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Republic of India

NLTA to Support Implementation of Orissa State Climate Change Action Plan

Summary Report

June 27, 2017

GSU18
SOUTH ASIA



Table of Contents

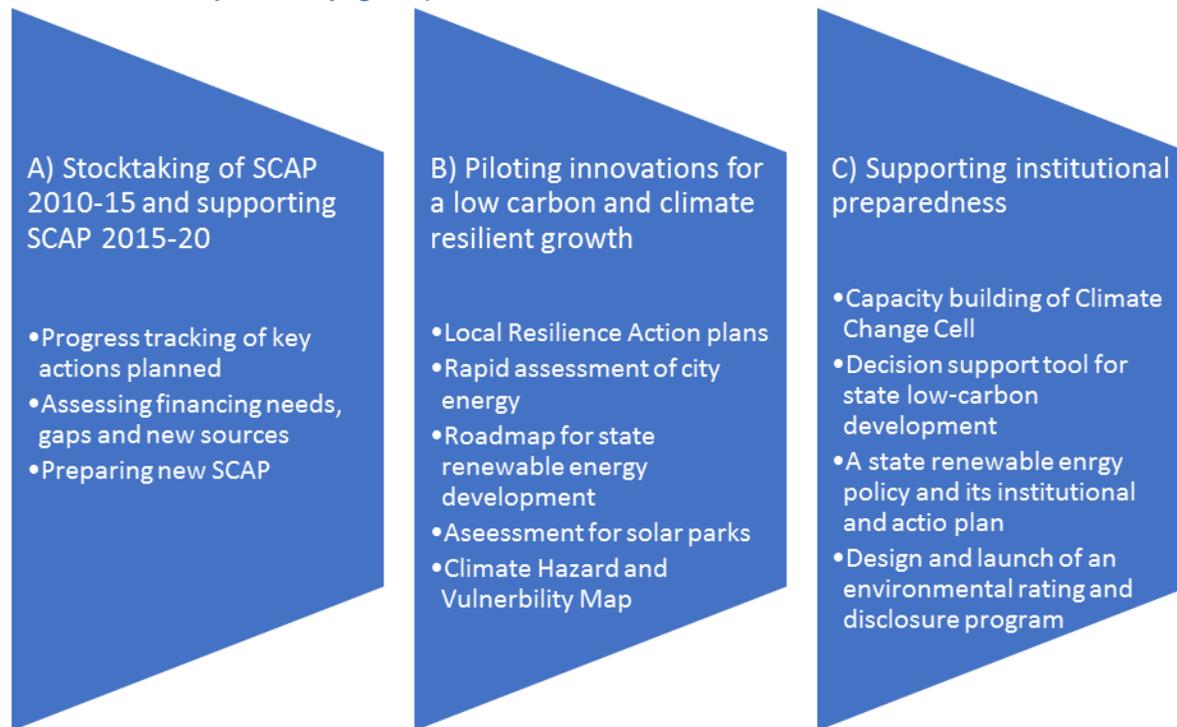
Abbreviations	3
1. Summary	4
1.1 NLTA: Key activity groups and deliverables	4
1.2 Key Achievements.....	4
1.3 NLTA Impact on Key Sectors	5
Energy	5
Climate Change and Environment	5
Urban Planning	7
Agriculture, Fisheries, Forest and Panchayati Raj	8
2. Objective.....	9
3. Introduction to the NLTA	9
4. NLTA Activity Areas	10
A. Stocktaking of SCAP 2010-15 and supporting development of SCAP 2015-20.....	10
B. Piloting innovations for a low carbon and climate resilient growth of Odisha	12
C. Supporting institutional preparedness for SCAP and beyond	15
5. NLTA Outreach Activities.....	17
6. Conclusion.....	17
ANNEXURES.....	19
ANNEXURE 1: Key priorities in 11 sectors under the Odisha SCAP (2010)	19
ANNEXURE 2: Key Sector-wise Deliverables (2014 -2017).....	22

