Opinion of the European Economic and Social Committee on 'Energy education' (exploratory opinion)

(2012/C 191/03)

Rapporteur: **Mr IOZIA**

On 11 January 2012 the Danish Presidency of the European Union decided to consult the European Economic and Social Committee, under Article 304 of the Treaty on the Functioning of the European Union, on

Energy Education

(exploratory opinion).

The Section for Transport, Energy, Infrastructure and the Information Society, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 11 April 2012.

At its 480th plenary session, held on 25 and 26 April 2012 (meeting of 25 April), the European Economic and Social Committee adopted the following opinion unanimously.

1. Conclusions and recommendations

1.1 'Global development challenges cannot be met if the world's economic powers do not rethink their growth model' – Connie Hedegaard, Commissioner for Climate Action.

1.2 The European Economic and Social Committee (EESC) is aware of the strategic part played by energy education. A substantial change in behaviour is needed to move to the low-carbon economy provided for in the Commission's 2050 Roadmap. It is imperative to involve civil society in order to achieve the EU's objectives, in particular its medium-term target of a 20 % reduction in energy consumption by 2020.

1.3 The main aims of energy education concern combating climate change and restoring harmony between man and nature. We have the responsibility of looking to the future and understanding and anticipating what society's needs will be. This is an extremely important, decisive time in which the European Union, national governments, local authorities, schools, universities, research centres, businesses, industries, banks, trade union organisations, NGOs and the media are involved in an integrated, multi-level approach.

1.4 NGOs' first-hand expertise in developing energy education models and tools is extremely important. Exchanges between professional bodies from the highly-varied world of grassroots associations and teachers at various levels of education will make energy education particularly effective. Combining best practices with teaching experience is the key to obtaining high-quality results.

1.5 The EESC believes it is necessary to develop innovative education, teaching and training methods and combine them with existing, proven methods. Information and communication technologies will play a key role here.

1.6 The EESC supports the new SET-Plan *Energy Education and Training Initiative,* which brings together bodies from academia, research institutes and industry. Public-private cooperation, particularly in the research and innovation sector, has yielded excellent results and should continue to be supported in the future. The EESC urges the Commission to support these initiatives.

1.7 Energy education will be able to help resolve issues related to poverty and energy insecurity. All citizens must have the right to affordable energy.

1.8 The European Union must give the priority of energy education all due attention and set aside appropriate resources in the next multi-annual financial framework.

1.9 The present opinion stresses the increasing need to support EDEN, a European network of national forums for energy and environment education based on existing local, national, European and international initiatives in this sector.

2. Introduction

2.1 Education is one of the main factors in behaviour change. This opinion highlights the key role of education in the process and reinforces the idea that *'the best energy is unused energy'* ([1]).

([1]) OJ C 77, 31.3.2009, pages 54-59.

2.2 In 2009 the EESC drew up an exploratory opinion at the request of the Commissioner for Energy on *Education and training needs for the carbon-free energy society* ([2]). It now reiterates the recommendations made in that opinion and raises further points for thought in the light of subsequent developments.

2.3 The radical change we are experiencing today and which future generations will also experience on a global scale makes sustainable energy an increasingly important factor in political, industrial, collective and individual choices. This transition period, which could almost be called a revolution, will yield a system in which our behaviour patterns and way of thinking will be completely different. We have limited time to bring about the transition and so long-term programmes and initiatives need to be launched without delay.

2.4 *Energy and the environment*

2.4.1 Energy has always played a key part in human life. In particular, the striking change in people's lifestyles and patterns of consumption contributed significantly to growing energy demand. In the coming decades, Europe will have to tackle numerous energy-related challenges, such as:

— living with the effects of climate change,

— a larger, ageing population,

— migration,

— securing supply of energy sources,

— reducing dependence on imports,

— energy efficiency,

— fighting energy insecurity and poverty,

— securing access to energy for all consumers (private and industrial),

— sustainable mobility,

— natural disasters (floods, earthquakes, tidal waves, etc.),

— lack of resources (energy, water, raw materials),

— increasing global energy demand,

— promoting renewable sources,

— ICTs (smart networks, etc.),

— the human factor (education, behaviour patterns),

— globalisation,

— safety,

— competitiveness.

2.5 *The European Union's priorities and energy education*

2.5.1 In order to achieve the main objectives of European energy policy such as security of supply, competitiveness and sustainability, the European Union should factor in these future challenges and make all appropriate changes.

