Skills, Competences and Mind-sets for Sustainability
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21st century skills, individual competences, personal capabilities and mind-sets related to sustainability: a management and education perspective

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Abstract:

Aim: This editorial article provides a general introduction into the topic of this special issue. It highlights the attention given to, and the differences in interpretations of, 21st century skills, individual competences, personal capabilities and mind-sets related to sustainability, specifically in management and education contexts. Furthermore, the article gives an overview of the articles included in this special issue.

Design/Research methods: Recent developments in the field are presented, based on a literature review. Differences in interpretations between management and education perspectives, as well as differences and similarities in conceptualisations of these constructs are discussed.

Findings: The article describes current issues that are being discussed in the debate around 21st century skills, individual competences, personal capabilities and mind-sets related to sustainability. Although different concepts are presented in the literature, they also have basic assumptions and characteristics in common, mainly the combined (holistic) approach of skills, competences, attitudes and values. However, the discussion has become blurred due to mixing interpretations of business context and education context.

Originality/value of the article: The main value of this introductory article of the special issue, is that it outlines similarities and differences in interpretations of 21st century skills, individual competences, personal capabilities and mind-sets related to sustainability.

Keywords: 21st century skills, individual sustainability competences, capabilities, mind-sets, higher education for sustainable development, sustainable management

JEL: I20, I23, J24, Q01, Q56
1. Introduction

A diversity of viewpoints and perspectives is surrounding the concepts of “21st century skills” (e.g. WEF 2018), “competences” (e.g. Wiek et al. 2011), “capabilities” (e.g. Thomas, Day 2014), and “mind-sets” (e.g. Kassel et al. 2016) oriented towards sustainability. Different models, concepts and lists of skills and competences have been presented, both from an business/management and (higher) education perspective. However, business settings and educational settings have been elaborating on different interpretations and standpoints. In business settings, focus has been set on human resource perspectives and (economic) rankings of skills needed in the near future (e.g. by 2020). In educational settings, focus has been set on a more profound selection, definition and critical interpretation of sustainability competences (Rieckmann 2012; Wiek et al. 2011).

Rankings of skills and conceptions of individual sustainability competences provide future directions for management and education. However, different interpretations from business and educational backgrounds have become mixed and used interchangeably, without consideration of validity issues of such approaches. This situation has led to a blurry discussion and a problematic interpretation and integration of these skills and competences (Lambrechts, Van Petegem 2016). A diversity of perspectives enriches the debate, on the premise that contributions start from a clear conceptualisation and definition of the topic. In the context of sustainability, striving towards a generally accepted definition and interpretation of the concept of 21st century skills, competences and capabilities becomes difficult, if not impossible. Therefore, this special issue started from a broad call for papers inviting a plurality of contributions from different backgrounds and perspectives on the topic.

This introductory article is organised as follows: in section 2, focus is set on the contours of the current debate around 21st century skills, individual competences, personal capabilities and mind-sets for sustainability. This section provides an overview of the topics and their links and similarities. Section 3 provides an overview of the articles that are published in this special issue and shortly highlights the main findings of each article.
2. About skills, competences, capabilities and mind-sets

The debate around skills and competences is characterized by a multitude of interpretations, as well as differences in terminologies used to address (often comparable) constructs (Shephard et al. 2019). The term 21st century skills can be defined as “those skills and competencies young people will be required to have in order to be effective workers and citizens in the knowledge society of the 21st century” (Ananiadou, Claro 2009: 8). Depending on the focus and the timeframe, different skills appear in overviews and studies of 21st century skills, often labelled as “soft skills”, such as critical thinking, creativity, and problem solving (e.g. WEF 2018). Critics point towards the business influence in these debates, and warn for overly managerial interpretations imposed on education, “according to which its main goal is to prepare workers for knowledge-intensive economies or even in some cases for particular firms” (Ananiadou, Claro 2009: 6). Others, like Rotherham and Willingham (2010), point to the fact that these skills are not newly developed in the 21st century, but already exist for centuries. Furthermore, the focus on 21st century skills may lead to a lack of attention to knowledge that is specific to different domains, as well as lack of profound integration of these skills: “without better curriculum, better teaching, and better tests, the emphasis on “21st-century skills” will be a superficial one that will sacrifice long-term gains for the appearance of short-term progress” (Rotherham, Willingham 2010: 20).

Within the educational context, Thomas and Day (2014: 209) found the terms “abilities”, “attributes”, “capabilities”, “competences”, and “skills” to be used to describe learning outcomes of higher education. These terms broadly cover comparable elements, such as knowledge, values, attitudes, etc. For example, competences (Rychen, Salganik 2003) as well as capabilities (Thomas, Day 2014) have been presented comprising knowledge, skills, attitudes and values. More recently, the debate is shifting towards sustainable mind-sets, that comprise values, knowledge, and actions or competences (Kassel et al. 2016). It is clear that, despite the differences in interpretations and terms used, all of these conceptualisations refer to a combined and holistic interpretation of knowledge, skills, values, attitudes,
behaviour, and action that are important in the future, and/or within the context of sustainability.

It is indeed true that corporate interpretations of competences and skills influenced the educational debate (Stoof et al. 2002), however the broad holistic competence concept was translated into extensive instrumental conceptions, in which knowledge and skills were integrated based on the ability to assess them. The lack of a holistic interpretation of competences has led to a problematic integration with a focus on instrumental assessment of knowledge and skills (Lambrechts, Van Petegem 2016), and with the risk of deleting values from the curriculum, as has been pointed out by Cheetham and Chivers (1996), Lambrechts et al. (2013) and more recently Dlouhá et al. (2019) as well. This evolution was also inclined by growing influence of business environments and the expectation of higher education to deliver students skilled to fulfil market demands, and leads to critical questions about the way competences are defined and integrated: “Current practices in competence based (higher) education start from an instrumental approach (whether or not influenced by neoliberal market discourse). As a result, values and virtues are left out because they simply do not fit into the instrumental approach of operationalizing and assessing competences” (Lambrechts et al. 2018b: 1296).

Framed within social constructivism, contemporary higher education embraced the competence concept (Van den Berg et al. 2006), commonly defined as the holistic approach to knowledge, skills, attitudes and values (Rychen, Salganik 2003). However, the concept became blurred, due to different interpretations and definitions in (human resource) management and educational context (Lambrechts, Van Petegem 2016), and the way competences were introduced in academic study programs was not (always) successful (Mochizuki, Fadeeva 2010). As pointed out by Mogensen and Schnack (2010), interpretations about competences in management context are characterized by the following: “the focus on knowledge and skills has almost vanished without a trace in favour of an emphasis on personal virtues like creativity, flexibility, adaptability, and so on, treated in a rather technical and individualistic manner with effectiveness as the main value” (Mogensen, Schnack 2010: 64).
The literature about Higher Education for Sustainable Development (HESD) has been focusing on the definition of competences for sustainable development (e.g. de Haan 2006; Rieckmann 2012; Wiek et al. 2011), resulting in different lists, models and sets of such competences. Depending on the author, lists between five and twelve competences have been drafted. Wiek et al. (2011) presented five key competences for sustainability: systems thinking, anticipatory thinking, normative competence, strategic competence, and interpersonal competence (Wiek et al. 2011). Rieckmann (2012) drafted comparable competences, and added critical thinking, acting fairly and ecologically, cooperation, participation, empathy, interdisciplinary work, communication, evaluation, ambiguity and frustration tolerance (Rieckmann 2012). Ploum et al. (2018) combined strategic competence and action competence (Ploum et al. 2018), while Blok et al. (2015) linked action competence to normative competence in a virtue ethics perspective (Blok et al. 2015). Salgado Perez et al. (2018) added further refinements to Wiek et al.’s (2011) framework, more specifically by focusing on intervention competence.

