



Department of Electrical Engineering | CPD course

# Circular Economy and Sustainable Energy Transition

8 September - 3 November 2025



Transforming  
Energy  
Access

The "Circular Economy and Sustainable Energy Transition" course has been funded with UK aid from the UK government via the Transforming Energy Access platform; however, the views expressed do not necessarily reflect the UK government's official policies.



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

# Introduction



Welcome to the Circular Economy and Sustainable Energy Transition (CESET) Continuing Professional Development (CPD) course – This course is a gateway to a purposeful learning journey where circular economy principles and sustainable energy transitions converge. In a world facing growing resource constraints and climate challenges, this course equips professionals with the insight and tools needed to rethink how energy systems are designed, used, and sustained.

Through an in-depth exploration of topics such as resource efficiency, lifecycle extension, regenerative system design, and inclusive access to clean energy, participants will examine how circular strategies can accelerate the transition to more sustainable and equitable energy futures. The course also provides practical engagement with tools, case studies, and policy frameworks that highlight the intersection of circularity and energy across supply chains, infrastructure, finance, and business models—particularly within emerging economy contexts.

By the end of this journey, participants will not only have deepened their understanding of sustainable energy systems but will also be better prepared to apply circular thinking in real-world scenarios. In a course where innovation meets resilience, each module brings you closer to shaping energy systems that are efficient, inclusive, and future-ready.

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## Eligibility Requirements

The Circular Economy and Sustainable Energy Transition (CESET) course is designed for a broad range of professionals engaged in or entering the energy sector. It gives participants an opportunity to deepen their knowledge of circular economy principles while building practical skills to support sustainable energy transitions in developing economies.

The course is particularly relevant for individuals with at least a national diploma (or equivalent) in a related field (for example, engineering, environmental management, physical sciences, data science, statistics, etc.) and who are working in or aspiring to work within the energy or sustainability sectors. The course is well-suited to professionals with a technical background looking to pivot into the energy sector through an applied understanding of circular strategies, system design, and resource efficiency.

In addition, the course provides a valuable opportunity for those pursuing Continuing Professional Development (CPD), offering a structured and contextually relevant learning experience grounded in real-world case studies, tools, and policy frameworks, making it relevant to the current global context. Whether your goal is to strengthen your professional capabilities, transition into the energy sector, or earn CPD points to advance your career, the CESET course offers a focused and practical learning pathway tailored to the evolving demands of sustainable and equitable energy systems, particularly within emerging economy contexts.

# Technical Requirements

This course will take place online in a virtual, asynchronous environment. You will therefore need to have access to a computer or laptop for this course as well as a stable internet connection and data.

Minimum/ Recommended requirements for a stable internet connection:

- Wireless: 4MB/s (unshaped & uncapped)
- ADSL: 8MB/s (unshaped & uncapped)
- Fibre: 5MB/s (unshaped & uncapped)
- Windows: Windows 8; Windows 8.1 or Windows 10 x86 (32-bit) and x64 (64-bit)
- Apple: macOS 10.10; macOS 10.11; macOS 10.12; macOS 10.13; macOS 10.15 or macOS 10.15

## Format and Delivery

The “Circular Economy and Sustainable Energy Transition” course spans 8 weeks and encompasses 6 distinct modules, each meticulously designed to provide a comprehensive learning experience. The course structure has been thoughtfully tailored such that it best suits the modern employees’ needs, taking into consideration work commitments, time constraints, and family responsibility.

Every week at 08:00 on Monday, a new module is released, along with all its respective lessons and assignments, to help ensure a steady progression of knowledge and skills over the duration of the course. The course is conducted entirely in English, fostering a globally accessible learning environment. The program is delivered through a flexible remote learning platform, which enables participants to download lessons and materials, affording them the convenience to engage with the content at their own pace and convenience, at a time when they are feeling the most productive and focused to ensure maximum efficiency of the course delivery.

This format ensures that professionals with diverse schedules and commitments can engage deeply with the course material, empowering them to derive maximum value from this educational journey.

## Course Description

### Module 1 – Environmental and Social Sustainability

This module provides a structured introduction to the principles and practical dimensions of sustainability. It begins with core concepts, establishing a foundation for understanding sustainability across environmental, social, and economic dimensions. The module explores global and national policy frameworks, governance mechanisms, and regulatory approaches that shape sustainability agendas. It examines practical applications of environmental and social sustainability, focusing on real-world strategies and interventions. Participants will also gain skills in monitoring, evaluation, and reporting, enabling them to track and communicate sustainability outcomes effectively. The module concludes with applied case studies and tools to bridge theory and practice.

## Module 2 – Policy and Regulation

This module introduces the policy, regulatory, and economic frameworks driving the global shift to renewable energy. It covers key drivers of adoption—such as climate change and energy security—and international agreements like the Paris Agreement and SDGs. Participants explore policy instruments including feed-in tariffs, auctions, and subsidies, as well as regulatory elements like permitting, standards, and power purchase agreements. Governance structures, stakeholder roles, and policy coordination mechanisms are also examined, with emphasis on fostering ownership and addressing barriers to implementation.

