



Climate Change: from global to local Action

Short Learning Program (12 ECTS)

Student Guide

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October 2019



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INTRODUCTION

The short learning program ***Climate Change: from global to local Action*** is a pilot course developed within the Erasmus+ Project “European SLP’s for continuous professional development and lifelong learning” (590202-EPP-1-2017-1-NL-EPPKA3-PI-FORWARD), and is a program offered in a cooperation between three European distance learning universities, Universidade Aberta – UAb, the Open University of the Netherlands - OUNL and Universidad Nacional de Educación a Distancia – UNED.

Short Learning Programmes (SLPs) or short degree programmes are a group of courses (units, modules or other learning building blocks) with a common subject focussing on specific needs in society and which are part of larger degrees.

This SLP is a natural follow up of earlier European projects where the involved partners – UAb, UNED and OUNL - worked together.

Since different universities teach the different modules of the course, this will allow for virtual mobility and exchange of cultures.

OBJECTIVES

The program aims to inform and analyse information about climate change from different perspectives, including scientific, political, economic and social. The program also aims to discuss the different adaptation and mitigation measures of climate change, including the different tools that organisations can implement to improve their environmental performance.

TARGET PUBLIC

The program is designed for all of those who are interested in learning about the topic of climate change, and motivated to find out more about how the weather works, the political, economic and the social implications relating to climate change. It targets professionals, managers and technicians from all organisations, from private and public sector, who, within their organisations, are able to make changes towards climate change mitigation and adaptation. Emphasis will be given to the actions and behaviours that organisations can implement and take to decrease their Carbon footprint, within the United Nations (UN) Paris agreement recommendations and the UN Sustainable Development Goal no. 13, Climate Action.



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PARTICIPANTS PRE-REQUISITES

The participants in the program should:

- have a bachelor degree, or equivalent, in any scientific area;
- have about 10-15 hours / week for self-study of the learning contents available online, for participation in discussion forums and assessment activities;
- be able to read and understand written English;
- have an e-mail account and ease of use of computer and basic software.

LEARNING OUTCOMES

The learning outcomes of the program are to:

- Raise awareness and learn about science, economical and politics of climate change;
- Understand the human interactions and individual role towards Climate Change;
- Act towards climate change mitigation and adaptation measures by applying the available environmental management tools within one's organisations or communities.

PROGRAM STRUCTURE AND CONTENT

The program ***Climate Change: from global to local Action*** (12 ECTS) is composed by 4 modules taught sequentially, by the different distance learning European universities involved (Fig.1.):

1. The science of climate change (3 ECTS) - UAb
2. Economy and Politics of climate changes (3 ECTS) - UNED
3. The Lived Experience of climate change (3 ECTS) - OUNL
4. Integrated responses within sustainable development (SD) (3 ECTS) - UAb

The program has a duration of 6 months (taught in part time and e-learning).
Each module of the program can be enrolled separately (see *Registration*).

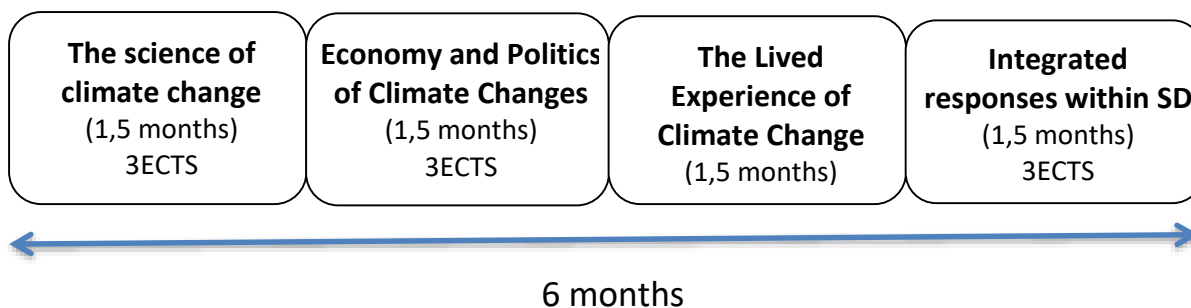


Figure 1. Structure of the Short learning program Climate Change: from global to local Action.