Furthermore, as discussed by Shephard et al. (2019), there is a difference between being competent (to act sustainable) and being willing to do so, thereby reemphasizing “the educational question that whether to be competent, or capable, to do something, one also needs to be willing to do it” (Shephard et al. 2019: 542). The competence debate has been focusing on an idealistic idea of developing or acquiring desired competences (“for” sustainable development), without necessarily taking into account differences in student attitudes and their willingness to act. A recent study by Lambrechts et al. (2018a) revealed different groups of students showing (sometimes subtle, yet important) differences in their perceptions of sustainability: the moderate problem solvers; the pessimistic non-believers; the optimistic realists; and the convinced individualists. Clearly, these differences are linked to differences in student perceptions (e.g. Platje et al. 2020), as well as their motivation to act sustainably (e.g. Biberhofer et al. 2019), hence a one-fit-for-all approach regarding integrating sustainability competences, as well as critical and interpretational competences is not feasible, nor desirable (Lambrechts et al. 2018a).
The literature shows a variety in approaches, in which the focus is set on competences, skills, abilities, attributes, capabilities, attitudes, actions, values, mindsets, or a combination of these. Holistic approaches, in which knowledge, skills, values and attitudes are closely interconnected, are mentioned, yet it remains a challenge to actually provide these holistic conceptions, certainly in educational context which is characterised by conservatism (Lambrechts et al. 2018b; Rotherham, Willingham 2010; Verhulst, Lambrechts 2015). Furthermore, the business perspective has inspired and influenced the educational debate. This is not necessarily problematic, although one should be aware of the influence of neoliberal markets and managerial approaches (Lambrechts et al. 2018b), with the risk of education becoming overly oriented towards market needs for specific skills (Ananiadou, Claro 2009). As pointed out by Lambrechts et al. (2018b), preparing for a job might be one of the main goals of higher education, but this should not constrain the development of competences (or capabilities) for a person to lead flourishing and active lives. Within the context of super wicked problems (cf. Levin et al. 2012), this also entails being able to cope with the complexity and uncertainty of future sustainability issues (Lambrechts, Van Petegem 2016). It might be expected that “frustration tolerance” (as identified by Rieckmann 2012) and “uncertainty competences” (Tauritz, 216) will become increasingly important in education and business contexts.

3. Special issue articles

Apart from this introductory editorial, seven articles have been accepted for publication in the special issue, each looking at the topic from a particular perspective.

Cebrian, Segalàs and Hernández (this issue) provide a review of existing theoretical frameworks in sustainability competences. Through a systematic literature review, evaluation strategies and instruments to assess these competences are identified. Different, mainly summative, assessment approaches are identified in the literature, yet there is still little evidence on the development, outcomes and
impact of courses that focus on developing sustainability competences. Therefore, the authors call for further research on the use of summative, formative and self-assessment tools for sustainability competences, as well as the design of specific tools that are in line with central constructs of Education for Sustainable Development, such as critical thinking, collaboration, teamwork and systems thinking.

Roorda and Rachelson (this issue, a) present the conceptual background of the RESFIA+D model, containing seven sustainability competences: Responsibility; Emotional intelligence; System orientation; Future orientation; personal Involvement; Action skills; Disciplinary competences. Based on a further conceptualisation of “competence” and the “competent professional”, the model is explained, as well as further possibilities to (self) assess competences on an ordinal scale. The RESFIA+D model focuses on the role of individual professionals towards sustainability, rather than the roles of either entire organizations, or of individual civilians or consumers.

Roorda and Rachelson (this issue, b) builds upon the previous article in which the conceptual background of the RESFIA+D model is clarified. This article presents practical experiences with the model. First and foremost, the model facilitates an awareness process, thereby enabling organizations and individual professionals to understand their role, as well as strengths and weaknesses regarding their competences in relation to sustainable development. Companies, NGO’s and other organizations may apply RESFIA+D as a structured tool for human resource development. (Higher) education institutions can use the instrument for education (re)development, where curricula and didactic approaches are derived from a systematically designed competence profile in which sustainable development is integrated.

Betour El Zoghbi and Lambrechts (this issue) focus on the perspective of the student and their future role in global sustainability issues, such as climate change. The findings of their article point towards the current inability of higher education to adequately prepare youngsters to cope with the uncertainty and complexity of such issues, thereby pointing towards the importance of building resilience and empowering academic and civic platforms that enhance young people’s
competences to manage sustainability-oriented lifestyles and workplaces through critical, creative, and collaborative processes. In light of the global climate marches witnessed in 2019 (Vaughan 2019), and within the current “post-truth” timeframe, this is linked to further critical and interpretative competences (e.g. Lambrechts et al. 2018a).

Mitchell, Lemon and Fletcher (this issue) specifically focus on community-based development projects. Through a mixed method approach, the lessons learned by different stakeholders of a sustainability initiative are analysed. Data gathered though a survey and through focus groups were analysed using text mining, aiming to reveal concepts that are considered salient by the stakeholders. In addition, thematic analysis aims at providing a contextualised, richer meaning to the obtained quantitative results. The authors conclude that learning and knowledge acquired over the course of the sustainability initiative, can be regarded as a potential asset, linked with important future oriented skills, if lessons learned from previous experiences are meaningfully captured, codified and utilised.

Van Dam (this issue) provides a critical view on marketing education at the level of Master of Business Administration (MBA). Rather than introducing a single, “bolted-on” sustainability course, the author calls for an inclusive approach, in which sustainability and ethics are included throughout the curriculum. Given the characteristics of business education (e.g. market orientation), a continuous reflection on the role of marketing and its limitations is needed. The case presented in the article therefore is entrenched with critical reflection on, and critical assessment of, the (lack of) sustainability of contemporary business and of the theories by which this is legitimised.

Van Liedekerke (this issue) provides a reflective viewpoint on the commonalities between the origins of business ethics and corporate sustainability on the one hand, and Higher Education for Sustainable Development on the other hand. Although both fields developed independently, they share the same problems faced, as well as solutions sought for: focus on interdisciplinary studies, integrated thinking, and looking beyond the short term and local interests. The role of ethics in corporate and educational sustainability is often marginalised, yet of utmost
importance. Therefore, the author calls to strengthen the connection between both fields, based on the underlying ethical choice they have in common.

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Assessment of sustainability competencies: a literature review and future pathways for ESD research and practice

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Abstract:

Aim: This paper aims at reviewing existing theoretical frameworks in sustainability competencies and identifying suitable evaluation strategies and instruments for sustainability competencies assessment in the context of Education for Sustainable Development.

Design / Research methods: To gain a comprehensive view of the evaluation and assessment processes of sustainability competencies a systematic literature review was conducted using a set of keywords. After a refining phase and selection of articles centred in evaluation processes a final sample of 43 articles was analysed.

Conclusions / findings: Little evidence exists on the development, outcomes and impact that courses introducing students to sustainability competencies have. Further empirical research is needed on the development and implementation of assessment tools for sustainability competencies.

Originality / value of the article: This paper outlines the state of the art of evaluation and assessment tools for sustainability competencies in higher education and suggests pathways for further research and practice based on a systematic literature review.