2.5.2 The process therefore needs to be given fresh impetus. Everyone should be aware of energy issues and the dangers of failing to achieve the goals set. Smart energy education is the key to changing behaviour. For example, it is essential to develop specific energy education measures in the area of ionising radiation from radioactive waste which is potentially harmful to humans and the environment ([3]).

3. **Energy education – some considerations**

3.1 Energy education is one of the keys to building a new development model and fostering a new culture. Moreover, because of the cross-cutting nature of the issue, a joined-up approach is required, encompassing different aspects of modern life and civil society, involving all sectors (farming, services, industry, construction) and all people.

3.2 The need for lifelong learning, an education process for individuals that extends throughout school and post-school life, is now greater than ever. The EESC stresses the importance of putting together a smart energy education programme that caters for the various areas of social life – family, school, workplace, cultural and recreational institutions.

3.3 To bring about sensible, responsible behaviour, measures are needed to facilitate, encourage and reinforce more efficient energy use. Clear, comprehensible, reliable and, most importantly, accessible information is needed on technologies requiring use of energy. There is a vital role for education as a necessary precursor to gaining public acceptance of legislation on energy saving and efficiency measures both at EU level and in Member States.

3.4 Energy education must be provided from infant and primary school onwards. Children are quite familiar with energy-related issues and are highly receptive to new ideas

([2]) OJ C 277, 17.11.2009, page 15.

([3]) OJ C 218, 23.7.2011, page 136.

and habits. They can influence the views and actions of their parents and the people around them. The children of today are the workers, employees, teachers, engineers, architects, politicians and entrepreneurs of tomorrow. The decisions they take in the course of their lives will have a huge impact on our society's use of resources.

3.5 Issues related to all aspects of energy and climate change should be included in all the Member States' curricula, from primary and secondary school through university to specialisation. It is vitally important to train the young people of today in the new careers. Energy education can provide practical skills which could meet the energy sector's future requirements, and therefore facilitate job creation in the short-to-medium and long-terms.

3.6 Liberalisation of the energy market and the sector's new technologies pose new challenges for consumers who have thus far bought energy from companies with monopolies. Energy education and training should also include, for instance, *how to use smart meters in a way that saves energy; consumers' rights and obligations when signing a contract with an energy supplier; how to calculate one's carbon footprint;* and *green labelling*. The experience of the Dolceta project (www.dolceta.eu) has been extremely important and the EESC strongly recommends that it not be wasted but kept visible to the general public.

3.7 Energy education also extends beyond school. Children and young people can influence the wider social community through family and friends, making adults aware of the need to behave more responsibly. If significant results are to be achieved, it is essential to ensure continuity in education measures and educate all people. Energy education needs to be extended and stepped up significantly, to embrace a wide range of target groups, adults and professionals (such as engineers, architects and opinion makers). A targeted trainer training policy is also needed.

3.8 Learning is a highly complex process. There are many key players in the process, each with a specific, important role. The EESC stresses the importance of looking at the best method of education – and therefore development of appropriate teaching and training programmes – for each reference group, taking into account age, gender, cultural differences and level of education. New training media such as social networks should be judiciously explored and developed.

4. **The role of the European Union**

4.1 The European Union can contribute to the development of quality education and training by encouraging cooperation between Member States and, if necessary, by supporting and supplementing their activities (Articles 149 and 150 of the Treaty). Without neglecting the chronic need to raise education standards in all areas, the European Union should focus particularly on the need for knowledge and skills in the field of energy. The webpage www.energy.eu already makes a significant contribution. Europe needs chemists to work on capturing solar energy and engineers to design and build smart networks, and that is not all. In addition, the EU must avoid jumping on bandwagons as it did in the case of the subsidies for biofuel production in developing countries, which had undesirable effects, one example being jatropha (a spontaneous desert oilseed plant) crops in certain African countries.

4.1.1 The EESC considers it essential that when the Commission establishes the next multi-annual financial framework, it includes energy education as an integral part of the European strategy for achieving the energy and climate goals that the EU has set itself for 2020 and 2050.

4.2 *The role of public authorities*

4.2.1 Under the subsidiarity principle, education is a sector which is governed solely by the individual Member States, which have full responsibility for the content and organisation of its education and training systems. National governments should facilitate involvement of all stakeholders in society in defining priorities and setting up energy programmes. Moreover, they should monitor information and make various instruments available to consumers, such as websites for price comparison and/or providing up-to-date information on the different aspects of energy.

