



**FRANCESCA ROMANA MASTRANDREA
FABRIZIO SANTINI**

EDUCATION FOR SUSTAINABLE DEVELOPMENT

A tool to design training courses

**Project n° LLP-LDV-TOI-09-IT-490
NJ ESD COM**

*New Jobs through Education
for Sustainable Development Competencies*

*Preface by
Edo Ronchi*



Education and Culture DG



Lifelong
Learning
Programme





Education and Culture DG

Lifelong Learning Programme

Progetto NJ ESD COM “*New Jobs through Education for Sustainable Development Competencies; Nuove professionalità attraverso le competenze per lo sviluppo sostenibile*”
www.njesd.com

Lead partner:

ASSOCIAZIONE INDUSTRIALI DI GROSSETO
Viale Monte Rosa 196
58100 Grosseto
email: info@confindustriagrosseto.it
sito internet: www.confindustriagrosseto.it
tel: +39 0564.468811 - fax: +39 0564.454588

Project designing:

Antonio Gallotta
Francesca Romana Mastrandrea

Project coordinator:

Francesca Romana Mastrandrea

PROJECT STAFF

Local and International Scientific
and Technical Committees

Associazione Industriali Grosseto

Antonio Capone, Tiziana Carrozzino,
Francesca Romana Mastrandrea, Jodi Cutler

Leuphana University Lüneburg,

Institute for Integrative Studies, Germany
Ute Stoltenberg; Verena Holtz

Malmö Municipality, Sustainable Development Unit

Sustainable Communities
Trevor Graham

Provincia di Grosseto

Servizio Formazione Professionale
Laura Pippi, Paola Parmeggiani,
Maria Grazia Temperani, Raffaella Marchi

Società Cooperativa s.r.l.

Nuova Maremma Laboratorio Educazione Ambientale “La Finoria”
Fabrizio Santini, Marco Porciani, Mario Matteucci

Istituto Statale di Istruzione Professionale

“Da Vinci - Balducci” - Arcidosso (GR)
Daniela Giovannini, Fabio Maria Risolo,
Alessandra Biondi

Istituto Tecnico Industriale Statale “A. Monaco”,

Cosenza
Ennio Guzzo, Rosa Principe, Lorian Aiello

Project Monitoring and Evaluation

Fabio Ferretti

Project Communication Management

Annarosa Pacini

Project Graphics

Franco Passarini

Book translation

James Bradley, Paola Della Santina

Slides translation

Jody Cutler

ISBN 978-88-6760-002-1

© Francesca Romana Mastrandrea
e Fabrizio Santini

2012 - PENZA MULTIMEDIA srl

Lecce-Brescia

73100 Lecce - Via A.M. Caprioli 8

Tel. 0832/230435 • fax 0832/230896

info@pensamultimedia.it

www.pensamultimedia.it

www.njesd.com

Disclaimer: This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

SUMMARY

Acknowledgements	7
Preface	9
Introduction	15
Part I:	
BACKGROUND AND CONDITIONS OF THE TRAINING ACTION	21
1. The educational challenge in the complex society	23
1.1. Educating for sustainability in complex society	23
1.1.1 The risk society and the theory of reflexive modernisation	24
1.1.2 Cultural theory as an interpretation framework for sustainability issues	26
1.1.3 Reflexive modernisation and sub-politics	27
1.1.4 Educational challenges in the complex society	28
1.2 The role of Education	29
1.2.1 What Education to orient oneself in the risk society?	29
1.2.2 Education for Sustainable Development: a new “adjectival” education or a regulative idea?	30
2. Competences in Education for Sustainable Development	33
2.1 The concept of competence	33
2.2 Reflecting on the competence concept	35
2.3 Competences in Education for Sustainable Development	37
2.4 Competences for teachers and trainers	39
2.5 The CSCT model (Curriculum, Sustainable Development, Competencies, Teacher training)	40
2.5.1 Blue Triangle: professional dimensions	41
2.5.2 Red Triangle: overall competencies for ESD	42
2.5.3 How to read the model	43
2.5.4 The five domains of competencies	44
2.6 The competences in the Vocational Education and Training (VET) system in Regione Toscana	46