Keywords: sustainability competencies, sustainability, higher education, assessment, evaluation

JEL: I20, I23, J24, Q01, Q56
1. Introduction

The past two decades have witnessed increasing recognition and political agreement over the role of education as a major agent to transform current society into a more sustainable, equitable and socially just one (UNESCO 2005; United Nations 2012). This has been reflected in international and national strategy and policy development, for example the Declaration of the United Nations Decade of Education for Sustainable Development (abbr. UNDESD, 2005-2014) in 2005, the United Nations Economic Commission for Europe (UNECE) Strategy for Education for Sustainable Development (ESD) in 2011 and the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, adopted by world leaders at the United Nations Sustainable Development Summit in 2015. The Declaration of the UNDESD in 2005 acted as a catalyst to the processes of integrating the principles of education for sustainable development (ESD) into all levels of education (UNESCO 2005). According to UNESCO (2009: 2) ESD is based on “values of justice, equity, tolerance, sufficiency and responsibility,” with respect as its core. The existence of diverse views of sustainability and diverse ways to embed ESD are acknowledged as a positive element to ensure that new developments are culturally and locally relevant but with “consensus around a range of key principles covering the scope, purpose and practice” (Wals 2009: 25). In an expert review, Tilbury (2011) highlighted important ESD learning processes, such as collaboration, systems thinking, innovation, and active and participatory learning. Higher education (HE) is a principal agent for addressing the current sustainability challenge that society is facing, because of its key mission of knowledge generation and transfer through research and teaching (UNESCO 2005; United Nations 2012).

Sustainability in HE calls for interdisciplinary and innovative practice to promote sustainability in all its activities (Cotton, Winter 2010). Many academics in the field of sustainability in HE claim a paradigm shift – an epistemological change – is needed towards sustainability that is based on holism, critical subjectivity and systems-thinking (Sterling 2004). The curriculum, pedagogy, structure, organisation and ethos are shaping dimensions of education; therefore embedding sustainability implies a cultural change rather than an add-on to existing curricula and structures.
ESD can foster a sustainable social transformation, through the clarification and reassessment of values; it should be creative, innovative and constructive, culturally appropriate and action-orientated (Tilbury, Wortman 2004).

To date a number of universities worldwide have signed international declarations and have publicly committed to embed sustainability within their campus, outreach, education and research (Wright 2010). However, despite the declaration of good intentions and the development of policies and strategies at the national and international level, little has been achieved in terms of embedding sustainability holistically in the HE curriculum (Cebrián et al. 2015). Most of the research in the field has focussed on: environmental management and greening of university estates and operations; descriptive case studies and examples of good practice of universities; embedding sustainability in specific courses such as environmental sciences, business and engineering; theoretical developments on teaching and learning approaches towards sustainability; university and policy analysis (Barth, Rieckmann 2016; Cotton et al. 2009; Fien 2002; Wright 2010). The lack of theorisation of research conducted in the field has been criticised for often leading to descriptive and non-theoretical accounts (Corcoran et al. 2004; Fien 2002). It could be argued that the focus has been on explaining part of the stories of transformation, as papers have concentrated on the achievements and positive experiences without paying sufficient attention to the barriers to progress and the process of change per se (Velazquez et al. 2005). The environmental management and greening of campus operations and estates has seen much more progress than curriculum development (Verhulst, Lambrechts 2015).

Emergent research in the field of sustainability in HE has explored the learning outcomes and competencies that educational programmes need to seek to develop in students for them to become change agents towards sustainability (Cebrián, Junyent 2015; Wiek et al. 2011). Despite the divergence in the usage of different concepts such as abilities, learning outcomes and competencies, and the existence of some criticisms around the usage of these terms, there is a need to define competencies in sustainability in order to foster curriculum developments and innovations. Developing sustainability competencies amongst graduates is particularly critical to the development of sustainability literacy and students becoming positive change
agents in their workplace and personal lives (Sipos et al. 2008). However, little evidence exists on the development, outcomes and impact that courses introducing students to these competencies have (Wiek et al. 2011). Further empirical research is needed on the development and implementation of assessment tools for sustainability competencies.

2. The Edinsost project

This paper presents a systematic literature review to identify the state of the art of evaluation and assessment tools for sustainability competencies in higher education, which served as the basis to guide the EDINSOST research project, “Education and social innovation for sustainability. Training in Spanish Universities of change agent graduates to meet challenges in society.” In this project, funded by the Spanish Government, ten universities are working together with the goal of creating synergies and common frameworks and criteria to integrate sustainability competencies, learning processes and assessment tools. Project objectives are to: 1) Define the map of sustainability competencies of university degrees covered by the project and establish the framework to facilitate their integration in a holistic manner; 2) Validate teaching strategies for the acquisition of sustainability competencies, from a constructivist and community oriented pedagogical approach (Simulacion, Case studies, Service Learning, Problem Based Learning and Project oriented learning; 3) Diagnose the state of faculty sustainability training needs and develop and pilot training proposals; and 4) Diagnose the state of learning of sustainability competencies of higher education students and prepare and pilot training proposals. This paper outlines existing theoretical frameworks in sustainability competencies, presents a comprehensive systematic literature review of recent literature in sustainability competencies’ assessment, and suggests suitable assessment strategies and tools, and pathways for further research and practice.
3. Research process

Systematic literature reviews are a commonly used in social and educational sciences to map the state of the art of specific fields of study. The aim is to conduct a systematic, replicable and transparent search and analysis process (Fink 2009). Recent studies have reported on systematic literature reviews in the area of sustainability in HE, which include quantitative and qualitative approaches (Barth, Rieckmann 2016). For example, Lozano et al. (2017) have used hermeneutics and grounded theory to create a framework to connect sustainability competencies and pedagogical approaches. Jim Wu and Shen (2016) used a mix-method approach to outline research topics that emerged during the UNDESD. Likewise, Figueiró and Rauffle (2015) conducted a systematic review to map and evaluate the status of sustainability in management education. In a Mindt and Rieckmann (2017) systematic literature review the state of the art concerning teaching-learning approaches and methods for sustainability-driven entrepreneurship in higher education was outlined. Finally, Barth and Rieckmann (2016) outline a bibliometric overview, which combines quantitative analysis with a qualitative analysis of content areas and research methodologies in the field of HE for sustainability.

Gaining a comprehensive overview of the evaluation and assessment processes of sustainability competencies in HE is essential to tackle the second objective of the Edinsost project, which is focused on validating teaching strategies for the development of sustainability competencies, from a constructivist and community oriented pedagogical approach. For this reason, a systematic review of existing research and practice focused on the design and development of sustainability competencies assessment strategies and tools has been conducted.

The data collection process consisted of a search in the 2 main databases: Web of Science and Scopus. These are the more relevant and comprehensive databases covering social and educational sciences. The literature search was conducted using the following keywords: (“higher education” OR “university” OR “universities” OR “tertiary education” OR “college”) AND (“education for sustainability” OR “education for sustainable development”) AND (“assessment” OR “evaluation”). This search produced a total of 80 hits in Web of Science and 121 in Scopus. A
second phase consisted of refining the sample, removing duplicates and selecting only articles that are peer-reviewed. In a third phase, articles focusing explicitly in the assessment process, including the design of assessment or evaluation tools and studies focusing on identifying students’ knowledge, attitudes and/or competencies development were selected. This led to a final sample of 43 articles (figure 1). Going through the steps of (1) data collection, (2) data processing and coding and (3) data analysis, we produced an overview that combines quantitative and qualitative analysis of content areas and evaluation strategies and instruments used.

Figure 1. Diagram of the research process

4. Results of the systematic literature review

In this section the results of the review are provided. First, existing theoretical frameworks of sustainability competencies. Second, the results in relation to evaluation and assessment processes of sustainability competencies, providing a general overview of publications by year and journal, are outlined. Third, the
content of the articles is characterised by the object and focus of the assessment, and the type of evaluation and assessment tools used. Forth, previous studies on students’ perceptions, attitudes and behaviours in sustainability. Finally, assessment approaches of sustainability in university programmes and curriculum.

5. Sustainability competencies frameworks

Emergent research in the field of sustainability in HE has explored the learning outcomes and competencies that educational programmes need to seek to develop in students for them to become change agents towards sustainability (Mochizuki, Fadeeva 2010; Sipos et al. 2008; Svanström et al. Rowe 2008; Wiek et al. 2011). However, it is not possible to describe a mandatory set of competencies for sustainability because of the variety of the definitions of the terms sustainability and competence in educational settings (Mochizuki, Fadeeva 2010). Despite the divergence in the usage of different concepts such as abilities, learning outcomes and competencies, and the existence of some criticisms around the usage of these terms, there is a need to define competencies in sustainability in order to foster curriculum developments on ESD (Wiek et al. 2011). De Haan (2010) introduces the elements of the sustainability competence or Gestaltungskompetenz. It expresses the abilities and competencies of students in contexts of sustainability and can be defined as the ability to shape future scenarios by active participation in modelling and transforming society towards sustainable practices (Barth et al. 2007).

