CARBON AND ENERGY AUDITS – 2018
INSTITUTE OF TECHNOLOGY OF CAMBODIA

EXECUTIVE SUMMARY

sevea

CAMBODIA CLIMATE CHANGE ALLIANCE

ARTELIA

WHO IS SEVEA CONSULTING ?

Sevea is a Cambodia-based consulting company that offers strategic and operational advisory services and fundraising support to businesses, social enterprises, and organizations seeking to develop their venture or project in the WASH, clean energy, climate change and rural development sectors.

The objective was to design an action plan supporting the implementation of low carbon and energy efficiency solutions in the Institute of Technology of Cambodia (ITC). This was done through two energy and carbon audits. In order to ensure ownership of ITC and commitment approach of ITC on this topic, the audits have been conducted while supporting and providing guidance to a voluntary audit team, composed of lecturers, staff and students from the university.

PROJECT'S ID

LOCATION

Institute of Technology of Cambodia (ITC)
- 4023 students
- 267 lecturers
- 11 buildings

APPROACH

- Participatory approach and capacity building of ITC users
- Simplified carbon & energy audits

OBJECTIVES

Design an action plan to :
- Reduce carbon emissions
- Reduce electricity bills
- Improve ITC's overall environmental approach

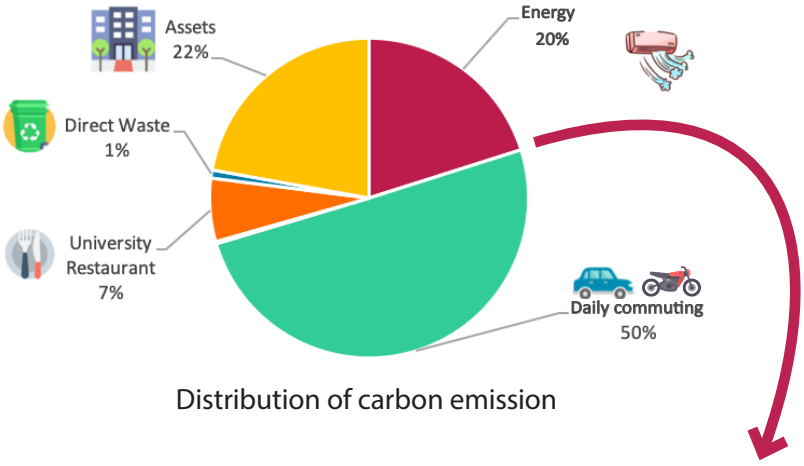
KEY DELIVERABLES

- Energy audit report
- Carbon audit report
- Training and guideline materials to reproduce audits

CONTEXT PRESENTATION

Partnership agreements with national universities have been established, to promote engagement of students and faculty in climate change action and policy research. This follows the initiatives of Cambodia Climate Change Strategic Plan 2014-2023 (CCCSP) and the General Secretariat of the National Council for Sustainable Development (GSSD) and its Department of Climate Change (DCC). The partnership aims to support academic sector, researchers and students to get directly involved with climate change work. Earlier in 2018, ITC also received a small research grant funded by Takahashi foundation (2018-2019) to move forward on energy efficiency.

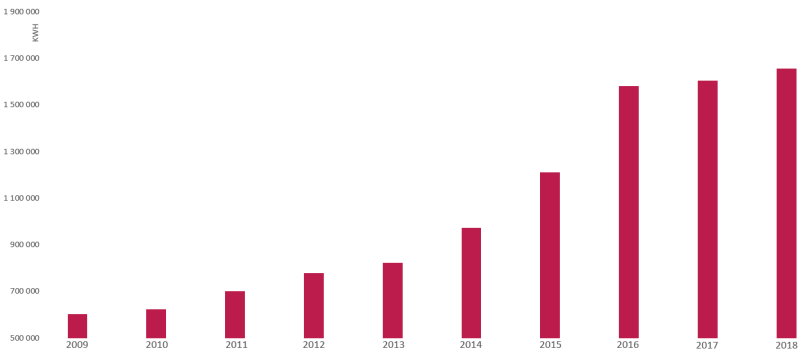
SITUATION ASSESSMENT



Distribution of carbon emission

Considering the perimeter of ITC's first carbon audit, the reliability and availability of data in ITC, the carbon emissions of campus activity have been estimated to **3,432 tCO2e/year**.

