

REPORT ON LERNING EXCHANGE PROGRAMME (VISIT) TO YUCATAN STATE IN MEXICO

BEST PRACTICE EXCHANGE ON YUCATAN'S CLIMATE CHANGE LAWS AND ACTION PLANS (28/02/2020 - 09/03/2020)

MARCH 2020





REPORT BY

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EXECUTIVE SUMMARY

Mexico has committed itself to implementing the Sustainable Development Goals as set out by the United Nations, all states and municipalities are required to align their initiatives to the SDGs and not only make mention of it in reports. A strict GHG inventory is managed by the federal government and municipalities as well as state departments are required to give annual reports.

One of the main challenges identified was heat islands. Due to the stricter border controls between Mexico and the USA the population of Mexico is increasing and densifying rapidly. There is a greater demand for space in the main cities. Rapid urbanization along with the high temperatures is causing heat islands. It was also observed that modern influences in architecture has also contributed to the heat Islands. Traditionally, due the high temperature set by the gratures experienced in the area, houses would have high ceilings and roofs to trap the heat. The state has expressly condemned the use of air-conditioning in houses in Merida. The state has initiated a renewable energy fund where citizens can apply for funding to change over to solar or other renewable energies. Citizens are charged an interest of approximate 5% over 5 years to pay back the money. They are also given tax rebates as well as rates rebates

Deforestation and a lack of indigenous trees that would provide shade and cooling has also impacted on the contribution of heat islands. Therefore the state has embarked on an "Arborisation strategy". The intention is to plant six hundred thousand indigenous trees in the city and surrounds. The state has initiated four nurseries, run by women only, to prepare seedlings in these nurseries. The state has also collaborated with five municipalities to develop a bicultural zone with protected areas. The state has also purchased bee farms for pollination of fruit trees within this bicultural zone as the local have experienced a number of

indigenous fruit trees not bearing fruit anymore due to climatic changes in the environment

Yucatan is an energy producer; however renewable energy is their highest commodity. Airolic, solar and gas energy are the primary electricity supply and if there is a shortfall fossil fuel is then used. Yucatan consumes almost 900 megawatts at present, it is predicated that in 4-5 years they will be producing 3400megawatts of clean energy, generating more energy than they consume.

Yucatan, has a genuine commitment to research and science and preserving their cultural biodiversity. They have established the first science and Technology Park in Mexico, similar to Silicon Valley, were the priority is joint contribution of state, private and public institutions towards the sustainable development. The scientific and technology park board contributes towards the goals, strategy and vision of the state.

The visit to Yucatan was extremely insightful, they are amongst the world leaders on sustainable development and renewable energy whilst also appreciating and protecting their rich culture and heritage.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
LIST OF FIGURES	4
1. INTRODUCTION	5
2. BACKGROUND	5
3. STATE OF YUCATAN DEMOGRAPHICS	5
4. LEARNING EXCHANGE METHOD	8
5. DISCUSSION	8
5.1. DAY ONE: 02 MARCH 2020	6
5.1.1. Activity One: Inroductory Meeting with Yucatan Secretary of SD	6
5.1.2. Activity two: Visit to Merida Municipality (Climate Change Strategies).	7
5.2. DAY TWO: 03 MARCH 2020	8
5.2.1. Activity One: Cenotes (Preseveration and Ecotourism)	8
5.2.2. Activity two: Mayan Traditional Communities	8
5.2.3. Activity Three: Engagement with the Mayor of Takax Municipality 1	0
5.2.4. Activity Four: Historic Haciendas (Ecotourism Potential)	0
5.3. DAY THREE: 04 MARCH 2020 1	1
5.3.1. Activity One: (Visit to Ocean Cenotes and Mangroves in Progreso) . 1	1
5.4. DAY FOUR: 05 MARCH 20201	2
5.4.1. Activity One: Visit to Yucatan Centre for Scientific Research	2
5.5. DAY FIVE: 06 MARCH 20201	3
5.5.1. Activity One: Engagement with Yucatan Civil Protection Centre1	4
5.5.2. Activity two: Engagement with Progresso Municipality1	4

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6. SUMMARY AND CONCLUSION
7. RECOMMENDATIONS
8. ACKNOWLEDGEMENTS
LIST OF FIGURES
Figure 1: State of Yucatan within Mexico (Wiki, 2020)8
Figure 2: Hacienda in Yucatan State
Figure 3: Deforestation of Mangroves in Progresso
Figure 4: Scientific Research Center of Yucatan, AC (CICY)17
Figure 5: Recycling Bins in Progresso
Figure 6: Chair in a public Park made up of a drum22

1. INTRODUCTION

- 1.1. The purpose of this report is to provide feedback on a weeklong (02 06 March 2020) learning exchange programme that was undertaken by COGTA officials to Yucatan State in Mexico. The learning exchange programme was aimed at understanding the manner in which the Yucatan state approaches and implements climate change adaptation strategies and bring home such progressive practices.
- 1.2. The point of interest in terms of the prepared itinerary was mainly centered around a number of issues such as Waste Management, Ecotourism, Agriculture, Traditional Communities, Marine Ecology (Mangrove), Disaster Management, Sustainable Energy, Science and Research. The report will thus deliberate on observations and best practices identified by the learning exchange team in aforementioned areas of interest.

2. BACKGROUND

- 2.1. Two officials were identified to participate in a learning exchange collaboration between Kwa-Zulu Natal and the Mexican State of Yucatan to further knowledge and best practice exchange on Yucatan's climate change laws and action plans from which the lessons learnt will assist in the implementation of the organization National adaptation strategy, which indicates that provincial governments are responsible for leading the response to climate change through reasonable legislative means.
- 2.2. The trip was principally funded by the Under2 Coalition and The Climate Group in particular to learn, about the state of Yucatan setting up their Special Plan on Climate Change Action (PEACC), Yucatan Peninsula Climate Change Strategy, Yucatan's REDD+ Strategy, Yucatan Peninsula Climate Fund, Sustainable Energy Strategy and local government experience on sustainable rural development from the Intermunicipal Bicultural board.

- 2.3. Ultimately, the intention of the trip was to accelerate KwaZulu-Natals response to climate change through reasonable legislative means since there is limited expertise in the provincial sector and give KZN a head start in the process.
- 2.4. Indicated in the text below, is a detailed log of daily activities and associated notes and PowerPoint presentations. The team had been fortunate enough to be accompanied on tours by senior officials who were able to impart significant information on the projects under review. The team gained first hand experiences by visiting and interacting with the locals benefiting from the developments of the state in its response to climate change and energy efficiency projects.

3. STATE OF YUCATAN DEMOGRAPHICS

- 3.1. Yucatán, officially the Free and Sovereign State of Yucatán, is one of the 32 states which comprise the Federal Entities of Mexico. It is divided into 106 municipalities, and its capital city is Mérida.
- 3.2. It is located on the north part of the Yucatán Peninsula. It is bordered by the states of Campeche to the southwest and Quintana Roo to the southeast, with the Gulf of Mexico off its north coast.
- 3.3. Before the arrival of Spaniards to the Yucatán Peninsula, the name of this region was Mayab. In the Yucatec Maya language, mayab is translated as "flat", and is the source of the word "Maya" itself. It was a very important region for the Maya civilization, which reached the peak of its development where the cities of Chichen here. the Mayans founded Itza, Izamal, Motul, Mayapan, Ek' Balam and Ichcaanzihóo (also called T'ho), now Mérida.
- The Yucatan State population was estimated at 2,097 million in 2015 census.

Mexico

Pacific Ocean

BELIZ

GUATEMALA

Figure 1: State of Yucatan within Mexico (Wiki, 2020)

4. LEARNING EXCHANGE METHOD

4.1. The learning exchange programme was conducted through presentations, discussions, observations, site visits and interaction with relevant communities and leaders.

