Core Module 1

Teaching-Learning-Assessment Plan

SARUA Curriculum Innovation Network SCIN

Key Concepts of Climate Change and Sustainable Development

Southern African Master's in Climate Change and Sustainable Development: Core Module 1

This core module adopts an interdisciplinary approach to introduce students to climate change science, policy, economics and finance, linking these to the concepts of sustainable development and climate compatible development. The module also includes the subjects of climate risks, impacts and vulnerability. The module is, thus, an introduction and prerequisite to the remainder of the course.

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Important note: This TLA Plan does not provide details of the key resources. Details and guidelines are found in the Courseware Guidelines, designed as an essential complement to the TLA Plan.

Quick links

Introduction to the Teaching-Learning-Assessment Plan 5

Introduction to the module.....8

Learning Theme 1: Sustainable Development.....13

LT1. Topic 1: Sustainable development theory & practice 14

LT1. Topic 2: Climate compatible development..... 15

LT1. Topic 3: The green economy..... 16

LT1. Summative assessment task..... 18

Learning Theme 2: Climate Science 19

LT2. Topic 1: The climate system..... 20

LT2. Topic 2: The physical drivers of climate change 21

LT2. Topic 3: Climate modelling and projections 22

LT2. Topic 4: Observed and potential changes in climate over Africa 23

LT2. Summative assessment task..... 24

Learning Theme 3: Climate Policy.....24

LT3. Topic 1: The international climate regime..... 27

LT3. Topic 2: Africa in international climate negotiations 28

LT3. Topic 3: International negotiations and local implementation 29

LT3. Summative assessment task..... 30

Learning Theme 4: Climate economics and climate finance 32

LT4. Topic 1: Evolution of economic discourse around climate change 34

LT4. Topic 2: Economic policy instruments 34

LT4. Topic 3: International landscape of climate finance..... 37

LT4. Topic 4: Finance opportunities in Africa 38

LT4. Summative assessment task..... 38

Cross-cutting summative assessment activity for the module 40

Summary of summative tasks in the module.....42

Note for printing:.....43

Introduction to the Teaching-Learning-Assessment Plan

The Teaching-Learning-Assessment (TLA) Plan is intended as a guide to the teaching, learning and assessment activities of the module. It aims to be more than merely the syllabus or content of the module. It includes the development of knowledge, skills and competencies, guidelines on teaching methodology, formative feedback and summative assessment – all of which contribute to the learning experience and therefore outcomes of the student. However, it is not a textbook. More detailed guidelines on the use of the resources is found in the module Courseware Spreadsheet.

In order to understand the TLA Plan better, the following points should be noted before reading it:

Assessment and feedback: Assessment is an integral component of the entire teaching and learning process rather than a final adjunct to it, and for this reason, assessment tasks are spread across the module. The curriculum upholds a supportive, proactive approach to the student's continuous development and achievement of the desired outcomes through frequent formative feedback from either the lecturer or the peer group. The student's grades are compiled from the summative tasks across the module.

All assessment and feedback should be based on clear, transparent criteria, provided (or developed by the class) in advance of the assignment. Assessment tasks can be completed by the individual student or a group of students. In the latter case, guidelines for awarding individual marks are provided in the Assessment Guidelines on the ePlatform.

There are two types of assessment: formative and summative.

i) Formative assessment/ feedback:

The student should receive formative feedback, from either the lecturer or peers, ideally for every assignment. This feedback outlines strengths and weaknesses and allows for reflection on areas for improvement, thus supporting the student's progress and development. Effective feedback is prompt, frequent, specific and personalised.

ii) Summative assessment:

The goal of summative assessment is to build up marks that ultimately contribute to the student's grade for the module. Summative assessment measures student

achievement by comparing it against standard criteria (i.e. the desired module outcomes). Because summative assessment is for marks, it is 'high stakes' and has a motivational effect on student engagement. To avoid contention, summative tasks should be assessed by the lecturer and an independent moderator and should be based on clear, explicit and transparent criteria. It is recommended that summative tasks account for about 20% of the student notional hours of a module and do not place too big a burden on the lecturer. Careful consideration must be given to ensuring proactively that plagiarism is avoided.

Assessment rubrics: An assessment rubric with clear criteria should be provided (or developed by the class as a group) in advance for all student assignments to ensure that assessment is transparent and fair. The student should know, in advance, what is expected of the assignment, how the task links to the outcomes of the module and what is valued in the module. The following standard rubrics are found in the *Assessment Guidelines and Tools* on the ePlatform and can be adapted and weighted as necessary: Presentation, Report, Analytical Essay and Development of Writing Rubric. These are to be adapted to assess the desired outcomes of each task.

Additional activities: The TLA Plan provides activities for 200 student notional hours. It also provides additional activities for those universities that require additional hours in the module.

Courseware Guidelines: The TLA Plan gives only abridged references for the prescribed resources. The number in [ ] links to the associated module Courseware Guidelines, which is a spreadsheet with full references to key and additional resources (see the different tabs). The Courseware Guidelines contains further guidelines for using the resources.

Exam: Should an institution require students to write an exam at the end of the module, the time allocated for the exam would be over and above the 200 notional hours provided by the TLA Plan. It is recommended that the exam questions are broad and integrated across the module, so as to demonstrate achievement of the broader competency outcomes of the module. Examples of exam type questions are provided at the end of the TLA Plan.

Grades: Grades are calculated from summative tasks. These may be weighted according to the institution's requirements. An example of a module grade table is provided in the Overarching Resources on the ePlatform.

Group work: Group work is encouraged as this builds the essential outcome of teamwork, defined as the ability to work flexibly in teams, engage effectively with

peers and successfully complete team tasks. There are several ways to award individual scores for group work (see Assessment Guidelines on the ePlatform). It is important that the lecturer plays a key facilitating role in supporting group work to achieve the desired outcomes. We suggest that group process/ participation skills are assessed by students rather than the lecturer and therefore that the assessment of group participation skills is used formatively but not for marks, to avoid contention.

