

Enhancing Climate Resilience in Sri Lanka and Bhutan Sub-National Governments - The Case Study of Climate Resilient Action Planning of Kurunegala City and Sarpang District

CASE STUDY

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Kurunegala city in Sri Lanka and Sarpang district in Bhutan are committed to climate-resilient development principles and strategies and their integration into the development process. The Asia LEDS Partnership supported both sub-national governments to prepare the Climate-Resilient Development Action Plan (CRCAP) under the ‘Asia LEDS Partnership: Scaling Up Lessons from CapaCITIES’ project, supported by the Swiss Agency for Development and Cooperation (SDC).

Key Take-aways

Kurunegala and Sarpang marked their leadership roles in promoting sustainability and climate-resilient development in their countries and

region, by preparing their CRCAPs with the target year of 2030, using the CRCAP methodology¹. The major takeaways of the project are:

- **CRCAP as an instrument for climate-resilient planning:** The preparation of the CRCAP was not just helpful in identifying vulnerabilities, but also revealed a growing realization of the changes needed in governance and in the formulation of new policies and strategies to tackle new urbanization challenges and to meet the development needs. The CRCAP helped the cities to scientifically assess the baseline situation, and recommended solutions and actions based on the vulnerability assessment and emission intensity of key urban sectors.



Figure 1: Sarpang, Bhutan



Figure 2: Kurunegala, Sri Lanka

1. CRCAP methodology was formulated under the Capacity Building for Low Carbon and Climate Resilient City Development (CapaCITIES) project, which was implemented in four Indian cities from 2016 to 2019 with support from the Swiss Agency for Development and Cooperation (SDC). The details are available on <https://capacitiesindia.org/> (Accessed 16th September 2019)

- **Strengthening climate resilience requires an integrated multi-stakeholder effort:** It is widely recognized that new approaches and innovative practices are needed to manage urban systems, especially in the light of current and future climate change impacts. Therefore, this transformation requires integrated multi-stakeholder efforts for optimum utilization of resources and for building the adaptive capacities of vulnerable sections.
- **Demonstrating commitment by delivering ‘low-hanging fruits’:** The CRCAP indicates the severity and urgency of climate change and heavily banks upon the city leadership. It is important that the city government shows its commitment and commences the implementation of some of the common ‘no-brainer low hanging fruits,’ which are available at ‘no cost to very limited cost’ and also offer significant climate change mitigation and adaptation benefits. Simultaneously, policy reforms and regulatory provisions could be brought in with the help of the provincial and federal governments to smoothen the whole process of strengthening climate resilience.
- **Need for detailed sectoral baseline and comprehensive strategies:** The CRCAPs also highlight the need for detailed sectoral baseline assessment and strategy preparation, considering the climate change projections. There is a need to prepare sectoral action plans for solid waste management, stormwater drainage, sewerage and energy, which will provide the baseline information and sectoral strategies of vulnerable urban systems. These sectoral plans will help the sub-national government to initiate climate action immediately, without waiting for a mandate or a policy from the state or the national government. However, since climate resilience is closely related to the developmental goals and priorities of the sub-national governments, policy support

from the state and national government will not only ensure the sustainability of the initiative, but also open up new avenues for channelizing these strategies towards implementable actions.

Context

Over the last few years, the global urban population has grown rapidly. Today, 55% of the world’s population resides in urban areas; that number is expected to touch 68% by 2050 (UN 2018).² The world is projected to have 10 additional megacities with a population of more than 10 million by 2030, with most of them being situated in developing regions.³ Asia is projected to have 4.9 billion people by 2030.⁴ With rapid urbanization, the major regions in Asia have become vulnerable to climate change impacts. Home to 60% of the world population⁵, the continent was the highest contributor to the global Greenhouse Gases (GHG) emissions in 2017, with a share of 53%.