Abbreviations

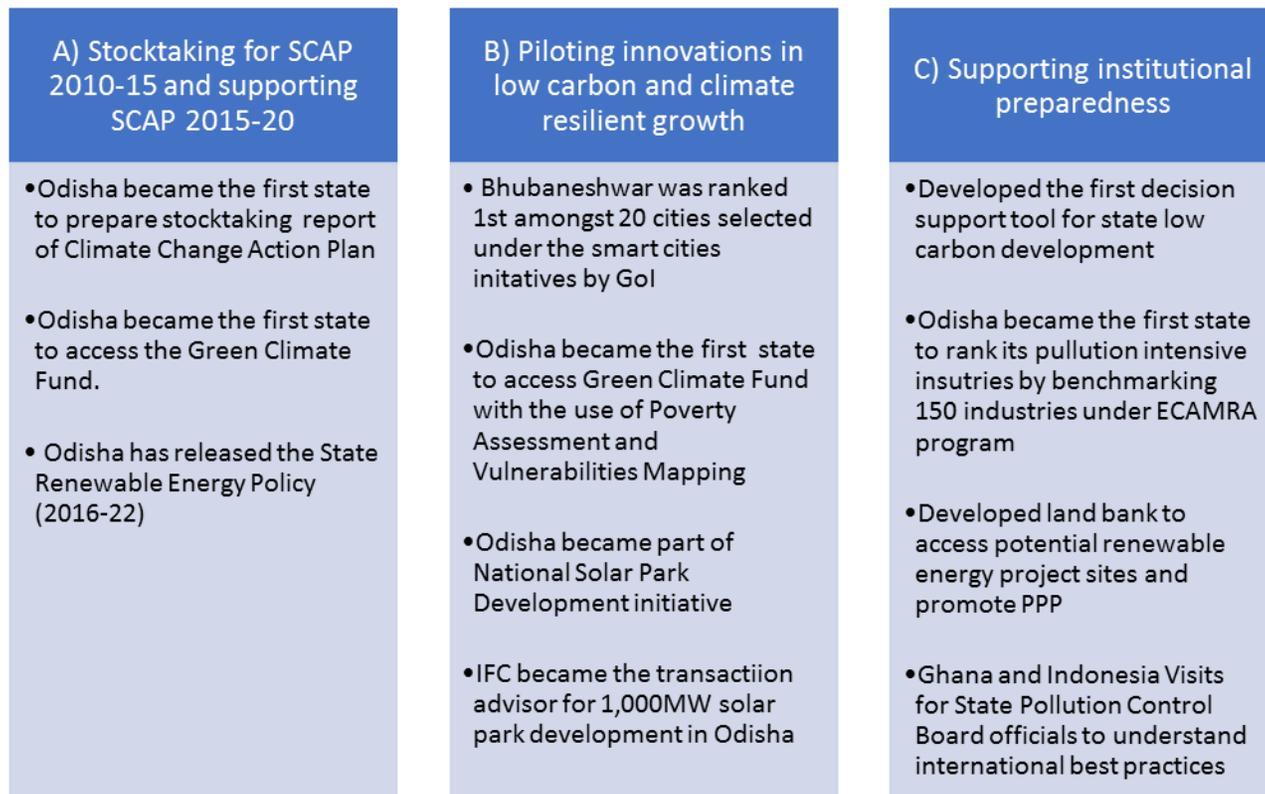
CCC	Climate Change Cell
DRM	Disaster Risk Management
ECAMRA	Environmental Compliance Assessment, Monitoring and Rating
ECBC	Energy Conservation Building Code
EIC	Engineer – in – Chief, Nodal Agency for Small Hydro Electric Power Projects
GCF	Green Climate Fund
GEDCOL	Green Energy Development Corporation
GHG	Greenhouse Gas
GIS	Geographical Information System
GoI	Government of India
GoO	Government of Odisha
GRIDCO	Grid Corporation of Odisha
LRAP	Local Resilience Action Plan
MCA	Multi Criteria Analysis
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NDC	Nationally Determined Contribution
NLTA	Non-Lending Technical Assistance
OREDA	Odisha Renewable Energy Development Agency
OSPCB	Odisha State Pollution Control Board
PPP	Public Private Partnership
SCAP	State Climate Action Plan
TRACE	Tool for Rapid Assessment of City Energy

1. Summary

1.1 NLTA: Key activity groups and deliverables



1.2 Key Achievements



1.3 NLTA Impact on Key Sectors

Energy

The NLTA was instrumental in strengthening the institutional environment, policy and operational framework for Odisha state to move towards clean renewable energy generation. These will act as a catalyst to steer Odisha away from a fossil-fuel dominant energy production and consumption pattern, and shift the energy-mix towards clean and renewable sources.

Since Energy is an infrastructure intensive and capital heavy business, the early policy and strategic guidance, capacity building and operational roadmap provided by the NLTA facilitated GoO's ambitious plan to add 2,750 MW of energy capacity from renewable sources by 2022, instead of going the fossil-fuel way that was more familiar to them.

The NLTA also helped the State implement the proposed state actions under the policy on time and keep on track to achieve such an ambitious renewable energy addition. The land bank created through the NLTA identified and assessed government owned or waste lands available for large-scale solar projects up to 1,000 MW out of the targeted 2,200 MW from solar addition under the policy. The NLTA has provided a way to easily identify future opportunities for renewable energy development through a transparent information database of potential public and waste lands.

Because of successful identification of potential solar park sites, Odisha was also included in the National Solar Park Development Initiative, which the World Bank is supporting under the Shared Infrastructure for Solar Parks Project. This enables the state to qualify for concessional financing to develop a total 1,000 MW solar park through bilateral/multilateral development banks as well as for additional funding through the Government of India (GoI). Furthermore, IFC agreed to provide its transaction advisory support for 1,000MW solar park development, building on the early success of policy formulation and land bank assessment.

The NLTA's information dissemination activities helped build awareness in the other stakeholders about the vision, policy and steps being taken by the GoO. Especially on the private sector engagement part, the NLTA helped engage with potential investors and private players early on to understand their challenges / concerns and mitigate risks, to facilitate a successful Renewable Energy PPP.

Climate Change and Environment

The NLTA conducted the first stocktaking exercise of the SCAP among States as the World Bank did to help Odisha become the first state to publish the SCAP in 2010. This resulted in the development of the State Climate Change Action Plan 2015-2020 to address the gaps and to establish measurable, actionable goals and timetables for implementation of a robust operational action plan for the following five years.

Based on the stocktaking exercise, SCAP 2015-20 contains:

- 49 specific actions to enable the state to design investments aiding adaptation;
- 11 actions that have both resilience/mitigate and adaptive features; and
- 22 GHG reduction strategies across sectors.

Climate Change and Environment

A summary of sector-wise prioritized action plan are as follows:

Sector	Prioritized Action
Agriculture	Increase area under fruit crops, water-efficient micro-irrigation methods, create seed banks and automated weather stations, document indigenous technical knowledge and develop green energy efficient agri-model (such as solar pump sets)
Coast and DRM	Construction of multipurpose flood and cyclone shelters, techno-legal regime for the construction of disaster-resilient public infrastructure;
Energy	Clean coal based power generation, improve distribution system, promotion of small and medium hydel plants and biomass and wind energy, maximize solar power generation
Fishery and animal resources	Scientific animal health management, fodder and breeding management, disease early warning system
Forests and environment	Assisted natural regeneration, protect and increase mangroves and coastal biodiversity, regenerate bamboo forests, fire protection, joint forest management
Health	Improve management of vector borne and water borne diseases
Industry	Feasibility study of bio methanation process for a food processing cluster in PPP mode, regional environmental management plans, compensatory waster harvesting
Mining	Study to assess coal-bed methane potential, green bet development in mining clusters, creation of an environmental restoration fund, reclaim old abandoned mines
Transport	Phase-out of old vehicles, fuel efficiency improvement through driver training, use of e-rickshaws
Urban development	Introduction of mass/bus rapid transport system and promotion of urban storm water and drainage management
Water	Improvement in irrigation water usage efficiency and flood control & drainage
Waste Management	Waste to energy PPPs, fly ash utilization, solid waste management.

