



الجامعة الأورومتوسطية بفاس

EUROMED UNIVERSITY OF FES

UNIVERSITÉ EUROMED DE FÈS

SDG13 Report

Climate action



SDG13 Report: Climate Action

At the time of COP 26, what greenhouse gas emissions by energy in Morocco?

<https://www.researchgate.net/publication/355809620>

In 2018, and according to official data, Morocco has a contribution of 1 / 500th of global greenhouse gas emissions, and is positioned at the 47th place in the ranking of total emissions of 160 countries.

After increasing by + 0.4% compared to the previous year, greenhouse gas emissions by the energy consumed in Morocco would have reached 63'953 Gigajoule (Gg) in 2020 (million tonnes of CO₂ equivalent)

In 2020, greenhouse gas emissions break down as follows:

- 34,650 Gg (+ 2.8% in 2020) due to oil, i.e. 54.2% of the total
- 27'510 Gg (+ 0.5% in 2020) due to coal, or 43.0% of the total
- 1'793 Gg (-29.2% in 2020) of natural gas, i.e. 2.8% of the total,

Emissions due to 6'988 GWh of renewable electricity from wind, solar and hydraulic sources are zero. As a result, greenhouse gas emissions due to the energy consumed in Morocco lead to 1.78 tonnes of CO₂ equivalent per year and per capita in 2020.

Climate change is a brake on development, especially for emerging countries like Morocco. It leads to increased poverty and slows down economic growth, hence the need to help address it.

The process of combating global warming is a voluntary national commitment aimed at reducing its GHG emissions in 2030 by 42% and requiring a total investment of 50 billion dollars.

- **Climate change in the Fes Meknes region** : [Project "Adaptation to Climate Change in Agriculture in the Maghreb" \(ACCAGRIMAG\)](#)

MAIN LESSONS

- A rise in temperatures predicted by all climate projection models.
- A downward trend in precipitation surrounded by more uncertainties.
- A period of crop growth that will tend to shrink, shortening the production period by one to three months.
- Olive and almond crops have little impact by 2050.
- Spring crops, such as chickpeas, will be hit hard by the effects of climate change.
- A significant reduction in the use of land for wheat cultivation with, however, more favorable conditions in the North and in mountain areas

At the level of the Fès-Meknes region, yields that do not change at the regional scale in a moderate scenario of climate change (RCP4.5), with geographically disparate effects: areas of heavily affected plains and possible production gains in mountain areas. Conversely, in a more pessimistic scenario (RCP8.5), yields which fall sharply in all the region with more frequent dry periods and more irregular yields increasing the risk for producers. The large-scale implementation of climate change adaptation measures is becoming necessary:

agroforestry, direct sowing, agricultural insurance, use of certified seeds, phytosanitary protection, supplementary irrigation and soil fertility management.

What is the university doing to help fight the adverse effects of climate change? Eco campus



The UEMF project was designed with the Negawatt approach: The constructions at UEMF are new and are less than 7 years old. UEMF reconfirms its firm commitment to ensure that all renovations, restorations or new constructions comply with the highest standards of energy efficiency and sustainable development:

The Eco-Campus respects the best international standards in terms of sustainable development.

construction / rehabilitation of positive-energy buildings, installation throughout the Eco-campus of sorting bins for waste, creation of sports, leisure and relaxation areas, use of a circular economy (minimize waste by optimizing the value generated by resources), installation on the UEMF Eco-campus of charging stations for electric cars. These terminals are the only ones in the Fez-Meknes Region and the only ones on a university campus in Morocco. Advertising boards have been put up in several places in the city of Fez inviting motorists to come and recharge their electric car batteries free of charge on the UEMF Eco campus, full accessibility and in all University buildings to people with reduced mobility (PRM), installation on all floors,

**Inclusion of renewable energies**

**Venez recharger gratuitement
votre voiture électrique à l'UEMF**

**La première borne
de recharge dans la région**





The UEMF eco campus was labeled by the COP 22 and recently obtained the French label for responsible innovation for its "sustainable UEMF" project