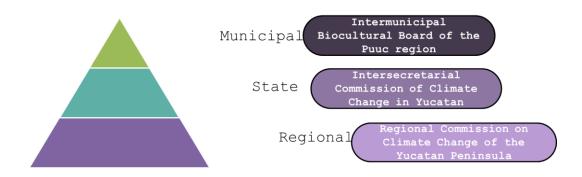
5. DISCUSSION

5.1. DAY ONE: 02 MARCH 2020

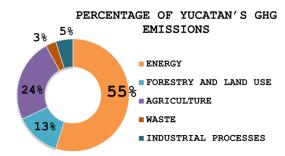
5.1.1. Activity One: Introductory Presentation by Yucatan Secretary of Sustainable Development

 Brief Narrative: The sustainable development secretariat of Yucatan prepared an introductory presentation providing an overview of the roles and responsibilities of the secretariat, Annexure A, The presentation was well collated and gave us a clear understanding of the priorities, functions, challenges, and initiatives of the Secretariat related to climate change and renewable energy. We were then advised of our itinerary for the trip. We met the team that would be taking us on daily activities. There was brief introductions into each directorate.

 Observations: The purpose of establishing such a secretariat is to create, implement and evaluate public policies dealing with governance on climate change a sustainability. Climate policy and governance is the responsibility of all spheres of government.



- The state development plan titled "Plan Estatal De Desarollo De Yucatan" focuses on the identification of Economic, Social, Cultural and Environmental Rights in order to guarantee the full integral development of people. The plan is aligned to 17 SDGs and 169 targets of the 2030 UN agenda. Currently 17% of Yucatan has been reserved as national protected area under the protection of the state.
- Yucatan is also considered an energy island, in that it is an energy producer. This is also the most significant contributor to the GHG emissions in the states GHG inventory. However, Yucatan is also leading the country in renewable energy's, explained in 5.4.1, with 24 authorized renewable energy projects in airolic, solar and gas.



 Best Practice: Establishment of a Secretariat for Sustainable development and Climate Change as well as robust participation in international cooperation and initiatives that provides technical assistance to systematize and improve the procedure for developing subnational GHG inventories and localization of SDG's

5.1.2 Activity two: Visit to Merida Municipality (Climate Change Strategies).

- Brief Narrative: The sustainable development unit of Merida City presented on their roles and responsibilities and current projects. Amongst other projects presented include very exciting interventions such as intensive arborization of the city whereby the target is to plant 100 0000 trees in 5 years. What was also interesting is an incentive programme whereby property owners are given 15% discount on rates on properties using renewable energy such as solar. The city also promotes bioclimatic design especially on new development.
- Observations: The city is committed to development and implementation of climate change mitigation strategies.
- Best Practices: Arborization and discounted tax rates on properties using renewable energies stand out as one of the best practices to promote measures aimed at contributing to climate change mitigation.

5.2. DAY TWO: 03 MARCH 2020

5.2.1. Activity One: Cenotes (Preservation and Ecotourism).

- Brief Narrative: Cenotes are sinkholes through which are interconnected through a fresh water groundwater system may be accessed from the Yucatan Peninsula Aquifer. Historically and culturally, cenotes are also important cultural and spiritual natural sites for the Maya, but they have been contaminated and degraded. We were accompanied by the Director Sustainability Mr Toshio Yokoyama to a rural Cenotes, he explained that there are more than between 7000-8000 cenotes that have been recorded, and it is highly possible that there are more that have not been found as yet. It was explained that due to changes in water quality, and identified threats to cenotes including over tourism, poor solid waste management, contamination, and deficiency of interest by locals in preservation. Cenotes are also found in the ocean and they are a spectacular phenomenon which draws scientists and serves as a tourist attraction.
- Observations: Cenotes in Yucatan suffer contamination poor solid waste disposal practices, the locals abuse these beautiful natural phenomenon by depositing domestic waste into the rural Cenotes which feeds back into the underground water system.
- Best Practices: its Yucatan has developed legislation around the protection of Cenotes declaring all cenotes (identified or not) a national protected area.