South Asia is among the world’s most vulnerable regions and is already experiencing severe climate change impacts such as flooding, storm surges, heat stress and sea level rise. Sri Lanka and Bhutan are two economies in the region that have witnessed significant economic and infrastructure growth in the last two decades. Both nations submitted their Intended Nationally Determined Contributions (INDCs) to the United Nations in 2015, and have pledged to adopt policies and actions for low GHG development. Thus, any policy for low GHG development in these regions needs to incorporate both vulnerabilities to climate change risks as well as GHG emission reduction targets, whilst meeting their Sustainable Development Goals (SDG) goals as well.

Kurunegala city in Sri Lanka and Sarpang district in Bhutan were selected to prepare the CRCAP, based on their commitment to climate-resilient

2. Revision of World Urbanization Prospect, 2018. Available at <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html> (Accessed 12th November 2019)

3. <https://www.weforum.org/agenda/2019/02/10-cities-are-predicted-to-gain-megacity-status-by-2030/> (Accessed 12th November 2019)

4. <https://www.un.org/en/development/desa/population/publications/pdf/trends/Population2030.pdf> (Accessed 12th November 2020)

5. Key World Statistics, International Energy Agency, 2019. Available at <https://webstore.iea.org/> (Accessed 15th November 2019)

development and also as per the recommendation of their national governments. Both sub-national governments are emerging urban centres and struggling with rising urbanising trends and the impact of climate change. The CRCAP supports the sub-national governments to estimate GHG emissions, assess the vulnerability hotspots and come up with specific actions plans for climate change mitigation and adaptation. The adoption of the CRCAP in Bhutan converges with the Bhutan Government’s motto for its ongoing five year plan (12th), i.e. “Just, Harmonious and Sustainable Society through Enhanced Decentralisation”. The CRCAP also aligns with Sri Lanka’s Climate Change Policy⁶ and Vision 2025.⁷

CRCAP Methodology

Cities across the South Asian region realize that climate change could have substantial impacts on urban systems, including the development infrastructure and people’s lives. City governments have limited technical understanding and do not have the necessary tools and resources to scientifically plan their response to climate change. As part of broader sustainability efforts, cities are also expected to map out the sources of GHG emissions and channelize their efforts and development focus towards the most vulnerable communities within the city and fragile urban systems.

The recommended climate-resilient development strategies and actions of both sub-national governments will contribute effectively to Bhutan’s and Sri Lanka’s NDCs and SDGs. The CRCAP strategies are based on the local priorities and will inform policy proposals of several vulnerable sectors, such as transport, energy and sanitation.

Cities require a systematic climate action plan and methodology to streamline their activities and optimally utilize the available resources. To this effect, ICLEI South Asia has prepared the Climate Resilient Cities methodology under the Capacity Building for Low Carbon and Climate Resilient City Development (CapaCITIES) project, supported by SDC. The Climate Resilient Cities Methodology resulted in the preparation of the



Figure 3: CRCAP Methodology

6. Sri Lanka’s Climate Change Policy was adopted in 2012 to frame strategies for climate change mitigation, technology transfer, financing and investment mechanisms, education, training and awareness, monitoring, assessment and management of impact risks due to climate change
7. In September 2017, the Government of Sri Lanka launched its Vision 2025, which underscores priority reforms to help the country become more prosperous.

CRCAP - a useful integrated planning document that helps to set up a baseline and identify strategies and actions to mitigate GHG emissions and build resilience to the changing climate. Moreover, since climate-resilient development planning is a new topic for most cities, the exercise of preparing the CRCAP also helps in chalking out a systemic process to identify goals, set targets, establish institutional mechanisms and identify and prioritise actions along with the financial and implementation plans.

The Climate Resilient Cities methodology was followed to develop the CRCAP for Kurunegala in Sri Lanka and Sarpang in Bhutan.

The Climate Resilient Cities Methodology consists of three phases: Analyse, Act and Accelerate, each unfolding into three steps that outline how climate vulnerability can be assessed and climate-resilient options (to achieve low-emission and climate-adaptive development) can be identified and integrated into urban development policies, plans and processes (see Figure 3). Further, all three steps of all phases comprise three sets of activities for the achievement of the objective of each phase. The complete methodology is supported by a wide range of tools and guidance to support local governments in delivering effective CRCAPs.