As a result of the assessment of the financial needs and gaps, a strategy to access sources other than state budgetary allocations was developed. This has resulted in successfully accessing the Green Climate Fund (GCF) for a “Ground water recharge and solar micro irrigation” project that ensures food security and enhances resilience in vulnerable tribal areas. The NLTA was instrumental in winning an early approval of this proposal from the GCF board. While this is one of the firsts, this project will serve as a model for further climate finance access and supplement GoO’s own budgetary allocations.

The NLTA also resulted in drafting a long-term low carbon conscious growth strategy in SCAP 2015-2020, by providing a decision support tool to assess GHG emission scenarios by different scenarios and commitment on low carbon conscious growth. Given that states will assume increasingly important and critical role in implementing Nationally Determined Contribution (NDC), this tool helps in planning stage to understand long term GHG emission impact with

Climate Change and Environment

different level of mitigation targets and measures.

The NLTA also worked with the Odisha State Pollution Control Board (OSPCB) to develop a state environmental rating and disclosure program and made Odisha become the first state in India to start ranking its pollution intensive industries.

Urban Planning

The Local Resilience Action Plans (LRAPs) for Bhubaneswar, Cuttack and at the State Level, produced as a deliverable under the NLTA, aligned the cities' needs to their visions and growth aspirations to attract investments and promote economic growth. The LRAP considered the risks and vulnerabilities arising from natural hazards along with the projected impacts of climate change and suggested various structural and non-structural measures to improve urban resilience. These measures will make sure that in case of a natural disaster, there is no loss of life and minimum damage to infrastructure, despite the high population & infrastructure density of urban areas.

The resulting priority interventions suggested for improving urban resilience are:

1) Integrated Flood Management

- restoration of ponds to hold excess rainfall runoff and flood water
- creation of rainfall infiltration or harvesting facilities and permeable pavements, multi-purpose flood facility centres and injection wells to help absorb a portion of excess rainfall runoff and help the flood water to flow off

2) Risk Resilient Urban Planning and Development

- construction of resilient and affordable housing for urban slums
- updating of building bylaws and development control regulations
- integrating risk sensitive land use planning in city master plans, urban flood management to address location specific problems

The NLTA also helped pave the way to improve the current energy utilization efficiency in urban areas so that energy wastage can be minimized both in short and long term, regardless of the renewable or non-renewable source. This is even more important at this point of time as the energy consumption demand is expected to soar and it is essential that any new infrastructure integrates energy efficient design principles and focuses on energy conservation.

By using the Tool for Rapid Assessment of City Energy (TRACE)¹, the NLTA quickly helped identify key areas that have energy saving potential across key energy intensive sectors in cities and develop a comprehensive energy efficiency strategy for the State. To set direction towards successful execution, the NLTA also developed a concept note for Implementation of Energy Conservation Building Code (ECBC) in Odisha.

Taking into account recommendations provided by LRAP and TRACE, Bhubaneswar was recently judged 1st in the Smart Cities Initiatives led by GoI². The NLTA was instrumental in making Bhubaneswar fare well on a lot of evaluation parameters & hence contributed to the top rank. Some example evaluation parameters where the NLTA

¹ <http://www.esmap.org/TRACE>

² http://smartcities.gov.in/content/city_challenge.php?page=winning-city-proposals-in-round-1-of-city-challenge.php

Urban Planning

helped are:

- At least 10% of city electricity supply coming from solar;
- Smart metering and Energy Efficient Street Lighting; and
- At least 80% buildings should be green and energy efficient.

Agriculture, Fisheries, Forest and Panchayati Raj³

The highly vulnerable areas and communities to climate change were identified to be given early attention, through the NLTA's Climate Hazard and Vulnerability mapping exercise where 107 single indicator GIS maps and 36 combined maps were developed. This facilitated identification of targeted spatial interventions that support both livelihoods and address climate risks. The prioritized communities are:

- Communities dependant on rain fed agriculture;
- Forest dependent communities who are vulnerable to climate risks and face many pressures including dam construction, mining and forest clearance for settlement; and
- Poor coastal fishing communities vulnerable to cyclones.

The NLTA followed an integrated investment approach on key areas of agriculture, coastal zones and disasters, forests and water resources. The resulting priority investment project pilots initiated in 4 districts as mentioned below, will help test and learn what works and what doesn't. This is an extremely important step, before devising and implementing any state-wide program – both from an effectiveness and resource utilization efficiency point of view.

- Balasore - Mangrove rehabilitation & development of sustainable livelihoods for fishing communities
- Bolangir - Climate smart agriculture project / irrigation project
- Kandhamal - Upscaling of producer to market networks for horticultural products and Holistic forest watershed management project
- Sundargarh - Holistic forest watershed management project

These proposed investment projects promote an ecosystem based adaptation (EBA) which can offer cost-effective options for addressing climate change vulnerabilities. They need to be detailed and developed further by the concerned departments potentially with the World Bank support and the institutional, organizational and administrative arrangements made need to be finalized.

³ Panchayati Raji and Drinking Water Department is responsible for policies and programs on rural development in Odisha.

2. Objective

The purpose of this document is to summarize the activities, outcomes and impact made by the World Bank's Non-Lending Technical Assistance (NLTA) to the Government of Odisha from 2014-17. This document is a part of the formal closure process of the NLTA ending June 30th, 2017.

3. Introduction to the NLTA

In a first such request of its kind from an Indian state, Government of Odisha (GoO) requested World Bank's Non-Lending Technical Assistance (NLTA) for implementation of its State Climate Change Action Plan (SCAP).

