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## Regional planning, sustainability goals and the mitch-match between educational practice and climate, energy and business plans

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### ABSTRACT

While a number of studies have explored campus planning and higher education in the context of regional sustainable initiatives, little emphasis has been put into the analysis of education for sustainability across scale. This article presents an empirical analysis of education for sustainability related to regional planning. The study combines multiscale governance on RSI with a research project of HEI students' opinion on sustainability competences. Drawing upon a sample of 398 respondents the survey is supplemented with a discussion on the nexuses and linkages between business, education, environmental and regional development plans. The results from the survey illustrate that students generally value sustainability competences and that they consider such competences important to possess in order to become attractive in future labour markets. By relating student perception to regional climate and energy planning, the study also highlights a mis-match between policy and (educational) practice. The findings from the survey and the discussion have implications for the traditional lack of coherence between policy areas relevant to sustainable development and stress an urgent need for better coordination between business, education, environmental and regional development plans.

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### 1. Introduction. Climate and energy planning across scale – linking regional sustainability initiatives to higher education

The EU, Governments, regional bodies and local municipalities have long developed climate and renewable energy policies, bio-economy and sustainability plans (E.g. European Commission – 2030 Climate and Energy Goals, COM, 2014; [EU Action Plan for Environmental Technology \(ETAP\)](#), COM, 2007; [Bio-Economic Strategy for Europe](#), COM, 2012; [European Strategic Energy Plan \(SET PLAN\)](#), COM, 2010). These plans are carried through in different spatial contexts and the degree of success is dependent on integration across scale. Though research and innovation is often recognised as a driver for sustainability (the immense public funding allocated to research on climate and energy technology), these policies are most often developed in isolation with respect to education and capacity building ([Lehmann et al., 2009](#); [Peer and Stoegelehne, 2013](#)). Also national strategies e.g. the [Danish Governments Action Plan on Environmental Technology \(2010a,b,c\)](#), [Danish Government Climate Policy Plan \(2013c\)](#), [Danish Engineer Association's Strategy on Climate Change](#)

([IDA, 2009](#)) are frequently missing from any debate of education. During the past couple of years, however, climate, energy, and environmental policies and plans, occasionally reflect on education. By way of exemplar the EU strategy on a biophysical economy ([COM, 2012](#)) in a few lines suggests to: “Build the human capacity required to support the growth and further integration of bio-economy sectors by organising university fora for the development of new bioeconomy curricula and vocational training schemes” ([COM, 2012](#), p. 8). Also, the EU Eco-innovation Action Plan ([COM, 2011](#)) reflects upon skills and capacity building under its umbrella: “New skills are required to facilitate the transition to a greener economy and to provide related reinforced skilled workforce for businesses (...) in particular in terms of newly-emerging and expanding skills such as those required by green and greener” ([COM, 2011](#), p 13). Correspondingly, when scaling to a national context, the Danish Business Council for Green Transition suggests sustainability education as a priority. These recommendations among others, have materialized in a recent Governmental strategy: “Denmark shall be a national laboratory, test and demonstration hub supporting business trade and transition of the energy system (...). The Government will in collaboration with industry and Higher Education Institutions, undertake an investigation of the need for competence development within energy

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efficiency and renewable energy” (Danish Government, 2013a, p. 13). In practice, however, education for sustainability is instrumentally reduced to a matter of engineering and technology e.g. of renewable energy, energy efficiency, smart grid, water management and biotechnology (Danish Government, 2013a, b). The case of Denmark is by no way extraordinary in a European context, whereby linkages between regional sustainability initiatives (RSI) and higher education institutions (HEI) are often limited (Wells et al., 2009), and linkages across spatial scales further complicate matters. As the knowledge intensity in production processes is rising, HE and competence development is considered a lifeline for industry. This, in turn, requires highly qualified employees, which is the reason why the significance of higher education is increasing. A number of scholars have long pointed out that universities and knowledge production are crucial in the so-called knowledge economy for economic regional centres and cities stimulated by a highly educated workforce (Wells et al., 2009). Consequently, HEI is acknowledged a center for strategic advantage in the knowledge economy. Recent reforms in university sectors have installed universities as strategic actors with respect to different forms of regional governance structures (Wells et al., 2009; Dlouhá et al., 2013; Sedlacek, 2013). Until recently campus planning and geographies of higher education conceptually remain outside the heart of regional sustainable initiatives, national and European strategies (Lehmann et al., 2009; Zilahy et al., 2009). It is so to speak clusters of expertise designed to bring together researchers, industry and governmental agencies. What is new about these HEI policies is the mutual links to “greening the knowledge economy” for “sustainable growth” on the one hand, climate and energy planning on the other. Linking education and capacity building is not only vital for regional sustainability initiatives, European and national sustainability, climate and energy strategies. HEI plays a significant role in shaping and envisioning educational strategies whether in the context of regional sustainability initiatives or regional competence clusters (Zilahy et al., 2009; Mader et al., 2013). Though geographies of higher education and RSI matter, even the best educational strategies will not do if students have no or little engagement in the sustainability agenda. This is why this study is twofold focusing on multi-scalar governance in the nexus between HEI policy and across regional plans and sustainable competence development from the students' perspective.