Kurunegala Climate Resilient City Action Plan

Kurunegala is the capital city of the North Western Province of Sri Lanka. Spread over 11 km², it is located at the junction of several main roads and is about 94 km away from Colombo and 42 km from Kandy. As of 2018, the city had a resident population of 38,969.⁸

The CRCAP of Kurunegala has been prepared in order to incorporate climate resilience in the long-term planning and development of the city. As per an estimation made by ICLEI South Asia under the CapaCITIES project, supported by

SDC, the total GHG emission of the Kurunegala Municipal Council (KMC) area in 2016-17 was 93,272 tCO₂e. The transport sector was the highest contributor of GHG emissions, accounting for 39.1%, followed by the sectors of commercial and institutional buildings and facilities, waste, residential buildings and manufacturing industries and construction with 29.5%, 14.3%, 9.2% and 7.9%, respectively. The GHG emission inventory of Kurunegala was prepared as per the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)⁷, using the country-specific emission factors and energy density values of applicable fuels and electricity. This exercise provided a technical understanding of the economy-wide sources of emission, the sectoral carbon-intensity profile and the emission trend in the city, and helped in the preparation of a carbon emission baseline for the target setting and support in the robust monitoring and reporting assessment.

Kurunegala aims to reduce 22,964 tCO₂e per year by 2030, through a set of identified priority interventions, covering sectors such as energy, transport, solid waste and wastewater⁹. Some of the popular interventions include deployment of rooftop solar photovoltaic cells, replacement of conventional streetlights with energy-efficient models, electric buses, biomethanation and eco-school programs. The cumulative potential of the GHG emissions reduction with the proposed interventions amounts to about 22% of Kurunegala's baseline annual GHG emissions in the year 2016-17.

A set of soft policy interventions, focusing on the development of plans and policies to complement existing infrastructure in the city, have also been identified. The CRCAP indicates that the cumulative investment requirement for the priority projects is USD 33.60 million, and this includes hard and soft interventions¹⁰ of USD 32 million and USD 1.60 million, respectively. Some of the priority hard interventions include deployment of solar photovoltaic systems;

8. Average of population projected by arithmetic, geometric and incremental method (ICLEI SA Estimate).

9. In contrast to other actions, initiatives identified by the city to address wastewater-related emissions do not have a significant mitigation potential. However, they have a fair share in the overall climate-resilient development. An Aerobic Treatment Technology-based Sewage Treatment Plant has been proposed for Kurunegala, keeping in mind the overall benefits in terms of improved sanitation.

10. Hard interventions include infrastructure-related measures; while soft interventions include policy and planning-related measures.

replacement of convention streetlights with energy-efficient lighting and redevelopment of old housing stocks. The soft interventions include preparation of a solid waste management plan, a comprehensive mobility plan and setting up of ecoschools and eco-campuses to promote education and awareness about sustainable development and environmental conservation.

The Kurunegala CRCAP also includes mapping of vulnerable wards of the city, which have been identified on the basis of the inputs and observations by all municipal officials and stakeholder discussions during the shared learning dialogues. The vulnerability assessment in the Kurunegala Municipal Area identified urban planning, sewerage, stormwater drainage, solid waste management, transportation and education and training as the vulnerable sectors. The risks and vulnerabilities associated with these major urban systems were estimated through risk assessment exercises. The assessment has provided a technical understanding of the climate vulnerabilities for each of the identified urban systems and a sound base for the selection of the climate-resilient development strategies and actions. Further, the administrative wards of Mahaweadiya, Ihala Teliya Gonna and Udawalpola have also been identified as the vulnerable hotspots of the KMC¹¹ - a useful exercise that would help in judicious utilization of the available resources and capacity in the areas that require urgent attention.