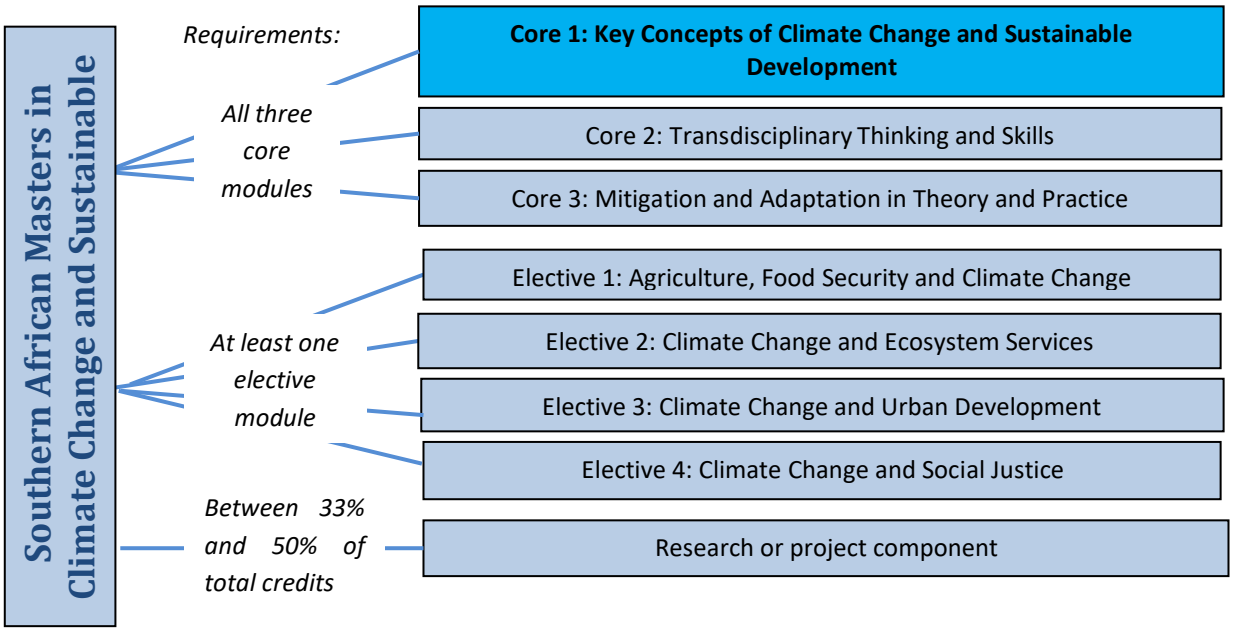
Key concepts: The key concepts detailed under some of the Learning Themes refer to concepts that the student should be familiar with before the first class in the Learning Theme. This means that if the student is not familiar with the term, s/he should undertake a simple search to get a basic understanding of the term, in advance of the class.

Outcomes: The TLA Plan provides topic-level and module-level outcomes that align with the curriculum-level outcomes. The curriculum outcome categories are derived from the South African Qualifications Authority (SAQA) National Qualifications Framework Master's level outcomes (Level 9) and the Critical Cross Field Outcomes, as these are consistent with regional requirements.

Student notional hours: The guidelines for hours in the TLA Plan refer to 'student notional hours'. A student notional hour is the estimated learning time taken by the average student to achieve an average pass rate for a specified task. Student notional hours are suggested for each activity to give an indication of the envisioned effort. The module provides for 200 student notional hours, with additional hours for institutions requiring a longer module.

Introduction to the module

Key Concepts of Climate Change and Sustainable Development is the first core module in the Southern African Master's in Climate Change and Sustainable Development.



Module rationale

Africa is highly vulnerable to the impacts of climate change, which threaten the continent's ability to address its development challenges. Developing an understanding of climate change science and policy, and of economic and finance considerations within which policy is formulated, is critical for building Africa's capacity for climate change research and decision-making. In this process, interdisciplinary knowledge and skills are crucial to adequately analyse past, present and future climates across the continent, and to integrate adaptation and mitigation into sustainable development strategies.

This core module examines the concepts of sustainable development and climate compatible development and introduces the fundamentals of climate change science, policy, economic activity and finance in order to lay the foundation for the whole curriculum. Although more focused on theory than practice, this introductory module promotes an inter- and trans-disciplinary learning process through the inclusion of practical knowledge (i.e. knowledge of processes, key role-players, governance systems and common methodologies) in order for students to be able to generate knowledge that is practice-and policy-relevant, positioning international agendas and debates within an African context. As the module is orientated to introducing students to the climate change and sustainable

development 'landscape', most of the Teaching-Learning-Assessment (TLA) activities take the form of readings, reviews and lectures to build the necessary foundational knowledge.

Overview of Module

The module provides the conceptual knowledge and skills foundation for understanding the impacts of climate on development and how development also impacts climate change. The module adopts an interdisciplinary approach to introduce students to climate change science, policy, economics and finance, linking these to the concepts of sustainable development and climate compatible development.

Module Learning Outcomes

This module is designed to lay the foundation for the whole curriculum. Students will learn about climate change science, policy, economics and finance, linking these to the core concepts of sustainable development and the green economy. By the end of the module, they will have gained a critical understanding of the climate change and sustainable development 'landscape' in order to apply concepts and principles in practice. Students that have completed this course will be able to review climate change projections, climate economic analyses and climate finance applications from a systemic perspective. They will also be equipped with relevant knowledge to understand the other core modules and to choose electives that are aligned with their own interest. Finally, students are expected to engage with the material and use scientific material and grey literature from various fields related to climate change and sustainable development, to translate science information into policy-relevant information and analyse evidence-based policy.

Please note: The curriculum takes a proactive approach to support the student's continuous progress towards achieving the outcomes. It is therefore expected that the student will receive formative feedback for most of the assignments undertaken, including where possible, feedback on summative assignments.

Knowledge Outcomes

- ***Specialist Knowledge:*** The student is able to identify opportunities and challenges for linking climate and development, and will have broad and specialised knowledge on which the rest of the course can build in relation to these areas:
  - Sustainable development, including the MDGs, SDGs, fundamentals of a green economy and the implications of these for southern Africa; student is able to navigate the climate and development institutional landscape and understand the geopolitics of this landscape.
  - Climate science including the climate system, circulation, variability, modelling, projections and uncertainties.
  - Climate policy in relation to the international climate regime (major institutions, conventions, and commitments), and processes for negotiations;
  - The economics of climate change ('market failure' and economic instruments for reducing climate change impacts) and climate finance architecture, both private and public.
- ***Knowledge of applications*:** The student is able to understand and evaluate different methods, tools and approaches in relation to the knowledge areas above, in particular students will be able to
  - Apply the principles of the MDGs and SDGs in different African contexts
  - Understand and evaluate and compare different methods used to develop climate projections
  - Evaluate the strengths and weaknesses of different economic instruments and analytical methods, so as to be able to engage constructively and critically with work that applies these instruments
  - Apply the principles of climate finance, through the development of skills in convening climate change responses and finance applications on behalf of disparate stakeholder groups and vested interests
- ***Research Literacies****:* The student is able to choose an appropriate process of enquiry to draw connections between physical climate impacts and development priorities; The student is able to collate, engage with, and use, various types of climate change-related readings and other materials (from political to natural science), and analyse evidence-based policy.

