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## Inclusion of '*Climate Basics*' Course into Ethiopia Undergraduate Program is Critical to Build Climate Resilient Economy and Society

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### Key messages

- *The gap analyses on undergraduate curricula revealed that the existing Higher Education Institutes programs remained far behind the expected level of integration of Climate Change Education;*
- *The current educational road map, which has proposed critical courses for the first year of the undergraduate program, failed to include the "Climate Basics" course that could offer these students foundational climate science knowledge and tools needed to analyze climate-related risks while maximizing climate change opportunities;*
- *The inclusion of "Climate Basics" as a stand-alone course plays a critical role in broadening the understanding of undergraduate students on various national and international climate discourses.*

### Context

Ethiopia has developed numerous national policies and strategies to address the impacts of climate change on its economy, ecosystem, and society, including the Climate Resilient Green Economy strategy, the Home Grown Economic Reform, and

others. The country's education policy also promotes climate-related education to enhance students' capacity to solve climate challenges. Climate Change Educations (CCE) and trainings have long been recognized by the United Nations Framework Convention on Climate Change, the Paris Climate Change Agreement, and the Sustainable Development Goals of the United Nations (Agenda 2030) as key tools to unravel the complex and multi-sectorial challenges induced/posed by climate change. Strengthening CCE is, therefore, vital to achieving Ethiopia's commitments under various regional and global climate discourses while building a greener and resilient economy.

The Ethiopian Ministry of Education has made efforts to introduce environmental education into curricula of various levels where climate topics have been partly integrated into school subjects such as Geography and Biology. However, considering the untapped potential of the Ethiopian Higher Education Institutes (HEIs) system, the sector has not been fully explored to address the complex multi-sector challenges induced by climate change. Notwithstanding the important steps taken so far, the inclusion of "*Climate basics*" into the HEIs remains very low and/or absent in some undergraduate programs.





Figure 1. Dr Solomon Benor, CEO of Research and Community Engagement Affairs at the Ministry of Education, giving a speech during an AICCRA Ethiopia event

Insufficient integration of CCE into the formal education system is also cited in the 2017-2030 CCE Strategy to confirm that the HEIs curricular policy has failed to integrate CCE into the formal undergraduate education system.

As the CCE strategy (2017-2030) pointed out, CCE helps students equip them with the skills required to deal with climate variability and climate change. Specifically, teaching students the "*Climate Basics*" course empowers them to persuade government officials and populations to play an active role in mitigation and adaptation actions. The acquired knowledge could also be used to design and implement the country's climate policies/programs/ actions per the stated objectives. Including "Climate Basics" in the undergraduate curriculum could contribute to the nation's effort to build a climate-informed society that rapidly addresses and responds to a changing climate. Hence, this policy brief is calling for its inclusion in a newly developed educational

roadmap to teach undergraduate students the necessary topics on weather and climate phenomenon, the concepts and causes of climate change, and the effects of climate change, as well as science-informed climate adaptation/mitigation strategies (*Annex 1*).

## Approach

Although Ethiopia is currently implementing an educational road map that identifies critical courses to be included in the first-year undergraduate program, the "Climate basics" are not included in the proposed courses list. Subsequently, we have employed various approaches to explore the significance of "*Climate Basics*" to be given as a stand-alone course in HEIs undergraduate curricula. For this, extensive desk work has been done on the existing education policy documents. In this regard, the 2017-2030 CCE Strategy has been evaluated, and lessons were taken on – how to integrate CCE into the existing



curricula. Secondly, the gap analysis has been conducted on the climate-related courses given by the HEIs under various study programs. In this gap analysis, HEIs undergraduate program curricula were reviewed, where climate-related courses were identified and reviewed for their contents in the context of the course outline in Annex 1. Three consultative meetings were held with senior experts in agriculture and climate sciences and vice presidents for academics of ten universities to discuss the findings from the gap analysis and propose a recommendation for the policymakers to be considered the inclusion of climate basics in the country's curricula. The experience in ten universities will be extended to all Universities.

## Key Findings

### *Findings from a series of consultation workshops*

During the consultative meetings and subsequent feedback gathered, participants overwhelmingly agreed that the "*Climate Basics*" course is a

powerful tool that supports the implementation of national policies and strategies in addressing climate change-related problems. The "*Climate Basics*" course enables students to gain contemporary climate knowledge and skills that interns change their attitudes and behaviors in tackling one of our nation's most significant challenges. Hence, the national climate change plan should promote CCE, in general, and the "*Climate Basics*" course, in particular, to enhance adaptive capacity, reduce vulnerabilities and manage risk more effectively and sustainably. In this context, the Ministry of Education of Ethiopia should continue to facilitate and promote this idea as an innovative and urgent to demonstrate education's power in combating climate change and its impacts.

