The International Alliance of Leading Education Institutes

Climate Change and Sustainable Development:

The Response from Education

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Report from Denmark

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Climate Change and Sustainable Development: The Response from Education

Danish National Report

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THE DANISH
SCHOOL OF EDUCATION
AARHUS UNIVERSITY

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Preface

This report is conducted as a contribution to the cross-national project: "Climate Change and Sustainable Development: The Response from Education", decided as the 2008-2009 joint project by the International Alliance of Leading Education Institute.

Denmark – Introduction to the Socio-Material Setting

Denmark is a small country, only 43.094 sq km., located in the temperate zone of Northern Europe. Denmark has historical and cultural ties to the other Scandinavian countries (Sweden, Norway, Iceland and Finland). The landscape is flat and most of it is used for agriculture. The population is 5.5 million, but only around 4% of them work within agriculture. Thus this field is characterised by high technology factory farming. Especially the production of pigs is enormous; more than 20 million annually.

The majority of the adult population is employed in small and medium sized companies or in the public sector. They live in cities (around 1/3 in the region of the capital, Copenhagen), and most of them in their own single-family houses. The Danes are world leaders regarding number of square metres living space per person (Dansk Byggeri, 17 August 2006), and their material consumption levels belong among the highest in the world.

Denmark is highly secularised - although the majority of people are members of the Christian, Evangelical Lutheran church, few are regular churchgoers. The ethos of the culture is modern; i.e. traditions and collectivity are gradually supplanted by a focus on continuing innovation and individualisation. However, like the other Scandinavian countries, these tendencies are tempered by a societal coherence which remains relatively strong. This strength is based on a long tradition for political democracy and corporatism/ consensus, as well as social egalitarianism and inclusion. The Danish welfare state follows what is commonly referred to as the Scandinavian welfare model. A large public sector offering e.g. free healthcare and education as well as relatively generous levels of social security benefits is financed by one of the world's highest tax rates. Despite the high taxation, there is widespread public support for the current welfare system and Denmark is commonly regarded as a relatively egalitarian society based around the traditional social-democratic values of freedom, equality and solidarity. (Nordisk-Ministerråd and Huset-Mandag-Morgen 2006). During recent years, these basic values have to some extent been challenged by a neo-liberal trend and by the change from a rather homogeneous towards a more multi-ethnic society.

Denmark has been a unified state of varying size since the 10th century. It is a constitutional monarchy with a single chamber parliamentary system and is one of the oldest democracies in the world, constituted as such back in 1849. During the 20th century, the Social-democratic party was the biggest party and was in government most of the time. Since 2001, a liberal-conservative government has been in power, supported by the nationalist Danish People's Party.

Since the introduction of democracy, social movements, first the peasant movement and later the labour movement, have been key agents in the development of the modern Danish society (Gundelach 1986). They were both supported by 'folkeoplysning', which is a term (literally 'enlightenment of the people') used to describe government supported but independent educational efforts to empower the population to reflect on their own lives and values and participate in the democratic development of society (Borish 1991). Previously, Folk High Schools and Evening Schools were key 'folkeoplysning' institutions, but, although they still exist, the tradition for non-formal adult education has gradually changed from the original democratic ideals towards leisure activities centred on ideals of self-realisation and individual development. (Korsgaard 1997).

After the Second World War, Denmark gradually changed from a country dominated by agriculture and domestic production towards industrial production for the international market. From the end of the 1950s this change gave rise to a significant economic growth. Hence, during the 'golden age' of the 1960s it became possible for the ordinary Dane to buy a house, car, holidays abroad and other consumer goods (Jamison, Eyerman et al. 1990).

However, this transformation involved pollution and a dramatic transformation of the physical environment as well. As in other Western industrialised societies, this gave rise to an environmental movement. In Denmark it was organised by students and became a part of 'the youth revolution'. With origins in student action groups, the environmental movement developed into a broader social movement during the 1970s, culminating with a remarkable victory at the end of the decade when plans for nuclear power, strongly supported by the government, industry and scientific experts, were abandoned (ibid).

In the wake of the movement of the 1970s, the established societal institutions gradually took over the responsibility for environmental policy and eco-technological development. Especially production and use of windmills, water treatment plans and organic farming became relatively successful innovations. As in neighbouring countries, an 'ecological modernisation' discourse took over from the late 1980s and became the dominant approach to sustainable development during the 1990s. This approach argues that there is no contradiction between economic and ecological development; rather eco-technical innovation should be regarded as a vehicle for economic growth. Furthermore it implies a change of focus from waste management towards an ecological transformation of production systems as well as consumer patterns. Everybody is expected to do their bit, so ecological modernisation was promoted as a process characterised by synergy and consensus. The environmentalists were integrated as partners in this process and a number of governmental programmes supported efforts to involve the population in projects focusing on saving resources when they consume (Læssøe 2007; Petersen, Holm et al. 2007).

When the liberal-conservative government took over in 2001, another approach to sustainable development was introduced. In accordance with president Bush's policy in USA, and supported by Bjørn Lomborg, a Danish social scientist known globally for his criticism against giving economic priority to a number of key environmental efforts, the new government stressed the need for a more economically effective environmental policy. This new trend did not entirely halt the ecological modernisation process, but it was ideologically downscaled for a period, until the middle of the decade when the climate crisis became widely acknowledged as one of the most challenging and urgent issues facing the global society. On the one hand, this change has pushed the government to make a dramatic shift towards signalling a progressive green attitude, including a renewed appeal for ecological modernisation. On the other hand, by focusing so much on mitigation and adaptation to climate change, other issues of sustainable development have been de-emphasised.

While environmental issues were considered among the most pressing issues among Danes in the late 1980s, this concern gradually decreased during the first phase of ecological modernisation in the 1990s. In 2001 they only ranked the environment as number 16 among political issues. The climate crisis has changed this trend and has been ranked 2nd in the latest opinion poll from 2007 (Læssøe 2006; Petersen, Holm et al. 2007). This new public concern challenges policymakers to reconsider how to support the involvement and learning of the population. The positive, harmonious approach of ecological modernisation is still dominant, but other conceptions of public involvement

and sustainable development challenge this dominance involving renewed discussion of issues such as economic growth and the need for structural changes.

There can be little doubt that the environmental changes and the ecological modernisation discourse influence the ways in which ESD and CCE are approached. However, the educational system and pedagogical traditions also influence these approaches. The Danish public school system has it roots back in the 18th and 19th century and the European period of enlightenment (Korsgaard 1997). The German tradition for formal 'bildung' and the 'progressive' pedagogical ideas have influenced the Danish school system perhaps more than anywhere else (Illeris, Laursen et al. 1978). This not only means that the ordinary Danish school during the 20th century became less authoritarian, less focused on formal training and relatively more interested in creative learning and personal development than schools in other European countries. It has also resulted in the Danish school legislation being liberal with regard to the establishment of alternative, 'free' schools. They are not only accepted; as long as they fulfil some basic demands, they are also supported economically by the government. Although this tradition has been challenged by the Anglo-Saxon schooling tradition and positivist, science-based teaching methodology, it still influences everyday educational practice in Denmark. This is of great importance when it comes to understanding ESD and CCE practice in Denmark. As will be documented later, this historical-ideological context has also influenced the approaches to educational research in the field.

Environmental Education in Denmark as a Forerunner for ESD

As is already clear from the above, in order to properly understand ESD in Denmark, it is necessary to operate with a framework of understanding extending further back than 2005 and the launch of the UN Decade for ESD. However, not only are Danish ESD efforts a result of a particular socio-material setting, political currents and pedagogical traditions, it is possible to identify many of the actual concepts and principles of ESD as described in this thematic analysis long before the Decade's inception. The existence of these concepts and principles indicates that most of the ideas of ESD had already long been incorporated within the Danish school system, albeit under different names.

In the following, a brief clarification of this statement is given along with a few examples.

Internationally, Environmental Education (EE) is seen by many as a forerunner for ESD; by others as a major ingredient in ESD; or even, by some, as a competitor to ESD. In Denmark, at least at the conceptual level, ESD can be seen as a fairly straightforward development and continuation of EE. Some of the main mechanisms are the following:

In the school year 1988-89, a nationwide in-service training course was planned for teachers in the Danish folkeskole (municipal primary and lower secondary school) about local development of EE. In preparation, the Royal Danish School of Educational Studies (RDSES) organised 22 school-based pilot projects during the previous school year in order to generate experience, clarification and descriptions of cases from schools.

The idea with the nationwide course was to help teachers develop new strategies and modes of practice according to an action oriented version of EE. With the notion of action orientation it was underlined that the goal should be to empower students with regard to environmental issues instead

of just bogging them down with a feeling of guilt. It should be noted that for the previous 10-15 years, many Danish school teachers had already been trying to persuade their students to be aware of environmental pollution, of the destruction of rainforests, the stupidity of overfishing, desertification etc. In a survey from 1989 (Breiting 1989), it was indicated that themes like global population growth and the future of mankind were among the themes many teachers 'usually taught'.

Since the 1975 amendment to the Education Act, many subjects had incorporated broader environmental issues, and a specific subject 'samtidsorientering' (modern studies) was introduced in lower secondary school which should deal with 'important contemporary issues/problems', many of which would today be classified as within the scope of ESD. To complete the picture, it should be noted that teachers engaged in 'peace education', 'global education' and 'development education' were active at the same time, and, although these areas were not directly reflected in the school's curriculum, they could be easily accommodated.

At the same time the official overall aim of the school emphasised an education for democracy perspective. The pupils/students should achieve useful knowledge and skills, of course, but as least as important was the formation of citizens who were prepared to engage and involve themselves in the social processes in a democratic society. Therefore, it was not enough to learn by heart a lot of facts about the challenging issues in the modern world, you should also get some experience in taking a stand and on the basis of serious reflection eventually take action. Naturally, this had to be adjusted to the age and development level of the children and youngsters. The whole idea, which has a relatively long tradition in Denmark, is often in short called 'education for democracy with democracy'.

In the same spirit a specific section, 16.4, in the Education Act stated that the students in all grades as much as possible should participate, in the meaning of co-determinate, in the selection of both the content and the form of the lessons.

Seen in this context, the intention with the nationwide in-service training course for teachers was to make these efforts more successful. Important conclusions from the pilot schools working with EE in 1987 were:
- Students should be heavily involved in deciding which environmental issues to focus on.
- The attention should be focussed on local problems and issues. (To enable students to investigate them and, if motivated, to take appropriate action, instead of focussing on the destruction of the rain forests and other distant problems).
- The focus shouldn't be on nature isolated from man, but on problems related to man's use of nature
- The approach should preferably be cross-curricular to reflect and increase student understanding of the complex and inter-related character of environmental problems and possible solutions.
- The local community should be seen as a resource and be drawn upon.

