
- Mrs W R Samaranayake (GIS and Land Use expert LUPPD, City office)
- Mr R S S Ratnayake (CCS)
- Ms Hasula Wickramasinghe (CCS)
- Dr. Jagathdeva Vithanage (Consultant – Base line survey and Analysis)
- Mr Susantha Undagedra (Consultant- Water sector adaptation)
- Industrial Services Bureau Kurunegala (Consultant)
- Development Officers attached to the KMC and DSD (Enumerators of the Baseline Survey)

(some experts attached to CCS and KMC will provide services in voluntary basis)*

Annex D: Selected Brief CVs of Local Consultancy Team

Manjula Mahinda Ranagalage

Affiliation: Senior Lecturer, Department of Environmental Management, Rajarata University of Sri Lanka,

Education:

Ph.D. in Geo-environmental Sciences in Graduate School of Life and Environmental Sciences, the University of Tsukuba (Pending result).

MA in Geography, Faculty of Graduate Study, University of Sri Jayewardenepura, 2013.

MSc in Geo-Informatics, Postgraduate Institute of Agriculture, University of Peradeniya, 2010.

BA Special in Geography (First class hons), University of Colombo, 2006.



Expertise: Environmental Management, Geo-Informatics, GIS Database

Employment Records (selected):

Senior Lecturer in Environmental Management, Department of Social Sciences, Rajarata University of Sri Lanka, Mihintale, from 01.12.2013 to 30.03.2015.

Lecturer in GIS, Department of Social Sciences, Rajarata University of Sri Lanka, Mihintale, From 01.12.2008 to 30.11.2013

Publications (selected):

Ranagalage, M., Dissanayake, D., Murayama, Y., Zhang, X., Estoque, R. C., Perera, E., & Morimoto, T., 2018. Quantifying surface urban heat island formation in the World Heritage Tropical Mountain City of Sri Lanka. *ISPRS International Journal of Geo-Information*, 7(9), 341.

Ranagalage, M., Estoque, R. C., Handayani, H. H., Zhang, X., Morimoto, T., Tadono, T., & Murayama, Y., 2018. Relation between urban volume and land surface temperature: A comparative study of planned and traditional cities in Japan. *Sustainability*, 10(7), 2366.

Notable projects:

Monitoring the Effects of Urban and Peri-Urban Agriculture and Forestry on Runoff and Infiltration of Storm Water in Kesbewa Urban Council, Sri Lanka, 2014. L.

Manawadu, Y.M. Wickramasinghe, Sudeera Ranwala, M.T.M Mahees, Ranagalage Manjula & E.N.C. Perera, Funded by Climate and Development Knowledge Network and UN-habitat.

Manawadu, Y.M. Wickramasinghe, Sudeera Ranwala, M.T.M Mahees, Ranagalage Manjula & E.N.C. Perera, Funded by Climate and Development Knowledge Network and UN-habitat.

Jagathdeva Vidanagama

Affiliation: Technical Coordinator – National Greenhouse Gas Inventory and Mitigation Options

Education:

PhD., Product Life Cycle Carbon Footprint Assessment, University of Colombo (UoC), Sri Lanka and Colorado State University (CSU), USA
Master in Manufacturing Management, University of Colombo
B.Sc. in Science, Wayamba University of Sri Lanka



Expertise: Product Carbon Footprint Analysis, Product Life Cycle Analysis and Eco Design, Resource Efficient Cleaner Production, Industrial Symbiosis (Industrial Ecology)

Employment Records:

Technical Coordinator – National Greenhouse Gas Inventory and Mitigation Options: Sri Lanka's Third National Communication on Climate Change Project, Climate Change Secretariat, Ministry of Mahaweli Development and Environment, August 2017 to Date.

National Expert on Resource Efficient Cleaner Production, National Cleaner Production Centre (A Project of UNIDO and UNEP), Sri Lanka, January 2007 to December 2013

Publications (selected):

Vidanagama, J., Lokupitiya, E., 2018. Energy usage and greenhouse gas emissions associated with tea and rubber manufacturing processes in Sri Lanka. *Environ. Dev.* 0-1. Doi: 10.1016/j.envdev.2018.03.006

Vidanagama, J., Lokupitiya, E.Y. K., Kulatunga, A. K., Warnakula, M. T., 2016. Cradle-to-Gate Greenhouse Gas Emissions Associated with Rubber Industry in Sri Lanka and Greenhouse Gas Mitigation Measures Through Process Improvements. 7th International Conference on Sustainable Built Environment; Special Session on Sustainable Manufacturing, University of Peradeniya, Kandy, 2016