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PROGRAM CALENDAR

Module 1 | The science of climate change: 11th November – 20th December

Module 2 | Economy and Politics of Climate Changes: 8th January – 14th February

Module 3 | The Lived Experience of Climate Change: 17th February – 27th March

Module 4 | Integrated responses within SD: 30th March – 15th May

PEDAGOGICAL MODEL AND TUTORIAL SYSTEM

The modules composing the program will be developed according to the e-learning pedagogical practices of each of the three partner universities.

UAb is a reference in European higher education institutions in the area of online and advanced eLearning, using the most advanced information and communication technologies, and a recognised Virtual Pedagogical Model. The main principles of the institutional virtual eLearning pedagogical model are four: learner centeredness, flexibility (time and space), interaction, and digital inclusion. The pedagogical approach intends to combine autonomous and self-directed learning articulating the flexibility that distance online learners need with the pacing necessary to help them get things done and avoid the constant postponing of the learning activities. The learning platform used at UAb is Moodle, which allows managing and sharing of diverse learning materials (text, video, audio) and both individual and collaborative learning activities.

UNED has more than 45 years of experience with distance learning, gathering a whole range of technical and human resources at the disposal of students to enable autonomous learning tailored to their needs and schedules. Based on the use of active methodologies in which students are the protagonist of their own learning, this system is the underlying concept of the European Higher Education Area (EHEA) for the training of professionals capable of taking up the challenges of the knowledge society. UNED provides instruction by means of a distance learning modality characterised by the use of a specific didactic methodology. The methodology combines the use of print and audiovisual media with that of new technologies, especially virtual learning communities. The learning platform is aLF, a collaborative platform that allows to impart and receive training, manage and share documents, create and participate in thematic communities, as well as carry out online projects.

The OUNL is the leading part-time university in the Netherlands and Flanders, offering high-quality, personalised and interactive online education. The pedagogical model is activated online learning, with pacing. The learning platform is yOUlearn, an e-platform that allows systematic individual student feedback, but also supports collaborative learning processes. Within the field of Natural Sciences at the Open University, the latest scientific developments are taught, which are approached from both natural and social sciences.

The course is structured by Topics. In each Topic a forum will be created, moderated by the teacher and will remain open throughout the course, to clarify the doubts and difficulties felt and presented by the trainees, thus providing a possibility for permanent interaction of trainees between themselves and with the teacher.



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The form of work used in this program includes: (1) individual reading and reflection on the learning contents, (2) sharing of reflections and study between trainees, (3) clarification of doubts in the forums moderated by the teachers, (4) completion of the learning activities, and (5) completion of the assessment activities.

ASSESSMENT

The modules of the program adopt a continuous evaluation model, consisting of a sequence of training activities and evaluation, throughout the module (i.e., participation in forums and carrying out individual or group evaluation activities).

CERTIFICATION AND ACCREDITATION

The final certification of the SLP *Climate Change: from global to local Action* will be awarded by Universidade Aberta, both the program or the individual modules. A certificate per module will also be awarded by the partner university where the module is taught.

The SLP can be accredited within the postgraduate programs of each partner university (e.g., at UAb the masters of Environmental Citizenship and Participation or the PhD on Social Sustainability and Development). With this training, students will get the competences to act within climate change adaptation and mitigation in their present or future careers.

REGISTRATION

The applications for the SLP *Climate Change: from global to local Action* are made online (<https://portal.uab.pt/alv/programasalv/extensao-universitaria-e-cultural/>), from **7th to 30th October, 2019**, and are made through an online application, with the following documents attached in digital format:

- Certificate of qualification;
- Identification document.

Candidates may choose to register on the program or on its individual modules. The registration is limited to a maximum of 30 participants (accepted by order of arrival). The **program begins on 11th November, 2019**.

FEES

The first edition of the SLP *Climate Change: from global to local Action* is free of charge.



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SCIENTIFIC COORDINATION

Carla Oliveira, Paula Nicolau, Sandra Caeiro: Universidade Aberta (UAb)

Paquita Perez Salgado: Open University of the Netherlands (OUNL)

Rosa Martín Aranda: Universidad Nacional de Educación a Distancia (UNED)

ADMINISTRATIVE COORDINATION

Paula Bacelar Nicolau, pnicolau@uab.pt, Universidade Aberta

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CONTACTS

Unidade para a Aprendizagem ao Longo da Vida (UALV), Universidade Aberta

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MODULES SYLLABUS

1. The science of climate change (3 ECTS)

Teachers Paula Nicolau, Célia Ferreira (UAb)

Aims

The aim of the module is to introduce the concept of climate change in the context of sustainable development.