In the teaching material for the actual training course, a number of chapters of more theoretical content supplemented the cases, among others on 'Sustainability as an example of content in environmental education' indicating an intention very close to ESD.

After the implementation of the full EE in-service training, it was clear that the basic ideas were viable and improved the focus and quality of the teaching, but teachers were still often uncertain of how to understand and implement this action oriented view on EE and empower their students. This, combined with experiences from and research on other Danish EE activities, fostered a special focus on concept clarification and experimental teaching regarding 'conflicting interests related to the use of natural resources' as the main focus of classroom investigations of environmental issues and the development of students' 'action competence' (see theme 1) related to environmental issues/problems as the overall goal of EE. The first perspective underlines a focus on social, economic and political aspects of environmental issues while the second perspective demonstrates a clear democratic-societal emphasis.

Another shift that moved the understanding of EE in the direction of current conceptions of ESD was the establishment at RDSES in 1986 of a centre collecting researchers dealing with EE and Health Education (HE). There were clear arguments for such a combination: A concept of health as quality of life has to be an important aspect of EE, and the environment is an important factor for health promotion and therefore deserves attention within HE. At the same time, more or less identical trends could be found with regard to HE and EE pedagogy and to research within the fields. The objective of empowerment, for example, was central within both HE and EE, as was the view that a cross-curricular approach is necessary. In this convergence between HE and EE, they both placed considerable emphasis on the living conditions of people and their experienced quality of life – so much so that in many cases, it was in practice difficult to label the teaching as either EE or HE. In other words, the realisation that EE had to be seen as an anthropocentric endeavour became absolutely clear.

The development of the identity and approach of such an anthropocentric and democratic understanding of EE in Denmark culminated for a time during the MUVIN project (1991-1995) and subsequent activities. 100 schools, 300 teachers and 3.000 students participated in MUVIN and descriptions of the approach and of the experiences gained were widely disseminated within the Danish educational community. The MUVIN project remains the most extensive and influential study of EE in Denmark to this day. The focus for the research was the action competence approach to EE and the identification of environmental problems as issues in the community characterised by conflicting interests regarding the use of natural resources. The MUVIN project was a Nordic initiative and as such a good example of how international co-operation can spark innovations at the national level.

The Emergence of ESD in Denmark

In the wake of the publication in 1987 of the so-called Brundtland report by the UN World Commission on Environment and Development, educating the population with regard to sustainable development was for the first time placed firmly on the national political agenda in Denmark. Referring directly to the report, in 1988 the Danish government decided to supplement their strategy concerning technology and production with two initiatives promoting citizen participation in sustainable development. As such, these initiatives were not directed towards the formal education system, but towards the non-formal youth and adult education ('folkeoplysning'). To begin with, between 1989 and 1992, this took place in the form of a government initiated and funded nationwide campaign 'Our Shared Future', along with the development project 'Green

Municipalities'. Subsequently, the government founded 'The Green Fund' which, with a budget of DKK 50 million (approx. € 7 million), had the objective of supporting local non-formal education initiatives concerning sustainable development. The fund operated 1994-2001 and its initiatives and the requirements made of stakeholders was highly influential in the Danish discourse on non-formal education and sustainable development throughout the 1990s (Læssøe 2007). Here, it is highlighted as an important part of the context for the following account focusing more specifically on the emergence of ESD within the school sector.

While the report of the Brundtland Commission kick-started non-formal ESD, the UN summit on environment and development held in Rio in 1992 had an effect when it comes to increasing focus on ESD within the school sector. The first fruits came in the form of collaboration between the Baltic countries [1]. In addition to researchers, teachers and NGOs, government officers and ministerial consultants were also involved. In March 2000, this led to the first official document on ESD, the Haga Declaration, which was signed by the Ministers of Education from each of the participating countries – including Denmark.

The Haga Declaration describes sustainable development as a challenge which will require an integrated approach and broad participation. In addition, the key paragraphs on ESD state:

- "ESD should be pursued at all levels of education; it should be included in all curricula or equivalent instruments corresponding to the level of education. Such education should rest on a broad scientific knowledge and be both integrated into existing disciplines and developed as a special competence. It demands an educational culture directed towards a more integrative process-oriented and dynamic mode emphasising the importance of critical thinking, and of social learning and a democratic process
- ESD should be based on an integrated approach to economic, environmental and societal development and encompass a broad range of related issues such as democracy, gender equity and human rights. This broad approach should be recognised in both natural science and social science, and should complement and build on existing initiatives in environmental education.
- ESD should also be regarded as an important tool for achieving sustainable consumption and production patterns as well as for necessary lifestyle changes."

Two years later, in January 2002, and continuing on from the Haga declaration, a background report (Baltic 21E) was published presenting a proposal for an Agenda 21 for education in the Baltic Sea region. This report, comprising 46 pages, was compiled in collaboration between the relevant stakeholders from each of the participating nations. It did not contain anything new in relation to the Haga Declaration with regard to the concept of ESD and the role of education; however, it did contribute by taking stock of progress within the field on the basis of a survey, a proposal for an action plan, reflection on indicators and evaluation, as well as on funding, organisation and implementation. In other words, at the beginning of 2002, a document was available which clearly prepared the ground for work with ESD over the course of the following years.

The same year - and thereby also the same year as the Decade of ESD was adopted at the UN summit in Johannesburg – the Danish government approved a national strategy for sustainable development. It contained less than half a page on education, but is still worth highlighting, partly because the social-democratic government who signed the Haga Declaration had now been replaced

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[1] Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, The Russian Federation, Sweden and Denmark

by a new liberal-conservative coalition, partly because it contains a number of statements regarding the educational sector's role and objectives for ESD. We will take a closer look at these statements under themes 1 and 2 of the analysis; for now, we will merely point out that, despite being largely consistent with the Haga Declaration, a shift can be observed away from a prioritisation of critical thinking and democratic learning ('bildung'), and towards knowledge and responsibility (ethics).

The Danish Ministry of Education has also played a role by incorporating sections on sustainable development within the curricula for the folkeskole. In Denmark, the Ministry of Education's curricula are only afforded the status of general guidelines for the municipalities, but they typically follow them, sometimes with minor changes. In the mid-1990s, the Minister for Education at the time stated as an overall principle that all school curricula should have a 'green touch. Even though this principle was later removed following the change in government in 2001, sustainable development remains a part of the objectives for a number of school subjects. We will look more closely at this under theme 4.

As a direct prelude to the Decade for ESD, Denmark formed a part of the United Nations Economic Commission for Europe's (UNECE) joint European preparations. As such, Denmark is a cosignatory of the common strategic guidelines for the decade which were approved in March 2005[2]. This is an important document, even though they are only guidelines, as it describes what ESD is about, contains a number of requirements of the national efforts, and a joint timetable for the decade. The document additionally obliges Denmark to deliver assessments – based on common European criteria – of national ESD efforts to UNECE. As such, the UNECE strategy document puts pressure on the Danish government to live up to the agreement.

There is generally speaking a lot of common ground between the documents on ESD produced by the Baltic countries as referred to above and the UNECE strategy in terms of strategic and organisational recommendations. This may well simply be a consequence of the Baltic countries introducing the earlier documents during the process of compiling the UNECE strategy. As will be apparent in the thematic analysis, however, it is worth noting that the UNECE strategy's chapter on principles contains a shift towards a broader and more open approach to ESD. As such, ESD is presented as an ongoing societal learning process:

> "There is a need to consider the evolving meaning of SD. The development of a sustainable society should, therefore, be seen as a continuous learning process exploring issues and dilemmas, where appropriate answers and solutions may change as our experience increases" (p. 4, para 13)

The UNECE strategy also includes a number of SD themes which suggest a wider scope for ESD than found in the Baltic E21 report with its focus predominantly on environmental issues. Whilst the latter describes ESD as primarily a question of the use of natural resources, only incorporating ethics and justice as peripheral aspects (Baltic E21 p. 17), the UNECE strategy also considers issues such as poverty alleviation, human rights, gender equity and cultural diversity as key themes (p. 4).

It should also be noted that the shift away from critical and democratic citizenship competences and towards individual responsibility which one finds in the Danish strategy for sustainable development is not apparent in the UNECE strategy. Rather the latter stresses the importance of ESD encouraging "systemic, critical and creative thinking and reflection in both local and global

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[2] UNECE Strategy for Education for Sustainable Development

contexts" (p. 4) and states that ESD should promote participatory learning, hereby facilitating processes "encouraging dialogue among pupils and students and the authorities and civil society" (p. 5). Contrary to the Danish focus on knowledge, the UNECE strategy thereby recommends "a reorientation away from focusing entirely on providing knowledge towards dealing with problems and identifying possible solutions" (p. 6)

In summary, in relation to developments leading up to the inception of the Decade for ESD in 2005, we can conclude that Denmark and its neighbouring countries had already during the 1990s begun to work together with the objective of formulating a policy for ESD and that, during the five years from the turn of the millennium to the inception of the Decade for ESD in 2005, this work led to the compilation of official documents containing not only the formulation of objectives and a description of the field of ESD, but also accounts concerning strategy, evaluation etc. As such, Denmark had a relatively well-developed bedrock upon which to formulate a strategy for the Decade. During the same period, work had also commenced on implementing ESD within primary, lower secondary and upper secondary curricula. There were at the same time signs that the Danish government placed greater emphasis on knowledge and individual responsibility than on the development of action competence in relation to democratic participation. This goes against the conclusions contributed by Danish research within the closely related field (at least in Denmark) of Environmental Education. Although they are not diametrically opposed, there exists a tension between current policy and research which we will deal with in more detail in the course of our analysis.

Producing the Danish ESD Strategy

There can be good reason to study the compilation of the Danish ESD strategy: partly because, as has already been implied, there is talk of a lengthy process whereby not only the strategy, but also the interpretation of ESD itself has been negotiated adapted politically; partly because the strategy comprises the central document in the analysis presented in this report of the official political perspective on and action taken in relation to ESD.

Four years and three months elapsed from the inception of the Decade to the launch of the Danish ESD strategy. In Denmark, the Decade was primarily introduced in the form of three conferences: the first was arranged by a team from the research programme on Environmental and Health Education at the Danish School of Education (DPU) in collaboration with IBIS, an NGO working with developing countries; the second was held by a number of NGOs; the third was an international conference organised within the SEED network[3], an offspring of the ENSI cooperation. The Ministry of Education participated in these conferences and was co-organiser of the SEED conference[4]. Apart from this participation, the government's contribution to mark the Decade was supporting the Danish UNESCO commission in publishing an introductory booklet and helping establish an internet portal for the Decade.

