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Science and Sustainable Development

Course Objective:
The main objective of the course is to develop an informed and rational outlook towards development, in general, and sustainable development, in particular.

There is a common misconception that 'pro-sustainability' means 'anti science and technology'. This thinking arises from a combination of two factors – a very limited understanding of what constitutes scientific and technological development, and a distorted outlook towards the concept of sustainability. Advances in science are making sustainable development more and more profitable and practical. At the same time, scientific and technological advances in certain fields are pushing us more and more away from the sustainability paradigm, by promoting consumerism and by turning us into energy guzzlers. The course will explore this interplay between science and sustainability.

One of the strong bases of the sustainability concept is appropriate technology. The course will not go into the details of technologies, but will examine the appropriateness aspect in depth, mainly through analysis of real life examples and case studies.

One of the major reasons why more and more people continue to talk about sustainable development is the so-called climate change. The scientific community is still debating whether climate change is actually happening or not, and if it is happening, whether it is a man-made or a natural phenomenon. The course will try to present all sides of the argument. It will also explain the concept of carbon finance, and give some practical training in developing carbon finance proposals, which may prove to be a useful skill in professional life for the students.

Finally, the students will be divided into groups of 3-4 persons each to work on a sustainable development plan for India. If there are any non-Indian students, they will have the option of working on a sustainable development plan for their own country, working either in a group or individually.

Course outline and teaching methodology:

1. Introduction to Sustainable Development and Sustainability Science:

What is sustainable development? How is it different from existing development paradigm? What is sustainability science? How is it different from mainstream scientific research? {Debates, group discussions}

2. The dual role of science in the context of sustainable development:

Why is the concept of sustainable development considered too idealistic? In what way advances in science help make it more practical? In what way scientific and technological advances hinder the sustainable development paradigm? {Case studies, group discussions}

3. Appropriate Technology for Sustainable Development:

What is the concept of 'Appropriateness' of a Technology? What are the socioeconomic, cultural and ecological dimensions of technology? {Case studies, essays}

4. The science, economics and politics of Climate Change:

What is climate change? What are its impacts for the ecosystems in general and humans in particular? How much of it is natural and how much is man made? What are the possible approaches for mitigation? Short term? Long term? What is the global response to date (Kyoto protocol, IPCC, concept of carbon trading, etc.)? {Film shows, debates, exercises on developing carbon trading project concepts}

5. Sustainable development for India (or whichever country the student happens to belong to):

What are the key areas of development for India? Is it possible / practical to follow the sustainability paradigm rather than following the conventional paradigm of development in each of the key areas? What are the pros and cons of this approach? What would be the first five steps to make the paradigm shift in various key areas? Who needs to take these steps? How? {Discussions within groups with assistance from the course supervisor and a one day conference where the plans are presented to a larger audience and debated upon.}