Odisha state is highly vulnerable to climate change owing to a vulnerable coast line, rain-fed agriculture, droughts, saline water intrusion, forest degradation and periodic natural disasters such as cyclones and flooding. Odisha will also become one of the largest contributors of Greenhouse gas (GHG) emissions in India due to the growing energy needs. This will also adversely impact community livelihoods and intensify water and vector borne diseases.

To overcome these challenges, the SCAP laid out a state-wide five-year plan (2010-2015) with priority actions in 11 sectors. (Refer Annexure 1 for a list of these actions)

Promote Climate Resilience	Promote Carbon Conscious Growth
<ul style="list-style-type: none">• Coastal/ Disasters• Agriculture• Water• Forestry & Fisheries• Health	<ul style="list-style-type: none">• Energy• Environment• Urban Planning• Industrial• Mining• Transport

Considering the above, the NLTA aimed to help implement the SCAP through strategic planning, investments, institutional reforms, and development of financing options beyond state and central resources. The NLTA also aimed to help GoO make climate change and environmental sustainability decisions in the medium to long run and build a carbon conscious and a climate resilient development path in the state.

The NLTA focussed on the following activity areas:

- (A) Stocktaking of SCAP 2010-15 and supporting development of SCAP 2015-20
- (B) Piloting innovations for a low carbon and climate resilient growth of Odisha
- (C) Supporting institutional preparedness for SCAP and beyond

4. NLTA Activity Areas

A. Stocktaking of SCAP 2010-15 and supporting development of SCAP 2015-20

Activities and Deliverables

Since 2011, the SCAP implementation had been slow, with little documentation of progress made. The NLTA assessed:

- progress on implementation of key SCAP actions (both adaptation and mitigation); and
- the current financing available from the state and central governments.

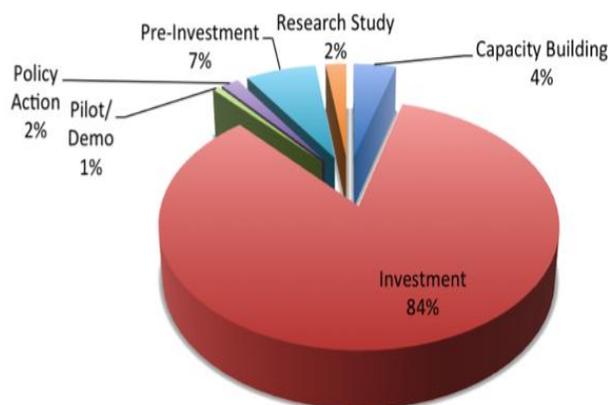
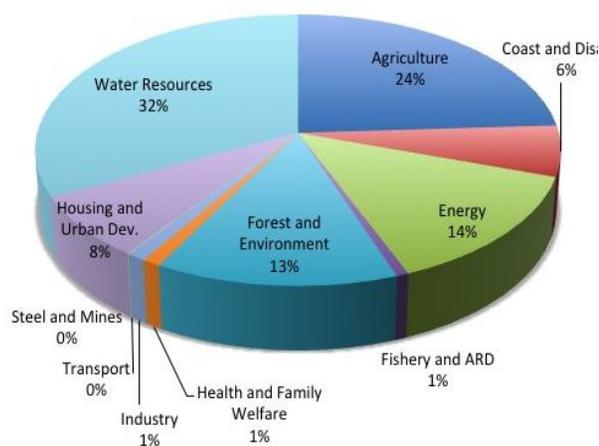
1) Progress Assessment

The NLTA conducted the first stock taking exercise with the Climate Change Cell mandated to track the progress for the SCAP. This was crucial because it helped identify the baseline, progress and next steps for prioritization and improvements so that the SCAP outcomes can be achieved in time.

2) Financial Assessment

The state's investments and budget allocations indicate that investments on projects related to climate change are increasing, to a 4% of 2014-15 budget from a 3.3% in 2013-14. The actual figures are likely to be higher as the 4% figure does not consider cross-sector investments made through the national mission (the Mahatma Gandhi National Rural Employment Guarantee Act: MGNREGA), etc. that have significant climate related benefits.

Based on 2014-15 budgets, the total climate change related investment is INR 4285.46 Crore, of which, 52% has been earmarked for mitigation, 40% for adaptation and the remaining 8% for actions that can be classified as both mitigation and adaptation.



The financing assessment revealed the following gap:

A. Stocktaking of SCAP 2010-15 and supporting development of SCAP 2015-20

Sectors	CCAP 2011	Climate Budget (2013-2015)		Financing
	Costs	Total	Total	GAP
	Amount (Crore)	%		
Agriculture	1500	1604.46	24.1%	-104.46
Coast and Disaster	1300	403.27	6.1%	896.73
Energy	6500	917.17	13.8%	5582.83
Fishery and ARD	217	44.27	0.7%	172.73
Forest and Env	4650	882.77	13.3%	3767.23
Health	500	66.13	1.0%	433.87
Industry	325	70.68	1.1%	254.32
Steel and Mines	55	0	0.0%	55
Transport	60	4.06	0.1%	55.94
H&UD	1200	502.12	7.5%	697.88
Water Resources	725	2163.92	32.5%	-1438.92
Total	17032	6658.9	39.1%	10373.15

Since the state had, thus far, relied on its own resources to finance the SCAP implementation, the NLTA assessment helped make a case for developing a strategic plan to access non-traditional financial sources, so that the total financing needs could be met.

As a result -

- Odisha was recently included in the National Solar Park Development Initiative, which the World Bank is supporting under the Shared Infrastructure for Solar Parks Project. This enables the state to qualify for concessional financing to develop a total 1,000 MW solar park through bilateral/multilateral development banks as well as for additional funding through the GoI.
- GCF approved funding for a “Ground water recharge and solar micro irrigation” project that ensures food security and enhances resilience in vulnerable tribal areas of Odisha.

Recommendations

1) Need for newer financial sources

As identified in the financial assessment mentioned above, the state government’s own resources won’t suffice for SCAP implementation. Hence there is a need to access non-traditional financial sources from governments, donors, and multilateral agencies. While there has been one project financed through the GCF after NLTA support, climate financing such as GCF could be utilized for more projects. Similar models could be replicated for accessing and engaging with multilateral agencies, especially for the Energy and Forest and Environment part of the SCAP, since the financial gap is the largest.