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[3] SEED is a Comenius 3 Network 'School Development through Environmental Education' in co-operation with the international network ENSI 'Environment and School Initiatives' www.ENSI.org. The conference delivered an interesting report: 'Building Capacity and Empowerment through ESD. Conference on Education for Sustainable Development in Esbjerg 2005', prepared by Bjarne Bruun Jensen.
[4] Later – in March 2007 – the Ministry of Education used its annual UNESCO conference to launch the Decade for ESD.

The NGOs had expected a more marked and pro-active approach from the government including, inter alia, an action plan, a scheme for subsidising initiatives, and coordination of national efforts. When such an approach was not forthcoming, in March 2006 the NGOs sent a collective request to the government asking for a meeting aimed at kick-starting the process. This meeting was held six months later and, over subsequent years, similar dialogues have been held between ministerial representatives and the NGOs. At these meetings, the latter have been highly critical of the government's efforts, while the government officers, on the other hand, have called for initiatives originating from the NGOs and the educational sector (Minutes from meetings in 2006 and 2007). The political opposition has also been active. Among other things, they have consulted the Minister for Education and asked him to answer a number of questions concerning the government's management of its international obligations regarding ESD. The Minister for Education and his officers have repeatedly rejected critique and stressed that the government's efforts have been sufficient and that the educational sector itself should take responsibility for promoting ESD within the available financial framework (ibid; the Minister's published speech manuscript from Parliament's environment and planning committee, 21.03.2007).

Researchers also play an active role in the process in several ways. Apart from organising two of the opening conferences and taking part in the dialogue meetings between the government and the NGOs, the Ministry of Education provided funding to DPU's research programme on Environmental and Health Education to produce a draft of the national strategy for the Decade. This funding constituted a small figure (DKK 400,000 or approx. € 55,000), half of which was to be used on a school development project on ESD. It did not therefore enable a proper mapping of ESD within various areas of the educational sector as recommended by the researchers. Instead, they elected to arrange four meetings with representatives from, respectively, the primary and lower secondary sector, the upper secondary sector, the tertiary sector, and the non-formal ('folkeoplysning') and adult educational sectors. The idea with these meetings was partly to gain an impression of the Decade's current level of permeation, partly to receive feedback on their preliminary outline of the strategy. Judging from the fact that two of the four meetings, despite being widely publicised, had to be cancelled due to a lack of interest and the two remaining meetings were attended by, respectively, six and twelve external participants, the impression was that the Decade had not been visible and engaging within the actual educational institutions. With this limited backing from practitioners, the researchers compiled a strategy discussion paper which both defined and elaborated the concept of ESD, and offered a suggestion as to the overall organisation and the central initiatives in line with the UNECE guidelines and inspired by the ESD strategies for other countries.

In brief, the document can be described as emphasising the new aspects of ESD compared to EE and the natural sciences. It attempts to counteract 'ESD becoming all encompassing' by focusing it on four key issues within SD, and retaining the importance placed on developing democratic competence as can be found in the UNECE strategy. This, and the researchers' presentation of a pro-active, and therefore also more expensive, plan for the remainder of the Decade, has apparently not found resonance within the Ministry of Education. The presentation was submitted to the Ministry in August 2007, that's more than 1½ years before the adoption of the finalised strategy, but here, only a handful of passages remain which in itself makes it fairly apparent that there is a considerable divergence in perspectives. These differences will be elaborated under themes 1 and 2.

The process of completing the strategy was placed under the auspices of the Ministry of Education. However, as is custom in Denmark, there was a consultation phase where stakeholders had the

opportunity to submit comments to drafts. Furthermore, it is worth mentioning in relation to the final phase prior to the completion of the strategy that the government, as part of the build-up to the global COP15 climate summit in Copenhagen, December 2009, has established a Ministry of Climate and Energy which, with a national campaign '1 tonne less' is also operating within the field of ESD. The issue of climate change has become a hot topic, politically speaking. It has a strong media presence and surveys have shown that it constitutes the issue which Danes afford the highest priority (Politiken 21st April 2009). According to ministerial officials, this development has caused the delay in finalising the Danish ESD strategy as it has been clear that initiatives concerning the populace's involvement in the climate change problem should be incorporated. We will take a closer look at this relationship between CCE and ESD in theme 3.

The Danish strategy for the Decade for ESD was published on 5th March 2009, i.e. less than a month before the UNESCO conference in Bonn marking the halfway point for the Decade. As it constitutes *the* central national document on ESD in Denmark, it will be the subject of detailed consideration in the thematic analysis. Regarded as a historic process, there can be little doubt that the Ministry of Education has had problems finding their legs with regard to ESD. The Minister for Education and the Government did not originally have ESD as one of their key issues, but have had to find their way under pressure from the NGOs, the research community, the escalation of climate problems, and, not least, from their obligations to UNECE and the Decade for ESD.

Summary and Interpretation of the Development of ESD in Denmark

The development of ESD in Denmark contains what appears to be a paradox: on one hand, as we have shown, Denmark was engaged in work within the field in preparation of policy already at an early stage, and had firm experiences from pedagogical research and practice as a foundation for the development of ESD; on the other hand, Denmark had a strikingly slow start, only adopting a national strategy almost halfway through the Decade. In light of the fact that many other countries only began working with ESD in conjunction with the Decade – or in some cases have yet to get started – one can pose the question of why a pioneer country within the field like Denmark began to lag behind.

There are a number of possible explanations:
- It might be a case of resting on one's laurels. With reference to the efforts to incorporate SD within the school curricula, the argument might be that Denmark had already implemented ESD and therefore did not need to take new initiatives. However, this interpretation is somewhat undermined by the fact that Denmark had committed to the UNECE timetable and, on the basis of Nordic and Baltic collaboration on ESD, should have been able to compile a strategy in tandem with the launch of the decade, or at least before the UNECE deadline at the end of 2007, with relative ease.
- Another possible explanation might be that ESD has become a waiting room full of good intentions: the process began in the form of a dialogue between NGOs, researchers and government officials resulting in the formulation of a number of objectives, principles and suggestions for political and organisational initiatives. There has been a good deal of political sympathy for these good intentions in principle, but only as far as the point where they are to be developed into a binding strategy and implemented in practice. A

counterargument is that the process in several of Denmark's neighbouring countries – Sweden, Finland, Lithuania and Germany – did not stall in the same way. The next point suggests one possible explanation for this.

- As mentioned previously, the Danish general election in 2001 resulted in a change of government which also meant a break with the pro-active and expansive environmental policy pursued by the previous government. However, this break was not sufficiently dramatic for Denmark to pull out of the ongoing collaboration with the Baltic countries or within UNECE, so Denmark continued to be involved in ESD activities within these forums. But when it came to transferring these intentions to actual policy in Denmark, the shift in political opinion was clear. ESD was not the government's project. Instead, it had other priorities for the educational sector, not least improving standards and proficiency in basic skills (reading, writing and arithmetic), and promoting the natural sciences. The delay to the Danish ESD strategy can therefore be seen as a result of the government on the one hand having to fulfil international obligations (primarily to UNECE), and on the other hand doing so in a way such that they, as far as possible, are compatible with their own educational policy priorities. As will be clear in themes 1 and 2, this exercise in compromise has left its mark on the view of ESD present in the Danish ESD strategy.

- As a supplementary explanation to the last point, the Danish ESD strategy can be considered as representing a vagueness, or perhaps rather a political game regarding what is the responsibility of the government and what is the responsibility of the NGOs, the educational sector and other stakeholders. As was evident in the account of the compilation of the strategy, precisely the question of areas of responsibility has been a bone of contention. The NGOs have applied pressure to force the government to play the leading role in relation to coordinating and providing support while officials from the Ministry of Education for their part have maintained that separate funding would not provided; the various stakeholders from the field of education were instead expected to get to work within their existing budgets. Under pressure when this did not happen, the government elected to adopt a slightly more pro-active approach in the immediate run-up to the publishing of the national ESD strategy. Although this 'bargaining process' has taken time, it not only suggests that clarifying this role distribution marks an important part of the process of implementing ESD, but also that pressure from international agreements has been a key factor in this case.

Theme 1 ESD – overall conception

The concept of ESD can be approached from two different angles focusing either on the understanding of *Education* or of *Sustainable Development*. As theme two looks at how SD is interpreted within ESD and considers the role of the educational sector in relation to SD, we will in the following concentrate on examining the educational philosophy which characterises, respectively, political documents and research within the field of ESD in Denmark.

Policy documents

The educational approach to ESD

The Danish strategy for the Decade for ESD from March 2009 comprises the most important policy document. Focusing on what it can tell us about the educational philosophy, it is striking that this strategy does not include a definition, only of SD. The first section of the strategy is essentially about SD as a field of interest while the section on initiatives and actions is primarily concerned with organisational proposals regarding ESD. However, it should be noted that the tradition in Denmark is that the government only outlines overall objectives and guidelines for teaching while the teachers themselves are responsible for the pedagogical approach.

Although the strategy lacks an explicit presentation of an educational philosophy, it does include a number of implicit assumptions which give an indication of its philosophy.

In the section outlining the messages which comprise the strategy's points of departure, it is stressed that:

- ”*Personal responsibility* and engagement are important for guiding *own actions and behaviour.*
- *Democratic decisions* should be made on the basis of *sound scientific knowledge*” (p. 13, our italics).

So the approach here has the goal of upgrading pupils' qualifications with scientific knowledge. This should enable the development of, on one hand, democratic decisions, and on the other hand, a personal set of ethics concerning one's own actions and more routine behaviour.

This is in line with sections on education found in previous Danish strategy papers concerning SD. In the national strategy for SD from 2002, it is stated:

> ”The key concepts in a forward-looking information and teaching strategy on sustainable development are knowledge and responsibility” (p. 74)

The ethical dimension is also present in that schools and youth education programmes are ascribed a special role ”as the institutions that help shape the fundamental values of children and young people” (ibid)

In the draft for a new SD strategy from 2007, the importance of knowledge and personal responsibility are underlined again as:

> "greater emphasis will now be placed on the link between knowledge, opinions and behaviour and on the impact our everyday actions can have in relation to sustainable development at a local, national and global level" (p. 39, our translation).

While the basic philosophy contained in these documents is consistent, other perspectives can be found in UNECE's strategic guidelines for DESD in Europe which the Danish government signed. Here, the development of democratic competencies forms an important element of the principles outlined for ESD:

> "Learners at all levels should be encouraged to use systemic, critical and creative thinking and reflection in both local and global contexts; these are prerequisites for action for sustainable development" (UNECE, 2005, p. 4).