The module highlights cross-cutting challenges such as equity, resistance, and social inclusion, while presenting best practices in policy design and coherence. Participants gain practical tools for monitoring, evaluation, and learning (MEL), supporting adaptive policy development. Emerging trends—such as decentralisation, digitalisation, and nexus thinking—are explored alongside financial tools like carbon pricing, green bonds, and concessional finance, equipping learners to engage with complex energy policy landscapes.

## Module 3 – Circularity and the Circular Economy

This module introduces the principles and practices of the circular economy with a focus on their relevance to engineering and renewable energy in the African context. It explores the transition from linear to circular systems by addressing environmental, economic, and social drivers of change. Participants will gain a deeper understanding of circular design strategies, business and service models, and systems thinking approaches that support sustainability and resource efficiency. The module also covers material flows—both technical and biological—and the use of digital tools for tracking and managing critical resources. Finally, it equips participants with practical metrics and assessment frameworks to measure circularity performance and align with broader sustainability goals.

## Module 4 – Durability, Recycling and Reusability

This module introduces key concepts and practices that support circularity in renewable energy systems, with a focus on durability, reusability, and recycling. Participants will build a foundational understanding of renewable energy system types and sustainability challenges related to components such as batteries and solar panels. Through an exploration of design principles, material choices, and quality standards, the module highlights how products can be engineered for longer lifespans and resilience in challenging environments. Learners will also engage with strategies for extending product life through reuse, repair, and refurbishment, supported by practical tools like repairability scorecards and regional case studies. Finally, the module examines recycling pathways and the role of local and informal ecosystems in reducing waste and promoting sustainable energy access.

## Module 5 – Renewable Energy Supply Chains and Sustainable Resource Management

This module offers a comprehensive introduction to the key aspects of solar energy supply chains, beginning with core supply chain principles, including logistics, procurement, and performance metrics. It explores strategies for managing risks and uncertainty, such as supplier diversification and improving transparency. Participants will learn to assess solar resources using tools like HOMER and NREL and understand how environmental and technical factors influence energy output. The module also covers sustainable system design, focusing on efficiency, integration, and environmental impacts. Finally, it examines future trends and innovations, including new applications and emerging market opportunities, supported by relevant case studies and a summative assessment.



## Module 6 – Finance and Business Models

This module equips participants with the skills to develop and evaluate climate-resilient energy business models. It begins by exploring diverse energy delivery frameworks and their value propositions, followed by practical tools for market assessment, supply-demand analysis, and policy evaluation using the PESTEL+Climate framework. Learners gain hands-on experience with carbon accounting and credit integration to enhance financial viability. The module also addresses key risk factors—financial, operational, and environmental—and introduces mitigation strategies. Through feasibility modelling, including climate-adjusted LCOE and NPV analysis, participants assess economic performance. Finally, they learn to structure commercially viable projects and funding proposals using blended finance approaches.

## Outcomes

Upon completion of this course, participants will gain a diverse set of skills, such as:

- Understand the core principles of the circular economy and how they apply to energy systems and resource management.
- Analyse the role of sustainable energy technologies in supporting a transition to low-carbon, circular economies.
- Evaluate policy, financial, and institutional frameworks that enable circular and sustainable energy practices in different contexts.
- Apply systems thinking to design or assess interventions that integrate circular economy strategies with energy transitions.
- Communicate key concepts and practical approaches to stakeholders involved in sustainability and energy planning.

## Overview

Course Title	Circular Economy and Sustainable Energy Transitions
Dates	<u>Start date</u> : 8 September 2025 <u>Registration Deadline</u> : 22 August 2025
Modules	<ul style="list-style-type: none"><li>• Module 1: Environmental and Social Sustainability (20 hours)</li><li>• Module 2: Policy and Regulation (10 hours)</li><li>• Module 3: Circularity and the Circular Economy (20 hours)</li><li>• Module 4: Durability, Reusability, and Recycling (10 hours)</li><li>• Module 5: Renewable Energy Supply Chains and Sustainable Resource Management (10 hours)</li><li>• Module 6: Finance and Business Models (10 hours)</li></ul>
Venue	Vula EMS Online Platform
Fees	Standard fee: R2,100* (roughly \$115) for the full course *This course is partially subsidized by UKAid from the UK government via the Transforming Energy Access platform.

# Registration and Cancellation

Please read the following carefully to follow the registration process.

- Potential candidates interested in participating in this course, should check the eligibility and technical requirements on pages 2 and 3 of this document. Should you fulfil these requirements, the registration form can be found [here](#). All applications will be considered, and successful candidates will be informed via email within a week of submitting their registration form.
- The registration fee covers all aspects of the course; there are no additional costs.
- Registrations close two weeks before the start of the course. Confirmation of successful enrolment will be sent by email.
- **Cancellations must be received no less than one week before the start of a course, or the full course fee will be charged.**

## Certificates

A digital certificate of completion will be awarded to participants who achieve a minimum pass rate of 50% required for all assignments and tests. For further information on digital certificates please visit [Digital Certificates at UCT](#)

## Contact Details

For more information or details on this course:

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