Skill Outcomes

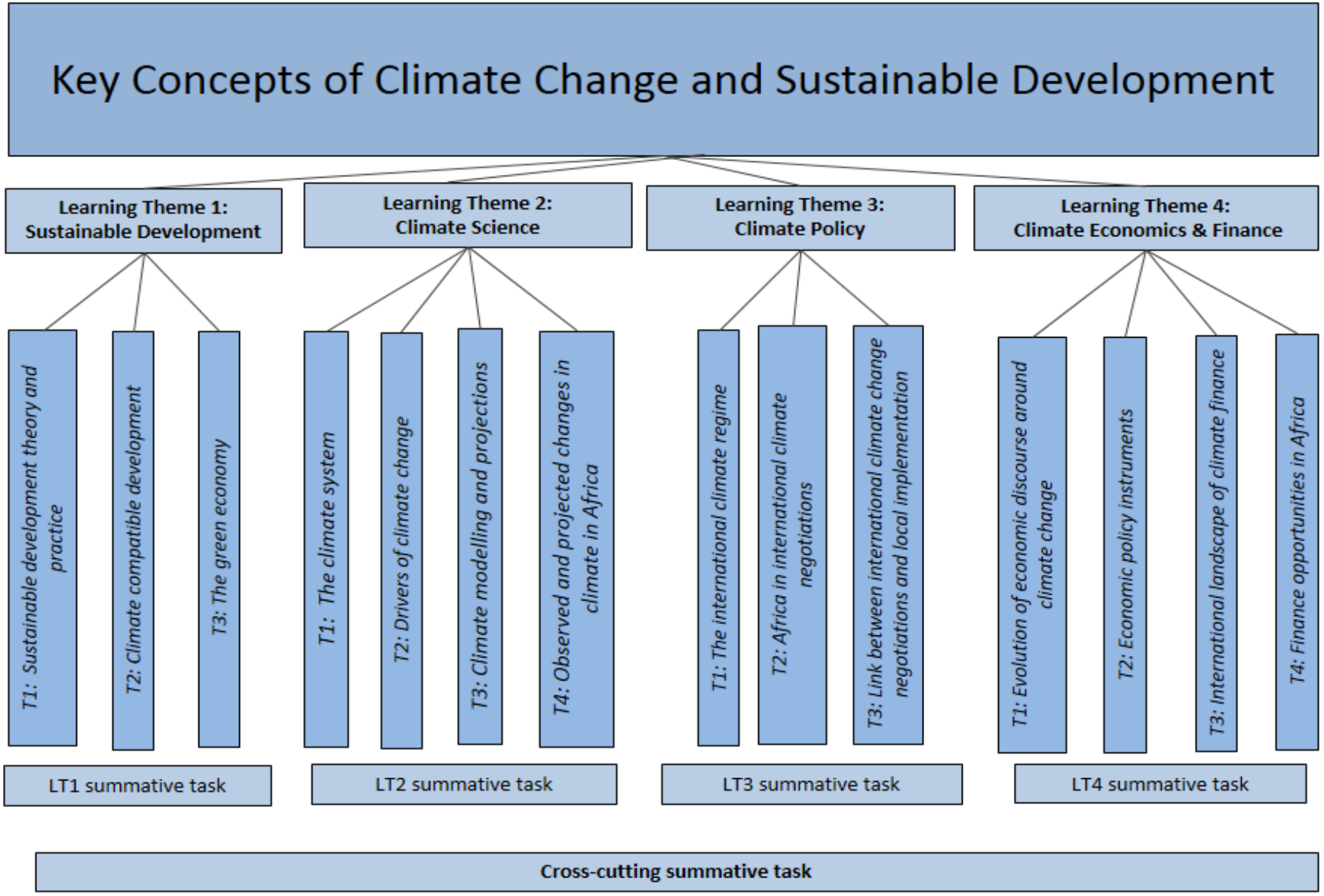
- ***Producing and communicating information:*** Student is able to produce, communicate and substantiate, orally and in writing, research based information through reports and essays and presentations
- ***Accountable and independent learning:*** The student is able to drive their own future learning by applying their knowledge of the climate change and sustainable development landscape to their personal interests, and choose an appropriate elective for further study.
- ***Teamwork*****:** Student works flexibly in teams, engages effectively with fellow students and contributes meaningfully to group projects.

Competency Outcomes

- ***Problem solving***: student is able to understand the local or national impacts and consequences of international policies, solutions and agreements in relation to sustainable development and climate change.
- ***Context and systems thinking:*** Student is will develop an understanding the overlap of climate and development, of linked domains (society, environment, economy, technology), of international hierarchies, temporal scales, and the different values, needs and power dynamics between developed and developing countries.
- ***Transdisciplinary thinking****:* Student is able to demonstrate an integration of different disciplines (politics, physical sciences, economics and finance).

Assumptions about students' prior knowledge and skills upon starting the course

No specialist know ledge is required for this module but students have academic literacies appropriate for a Master's level course.


Key Concepts of Climate Change and Sustainable Development
Learning Theme 1: Sustainable Development
Learning Theme 2: Climate Science
Learning Theme 3: Climate Policy
Learning Theme 4: Climate Economics & Finance
T1: Sustainable development theory and practice
T2: Climate compatible development
T3: The green economy
T1: The climate system
T2: Drivers of climate change
T3: Climate modelling and projections
T4: Observed and projected changes in climate in Africa
T1: The international climate regime
T2: Africa in international climate negotiations
T3: Link between international climate change negotiations and local implementation
T1: Evolution of economic discourse around climate change
T2: Economic policy instruments
T3: International landscape of climate finance
T4: Finance opportunities in Africa
LT1 summative task
LT2 summative task
LT3 summative task
LT4 summative task
Cross-cutting summative task

Learning Theme 1: Sustainable Development

Rationale for Learning Theme

The theme provides an introduction to the development of concepts related to sustainability and sustainable development. Topic 1 introduces concepts relevant to sustainability and analyses the socio-political context from an international perspective to understand what framed the birth of sustainable development and shaped its evolution till today. Links between socio-economic and sustainable development in Africa are also explored through analysing implications of MDGs, and the SDGs and green economy over the region. The learning theme introduces the links between sustainability and climate change issues, in order to lay the foundation for the rest of the curriculum.

Topic 2 introduces the concept of Climate Compatible Development (CCD) as falling under the sustainable development umbrella, along with associated concepts and framings, and explores what this means with regard to mitigation and low carbon development, and vulnerability, impacts and adaptation (VIA). This introduction serves to provide a broader context for the more detailed coverage of mitigation and VIA in subsequent learning themes and modules. The focus is largely on the links between energy and development, and between climate risks to development, placing climate change in the broader development context. Topic 3 introduces the concept of the green economy, as a way to promote mitigation and green growth.