5.2.2. Activity two: Mayan Traditional Communities (Agriculture, Historical Sites, Ecotourism and Impact of Climate change).

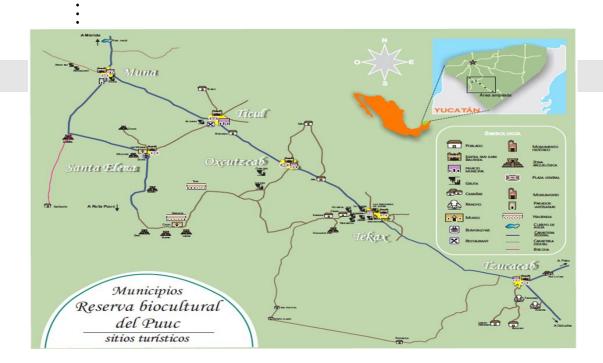
Brief Narrative: We were then escorted to the rural village of Mocontun, approx. 2hrs from Merida. Access to Mocontun is via a dirt road approx.
 13km long. We were welcomed by the chief and other "ahendatarios' (labourers). There was a fruitful discussion that followed, the chief

explained the history of the village, that this village was alive with vegetation and people however over time there are very few families that have stayed and taken care of the land. Many of the youth of the village have left for work in the cities. The village therefore is tendered to by the older generation, the chief expressed fear that one day the village will cease to exist because there will be no one left with the knowledge to take care of the fields.

Moucatan has been lucky enough to receive a federal grant to regenerate the village, it now forms part of the Intermuncipal bicultural board of the PUUC region also called "JIBIOPUUC". Its area includes the territory of five municipalities: Muna, Oxkutzcab, Santa Elena, Tekax. The purpose of forming the JIBIOPUUC region is to conserve AND protect the heritage, forest area and the rich biodiversity.



 Observations: JIPPUC is unique in that it does not belong to any one single municipality, it has its own organizational structure made up of experts, civilaians and well as council members. There is a deep political commitment to the preservation and success of JIBIUUPC. The locals allowed us to participate in the Organic beekeeping and "empamya" farming which are some of the skills the federal government is helping to develop and in turn create a honey value chain for the local villages.



with bees that are indigenous to the area ensure that the livelihoods of the villages are improved and youth in the village are able to find opportunities in the honey value chain. Mocontun is also a biocultural hotspot for indigenous wildlife such as the jaguar. The villagers are able to share indigenous knowledge on the wildlife with the experts and in return the experts teach the villagers how to use specialized monitoring equipment to manage invading wildlife in the area. The creation of JIBIOPUUC can be considered one of the best practices of this experience.



5.2.3. Activity Three: Engagement with the Mayor of Takax Municipality (Ecotourism Strategy).

- Brief Narrative: We were invited by the Mayor of Takax Mr Dieago Montana to visit one of the new eco-tourism sites developed in Takax. The tour was led by one of the locals, who showed us the indigenous homes "Casa de Maya" as well as the local church as well as curio shop. The Mayor met with us at the church and welcomed us to the area, discussed some of the projects in the area and future plans that he had. He then led us to the delicious lunch that was part of the tour. The meals were prepared by the local women and served in cultural crockery and cutlery. We were also served specialty drinks which are native to the Peninsular of Mexico.
- Observations: Takax is positioning itself to be an eco-tourism hub, it has many other attractions for tourists to enjoy such as Zip-Lining, cenotes, farm stalls, refurbished hacienda's and other cultural sites
- Best Practices: Strong leadership and planning is key to the success of this node. The council as well as the board of JIBIOPUUC considers the rights of indigenous peoples as a priority, promoting the active participation of local Mayan communities and everyday culture.

