

## Educating for a sustainable future - the Greek profile

**Panagiotis Anastasiadis†, Sophia Metaxa‡ & Eleftheria Metaxa‡**

Technological Education Institute of Central Macedonia, Serres, Greece†  
University of Applied Sciences, Piraeus-Athens, Greece‡

**ABSTRACT:** The goal of sustainability requires fundamental changes in human attitudes and behaviour. Progress in this direction is thus critically dependent on education and public awareness. One must move ahead in a spirit of exploration and experimentation, so as to contribute through education to correcting trends that place in jeopardy our common future. Greece has adopted the European Union's ten-year growth strategy (EU 2020). The aim of this strategy is to address the shortcomings of the European growth model and create the conditions for a different type of growth that is smarter through the development of knowledge and innovation. The process of educating for a sustainable future in the Greek context is presented and discussed in this article.

**Keywords:** Engineering education, sustainable future, Greek profile

### INTRODUCTION

The carrying capacity of mother Earth is nearing its limit, due to the mode of occupation, production and consumption of the capitalist system, which has become the global economic model, and now also features the rhetoric of a green economy. Whatever the concepts or terms used, the key is that the socio-environmental vision be always at the forefront. Atmospheric greenhouse gas pollution continues unabated even though scientists have been telling us for years that global climate change will greatly increase, while the basic understanding of global climate change science is consistently found to be poor.

Building sustainable societies and global responsibility is based on the value of life, which the economy must serve. Sustainable societies are made of environmentally educated citizens in their communities, where they decide for themselves, based on their own needs, the meaning of a green economy, of sustainability, sustainable development, climate change and many other concepts that can be moved away from their original meaning or motivation and are co-opted or coined to serve the hegemonic liberal rationality. Each community can see and feel beyond words and semantics, while maintaining their course towards a global unity, tracing their own history.

Educating ourselves for sustainable societies means situating ourselves in relation to the current global system and leaving the comfortable position of neutrality. Because education is always based on values, regardless of whether it is formal, non-formal, informal, direct or distant learning, there will never be neutrality in education.

Educators from all over the world agree that the way toward real sustainability can be through various existing currents, which are based on values and principles linked to sustainability: transformative learning, eco-literacy, popular environmental education, eco-pedagogy, Gaia Education, and environmental educ-action are some of them. All of these currents contribute to the construction of new models of society and remind us of the need to develop knowledge, awareness, attitudes and skills that are necessary to participate in the construction of these new models, integrating them into our way of being, producing, consuming and belonging.

More than ever one advocates education that invokes admiration and respect for the complexity of living systems, with the utopic vision to build sustainable societies through the *ethic of care* and protection of the biological and social diversity. In making this educational process, the trans-disciplinarity intrinsic to socio-environmental education leads to

interactions between the various areas of science and technology, and the different manifestations of popular and traditional knowledge. This allows the integration of existing knowledge, the production of new knowledge, and new social and environmental actions, while carrying out the dialogue between wisdom and care as high technology impacts on the education for sustainable societies and global responsibility [1].

The local reclamation of these concepts and utopias under the force of the planetary identity, empower learning communities through a practice of dialogue, a sense of belonging and manifestations that are necessary for well-being, and individual and collective happiness. In these practices the essence of the spiritual dimension emerges as a radical practice of ethical valuing of life, respectful care for all living things, connecting hearts and minds through love. It is a process that empowers the individual to practice dialogue with oneself, with others and with the planetary community as a whole, restoring a sense of citizenship and overcoming the separation between society and nature [2][3].

## PRINCIPLES FOR SUSTAINABLE EDUCATION

Promoting sustainable development and its close interrelationship with democracy and peace is increasingly recognised. It is one of the key challenges of our time; and education in all its forms is vital to addressing it successfully. Educators believe in education as the force of the future - which cannot be other than a sustainable future - and are committed to maximising their efforts and multiplying partnerships for the development and deployment of this force in the cause of peace and human betterment [4].