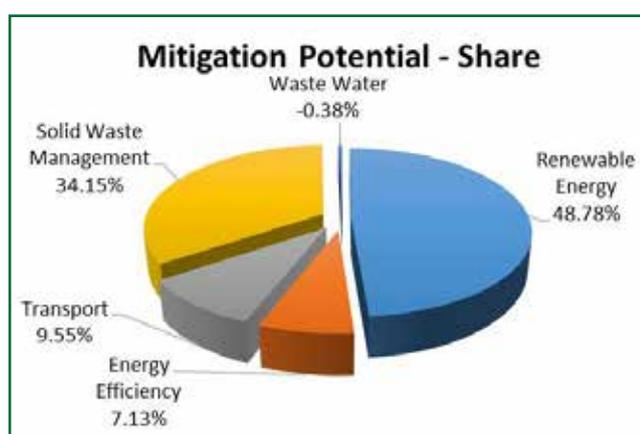


Figure 4: Sector-wise Share of GHG Emission Reduction under Kurunegala CRCAP

Figure 4 shows the sector-wise mitigation potential of the proposed priority interventions for Kurunegala. Energy sector interventions (renewable energy and energy efficiency) will make the highest contribution to emission reduction, followed by solid waste management and transport initiatives.

During the application of the Climate Resilient Cities methodology to prepare the CRCAP, the KMC officials and other stakeholders had many opportunities to gain new insights that would be critical in their day-to-day development planning activities. Some of these important insights are:

- (a) Improved understanding of the cross-cutting nature of urban systems and the direct and indirect impact of climate change on them.
- (b) Better technical understanding of energy data categorization, and the need for streamlining data collection procedures and an integrated database management system.
- (c) Understanding of the GHG emission sources and carbon profile of the city and their importance in climate-resilient development planning
- (d) Understanding the level of exposure, sensitivity and adaptive capacity of urban systems, and knowledge of the vulnerable geographic areas and demographic groups of the city
- (e) Technical training on the accounting and reporting of the GHG emissions following the GPC¹² and the process of conducting the vulnerability assessment

Sarpang Climate Resilient Action Plan

Sarpang is one of Bhutan's 20 Dzongkhag (districts), spread over 1,655 sq.km and sharing approximately 200 km of the country's international border in the south with India's Assam state. It is one of the three gateways to India, and one of the more socio-economically

11. Draft Kurunegala CRCAP, Sri Lanka, November 2019

12. The GPC is a global framework that harmonizes emissions measurement and reporting processes for cities of all sizes, economies, and geographies. Jointly developed by ICLEI, WRI, C40 and with additional collaboration by the World Bank, UNEP, and UN-HABITAT, the GPC also enables cities to develop effective climate action plans and low-emission development strategies. For more information, please visit <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities> (Accessed 16th September 2019)

developed areas of Bhutan due to its strategic location and close proximity to Indian markets. The total population of Sarpang district is 46,004¹³ with Gelephu Thromde and Sarpang Town being the major centres.

ICLEI South Asia has prepared the Climate Resilient City Action Plan for Sarpang and Gelephu Thromde under the CapaCITIES project, supported by SDC. The CRCAP identifies the sustainable development opportunities in the district, incorporating both low GHG development as well as climate change risks. The present GHG emission in Sarpang stands at 63,023 tCO₂e. The transport sector, in keeping with its highest share in energy consumption, is the largest contributor of GHG emissions in the district, with a share of 82%. The waste sector and the residential buildings sector are the second and third highest contributors to the overall GHG emissions in the district, with 13% and 4%, respectively. The commercial and institutional sector contributes the least, with 1%.

Gelephu Thromde contributes 55,794 tCO₂e of the total district emissions. The transport sector is the highest GHG emitter in Gelephu city, with a sector share of 87%, followed by the waste sector, residential buildings and commercial and institutional buildings and facilities, with shares of 7%, 4% and 2%, respectively¹⁴.

Sarpang has not been able to cope with its rapid urbanization and has faced major issues in sectors such as sewerage and stormwater drainage, causing a lot of health problems such as vector-borne diseases. The district lacks an efficient sewerage system and a large proportion of its untreated wastewater is being discharged directly into water bodies.