4.2.2 Public authorities must set a good example. Regional and local authorities must coordinate activities effectively with a view to helping to build a widespread energy-saving culture. Awareness of the necessary changes and energy efficiency techniques and use of renewable sources must become part of the culture everywhere. Thus, as well as adopting regulatory and technical measures, the institutions must mount widespread information and awareness-raising campaigns targeting all people, businesses and trade associations. In this regard, the EESC is setting an example with its internal EMAS (Eco-Management and Audit Scheme) programme, which has enabled it to obtain the highest level of certification granted by the Brussels Region environment agency (IBGE Ecodynamic Enterprise label).

4.3 *The role of schools*

4.3.1 Many of our ideas and much of our knowledge are absorbed during our time at school. Schooling is currently based on a traditional system of learning in which there are some gaps in national curricula. With few exceptions, there are no energy or environment education programmes and teachers

with suitable formal training in these subjects are often lacking. For these and other reasons, schools must in the future provide an opportunity to further students' knowledge of energy saving, energy, science, the environment and climate, helping to instil in them an awareness of energy efficiency and giving them the social and analytical skills to be able to rationally assess behaviour and change it in the future. Energy and environment knowledge could be included in the key competences of the European reference framework for lifelong learning. Teachers play a decidedly key role and need teaching materials which are appropriate for the level of education and the subject taught. Every teaching programme should include up-to-date resources and appropriate support and training activities for teachers. The role of universities is essential, as under the Bologna process, whose objectives include building an education system that is in increasing harmony with the fast-moving global world and the EU's interests, which will in turn give qualifications more weight in the labour market throughout the European Area.

4.4 *The role of businesses*

4.4.1 The partnership between education establishments and businesses, which was supported by the EESC in 2009 ([4]), is of fundamental importance. The flexibility typical of the professional sectors, particularly SMEs, can make the partnership one of the main resources for job creation in times of crisis and considerably boost development of the spirit of enterprise and creativity. Research and innovation should be an integral part of this partnership in order to encourage fast transfer of new technologies. Professionals (engineers, architects, etc.) should be given ongoing education in new developments in the sector in question. Seminars on energy-saving should also be held in the workplace.

4.5 *The role of banks*

4.5.1 The role of the banking sector is very important for the economy and society. Banks are involved at numerous stages of people's day-to-day lives and, as well as being financial intermediaries, they should also be trustworthy advisers. By providing dedicated soft loans along with sufficient information, they could support energy and environment education activities, facilitating green investment in various sectors of the economy (construction, transport, etc.).

4.6 *The role of trade unions*

4.6.1 Trade union organisations can do much to further a process in which education and vocational training are tools in a unique plan for civilisation and sustainable development. The green economy, for example, needs skilled staff able to adapt to the changes brought about by developments in technology, research and innovation. Trade unions can play a key role when it comes to individual behaviour as well, raising awareness among their members through schemes, possibly contractual in nature, which reward responsible behaviour and energy savings achieved. Cooperation between businesses and workers' organisations in this area could yield significant results.

4.7 *The role of civil society (NGOs)*

4.7.1 Consumer and environmentalist organisations play a vital role, given their exceptional contribution of skills and knowledge transfer. They should be involved in raising awareness about consumer issues and energy efficiency at all levels – planning, drafting, deciding on content, distributing information, proposals, dissemination, evaluating results.

4.7.2 NGOs should be the natural partners of national authorities and should be supported in their educational initiatives, which benefit society as a whole. Informal education programmes, liaison with teachers, organisation of educational visits on the ground, specialised mini-campuses and publications for different age groups are all areas which should be delegated to organisations that are active and expert in energy education.

4.8 *The role of the media and social networks*

4.8.1 In disseminating accurate information and providing huge-scale educational activities for all ages, the media have a strategic, valuable role. The messages contained in programmes raising awareness of energy- and environment-related issues should always have scientific depth and be culturally neutral. The details of information provided should be subject to rigorous examination before media tools, particularly television, are used. There are huge stakes involved in the environment and energy sectors, which can influence people in one direction or the other who do not have the knowledge or analytical tools to make an informed assessment of the information received.

4.8.2 Social networks play an equality important, sensitive role, given that their public is essentially young and emotional and tends to become passionate about such important issues. All those who use this facility should comply with a code of practice and agree to be monitored and, if necessary, change information which is ambiguous or biased.

4.8.3 There is no doubt that these tools will become increasingly important in the future. (The number of people currently connected to social networks is greater than the earth's population at the start of the 20th century.) The huge amount of information available will change the language and nature of information provision. Education will be affected by these changes, and we will need to learn how to reduce multi-faceted, complex information to bite-sized messages accessible to all. See http://en.wikipedia.org/wiki/List_of_social_networking_websites.