2) Need for Data/ Measurement related processes

The NLTA assessment also made evident a strong need for establishing and standardizing data collection, analysis and reporting processes within the state departments so that the expenditure and outcomes can be measured accurately.

- To monitor the correlation between expenditure and outcomes, the Climate Change Cell must develop guidelines for all departments so that the data collection can be internalized within the respective monitoring and evaluations processes
- Whilst the Climate Change Cell has developed an internal reporting and analysis format, it must be

A. Stocktaking of SCAP 2010-15 and supporting development of SCAP 2015-20

standardized within the budgeting and reporting routines of all departments.

- 3) Need for longer-term approach to stocktaking because 3-5 year investments plans are not sufficient to accurately analyse adaptation capability outcomes.
- 4) Need for capacity building on climate change issues by associating with the administrative training institute of the state wherein focused training and technical assistance can be delivered for more effective mainstreaming of the SCAP.
- 5) Need for developing a knowledge hub for continued stakeholder engagement: The Climate Change Cell must be developed into a more robust knowledge hub so that more effective support can be rendered to departments.

B. Piloting innovations for a low carbon and climate resilient growth of Odisha

Activities and Deliverables

1) Prioritization of Key SCAP Activities

The NLTA prioritized key activities under SCAP by applying rigorous technical criteria such as urgency, constraints, and resources across sectors. The NLTA fine-tuned key actions by sector and proposed a time-bound implementation strategy with the Climate Change Cell and nodal departments.

This activity was crucial in achieving faster progress in SCAP implementation because initially the SCAP had not identified sectoral strategies or city-level plans, implementation plans, cost of the specific actions, or funding sources. For a massive transformational and cross-sectoral initiative like the SCAP to succeed timely, prioritization based on a cost-benefit analysis, leveraging all possible financial sources and having a detailed implementation strategy is essential.

2) Development of Local Resilience Action Plans (LRAP) for Odisha state, Bhubaneswar, and Cuttack

LRAPs are action plans prepared by the city/ state with support from the Bank to reduce vulnerability to natural hazards and climate change and contains a series of practical actions (investments and soft measures) that can be implemented by the Government to become more resilient. Considering Odisha's urban population growth (26.8%), emergence of Bhubaneswar, Cuttack, and Puri as key economic areas, and the fact that these cities are vulnerable to cyclone, urban flooding, heat waves and earthquakes, development of LRAPs and their effective implementation becomes crucial. Also, owing to climate change and global warming – not only are risks of these natural hazards increasing, but also the magnitude of their impact. For example, residential buildings in Bhubaneswar could lose up to US\$ 75 million, only from cyclones. This further necessitates the development and implementation of LRAPs for the state government.

Each LRAPs (for the state, and for the cities of Bhubaneswar and Cuttack) contains assessment of: i) climate change and impact scenarios; ii) vulnerability and risk, iii) various organizations involved in disaster recovery and climate change adaptation; and iv) ongoing risk mitigation activities undertaken by the GoO and other agencies. The hazard risk assessment exercise identified both Bhubaneswar and Cuttack municipalities as highly vulnerable to cyclone, urban flooding and vulnerable to heat waves and having moderate risk of earthquake. While Bhubaneswar was found to be vulnerable to urban flood, Cuttack was found to be vulnerable to riverine as well as urban flood. The risk assessment exercise has identified vulnerable hotspots within the cities. As an outcome, several structural and non-structural interventions are suggested to improve urban resilience - while most of the structural measures suggested are specific to the cities or to certain localities, non-structural interventions are mostly at State and city

B. Piloting innovations for a low carbon and climate resilient growth of Odisha

levels. These are integrated flood management and risk resilient urban planning and development that are detailed in the recommendations section below.

3) Energy efficiency improvements in cities

The Tool for Rapid Assessment of City Energy (TRACE) was used for an energy diagnostic in three cities - Bhubaneswar, Cuttack, and Puri to understand energy efficiency opportunities. The building, potable water and transport sectors were identified as the most promising in terms of state ownership, ongoing policy work, and readiness for potential energy efficiency interventions as well as with regards to replication and energy savings potential.

4) Maximization of the use of renewables

a) **Developing low carbon strategy and policy for implementation of RE projects**

The NLTA supported GoO in promoting renewable energy by helping prepare a low carbon strategy covering key sectors, building on the actions identified in SCAP. Given that 95% of renewable energy potential is still untapped and private investment is not fully mobilized to promote renewable energy, the NLTA detailed out a roadmap and policy for implementation of RE projects in the State between 2016-2022.

The resulting Odisha Renewable Energy Policy (2016-2022) was approved by the State Cabinet in November 2016 after a series of consultations with stakeholders. The overall target for renewable energy capacity addition over policy period for the State is 2,750 MW –

Technology	Solar	Wind	Small Hydro	Biomass	Waste to Energy (WTE)
New Target(MW)	2,200	200	150	180	20

b) **Capacity building of Key State Institutions**

The NLTA also contributed to operationalizing the Green Energy Development Corporation (GEDCOL) by developing an operationalized plan and the institutional arrangements therein to support low-carbon development as per the renewable energy roadmap that the NLTA supported. It also helped strengthen the functioning of Grid Corporation of Odisha Limited (GRIDCO). These capacity building activities will help these key institutions achieve the state targets by 2022.

c) **Developing a Land Bank Database**

A land bank database was developed to identify non-agricultural, non-forest land blocks available for solar project development in each district of Odisha. This helped identify potential sites for development of Solar Park/Hybrid Park with Solar and Wind projects. Land procurement has been one of the biggest challenges faced by private developers because of its potential to cause delays and cost overruns on projects. Odisha has non-agricultural government land that can be utilized for renewable-energy development. However, due to the lack of availability of site information, it has been difficult for private-sector developers to tap into such resources in a cost-effective manner, a problem this land bank will solve.