To tackle this issue, two Decentralized Wastewater Treatment Systems (DeWATS), with a cumulative capacity of 1 million litres per day (MLD), have been proposed. DeWATS allows the biogas produced from treatment of wastewater - a cleaner alternative to LPG - to be captured and utilised, in addition to providing numerous

benefits in terms of hygiene and public health.

Sarpang, by virtue of having a six-month long monsoon, is vulnerable to flooding. The city does not have an appropriate infrastructure to manage floods. To tackle this problem, the preparation of integrated flood hazard zoning maps and plans to identify critical locations for infrastructural interventions such as gabions and flood ways, and watershed-based climate-resilient flood mitigation plans for rivers/streams have been proposed. Sarpang also aims to install a waste-to-vermicompost plant to reduce GHG emissions from waste going to the landfill. Some energy-efficient and renewable energy-based interventions are also proposed, but as the grid-supplied electricity in Bhutan is hydel-power based, the emission reduction potential of these energy interventions translates to zero. However, these resilience interventions will also reduce the dependence on grid electricity (especially the power being imported from India during winter).

The preparation of appropriate management plans and awareness generation and training has been proposed to address key challenges in health (such as outbreaks of vector-borne diseases) and education sectors. It is critical to note that in the case of Sarpang, the priority resilience interventions identified are more inclined towards adaptation aspects of climate change, probably because of the region's vulnerability to climate impacts, especially flooding. The total investment required for the proposed priority actions is estimated to be USD 26.45 million¹⁴.

Figure 5 shows the sector-wise emission reduction potential of the proposed projects. As explained above, the mitigation potential of energy-based interventions is non-existent. The waste management sector includes both solid waste and wastewater-based interventions, such as a 2 metric tons per day (TPD) waste-to-vermicompost plant in Gelephu Thromde and the installation of two DeWATS systems with a cumulative capacity of 1 MLD.

13. Sarpang, Dzongkhag at a Glance, <http://www.nsb.gov.bt/publication/files/pub8dd1015sk.pdf> (Accessed 16th September 2019)

14. Climate Resilient City Action Plan: Sarpang Dzongkhag & Gelephu Thromde, October 2019

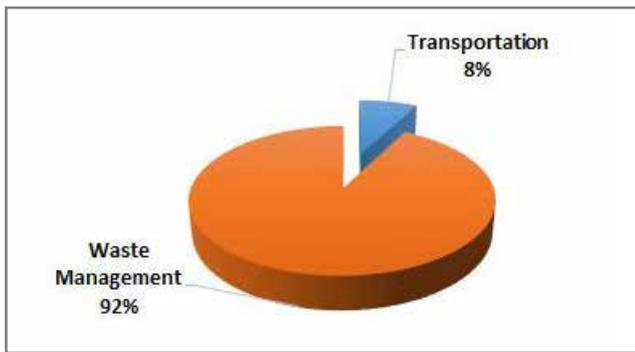


Figure 5: Sector-wise Share of GHG Emission Reduction under Sarvang CRCAP

Monitoring, Reporting and Verification of Low Emission Interventions

To enhance the effective implementation of any low-emission development policy or measure at the subnational level, it is imperative to strengthen the monitoring and evaluation (M&E) mechanism at the administration/organizational levels. The M&E and /or MRV system form an important input into Phase 3 ‘Accelerate’ of the CRCAP methodology.

As envisaged in the CRCAP methodology, cities are expected to implement MRV systems for internal assessment of the implementation of all climate-resilient development programs and projects and of the larger CRCAP itself - tracking progress against overall objectives and specific targets using well-defined key performance indicators (KPIs).

An MRV process typically includes specific indicators, timelines and a project-specific monitoring mechanism. There are multiple climate change funds, each with different guidelines on specific requirements, processes and reporting requirements. Climate mitigation funds require tracking and reporting of GHG impacts, energy savings, green job creations, and benefits to the vulnerable sections of the society. MRV can also be developed by the city on a voluntary basis. The MRV system includes:

- **Monitoring:** Measurement of indicators linked to the implementation of actions and their impacts (defining what data needs

to be captured, who will capture, what stages need to be reviewed and also setting milestones).