The consultative meeting participants also agreed that educating the young generation with "*Climate basics*" concepts will benefit the fight against climate change and ensure environmental sustainability, combat climate-related diseases, and improve sustainable development-related outcomes. Hence, adequate attention must be



Figure 2. Administrators and researcher from 11 Ethiopian universities at an AICCRA event

given within the education sector to equip undergraduate students with "Climate Basics" knowledge that could be used to deal with the contemporary challenges they will face after graduation. The policymakers should also be aware that the inclusion of the "*Climate Basic*" as a mandatory course helps to develop a shared understanding among the undergraduate students about foundational climate science and can be considered as one of the contributions of the HEIs toward climate change literacy and policy advice.

## Recommendation

Ethiopia is under transformation, where it is implementing an educational road map that led to the inclusion of new and timely courses to be offered in the first year of undergraduate programs. Unfortunately, the "*Climate Basics*" course does not get proper traction among the proposed lists. Given climate change is one of the greatest national policy issues of our time, ***the inclusion of "Climate Basics" into the first year of the undergraduate programs as a compulsory course is critical to raise the understanding of students on foundational climate science, knowledge, and tools that enabled them to analyze climate-related risks while maximizing climate-induced opportunities.*** The acquired knowledge from the "*Climate Basics*" course will help students understand appropriate weather and climate information and apply climate information and climate predictability tools in climate-sensitive sectors. The course will inspire the student to continue learning the advance of climate sciences which will help to their future career. Moreover, the course could be taken as one of the contributions of EHIs to advance the national climate change strategies/policies to build a climate-resilient economy, ecosystem, and society.

## Suggested course and description

**Course Title:** Climate Basics

**Course Code:** -----

**Credit Hours:** 2 Cr. Hr / 3 ECTS

**Learning outcomes:** After successful completion of this course, students are expected to:

- Explain the fundamentals of climate basics and climate change science.
- Describe main features of Ethiopian climate seasonal classification.
- Describe the components of earth system and their role in climate change.
- Explain observed and projected trends in the climate.
- Identify the major causes of climate change.
- Describe the Application of Climate basics in climate change adaptation and mitigation.

**Activities:**

- Attending lectures.
- Reviewing different scientific papers and case studies.
- Group-work and individual assignment.

**Course contents:**

### 1. Understanding climate basics

- 1.1 Concepts and definitions of key terms
- 1.2 History of climate and the Earth System
- 1.3 The Components of Earth's Climate System and their role
- 1.4 Earth's Climate System and Atmosphere-Ocean Interaction /
- 1.5 General atmospheric circulation and carbon-and water vapor cycle

### 2. Climate variability and change

- 2.1 Difference between climate change and climate variability
- 2.2 Causes of climate change and variability
- 2.3 Evidence for Global Climate Change
- 2.4 Observed and projected climate change trends

### 3. Global climate classification and seasonal climate classification of Ethiopia

- 3.1 Concepts of Global Climate Classification

- 3.2 Methods of Climate Classification/agro-climate/ biota, ecosystem/
- 3.3 Climate Types of Ethiopia/
- 3.4 Factors Affecting Ethiopian Weather and Climate System

#### **4. Application of Climate Basics to climate change adaptation and mitigation**

- 4.1 Concepts of climate change adaptation
- 4.2 Concepts of climate change mitigation
- 4.3 Role of climate basics knowledge for Climate Change adaptation and mitigation

#### **Reference**

- 1. CSA 101 (<https://csa.guide/>)
- 2. CRMA draft manual, 2022

#### **Acknowledgment**

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## FURTHER READING

- Federal Democratic of Ethiopia (2017). Climate Change Education Strategy of Ethiopia 2017-2030. Addis Ababa, Ethiopia
- Draft Gap Analysis Report of AICCRA (2022). Gap Analysis Report for Integrating Climate Information Service, Climate Risk Management, and Climate Smart Agriculture into the undergraduate agriculture Curriculum in Ethiopian Higher, Addis Ababa, Ethiopia
- Consultation report with Universities at an Adama meeting in [AICCRA website](#).

### About the authors

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