5.2.4. Activity Four: Historic Haciendas (Ecotourism Potential).

land in all Spanish-speaking countries of colonial background. They were allocated large plots of land, members of the Spanish nobility proceeded to build enormous manor houses that were utterly grandiose and built to impress. Estates were originally involved in mining, livestock and/or agriculture, with the wealthy Spanish owners employing local native workers to run their properties. Most haciendas were phenomenally lucrative and became the first victims during the several

wars of independence, for they represented the kind of social divide which marginalized the native population. The sheer existence of haciendas and the social cast divide they created, was one of the main rallying point for revolutionary uprisings.





- Observation: In Yucatan and in many other parts of Mexico a number of these Haciendas are abandoned and the Government is working on a programme to revitalized them as sustainable centres of ecotourism, agriculture etc. The officials indicated that this is a very costly undertaken, government is also considering renting these properties to private individuals.
- Best Practice: Haciendas are strategically located as such they have a huge economic potential in terms of agriculture, mining, ecotourism etc. Therefore, revitalizing them has an ability to stimulate Sustainable Local Economic Development. The province of KwaZulu-Natal can also employ the very same strategy especially in revitalizing abandoned or neglected farm houses and communities.

5.3. DAY THREE: 04 MARCH 2020

5.3.1. Activity One: Visit to Mangroves in Progresso

between marine and terrestrial environments in tropical and temperate habitats. Mangrove forests, specifically their thick, impenetrable roots are vital to shoreline communities as natural buffers against storm surges, an increasing threat in a changing global climate with rising sea levels. Mangroves are under threat nearly everywhere, but the problem is particularly acute in Progresso, where the rate of deforestation is high and quite visible as shown in a picture below.

Figure 3: Deforestation of Mangroves in Progresso



 Observations: The mangroves in this area appears to be extremely vulnerable to deforestation mainly due to demand as building material and fuel by local communities. Strong protection measures and managed used of this important natural resource coupled with a certain level of awareness are some of the interventions that can contribute in minimizing deforestation in Progresso. • Best Practices: The Yucatan State and Progresso Municipality are doing their level best to combat the problem of mangrove deforestation to an extent that local communities are part of awareness and cleanup campaigns.

5.4. DAY FOUR: 05 MARCH 2020

5.4.1. Activity One: Visit to Yucatan Centre for Scientific Research

• Brief Narrative: As part of the learning exchange programme the team had a privilege of touring the Scientific Research Center of Yucatan, AC (CICY). The institution is a public research center dedicated to scientific and technological research, and professional training in the areas of chemistry, biochemistry, plant molecular biology, biotechnology, water science, materials, natural resources and renewable energy. The CICY contributes to the sustainable development of the Yucatán Peninsula and Mexico. Amongst other interesting endeavors of the institution is that it maintains a seed bank which stores a collection of native species, including endemic, threatened and introduced species.





- Observations: The CICY has established itself as an authority in its field of action, one of the most important forces for generating scientific and technological knowledge in the region.
- Best Practices: The Scientific Research Center of Yucatan, AC (CICY) is the best practice and the consolidation of the state and private partnership in research is a significant advantage in terms of focused and relevant research agenda. The CICY is probably equivalent to Council for Scientific and Industrial Research (CSIR) in South Africa. The Province of KwaZulu-Natal may one day consider having a similar model of scientific research centre in addition to academic institution.

5.4.2. Activity Two: Renewable Energy and Smart Grid

- Brief Narrative: In December 2013, the Mexican government approved constitutional energy reform. Following this, it issued the Electrical Industry Law in August 2014 and the Energy Transition Law in December 2015. These pieces of sweeping legislation catapulted Mexico into the international energy spotlight for its leadership on energy policy reform. The new laws address all Mexican energy sectors, including power and hydrocarbons, transportation fuels, and energy efficiency. For the electric sector, the new laws make major changes, including creation of an incentive system for clean energy deployment and endorsement of a Smart Grid program thus committing to making Mexico's power grid capable of meeting the country's lofty clean energy goals while improving efficiencies, maintaining system reliability, and increasing its security.
- The Energy Transition Law (LTE) of Mexico addresses Smart Grid in Articles 37 and 38, brief statutory sections that describe the law's vision of a Smart Grid program for Mexico: Article 37: The Smart Grid Program aims to support the modernization of the National Transmission Network and General Distribution Networks, to maintain a reliable and secure grid

infrastructure to meet electricity demand in an economically efficient and sustainable manner. The Smart Grid program also facilitates the incorporation of new technologies to achieve electricity cost reductions, the provision of additional services through the electric network, and promotion of Clean Energy and Clean Distributed Generation by allowing greater interaction between end user devices and the electrical system. Article 38 state that Smart Grid Program shall identify, evaluate, design, establish and implement strategies, actions and projects related to the electricity grid.