Key words to understand prior to the activities in Learning Theme 1:
Sustainable Development, green economy, green growth, climate change mitigation, climate change adaptation, climate change vulnerability

Cross-cutting readings for Learning Theme 1
[13] CDKN (2015) Transforming our World: The 2030 Agenda for Sustainable Development

LT1. Topic 1: Sustainable development theory & practice

Outcome

- ***Specialised knowledge***: Student is able to understand and process specialised knowledge with regards to respective international agreements on sustainable development and its links with climate related issues
- ***Knowledge literacy***: The student distinguishes between peer reviewed articles and grey literature
- ***Producing and communicating information***: The student is able to argue and substantiate concepts relating to international agreements on sustainable development
- ***Independent learning***: The students is able to take responsibility for his or her own learning

LT1	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T1.1	**Student/s: Preparatory reading** Read Key readings with associated questions	8	Readings [63] IISD (2010) [8] Nicolai et al. (2015) [6] Hopwood et al. (2005) [7] Metroeconomica, HR Wallingford and CDKN (2015) Websites: [12]http://mdgs.un.org/unsd/mdg/default.aspx [14]https://sustainabledevelopment.un.org
T1.2	**Class activity: Introductory lecture** • Sustainable Development: definition(s), principles and main pillars • From Stockholm to present time: main conventions, impacts of socio-economic trends and evolution of the sustainable development thinking at the international scale • Debates around sustainable development and proposed (opposed) pathways to achieve sustainability • Sustainable Development in Africa: an overview of the MDGs, SDGs and the Green Economy • Sustainability, climate change and SDGs: implications in Africa	2	
T1.3	**Student/s: Research** Working in pairs or small groups, students use the Key readings and readings identified on their own in preparation of class debate.	1	
T1.4	**Class activity: Discussion** Class debate on i) The strengths and weaknesses of different interpretations and applications of the concept of sustainable development. ii) How the recent SDGs have linked climate change-related issues to SD. Lecturer facilitates the discussion with the class.	1	

LT1. Topic 2: Climate compatible development

Outcome

- ***Specialist knowledge:*** The student is able to demonstrate an understanding of the overlap between development and climate agendas and international programmes, and the challenges and opportunities between climate change and development
- ***Producing and communicating information***: The student is able to link personal experience with abstract concepts in informal writing; student understands the use of paragraphs in writing

LT1	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T2.1	**Class activity: Lecture** Lecture on climate compatible development (CCD), covering: • Understanding the links between sustainable development and climate change, and CCD • Develop insight into international, African, regional, national and local development agendas and related climate policies • Understand how international policies, and the equity debates, impact on and intersect with national policies regarding CCD in an African context. • Critically assess different framings of CCD	2	*Websites:* [3] CDKN [14] UN SDGs *Readings:* [64] African Progress Panel (2015) [16] UNDP Adaptation Gap Report (2014, 2015) [2] Ayers and Dodman (2010) [9] Suckall et al. (2015) [11]Tanner and Horn-Phathanothai (2014) [4] Dupar, M. et al. (2015)
T2.2	**Student/s: Read Key readings and summarise** Students read the Key readings and summarise the main points.	7	
T2.3	**Student/s: Discuss with peers** Students pair up to compare their summaries and discuss any differences.	1	
T2.4	**Student/s: Informal writing piece** Students to write 500 words, drawing from the lecture, the readings and their discussion to interrogate the SDGs and CCD, looking at how this links to their own local experience. Formative feedback: Writing commented on by lecturer/ peer using adapted	2	

	Rubric for Development of writing style Content: linking the general with the personal		

LT1. Topic 3: The green economy

Outcome

- ***Specialist knowledge***: The student is able to demonstrate an understanding of opportunities for the green economy
- ***Knowledge literacy***: Student is able to access, process and manage appropriate resources on the green economy
- ***Teamwork:*** student is able to collaborate effectively with peers
- ***Context and systems-thinking***: Student is able to apply knowledge on the green economy to identify appropriate green economy opportunities in their own context.
- ***Stakeholder engagement***: Student is able to identify the values and interests of different stakeholders in the green economy in local context

LT1	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T3.1	**Student/s: Read Key readings** Students read the Key readings, in particular SwitchAfrica outlines opportunities/ types of green development projects that can be implemented in Africa – students should focus on projects linked to mitigation issues. Students can also identify their own readings on the green economy in their own country, in preparation for a class discussion.	2.5	*Readings:* [15] UNEP (2011) Green Economy Report [relevant chapters only] [10] SwitchAfrica: overview of implementation of SD/ green development in Africa [5] Green Growth, Best Practice (2014) [84] Green Growth Knowledge Platform (2011) Ethiopia's Climate Resilient Green Economy Strategy
T3.2	**Class activity: Group discussion** Class discussion, facilitated by the lecturer, on the green economy, distinguishing between green economy and green growth: • green economy (government plays more proactive, prescriptive role) • green growth (open to free market mechanism)	1.5	
T3.2	**Class activity: Seminar and Debate**	3	

	Seminar: Opportunities for green economy in the country as a way to promote mitigation actions Invite someone in government or business, if possible (2 hours) to hold a discussion. Depending on whether the person is from government or business, this may sway the conversation to be either more green economy or green growth, so if speakers from both cannot be secured, would be good for seminar leader to cover the different perspectives. **Class debate** on the green economy opportunities in own country (1 hour)		

LT1. Summative assessment task

Outcome

- ***Research literacy:*** Student is able to undertake an appropriate process of enquiry and identify suitable resources to analyse SDGs in relation to their own country context
- ***Producing and communicating information:*** Student is able to a report and a presentation
- ***Context and systems thinking:*** Student is able to identify and critically evaluate interventions and their consequences in relation to the SDGs.
- ***Teamwork:*** student is able to collaborate effectively with peers

Summative assessment task for LT1: **Research and presentation on SDGs in a local context**	***Hrs***
Student/s: Group research Working in groups, students identify suitable resources and conduct research on one of the following themes: • Identify a government programme or policy that has been developed in the past year in your country. Assess the extent to which this programme or policy complies with or is supported by the SDGs. What are the points of compliance and non-compliance? [Students that want to focus on the process of developing the SDGs and national policies as a determinant of success or failure may do so if they are confident they will find enough material on the process]. • Taking the SDG goal of affordable and clean energy, describe how this might be achieved in your country. What are the barriers (institutional, technical, financial and other) that need to be addressed if this goal is to be achieved? • Sustainable development has become too "broad church" to be useful. Climate change action will need to move beyond the SDGs if it is to be effective. Discuss with reference to the SDGs.	2
Student/s: Each group develops a presentation on the chosen theme (2 hours). Individual student will have a 5-minute presentation slot.	2
Class activity: Individual presentations in class(2 hours) **Summative assessment: by lecturer using** standard presentation rubric. This is the first presentation so explain criteria clearly in advance **Formative feedback:** on group work process/ participation Student self-assessment on the group work process/ participation (1 hour) This is the first assessment of group participation. Student assesses own contribution to the groups' work (see Group work guidelines on ePlatform).	3

Learning Theme 2: Climate Science

Rationale for Leaning Theme

The theme introduces students to the physical science basis of climate change. The course offers an overview of how the climate system operates, and how its components interact. Understanding the physical science basis is important for interacting with climate scientists and communicating the motivation behind global policy targets and a global emissions budget, as well as national and regional strategies. Students involved in further climate science research or climate policy need to know how the physical science helps to determine global policy targets (i.e. the link between a reduction of emissions and global temperature targets), and how climate trends and weather events are or are not attributed to climate change. Linked to this, students must understand the tools used to make climate projections, namely socioeconomic and associated emissions scenarios, and climate models. Climate risks and impact assessments are based on climate projections, and students need to be aware of the limitations of projections (and the implication) in order to understand how to draw inference from analyses that use climate projections. This foundational knowledge is a basis for engaging across disciplines and facilitating discussions between different stakeholders.