Contents

- What science tells us about climate change
- Introduction to the science of climate change
- Global warming
- Climatic variability in the past
- Climate models

Competences

- Understand and critically analyse scientific texts relating to climate change;
- Demonstrate knowledge and understanding of Earth's climate system: its fundamental components, external factors / drivers of the system; mechanisms of climate change; modelling and climate simulations;
- Understand climate history;
- Understand climate models.

Materials

Wilson, G. et al. (2012) Introduction to climate change in the context of sustainable development. Textbook T869 Climate change: from science to lived experience. United Kingdom: Open University, 182 p. <https://repositorioaberto.uab.pt/handle/10400.2/2127>.

Flato, G. et al. (2013) Evaluation of Climate Models. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Bacelar-Nicolau, P. Azeiteiro, U.M. (2015) Terrestrial and Aquatic Ecosystems Response to Climate Change In: Caeiro, S., Bacelar-Nicolau, P., Becker, S., Otto, D. The heat is up – cross – disciplinary perspectives on climate change negotiations. E-book. 1 – 15 pp. ISBN: 978-972-674-771-0. https://www2.uab.pt/producao/eBooksArea/TheHeatIsUp/The_heat_is_up.swf.

Other up to date complementary materials.



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2. Economy and Politics of Climate Change (3 ECTS)

Teachers Rosa María Martín-Aranda, María del Carmen Ortega-Navas, Enrique San-Martín-González (UNED)

Aims

The aim of this module is to describe the existing relations between climate change, economics and politics, analysing their impacts in terms of policy to fight global warming.

Contents

- The cost of climate change: economic and non-economic impacts;
- Fighting climate change: economics and policy in theory and practice;
- The design of climate change policy at domestic level;
- The international political economy of climate change: developed vs. developing countries;
- Climate change policy in the European Union.

Competences

- Understand the environmental problems from the economic perspective;
- Construct know on the environmental consequences of economic decisions;
- Learn about the fundamentals of economics and politics of climate change raising awareness about its future consequences;
- Be able to analyse environmental policies and its consequences;
- Understand the complexity and difficulty of climate policy elaboration at national and international level;
- Learn the objectives and main actions develop by the EU regarding climate change.

Materials

Jonathan M. Harris, Brian Roach and Anne-Marie Codur (2017): The Economics of Global Climate Change. Global Development and Environment Institute. Massachusetts (U.S.): Tufts University.

[http://www.ase.tufts.edu/gdae/education_materials/modules/The Economics of Global Climate Change.pdf](http://www.ase.tufts.edu/gdae/education_materials/modules/The_Economics_of_Global_Climate_Change.pdf)

References for further reading

Wilson, G., Fairén, V., García-Sanz, J. Zúñiga, I., Otto, D., Breitmeier, H., Abbot, D. & Kroeze, C. (2012). T869 Climate Change: from science to lived experience, Module 1: Introduction to climate change in the context of sustainable development. Chapter 3 and 4.

https://www.ou.nl/documents/40554/102890/LEChE_Module1_Textbook_2012.pdf/95da9c5e-3e0e-48b7-a0ef-489ec9c7c47c



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3. The Lived Experience of Climate Change (3 ECTS)

Teacher Paquita Perez Salgado (OUNL)

Aim

The aim of Module 3 is to introduce the concept of Lived Experience of Climate Change and its potential contribution to policy and actions for adaptation and mitigation.

Contents

- Describing the Lived Experience of climate change;
- From feature analysis to process analysis: the dynamics of a lived experience;
- Whose lived experience counts: from practical knowledge to knowledge as a power?;
- The lived experience of climate change, policy making and practice;
- Revisiting the lived experience of climate change.

Competences

- Demonstrate knowledge and understanding of the concept of lived experience of climate change, and of the contextual aspects of people's lives, on an individual and collective level;
- Be able to engage critically with the concept and elaborate on further examples and conceptualisations;
- Be able to compare, contrast and weigh knowledge gained through lived experiences with knowledge from scientific accounts;
- Understand and search for judgements on evidence from a range of sources;
- Construct knowledge on climate change through communicative exchange with others;
- Be aware of the dynamics for interventions towards climate change.