### 1.1. Research questions

This study investigates Danish HEI students and their views on anthropogenic climate change, linked to the acquisition of sustainability competences. Further the survey invites students to reflect on sustainability curricula in their educational programs. The results from the survey are discussed against regional plans and strategies focusing on the supporting development in sustainable production and knowledge economies. The specific research questions addressed are the following:

- RQ1: How do students at higher educational institutions perceive sustainability as regards competences they acquire during their studies?
- RQ2: How do students consider future labor market demands as regards sustainability competences?
- RQ3: What are the nexuses and linkages between business, education, environmental and regional development plans?
- RQ4: How do student perceptions of sustainability relate to regional planning and regional sustainable initiatives?

## 2. Method

Research questions 1 and 2 are based on a survey whereas the third and fourth research questions are answered in the form of a qualitative discussion informed by policy documents addressing businesses, education, environmental and regional development issues and academic literature.

The survey focusses on the Region Zealand which is one of the five regions in Denmark. It is the least educated region in Denmark accompanied by the lowest regional employment rate in the clean-tech industry and demonstrate the lowest export figures in climate, energy and environmental technologies (Brøndum and Fliess, 2013). The regional development strategies and business promotion have proportionally to other sectors, allocated the most public funding into the clean-tech industry for the past decade. Although the Educational Analysis in Region Zealand (2013b) recognizes the need for competences development on emerging sustainable and circular economies, e.g. in the clean-tech sector, no letter of recommendation, action plans or implementation exist. A study by Danish Technological Institute (2012) and Brøndum and Fliess (2013) claim, if a region cannot obviate the need for human capital and skills to support the clean-tech industry, the sector may need to outsource at least parts of their activities. For these reason it is in particularly interesting to make sense of students engagement in sustainability competence.

Students engagement and interest across education is crucial, if to build a differentiated sustainability competences/qualifications as the occupational structures changes. Without student engagement, interest and support, there are limited opportunities for HEI in educating students (future employees) with sustainability competences, energy- and environmental innovation skills. From a student's perspective, the survey examines how students find their education support learning on sustainability challenges, and their expectations on the relevance of sustainability competences to future labor markets. Sustainability knowledge here defined to the students as methods, approaches and theories integrating economic, social and environmental aspects and consequences of decisions, practices and plans and if the effectiveness and optimum is not met in all three spheres separately and joined, it is not sustainable (Bulkeley, 2013). However, in many situations decisions have conflicting implications in the three dimensions, so one or two may have to be prioritized at the expense of the other(s) (Berglund and Gericke (2015), it is precisely the holistic, critical and integrative approaches that allow students to analyse the interests and conflicts involved in any sustainability agenda.

### 2.1. Outline of the sample, data collection and processing

The questionnaire was sent to a total of 1020 surveys students enrolled at four largest HEI across regional Zealand, Denmark.<sup>1</sup> In sample students from Vocational Education Lolland Falster (CELFI), Center for Vocational Education Zealand (EUC), Roskilde University (RU) and University College Zealand (UCSJ) were invited to take a stance on a number of themes related to attitudes towards anthropogenic climate change (A), their willingness to obtain sustainability competences (B), self-reported educational choices and behaviours (C) connected to expectations on the green business and future labour markets (D). The students completed an online

<sup>1</sup> All students must obtain high school qualifications in order to enroll at a HE institution. The Danish HE institutions consists of short HE typically 1–2 years of study at Vocational Education and Business Academies. Medium HE typically 2–4 years of study at a University College and long HE 5 years of study at university. The questionnaire was sent to each of these institutions in the Region Zealand.

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