Furthermore, in the same document, knowledge is treated as more than just scientific knowledge:

> "Formal ESD should be permeated by experience of life and work beyond the classroom. Educators involved in ESD play an important role in facilitating this process and in encouraging dialogue among pupils and students and the authorities and civil society." (ibid p. 5)

This perspective involves a participatory approach to ESD. This is explicitly stated in the following:

> "ESD involves initiatives for developing a culture of mutual respect in communication and decision-making, shifting the focus away from solely transmitting information towards facilitating participatory learning" (ibid)

It is noteworthy that these pedagogical perspectives are not included in the Danish strategy documents: partly because they are explicitly present in the document which the strategy is directly related to, partly because the same view of education can be found in the national school curricula. Here it is stated among other things that teaching should lead to:

> "...pupils developing competencies, critical faculty, and personally acquired core values which enable them to participate in the development of society in a qualified and engaged manner" (Lysgaard 2009, p. 20, own translation);
> ...pupils having acquired sufficient knowledge and skills to be capable of discussing different interpretations of values in relation to production, revenue and consumption" (ibid. p. 6);
> "... [pupils] using language as a means of resolving conflicts" (ibid. p. 8);
> "...the pupil developing the prerequisites for an active and equal participation in school, education and society" (ibid. p. 8);
> "... [pupils being able to] illustrate a subject from different perspectives, e.g. in conjunction with presentations and debates" (ibid. p. 9);
> "Through aesthetic, practical, experimental and theoretical assignments, the pupils should have the opportunity to develop self-esteem, imagination, *joie de vivre* and

knowledge, so that they, both together with others and individually, want to and are able to make critical assessments and act privately and within society" (ibid. p. 14)[5].

These pedagogical intentions correlate well with both the Danish educational tradition and research within Environmental Education (see accounts in the introductory chapter).

The deviation from the focus on participatory learning and action, and thereby on the goal of a democratic competence development, found in the UNECE strategy document may perhaps be explained by reluctance from the government to see a potentially critical politicisation of ESD. On the other hand, citizenship education has become more prominent under the same government. This is described in a publication from the Ministry of Education:

> "Primary and Lower Secondary Schools and General and Vocational Upper Secondary Education shall contribute to inspire the students to seek knowledge and influence on the society, and teach the students to commit themselves and participate actively. It is important that the students learn where to gather information about social matters. Furthermore the student shall learn to listen, be curious, take a critical position, and express their own opinion" (Learning Democracy, UVM 2008, p. 13).

As is apparent, these formulations are in accordance with the passages cited from the UNECE strategy. The absence of similar phrasing in the Danish ESD strategy and the focus upon scientific knowledge and individual responsibility is therefore more likely due to a general prioritisation within, respectively, the government's educational policy and its policy regarding sustainable development, which have governed the perspective on ESD in the strategy.

The conception of challenges and the relationship between rhetoric and action

As detailed in the previous section, the strategic documents describe the educational challenge as strengthening relevant scientific knowledge and the link between this knowledge and everyday attitudes and behaviour.

In the introduction to the section on initiatives and actions in the Danish ESD strategy, the challenge is described as follows:

> "In Denmark, work has been carried out for a number of years within the areas mentioned in UNECE's strategy and in regard to UNESCO's interpretation of the concept of education for sustainable development. But there continues to be a need for devoting effort to ensuring that pupils and students acquire broad and in-depth knowledge of science-related issues and the link between these and society's economic, environmental, social and cultural conditions" (UVM 2009, p. 14).

The opinion would therefore seem to be that the challenge is not so great, as work has already been done for a number of years, but there will continue to be a focus on ensuring that the intentions are realised. At the same time, it is striking that the strategy in reality only contains concrete initiatives which support learning within the natural sciences whilst the desire to promote understanding of the

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[5] We return to the school curricula under theme 4.

aspects concerning society outside of a natural science framework does not result in similar initiatives. This will be documented in the section on priorities under theme 2.

Research

ESD research in Denmark

In the process of conducting this examination of the development of ESD and CCE in Denmark, we have contacted researchers, employees at university colleges, teachers, associations, NGOs, government officials and others, who we knew were engaged in work with ESD. We asked them to aid us in identifying and locating research on ESD other than the research we conduct at DPU. Based on the responses we received, we found that there exist a number of development projects within the field, but that there apparently has not been conducted research on ESD in Denmark other than at DPU. [6]

As seen in the introductory chapter on the background for ESD in Denmark, research on ESD has developed from research on Environmental Education (EE) and Health Education (HE). This link might suggest an approach to Danish ESD research characterised by a natural science perspective; however, the EE research conducted at DPU is notable for its foundation on a concept of environment clearly distinguished from a pure concept of nature, as environment is viewed here as nature seen through human interests, and environmental issues are interpreted as conflicts of interest within society regarding the use of natural resources (Schnack 1995 and 1998). This makes the Danish EE research highly relevant in relation to ESD in that the concept of SD similarly shifts the focus from natural ecology to how society deals with this in relation to the overall societal development.

In addition, this research is characterised by its development, at an early stage of the international development of theory within the field of EE, of an educational philosophy based approach to teaching about the environment. This as a counterbalance to approaches which derive their pedagogy from environmental and nature issues and generally base themselves on various forms of behavioural sciences. Whereas the latter typically can be characterised as prescriptive in the sense that its educational project is to teach children and young people to change their behaviour in accordance with a predetermined standard for environmentally correct behaviour, the Danish EE research draws instead on an empowerment tradition within pedagogic theory. Rather than a 'conditioned socialisation' which reduces humans to objects for political processes they do not recognise as political, an 'educational socialisation' is set with the aim of emancipating humans to be political subjects (Schnack 2003).

The central concept in the Danish researchers' idea of an alternative to the prescriptive approach is 'action competence'. The use of 'action' stresses a difference form 'behaviour' in that action is seen as conscious and intentional and, by adding 'competence', these intentional actions are related to: "… being able – and willing – to be a qualified participant" (Jensen and Schnack 1994 p. 7 and 1997). As such, according to this approach there are no neatly packaged solutions to environmental issues; it is instead a democratic duty to develop, select, and implement solutions, meaning that children and young people must be supported in developing action competence so they can

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[6] This informal survey uncovered a few evaluations of projects within ESD and CCE, but as these were not carried out with a research objective, we have chosen not to include them here.

participate in these processes. With sources of inspiration including both Dewey and Critical Theory, the concept of 'experience' is incorporated in a central role as experience here does not only refer to a concrete trial and error process, but also to the collective, critical reflection through which pupils learn by analysing underlying structures and other relevant matters for understanding the environmental issue in question.

Within this action competence approach, Danish EE research has collected empirically based knowledge through development projects (Breiting et al. 1999, 2009), sought clarification of the educational philosophical foundation (Schnack 2003), been occupied with adding greater nuance to the elements of the concept itself (Mogensen 1995), and worked on developing the central auxiliary concepts such as participation (Simovska 2005; Reid, Jensen et al. 2008) and mental ownership (Breiting 2008). As EE, within this approach, is not regarded as fundamentally different from ESD, it has been possible for research to gradually drift towards a focus on ESD. This development, however, involves new challenges which have also been the subject of theoretical reflection. This reflection has concerned, among other things, the historical link between the concept of emancipation and protecting one's own interests in relation to SD's radicalisation of the regard for the common good (Læssøe 2008). Similarly, it has considered that education can no more be separated from societal conditions than environment can, meaning that e.g. the concept of participation in ESD must be analysed and addressed on the basis of a historical-contextual understanding (Læssøe 2007).

Separate from the action competence approach, the Danish philosopher Peter Kemp argues in the book "The World Citizen" (2005) against both modern, individualist conceptions of emancipation as self-fulfilment and the transfer of responsibility to the state. With inspiration from Gadamer and Ricoeur, *mimesis* is used as the key concept in the education of a world citizen:

> "… who neither cultivates his or her individuality at the expense of a sense of community with society and the global world or the state at the expense of the individual's capacity for interpretation and personal development" (Kemp 2005 p. 275, own translation).

Mimetic learning in this sense involves a relationship between teacher and pupil whereby everyday acts (préfiguration), are interpreted in the form of a narrative (configuration) which, in turn, affects everyday acts (refiguration) (ibid. p. 205f).

Research and the development of ESD in Denmark

When it comes to school and youth education programmes, Danish research on ESD has not previously studied how ESD is approached and implemented in policy or the effect of policy initiatives regarding ESD on educational practice in schools.[7]

As outlined in the introductory chapter on the development of EE in Denmark, research at the time played a part by its inclusion in evaluations and development projects the results of which were also used as input to the sphere of politics from research. This relationship has been re-established in

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[7] Within non-formal youth and adult education on sustainable development there exist both evaluations and analyses illustrating this problem (Læssøe & Jamison 1990; Larsen & Læssøe 1991; Læssøe 1995; Læssøe 2001; Læssøe 2007). However, as there are substantial differences between the formal education system and the field of non-formal education, these are not detailed here.

conjunction with the development of ESD, albeit on a much smaller scale so far, with the Ministry of Education granting funding in 2007 for a collaboration between researchers and four schools on a development project within the field of ESD. At the same time, research was provided with a much more direct opportunity to affect the development of ESD in Denmark as the Ministry entered into a contract with the ESD research team at DPU regarding the compilation of a draft for a national strategy for the DESD. As will be apparent in theme 2, in the end this draft only had very limited influence on the final strategy.

Theme 2: The role of education in relation to the challenges of sustainable development and climate change respectively

Policy Documents and initiatives on ESD

Broad and complex signals regarding Education's role in SD:

Based on the paragraphs on ESD in the Danish national strategy for SD from 2002, the current government's draft strategy for SD from 2007, and its strategy for the Decade for ESD from 2009, the official view of the role of education with regard to SD may be described as wide-ranging and open. As will be evident from the more detailed analysis, however, the DESD strategy contains certain priorities and initiatives which involve a somewhat narrower understanding of this role.

In the Danish ESD strategy one finds the following section on sustainable development:

> "UNESCO's interpretation of the concept of education for sustainable development indicates that education programmes and learning environments must increase the population's competencies and skills in a way that enables them to make decisions based on knowledge and considerations concerning:
> - the relationship between the needs and interests of present and future generations
> - the relationship between preservation and change
> - the relationship between rich and poor
> - the relationship between local interests and global considerations" (p. 7).

Here, the role of the educational sector is thus emphasised as improving the ability of citizens to make authoritative, considered and knowledge-based decisions. The formulation is tentative. It does not explicitly express the government's view, instead referring to 'UNESCO's interpretation' which furthermore merely 'indicates' the role of ESD.

In one of the strategy's three overall goals, the role of ESD is described more directly as:

> "To strengthen the population's understanding, engagement and knowledge regarding the concept of sustainable development that simultaneously incorporates the interrelationship between economic, social, political and cultural elements, thereby ensuring qualified general debate on the subject" (p. 11).