PART II: THE TRAINING ACTION	51
part II a: THE CHARACTERISTICS OF THE TRAINING ACTION	53
3. The characteristics of the training action	55
3.1 Aims	55
3.2 Competences and goals	55
3.3 Target Groups	58
3.4 Context and content	59
3.5 Teaching and learning methodology	59
3.6 The training tools	60
3.7 Evaluation	60
3.8 The training action framework	60
3.9 Best practices	61
part II b: THE CONTENTS, A COMMON LANGUAGE	63
4. Sustainable Development	65
4.1 What is Sustainable Development about?	66
4.2 History of Sustainable Development	66
4.3 Main SD national and international documents	68
4.4 Features of the sustainability challenges	68
5. The Dimensions of Sustainable Development	71
5.1 From Pillars to Dimensions of sustainability	71
5.2 Environmental aspects	74
5.2.1 The limit of Resources	74
5.2.2 The reduction of Biodiversity	79
5.2.3 The Climate Change	81
5.3 Economical aspects	
5.3.1 The Green economy	83
5.3.2 Beyond GDP...	84
5.3.3 Green jobs: labour and employment issues	87
5.4 Social aspects	89
5.5 Cultural aspects	92
part II c: METHODOLOGY	101
6. Teaching and learning methodology	103
6.1 Teaching competences	103
6.2 Teaching methodologies	104
6.2.1 Active Learning	104

6.2.2 Cooperative Learning	107
6.2.3 Strategic competences for ESD	117
6.2.3.1 Critical thinking	117
6.2.3.2 Creative thinking	118
6.2.3.3 Decision making	119
6.2.3.4 Problem solving	120
7. The training tools	123
7.1 The training tools	123
7.2 The Square of sustainability	126
7.3 The Triple helix model	129
7.4 Using the training tools	135
8. Validation and Evaluation	137
8.1 Validation and Evaluation: reference concepts	137
8.2 Competences evaluation in the training action	140
8.3 The evaluation tools	143
9. The training action framework	153
9.1 Framework description	153
9.2 Delivering and scheduling modes	157
Conclusions	161
Glossary	165
APPENDIX	171
A) Best Practices	171
A.1 Case studies	
A.1.1 Education and Training	
A.1.2 Companies	
A.1.3 Public Authorities	
A.2 Data Bases	
A.2.1 DB Education and Training	
A.2.2 DB Companies	
A.2.3 DB Public Authorities	
B) Papers and slide presentations linked in the digital version	172
C) Web sites selection	177
D) Films and documentaries selection	178
Bibliography and References	185

PREFACE

by Edo Ronchi*

20 years after the Rio Conference in 1992, which launched the global strategy for Sustainable Development, the world population has grown by about 1.7 billion, more than 30%, world GDP has almost tripled, from 24.3 trillion dollars in 1992 to about 72 trillion dollars estimated in 2012, but the global environmental situation is getting worse and worse.

According to the latest OECD report (2012, *Environmental Outlook to 2050*), if there are not any new interventions, it will probably get worse in coming decades.

Emissions of greenhouse gases, in fact, have never been so high and have increased by 45% over the past 20 years and, if we proceed at this pace, we will rapidly go beyond the threshold of the 2°C change in average global temperature.

Species at risk of extinction or threatened are increasing, natural resources are unsustainably affected, primary forests continue to decline, marine fish stocks are rapidly decreasing: the erosion of *natural capital* goes on at rates well above its capacity for renewal and resilience.

The *ecosystem services*, essential to our quality of life and to economic development itself, such as water, air, climate, fertile soil, are subjected to heavy pressures and a worrying deterioration.

The strategy for Sustainable Development that should have fostered economic and social development, improving environmental conditions in these twenty years, has not been successful. There has not been, in fact, a decoupling between economic growth and environmental impacts, and - even worse - continuing with current trends, not only the situation would not improve, but would incur additional, serious environmental deterioration on a global scale. Why?

* Founder and President of the Italian Sustainable Development Foundation; former Italian Minister for the Environment (1996-2000).





Some argue that the same strategy would be wrong because, given the level reached by the global ecological crisis, it would not be possible to have both economic development and environmental sustainability. Therefore, the proposal of “sustainable development” would be an oxymoron, because it would combine two words that would express opposing concepts: sustainability and development, such as hot ice or parallel convergence.

If this criticism to Sustainable Development were well founded and without alternatives, we would be doomed to fall into a severe and inevitable global ecological crisis.

As the world population will continue to grow until at least 9 billions and it is not possible to stop the ongoing economic growth in major countries of rapid development, inhabited by billions of people, such as China, India and Brazil, there would be no mercy.

This might happen. It is not, unfortunately, possible to exclude it beforehand, given the present situation and the current trends. These trends may however be changed.

The change towards Sustainable Development has been hindered and stopped for ethical and cultural deficiencies and for the prevalence of short term economic interests, that have hindered the spread of available alternatives.

There is no obligatory way, but there are possibilities of choices.

Either we can bet on the worst part of ourselves and society, and thus help to produce corresponding results, or we can try to do our best, wherever we operate, in the belief that we share common good, that is worth and it is important to fight to win a better future for many, and not only for us or for few individuals.