The NLTA also contributed to develop specific and detailed parameters to categorize and prioritize the identified public and waste land sites and shortlisted two sites after the detailed techno commercial evaluation to assess potential feasibility of solar parks.

B. Piloting innovations for a low carbon and climate resilient growth of Odisha

5) Improving resilience and reducing the vulnerability of the poor

The NTLA supported the development of Climate Hazard and Vulnerability maps in the four demonstration districts: Balasore, Bolangir, Kandhamal and Sundargarh. The maps facilitate the identification of targeted spatial interventions that both support livelihoods and address climate risks. Given the diversity of climate risk and socio-economic conditions across the state, it is clear that not all areas and communities will be equally impacted. Understanding the spatial dimension of livelihoods and climate risk is therefore key to developing effective interventions.

There are clear synergies, in terms of reducing the vulnerabilities of the poor to climate change and sustaining livelihoods, with ongoing investments undertaken by the Departments of Agriculture, Fisheries, Forest/Environment and Panchayati Raj. Based on initial discussion with key departments and the findings of the Climate Hazard and Vulnerability mapping work, potential investment projects which could be supported through a World Bank loan were identified. The projects identified in this initial Climate Change and Livelihoods Project Plan address representative climate hazards, vulnerabilities and geographical areas. Their implementation could serve as pilot/ demonstration projects, which if replicated at scale could lead to transformational change.

Recommendations

1) Need for Integrated flood management

- a) **Pond restoration:** both Bhubaneswar and Cuttack have several ponds which are silted, reducing their water holding capacity drastically. These ponds, if de-silted, can act as local reservoirs to hold excess rainfall runoff and flood water.
- b) **Restoration of secondary and tertiary drains** connecting to the primary drains that are being renovated.
- c) **Rainfall infiltration (harvesting) facilities and permeable pavements:** the design and construction of the cities' infrastructure facilities need to consider flood risk and mainstream flood control in all construction activities. This includes infiltration ponds, and permeable pavements, which can help absorb a portion of excess rainfall runoff and flood water.
- d) **Multi-purpose flood facility centres:** Design of open spaces like playgrounds and other public spaces as retardation ponds. This may require excavating playgrounds to help flood waters flow in local catchments through gravity.
- e) **Injection wells:** Potential for development of injection wells, which can help drain out flood water and at the same time recharge ground water aquifers, which are depleting particularly in Cuttack city. This needs geological investigations and selecting appropriate locations for injection wells.

2) Need for risk resilient urban planning and development

- a) **Resilient and affordable housing for urban slums:** Some centrally sponsored slum rehabilitation projects are being developed by these cities. Design interventions are needed for these buildings to be cost effective and resilient to hazards particularly to earthquake, cyclone, and heat wave.
- b) **Building bylaws and development control regulations:** The building bylaws and development control regulations need to be updated based on hazard risks and climate change impacts.
- c) **City Master plan:** Integrating risk sensitive land use planning in the city Master plans. The proposed

B. Piloting innovations for a low carbon and climate resilient growth of Odisha

development and land use zoning of 2030 need to consider hazard risks and impacts of climate change.

- d) **Urban flood management:** integrated flood management approach needs to be taken to address location-specific problems.

3) Need for development of a state-wide energy efficiency strategy

The TRACE assessment helped identify public and residential buildings, potable water and public transport sectors as promising areas. It also revealed that energy use in Indian cities is handled by a variety of governing departments. Hence full control over energy efficiency opportunities is spread over a vast jurisdiction, making it difficult to concentrate interventions at a city level.

Therefore, to strengthen the energy efficiency mandate and clearly define time-bound energy efficiency objectives (that will inform the capital investment planning for the 13th EIC 5-year plan), the development of a state-wide energy efficiency strategy is needed. The Electrical Engineer-in-Chief, SDA could be entrusted with development, implementation and monitoring of this strategy, working across departments and governance levels.

4) Need for assessing and developing the potential lending projects identified in initial Climate Change and Livelihoods Project Plan

The priority investment projects require further site specific fine-tuning and assessment at the village / community level to better understand the socio-economic conditions of communities and to determine which communities should be supported as a priority. After this step, the institutional, organizational and administrative arrangements for the investment projects need to be agreed upon.

The initial Climate Change and Livelihoods project plan covers only four districts. A climate risk and vulnerability mapping of all districts of Odisha is needed for a broader strategy and implementation.

The initial Climate Change and Livelihoods Project Plan has focused on agriculture, coastal zones and disasters, forests and water resources, and related departments associated with livelihoods. However, it is important to recognize that climate resilient livelihoods and poverty alleviation are cross cutting issues, and ultimately actions across all sectors should be screened for their impact, using a high level multi criteria analysis (MCA) screening tool.

C. Supporting institutional preparedness for SCAP and beyond

Activities and Deliverables

1) Capacity building for the Climate Change Cell (CCC)

GoO created a Climate Change Cell (CCC) to oversee the progress and liaise with the Government of India, external funding agencies and different sectors for the smooth implementation of the SCAP. The NLTA focused on strengthening the capacity of the CCC through:

- better articulation of the role, mission and vision of the CCC and the climate change nodal officers;
- review of similar institutional arrangements in other states for best-practices;
- assisting in training/capacity building through participation in international conferences/seminars/workshops;

and

- supporting the preparation of the second iteration of the SCAP 2015-2020.

2) Development of Odisha Energy Security Scenario 2047 tool

An energy and GHG emission scenario building tool for the State of Odisha, which explores a range of potential future scenarios for the State, was developed to compare possible energy futures across:

- energy supply sectors such as solar, wind, biofuels, oil, gas, coal, and nuclear; and
- energy demand sectors such as transport, industry, agriculture, cooking, and lighting and appliances.

The tool allows users to interactively make energy choices, and explore a range of outcomes for the State in the context of GHG emissions, water availability issue and land use change within the state.