This passage tells us a number of things:
- Firstly that the task is to qualify the general debate – i.e. a clear citizenship ('bildung') perspective.
- Secondly, the perspective on SD in the previous citation is confirmed, namely that SD has to do with an interaction between a number of societal elements.
- Thirdly that it is not just a matter of increasing knowledge of SD, but also about strengthening engagement.

The importance of qualifying the population's understanding of SD through knowledge was also present in the SD strategy from 2002:

> "The education sector plays an important role, for example through teacher and educator training which should focus on helping children and young people understand the problems associated with sustainable development" (p. 74)

But in the same document, the normative and formative role is accentuated more explicitly than in the term 'engagement' in the citation from the DESD strategy above. It is stated that:

> "The key concepts in a forward-looking information and teaching strategy on sustainable development are knowledge and responsibility. Schools and youth education programmes assume a special role as the institutions that help shape the fundamental values of children and young people" (p. 74).

So far, we therefore have a competence development perspective which is primarily presented as increasing the knowledge base regarding SD, but also involves engagement and a sense of responsibility. Meanwhile, neither knowledge nor responsibility are unambiguous concepts as used in the strategy documents.

In the citation regarding the overall goals of the DESD strategy, responsibility can be said to be linked to the role as citizen; the qualification of the general debate. This perspective is likewise contained in the following passage from the 2002 strategy:

> "Sustainable development should be taught in a context of international cooperation among educational institutions. This would cause children and young people to realise that we have common problems that can best be solved by taking joint international action" (p. 74)

However, in the draft strategy from 2007, ESD is placed within a chapter on the consumer elements of SD. Knowledge is again emphasised, but here, it is linked to our everyday conduct:

> "Within the field of education, work will build on previous efforts concerning the green element in teaching, but greater emphasis will now be placed on the link between knowledge, opinions and behaviour and on the impact our everyday actions can have in relation to sustainable development at a local, national and global level." (p. 38ff)

So, in this case, engagement is not linked with general discussions and international efforts, but to everyday consumer behaviour.

When it comes to knowledge, the previous citations considered SD as a societal problem. Elsewhere, the importance of knowledge about nature is stressed:

> "Greater awareness of the natural basis of human existence combined with profound knowledge of the interplay between the environment and economic and social issues will be reflected in the attitudes and sense of responsibility of future generations" (2002 p. 74).

> "But there continues to be a need for devoting effort to ensuring that pupils and students acquire a broad and in-depth knowledge of science-related issues and the link

between these and society's economic, environmental, social and cultural conditions" (DESD strategy 2009 p. 13)

Sustainable development is frequently described as a hazy and complex concept. As has been apparent, the same applies to the Danish government's documents on the role of education in SD. They are about competence development, which includes both a knowledge base and engagement and responsibility. This responsibility is related to both the role of citizen and the role of consumer and their connection to international efforts and individual behaviour respectively. Meanwhile, the knowledge perspective has to do with both social and natural science knowledge. The descriptions hereby contain considerable room for interpretation which would seem to suggest that the educational sector itself can construe and shape ESD as they see fit.

Priorities

There are, however, two parts of the DESD strategy which in fact involve a more specific interpretation of SD and the role of the educational sector. Firstly, a section which directly specifies the government's priorities and secondly, the part of the strategy describing the initiatives which are to be set in motion.

The section specifying the priorities immediately follows the overall goals of the strategy. Here it is stated that:

"A number of current Danish initiatives within the education field already support the Strategy for Education for Sustainable Development.

These include, in particular:

- *The report "Et fælles løft" (A General Boost), which focuses on strengthening science, technology and health education.*
- *Teaching Climate Issues 2009[8]*
- *Virtual Galathea 3[9]*

This linkage between the ongoing Danish initiatives must be seen particularly in light of the Ministry of Education's ambition that scientific knowledge is afforded a more prominent place as part of general education.

A solid grounding in natural science is a prerequisite for the quality of the democratic decision-making process in a society characterised by high-technology and great challenges in, for example, the fields of health care and climate change.

The strategy takes a point of departure in the following messages:

- Personal responsibility and engagement are important for guiding own actions and behaviour.

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[8] Teaching Climate Issues 2009 (Klimaundervisning 2009) is a government funded project which, as will be evident later, includes other intentions beyond the promotion of the natural sciences, but is nevertheless located within Danish Science Communication (Dansk Naturvidenskabsformidling).
[9] Virtual Galathea is a scientific expedition vessel which has studied, among other things, environmental and climate matters and provided virtual communication to schools and the general public.

- Democratic decisions should be made on the basis of sound scientific knowledge.
- The desired economic growth should ideally not damage the opportunities for growth of future generations or other continents" (DESD strategy 2009, p. 11ff).

As is apparent, in this section it is made clear that the government prioritises a promotion of knowledge of the natural sciences, increasing the responsibility related to individual behaviour, and a reading of the 'development' concept within SD as synonymous with economic growth. This is entirely in accordance with the prioritisation of subject knowledge and natural sciences within general Danish educational policy and with the 'ecologically modern' strategy of environmental and climate policy.[10]

The section 'Strategic efforts' supports the prioritisation of the natural sciences in education's contribution to SD. As such, the concrete initiatives involve:
- Closer cooperation between schools and nature schools regarding education programmes and teaching materials
- The establishment of a National Centre for Science, Technology and Health Education (Budget 2009-2012: DKK 65 million or approx. € 9 million)
- The Academy for Talented Youth (ATU) which offers upper secondary school students the opportunity to pursue 2½ years of intellectual challenges alongside their normal studies
- The establishment of a National Science Centre for talent development and nurturing for all in the education sector (ibid. p. 16).

The other initiatives mentioned here are characterised by not being expressed in such direct terms, but as statements of intent or as initiatives which the government are not responsible for. Among the statements of intent are e.g.:

"As part of the preparations for the Climate Change Conference in 2009, work is to be carried out in the formal and informal learning environments, strategically and substantively, with projects relating to climate change and sustainable development";

"During the UN Decade of Education for Sustainable Development, action is to be taken to focus and differentiate in relation to other problems than climate change, as well as other age groups than children and young people – e.g. as part of the concept of lifelong learning" (ibid. p. 16).

Examples of phrasings of strategic efforts not originating form the government and implemented by other stakeholders such as NGOs or local councils are:

"A series of climate change summits targeted at young people are to be planned";

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[10] That is to say, a strategy which regards an environmentally-friendly growth in terms of production and consumption as the path to sustainability (Hajer 1995; Dryzek 1997; Holm, Petersen et al. 2007)

"Popular participation in aspects of sustainable development can be strengthened through interest groups and the liberal education organizations actively incorporating the concept in their activities. Democratic processes should have a prominent place" (ibid. p. 16-17).

A process with the potential for other approaches

Whilst the strategy is broad, open and in accordance with UNECE's guidelines, as described, national efforts focus on enhancing children and young people's knowledge of the natural sciences. However, this is a snapshot based solely on the DESD strategy paper. In conjunction with the publication of the strategy, the Ministry of Education presented a number of documents describing the flagship initiatives. In addition to those mentioned above aimed at promoting the natural sciences, they also detail government-supported initiatives which could potentially strengthen other forms of ESD and thereby other roles for the educational sector in relation to SD. In the following, we will highlight two such initiatives:

The project 'Teaching Climate Issues 2009' is to provide an overview of what is available concerning climate education as well as creating networks among involved teachers and the organisations, museums, publishers etc. who develop teaching materials to be used in climate education. This is carried out in collaboration between the Ministry of Education and Danish Science Communication (DNF) which might indicate that the focus will again be on the natural sciences. On the other hand, it is specified that the initiatives that form part of Teaching Climate Issues 2009 will take five central perspectives as their point of departure, namely a knowledge perspective, an action and behaviour perspective, a technology and society perspective, a future perspective, and a societal perspective (document from the Ministry of Education). We will take a closer look at this project in theme 3.

Another flagship project is comprised by the development of the concept of Eco-Schools (in Danish literally 'Green Flag - Green Schools'). The concept originated in 1994 and offers schools the opportunity to be certified as 'Eco-Schools' if they have implemented one or more environmental themes. Right from the start, there has been discussion centred on the extent to which objective environmental results (e.g. a 10% reduction in water or energy consumption) or harder to measure learning outcomes should comprise the criteria for awarding Eco-School status. This discussion contains ideological as well as methodological questions.

In 2007, 230 schools had achieved Eco-School status (the Danish Outdoor Council 2008). It thereby represents by far the largest current project within the field of environmental education in Denmark. Furthermore, the number of Eco-Schools comprises the only indicator concerning ESD in the Danish Ministry of the Environment's evaluations of the national strategy for SD. As part of the DESD, it is now the Ministry of Education's ambition to increase the number of Eco-Schools to 500 at the same time as updating the concept to be more in line with the ideas of sustainable development. As such, this is another example of an initiative with the potential for a development of ideas and theory concerning the form and content of ESD.

With the publication of the Danish ESD strategy and the initiatives taken or supported by the Ministry of Education, along with a general increase in the level of activity regarding climate change issues in the lead up to the December 2009's COP15 summit in Copenhagen, the situation in Denmark concerning ESD and the role of the educational sector in SD is not fixed or clearly-defined, but an ongoing process.

Policy regarding the role of education in relation to climate change

In a historical perspective, the greenhouse effect and climate changes (e.g. desertification) have been themes which have been part of previous campaigns for environmental education in Denmark and, as has been evident, the problem of climate change is explicitly incorporated in the DESD strategy. There are no separate policy documents detailing the role of the educational sector or outlining pedagogic guidelines for teaching within the area of climate changes. On April 30[th,] the government published a climate policy report, but education and the school sector are only dealt with here with a brief mention in relation to a broad statement regarding an ongoing involvement of the populace with the aid of information and campaigns.

If one studies the efforts of Danish climate policy regarding climate adaptation and mitigation up to the present day, one finds that they are characterised by endeavours to solve the problem with help from scientific research and technological development. The research funds earmarked for the climate area therefore do not offer an opportunity to support research on socio-cultural matters or on education in relation to climate change. This prioritisation is in line with the focus on promoting scientific knowledge found in the DESD strategy. Similarly, the strategy's emphasis on the responsibility of the individual citizen corresponds with the (so far) only significant government initiative within the area of non-formal CCE, namely the '1 Tonne Less' campaign which seeks to offer inspiration and advice to the public in order to save one tonne of $CO2$/year (Rubik, Scholl et al. 2009).

The increasing awareness of climate changes as an extensive and urgent risk to society has thereby so far accentuated political efforts aimed at promoting natural sciences, technology and individual behaviour reducing $CO2$ emissions. If this were to be transferred to school CCE, it would be in accordance with the government's priorities in the DESD strategy, but in conflict with the pedagogical approach found in many of the school curriculum's stated objectives which are primarily concerned with developing pupils' competencies as citizens in a society.[11] As is the case for ESD in general, however, CCE is also in the midst of a process which can include other qualities. For example, initiatives that form part of the Climate Education 2009 project can enhance other elements than scientific knowledge and advice for environmentally-friendly consumer behaviour, just as Danish schools have the opportunity of working with societal issues in conjunction with Science lessons.