- **Reporting:** Reporting requirements vary according to the guidelines of specific climate change funding institutions. The modalities of the reporting are very specific to each of the climate funds that the project proponents are expected to adhere to.
- **Verification system:** City self-verification of emissions and/or third-party verification - after identification of verifiers and acceptance of the MRV system by the national/local government. Verification should ideally be overseen by an external or third party to ensure transparency and an objective assessment.

To institutionalize the process, a Climate Core team has been established in the city, comprising key city decision-makers and stakeholders, who would evaluate the progress of the CRCAP implementation and monitor direct impacts of the proposed low-emission climate-resilient development projects such as the reduction in energy consumption, GHG emissions along with co-benefits. It is also important to build the capacities of municipal staff for specific projects to record and assess implementation impacts.

Implementation barriers will be identified, discussed and solutions will be proposed by the Core Climate team on an annual basis, before the municipal budget is drawn up and finalized.

The CRCAP itself shall be reviewed and prepared once every three years to ensure a rolling plan and allow for mid-course corrections. It is advisable to update the inventories of the GHG emissions once in two years. GHG emissions reduction accruing from the proposed low-emission actions should also be regularly reported on the global reporting platform (for example, ICLEI CDP Unified Reporting System)¹⁵ and also on the city government’s website to ensure recognition and visibility of the efforts. It is also understood that the cities may also need to report to national and sub-national levels of government, using the relevant reporting frameworks. Depending

15. ICLEI CDP Unified Reporting System streamlining ICLEI’s carbon Climate Registry (cCR) and CDP’s reporting platform with an goal to make climate reporting faster and easier. For more information, please check <https://talkofthecities.iclei.org/infographic-highlights-from-cdp-and-icleis-unified-reporting-system/> (Accessed 16th September 2020)

on this, a technical consultant may be required to assist the city to develop a project-specific MRV system. The MRV process is supposed to be implemented with regular reporting feeding into relevant processes.

Interlinkages of Subnational Actions with National Policy

There are a number of opportunities to mitigate and adapt to climate change at the city level, but a range of barriers - financial, political, institutional, information and capacity related - prevent these opportunities from being fully realized. To address these barriers and fully unlock the opportunities requires acknowledgement of the distinct dynamics that operate at the national and subnational levels, and how the interactions between them can help or hinder climate-resilient actions. Rather than simply implementing stand-alone local actions or downscaling national strategies, a range of effective solutions exists that national governments can employ to accelerate climate mitigation via integrated national and subnational action. These include providing clear mandates and ownership to the cities' government entities on aspects related to municipal service management, providing technical skills and knowledge support, and devising innovative financing mechanisms for implementation of priority low-emission climate-resilient development projects.

The Government of Sri Lanka intends to create 10 or more Climate Smart Resilient Cities in the medium term to demonstrate and strengthen cities' adaptive capacity to mitigate the vulnerability risk in coming years, while achieving its climate commitment and SDGs. Further, the Royal Government of Bhutan has also recently formulated the 12th five-year plan with an objective of building a "Just, Harmonious and Sustainable Society through Enhanced Decentralization". It has 17 key result areas. One of the critical Key Results Areas (KRA) in the Bhutan plan is 'Carbon neutral, Climate and Disaster Resilient Development Enhanced'. Further, there are 10

local government level key results areas (LGKRA), one of them being 'to enhance carbon neutral, climate and disaster-resilient development'. All of the LGKRA are supported by various dedicated programs and projects sponsored by federal and provincial governments.

Cities are best placed to identify local needs and benefits and to exploit synergies across investment priorities by mobilizing local resources and coordinating between individuals, institutions and sectors that are crucial to mitigation action. Sub-national governments have greater opportunities for policy innovation in developing tailored solutions and identifying policy complementarities, for example, through local piloting and experimentation. The experience and lessons learnt from the CRCAP work in Sri Lanka and Bhutan have enhanced the capacity of officials in city climate action planning and is expected to give a much-needed impetus to the replication of the CRCAP in other cities, thereby contributing to the NDC targets and SDGs.

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