Awareness and information conference

Conference-Debate: Climate Change: Issues for the Region of Fès Meknes »November 10, 2021 (An event co-organized by UEMF and the World Bank and the participation of the think tanks Policy Center for the New South and the Research Institute for European, Mediterranean, and African Studies (RIEMAS))

As indicated in the report on the New Development Model (NMD) (<https://www.csmd.ma/rapport-en>), the territories represent a key level for anchoring development in a sustainable and inclusive trajectory. Even though the challenges of climate change are global, it is obvious that local actors will have a major role to play in defining and implementing the solutions most suited to the challenges but also to the opportunities of each territory. This event aims to gather from key players in the Fez-Meknes Region their perspectives on the challenges posed by climate change but also their recommendations for actions to be implemented locally to anchor the region in a trajectory of resilient and sustainable development.

The region of Fès-Meknes has a powerful tool for this purpose: Regional Information System for the Environment and Sustainable Development <https://siredd.environnement.gov.ma/fes-meknes/ChangementClimat/?idCible=0>

Introduction to ecology with the Climate Fresco



The students of Master of the Euromed Business School find the benches of University after the initiation to ecology with the #FresqueDuClimat, they work in collective intelligence on their professional project



Training

Master: DESIGN AND ENGINEERING OF GREEN BUILDINGS (CIBV)

Modules taught:

- Transfer phenomena;
- Fluid mechanics ;
- General and applied thermodynamics;
- Materials for energy efficiency in buildings;
- Standards and climate;
- Ventilation and lighting of the building;
- Air conditioning, heating and energy integration;
- Renewable energies for buildings;
- Ecodesign of a building;
- Energy analysis and economic evaluation of the building;
- Green and smart buildings;
- Sustainable development and waste management;
- Preliminary design of an efficient building;

Specialized Master: Environmental Engineering and Water Management

The sector proposes to train executives with a transversal vision of the challenges of the environment and of water management in particular. The development of clean technologies (processes, methods or tools) in order to solve the environmental problems attributable to human activities is put forward with a focus on the Euro-Mediterranean region.

To do this, the student acquires in this sector advanced knowledge in the field of the environment (scientific and technical methods, knowledge of ecosystems, techniques of analysis and treatment of pollutants, water management and treatment, remote sensing tools. and GIS, national and international policy, green economy, climate and climate change,) and energy efficiency

**Climate Continuing Education Project****Title of the Training Module *****History of the UNFCCC process and IPCC Reports****State of knowledge on climate change, Conference of the Parties (COP) and Sustainable Development Goals (SDGs)****Establishment of National Greenhouse Gas Inventory Systems: Case of the SNI-GES of Morocco****The Role of NEXUS Water / Energy / Food Security****Integration of adaptation to climate change in urban areas****Climate Change and Adaptation in the Rural World****Mainstreaming climate change into national development planning and budgeting: NDC and PNA****Project financing tools to fight against climate change: Example of the Green Climate Fund****The MRV system****Climate diplomacy**



Research Development: Renewable energies

Innovation structures:

Agro Energy TIC Valley

It is a mixed platform for testing, research and training in the fields of bioenergy and energy storage, jointly created by the EuroMed University of Fez and the Institute for Research in Solar Energy and New Energies (IRESEN).

Energies Renouvelables	Stockage de l'Energie	Efficience Energétique, Digitalisation et IA
Solaire et Applicatifs	Stockage Thermique/Thermochimique	Agro-Industrie '4.0'
Biomasse: Biogaz & Combustion	Stockage Electrochimique & Applications	Agriculture Efficiente et Intelligente – 'Smart Farming'
Hybridation et Systèmes de Gestion Intelligent de l'Energie (EMS) (TIC, AI, IoT, D2D, V2G, etc.)		

Renewable Energy, Storage



and Energy Efficiency Platform

The "Renewable Energies, Storage and Energy Efficiency" Platform encompasses several equipment for the design, manufacture and characterization of devices meeting the criteria of sustainable development in energy matters. In addition to this intramural infrastructure, the university also has open-air laboratories including a house equipped with several types of sensors for research on energy efficiency.