Research:

As described in the introductory historical account, the research work with ESD in Denmark has its origins in research into environmental education (EE) which has largely been concentrated within one institution, The Royal Danish School of Educational Studies (Danmarks Lærerhøjskole), which later became the Danish School of Education (DPU). As the research conducted here has been the source of an alternative to an EE approach limiting the field to the natural sciences and with modification of individual behaviour as its objective, this research also involves an understanding of the educational sector's role in relation to SD different from that found in the government's DESD strategy. When ESD is understood as a matter of promoting democratic action competence in

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[11] Elaborated in theme 4.

pupils, the role of education - instead of getting pupils to adapt their behaviour in a pre-defined manner in order to solve society's problems with sustainable development - becomes a matter of equipping them as citizens to critically appraise proposed solutions and themselves participate in reflecting upon and developing possible solutions in a democratic manner (Schnack 2008).

Researcher participation in ESD policy development

Although the researchers thereby in some ways are in direct opposition to the government's view of the educational sector's role in ESD, this does not mean there is no dialogue between researchers and government officials. As described in the historical account, researchers from DPU received funding from the Ministry of Education in 2007 to produce a draft for the national strategy for the Decade. The difference in the views of researchers with a pedagogic perspective and politicians and government officials with a political perspective regarding the educational sector's role in ESD had the unsurprising result that the draft strategy compiled by the researchers was subjected to a fairly thorough revision prior to adoption. The invitation to compile a draft strategy did, however, have a separate consequence – the DPU research group had the opportunity to work on the relationship between EE and ESD. Operating with an understanding of environment as being about conflicts of interest within society and emphasising pupils' status as actors who need to develop competencies in order to understand and solve the problems as societal issues, the step from EE to ESD was not far. On the other hand, the question remains if it does not make a difference that the subject matter is sustainable development rather than the environment; and how to avoid SD and ESD becoming meaningless concepts by taking every aspect into account and affording them equal value. As an answer to these questions, the researchers suggested that ESD be defined as centred around four interrelated issues, namely the four relationships mentioned in the strategy and included in the first citation at the beginning of this theme.

Researcher participation in CCE

Researchers and policymakers are likewise engaged in dialogue regarding CCE. As such, the Danish Centre for Ethics and Law in Nature and Society (Center for Etik og Ret i Natur og Samfund) received funding in 2008 from the Climate and Energy Ministry to compile a report on 'Barriers to Climate Awareness' containing recommendations for how to tackle them pedagogically. In 2009, the Climate and Energy Ministry has also appointed a member of DPU's ESD research group as chairman of a panel assigned the task of proposing new ways of increasing public participation.

When it comes to cooperation concerning the development of practice the Ministry of Education tends to work with larger NGOs on development projects,, for example about the Eco-Schools project. Bucking the trend, however, it should be mentioned that the ESD group at DPU received funds from the Ministry in 2007 to conduct a small development project at four schools.

Reflections

As stressed previously, it is important to be aware that, in Denmark, there is traditionally very little top-down political control of teaching: to the extent that teachers receive more precise directives, these stem largely from the municipal level. Schoolteachers therefore have considerable freedom to decide the content and form of their lessons. This also means that ESD and CCE can be found within classrooms where the scope and depth of what is included, as well as the approach taken to the subjects, are independent of the policy process and its priorities. As resources have not been provided for research evaluating or in some other way investigating the various teaching approaches to ESD and CCE and their spread in practice, we currently know little about what actually takes place in the classroom.

Theme 3: Education for Sustainable Development and Climate Change Education (ESD and CCE)

Relationships between Education for Sustainable Development and Climate Change Education

CCE was explicitly incorporated within ESD in Denmark as an area deserving particular attention at a relatively late stage, i.e. mid-2007. Nevertheless, as we have already seen, the issue of climate change plays a large part in the recently published DESD strategy and is the focus of many of the initiatives being promoted in conjunction with its launch. This enables the government's strategy for ESD to be strongly tied to the upcoming climate summit in Copenhagen, taking advantage of the increased public attention to climate issues resulting from such an event taking place on domestic soil.

However, with CCE still an emerging field, its exact relationship to ESD is still a matter for debate – attempting to map possible overlaps and distinctions as well as suggesting future paths for CCE are among the goals in conducting this international project. The problem of defining the exact role of CCE in relation to ESD is reflected in the Danish strategy, where it is stated in the section on 'strategic efforts' that:

> "During the UN Decade of Education for Sustainable Development, action is to be taken to focus and differentiate in relation to other problems than climate change" (DESD strategy 2009, p. 15).

However, precisely which problems or what action there is talk of here is not specified. In a press release by the Ministry of Education in conjunction with the launch of the Danish DESD strategy, it is pointed out that ESD in Denmark has focused a number of issues during recent years, including citizenship and equal opportunities. This year, it is stated, it is the turn of climate change (UVM Press Release 2009). One might ask whether dividing ESD into focus areas in this way does not partly defeat the object of operating with the more holistic approach - accounting for the complexity and interconnectedness of the issues at stake - that a concept of sustainable development would seem to entail. Furthermore, concentrating to such an extent on one particular element, highlighted as a focal point for the 2008/09 school year, seems somewhat at odds with the launch of what is intended to comprise the Danish ESD strategy over the next five years.

Despite this criticism, the various initiatives centred around the issue of climate change often implicitly support other principles of ESD. For example, the government is supporting a number of meetings and summits regarding climate change for children and young people from across the globe. These meetings are to result in a number of recommendations which are to be presented to policymakers at COP15. As such, this initiative can be said to foster a participatory and democratic approach and incorporate a global citizenship perspective. Of course, such initiatives are supported by the Ministry of Education but compiled and formulated outside the Ministry's realm which may explain the apparent difference in emphasis and approach compared with the government produced DESD strategy.

Likewise the launch of the Teacherscop15 international teachers' website on climate change in the classroom, which forms part of the Ministry of Education's project Teaching Climate Issues 2009 (Klimaundervisning 2009) and also seems to promote a participatory, democratic and global approach to CCE. The site is in English and presents a global audience with ideas offering inspiration for climate teaching and examples of teaching programmes dealing with climate-related issues. It is particularly interesting that the site professes to present a Danish perspective on learning, thereby equating this with a particular set of values:

> "These programmes are focusing on pupil participation and on learning as part of a democratic process, and school classes are encouraged to cooperate across frontiers" (http://www.teacherscop15.dk/).

One of the key initiatives highlighted by the Ministry of Education as part of its activities aimed at promoting climate teaching in education in the build up to COP15 is the conference 'Inspiring Climate Education (ICE2009) – international teachers' conference on teaching current climate change in secondary education' to be held in Copenhagen in October. This is described in the promotional material as the first international conference on climate change education and is sponsored by the Ministry and organised by Danish Science Communication.

In the introductory passage of the first material produced announcing the conference, the role of education in relation to climate change is outlined:

> "Children and youth are the coming generations that will live with climate change. It is of outmost [sic] importance that they understand the impact that climate change will have on their everyday life and that they learn how they can take action both inside and outside of the classroom in order to change or find solutions to the development" (ICE09 First Announcement).

This would seem to emphasise the 'action competence' approach which, as previously detailed, has played an important role in the development of first EE and later ESD, but is largely missing from the Danish DESD strategy. The description continues:

> "Incorporating the many scientific, political, economical and behavioural dimensions of climate change into the curriculum and teaching practice of secondary education plays a major role in this aspect. We need to understand and expose the hidden potential in establishing cooperation between educational institutions and private companies and we need to realize that teaching climate change is not confined to science class, but can also take place in a humanities class" (ibid).

As such, this would also seem to represent a break with the dominant focus on science education found in the strategy with interdisciplinary approaches to CCE highlighted as one of the themes of the conference and would seem to allow CCE to be incorporated within the approach to ESD found in e.g. the UNECE strategy with relative ease.

The project Teaching Climate Issues 2009, which is an umbrella project covering many of the Ministry of Education's smaller initiatives within the area of CCE, is also described in fairly broad terms compatible with such an approach to ESD. Five key perspectives are outlined:

- "Knowledge perspective - what do we know about Earth's climate and factors that affect it?
- Action and behavioural perspective - what can be done to limit global warming?
- Technology and community perspective - which technologies / production forms in existence could help limit the greenhouse effect? What are the socio-economic conditions for the spread of these technologies / production forms?
- Future Perspective – future sustainable technologies, practices and dissemination
- Socio-economic perspective - issues connected to climate change, including a) how will climate change and efforts to improve the climate influence economic growth? b) security aspects of climate and energy policy" (http://en.cop15.dk/about+cop15/information+for/the+press/show+article?articleid=321) .

As the various examples above have shown, the boundaries and relationships between CCE and ESD in Denmark remain blurred. It is, at this stage, too early to determine with any degree of certainty whether CCE will be incorporated as one element of the broader field of ESD, assuming the dominant values and approaches as is the case in a number of the initiatives outlined here; whether CCE will, so to speak, 'colonise' ESD transforming sustainable development into a question of adapting to climate change through behavioural change on the background of 'technical' knowledge to the detriment of a more multi-faceted and participatory approach, as one might interpret certain aspects of the DESD strategy; or indeed whether CCE over time will become established as an independent, although related, field to ESD.

In Denmark, this process is likely to be influenced not only by the Ministry of Education and other key stakeholders within the field of education. As was seen in theme 1 with the congruence between the concept of ESD within the Danish strategy and national SD policy, the Ministry of Climate and Energy is likely to play a part, directly or indirectly, in the development of a concept of CCE.

The recently published 'Climate Policy Report 2009' is the newest expression of Danish climate policy and here, education is conspicuous by its absence. Instead of through education, the policy seeks to adapt behaviour through information campaigns and by providing incentives, for example through higher taxation of energy consumption (Klimapolitisk redegørelse 2009 p. 10).

The report recognises the importance of actively engaging the general public:

> "… the readjustment of Danish society necessary to ensure a reduction [in the emission of greenhouse gases] can only be achieved if businesses, consumers and municipalities play an active role. New initiatives only have a discernible effect if Danes actively utilise them as an opportunity to change their habits" (ibid. p. 12, own translation).

However, the methods for ensuring such an active populace are marked by a view of the general public as predominantly consumers, not citizens:

> "Therefore the task is to ensure well-functioning framework conditions and incentives which make sure that citizens, municipalities and businesses can actively assume joint responsibility" (ibid. p. 12-13, own translation).