The following principles are the basis of the guidelines and action plan of the Global Network on Environmental Education for Sustainable Societies of the People's Sustainability Treaty on Environmental Education:

- Education is the right of all; we are all learners and educators.
- Environmental education, whether formal, non-formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
- Environmental education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and the sovereignty of nations.
- Environmental education is not neutral but ideological. It is a political act.
- Environmental education must involve a holistic approach and thus an interdisciplinary focus in the relation between human beings, nature and the universe.
- Environmental education must stimulate solidarity, equality and respect for human rights involving democratic strategies and an open climate of cultural interchange.
- Environmental education should treat critical global issues (e.g. climate change crisis), their causes and interrelationships in a systemic approach and within their social and historical contexts. Fundamental issues in relation to development and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.
- Environmental education must facilitate equal partnerships in the processes of decision-making at all levels and stages.
- Environmental education must recover, recognise, respect, reflect and utilise indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to change ethnocentric approaches, as well as the encouragement of bilingual education.
- Environmental education should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destiny.
- Environmental education values all the different forms of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolised.
- Environmental education must be designed to enable people to manage conflicts in just and humane ways.
- Environmental education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based on meeting everyone's basic needs, regardless of ethnic, gender, age, religious, class, physical and mental differences.
- Environmental education requires a democratisation of the mass media and its commitment to the interests of all sectors of society. Communication is an inalienable right and the mass media must be transformed into one of the main channels of education, not only by disseminating information on an egalitarian basis, but also through the exchange of means, values and experiences.
- Environmental education must integrate knowledge, skills, values, attitudes and actions. It should convert every opportunity into an educational experience for sustainable societies.
- Education must help develop an ethical awareness of all forms of life with which humans share this planet, respect all life cycles and impose limits on humans' exploitation of other forms of life.

## EDUCATION IS THE FORCE OF THE FUTURE

It is widely agreed that education is the most effective means that society possesses for confronting the challenges of the future. Education will shape the world of tomorrow. Progress increasingly depends upon the products of educated

minds: upon research, invention, innovation and adaptation. Educated minds and instincts are needed not only in laboratories and research institutes, but in every walk of life. Education is not the whole answer to every problem. But, education, in its broadest sense, must be a vital part of all efforts to imagine and create new relations among people and to foster greater respect for the needs of the environment. Education must not be equated with schooling or formal education alone. It includes non-formal and informal modes of instruction and learning as well, including traditional learning acquired in the home and community.

By defining education broadly, one also widens the community of educators, as the programme statement of *Education 21* promoted within the United Kingdom notes, to include ...*teachers, lecturers, curriculum developers, administrators, support staff, industrial trainers, countryside rangers and staff, environmental health and planning officers, community educators, youth leaders, parent association members, media people, representatives of learners in all contexts* [5].

One might further widen this community to include all those, whatever their role in society, who perceive a need or duty to inform and educate people regarding the requirements of a sustainable future. International organisations, government departments and institutions, foundations and many others are deeply involved in education in the broad sense of the term used here.

Many firms in the private sector also see the need to play their part in promoting awareness and are doing so in innovative ways. This vast community of educators represents an enormously potent, but largely untapped human-resource for sustainable development that can be invaluable in a range of contexts, as well as education. It represents, above all, a means for bringing the struggle for sustainable development into communities and local institutions around the world which, in the final analysis, is where the cause of sustainable development will either triumph or fail.

Education serves society in a variety of ways. The goal of education is to make people wiser, more knowledgeable, better informed, ethical, responsible, critical and capable of continuing to learn. Were all people to possess such abilities and qualities, the world's problems would not be automatically solved, but the means and the will to address them would be at hand. Education also serves society by providing a critical reflection on the world, especially, its failings and injustices, and by promoting greater consciousness and awareness, exploring new visions and concepts, and inventing new techniques and tools.

Education is also the means for disseminating knowledge and developing skills, for bringing about desired changes in behaviours, values and lifestyles, and for promoting public support for the continuing and fundamental changes that will be required, if humanity is to alter its course, leaving the familiar path that is leading towards growing difficulties and possible catastrophe, and starting the uphill climb towards sustainability. Education is humanity's best hope and most effective means in the quest to achieve sustainable development.

