UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Population and natural resources from antiquity to the contemporary age

2425-BbetweenSDG-08-07

Module description

The module aims at analysing the relationship between population and natural resources on the long run, focusing on the importance of some resources in the human history and, mainly, on their use. It will show the various levels of sustainability and the problems in the natural resources' use, especially in terms of environmental and economic sustainability of their management. The long run perspective will allow at observing the crucial problems of the contemporary world in a different way, highlighting the complexity of the contemporary challenges and their historical roots. At the end of the module the student will acquire transversal skills, from the environmental history to the consequences of the human actions on the environment, from the economic history of the natural resources to the role played by institutions in regulating the relationship between the humanity and the environment.

Learning goals

The skills obtained will allow the student to understand, evaluate, and develop policies related to the management of the natural resources in various fields; from the human impact on the territories, to the macro- and micro-economic consequences of the different use of the resources, up to its social and health consequences. Sustainability-related soft skills can be summarized in: the application of abilities and competences in environmental issues; the adoption of specific actions to reduce the negative incidence of consumption; the involvement of other people in the pursuing of environmentally friendly behaviours; the evaluation the environmental effects of the personal conduct; the encourage of sustainability.
The sustainability-related specific skills are: the providing advice on environmental problems, especially in terms of holistic understanding of the phenomena, and, therefore, of their solving; the providing advice in operative and commercial topics, especially in terms of conflict resolution, improving of efficiency, of land use, of realizing landscape projects, considering the elements and the players that participate in the territory and resources' management; the development of solutions, especially the identifying of improving actions, the identifying of solutions to specific problems, and the dealing with natural resources-related problems with a discriminating

attitude; the implementing of new procedures and processes for a sustainable use of the resources; the conducting of researches and evaluations related to the territory and resources' management.

General goal

Specific skills and competences

Sustainable Development Goals of the 2030 UN Agenda

The module refers mainly to the following goals of the UN 2030 Agenda: 7 (Affordable and clean energy); 11 (Sustainable cities and communities), 12 (Responsible consumption and production); 13 (Climate action). Specifically it aims at:
Goal 7.a: «enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology».
Goal 11.3: «enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries».
Goal 11.4: «Strengthen efforts to protect and safeguard the world's cultural and natural heritage».
Goal 11.b: «substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement».
Goal 12.2: «achieve the sustainable management and efficient use of natural resources».
Goal 12.8: «ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature».
Goal 13.2: «Integrate climate change measures into national policies, strategies and planning».
Goal 13.3: «Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning».

Breakdown of meetings

The module lasts 12 hours, and it is divided into 6 two-hours lessons.
In detail:

1. 2 hours: Which resources? From organic to mineral economies.
   First, we will clarify what we mean with the word "resources", and specifically the meaning of "energy resources". Then, we will observe how they have been used by the humanity, and the potentialities and the criticalities. We will also focus on the energy sources (human energy, wood, water, wind, minerals) used across the centuries. We will highlight the types and amounts of resources used, and mainly the efficiency of their use – a crucial element in the understanding of the environmental and economic consequences. The main topics will be: the moving from low-energy societies, based on the use of reproducible resources, in the pre-industrial period, to the industrialized societies with higher energy availability (and consumption), obtained from non-reproducible resources; the moving from "biological energy converters", to the "mechanical" ones, and from the use of somatic energy to the exosomatic one; the development of power; the "energy transitions" and the connection with the Industrial Revolution.

2. 2 hours: Population and natural resources: beyond Malthus.
   We will focus on the different interpretations of the complex relationship between demography and natural

resources. How much does the population increase in the consumption and in the access to the resources? How did this relationship evolve across time? Specifically, is there any relationship between the “energy transitions” and the demographic trends? We will first clarify the meaning of the concepts of “natural constraints” and “energy constraints”, and then we will focus on their role in the demographic development in an historical perspective. We will focus on the Malthus theory (1798) about the incompatibility of geometric progression of the population levels, and the arithmetic one of the resources availability. We will analyse Malthus’ thought on the “preventive” and “positive” checks, and on the role played by technological development. Finally, we will focus on the critics to the Malthusian model, and the on the alternative models proposed for the understanding of the relationship between population and resources.

3. 2 hours: Natural resources and economic development.
   We will analyse the relationship between the resources’ exploitation and the economic development both in terms of being the resources’ availability a potential pre-requisite for the latter, and of the consequences of the economic growth in modifying the resources used, the technologies used for this, and the effects in environmental and sustainability terms. We will use a diachronic perspective, from the Early Modern Period to the Contemporary one. We will focus mainly on the following topics: the uneven and combined development in relation to the varying resources availability; the development of energy blocks, testifying the strong relationship between energy resources and economic development; the energy-related hierarchies, the economic ones, and the divergence between countries.

4. 2 hours: The natural resources between commons and privatization: the economic, social, and environmental consequences.
   First, we will focus on the meaning of the word “commons”, highlighting its complexity in terms of huge variety of goods, juridical status, aims, and users, besides observing the conflicts that characterize their management. We will then discuss the standings of those who claim the importance of the privatization in order to achieve an optimized (and sustainable) management of the resources and, on the contrary, of those who emphasize the importance of the collective management in order to reach the same goals, and also to counter the rise of the economic inequality.

5. 2 hours: The Anthropocene: how humanity shaped the environment.
   We will focus on the effects of the human actions and of the historical processes (especially demographic and economic paths) on the environment, especially in terms of availability and management of the natura resources, referring to the concept of “Anthropocene”. Moving from the idea that Earth is an integrated system, we will analyse the anthropic impact on the environment and on the resources, and the role played in this sense by the increase in the consumption – besides highlighting the crucial historical moments of this relationship. The students will achieve the conceptual baggage in order to understand what the ”Anthropocene” is, the limits and the potentialities of this concept, the difficulties in its periodization, and the implications in terms of analysis of the environmental processes and of the countermeasures aimed at mitigating the negative effects of the human actions on the environment.

6. 2 hours: Economic and environmental sustainability: two sides of a coin?
   The final lesson will highlight that the word “sustainability” includes a relevant complexity, and that it can be declined in various ways. We will focus on the differences between the ideas of “economic growth” and “economic development”, and on the complex relationship between economic and environmental sustainability. In summary: can an economic system be sustainable from an environmental point of view? Which are the criticalities in merging the Anglo-Saxon capitalism and the economic and environmental sustainability?

Number of participants

There is no limit in the number of participants.

The module is delivered remotely.

Language used in meetings

Italian

Delivery period of the module

From March 2025.

Methods of assessing the outcomes of the learning process

Students have to prepare a short paper on a topic that will be agreed with the Professor.

Department of affiliation of the teacher

Economics, Management, and Statistics

Sustainable Development Goals

AFFORDABLE AND CLEAN ENERGY | SUSTAINABLE CITIES AND COMMUNITIES | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION