Economics of Climate Adaptation

Climate hazards extend beyond financial impacts. They disrupt access to water, education, healthcare, and mobility, while also affecting GDP and consumption.

The long-term consequences of these disruptions can already be observed in Egypt, and climate impacts will continue to unfold over the coming decades.

Affected people:
20.400

Financial losses:
13 million US$
in the electricity sector

due to the 2020 floods

2020 | 2040 | 2050 | 2060

The average temperature is expected to rise by 1.6°C under high-emission scenario

Egypt is projected to face significant water stress

The combined impact of climate change will represent between 2-6% of Egypt's GDP

How can these impacts be quantified and incorporated into

RISK MANAGEMENT STRATEGIES?

How can we assess the benefits of adaptation measures and analyze their

COST-EFFECTIVENESS?

Think about the impact of heatwaves on students' access to education.

That is where the **Economics of Climate Adaptation** (ECA) framework can play a crucial role, enabling the quantification of risks and analysis of adaptation measures.

Economics of Climate Adaptation

Using the CLIMADA modelling platform, ECA can assess damages to the education sector by estimating the number of students affected, highlighting a broader impact on the education system.

CLIMADA also compares various adaptation measures based on their cost and effectiveness in reducing the impacts of heatwaves on students and the education sector.

How do we gather all the

NECESSARY DATA?

ECA prioritizes stakeholder engagement through workshops, to gather information on data availability and sources, formats and quality.

The stakeholders provide some of the data required

The remaining data are supplemented with

Stakeholder engagement is also key for data for the modelling.

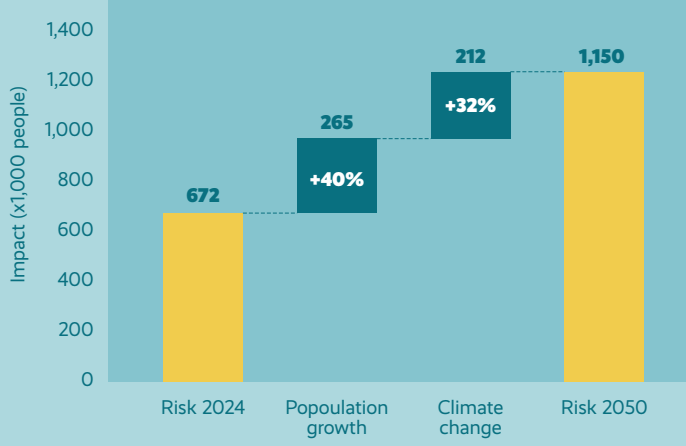
secondary sources and open databases.

validation and exchanges between parties.

CLIMADA
Economics of Climate Adaptation

How do ECA and the modelling tools
SUPPORT NATIONAL GOVERNMENT
with evidence-based decision-making for adaptation planning and climate risk financing?

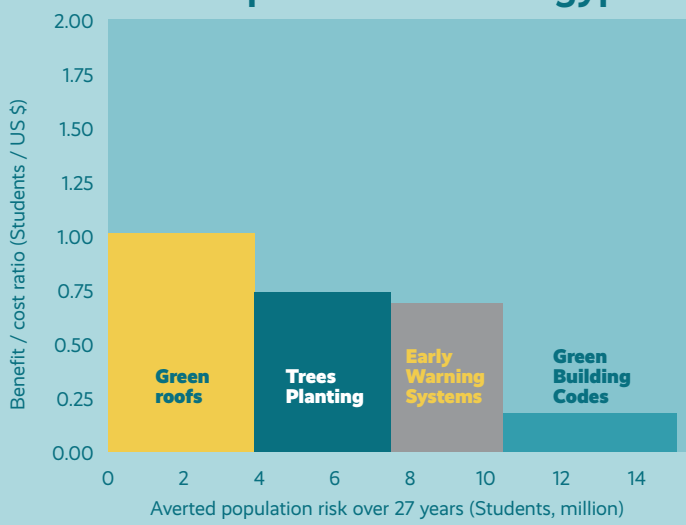
Expected Annual Impact in Egypt



CLIMADA assesses the current and future number of students affected by heatwaves, enabling decision makers to develop adaptation strategies and plan for risk financing.

Currently, over 670,000 students in Egypt face disruptions to their education annually due to heatwaves. This number is expected to **increase by up to 72%** by 2050 under a high-emission scenario.

Benefit per cost ratio in Egypt



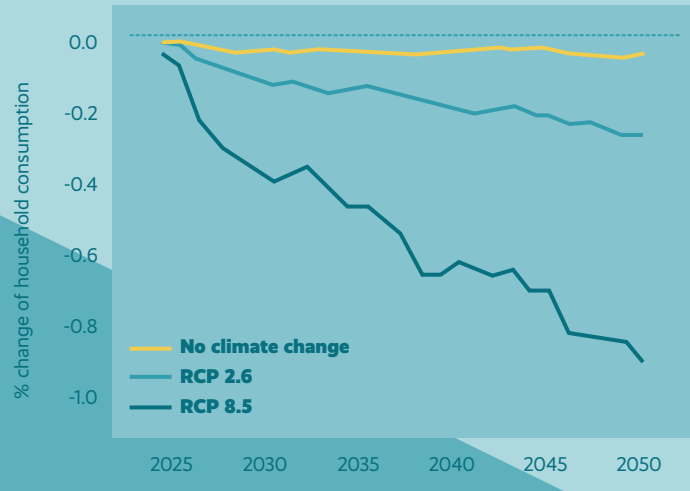
CLIMADA analyzes the benefit of adaptation measures compared to the investment required to reduce the impact of heatwaves on students, facilitating the prioritization of adaptation measures.

Green roofs are among the most cost-effective strategies for enhancing the Egyptian education sector's resilience to heatwaves.

Can ECA also support with decision-making on the
MACROECONOMIC IMPACTS
of the hazards?

CLIMADA provides localized impact data that the Dynamic General Equilibrium model for Climate Resilient Economic Development (DGE-CRED) uses to estimate the effects on macroeconomic variables such as GDP and household consumption, as well as the potential macroeconomic benefits of adaptation measures.

Current and Future Household Consumption in Egypt



CRED showcases the current and future household consumption using CLIMADA risk data.

Climate hazards in Egypt will also **reduce consumption by 1%**, or approximately 3.2 billion USD, thereby limiting people's economic capacity to purchase goods and services.

The outcomes help

DECISION MAKERS

support vulnerable populations, through national level strategies and proactive adaptation investments.

- National Adaptation Plans
- Local Adaptation Plans

- International cooperation
- Development banks
- Global funds

ECA, alongside its modeling platform CLIMADA, helps governments and financial institutions make data-driven decisions on adaptation investments and risk financing.

For full report, please see:

UNU EHS

MCII

german cooperation
DEUTSCHE ZUSAMMENARBEIT

الهيئة العامة للرقابة المالية
FINANCIAL REGULATORY AUTHORITY