## GREEK PROFILE FOR SUSTAINABLE DEVELOPMENT

The first National Sustainable Development Strategy (NSDS) was adopted by the Council of Ministers in 2002. The second NSDS was prepared in 2007 and had been partially implemented till 2009. Since 2009 when the Ministry of Environment, Energy and Climate Change (MEECC) was established, the political priorities for Greece, throughout the whole government structure, have been set under the overarching objective of *Green Growth*.

Since 2010, when the economic difficulties has been increased due to the financial crisis, Greece's overarching political strategic objective continues to be that of *Green Growth*, taking into account the constraints and obligations arising from structural reform. The MEECC has drawn up a revised national strategy on *Green Growth* for growth and sustainable development respecting the environment, while responding to actual needs with practical means. This strategy is also linked to/inspired by the recent Europe 2020 EU Strategy [6][7].

More specifically, it aims at:

- a) Increase of development investments;
- b) Reforming the production basis of the economy and reinvigorating economic activity;
- c) Balancing rural development;
- d) Creating new jobs and reducing unemployment.

Its principles and requirements include:

- a) Investment in education;
- b) Investment in knowledge-base expansion;
- c) Investment in innovation;
- d) Investment in new technologies.

The strategy introduces a cross-sectoral approach. the priority sectors encompassed include agriculture, tourism, manufacturing, construction/infrastructure development, energy/promotion of renewable energy.

The thematic pillars of the strategy include the following:

- Addressing climate change challenges and transition to a competitive low-carbon economy (e.g. energy saving and energy demand management, increase of energy efficiency, etc);
- Sustainable management of natural resources (e.g. integrated management of ecosystems and biodiversity, water and forest resources, risk planning and management, rehabilitation and landscape preservation);
- Improvement of quality of life based on an environmental-friendly approach (e.g. improvement of social and productivity cohesion, revitalising of rural and degraded urban areas, sustainable mobility, integrated waste management, etc);
- Reinforcement of institutional tools and mechanisms for environmental governance (e.g. reinforcement of inspection instruments, improvement of public access to environmental information, education and awareness raising, etc).

The implementation of the new MEECC strategy on *Green Growth* that reflects the overall government orientation and focus requires a close cooperation between all relevant ministry and government agencies, as well as a reach out to the private sector and other social stakeholders [6]. The strategy itself aims at economic growth, increase of investment opportunities, creation of jobs, reduction of unemployment, revitalising degraded urban and rural areas, social cohesion, education on sustainable development and increased democracy, through an integrated and sustainable use of natural resources.

Two indicative programmes that will contribute to the implementation of the strategy and require horizontal integration include:

- *In-house saving* is public-private ventures that ensure best heating and cooling performance and insulation, thus, resulting in a considerable decrease in energy requirements.
- *Building the future* is a larger scale programme that entails the pilot application of the principles of *green growth* in selected indicative geographic and sectoral areas that will be linked to academic research in order to invest in development of new materials for energy saving.

Greece has adopted the European Union's ten-year growth strategy (EU 2020). The aim of this strategy is to address the shortcomings of the European growth model and create the conditions for a different type of growth that is smarter through the development of knowledge and innovation, more sustainable, based on a greener, more resource efficient and more competitive economy, and more inclusive aimed at strengthening employment and social and territorial cohesion.

Greece has been working in depth on promoting activities implementing the three priority areas: a) to ensure that there is an education for a sustainable development school plan in every school by 2015; and b) to reorient technical and vocational education and training in support of sustainable development and the transition to a green economy; through decisions and circulars, in line with the endorsed work plan for the implementation of the strategy.

For the preparation of the National Strategic Reference Framework (NSRF) 2014-2020, the Greek Partnership Agreement has incorporated the Europe 2020 Strategy's targets related to: a) 75% of the population aged 20-64 should be employed, b) the 20-20-20 climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right), c) the share of early school leavers should be 10% and at least 40% of the younger generation should have a tertiary degree.