According to De Haan (2010) the elements of sustainability competence are:

- Competence to think in a forward-looking manner, to deal with uncertainty, and with predictions, expectations and plans for the future.
- Competence to work in an interdisciplinary manner.
- Competence to achieve open-minded perception, transcultural understanding and cooperation.
- Participatory competence.
- Planning and implementation competence.
- Ability to feel empathy, sympathy and solidarity.
• Competence to motivate oneself and others.
• Competence to reflect in a distanced manner on individual and cultural concepts.

Rieckmann (2012) conducted a Delphi study in which sustainability key competencies were defined by experts from Europe and Latin American, where systemic thinking, anticipatory and critical thinking emerged as the most relevant ones. Moreover, in a recently conducted literature review and framework proposal (Lozano et al. 2017) a set of twelve sustainability competencies have been identified: systems thinking; interdisciplinary work; anticipatory thinking; justice responsibility and ethics; critical thinking and analysis; interpersonal relations and collaboration; empathy and change of perspective; communication and use of media; strategic action; personal involvement; assessment and evaluation; and tolerance for ambiguity and uncertainty.

Developing these competencies amongst graduates is particularly critical to the development of sustainability literacy (Stibbe 2009) and students becoming positive change agents in their workplace and personal lives (Sipos et al. 2008). The use of certain type of pedagogies, and teaching and learning approaches and strategies such as project-based learning, service learning and action learning (Bessant et al. 2013; Thomas 2009), foster the competencies or skills necessary to deal with sustainability, such as critical and creative thinking, problem-solving skills, action competence, collaboration, and futures thinking, therefore creating empowered and globally responsible citizens and professionals who can become active change agents (Wals 2010).

In terms of learning outcomes, Sipos et al. (2008) developed the transformative sustainability learning (TSL) framework and conducted three case studies on courses related to sustainability and citizenship. They concluded that courses that were engaging students in a cognitive, psychomotor and effective sphere enhanced TSL (Sipos et al. 2008). Wiek et al. (2011) conducted a literature review on existing studies and frameworks on competencies on sustainability and developed an integrative framework on key sustainability research and problem solving competencies, namely “systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence” (Wiek
et al. 2011: 205). Other research in the area has also developed competence frameworks for specific subject areas: engineering (Mulder et al. 2012), teacher education (Cebrián, Junyent 2015; Sleurs 2008), and educators at all levels of education (UNECE 2012). Research has also looked at the inclusion of sustainability competencies in the programme descriptors of undergraduate degrees (Cortés et al. 2010; Lambrechts et al. 2013; Segalàs et al. 2009). Thus the relevance of developing key competencies on sustainability has been acknowledged by international agencies such as UNESCO (2005; 2017), UNECE (2009) and for accreditation agencies (ABET 2017; Engineering Council 2013). UNESCO has recently published a set of learning objectives for each of the 17 Sustainable Development Goals of the 2030 Agenda for Sustainable Development (UNESCO 2017). Also, UNECE commissioned a group of ESD experts to develop a framework on ESD competencies for educators (UNECE 2012). The UNECE framework is based on Delors’ four pillars of education (Delors 1996). Table 1 summarises the UNECE ESD competencies for educators framework.

Table 1. UNECE framework on ESD competencies for educators

<table>
<thead>
<tr>
<th>Domains</th>
<th>Brief description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Learning to know refers to understanding the challenges facing society both locally and globally and the potential role of educators and learners (The educator understands...);</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Learning to live together contributes to the development of partnerships and an appreciation of interdependence, pluralism, mutual understanding and peace (The educator works with others in ways that...);</td>
</tr>
<tr>
<td>Ethics and</td>
<td>Learning to be addresses the development of one’s personal attributes and ability to act with greater autonomy, judgement and personal responsibility in relation to sustainable development (The educator is someone who...).</td>
</tr>
<tr>
<td>Practical skills</td>
<td>Learning to do refers to developing practical skills and action competence in relation to education for sustainable development (The educator is able to...);</td>
</tr>
</tbody>
</table>

Source: Adapted from UNECE (2012: 13-14).

However, as this is a relatively new and emerging area of research, little evidence exists on the development, outcomes and impact that courses introducing
students to these competencies have (Lozano et al. 2017; Wiek et al. 2011). Further empirical research is needed on the development and implementation of assessment tools for sustainability competencies (Cebrián, Junyent 2015; Sleurs 2008). There is still further research to be conducted to implement innovative and transformative teaching and learning approaches and transformative institutional strategies that lead to sustainability competencies (Barth, Rieckmann 2016; Sterling et al. 2017). Therefore, as stated by Wiek et al. (2016) the research agenda in the following years needs to focus on operationalising sustainability competencies, framing the different levels of competence and measuring and evaluating students’ competencies development.

A tendency exists to focus on developing competencies’ frameworks without paying sufficient attention to the individual and cultural context, and the organisational change processes required to achieve embedding ESD (Mochizuki, Fadeeva 2010). Developing innovative courses that consider sustainability competencies can foster transformative learning amongst students but also engage stakeholders and the community, and in turn contribute to generate organisational change in the context of HE by opening up innovative programme designs (Mochizuki, Fadeeva 2010).

6. General overview of publications focused on evaluation and assessment processes of sustainability competencies

The review shows that the 43 research articles identified, with focus on evaluation and assessment processes of sustainability competencies, were found between the period of 2005 and 2017. After 2005 there is an increasing tendency due to the catalyst or lever effect of the UN Decade on Education for Sustainable Development (UNESCO 2005), with a pick in 2015 coinciding with the end of the decade and with the hold of special issues in ESD of non-specific sustainability journals (figure 2). As stated in the previous sections, this a relatively new and emerging research area, so it is expected an increasing body of literature focused on the design and development of innovative teaching and learning methods, and assessment tools for sustainability competencies in the next years (Wiek et al. 2016).
Regarding the distribution by journal (Figure 3), the “Journal of Cleaner Production and International Journal of Sustainability in Higher Education” emerged as the most numerous sources, with a 21% of the total publications each. The following largest source is Environmental Education Research with a 9% of the total of publications both. The scope of all these journals are to help advance understanding of environmental issues, sustainability and ESD through focusing on papers reporting research in the area. Also, the journal Assessment & Evaluation in Higher Education has a 9% of total publications, due to a Special Issue in assessment and evaluation of sustainable development in HE in 2015.
Figure 3. Distribution of the research articles by journal

A word cloud of the keywords of the 43 papers was conducted, where the common keywords education, Education for Sustainability, Education for Sustainable Development, Sustainability and Sustainable Development were removed in order to provide a more detailed overview of relevant keywords. The word cloud shows a set of predominant keywords such as learning, assessing, curriculum, curricula, competences, campus and environmental (Figure 4). It also provides some insights into other commonly used words such as attitudes, values, outcomes, system, engineering and teacher amongst others. This shows the focus on engineering and teacher education studies, and attitudes, values and learning outcomes.
Figure 4. Word cloud of keywords

Source: Authors’ own elaboration.