The lack of a clear citizenship perspective is likewise clear when describing how Danes very much want to share the responsibility for solving climate issues "… both as consumers, as employees and as business owners" (ibid. p. 13, own translation). No reference is made to any feelings of civic duty, as members of a society committed to the common good, let alone as global citizens.

As mentioned, information campaigns are also regarded as an important tool as they can increase public awareness of the various possibilities available. One example given is the previously described '1 Tonne Less' campaign. These campaigns are described in terms of providing knowledge and advice to citizens and are thereby difficult to reconcile with the definition of ESD found in e.g. the UNECE strategy. Another initiative aimed at involving the general public – and the only place in the report mentioning schools, albeit briefly – is a soon to be launched internet guide to the climate and energy field. This is described as.

> "… a virtual cityscape which citizens, school pupils and businesses can move around in and obtain good, accessible information" (ibid. p. 14, own translation).

Despite depicting the website in terms of a virtual community, the objective seems to be the provision of information rather than any form of active involvement of citizens. Indeed, the possibility for citizens to play a more active role is only mentioned once, and then in terms of an added bonus resulting as a by-product from the other initiatives; namely that they can supply suggestions for initiatives that can contribute to national initiatives to reduce energy consumption or fuel emissions. The report does not however provide any further detail of, for example, initiatives for organising or promoting dialogue with citizens.

In determining the future directions of CCE, there would therefore already seem to exist a clear demarcation between the participatory and action-oriented approach common within concepts of ESD and an approach promoting individual responsibility and the dissemination of information and (scientific) knowledge found in much of the existing policy regarding climate change. As seen in the Danish DESD strategy, the current focus on climate change issues means that this battleground is likely to spill over and impact upon the broader field of ESD.

Theme 4 ESD & the curriculum

Including evaluation, assessment, success-criteria, and the question of the relationships between ESD and the (academic) disciplines.

Policy Documents

In the Danish DESD strategy, curricular matters are, naturally, mentioned several times given that curriculum is perceived as goal-descriptive, as a provider of inspiration for development and as an instrument for regulating practice, particularly in the formal education system.

The highest curricular level can be found in the strategy's statements regarding targets or, as it is put somewhat more resolutely: 'The strategy shall ensure that…' This can be regarded as the formulation of an overall objective, worded in the Minister of Education's foreword to the strategy as follows:

> "The strategy shall ensure that children, young people and adults become aware of the concept of sustainable development and learn how to act competently through knowledge and skills" (UVM 2009 p. 3).

The strategy paper itself formulates the overall objectives in a little more detail with three points:

> " The overall goal of the strategy is:
>
> - *To ensure that knowledge for education for sustainable development is disseminated and utilized in practice at all educational levels in the formal education system, and also to engage in special efforts vis à vis the non-formal learning environments and also – where possible – the informal environments.*
> - *To strengthen the population's understanding, engagement and knowledge regarding the concept of sustainable development that simultaneously incorporates the interrelationship between economic, social, political and cultural elements, thereby ensuring qualified general debate on the subject.*
> - *To coordinate a series of Danish educational initiatives that ensures cohesion and synergy in relation to both time and content.*" (UVM 2009 p. 11)

Although these points are referred to as the overall goal, they should presumably be understood as subordinate to the previous citation. This is likely especially true of points one and three as point two is closer to the original objective. The most notable difference is the replacement of 'acting competently' with an ambition of 'ensuring qualified general debate on the subject'. Here, the action perspective therefore involves reflection and discussion actions.

It is worth noting that both environmental (in a narrow sense) and nature-related issues are conspicuous by there absence from the four elements mentioned (economic, social, political and

cultural). This is in stark contrast to the dominance of the natural sciences in the initiatives outlined elsewhere in the strategy. This can be seen either as an oversight on the part of the authors or as an expression of an understanding of sustainable development as in itself a nature and environment-related concept.

The first step towards this overall objective is the dissemination and application of knowledge regarding ESD at all levels of education. One of the strategies employed to achieve this goal is to influence educational curricula:

> "In connection with coming changes to curricula, etc., sustainable development will be inserted into relevant parts of education-related legislation, ministerial orders and goal descriptions" (UVM 2009 p. 14).

At the same time, it is pointed out that this has already been happening since 2005.

The national curriculum in Denmark is more or less confined to the formulation of overall objectives and a specification of which subjects are to be taught at the various levels of schooling and the central knowledge and skill areas. The objectives for the various subjects are of a relatively general nature with more detailed stipulations of content determined at a local level. The Ministry does, however, distribute suggested guidelines which are traditionally complied with by the individual school. In other words, there are parts of the curriculum on which the Ministry can legislate and other parts where they can only provide guidance and inspiration.

In the DESD strategy, it is not always entirely clear which level is being addressed and at times the phrasing seems somewhat vague, e.g. when it is stated that:

> "In all education programmes, the participants must address the concept of sustainable development from both a scientific as well as societal, humanistic and democratic perspective" (UVM 2009 p. 14);

Or when the Minister writes in his foreword to the strategy:

> "The aim is to introduce sustainable development in all relevant curricula used in basic education, youth education and teacher training in order to establish a link between natural and social sciences and humanities" (UVM 2009 p. 3).

In this case, meanwhile, an example is given which might suggest that it is primarily intended as inspiration to schools and teachers:

> "Different aspects of climate related problems can for instance be introduced in multidisciplinary educational programmes" (ibid.).

In general, it may be established that [T4, P1] the national policy documents on ESD do describe needs for reorientation of the basic school curriculum. It is meanwhile more difficult to ascertain [T4, P2] which key qualities and points regarding the specific substance of ESD one envisages in relation to such a reorientation. This is kept very open (in accordance with Danish curriculum traditions) by merely stating that 'sustainable development' should be 'introduced' or 'inserted into' the curriculum.

On the other hand, it is clear that the strategy, structurally speaking [T4, P3; P5], is focused on significantly strengthening and giving greater priority to the field of natural sciences within the general education system, as well as encouraging 'multidisciplinary educational programmes'. The prioritisation of natural sciences is a government agenda which exists independently of the campaign for ESD, but here, the two are closely linked. Meanwhile, the idea of multidisciplinary education programmes is specified as not only being a matter of cooperation between related subjects, but of establishing 'a link between natural and social sciences and humanities', in line with the ideas put forward by UNESCO and UNECE. Nowhere is it elaborated, however, exactly what is meant by such a 'link', even though it is referred to in singular form as a known quantity. The use of the term 'multidisciplinary' rather than 'interdisciplinary', which is more commonly found in a Danish educational context, constitutes a clear allusion to the government's general agenda of strengthening subject knowledge within the education system. As such, 'link' and 'multidisciplinary' can to some extent be said to be pulling in opposite directions and it can be difficult to determine whether it has a direct impact on the curriculum. Certainly, it is stated in the section on 'Incorporation of the concept of sustainable development in legislation, regulation and curricula' that:

> "In all education programmes, the participants must address the concept of sustainable development from both a scientific as well as societal, humanistic and democratic perspective" (UVM 2009 p. 14).

This is a clear statement regarding the content of education programmes and thereby curriculum, but the significance of its inclusion in a section on legislation, regulations and curricula is unclear.

In a process taking place entirely independently from the DESD strategy, the objectives for the various subjects at primary and lower secondary levels, known as 'Common Objectives', are currently being revised by the Ministry. A review of the previous common objectives reveals that in a number of subjects, particularly, but not exclusively, the natural sciences and, to a lesser extent, the social sciences, there are various elements which can be considered directly or (especially) indirectly relevant to ESD. Reviewing the currently available revisions reveals that the relevance to ESD is slightly stronger in some areas and a little weaker in others, but a general trend is not evident.

In the common objectives and the DESD strategy – as well as 'the folkeskole act'[12] - the tendency is more towards an empowerment and action competence way of thinking than one of behavioural modification [T4, P7]. This is in line with the Danish democratic tradition which understands the role of the school as to educate pupils to become competent participants in democratic processes. In this context, pupils are primarily perceived as (future) citizens, and while they are naturally also both consumers and producers, these roles are not a particular theme [T4, P4].

There are no guidelines for evaluating curriculum development, education programmes or pupils' learning with regard to sustainable development and democratic skills and values [T4, P6; P10]. However, it is stated that:

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[12] The act regulating the overall framework for municipal primary and lower secondary schools ('folkeskoler').

>"The work on developing indicators will take a point of departure in the existing work, but focus will be placed on developing objective, measurable indictors that can show a progression in the education sector's work on promoting sustainable development" (UVM 2009 p. 19).

It is further mentioned that:

>"In evaluating the Danish efforts to promote the UN Decade of Education for Sustainable Development, the Ministry of Education will take a point of departure in the indicators that UNECE has proposed" (UVM 2009 p. 19).

Research

In conjunction with this project, we have conducted a systematic review of the national goals for the various subjects within primary and lower secondary schooling, the so-called 'Common Objectives'. This review shows that objectives or subsidiary objectives are indicated for a number of subjects which can be considered as having at least some relevance to ESD. SD only seldom figures as a topic, and then primarily within the natural science subjects. Climate change is rarely mentioned and, when it is, mostly indirectly.

These common objectives are currently being revised, but, so far, there is little to suggest any significant change in the attention paid to CC and SD.

There are no systematic studies of the Ministry of Education's syllabus guidelines or of the local syllabuses at the individual schools.

As an indication of the Danish tradition of including themes relevant for ESD in the taught curriculum, the results of a survey conducted in 1989 in Danish primary and lower secondary schools can be mentioned. Approximately 1% of Danish school teachers were asked what they 'usually taught in their subject areas related to EE'. A list was offered in the questionnaire and the list in itself is indicatory.
The list included headings such as: 'The consumer society', 'Developed versus developing countries', 'The global military build-up', 'The population explosion', 'Famine', 'Energy and resource shortages', 'The future of mankind', 'Political aspects of environmental problems' alongside more classic themes linked to pollution and ecology. The subject 'Samtidsorientering' (modern studies) was shown to have some of the highest occurrences of the themes that were not closely related to the more traditional themes of pollution and ecology. The theme 'Political aspects of environmental problems' is among the lowest scoring of all the themes, indicating a need for a greater focus on these aspects already at the time of the investigation.

3. Has educational research suggested criteria for evaluation of the outcome of ESD and/or CCE?

Work has yet to be conducted directly concerning criteria for evaluation.

More indirectly, one might draw certain principle consequences from the development of the concept of ESD (see theme 1) regarding relevant criteria for success. The argument has therefore been made by researchers that the criteria for evaluation should be about what the pupils learn from the activities in the lessons rather than what objective improvements can be registered concerning energy consumption, pollution, equality, bullying etc.