In this module, earth energy balance, composition of the atmosphere, greenhouse gases, heat transfers and general circulation of the atmosphere and the ocean will be explained. The course provides an overview of the main drivers of climate change, considering the natural and human influences over recent millennia. It provides tools to understand projections and uncertainties in the future climate as well as the scientific basis for a global GHG emissions budget. Finally, the module contributes to further the understanding of climate variability and change in Africa, and provides tools to understand projections and uncertainties in the future climate.

Key words to understand prior to the activities in Learning Theme 2:
IPCC, anthropogenic climate change, CO2 equivalent

Core cross-cutting resources for Learning Theme 2: 5 hours

[24] Harvey, D. (1999) Global Warming: The Hard Science. Routledge. Select chapters.

[19] Documentary: An Inconvenient Truth : Presentation by Al Gore

[32] World Bank (2012 onwards): Turn Down the Heat Series

LT2. Topic 1: The climate system

Outcome

- ***Specialised knowledge***: Student is able to demonstrate specialised knowledge with regards to the fundamentals of climate change including general circulation of the atmosphere, and climate variability
- ***Independent learning***: Student demonstrates responsibility for own learning through pre-reading activity

LT2	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T1.1	**Student/s: Read Key readings;** Answer questions and prepare short summaries in preparation for lecture. Students find short video resources that effectively explain concepts to class.	2	*Readings:* [22] Fundamentals of Physical Geography, Chapter 7: Introduction to the Atmosphere. *You tube videos:* https://www.youtube.com/results?search_query=earth%27s+climate+system [85] NASA The Ocean: A Driving Force for Weather and Climate
T1.2	**Class activity: Lecture on The climate system** · The climate system and how it operates · Earth energy balance, composition of the atmosphere · Circulation of the atmosphere/ocean and its influence on regional climate	2	
T1.3	**Class activity:** Students share video demonstrations with class, followed by discussions and refining of understandings	2	

LT2. Topic 2: The physical drivers of climate change

Outcome

- ***Specialised knowledge:*** Student is able to demonstrate knowledge on climate change drivers, feedbacks and attribution
- ***Producing and communicating information***: Student is able to discuss anthropogenic climate change, drawing from their own reflections and academic work

LT2	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T2.1	**Class activity: Lecture** Lecture on the drivers of climate change, covering: · Radiative forcing of climate · Climate feedbacks · Climate change attribution	2	*Readings:* [30] Stott et al. (2016) [27] Lott et al. (2013) [18] Committee on Radiative Forcing Effects report (2005)
T2.2	**Student/s: Read Key readings** Students read Key readings in preparation to participate in class discussion.	1.5	
T2.3	**Class activity: Discussion** Discussion on southern Africa's contribution to anthropogenic climate change, facilitated by the lecturer.	1.5	

LT2. Topic 3: Climate modelling and projections

Outcome

-
- ***Knowledge of applications***: Student is able to understand and compare different methods used to develop climate projections
- ***Knowledge literacy:*** Student is able to process and review academic articles on climate modelling methods

LT2	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T3.1	**Class activity: Lecture** Lecture on climate modelling and projections, covering the different research methods and empirical approaches used to develop climate projections, and the science basis for a global emissions budget	2	*Readings:* [20] Edwards (2011) [21] Flato (2011) [25] Hawkins and Sutton (2011) [28] Moss et al. (2010)
T3.2	**Student/s: Read Key readings and summarise different methods** Students read the Key readings and write a succinct overview of the use of global climate models in producing climate projections, noting any strengths and weaknesses. Criteria co-developed by class and lecturer **Formative feedback** by peers	8	

LT2. Topic 4: Observed and potential changes in climate over Africa

Outcome

- ***Specialised knowledge***: Student is able to demonstrate knowledge on the biophysical dimensions of climate change in Africa
- ***Research literacy***: Student is able to choose appropriate resources on key trends and projections of climate change in their own country
- ***Producing and communicating information***: Student is able to write a scientific report

LT2	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T4.1	**Student/s: Pre-readings:** Student reads the Key academic and non-academic readings	2	*Academic readings* [23] Giannini et al. (2008) [31] Tyson and Preston-Whyte (2000) [26] Hulme et al. (2001) *Non-academic readings:* [38] IPCC WG2 (2014) Chapter 22, Africa. Section 22.2. (2014) [77] CDKN (2015)
	Class activity: Lecture on African climate change Overview of current and projected warming in Africa, Southern Africa, and nationally.	2	
T4.2	**Student/s: Group report** Step 1. Students write a group report summarising key trends and projections of climate change for their country. Alternatively, critically assess the way in which climate data has been used in the relevant section of latest national communication to UNFCCC (4 hours). **Formative feedback: This is the first formal report writing, therefore the focus is on structure.** The lecturer gives feedback on the report, highlighting its strengths and weaknesses. Criteria: Report rubric; analysis of key trends and projections Step 2. Groups develop a presentation on findings : 5 minutes per person (2 hours)	6	
T4.3	**Class activity: Presentations and feedback** Students present their findings in class (Focus on assessing group work –see guidance at the end of TLA Plan)	2	

LT2. Summative assessment task

Outcome

- ***Research literacy***: Student is able to select appropriate resources and analyse articles and other materials on climate science
- ***Teamwork:*** Student is able to work democratically and collaboratively with peers, distributing work fairly and effectively.
- ***Producing and Communicating Information:*** The student is able to communicate, orally and visually, through a presentation, contextualised information and substantiate an argument.

Summative assessment activity for LT2	***Hrs***	***Key resources***
Students: Group research and presentation Working in groups students must undertake their own research and prepare a presentation on one of these topics: Access the www.skepticalscience.com website and choose one of the top ten "climate change myths". Read the background material around the myth propagated by climate deniers, and the additional recommended reading. The group should then outline position of the skeptic argument, explain why it is problematic and present compelling and fact based arguments as to why it should change. OR Based on the 3rd (or most recent) National Communication of your country, assess the quality of the climate science that is used to describe observed and expected climate change in the report, and suggest ways that the report could be improved.	6	Website [80] www.skepticalscience.com Student to identify resources
Class activity: Delivery of presentations in class Criteria: Presentation rubric, including: Strength of the argument; use of appropriate resources Summative assessment by lecturer: (see guidelines for assessing individual contributions to group work at the end of the Teaching-Learning-Assessment Plan)	2	

Learning Theme 3: Climate Policy

Rationale for Learning Theme

The theme introduces the international climate change governance and policy landscape from an historical perspective and critically analyses current implications of this landscape for developed and developing countries.