7. Tools for the evaluation and assessment of sustainability performance amongst students

The articles were analysed in relation to the object of the evaluation or assessment (Figure 5), 33% of the articles focus on evaluation and assessment of sustainability competencies, skills and outcomes, 23% explore the perceptions, understandings, attitudes and behaviours of students and 21% have the goal of designing assessment tools for students’ learning, programmes of study or the sustainability performance of universities. Finally, 14% of the papers found centered in the assessment of the inclusion of sustainability in specific university programmes or courses and only 9% in assessing students’ knowledge and understandings of sustainability.
From the set of articles assessing competencies, skills or learning outcomes a diversity of contexts, subject areas and tools are found. For example, Cebrián and Junyent (2015) created an open-ended questionnaire to explore teacher students’ perceived ESD competencies. Nikel (2007) used survey questionnaires, narrative tasks and an interview to study the perspectives of 30 student teachers about ESD competencies. Segalàs, Ferrer-Balas and Mulder (2008; 2010) undertook a 5-year research project to analyse how sustainability competencies were introduced into technological universities. Conceptual maps were used as assessment tools of sustainability competencies. Habron, Goralnik and Thorp (2012) assessed undergraduates’ systems thinking competency through a short answer exam, online interactive small group dialogue exam, homework assignments, completion of an online community engagement tutorial, and completion of a final reflexive project (either in a group or individual). Mercer et al. (2017) used educational game design to foster design thinking and communication skills amongst students and assessed students’ development using questionnaires and qualitative feedback. Moreover, Warr et al. (2017) designed and assessed the impact of a cross-disciplinary place-
based learning initiative on both the operational and student learning outcomes. Hegarty et al. (2011) evaluated student-learning outcomes in a stand-alone course on sustainability through critical analysis of articles, ecological footprint calculator and field-specific problem analysis (PBL). Rose, Ryan and Desha (2015) undertook a curriculum renewal to embed sustainability into a first year engineering curriculum and used “before and after surveys” to evaluate learning outcomes. Furthermore, Shephard et al. (2015) used a longitudinal mixed-effects repeat-measures statistical model to assess the development of affective outcomes related to sustainability. Pretorius, Lombard and Khotoo (2016) used evidence-based reflection to provide a narrative assessment of the experience gained with Inquiry-based in two undergraduate sustainability-focussed modules in open and distance learning at the University of South Africa. In recently published research, García, Junyent and Fonolleda (2017) have developed a rubric to assess professional competencies in ESD. Likewise, Sandri, Holdsworth and Thomas (2018) propose an assessment tool, based on a scenario/vignette question design, to capture data on sustainability graduate attributes in context and has the potential to be used across universities to enable comparative research.

Regarding the type of evaluation, there are only 25 cases that specify what type of evaluation is conducted. Of these, 19 correspond to summative evaluation and 6 to formative evaluation. Regarding the involvement of students in their own evaluation, only 6 cases out of 25 use self-assessment tools. When analysing the assessments tools, the most commonly used is the survey and questionnaire (used in 20 cases), followed by reflexive diary (used in 5 cases) and interviews (used in 4 cases) (Figure 6). One of the main reasons why questionnaires are used, is because it is less time-consuming, easy to distribute amongst a larger number of students and in turn it provides a larger amount of information. The challenge is that questionnaires do not allow obtaining other type of information regarding the process of learning itself.
As the findings of the literature review show, a variety of tools are suggested and used to assess competencies and learning outcomes. Therefore, using a range of assessment tools can be positive to gain a more comprehensive overview of the development of sustainability competencies. However, this also mirrors the lack of a common framework of sustainability competencies and effective teaching and learning approaches that help students develop these competencies (Sterling et al. 2017). Further research is needed to design and validate instruments for assessing and monitoring students’ sustainability performance (Barth, Rieckmann 2016).

8. Studies on students’ perceptions, attitudes and behaviours in sustainability

Most of the studies exploring university students’ perceptions, understanding, attitudes and behaviour have used questionnaires or surveys (Azapagic et al. 2005; Kagawa 2007; Murga-Mentoyo 2008). For example, Biasutti and Frate (2017) developed and validated a quantitative 20-item scale that measured Italian university
students’ attitudes towards sustainable development. Mosher and Desrochers (2014) conducted a pretest posttest study to evaluate the impact of a sustainability workshop in changing students’ behaviour. Moreover, Solís-Espallargas and Valderrama-Hernández (2015) explored the change of perception of teacher students due to a specific module on ESD through action-research and pre-post-questionnaires. In a study conducted in Australia a values approach was outlined to incorporate sustainability concepts into business courses (Sidiropoulos 2014). Student feedback showed how a values approach to ESD effectively produces changes in values, attitudes and behaviour over time, building graduate capability in sustainability.

Furthermore, other papers appeared in the search that focus on university educators’ perceptions, knowledge or sustainability competencies. Aznar, Ull, Piñero and Martínez-Agut (2017) used an evaluative research based on a quantitative approach to assess the impact of the inclusion of sustainability within the teacher education curriculum. They used questionnaires and in-depth interviews with faculty to evaluate their knowledge, perception and attitude towards sustainability directly impacting on the training of future teachers. Cebrián (2015; 2017) conducted a collaborative action research with academic staff to foster critical reflection and action towards embedding ESD in teaching practice. Findings showed how action research enabled a change of vision and understanding of ESD and endorsed new teaching practices. Roberts and Roberts (2008) hosted a staff development event to provide a space for exchanging and sharing innovative practice in ESD in the university context.

9. Assessment of sustainability in university programmes and curriculum

Also research focused on the assessment of the inclusion of sustainability in university programmes and curriculum in different universities appeared in the review (Watson et al. 2013). Specific tools have been designed for this purpose, such as Sustainability Tool for Assessing University’s Curricula Holistically (STAUNCH) (Glover et al. 2011). This was used across the Welsh higher education sector and emerged as a valuable tool for recognising what is being offered in the
curriculum about sustainability. However, it does not reflect the quality or effectiveness of the curriculum content (Glover et al. 2011). Other studies (Lambrechts et al. 2013) have evaluated the presence and integration of sustainability competencies in different programmes and curricula. Makrakis and Kostoulas-Makrakis (2016) conducted a sequential mixed methods evaluation in RUCAS programme “Reorientation of University Curricula to Address Sustainability (RUCAS): A European Commission Tempus-funded Programme.” Using both qualitative and quantitative approaches in combination in an iterative evaluation process was found useful to enrich and produce more robust results. Sustainability assessment tools for sustainability programmes have been characterised, which include indicators and criteria for university performance in management, operations, estates, curriculum and outreach. For example, the INDICARE-model assesses participatory processes in HE’s sustainability initiatives (Disterheft et al. 2016). As pointed out by Fischer, Jenssen and Tappeser (2015) in a comparative analysis of 12 assessment tools for sustainable universities, these have become more than instrumental facilitators of change. They have also established normative standards by framing what fields and issues should universities engage with.

10. Conclusions

As the findings of this review indicate a variety of frameworks of sustainability competencies and learning outcomes have been suggested (Wiek et al. 2011). This mirrors the lack of common definitions and frameworks, and the importance of defining common frameworks of sustainability competencies. This is a previous necessary step to create innovative teaching and learning, and transformative institutional approaches that can lead to sustainability competencies (Barth, Rieckmann 2016). So far little evidence exists on the development, outcomes and impact that courses introducing students to these competencies have (Lozano et al. 2017). The research efforts in the next years need to be put on operationalizing
sustainability competencies and developing tools to measure and evaluate students’ competencies development (Cebrián, Junyent 2015).

From the articles analysed in this review, a divergence in the object and focus of the evaluation and assessment is observed, which includes competencies, skills, outcomes, perceptions, attitudes and behaviours of students. Also, different assessment approaches and tools are used, such as questionnaires, reflexive diaries, interviews, narrative tasks, scenario/vignette question design, conceptual maps and pre-post-test amongst others. The results indicate that most of the papers published centred in summative evaluation rather than formative or self-assessment. Using a range of assessment tools can be positive to gain a more comprehensive overview of the development of sustainability competencies. However, it is critical to develop effective teaching and learning approaches that help students develop these competencies (Sterling et al. 2017), jointly with the design and implementation of summative, formative and self-assessment tools.