One can give voice to the apathetic alibi that “that is the way it is done”, and to disengagement because “I cannot do anything”, or we can try to live our days in a conscious way.

Major changes, such as those required by a new development paradigm, cannot prevail unless they mobilize cultural and ethical resources.

Resources that can lead us to make some choices and reject others, not only for convenience, but because we believe it is fair.

It would have been much easier if, while each individual or country were only concerned in its own interests, the invisible hand of the global market would have produced the common good for everyone. But this has not happened, let alone with the current economic globalization, which is aggravating the ecological crisis.

As soon as we take note, the better.

The second reason that has prevented us to find the way to Sustainable Development has been the insufficient dissemination of available alternatives: *cultural alternatives* (consumption patterns, behaviors, values), *social alternatives* (lifestyles and possibility of low-impact welfare), and *knowledge and technology* (which offer enormous opportunities for eco-efficiency, dematerialization and recycling, saving energy and materials, development of new materials and renewable energy, clean or minimal impact technologies).

In assessing sustainability one must pay attention not only to the processes of material and energy consumption, but also to that extraordinary resource, both renewable and growing, which is *knowledge* that could help us definitely to find the way to Sustainable Development.

It is true that an increase in efficiency, energy and/or use of resources, has, in some cases, resulted in a rebound effect, lowering prices and increasing consumption, thus rising the amount of products sold and hence also the global consumption of materials and energy.

But this is neither an inevitable dynamic, nor a physical law.

Neither lower prices nor greater availability of income should lead to ecologically unsustainable consumption: this trend can be opposed by proper information to consumers, punishing, for example, misleading advertising and using economic and fiscal instruments capable of directing the market.

Analyzing the current trends, one runs the risks of seeing only the prevalent ones and of exchanging them for unique, especially in economic processes. On the contrary, there are already substantial economic initiatives, although not yet prevalent because they are hindered by opposing economic interests, which are in the direction of Sustainable Development.

For example, a strong development of renewable energy sources, in different countries and different sectors, a substantial increase in energy efficiency and savings, a relentless growth in the quantity of waste recycled and in the production processes of goods and services of high environmental quality.

Not by chance, green economy was at the centre of the United Nations Summit of Rio +20, in June 2012, with the extensive awareness that, to find the way to Sustainable Development, one should attack the core of economy and base development on the pillar of green economy: an



economy of industrial reorganization, innovations and differentiation for the promotion of new products, new goods and services and therefore new development. An economy that takes on the challenge of limits, of environmental sustainability, of low carbon emissions, of renewable resources, of reduction of withdrawals of natural resources and of environmental impact. Furthermore taking care of *social equity and inclusion*.

All these cultural and ethical reasons, together with availability and feasibility of alternatives, can promote Sustainable Development better, if they are supported by appropriate legislation and far-sighted governments.

But they will not be implemented by decree and top down.

This is due to delays of a policy that is based on short-term national consensus, to economic interests that are still strongly opposing, to economic and financial globalization occurring in the absence of a corresponding ability to govern and control.

Sustainable Development requires actually deep economic and social changes, not only in one country, as it happened in the past, but, for the first time in our history, changes truly global, involving both the mature industrial countries and those engaged in development, without neglecting the countries and peoples that continue to be affected by poverty and hunger.

The first step in a process of education for Sustainable Development starts from here: from the awareness of living among many on a planet that has become small, and to have a common destiny and common responsibilities.

Such education should help us in all areas, to translate this awareness into environmental and civic engagement so as no one feels entitled to live only to make money and confuse the beauty and quality of life with consumerism.

It should be an education to sobriety as a positive and desirable value, to live better together, with less waste and less environmental damage.

Education for the development of knowledge of good and best practices and sustainable techniques already available – or which may become available – would be of great help for massive and rapid spread, and for identifying and overcoming the opposition of rival economic interests.

Suggesting green economy as a fundamental pillar of Sustainable Development requires a *joined commitment of all the members of society*.

The commitment of companies and entrepreneurs through education to social and environmental responsibility, the commitment of those who have governance responsibility by a proper legal framework, and the commitment of citizens that affect the economy as consumers: their education for Sustainable Development might contribute significantly, in part as it is already happening in many countries, to change market trends.

Education for Sustainable Development, finally, could help us cope with the economic and financial crises with innovative attitudes and ideas.

Instead of getting to the blind alley of nostalgia of the past and think about the post-crisis period as a return to pre-crisis, to the same production and to the same consumption, Education for Sustainable Development would help us to understand that to solve one's problems one should try to get rid of the mentality that has helped to create them and to try new ways.