3) Support of an environmental rating and disclosure program for Odisha State Pollution Control Board

The NLTA supported design and launch of an environmental rating and disclosure program that includes performance criteria for environmental impacts targeting energy intensive high polluting industries, mines and thermal power plants. It has helped institute the public performance rating scheme for industries (ECAMRA) and in developing performance indicators and a robust monitoring program and as well as in capacity building for improved self-reporting based on the international standards.

The NLTA organized a study tour to Ghana and Indonesia for environmental regulators and senior policy-makers from the GoO in 2015. This helped them learn about Environmental Rating and Disclosure (ERD) Programs and created a 3-country network of environmental regulators who can continue to share the lessons of implementation of their ERD programs.

Recommendations

1) The following activities should be initiated and completed:

- Using the existing environmental ratings web platform of the international consultants, customize and deploy:
a) data entry web-interface for companies to report self-monitoring data directly into the ECAMRA's integrated database system. This data will include environmental parameters at the point-specific level as well the company totals for water and energy use; b) An online environmental audit and inspections data management system; and c) A desktop application for computerized evaluation of environmental rating of companies;
- Help evaluate the final environmental ratings for public disclosure; and
- Help prepare communications plan and a public website for the disclosure of ratings to the media and the public.

2) Further evolve the decision support tool (Odisha Energy Security Scenario 2047 tool) by adding a feature to show financial implications of the chosen scenarios, so that the user can understand how much it will cost to meet the different GHG paths. This will help make more well-informed decisions by considering the cost and financial feasibility as well.

3) More cross-departmental engagement by the CCC through:

- establishment of inter-departmental data collection standards so that CCC can analyse the collected data and monitor KPIs;
- knowledge generation and dissemination activities to mainstream SCAP 2015-20 goals (and how to achieve them) in the activities of all possible departments; and
- sharing of best-practices and tools developed for the purpose with all departments and training them to use them effectively in their respective planning processes

Support in these areas will help Odisha to develop its adaptation response prudently, measuring effectiveness periodically, while putting in place institutions and procedures to both increase resilience and the ability to respond to the more dramatic changes.

5. NLTA Outreach Activities

The SCAP progress report was released in a ceremony hosted by the Odisha Chief Minister in 2015.⁴ This helped the NLTA get institutional visibility within the GoO departments and helped in further engagement with them. While the NLTA majorly worked with GoO, the larger impact envisioned in the policies and action plan cannot be achieved without involving the private sector and the public. For successful implementation of SCAP, it is essential to have an early engagement with the private sector and all other stakeholders – to share the vision and action plan, gather inputs in the participation barriers to be removed and risks to be mitigated.

For the same purpose, consultations, workshops, and seminars were organized during the course of preparation of NLTA deliverables across sectors. These events helped not only improve the quality of deliverables but also sensitise the industries, NGOs, academia, and communities on the important aspects of SCAP and outcome from its implementation in the state.

For example, the consultation and dissemination workshops held for development and announcement of the state renewable energy policy with the support from NLTA helped confirm GoO's commitment to RE promotion and the steps it is taking to make private sector engagement easier, such as providing land acquisition and other infra support, co-financing and other technical assistance to encourage and de-risk private investment. They also provided clarity on commercial terms and potential of the business the private sector could expect to build and grow, and how GoO plans to facilitate the process.

6. Conclusion

The NLTA has helped the GoO progressed the implementation of SCAP, by stocktaking of the SCAP 2010-15, assessing achievements, gaps and finances, and preparing the next SCAP for 2015-20. It also helped the GoO strategize and implement a low carbon & climate resilient growth through LRAPs, vulnerability mapping, TRACE assessments and capacity building for the state departments and agencies such as GEDCOL. The NLTA further helped the institutional

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<https://www.odisha360.com/2015/05/29/chief-minister-shri-naveen-patnak-releasing-the-progress-report-on-climate-change-action-plan-at-secretariat-on-may-28-2015/>

preparedness for SCAP and beyond, through the energy security scenario decision support tool and design, launch of the environmental rating and disclosure program and capacity building of the climate change cell. Areas needing policy and regulatory intervention were identified and supported as for the case of renewable energy development. Municipalities also got implementation support through identification of investment areas, prioritized communities and pilots to be done through LRAPs and TRACE . Based on the success and learnings from the NLTA, GoO is now in a better position to iterate, refine and scale solutions to the whole state for a greater impact.

After the NLTA engagement, there is a stronger awareness at all levels of the GoO administration about the risks posed by climate change to the State's social and economic development. This helps integrate climate change resilience as a necessary dimension in planning all their policies and activities. When multiple cross-sectoral schemes', seemingly small, individual climate resilience efforts will converge, the impact achieved will be reinforced and multiplied.

However, despite defining policies and creating institutions for the purpose, the progress made thus far, is far from satisfactory. A lot remains to be done towards successfully integrating climate resilience in the broader economic and sectoral agenda, to scale and cover the entire state. The financial and fiscal aspects of building resilience have received limited attention. To move fast, effectively and holistically – GoO needs to keep sourcing funds from multiple sources by leveraging multilaterals / donors and national funds to supplement its own.

Managing climate risks proactively, responsibly and effectively could bring about a sense of security and a means of progress to people, especially the most vulnerable ones. At the same time, rather than being a unique burden on the State, building climate resilience could prove to be opportunity for technological, institutional and societal innovations, and more sustainable investments, all associated with economic and societal gains.