Over the last years, there has been a rapid increase on the number of publications regarding the assessment of sustainability competencies. Also it is plausible an emergent diversification of the assessment tools used. Questionnaires have been commonly used to assess or explore students’ knowledge, attitudes and behaviours towards sustainability. Other tools have been identified as suitable to assess sustainability competencies such as reflexive diaries, interviews, conceptual maps, rubrics and scenario/vignette visioning (Sandri et al. 2018). There is an emergent literature on qualitative assessment tools such as interviews and reflexive diaries or portfolios that facilitate the assessment of more normative sustainability competencies. However, still a lot of the articles focus on summative evaluation rather than formative or self-evaluation assessment. Thus developing formative and self-evaluation tools is needed in order to get a more comprehensive overview of students’ learning process and sustainability competencies.

However the emergence of studies on the design of assessment tools, it is still necessary to conduct further developments and research in this area. Based on the review conducted, authors suggest the following pathways for future research and practice that will improve the assessment methodology and tools of sustainability competencies:
Gisela CEBRIÁN, Jordi SEGALÀS, Àngels HERNÁNDEZ.

- Conduct longitudinal studies using summative, formative and self-assessment tools within HE and in the professional life of graduates, which can provide evidence of the development of sustainability competencies through higher education studies and in the posterior professional life.
- Carry out comparative analysis of different assessment tools against sustainability competencies. This would provide evidence on the effectiveness of different assessment tools.
- Design and test assessment tools in line with ESD principles such as critical thinking, collaboration, teamwork and systems thinking.
- Develop specific rubrics for each sustainability competence and adapt them to different programmes and contexts.

Acknowledgments

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The seven sustainability competences according to the RESFIA+D Model. Part A: conceptual background

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Abstract:

Aim: Analyse the origins, structure and validation of a model for professional competences for sustainable development, called RESFIA+D. The model provides an assessment and policy instrument that can easily be applied practically. Companies, NGO’s and other organizations may apply RESFIA+D as a structured tool for human resource development (HRD). Institutions for higher and vocational education can use the instrument for education (re)development, where curricula and didactic approaches are derived from a systematically designed competence profile in which sustainable development is integrated. Finally, individual professionals may use RESFIA+D as a tool for professional development.

Design / Research methods: The article defines the concepts of “competence” and “competent professionals”, in an easily understandable style. Next, the structure of the RESFIA+D model is described. Scientific details, such as origins and validation, are described elsewhere; references are made to other sources.

The basic set of RESFIA+D competences is combined with a structure of seven competence levels, which allows users to express the assessment results on an ordinal scale. This scale enables users to design plans for systematic improvements, both at a strategic and an operational level.

Conclusions / findings: RESFIA+D was applied successfully within companies, universities, and by individual professionals. Details of the applications will be offered in a follow-up article called “The Seven Sustainability Competences according to the RESFIA+D Model. Part B: Practical Experiences” in this same journal. Using a “cover” principle, the model is in accordance with, and complements other models for SD (sustainable development) competences.

Originality, value of the article: The article focuses in a unique way on the roles of individual professionals towards sustainability, whereas most or all usual assessment models focus on the roles of either entire organizations, or of individual persons seen as civilians or customers.
Keywords: competences, sustainable development, RESFIA+D, Human Resource Development (HRD), professionals, organizations, education.

JEL: I20, I23, J24, Q01, Q15, Q56

1. Introduction

Various sources – e.g. books and presentations – distinguish two kinds of roles of individuals: the civilian and the consumer. For a responsible civilian, driving 65 mph on a highway seems like a pretty fair speed, and eating healthy food appears important. However, as a consumer, the same person may wish to drive faster, and not just to buy responsible food in the supermarket but also those nice and shiny, sweet or spicy snacks. It is a constant struggle: the sensible citizen versus the easily tempted consumer.

Actually, both have opportunities to act sustainably. The citizen may vote conscientiously and participate in discussions to support civic organizations. The consumer may carefully use electricity and water or buy fair trade products, sustainable fish, and FSC-certified wood – and never more than needed.

However, there is a third role: the professional. This article addresses those professionals.

It is true that many books and websites dealing with sustainability in the professional world have been introduced. However: nearly without exception, they are about companies and organizations as a whole. Nevertheless, in the end, anything those businesses or institutions do is the work of separate individuals. Those professionals – ranking high or low in the organization, from CEOs and top managers to production employees, administrative staff, nurses or janitors – all matter. About them, the individual professionals, not much has been written yet. That is the reason for this article, which offers a well-structured set of professional competences for sustainable development. The roles of the individual professionals are extremely important because:

- Every decision made by a company, government, or organization is ultimately taken by human beings.
- All actions undertaken by a company, government, or organization are always performed by human beings.
THE SEVEN SUSTAINABILITY COMPETENCES … CONCEPTUAL BACKGROUND

This article is dedicated to all of those people: individuals at work. For those individuals, a set of competences was designed. The set is called “RESFIA+D”, which is an abbreviation. The first six characters, “R E-S-F-I-A”, represent general competences, i.e. those that may be expected from any professional: “Responsibility”, “Emotional intelligence”, etc. The seventh, “D”, is short for “Disciplinary”. That is to say: related to separate professions or disciplines”. The entire model is shown in Figure 1.

**Figure 1. The RESFIA+D Competences Model**

<table>
<thead>
<tr>
<th>Competence R: Responsibility</th>
<th>Competence E: Emotional intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sustainably competent professional bears responsibility for his or her own work.</td>
<td>A sustainably competent professional empathizes with the values and emotions of others.</td>
</tr>
<tr>
<td>R1. Create a stakeholder analysis on the basis of the consequence scope and the consequence period</td>
<td>E1. Recognize and respect his or her own values and those of other people and cultures</td>
</tr>
<tr>
<td>R2. Take personal responsibility</td>
<td>E2. Distinguish between facts, assumptions and opinions</td>
</tr>
<tr>
<td>R3. Be held personally accountable with respect to society (transparency)</td>
<td>E3. Cooperate on an interdisciplinary and transdisciplinary basis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competence S: System orientation</th>
<th>Competence F: Future orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sustainably competent professional thinks and acts from a systemic perspective.</td>
<td>A sustainably competent professional works and thinks on the basis of a perspective of the future.</td>
</tr>
<tr>
<td>S1. Think from systems – flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn</td>
<td>F1. Think on different time scales – flexibly zoom in and out on short and long term approaches</td>
</tr>
<tr>
<td>S2. Recognize flaws in the fabric and sources of vigor in systems; have the ability to use the sources of vigor</td>
<td>F2. Recognize and utilise non-linear processes</td>
</tr>
<tr>
<td>S3. Think integrally and chain oriented</td>
<td>F3. Think innovatively, creatively, out of the box</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competence I: personal Involvement</th>
<th>Competence A: Action skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sustainably competent professional has a personal involvement in sustainable development.</td>
<td>A sustainably competent professional is decisive and capable of acting.</td>
</tr>
<tr>
<td>I1. Consistently involve sustainable development in the own work as a professional (sustainable attitude)</td>
<td>A1. Weigh up the unweighable and make decisions</td>
</tr>
<tr>
<td>I2. Passionately work towards dreams and ideals</td>
<td>A2. Deal with uncertainties</td>
</tr>
<tr>
<td>I3. Employ his or her conscience as the ultimate yardstick</td>
<td>A3. Act when the time is right, and not go against the current: ‘action without action’</td>
</tr>
</tbody>
</table>

| + Competence D: Disciplinary Competences | |
|------------------------------------------| |
| A sustainably competent professional possesses a rich variety of competences for sustainable development that are specific to his or her profession. | |

D1, D2, D3, … : To be specified separately for all kinds of sectors, disciplines, professions, etc.