Research topics:

Renewable energies and energy efficiency

- Technological and operational development of solar thermal, photovoltaic, wind and hydroelectric type production technologies. This work will cover both possible technical developments in current energy production and storage technologies as well as the development of new materials aimed at increasing energy efficiency in the production, storage and distribution of renewable energies.
- Conduct and control of the various study phases (installation, operation, maintenance of installations and electrical equipment);
- Improvement of processes and devices related to energy engineering;
- Integration of renewable energies into industrial processes;
- Mastery of different calculation methods for energy and thermal systems;
- Development of identification and prognosis methods for wind generators (Project to be developed with the EDF Energies Nouvelles group);
- Cleaning, alignment and maintenance systems for solar parks to preserve high transformation efficiency (Project to be developed with the EDF Energies Nouvelles group).
- New classes of nano-composite and bio-composite polymers (Project to be developed with the PSA group for the design of materials with minimal ecological impact and mechanical characteristics suitable for the construction of automobile hulls);

Cooperation projects

AgriTech

The French Development Agency (AFD) and the Euromed University of Fez (UEMF) signed a financing agreement for the design and implementation of a AgriTech cluster in the Fès-Meknes region. This is an unprecedented project in Morocco which consists of the structuring of a regional pole of innovation and entrepreneurship in the sector of agriculture and agro-industry. To this end, AFD is making a grant of 16.3 million dirhams (1.5 million euros) available to UEMF for the design and implementation of this project within of its Eco-campus. In the Fès-Meknes region, this pilot project aims to support the move upmarket of the agro-industrial sector. Several capacity building actions, through support to entrepreneurs, the promotion of research and development and the adaptation of the local agricultural fabric to international standards and to the fight against the effects of climate change, will be financed by this technical assistance. .

Eumed Climate Hub (in cooperation with the UfM)

Euro-Mediterranean Climate Change Capacity Building Project

Functions and rationale.

The Euro-Mediterranean region - challenged by an urgent need to reduce emissions and adapt to climate change - has relevant and considerable know-how, but nevertheless fragmented and differentiated between communities, difficult to understand outside universities or specialized institutions, poorly shared, not pooled as a common set of resources, and rarely accessible to professionals called upon to materialize the progress of mitigation and adaptation in their ordinary professional life: across the region, actors in various fields like agriculture, fishing, urban management, construction, infrastructure, water, energy, transport, finance, commerce, manufacturing, etc. have unequal access to training.

The Euro-Mediterranean Climate Change Capacity Building Center - "EuMed Climate Hub" - is therefore designed as a physical location and an online web resource to link regional knowledge and best practices and provide pragmatic training to stakeholders. field at all levels, with the aim of accelerating sustainability through a general strengthening of skills.

On site and online it will host:

- EUMED CLIMATE SEMINARS - pragmatic training on adaptation, resilience and mitigation through adaptation, for central and local governments, the private sector and NGOs
- EUMED ENERGY FOR CLIMATE SEMINARS - pragmatic training on SDG-oriented energy efficiency, the transition to renewable energies and systems integration;
- THE EUMED TECHNOLOGICAL COMPENSATION CHAMBER - a virtual and on-site meeting space to share, compare and integrate diverse know-how and promote reciprocal technology transfer, based on the awareness that technology also includes all the fruits of an experience millennium held in the South in the management of arid zones urban and rural landscapes, infrastructures, construction, energy efficiency solutions, etc.
- THE EUMED CLIMATE SCIENCE AND POLICY PLATFORM - responding to pragmatic needs for data, information and science-based solutions emerging from central and local institutions, based on input from existing scientific networks, including MEDECC
- THE EUMED CLIMATE PORTAL - a web portal helping with the coordination and communication of the activities mentioned above, but also serving as a separate engine for capacity building and access to climate finance, especially for local governments and stakeholders

UEMF partnership and Tantan commune on the climate

<https://www.ueuromed.org/actualites/accords-et-partenariats/signature-de-l'accord-cadre-emadu-uemf-tantan>