Vidanagama, J., Lokupitiya, E., 2017. Comparison of Energy Usage and Greenhouse Gas Emissions Associated with Tea and Rubber Manufacturing Processes in Sri Lanka. International Conference on Climate Change, Colombo, 2017. (Awarded the best presenter of the session)

Vidanagama, J., Lokupitiya, E. Y. K., 2016. Assessment of Rate of Change in Soil Carbon Stock in Tea Plantations in Sri Lanka. Center for Environmental Studies of the University of Peradeniya, Kandy

Vidanagama, J., Lokupitiya, E.Y.K., 2016. Energy Usage and Greenhouse Gas Emissions Associated with Tea Manufacturing Process in Sri Lanka. Annual Research Symposium University of Colombo, Colombo, 2016

Udagedara Susantha Chandrasiri Udagedara (U.S.C Udagedara)

Affiliation: Technical Coordinator, Vulnerability and Adaptation Measures Chapter of Sri Lanka's Third National Communication on Climate Change / Climate Change secretariat, Ministry of Mahaweli Development and Environment, Sri Lanka



Education:

Master of Environment Management [Colombo]
Bachelor of Science (B.Sc) Environment Conservation and Management-Hon's [Kelaniya]

Expertise: Climate Change (vulnerability assessment and adaptation), Seagrass (taxonomy, psychology, ecology, seed bank, climate resilience, mapping, modeling and conservation and etc), Project management and Monitoring of the projects/community participation projects and project evaluation, Environmental Issues Related to Water and Soil/Land Pollution and Conservation

Publications (selected):

S.Udagedara, D. Fernando, N.Perera, A.Tanna and R. Bown, 2017, A first record of *Halodule pinifolia* Miki den Hartog, and new locality of nationally endangered *Halophila beccarii* Asch, from the eastern coast of Sri Lanka, *International Journal of Aquatic Biology*, 5(5): 328-335.

Udagedera U. S. C, Gabadage D.E and Najim M. M. M., 2015, Distribution notes on the endangered freshwater crab *Ceylonthelphusa armata* (Ng, 1995) (Crustacea: Brachyura: Gecarcinucidae) in Sri Lanka: a cautionary note. *Journal of Threatened Taxa*.

Udagedara U. S. C and Kularatne H, 2015, A new record of Closed-wing Reeding, *Indolestes divisus* (Hagen, 1862) from Kegalle District, Sri Lanka (Odonata: Zygoptera: Lestidae), *Notulae Odonatologicae*, 8(5):147-155.

Notable projects:

Study on distribution of Seagrasses in Valaichchenai Lagoon, Batticaloa District, Sri Lanka (Field Researcher/ Coordination of Research project), 2017.

Asia Pacific Network for Global Change Research (Research Assistant), 2016.

Seagrass and Food Security in Sri Lanka-A case study of Puttalam Lagoon (Research Partner-Sri Lanka), 2015.

Framework development for carrying out an Environmental Risk Assessment (Cleaner Production Consultant), 2015-2016.

Assessment of Youth Climate Change Awareness in Sri Lanka (Research Coordinator), 2014-2016.

Annex E: Gallery

Day 1



Left-Right: *Opening session; UDA & KMC Presentation*



Left-Right: *GTC Presentation; KEI/KACCC presentation*



Left-Right: *Discussion session; Group photo*

Day 2

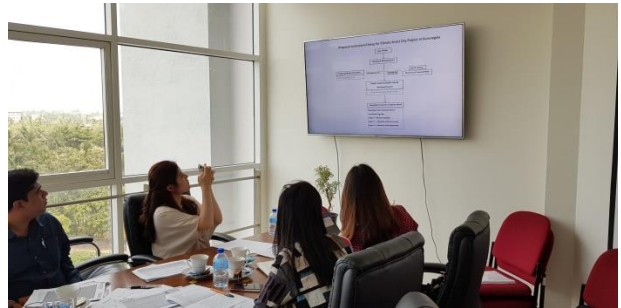


Left-Right: *City level kick-off meeting with KMC; Discussion*



Left-Right: Sewage; Field Trip in Kurunegala City

Day 3



Left-Right: City level kick-off meeting with MMDE; Discussion