Materials

Wilson, Gordon - T869 Climate change: from science to lived experience. Module 2: The lived experience of climate change. Textbook, Open University, 2012, 61 p.

Workbook, Open University, 2012, 27 p.

<https://www.ou.nl/web/the-lived-experience-of-climate-change/module-2>

Perez Salgado, F., Abbott, D., & Wilson, G. (2018). Dimensions of professional competences for interventions towards sustainability. *Sustainability Science*, 13(1), 163-177.

<https://doi.org/10.1007/s11625-017-0439-z>

Abbott D & Wilson G (2015) The Lived Experience of Climate Change: Knowledge, Science and Public Action. Springer, Cham Heidelberg New York Dordrecht London. DOI: 10.1007/978-3-319-17945-2



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Perez Salgado, F., Wilson, G., & van der Klink, M. R. (2014). Transforming academic knowledge and the concept of Lived Experience: Intervention Competence in an international e-learning programme. In *E-learning and Education for sustainability* (Vol. 35, pp. 59-59). Frankfurt am Main: Peter Lang Verlag.

Pérez Salgado, F., de Kraker, J., de Neubourg - Boon, M. J. J. P. M., & van der Klink, M. R. (2012). Competences for climate change education in a virtual mobility setting. *International Journal of Innovation and Sustainable Development*, 6(1), 53-65.



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4. Integrated responses within sustainable development (3 ECTS)

Teachers: Sandra Caeiro (UAb)

Aims

The aim of this module is to describe the different types of environmental and sustainability policy tools that organizations have available on the market to improve their environmental performance. These tools applied at global, regional, local and individual level) have an important role as support for natural resources efficient use and environmental reduction pressures, within the climate change mitigation measures.

Contents:

- Tools of command and direct control, like norms, environmental impact assessment, strategic environmental assessment, environmental liability, and environmental licence;
- Economical and market tools, like taxes, financial supports and trading systems;
- Communication and voluntary tools, like eco-labels, sustainable construction, environmental management systems and performance evaluation and communication.

Competences:

- Understand specific theories of concepts, policies and principles of integrated environmental management;
- Explain, compare and apply various environmental management tools, including the environmental management systems, integrated systems of management, environmental auditing, sustainability performance evaluation and understand its applicability;
- Be able to link these tools with climate change mitigation measures.

Materials

Antunes, P., Santos, R. Integrated environmental management of the oceans. *Economics* 31 (1999) 215–226.

Caeiro, S., Martinho, A. P. (2015). Environmental management tools as support for mitigation measures of climate change. In: Caeiro, S., Bacelar-Nicolau, P., Becker, S., Otto, D. *The heat is up – cross – disciplinary perspectives on climate change negotiations*. E-book. 1 – 15 pp. ISBN: 978-972-674-771-0.

https://www2.uab.pt/producao/eBooksArea/TheHeatIsUp/The_heat_is_up.swf.

Global reporting Guidelines G4 (Guidelines explaining how to develop an sustainability report) <https://www.globalreporting.org/reporting/g4/Pages/default.aspx>

Ramos, T., Caeiro, S. (2010). Meta-performance evaluation of sustainability indicators. *Ecological Indicators* 10, 157–166.



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Starkey, R. (1999). *Environmental Management Tools for SMEs: A Handbook*. Environmental Protection Agency (available at <http://www.eea.europa.eu/publications/GH-14-98-065-EN-C>)

Whitelaw, K. (2004). *ISO 14001 Environmental Systems Handbook*. Second edition, Elsevier, Netherlands (<http://rpd-mohesr.com/uploads/custompages/iso%2014001%20enviromental%20systems%20handbook.pdf>).



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ACADEMIC STAFF

Carla Padrel de Oliveira, Associate Professor in the Department of Science and Technology at Universidade Aberta, has a BSc in Chemistry from the University of Lisbon, Portugal (1987) and a PhD on Chemical Engineering from Imperial College of Science, Technology and Medicine, London (1991). Her main research and teaching areas include sustainability/chemistry and environment and e-learning and environmental sciences. She is the coordinator of the PhD program in Social Sustainability and Development at Universidade Aberta. She is currently Vice Rector for Quality and International Affairs of Universidade Aberta.