## CONCLUSIONS

One needs a wider commitment to build a strong global network on environmental education for sustainable societies and global responsibility, inspired by the efforts mobilised from the last 20 years, where people and institutions have committed themselves to the principles, goals and objectives defined in the Treaty on Environmental Education, acting with public policy, social movements, with formal and popular education.

One has to learn and practice other ways of making public policy from the communities, and state policies need to be committed to quality of life. Therefore, the education processes committed to human emancipation and political participation in building sustainable societies must be strengthened as a matter of urgency, so that every human community feels committed, active and included in the sharing of wealth and abundance of life on our planet.

Finally, the authors intend to establish and strengthen local and planetary action plans, which will focus on an education that is able to unravel the structures of class and power between people, nations and institutions that currently exist on our planet Earth.

## REFERENCES

1. Rees, W.E. and Roseland, M., Sustainable communities: planning for the 21st Century. *Plan Canada*, 31, 3, 15 (1991).

2. Lehmann, S., *The Principles of Green Urbanism: Transforming the City for Sustainability*. London: Earthscan (2012).
3. Anastasiadis P. and Metaxas G., Formulating the principles of an eco-city. *World Trans. on Engng. and Technol. Educ.*, 11, 4, 394-399 (2013).
4. United Nations Educational, Scientific and Cultural Organization. Educating for a Sustainable Future. A Transdisciplinary Vision for Concerted Action EPD-97/CONF.401/CLD, UNESCO 2010.
5. Treaty on Environmental Education for Sustainable Societies and Global Responsibility (1992), 16 November 2015, [http://www.stakeholderforum.org/fileadmin/files/Earth\\_Summit\\_2012/1992\\_treaties/Treaty\\_on\\_Environmental\\_Education\\_for\\_Sustainable\\_Societies\\_and\\_Global\\_Responsibility.pdf](http://www.stakeholderforum.org/fileadmin/files/Earth_Summit_2012/1992_treaties/Treaty_on_Environmental_Education_for_Sustainable_Societies_and_Global_Responsibility.pdf)
6. <http://www.ypeka.gr/LinkClick.aspx?fileticket=62OZ1zQ8pCg%3d&tabid=549> (in Greek)
7. European Commission, Environment (2015), 16 November 2015, <http://ec.europa.eu/environment/eussd>

## BIOGRAPHIES



Panagiotis Anastasiadis graduated with a diploma in civil engineering from the Civil Engineering Faculty of Aristotle University of Thessaloniki, Greece, in 1989, and was awarded his PhD in Environmental Engineering from the Polytechnical School of Aristotle University of Thessaloniki in 1994. He has undertaken post-doctoral research in the field of GIS and water resource protection (2001-2002). He has been a collaborator professor since 1996 in the Civil Engineering Department at Technological Educational Institute of Central Macedonia in the fields of environmental engineering and hydraulic engineering. He has published over fifty peer-referred conference and journal papers in the field of groundwater pollution, flood management, environmental engineering, technology education, environmental engineering education and sustainability.



Sophia Metaxa graduated in civil engineering from Liverpool University in 1999 after that she completed her MSc in structural engineering from the University of Sheffield in 2000. While working in Greece as a freelance civil engineer, but also as an adjunct lecturer at TEI of Piraeus in both undergraduate and postgraduate programmes, she completed her MSc in mechanics at the National Technical University of Athens in 2005. In 2010, she started her PhD at the University of Patras on which she is still working. She has been a lecturer in the Department of Civil Engineering at the TEI of Piraeus since 2010.



Eleftheria Metaxa graduated in civil engineering from Liverpool University in 2001 after which she completed her MSc in structural engineering from the University of Sheffield in 2002. While working in Greece as a freelance civil engineer she completed her MSc in structural design and construction management at TEI of Piraeus with collaboration with Kingston University, UK, in 2006. Since 2004, she has been a part-time lecturer in the Department of Civil Engineering at the TEI of Piraeus.