Observations: Mexico is moving on a path with ambitious and growing goals of clean energy generation. To meet them, it has begun restructuring its power sector to make it more competitive, efficient, and responsive to consumers. Each aspect of the country's National Electric System from generation to the customer's premises is touched by the grid modernization called Smart Grid Program.

• Best Practices: The legislative reforms, implementation of Smart Grid Programme and Renewable Energy stand out as one of the best practices. Yucatan has so far managed to realize three wind farms and two solar parks collectively generating 300 MW (Yucatan government, 2020). One of the wind farm is located by the road connecting Yucatan capital Merida and the port city of Progreso (we were fortunate to see this wind farm). It is made up of 36 turbines with 55-metre blades installed on 120-metre towers. With Yucatan's current wind and solar parks in operation, along with clean power plants operated by Mexican state-owned utility Commission Federal de Electricidad (CFE), the state's percentage of clean energy consumption reaches close to 50% (Yucatan governor, 2020).



Figure 5: Wind Farm in Progreso (Yucatan State)

5.5. DAY FIVE: 06 MARCH 2020

5.5.1. Activity One: Engagement with Yucatan Civil Protection Centre

- Brief Narrative: The Yucatan State like many parts of the world is vulnerable to natural and man-made hazards such as hurricanes, floods, extreme heat, fires etc. The State has a dedicated Civil Protection Unit with a staff complement of 126 personnel and a budget of 35 million Peso to run the operations this amount excludes contingencies and reserves. Most of the staff is placed at municipalities. Municipalities tend to rely on Yucatan State on matters related to Disaster Management. Great news is municipalities are now beginning to realize the need of building their disaster management capacity.
- Observations: It appears as if the Municipalities in Yucatan have not fully appreciated the disaster management responsibility, thus their disaster management status requires a lot of capacity building, and the progress

is hindered by a misperception that disasters are infrequent or perhaps are a once off occurrence. The capacity situation is comparable with Municipalities in the Province of KwaZulu-Natal. However, Disaster Management legislative and policy framework in South Africa has resulted in improved situation. Mexico is currently pushing for disaster management legislative reforms which should result in significant progress in as far as Municipal capacity is concerned.

 Best Practices: Yucatan Civil Protection Centre appears to be well resourced particularly in terms of Human and Financial Resources.

5.5.2. Activity two: Engagement with Progresso Municipality (Waste Management Strategies)

 Brief Narrative: The Progresso Municipality introduced a number of measures to improve waste management in the city and surroundings.
 The measures include bylaws, robust awareness campaigns, camera system to identify people responsible for littering and issuing of fines to persons found littering.

Figure 6: Recycling Bins in Progresso



Figure 7: Chair in a public Park made up of a drum



- Observations: Progresso is a coastal city, a significant tourist attraction.
 It is generally unpolluted. People around the city are receptive and well aware of the idea of recycling and the need to keep the environment clean. This is supported by the fact that people are making use of the provided bins and they separate their waste according to it type.
- Best Practices: The Municipality promotes recycling of different type of waste and reuse of certain materials as one of its waste management strategies.