The first Topic explores the history of the UNFCCC and the related institutions, while critically looking at international negotiations for mitigation and adaptation. The Topic will particularly examine the differentiated position and level of power of developed and developing countries, including the challenges to reach international agreement. This overview of the landscape is important for students to understand key players in international climate policy and to capture the major issues that dominate the debate during climate negotiations.

In its second part, the focus is on Africa in the context of global climate politics. The theme further examines the implications of the international climate change framework for African countries. Unity as well as fragmentation among African countries during the negotiations are studied. Current national commitments to reduce greenhouse gas emissions and to climate change adaptation are briefly explained (as an introduction to Core module 3), including the mechanisms and strategies that have been adopted outside of the UNFCCC. Finally, differences among African countries are analysed in terms of opportunities and challenges to implement adaptation and mitigation strategies.

Key words to understand prior to the activities in Learning Theme 3:

Kyoto Protocol, Paris Agreement, UNFCCC, climate justice

Outcomes for Learning Theme 3

- ***Specialised knowledge***: Student is able to demonstrate knowledge with regards to the institutions, legislation and interests that comprise the climate policy landscape; Africa's position in climate negotiations, in terms of geo-politics and equity issues; the link between international climate change negotiations and local implementation issues and challenges
- ***Knowledge literacy***: Student is able to contextualise the source of climate policy production
- ***Producing and communicating information***: Student is able to summarise and share detailed information; prepare and hold an interview with an expert; produce a short video; communicate informally with a non-expert audience; present information visually
- ***Independent learning:*** Student takes responsibility for own learning through answering questions on Key readings
- ***Teamwork:*** Student is able to work effectively within a group
- ***Stakeholder engagement:*** Student is able to understand perspective of different stakeholders; conduct an interview with a climate change expert in their own country
- ***Context and systems thinking***: The student is able to understand and navigate climate change's institutional landscape, recognising how and why this landscape has evolved (e.g. Kyoto to Paris and the progressive inclusion of adaptation) and the influence of institutions operating at different scales.
- ***Problem solving:*** Student is able to understand and describe the consequences of the Paris Agreement in relation to their own country context.

LT3. Topic 1: The international climate regime

Outcome

- ***Specialised knowledge***: Student is able to demonstrate knowledge with regards to the institutions, legislation and interests that comprise the climate policy landscape.
- ***Knowledge literacy***: Student is able to contextualise the source of climate policy production
- ***Producing and communicating information***: Student is able to summarise and share detailed information
- ***Context and systems thinking***: The student is able to understand and navigate climate change's institutional landscape, recognising how and why this landscape has evolved (e.g. Kyoto to Paris and the progressive inclusion of adaptation) and the influence of institutions operating at different scales.

LT3	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T1.1	**Class activity: Lecture** Lecture on the international climate regime, covering: · The history of UNFCCC, IPCC and other climate-change related institutions or conventions · Critical overview of international policy framing mitigation and adaptation · Differentiated positions and levels of power, and main conflicts of interest between developed and developing countries	2	*Readings:* [41] UNFCCC (2015) Paris Agreement. Annex to decision 1/CP.21, document FCCC/CP/2015/L.9/Rev.1. [36] Dubash (2012) [34] Betsill et al. (2015)
T1.2	**Student/s: Read Key readings and summarise** Students read the Key readings and each prepares a 5-minute presentation, detailing an international climate change institution and its role/s.	4	
T1:3	**Class activity: Presentation and a group discussion** Students meet as a seminar to present on international institutions and raise questions needing clarity from the lecturer.	2	

LT3. Topic 2: Africa in international climate negotiations

Outcome

- ***Specialist knowledge***: Student understands Africa's position in climate negotiations. Student is able to understand and evaluate the effectiveness of the climate negotiations process, in terms of geo-politics and equity issues.
- ***Independent learning:*** Student takes responsibility for own learning through answering questions on Key readings

LT3	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T2.1	**Student/s: Read Key readings with questions**	6	*Readings:* [33] AMCEN (2011) [38] IPCC Assessment Report (2013) (specific sections only) [40] Rajamani (2015)
T2.2	**Class activity: Lecture** Lecture focused on Africa in climate negotiations • Africa as a diverse and unified group • National climate change strategies • Challenges and opportunities to implement adaptation and mitigation	2	

LT3. Topic 3: International negotiations and local implementation

Outcome

- ***Specialised knowledge:*** Student is able to demonstrate an understanding of the link between international climate change negotiations and local implementation issues and challenges
- ***Stakeholder engagement:*** Student is able engage with a climate change expert in their own country
- ***Producing and Communicating Information*:** Student is able to prepare and hold an interview with an expert; communicate informally with a non-expert audience;
- ***Teamwork:*** Student is able to work effectively with a group to successfully arrange an interview with a key local climate expert

LT3	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T3.1	**Students: Read Key readings**	2	*Blog* [43] Winkler (2015) "Paris Agreement: after climbing a great mountain, many more to climb" *Briefing paper* [37] Lawyers responding to climate change (2016) Guide to the Paris Agreement *Suggested additional resources:* key UNFCCC mechanisms for developing country actions: e.g. Clean Development Mechanism (CDM), REDD+; NAMAs; INDCs to NDCs etc.
T3.2	**Class activity: Seminar** Seminar on the link between international climate change negotiations and local implementation issues and challenges National climate policy expert to share expertise on international climate change negotiations and representative of the environmental department from a local municipality to share what is done for mitigation/adaptation at the local level	2	
T3.3	**Class activity: Preparation for interview** Class to cover ethics and criteria for interview and blog post. Criteria for interview: Appropriate questions and style, Interview etiquette and goals	1	
T3.4	**Student/s: Group work: interview** In pairs or small groups, students prepare, arrange and conduct a short interview with a climate change expert in their country, on a topic of climate policy The interview is transcribed, edited and linked to a short blog post.	6	
T3.5	**Student/s: Group work: blog** Criteria for blog post to be developed by class: appropriate language for communicating science, coherence, validity, transparency	4	

	Follow up: Students share each other's blog posts and provide direct friendly feedback		

LT3. Summative assessment task

Outcome

- ***Producing and Communicating Information*:** Student is able to create visual aids and use them in a short presentation
- ***Teamwork:*** Student is able to work in a team
- ***Context and systems-thinking*:** Student is able to track the changing priorities, targets and institutional arrangements in the evolution of the UNFCCC.
- ***Problem solving:*** Student is able to understand and describe the consequences of the Paris Agreement in relation to their own country context.