Célia Dias Ferreira, Assistant Professor in the Department of Science and Technology at Universidade Aberta, has graduated in Environmental Engineering (1996) and completed her PhD in Waste Treatment (2005). She is the Head of Group "Environment and Society" at CERNAS (Research Center for Natural Resources, Environment and Society). Her current research interests include sustainable waste management and phosphorus recovery from waste, with over 50 papers in refereed journals. Her track record includes the coordination of a LIFE project, 2 Interreg projects, over 1M€ projects in research infrastructures and equipment and one nationally funded Research Project. In 2016 she was honoured as one of the "100 Portuguese Woman in Science" whose work was most relevant to the progress of the Portuguese Science and Technology in the last decades.

Enrique San-Martín-González, Tenured lecturer (*Profesor Titular de Universidad*) on Applied Economics at UNED. He has a PhD on Economics at UNED, on Water Management Economics, that received a Special Award. His main line of research is economics and policy of natural resources and the environment. Most of his research relates to water and energy, with published articles in refereed journals and participation in national and international research projects.

María del Carmen Ortega-Navas, professor and researcher at UNED, graduated in Philosophy and Education Sciences from Universidad Complutense de Madrid, and has a PhD degree in Philosophy and Educational Sciences at UNED, with Special Award. Performs her teaching and research activities in the Department of Educational Theory and Social Pedagogy, Faculty of Education at UNED. Her current research interests include health education, emotional education, quality of life, aging technologies and long learning.

Paquita Perez Salgado, is the UNESCO Chair in Knowledge Transfer for Sustainable Development supported by ICTs and Full Professor at the Department of Science of the Open University of the Netherlands. Her research and teaching areas are in Learning and (Environmental) Sciences. One of her research lines is to further investigate and develop the knowledge concept of 'Lived Experience', with emphasis being placed on a multi- and transdisciplinary approach in finding solutions to issues concerning sustainable development. She is the former Dean of the School of Science at the Open University of the Netherlands (2001-2013). She worked at the University of Amsterdam (where she graduated in Natural Sciences and got her PhD degree in Physical Chemistry), the University of Groningen and the University of Twente. She was an expert at the National Expert Organisation Girls/Women and



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Science/Technology (VHTO). She is active in several European and international organizations in the field of science, sustainability and higher education.

Paula Bacelar Nicolau, Assistant Professor in the Department of Science and Technology at Universidade Aberta, has her PhD degree in Environmental Microbiology from the University of Wales, Bangor, UK and graduated in Plant and Applied Biology at the Faculty of Sciences of the University of Lisbon, Portugal. She is vice-coordinator of the Master in Environmental Citizenship and Participation, at Universidade Aberta. Her main teaching and research areas include e-learning in biological and environmental sciences, education for sustainable development and conservation biology. She has published in ISI journals and chapter books, and is a reviewer of scientific journals and international books.

Rosa María Martín-Aranda, Vice-Chancellor for Research, Technology Transfer and Dissemination, is Full Professor of Chemistry and Environmental Sciences at UNED, Spain. She has been Dean of Environmental Sciences (2006-2010), Vice-Chancellor for Evaluation Procedures (2011-2015), Co-chair of The Lifelong Learning Programme, Education and Culture, European Union LECH-e Lived Experience of Climate Change, e-learning (2009-2012), and Chair of the UNESCO-UNED Department for Environmental Education. She is interested in Green Chemistry and Catalysis, with more than 100 papers and 10 patents. She is involved in the development of innovative green processes for the industry.

Sandra Sofia Caeiro, Associate Professor in the Department of Science and Technology at Universidade Aberta, has graduated in Environmental Engineering at NOVA University of Lisbon, Master degree in Science of Coastal Zones from University of Aveiro and a Doctorate degree on Environmental Engineering from the NOVA University of Lisbon, Portugal. Her main research and teaching areas include sustainability/environmental management and assessment, education for sustainable development and e-learning and environmental sciences. She is the coordinator of the Post-graduation in Local Sustainability and vice-coordinator of the PhD in Social Sustainability and Development at Universidade Aberta. She is Associate editor at Journal of Cleaner Production, Elsevier. She has published papers in peer-review ISI journals, chapter books and international conference proceedings, and coordinated and participated in several national and international research projects.