Source: Authors own elaboration based on Roorda (2017), Roorda and Rachelson (2018).
2. Competent professionals

A competence: What is it, really? Or, to put it another way, what is a competent professional? Quite a few books have been written about these two questions: highly complex theories - now and then based on thorough scientific studies. But it does not have to be that difficult. Actually, it is very simple:

*A competent professional is someone you will ask to do a job for you again.*

This is because he or she recently did it in a way you liked.

2.1 The competent plumber

In order to imagine how someone like that would act, this (kind of) definition will be explained in a way that is not too complicated. It is not based on an abstract kind of profession that cannot be grasped easily, but instead based on the example of a professional with a clearly visible task in a familiar environment.

As a starting point, imagine a dramatic situation in your own house. A small catastrophe. An imaginary situation, by the way, hopefully not a real one. What has happened? Your son, three years old, has – just for fun – been hanging on the bathroom sink, which has completely broken off the wall and is now lying on the floor. Your son is all right, but the bathroom less so. The water pipe has shattered into pieces, and now you have a beautiful “fountain” right where you always dreamed of *not* having one. Water is gushing out! It has already flooded the bathroom floor and the landing and is starting to run down the stairs like a waterfall. The hall and living room are about to turn into a sea. What about you – what do you do? You can think of just one thing to do: panic!

“Call the plumber…” you sigh, and so you do. Later, the plumber arrives. So now, what do you expect he – if your plumber is a male - will do, as a competent professional?

The first thing he does is eliminate the immediate cause of the problem, making sure that it does not get any worse. That is to say: He needs to find the main water supply line and turn the shut-off valve handle. And he definitely should not ask you
where this handle is, for you are panicking right now. All of a sudden, you don’t know anything anymore. So, the good man has to know, all on his own, where he has the biggest chance of finding the shut-off valve: in this case, downstairs under the doormat by the front door, right? Without hesitation, he lifts the mat, removes the wooden panel, and shuts off the main water line. Well, that is something.

The second thing he does is calm you down so that you can contribute something useful. So, he starts talking to you, telling you things like: “Look, it isn’t really so bad. It’s clean water after all. We will fix it. Now, if you could get me a couple of buckets and some towels, I will…” et cetera. It is reassuring when he does that. Your mind clears a little, and your sense returns.

Only after this has been done, the plumber will go upstairs, equipped with the necessary tools, where he will start doing the things you would expect primarily from a person like him. So, he will “plumb”, or whatever it may accurately be called, and start repairing the water pipe and the sink.

2.2 What he actually did

Someone who acts in such a calm, competent way is definitely a professional. And, he did much more than just the technical stuff you might associate first when you think of his profession. In his first act in this terrible situation, his role was primarily that of a disaster fighter. His action, his achievement, was to shut off the main water line. In doing this, he made use of his architectural insight regarding how houses in your country are usually constructed. At that moment, the tool he used was his architectural insight. In his second achievement, calming you down and giving you some directions, he acted in a very different role, that of an aid worker. The tool he used this time was his knowledge of people.

Only in his third role, he performed as a technician when he started repairing. For this he probably used tools such as pipe wrenches and a soldering torch.

Context, roles, achievements, and tools

Context, roles, achievement, and tools – these together define competences. Here is a brief overview.
Context: Inundation in a bathroom

Role #1: Disaster fighter
Achievement: Find main water line and turn it off
Tool: Architectural insight

Role #2: Aid worker
Achievement: Calm people down, give directions
Tool: Knowledge of people

Role #3: Technician
Achievement: Repair broken sink
Tools: Pipe wrenches, soldering torch, etc.

In the bathroom catastrophe scenario, the plumber established three different competences, and at the right moment, he shifted fluently from one role to another. This wonderful example – it is almost a shame it did not really happen – provides answers for the two questions this section started with.

A competence is the ability to deliver, in a given context, in a certain role, solid achievements by making use of appropriate tools.

A competent professional is someone who is able, in a range of contexts, to shift flexibly between the various roles that are demanded, and who delivers solid achievements in each of them.

A person who has proved being able to do that – that is someone you will ask to do a job for you again.
When people are asked what they associate with the word “sustainability”, some will immediately mention nature and the environment: climate change, for instance, or aerosols.

Others will quickly add, “But wait, sustainability, isn’t that about people, too?”. And when asked for an explanation, they may mention poverty and hunger in developing countries, refugees, or discrimination and issues concerning a multicultural society.

Indeed, sustainable development is about many, many issues. Sometimes, this makes it hard for people to understand the concept properly. It may seem as if every problem we are struggling with – in the world, in Europe, Africa, or Asia, in your country, or even in your own town or village – has to do with sustainability. Many people have the feeling that “sustainability” is some sort of container into which you can throw each and every problem in the entire world. If this is true, then what is the use of such a word? What does it explain? How can you ever know how to live or work in a sustainable way?

The concept of “sustainable development” was used for the first time in 1980, in a publication of three global organizations for nature and the environment (IUCN, UNEP, WWF 1980). In the following years, the Brundtland Commission performed a thorough study on behalf of the United Nations. In 1987, the commission published its final report called “Our Common Future” (WCED 1987). According to the report, sustainable development is:

“a development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

In other words:

On the one hand, sustainable development is about now: about the desire to grant every person in the world a decent life. This concerns, for example, combating poverty and hunger. Moreover, it includes quality education and health care for everybody – wherever in the world – a healthy living environment, freedom,
democracy, safety, and human rights. In short, it gives each human the chance to be a full member of society.

On the other hand, sustainable development is also about later: about the concerns that we are overexploiting our planet with our present lifestyle. It is about our desire to grant our children, grandchildren, and great-grandchildren a decent future, which is only possible if we drastically change our present way of living.

3.1 Solutions that really work

Some people wonder – are those two, now and later, really connected? What makes sustainable development different from a grab bag of issues, a container concept? Actually, all those issues in the “grab bag” are strongly linked to one another; they influence each other in many ways.

An example illustrates this. One of the big issues of our generation is world population growth. This growth takes place at dazzling speed. It took mankind hundreds of thousands of years to grow to one billion people. This point was reached around the year 1800. The second billion took us less than 130 years. In 2011, we completed the seventh billion, an accomplishment we achieved in just 12 years!

What is driving such growth? All right, sex, of course. But that is certainly not the only answer. An important key lies in the fact that population growth occurs almost entirely in poor countries. Why there? Because the people there need children – to provide for them in old age. When you live in poverty, your children are seen as the only ones who will feed you, clothe you, and house you when you are old. Moreover, if child mortality in your country is high, you may certainly hope to have a lot of kids! It is a fixed pattern: Everywhere where prosperity increases, the birth rate decreases. In various wealthy countries, the population is actually shrinking slightly.

If you want your great-grandchildren to have a decent future, global population growth must come to a halt; so much is absolutely certain. If not, our planet will not survive. Managing population growth depends upon solid economic growth in developing countries. So even if you don’t experience the wish that poor people become prosperous out of a feeling of solidarity or compassion, you still would be
wise to wish them prosperity from a rational perspective. It is quintessential for your own future and that of your children and their offspring.

On the other hand, such strong economic growth may, of course, increase the global ecological footprint considerably, as the present Republic of China illustrates, for example, unless we find clever ways to avoid this. Partly, this can be done with the help of new science and technology. The rest will have to be accomplished through changes in our behavior as consumers.

This example shows that poverty, economy, ecology, science, technology, and human behavior interact strongly with each other. For that reason, sustainability is not simply a container or grab bag with all problems thrown separately into it. On the contrary, sustainability is the only way to understand the ways in which all those problems and issues are linked and to find solutions that really work.

3.2 The Triple P

The way in which the Brundtland Commission describes sustainable development has been generally accepted. However, in real life it is hard to apply practically. “Meet the needs of the present generation”. Right, but how? And by the way: which needs? Should everybody possess a second car and get a new smartphone every six months? “Future generations” – wonderful, but how many generations? A thousand?