ANNEXURES

ANNEXURE 1: Key priorities in 11 sectors under the Odisha SCAP (2010)

a) Mitigation Actions Proposed in SCAP

Energy	Mining
<ul style="list-style-type: none"> • Policy initiatives (such as green cess) for generating cleaner energy through clean coal approaches • Operationalizing Green Energy Corporation • Reducing transmission and distribution (T & D) losses • Promoting demand side management (DSM) and energy efficiency • Encouraging effective fly ash utilization and emission reduction • Promoting of small and medium hydel plants • Harnessing the biomass potential • Promotion of grid based wind power generation • Maximizing solar power generation 	<ul style="list-style-type: none"> • Incorporating climate concerns in State Mineral Policy • Analyzing appropriate policies to promote energy-efficiency and energy-savings potential in mining • Strengthening environmental monitoring of mining enterprises
Forestry	Transport
<ul style="list-style-type: none"> • Increasing reforestation / afforestation activities in degraded forest areas • Increasing planting on non-forest land • Monitoring carbon stock and biodiversity at regular intervals • Assessing fire management strategies • Working to establish new systems to support for community users 	<ul style="list-style-type: none"> • Revise state transport policies to incorporate climate change considerations • Integrate urban and transport planning • Facilitate moving towards low carbon fuel in transport • Piloting low carbon, green highways • Encouraging fuel use efficiency and tightening enforcement • Promoting non-motorized transport and developing inland waterways
Industry	Urban Planning
<ul style="list-style-type: none"> • Integrating climate concerns in industrial policies and plans • Assessing GHG profiles of major industrial clusters 	<ul style="list-style-type: none"> • Building capacity on climate change in town and country planning • Incorporate climate considerations in water supply and sewerage design

<ul style="list-style-type: none"> • Carrying out energy efficiency studies for industrial enterprises • Promoting recovery, recycle and reuse of waste material in industries • Setting emission standards for thermal power plants 	<ul style="list-style-type: none"> • Preparing a climate-friendly MSW management plan • Orienting towards energy-efficient street lighting • Developing a climate-responsible master plans • Strengthening infrastructure for promoting non-motorized transport
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b) Adaptation Actions Proposed in SCAP

Agriculture	Water Resources
<ul style="list-style-type: none"> • Rapid screening and strategy assessment of State Agriculture Policy from a climate change perspective • Strengthen capacity of the Department of Agriculture to provide seeds of a diverse mixture of crops and crop varieties that better tolerate climate risks • Scale-up the livelihood-focused, people centric integrated watershed development in rain fed areas • Improving availability of early warning systems to farmers • Provide economic incentives that will encourage farmers to switch and rotate crops and grow a mixture of crops rather than monoculture • Pilot climate friendly sustainable soil, water and crop management practices in 3 districts • Improved pricing schemes for irrigation water to encourage use efficiency • Formulation of a “State Drought Management Policy” 	<ul style="list-style-type: none"> • Development of flood forecasting models • Increasing the water use efficiency in irrigation • Increased budgetary allocation for schemes for construction and protection of water harvesting structures • Improving urban drainage systems • Strengthening river health and eco-systems monitoring • Expansion of state hydrometry network • Raising awareness through Farmers’ Training Programs and creating agro-climatic stations in 5 pilot districts
Coastal/Disasters	Forests

<ul style="list-style-type: none"> • Enhance capacity of OSDMA to undertake flood mapping, flood forecasting and downscaled climate change projections modeling • Developing a techno-legal regime for construction of disaster resilient housing and public infrastructure • Integrating climate change risk in the state’s disaster management policy • Enact policy restricting development in coastal land sensitive to sea-level rise such as barrier lands, coastal wetlands, estuarine shore lands, and critical wildlife habitat 	<ul style="list-style-type: none"> • Increasing reforestation/ afforestation activities in degraded forest areas • Increasing and protecting existing mangrove cover along the coast and identify areas where new and increased tree planting could create barriers to storm and cyclone impacts in coastal zones • Analyze the risk to Non-Timber Forest Product (NTFP) due to climate change and device sustainable risk transfer mechanism through the sustainable forest management plan. • Capacity building at the community level to develop strategy to adapt to climate change as part of a sustainable forest management
Urban Planning	Health
<ul style="list-style-type: none"> • Build climate change capacity in urban local bodies • Develop models of urban storm water flows and capacities of existing drainage systems with climate change 	<ul style="list-style-type: none"> • Integrating climate change considerations in the State Health policy • Data sharing protocol between Departments of Health, Meteorology and Forest and Environment on surveillance of climate related vector borne and water borne diseases • Study linkages between climate variability and health in the state to identify hotspots with a view to strengthening health care delivery systems.
Fisheries and Livestock	Industry
<ul style="list-style-type: none"> • Enhancing disease early warning systems for livestock with climate change considerations • Capacity building of livestock keepers • Impact of climate change on inland and coastal aquaculture • Development of infrastructure for early warning systems in coastal areas for fishermen 	<ul style="list-style-type: none"> • Implementing a system of compensatory water harvesting for industries • Streamlining institutional arrangement and strengthen OSDMA to tackle extreme climate events in coastal industrial areas

ANNEXURE 2: Key Sector-wise Deliverables (2014 -2017)

Energy	Climate Change and Environment
<ul style="list-style-type: none"> • Odisha State Renewable Energy Policy and dissemination • Roadmap for Renewable Energy (RE) development in Odisha till 2022 • Operational Plan for GEDCOL as a part of RE roadmap • Land Bank database for Solar park • Techno commercial assessment for identified sites in Balasore District • Capacity Building for GEDCOL and GRIDCO 	<ul style="list-style-type: none"> • SCAP 2010-2015 Progress Report • SCAP 2015-2020 (that will be used by the Climate Change Cell to revise SCAP) • ECAMRA: public performance rating and disclosure program for State Pollution Control Board • Odisha Energy Security Scenario 2047 tool – GHG emissions scenario
Urban Planning	Agriculture, Fisheries, Forest and Panchayati Raj
<ul style="list-style-type: none"> • Odisha State Local Resilience Action Plan • Bhubaneswar and Cuttack Local Resilience Action Plans • TRACE assessment for Puri, Bhubaneswar and Cuttack • Concept Note: Implementation of Energy Conservation Building Code in Odisha 	<ul style="list-style-type: none"> • Climate Hazard and Vulnerability mapping for the State; • Pilot projects in 4 districts: Balasore, Bolangir, Kandhamal and Sundargarh; • Initial Climate Change and Livelihoods Project Plan

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