Summative assessment task for LT3	***Hrs***	***Key resources***
Student/s: Group research: Timeline and local implications of the Paris Agreement Groups are given a period in the evolution of UNFCCC climate policy, conventions and agreements. The group then compiles a timeline culminating in the Paris Agreement, so that students understand the key features and discourses of each period. In addition, students underline the major shifts brought in the Paris Agreement, compared to previous international agreement. Students start looking ahead to COP22 in Marrakech Groups prepare a presentation on the findings	6	Student to identify resources from LT3
Class activity: Presentation Once the timeline is complete, the group gives a short presentation to the class on the implications of the Paris Agreement for their country, each student having a 5-minute slot. Criteria: Presentation rubric Content: demonstrate insight into Paris agreement: what it commits to, what makes it different, how commitments were secured, what the gaps are. Style: Clarity, logic, visual aids/ diagrams	2	

Summative assessment by lecturer		

Learning Theme 4: Climate economics and climate finance

Rationale for Learning Theme

This theme introduces both economics and finance as tools for understanding and responding to climate change.

In the first section, economics is explained as a social science focussed on resource allocation decisions in the face of resource scarcity and unlimited needs – i.e. as an analytical lens that should be appropriate in trying to understand climate change. It proceeds to trace the origins of GHG emissions in economic activity and introduces the notion of climate change as an "externality" and "market failure". The relevance and merits of respective economics instruments such as "prices" (including transaction costs), "quotas" or "property rights", "institutions" and "knowledge" will be introduced together with the people and organisations that advance them so as to equip students with the ability to navigate the economic policy landscape reflectively and critically. Students will be required to engage critically on the relative merits of different policy prescripts. The evolution of the economic discourse on climate change (from economics as a cost or benefit, to economics as a catalyst for necessary economic change) will be highlighted and notions of Environmental Kuznets Curve, green growth, carbon productivity and leap-frogging will be expounded.

The theme's finance section provides an overview of the international climate finance architecture and the challenges and opportunities for African countries in accessing climate funds. It includes an introduction to the history behind the establishment of the UNFCCC main funds, the contributions to these funds and access mechanisms. The theme then explores the challenges of climate change finance, linked to fragmentation, complexity and duplication on the 'provider side', but also to a growing complexity that now characterises the 'demand side'. It analyses critically the differences among African countries to access international finance for adaptation and mitigation.

After exploring the general climate finance architecture, the course will analyse various public and private international and regional climate-related financial mechanisms including (but not limited to): the Green Climate Fund; the African Green Fund; the Clean Development Mechanism, REDD and REDD+; the Integrated Financing Strategy; and the functioning of the Voluntary Markets. Moreover, Green Climate Fund the theme will link back to previous coverage on the green economy

to highlight new opportunities for Africa to fund climate change related projects through national investments.

Key concepts to understand prior to the activities in Learning Theme 4:

Economics: Market failure, environmental externality, damage function
Finance: Green Climate Fund, African Green Fund, carbon markets, REDD and REDD+, CDM

LT4. Topic 1: Evolution of economic discourse around climate change

Outcome

- ***Specialised knowledge***: Student is able to demonstrate understanding of the links between economy and climate change and to engage critically with the economic discourse on climate change.
- ***Producing and communicating information***: Student is able to articulate economic analysis to non-economists.
- ***Independent learning:*** Student is able to demonstrate self-learning through the preparatory readings.
- ***Interdisciplinarity:*** Student is able to include economic analysis in other modes of analysis in an appropriate manner.

LT4	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T1.1	**Student/s: Read Key readings with questions** Students read the Key reading in preparation for a class discussion	9	*Readings:* [45] Arrow et al. (1995) [50] Executive Summary of the Economics of Climate [78] Adaptation Report Climate change market failure article [55] Monbiot (2014) [52] Global landscape of climate finance online article [58] GIZ (2013)
T1.2	**Class activity: Lecture and discussion** Lecture on the evolution of economics discourse in climate change, covering: • Economics as the study of allocating scarce resources to satisfy unlimited needs and wants and how this ought to be related to climate change. • GHG emissions as a market externality. • The evolution of recent economic discourse – "damage functions", climate change as a "dead-weight cost"; "winners and losers"; climate change as an "economic opportunity", the Environmental Kuznets Curve, the merits of the "leap-frogging" idea. • The importance of connecting economics with the social and biophysical sciences to address the climate problem. Lecturer to facilitate discussion and provide feedback on individuals' contributions.	2	

LT4. Topic 2: Economic policy instruments

Outcome

- ***Specialised knowledge:*** Student is able to demonstrate familiarity with the strengths and weaknesses of different economic policy instruments.
- ***Knowledge literacy:*** Students are able identify and process appropriate sources to collate and evaluate an example of economic policy use.
- ***Producing and communicating information:*** Student is able to: produce an essay substantiating the use of economic policy for addressing climate change; produce a presentation and orally and visually communicate specialist information to a peer group.
- ***Teamwork:*** Student is able to work effectively with a peer
- ***Problem solving:*** Student understands potential and constraints of economic policy to address climate change

LT4	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T2.1	**Student/s: Read Key readings**	6	[44] Ackermen (2007) [49] Coase (1960) [62] Vatn & Bromley (1994)
T2.2	**Class activity: Lecture** Lecture on economic policy instruments (can market instruments address climate change?). • Getting prices right (including the importance of transaction costs) • Get property ownership right. • Correct "imperfect information". • Get institutions right (market structure and "rules of the game") • Central co-ordination. Different policy approaches are introduced in the lecture and students are required to reflect critically on the respective strengths and weaknesses in addressing climate change. This will serve as preparation for the essay assignment.	2	
T2.2	**Student/s: Essay** Working in pairs, students produce an essay identifying a real world example of the use of economic policy to address climate change. Length of essay: 3000 words (1500 words each) Assessment of essay: peer feedback using adapted Essay rubric. Research criteria: identification of appropriate literature; appropriateness of the example;	8	

	Content criteria: analysis of the role of economics; conclusion Style criteria: construction of argument Follow up: develop a presentation of the key findings		
T2.3	**Class activity: delivery of Presentation** In pairs, student (5 minutes each) presents an explanation of why the economic policy to address climate change did or did not work. Focus on the conceptual understanding of the role of economics in addressing this problem. Assessment of presentation: peer assessment using presentation rubric	2	

LT4. Topic 3: International landscape of climate finance

Outcome

- ***Knowledge of applications:*** Student has knowledge of relevant climate funds and their respective modalities.
- ***Context and systems thinking***: Student is able to link respective climate funds with systemic climate and development challenges.