([4]) OJ C 228, 22.9.2009, pages 9-13.

5. The EESC's priorities

The EESC calls for focus on the following priorities:

5.1 **Living with the effects of climate change, adaptation and the need for relevant skills.** The existence of climate change has been proven by scientific tests and is widely acknowledged throughout the world. Certain events, such as floods, will occur with increasing frequency. It will become vital to adapt to these phenomena if we are to survive. Furthermore, the lack of appropriate specialists could seriously jeopardise achievement of the European Union's short-, medium- and long-term goals.

5.2 **Energy efficiency.** Energy efficiency is at the heart of the Europe 2020 strategy. The combined effects of fully implementing new and existing measures will transform our daily lives and, in the Commission's view, could generate a saving of EUR 1 000 per year per household, boost the competitiveness of European industry, create up to two million jobs and reduce annual greenhouse gas emissions by 740 million tonnes ([5]). Energy consumers play a key role in supporting this process. Everyone, adults included, must change their behaviour, and so appropriate, reliable information on energy needs to be provided.

5.3 **Fighting energy insecurity and poverty.** Fighting energy insecurity and poverty is now a social priority which must be tackled at all levels. Fossil fuel prices are still rising and this trend looks set to continue in the coming years. If we do not act fast and effectively, the number of vulnerable energy consumers will also rise substantially ([6]).

5.4 **Securing access to energy for all consumers (individuals and enterprises)**. Energy is a public commodity and plays a key role in ensuring a country's economic well-being. It is vital to secure supply of energy at affordable prices which will not vary excessively or unpredictably in the coming years, ensuring that all citizens and consumers have access to energy.

5.5 **Sustainable mobility**. The growing need to transport people and goods from one place to another exacerbates the risk of pollution and congestion, especially in urban areas. A form of sustainable, environment-friendly and energy-efficient mobility needs to be developed. Co-modality is of the utmost importance in this sector.

5.6 **Lack of resources (energy, water, raw materials)**. The 6 to 9 billion increase in the world's population will heighten international competition for natural resources and put pressure on the environment ([7]). Preserving fundamental resources such as air, water, the soil, forests and food is therefore essential to promote sustainable growth and create a modern economy.

5.7 **ICTs.** Information and communication technologies are now an integral part of the information and knowledge-based societies. For instance, smart energy distribution at affordable prices will help considerably to change the behaviour of future generations.

6. Some examples

6.1 There are numerous initiatives and good practices in Europe and the wider world for facilitating education in the field of energy and environmental protection, very often relating to reducing pollutant gases.

6.2 The *Défi Énergie* (Energy Challenge) project, coordinated by the Brussels energy and environment authority *Bruxelles Environnement* as part of the Sustainable Energy Europe campaign, involved around 4 000 people in 1 400 households, reducing CO_2 emissions by the equivalent of a tonne per year, in other words cutting their energy bill by EUR 380 (www.ibgebim.be).

6.3 Italy's Carlo Colludi Foundation has a *Pinocchio ripensa il mondo* (Pinocchio rethinks the world) project targeting primary school children. It is in three phases: differentiated waste collection; energy saving; and ethical choices relating to sustainability (http://www.pinocchio.it/fondazionecollodi/).

6.4 With its MUS-E® Arts at School programme, the International Yehudi Menuhin Foundation develops new learning processes through the arts – music, dance, singing, drama and visual arts. The project operates in 11 countries, with 1 026 artists working with 59 189 children in 623 primary schools (www.menuhin-foundation.com/).

6.5 The Spanish Energy Mix Forum (SEMF), open to all energy stakeholders, holds debates on Spain's different energy sources (http://www.semforum.org/).

6.6 The Mediterranean summer school (UMET) on sustainable energy in the Mediterranean involves the universities of France, Italy, Portugal, Spain and Greece, as well as Morocco, Algeria, Tunisia, Egypt, Turkey, etc. Over the coming years the summer school aims to expand to other cities (http://www.ome.org/index.php).

6.7 The Green Beautiful *(La Belle Verte)* is a 1996 film directed by Coline Serreau which deals with the problems of the western world, including the frenetic pace of life, abuse of power, pollution and unbridled exploitation of natural resources and land (http://www.youtube.com/watch?v=TTvoZkHugr0).

([5]) COM(2011) 109 final.
([6]) OJ C 44, 11.2.2011, page 53.
([7]) COM(2010) 2020 final.