Under the auspices of ENSI, a set of criteria for ESD-schools, green schools, eco-schools etc. has been compiled as part of an extensive international collaborative research project. These are however intentionally not presented as criteria for assessing outcomes, but as material for inspiring the reflective processes which teachers must get involved in if they are to aid the transition to e.g. an ESD-school in a qualified manner.

4. Has educational research examined the validity of stated outcomes and assessment strategies?

No

5. Has educational research made a contribution to support curriculum development regarding ESD and CCE?

On a general level, research can be said to have contributed with a number of crucial points related to the action competence perspective, but as of yet, no research is available directly and concretely considering ESD and CCE with a view to supporting curriculum development.

Theme 5

ESD and pedagogical traditions and development tendencies.
ESD and school development; ESD and what happens in the classroom; ESD and teaching methodologies.

According to Policy Documents

Do the documents on ESD signal any demand or recommendations for new pedagogical approaches compared to traditional teaching?

The ESD strategy from the Ministry of Education signals some need for new pedagogical approaches by stating that:

> "The concept of education for sustainable development contains both well-known, new and, in particular, multi-disciplinary aspects" (UVM 2009 p. 16).

It is relevant that it is also stated that ESD includes well-known aspects in the Danish schools as already documented in the introduction to the present report. At the same time it is interesting to note the emphasis on 'multi-disciplinary aspects', for at least two reasons:

Firstly, it involves a concept of ESD that stresses that ESD isn't only for the natural sciences – very much in accordance with the predominant international understanding of ESD.

Secondly, it is interesting that the wording 'multi-disciplinary aspects' is used and not 'cross-curricular aspects' or 'interdisciplinary aspects', terms that have a long tradition in the Danish pedagogical discussion (in Danish 'tværfaglig') linked to teaching through project work that deals with real life issues and which would therefore constitute an obvious form of organisation for ESD teaching in schools. We interpret this choice of wording as a political attempt to underline the importance of learning the basic theoretical knowledge and proficiency skills in the separate subjects rather than in interdisciplinary projects

At the same time, the need for special efforts to develop new pedagogical approaches is signalled by the formulation:

> "A pilot project is to be implemented on teaching methods for incorporating education for sustainable development across the subjects taught in primary and lower secondary school" (UVM 2009 p. 16).

In reality the Ministry has supported a rather small pilot scale teaching experiment in 4 schools during the school year 2007-08 with the involvement of educational researchers. The experience from this development work has been described in a publication (Breiting & Schnack 2009)

highlighting the need for much more focus on and understanding of what ESD could mean in relation to classroom teaching practice.

Are there any general guidelines or recommendations regarding teaching methods in the fields of ESD and CCE?

These aren't that concrete, but in general there is an indication of combining subject matter from several subjects as part of ESD:

> "The concept of education for sustainable development contains both well-known, new and, in particular, multi-disciplinary aspects" (UVM 2009 p. 16).

> "In all education programmes, the participants must address the concept of sustainable development from both a scientific as well as societal, humanistic and democratic perspective" (ibid. p. 14).

And here concerning non-formal education, but signalling the same principles as for the school system:

> "The adult education sector can use the UN Decade of Education for Sustainable Development as a starting point for teaching about the interrelationship between natural science, social science, economic, social and cultural aspects" (ibid. p. 14-15).

According to Research

1. **Has educational research within the field of ESD and CCE contributed to methodological innovation? - Is it possible to say something about how they have influenced practice?**

As mentioned in the introduction, the development of EE in Denmark already began to move in the direction of key elements of ESD at an early stage, the Danish part of the MUVIN project (1991-95) being one of the prime examples (Breiting et al. 1999, 2009). The aim was to enhance the students' action competence related to environmental problems. And the findings of the research indicated the value of students' active investigations of real environmental issues and of their experience by taking action according to their own commitment. In addition, the use of conflicting interests regarding people's use of natural resources helped to underline the societal democratic perspective and thereby to clarify the focus of EE. Its potential for teaching innovation as a coherent framework for lessons within many subjects and for cooperation between teachers was demonstrated. The findings from the MUVIN project have influenced a number of initiatives in Denmark as well as in other countries, e.g. in South Africa, Hungary and Thailand.

Through the hundreds of cases from the MUVIN schools and later work, many interesting practical approaches related to EE have been developed, described and discussed, e.g. how to introduce issue-oriented learning, how to interact with the local community, how to cooperate with other schools about environmental problems, how to include students' action-taking in the teaching-learning process, how to combine concept formation with investigations of real life issues, how to

investigate communities, how to integrate different subjects in project work, how to use creative work as a tool for students' reflections etc. Examples of school work and an introduction to this kind of EE work have been disseminated in the form of a book to all schools in Denmark. In this book, the approach was to make use of a focus on EE as a way to enhance the quality of teaching in general.

A master thesis conducted a follow-up study to emphasise the long term influence on teachers that had been involved in the MUVIN work (Neumann unpublished thesis). It was encouraging to learn that many of the involved teachers continued with their engagement in EE after their MUVIN work had stopped, but the weak point seemed to be passing experiences on to other teachers and other schools not involved in MUVIN.

Parallel to this work under the label of EE, health education (HE) in Denmark has developed along similar lines. Schools involved in projects like the 'Health-Promoting Schools' initiative have had a clear democratic empowerment perspective and the questions listed above also apply to approaches within HE.

The problem for ESD as things presently stand is that, in our experience, the engagement at the schools in EE (and to some degree HE) might have evaporated during the intervening years due to increasing pressure on teachers and schools to perform in other areas. Exceptions exist in a small number of municipalities. Projects and initiatives concerning citizenship education might provide interesting contributions of relevance for ESD, but at present, there is no available overview of Danish experience within this field.

We consider teachers as far better at maintaining and furthering educational innovation than written reports and instructions and therefore fear that much of the shared more or less tacit knowledge and understanding within schools regarding EE methodology of relevance to ESD might have been lost with the retirement of some teachers and the 'loss' of others who now have other duties.

The conclusion is therefore that there exists research in Denmark that has produced substantial findings and methodological approaches of relevance to ESD, but that much of it may bear little resemblance to the practice and competencies of present day teachers.

With regard to climate change education (CCE), it has only been on the agenda as a separate theme since around 2008 and a number of initiatives are still to be evaluated and summarised at present.

Finally, two older studies related to EE should be mentioned. The first one concerned lower and upper secondary school students' attitudes and knowledge about environmental problems (Mogensen & Nielsen 1999). This investigation sought to answer the question: How much influence do students believe they can have in relation to environmental problems? The second study dealt with the importance of school pupils having experience with real actions as a part of EE (Mogensen 2001). The findings underlined several positive effects for the students when they had been able to act to help solve an environmental problem. The findings seem to support the general theory and practice related to the action competence approach to EE.

2. **Has research been conducted within the country's universities which is not linked to national initiatives, but that, nevertheless, could be of pedagogical relevance to the field of ESD and CCE?**

It is possible to categorise a small number of studies that are interesting in relation to the development of ESD in Denmark. They have typically been a part of development programmes:

One kind of study concerns the cooperation between schools and the local community. Of these, the 'QUARK' study is an example of an early study with a special focus on the resource persons in the local councils (See Mogensen & Vognsen 1993). Some of these research questions have later been taken up in relation to the schools' cooperation with external actors and the benefits and pitfalls of such cooperation, exemplified by energy issues (Hoffmann & Carlsson 2003). Later studies have looked at guidelines for school classes visiting organic farms as examples of excursions in EE (Breiting & Ruge 2006).

Another category of studies have built on the cooperation between schools in Denmark or between schools in Denmark and in other countries with a focus on health issues, environmental issues or both, e.g. Simovska & Jensen (2004) and Simovska & Jensen (2008).

Obviously, there is an important overlap with a third category of studies dealing with participation in EE, HE and ESD of which a number of studies are included in Reid, Nikel, Jensen & Simovska (2008). This research highlights an examination of different notions of participation as crucial to the development of ESD.

3. Is there research within the field which could contribute to the project with new and interesting perspective?

From the work with the pilot project for ESD development with 4 schools mentioned above, a number of findings are interesting:

- It takes time for teachers to fully grasp the idea of ESD and to develop an understanding of what the innovative potential of ESD might be at different grade levels. In this process some facilitator role is important.

- For every planned sequence of teaching, the teacher could ask herself: How could this teaching become directed even more toward ESD without losing its stated objectives? – Ingredients in such a quest for concrete ideas could focus on:

- How can students reflect on the effects of current actions on their future grandchildren?

- How can students reflect on the effects of current actions on people living in other parts of the globe?

- How can students generate more engagement in connections between their everyday lives and what they learn in school related to development and sustainable perspectives?

- How can students develop an increased understanding that we create the future everyday and that life is full of choices with complicated consequences for ourselves and many other people in the world?

- How can we involve and get in contact with the local community to enhance the students' learning experience and to get insight into the concerns of and issues facing the general public?

- Teachers need to see the progress of their students to fully accept and value the innovative power of a focus on ESD.

4. Has research been conducted in the field of ESD, CCE and/or related topics that is able to document effects of specific pedagogical approaches on the learning outcome of the students?

See below.

5. Is it possible to draw conclusions from earlier or recent research regarding what works and what doesn't work in the field of ESD and CCE or related areas? If so, what are the applied success criteria, what kind of documentation/evidence supports the conclusions, and what are the main conclusions of general relevance?

What works well can be reflected on the basis of a list produced as part of the MUVIN research with the emphasis on what students value in EE - aspects that have often been confirmed in later experience:

- · Working with real problems that engage people outside the school.
- · Taking part in a learning project that also creates interest among people
- outside the school.
- · Being respected for their work, both by the school and by outsiders.
- · Working in groups, with a free hand to organise their work and have ideas
- for studies, etc.
- · Co-influencing the actual in-class education in terms of target, content, or
- ganisation, and concrete design.
- · Obtaining 'quasi-professionalism' at some of the things they are able to
- accomplish.
- 15. What do students appreciate about environmental education?
- · That people from outside the school have expectations for the work and
- outcome of the class.
- · Having their self-esteem in class boosted.
- · Learning something from education that gives them greater confidence
- in their own power of influence.
- · Working on issues that engage them existentially, and which appear to
- carry weight for their future.
- · Meeting adults outside the school.
- · Experiencing institutions and milieus outside the school.
- · Getting an opportunity to do something towards solving or counteracting
- environmental problems.
- · Doing cross-disciplinary work that implicates methods, approaches,
- perspectives, general knowledge and 'real-life studies' in a productive
- manner.
- · Acquiring new knowledge and insights that strike them as being useful
- and meaningful.
- · Having opportunities for processing their impressions both intellectually
- and emotionally.
- · Getting to meet thought-provoking people and viewpoints.

- • Breiting et al. 1999, 2009, p. 181-2

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