LT4	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T3.1	**Student/s: Watch videos in preparation for group discussion**	2	*Videos* [81] Cities Climate Finance Leadership Alliance.(2015) **The Bangkok Johannesburg Blueprint** [82] Larry Lohmann (2008) Does carbon trading really work?
T3.2	**Class activity: Lecture** Lecture on the international landscape of climate finance: – Infrastructure finance, including history of UNFCCC and UNCCD main funds and other emerging funds, most notably the Green Climate Fund. – Contributions, eligibility, access to these funds – Challenges and opportunities – Responsible investing and the disinvestment campaign	2	*Readings:* [47] Buchner et al. (2014) [53] Horstmann (2011) [59] Rai et al. (2015) [60] Schalatek et al. (2014) *Online reports* [63]ODI (2011)briefing note [79] Climate Funds Update [76] UN (2015) Addis Ababa Action Agenda, Financing for Development
T3.3	**Student/s: Read Key readings in preparation for group discussion**	8	
T3.4	**Class activity: Group discussion** Lecturer facilitates a group discussion on the international landscape of climate finance	1	

LT4. Topic 4: Finance opportunities in Africa

Outcome

- ***Specialised knowledge:*** Student can understand the difference between public and private finance in for climate responses in Africa, finance readiness at the country scale and available sources of finance.
- ***Knowledge of applications:*** Student is able to evaluate the different carbon market mechanisms and payments for ecosystem services, including the limitations of these mechanisms.
- ***Knowledge literacy***: Student is able to evaluate the process of knowledge production
- ***Research literacy***: Student is able to: identify and review literature on climate finance for a local case study

LT4	*Teaching-Learning-Assessment Activity*	*Hrs*	*Key resources*
T4.1	**Student/s: Read Key readings**	6	Readings: [57] ODI/ACFH/GIZ (2013) Report [56] Norman et al. (2015) [54] Michaelowaa & Jotzo (2005)
T4.2	**Class activity: Lecture** Lecture on African mechanisms for devolved financing and public private financing for climate change responses: • Opportunities to finance adaptation and mitigation in Africa (public and private fund) • The Green Climate Fund; the African Green Fund; the CDM (background, projects and challenges for Africa); REDD; the Integrated Financing Strategy; and the functioning of the Voluntary Markets. • National investment	2	
T4.3	**Student/s: Funding report** Students to identify their own resources and use their lecture notes to identify appropriate possible funding mechanisms for a real case study in their country. Criteria: Report rubric	6	Potential resources on CDKN website, including examples of CDKN work on engaging with private sector (e.g. Kenya flower sector) and business partnership programme

LT4. Summative assessment task

Outcome

- ***Teamwork:*** Student is able to work effectively with peers to formulate and support arguments
- ***Context and systems thinking***: Student is able to draw linkages between national climate agreements with market and financing mechanisms.

Summative assessment task for LT4	***Hrs***	***Key resources***
Class activity: Group debate Students break into two groups. One group argues that effective climate change action requires more market activity in general and global carbon marketing particular. The other argues that markets are part of the climate change problem and can never solve the climate change challenge. OR Based on the most recent National Communication of your country, outline the most important features of a credible application to the Green Climate Fund, motivating why these features deserve funding. Approach: lecturer facilitates debate Summative assessment by lecturer of individual contributions to the debate Criteria: Ability to argue rationally (unemotionally), specialist knowledge, good listening skills, ability to speak clearly and concisely. These criteria must be discussed with class in advance.	4	Students to identify resources

Cross-cutting summative assessment activity for the module

Outcome

- ***Accountability and independent learning:*** Student is able to demonstrate effective self-driven learning and time management
- ***Knowledge and research literacy***: Student is able to process and synthesise information from different sources to review literature, and draw conclusions from theory and data in response to a specific question relating to sustainable development, climate science, policy, economics and/or finance.
- ***Producing and communicating information:*** Student is able to produce a report for an academic audience
- ***Interdisciplinarity:*** The student is able to integrate knowledge from different disciplines.

Cross-cutting summative assessment activity for Core Module 1: 3000-word analytical essay	***Hrs***	***Key resources***
Student/s: Individually, student writes a long essay (3000-words) that demonstrates the student's ability to draw on all learning themes in the model and to synthesise knowledge from the disciplines covered in the module. Possible essay titles: • Can climate science and attribution of climate change to specific events contribute to understanding of loss and damage? • Is the 2^{o}C target consistent with a "precautionary" approach? Discuss with reference to uncertainty in climate science. • Only a dictatorship or centrally controlled society and economy can prevent run-away climate change. Discuss with reference to the evolving strategy of the UNFCCC and the Paris Agreement in particular. • Global poverty and the need for development is the reason we will not meet carbon targets. • Carbon targets can only be met with public funding because private finance will always seek profits. Discuss. Draft essay (12 hours); Final essay (8 hours) **Assessment** using Analytical Essay Rubric Formative feedback: by lecturer on Draft essay Summative assessment: Final essay marked by lecturer	20	Key and additional readings from across the module. Additional resources identified by the student. Analytical essay rubric

Possible exam questions

If the institution requires it, the module can end with a summative final exam, for which suggested integrated questions/ activities are provided below.

- In light of the IPCC executive summary, are the SDGs responding to all identified climate change challenges? Or are there any tensions or gaps between the 2 agendas? [Focus on a particular sector]. Write an analytical essay.
- Write an assessment report of the SDGs in light of climate change impacts in one sector (e.g. agriculture; water) as well as brief 'recommendation for policy makers' to better reflect climate change concerns into the SDGs.

Summary of summative tasks in the module

The student's grades are compiled from summative individual and/ or group tasks across the module.

Summative assessment measures the student's achievement by comparing it against standard criteria (i.e. the desired module outcomes). Because summative assessment is for marks, it is 'high stakes' and has a motivational effect on student engagement. To avoid contention, it is recommended the lecturer and an independent assessor provide summative assessment, based on clear, explicit and transparent criteria. Standard rubrics are found in the *Assessment Guidelines and Tools* on the ePlatform and can be adapted and weighted as necessary. Careful proactive consideration must be given to ensuring that plagiarism is avoided.

It is recommended that summative tasks account for about 20% of the student notional hours of a module and do not place too big a burden on the lecturer.

LT	**Task**	**Subject**	**Hrs**	**Group/ individual**
LT1	Presentation	SDGs in a local context	7	Individual
LT2	Presentation	Climate science	8	Group
LT3	Presentation	Local implications of the Paris Agreement	8	Group
LT4	Class debate	Climate finance	4	Individual
Cross-cutting	Analytical essay	Choice of cross-cutting essay questions	20	Individual
47 hours of summative activities				

Note for printing:

This TLA Plan has been formatted to be printed as an A5 booklet, with a gutter margin. Ensure that you select 'Booklet' on your Printer Settings, under the 'Layout' tab.

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Programme for Climate Change Capacity Development
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Programme de développement des capacités face au changement climatique

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