6. SUMMARY AND CONCLUSION

- 6.1. The learning exchange programme in Yucatan State of Mexico was a huge success. The method of learning exchange (firsthand experience) made it even more interesting. The interaction with traditional communities and understanding their plight (drought, less agricultural production, under development) in the face of climate change was disheartening and encouraging at the same time to see how they are surviving.
- 6.2. It was encouraging to see how the Municipalities in Yucatan State are mainstreaming climate change mitigation strategies particularly in development, waste management and renewable energy. Ecotourism remains an important strategy to preserve environment whilst addressing socioeconomic challenges. Haciendas and cenotes in Yucatan have a huge potential, to play a central role in ecotourism and thus promote sustainable Local Economic Development.
- 6.3. The CICY research model in Yucatan State is one of the best highlights of the learning exchange programme. The CICY focus on the region and practical research output is commendable, the consolidation and private partnership is an added advantage.

- 6.4. The commitment of the Yucatan State on disaster management shows a forward-looking and understanding of risk posed by climate change on civilians, economy and the environment. The state demonstrated such commitment through the allocation of reasonable human and financial resources. There is however a need to emphasize that local government (Municipalities) must improve their disaster management capacity more so because they are at the coalface of the battle against climate change and the impact of disasters.
- 6.5. The sweeping constitutional and legislative reforms in the energy sector has catapulted Mexico into the international energy spotlight for its leadership on energy policy, especial because it provides incentive system for clean energy deployment, thus contributing in reduction of Chlorofluorocarbons (CFCs) (gases mainly responsible for Global Warming/Climate Change).
- 6.6. The significant part of the learning exchange programme was mainly on exploring and understanding the impact of climate change in Yucatan State and also how Municipalities are responding to challenges imposed by climate change including waste and coastal management. Ecotourism is one of the highly supported and encouraged initiatives by Municipalities in Yucatan State, to stimulate sustainable local economic development whilst preserving the environment. Historical sites, food and culture are the main selling points and these programmes are well supported by senior administrative and political authorities.

7. RECOMMENDATIONS

- 7.1. Notes the content of the report;
- 7.2. The development of climate change adaptation strategies and programmes must take into cognizance of the plight of rural/traditional Communities and these must be done in consultation with communities concerned:

- 7.3. Government particularly at a Municipal level must design incentives schemes to encourage rate payers to use renewable energy and bioclimatic designs, such incentives may include discount on property rate and other creative forms of encouragement;
- 7.4. Ecotourism is an important aspect of climate change adaptation and mitigation. Areas of ecotourism potential must be collectively identified and developed;
- 7.5. Laws protecting natural environments such estuaries and mangroves must continuously and effectively enforced to preserve benefits associated with such environments;
- 7.6. Other than common academic institutions the Province of KwaZulu-Natal can benefit immensely from a scientific research centre similar to CICY.
- 7.7. Yucatan State has a population far less than that of the Province of KwaZulu-Natal. However resourcing of Disaster Management (it terms of staff complement and budget) is huge compared to that of the Province of KwaZulu-Natal. The Province may want to relook at this matter including the funding model of the PDMC and Municipalities.
- 7.8. Recycling and use of reusable materials must continue to be an important strategy to manage waste, government must provide an enabling environment in terms resources required to achieve this coupled with robust education and awareness campaigns.
- 7.9. Government, municipalities in particular can benefit tremendously on services derived from Smart Grid Solutions not only in energy sector but on water sector as well. Smart Grid Solutions helps to monitor, measure and control power flows in real time that can contribute to identification of losses and thereby appropriate technical and managerial actions can be taken to arrest the losses (mainly resulting from illegal connections and frail infrastructure).

8. ACKNOWLEDGEMENTS

We would like to express our deepest and sincerest gratitude to the Department of Cooperative Governance and Traditional Affairs (COGTA) for such a great opportunity and responsibility to represent it on a mission important as this one. We are indebted to The Climate Group's Under2°Coalition Future Fund, the learning exchange programme would not have been possible without their commitment and sponsorship. Our host, the State of Yucatan (Secretariat for Sustainable Development) was phenomenal, we felt at home on day one. Our sincere appreciation goes to the entire team, institutions and individuals that passionately presented and answered our questions on various thematic areas. We hope and believe that the knowledge exchanged will benefit everyone involved in this partnership, in realizing a sustainable world.







