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Preface

Imagine we had four planets, the first for humans, their houses, roads, schools, hospitals, churches and factories, the second for agriculture and its traditional purpose, production of food and textile fibres, the third for biomass for fuel to avoid global warming and absorb the exact same quantity of CO₂ from the atmosphere as the fuel emits when it burns (zero greenhouse effect). The fourth planet would be left wild for the conservation of natural biodiversity, as taught by St. Francis of Assisi.

Combining sciences and thoughts is essential for the sustainability of ecosystems as well as for understanding human life. Ecology, economics, chemistry, physics, climatology, informatics are pieces to be put together in order to compose the transdisciplinary picture of our complex world. As Herman Daly said, “the disciplinary structure of knowledge is a problem of fragmentation, a difficulty to be overcome rather than a criterion to be met. Real problems do not respect academic boundaries. We certainly believe that thinking should be disciplined in the sense of respecting logic and facts, but not disciplinary in the sense of limiting itself to traditional methodologies and tools that have become enshrined in the academic departments of neoclassical economics.”

The economy and society cannot ignore the second principle of thermodynamics, the essence of Ilya Prigogine’s dissipative structure, the greenhouse effect, the biological and cultural diversities, the biophysical limits to economic growth and sustainability as a whole.

The last 50 years have seen humans make incredible advances in scientific knowledge and technology, solving many problems and increasing health care and economic welfare. At the same time, people like us, who do not see science as a means for dominating the world and nature but as a path of knowledge for living in harmony with nature, feel an increasing discomfort. In other words, while science celebrates new peaks, it is clear to everyone that the quality of life has deteriorated, also in the psychological realm, with destruction of nature and high unemployment of youth, despite economic and industrial growth.

Sustainability is crucial. And even aesthetics plays an important role. The word aesthetics is derived from the Greek to feel, distinguishing sensory from rational

knowledge. We must not let the wonders of the planet be destroyed by self-destructive technological processes, but protect them by conserving their self-organisation.

Ecosud proposes a bridge between scientific thought and this “environmental wisdom”, that can re-establish an interrupted dialogue between human communities and nature.

This Volume contains the proceedings of the Sixth International on Conference Ecosystems and Sustainable Development that was held in Coimbra (Portugal) in September 2007.

ECOSUD offers a unique opportunity and encourages the interdisciplinary communication between scientists, engineers and professionals working in ecological systems and sustainable development.

The Conference objectives have evolved over the years, seeking to integrate thermodynamics, ecology and economics into “ecodynamics”. The proceedings has been arranged in the following sections:

- Ecosystem modelling
- Environmental management
- Mathematical and system modelling
- Environmental risk
- Natural resources management
- Sustainability indicators
- Ecological areas studies
- Energy and the environment
- Socio economic factors
- Sustainable tourism
- Soil and agricultural issues
- Sustainable waste management
- Water resources

The Editors would like to thank the members of the International Scientific Advisory Committee for their help in reviewing the papers and promoting the Conference, and the authors for their contributions.

The Editors

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