The main source of carbon emissions is the daily commute of ITC users with 1,725 tCO2e, representing 50% of total carbon emissions. These emissions are mainly due to the use of motorbikes and cars.



ITC's electricity consumption by year

ITC's energy consumption represents a consequent potential for action and which accounts for 20% of carbon emissions. This is especially since the electricity consumption has risen significantly during the past 3 years, mostly due to the increasing numbers of buildings and students in the campus. The electricity consumption was 1,6 GWh last year, which equalled to a **$ 321,000** bill.

KEY RECOMMENDATIONS

CARBON AUDIT

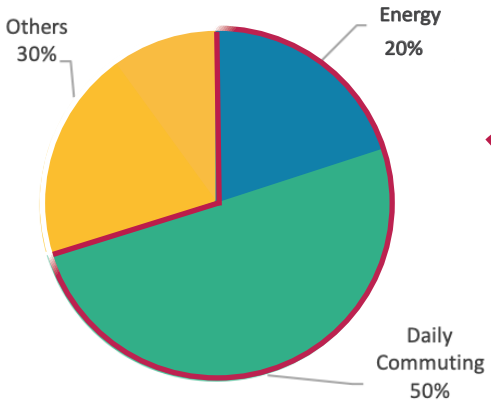
Recommendations	Description	Expected Outputs
Governance & Management		
Green Committee	Create leading group, define the role of the committee and regular update of action plan	Develop and push the agenda of sustainable development of ITC on long term
Green Monitoring & Key Performance Indicators	Set a dashboard of Key Performance Indicators (KPIs), track them monthly, and report to the management of sustainable department unit	Tools and information to raise awareness and report to partners (sponsors, donors, etc.)
Mobilisation		
Green Week	Mobilise a group of green committees and plant & organise the green events	Sensitisation around environmental issues and develop synergies with other sectors
Green Department Competition	Create a green dynamic & actions every month	Involve a maximum of ITC students and staff to conduct green actions
Carbon & Energy Audit Internships	Develop Internships with ITC students to work on carbon & energy audits	Push actions from the green agenda of ITC, develop and improve tools for the next year
Daily Commuting		
Clean Transport Initiatives	Develop incentives model for more usage of clean transport approach, implement, monitor & evaluate ITC performance	Reduce carbon footprint of ITC Awareness on clean transport
Waste Reduction - Focus on Plastic		
Scale up and reinforcement of recycling bins project	Analyse the need of recycling bins, set meeting with relevant actors	Better waste segregation
Personal lunchboxes and biodegradable bags	Replace plastic bags and foam boxes by biodegradable bags and lunchboxes	Reduction of plastic consumption and environmental habits
Eco-cups	Use reusable eco-cups instead of plastic or cardboard recipient for drinks	Reduction of plastic consumption and better environmental habits
Install more solutions avoiding the use of water plastic bottles	Encourage people to come with their own bottle	Reduction of plastic consumption and better environmental habits
Waste Reduction - Non-Plastic Waste & Others		
Segregation and Recycling of other waste	Find recycling project per type of waste	Waste management R&D projects
Initiate monitoring and evaluating of chemical waste	Monitor, evaluate and initiate actions	Chemical waste management and treatment
Digitalisation: avoid the use of paper	Organise the workshops to train people how to use online tools	Lower paper consumption and better environmental habits

