



## **PARTNERING TO ADDRESS CLIMATE CHANGE IMPACTS ON CAMBODIA'S ECONOMY**

Cambodia Climate Change Alliance (CCCA), a programme implemented by the National Council for Sustainable Development (NCSD), with the support of UNDP, EU and Sweden Sverige, is partnering with research institutions to increase understanding on how to address climate change impacts on sectors crucial to Cambodia's sustainable growth.

Institute of Technology of Cambodia (ITC), one of NCSD/CCCA partner institutions, is working in collaboration with National University of Singapore (NUS), The Hong Kong Polytechnic University (PolyU), The Health and Environment International Trust (HEIT), local schools, and private sector to enhance understanding of the impacts of current and future climate regimes in labour productivity in three key sectors of Cambodia's economy: construction, garment, and education sectors.

This work will help targeted sectors assess cost-effectiveness of measures to reduce potential losses in labour productivity, and will also help government, informing the design of public policies and public investment programmes to encourage targeted sectors to adapt.

### **CONTACT**

Dr. Kinnalesh Vongchanh, ITC  
Tel: (+855) 99351199  
Email: kinnaleshv@yahoo.co.uk

# UNDERSTANDING THE EFFECTS OF HEAT STRESS ON LABOUR PRODUCTIVITY IN CAMBODIA'S GARMENT INDUSTRY, CONSTRUCTION AND EDUCATION SECTORS

## **RATIONALE AND BACKGROUND**

---

Today we know that understanding how climate change can affect our lives and how to best adapt to future climate conditions is crucial to governments, businesses and communities alike.

A 2018 study by MEF and NCSD found that the country could see a reduction in absolute GDP by almost 10% by 2050 due to climate change, even if global efforts could keep temperature rise below 2°C and Cambodia could maintain current levels of investment in climate change adaptation.

The study also found that labour productivity losses due to climate change could particularly affect agriculture, manufacturing and construction sectors, noting that current adaptation activities particularly underestimate the effects of heat stress on labour productivity.

A preliminary research conducted in Cambodia in 2016 by a research team, led by Professor Tord Kjellstrom with collaboration from H&M and a garment factory in Phnom Penh, indicates that current heat levels are already affecting work productivity (with significant losses in daylight work hours due to workplace heat levels).

To support this finding, another preliminary research was conducted between 2019 by a research team, led by Dr. Kinnalesh Vongchanh. The WBGT level around day time in the working area was higher than 27°C during very hot day, indicating more attentions should be made towards indoor working conditions.

Longer period of observation is needed to provide better estimates of these impacts that can inform potential measures to be taken by private sector and government.

## **OBJECTIVES OF THE PROJECT**

---

To better understand and assess the impact of heat stress on labour productivity (number of daylight work hours lost) in garment factories and in construction sites in Phnom Penh, and to identify measures to reduce labour productivity losses due to heat stress and assess their cost-effectiveness.

The ultimate objective is to generate evidence that can support private sector investment decisions, and that can inform the design of policies to encourage private sector to adapt to current and future climate conditions in two key

sectors of Cambodia's economy – Garment Industry and Construction.

## WHAT IS UNIQUE ABOUT THIS PROJECT?

**Breaking new ground** by providing new estimates of impact of heat stress on labour productivity of garment workers, construction workers and students, with measurements taking place in Cambodia for the first time in the construction sector and expanding and consolidating data on these sectors.

**Partnership between research institutions, policy makers and the private sector** generates new evidence needed to inform both policy development and investment decisions in Cambodia. Without this tripartite collaboration it would be difficult to advance knowledge in these areas and to develop cost-effective measures to reduce the expected impacts in the short, medium and long terms.

A collaboration between



Institute of  
Technology  
of Cambodia



National  
Council for  
Sustainable  
Development

With support from

### CAMBODIA CLIMATE CHANGE ALLIANCE

Implemented by:



Funded by:



ស៊ុយអែត  
Sverige

## RESEARCH ACTIVITIES

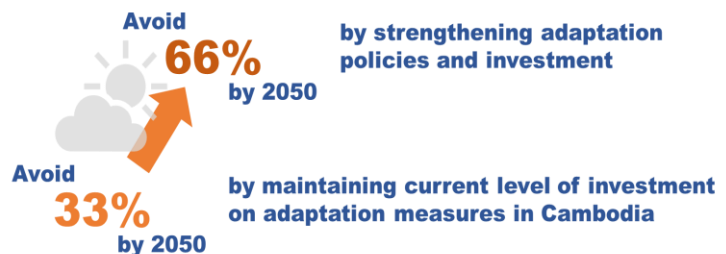
**Garment Industry** – the study will be conducted in garment factories in Phnom Penh, with ITC research team and National University of Singapore's initial work starting in late October 2021. A team from ITC will contact factories that have agreed to participate in the study, to discuss scheduling of activities to avoid any disruption in production. The activities will be done in factories including:

- Conducting interviews of management and workers;
- Expecting 125 participants to join interview with proximately 10-15 minutes per person for interview of the workers;
- Requiring to have daily productivity rate, defected product rate, and record of sewing machine failure during operation hours to be done by factory team;
- Recording workers attendance in the sewing department;
- Measuring indoor weather condition using thermal sensors with logger and thermal logger for 1 year (November 2021-October 2022). These loggers are expected to be installed in sewing department;
- Measuring indoor air quality from time to time throughout the year;
- Conducting energy audit to improve energy efficiency in the factories;
- About 5 researchers will be on sites during the actual measurement.

ITC researchers, with support from an international team of researchers, will share with managers/business owners the findings of the research, including suggestions of cost-effective measures to reduce labour productivity losses due to heat stress where they are deemed feasible.

## GOING FORWARD...

The study on Addressing Climate Change Impacts on Economic Growth in Cambodia (MEF and NCSD, 2020), based on estimates from an economic model tailored to Cambodia context, identified priority areas for intervention to protect economic growth from climate change impacts and concluded that investment in adaptation can payoff.



Addressing the impacts of heat stress on labour productivity in garment industry, construction and education sectors is amongst the priorities identified. This research project will provide new evidence to help design well targeted adaptation policies and investments in Cambodia in these three sectors.