6.8 The Commission's Intelligent Energy – Europe Programme has been supporting energy education projects since 2004. These include KidsCorner, U4energy, Flick the Switch, Kids4Future, Rainmakers, Young Energy People, My Friend Boo, etc. As regards professional training in the building sector, the BUILD UP Skills project deserves a mention (http://ec.europa.eu/energy/intelligent/).

6.9 My Friend Boo, a fun cartoon series supported by the IEE programme which is the first of its kind in Europe, aims to help young people understand subjects such as energy, climate change, the environment, conservation and health (http://www.myfriendboo.com/).

6.10 Other Europe-wide initiatives include the Covenant of Mayors, with over three thousand signatories. From day one the EESC has supported the dissemination of this instrument to as many European municipalities as possible ([8]), prompting the Commission to change its strategy. CONCERTO, CIVITAS and the new Smart Cities and Communities Initiative are tools for sharing good practices in the area of sustainable transport and appropriate, intelligent energy use. The SET-Plan Energy Education and Training Initiative lends considerable added value to the SET-Plan project as a whole and develops it.

6.11 Various international initiatives have already been launched, such as NEED (National Energy Education Development Project) – a network of students, educators, businesses and government and community leaders – which started a good 30 years ago in the United States (http://www.need.org/); the United States Department of Energy's Energy Education and Workforce Development programme (http://www1.eere.energy.gov/education/); and the EnergyQuest energy education website (http://www.energyquest.ca.gov/).

7. Public hearing on energy education

7.1 During the EESC public hearing numerous additional interesting experiences in the field of energy and environmental education were presented.

7.2 Representatives of the EACI, the EU-ASE (European Alliance to Save Energy), the Carlo Collodi Foundation, the Yehudi Menuhin Foundation, Solvay, CIRCE, Business Solutions Europa and the ELISAN network, as well as the Covenant of Mayors representative to DG Energy, each with their specific point of view, firmly stressed the key nature of the issue.

7.3 Issues raised during the discussion included the role of education and vocational training, instruction of engineers and graduates in scientific disciplines, the need to strengthen the relationship between universities, research and industry, the urgent need for public authorities to engage in fighting poverty and energy insecurity, involvement of local communities to develop initiatives and raise awareness relating to intelligent, sustainable energy use, and innovative tools for both informal and formal extra-curricular training.

7.4 One specific suggestion arises from the need to introduce a single, comprehensible energy assessment system, for instance using EUR/MWh as a unit of measure for all products which use energy so as to measure their efficiency and cost immediately.

7.5 The quality of the information provided and content of the education is of the utmost importance. There is a real danger that it can be manipulated to protect interests rather than generate informed decisions. Particular scrutiny from public authorities is therefore necessary to ensure the independence and integrity of the information and education processes.

7.6 One of the most important points concerns the difficulty of systematically incorporating energy education material into school curricula because of lack of time, excessively intensive programmes and different priorities.

8. EDEN: the European energy and environment education network. The EESC–Carlo Collodi Foundation Cooperation Protocol

8.1 The European network of national forums for energy and environment education (EDEN), as proposed in the Exploratory opinion on *Education and training needs for the carbon-free energy society*, could help fill the existing gaps and achieve the EU energy-saving target of at least 20 % and help achieve the European 2050 vision of a resource-efficient, low-carbon economy, and strengthen energy independence and security of supply.

8.2 In order to implement the opinion's proposals and support the establishment of a European network, the EESC and Italy's Collodi Foundation signed a cooperation protocol on 26 March 2010 in which they undertook to work together. Pinocchio, the universally-known character from Carlo Collodi's book, was chosen as the initiative's symbol.

8.3 This European network, based on organisations operating in the field of energy efficiency, renewable energy and environment education, acts as a national distribution channel for suitable programmes and materials, facilitating integration of clean energy, more efficient use of natural resources and guaranteed high environmental standards into national school curricula.

([8]) OJ C 10, 15.1.2008, page 22.

8.4 Thus far, a number of organisations have joined the network. In addition to the EESC and the Carlo Collodi Foundation (IT), which are founder members, the following are currently part of the network: the Terra Mileniul III Foundation (RO), ARENE Île-de-France (FR), Les Péniches du Val de Rhône (FR), the Municipality of Greenland (Greenland), the Climate Action Network (RO), The Mosaic Art and Sound Limited (UK), Art For Green Life (UK/BE), CECE (ES), Intercollege (CY), Business Solutions Europa (BE), EU-ASE (BE), CIRCE (ES), and the Menuhin Foundation (BE).

Brussels, 25 April 2012.

The President
of the European Economic and Social Committee
Staffan NILSSON