ENERGY AUDIT

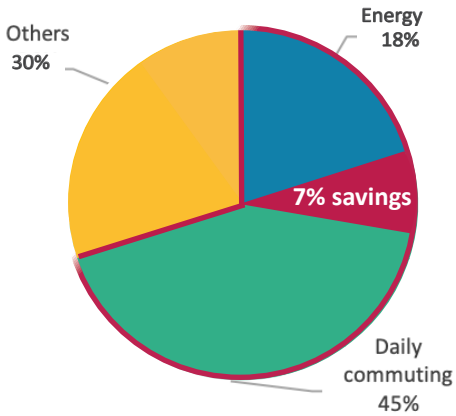
Recommendations	Description	Expected Outputs
	Envelope	
Improve the envelope	Improving the envelope will increase the insulation of the buildings, by protecting the windows of main facades with sun-blinds	Keeping the privacy Better insulation
	Equipment	
LED & Energy saving lamps	Replace lights with LED or energy saving lamps in the rooms that are more likely to be occupied in priority	50% energy savings compared to traditional lights
Replacement of AC	Replacement of the old AC units with new models	Estimated gain of 30% energy savings on the AC units replaced
	Operation & Maintenance	
Lighting Control	Lighting control with presence and brightness detectors in toilets and corridors	Reduces the operating time of lights in corridors and toilets by 50%
Set Point Temperature of AC	Increase the set point temperatures for the cooled rooms to 26°C	Around 25% energy savings on all AC units

POTENTIAL FOR CARBON MITIGATION

The two main sources of ITC's carbon emissions that have both a high impact and a strong potential for action are the electricity consumption and the daily commutes of ITC users. Consequent and easily achievable improvements can be made, especially regarding the use of air conditioning (AC) and through clean transportation incentives.
We estimate that the carbon emissions savings for energy and daily commuting will be of approximately 10% each after 3 years. Together they will represent a 7% reduction of total carbon emissions provided that there is no major change in ITC (*e.g.* no construction of new buildings, no big change of effectives).



Current distribution of carbon emissions



Expected distribution of carbon emissions in 2021

A 10% reduction target of carbon emission for the next 3 years will lower it by **235 tCO2e.**

The same target applied to the electricity consumption will lower it by 160 MWh and thus save 62 tCO2e, which represents a financial saving of **$32,000.**

ACTION PLAN

2018 - 2019

Stage 1:
Set governance and management foundations

1. Define committees with agreement of ITC's top management
   - Sustainable Committee
   - Energy Unit
2. Start small-scale initiatives and initiate actions that require substantial time to be implemented
3. Set up monitoring tools

During the first semester of 2019, the priority for ITC should be to establish a Sustainable Committee in the campus including teachers and students of all departments. An Energy Unit should be established to work specifically on energy efficiency and reinforce the existing team at ITC. This committee will raise awareness of ITC students and employees, as well as running small pilot projects to reduce carbon emissions and electricity consumption.

2019 - 2020

Stage 2:
Professionalisation

1. Strengthen activity of committees
   - Dashboard/pilot activity
   - Initiate local partnerships
2. Set up big actions:
   - Energy Efficiency
   - Carbon Audit
   - Mobilisation: Green Weeks and Green Challenges for each department

During the year 2019-2020, ITC should professionalise its approach. The Committee and Energy Unit should build a stronger organisation and develop tools to support their governance and have an efficient and well-coordinated management among the different departments of ITC. This should include, for instance, Key Performance Indicators - integrated to their performance follow-up system - to monitor their actions and impacts, report properly to the top management of ITC and involved partners, and feed mobilisation campaigns with fact-based data. Bigger actions to improve the environmental approach of the campus should be initiated and pilot projects should be scaled up to the entire campus.

20120- 2023

Stage 3:
Mature campus on green pratices

1. Become a leader in Cambodia
2. Increase R&D
3. Set new curricula
4. Fundraise to lead long-term and professional programs
5. Develop national and international partnerships

In 2 years, ITC needs to strive to become a mature campus on green and energy efficiency practices. ITC could be a proof of concept for Cambodia with regards to carbon emission mitigation and excellent environmental management, and inspire other campus and private sector members. Research and development of relevant departments and curricula of ITC could be adapted in synergy with this vision. This could attract international and innovative partnerships with other universities and corporates locally or beyond Cambodia. In order to enable this vision of excellence, ITC will have to raise funds, to build expertise internally, be supported by appropriates experts and build long term programs for ITC and Cambodia.

MISSION MANDATED BY

CAMBODIA CLIMATE CHANGE ALLIANCE

Implemented by: Ministry of Environment

Supported by: European Union; UNDP Empowered lives. Resilient nations.; Danida; SWEDEN

FOR

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IN PARTNERSHIP WITH

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Boosting your ethical ventures

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