Many models have been designed to explain sustainability more concretely. One of the best known was created by Ismail Serageldin in 1996: the “Triple P”, i.e. the three P’s: “people”, “planet”, and “profit”. Together they are called the “pillars of sustainability”. They can be summarized as follows (Roorda 2017):

**Social sustainability** ("people") at an individual level is about respect for human rights, freedom and safety, cultural values, education and health, personal development, diversity, empowerment and participation. At a societal level, it concerns peace, democracy, solidarity, and social cohesion.

**Ecological sustainability** ("planet") relates to conservation and resilience of the natural environment. This implies that ecosystems and biodiversity are protected
and that the ability of the natural environment to provide us with resources and regenerate our waste is not harmed.

**Economic sustainability** (“profit”) is present if development toward social and ecological sustainability can take place in a sufficiently stable economic environment and is financially feasible, and if individuals, families, and communities are guaranteed to be free of poverty. (Sometimes, instead of “profit”, the broader concept of “prosperity” is used.)

Sustainable development means that all aspects and themes above are seen as mutually dependent and interrelated, in that the various interests, problems, and solutions are constantly and harmoniously weighed against and connected with each other. This principle is often referred to as: “The three P’s must be in balance”.

### 3.3 The necessity of sustainably competent professionals

The Brundtland report and the Triple P don’t guarantee that sustainable development is now crystal clear to everybody or that it is easy to decide in all cases which decisions or actions are sustainable and which are not. Choices concerning sustainable development are usually far from simple. If the use of oil and gas contributes to the greenhouse effect and hence to climate disruption, would it be wise to use nuclear power for a couple of generations, or would that be even more unsustainable? Should we make cars more sustainable, or would that be highly unsustainable in the long term because we might have to get rid of all or most cars? Should we ban child labor in Asia and Africa as fast as we can, even if this means that the parents who depend on their children’s income would starve?

No easy answers exist. The dilemmas are complicated, and so are the solutions. At the same time, there are lots of opportunities – opportunities to make the world more beautiful and just than it is at present. Wouldn’t it be great if there were no more hunger anywhere? If war could disappear altogether? If all people could live freely and securely? If nature were resilient? These and many more goals have been formulated in a concrete and assessable way in the seventeen Sustainable Development Goals (SDGs), also known as Agenda 2030 (UN DESA 2015).
THE SEVEN SUSTAINABILITY COMPETENCES … CONCEPTUAL BACKGROUND

Whether these goals are realistic is a matter of debate, but there are two things that are undoubtably true.

The first certainty is: If we all believe that the human world is doomed to perish, we will be right. Negative thinking will become a self-fulfilling prophecy, a prediction that makes itself come true, simply because everybody will lean back and do nothing. Consequently, what we should do is roll up our sleeves. Let us work on sustainability with everything we have!

The second certainty is: Because solutions are complicated, we need everybody to make them work. At present, a number of companies – large ones and small ones – are contributing intensively to sustainable development, mainly because, by coincidence, they are managed by people who have decided to do so. The same is true for governments of countries. Some have a genuine sustainability policy, but only until the next election brings in another government. In other words, whether a company or a country strives to operate sustainably depends on who happens to be in the executive position, i.e. ultimately by coincidence.

However, sustainable development is far too essential to leave it up to chance. In order for it to become institutionalized, we need everybody, each professional, in lower and higher positions, in whatever enterprise, government, educational institution, or societal organization.

4. RESFIA+D: The Seven Sustainability Competences

Sustainably competent professionals are what our society needs - in huge quantities, in all kinds of professions, and across every thinkable sector: industry, service, finance, government, healthcare, education, farming, fishing, and forestry. We need them in multinational companies, small and medium enterprises (SMEs), family-owned businesses, commercial companies, NGOs, and informal associations.

A person can be a sustainably competent professional at every level within an organization, regardless of whether they are a CEO or a CFO, a middle manager, a
specialist, a salesperson, or an assembly line worker. Every professional can contribute to sustainable development.

To prove this, an instrument was developed to investigate how one can significantly contribute to sustainable development. The instrument is called RESFIA+D, and it consists of seven competences. Six of them are “generic” competences, which means that they are relevant for every professional. The seventh is called “disciplinary”. Actually, this is an infinitely large group of competences linked to all kinds of specific sectors and professions because there is potentially an unlimited number of professions.

The Seven Competences of the Sustainable Professional are shown in Table 1. The table shows that each of the six generic competences is expressed in terms of three types of concrete professional achievements.

Table 1. RESFIA+D: Professional competences for sustainable development

<table>
<thead>
<tr>
<th>Competence R: Responsibility</th>
<th>A sustainably competent professional bears responsibility for his or her own work. I.e.: the sustainable professional can …</th>
<th>Competence E: Emotional intelligence</th>
<th>A sustainably competent professional empathises with the values and emotions of others. I.e.: the sustainable professional can …</th>
<th>Section</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1. Create a stakeholder analysis on the basis of the consequence scope and the consequence period</td>
<td>§5.5</td>
<td>E1. Recognise and respect his or her own values and those of other people and cultures</td>
<td>§4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2. Take personal responsibility</td>
<td>§8.2</td>
<td>E2. Distinguish between facts, assumptions and opinions</td>
<td>§8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3. Be held personally accountable with respect to society (transparency)</td>
<td>§8.2</td>
<td>E3. Cooperate on an interdisciplinary and transdisciplinary basis</td>
<td>§1.3, §4.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The section numbers refer to the sections of a textbook called “Fundamentals of Sustainable Development” (Roorda 2017) in which this table is printed as Table 8.4.
Table 1. Cont. …

<table>
<thead>
<tr>
<th>Competence S: System orientation</th>
<th>Competence F: Future orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sustainably competent professional thinks and acts from a systemic perspective. I.e.: the sustainable professional can …</td>
<td>A sustainably competent professional works and thinks on the basis of a perspective of the future. I.e.: the sustainable professional can …</td>
</tr>
<tr>
<td>S1. Think from systems: flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn</td>
<td>F1. Think on different time scales – flexibly zoom in and out on short- and long-term approaches</td>
</tr>
<tr>
<td>§3.5</td>
<td>§5.5</td>
</tr>
<tr>
<td>S2. Recognise flaws in the fabric and sources of vigour in systems; have the ability to use the sources of vigour</td>
<td>F2. Recognise and utilise non-linear processes</td>
</tr>
<tr>
<td>Ch. 2-4</td>
<td>§7.3</td>
</tr>
<tr>
<td>S3. Think integrally and chain oriented</td>
<td>F3. Think innovatively, creatively, out of the box</td>
</tr>
<tr>
<td>§8.3</td>
<td>§8.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competence I: personal Involvement</th>
<th>Competence A: Action skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sustainably competent professional has a personal involvement in sustainable development. I.e.: the sustainable professional can …</td>
<td>A sustainably competent professional is decisive and capable of acting. I.e.: the sustainable professional can …</td>
</tr>
<tr>
<td>I1. Consistently involve sustainable development in the own work as a professional (sustainable attitude)</td>
<td>A1. Weigh up the unweighable and make decisions</td>
</tr>
<tr>
<td>§4.7</td>
<td>§8.5</td>
</tr>
<tr>
<td>I2. Passionately work towards dreams and ideals</td>
<td>A2. Deal with uncertainties</td>
</tr>
<tr>
<td>§4.2</td>
<td>§6.3</td>
</tr>
<tr>
<td>I3. Employ his or her conscience as the ultimate yardstick</td>
<td>A3. Act when the time is right, and not go against the current: “action without action”</td>
</tr>
<tr>
<td>§8.2</td>
<td>§4.2</td>
</tr>
</tbody>
</table>

Plus: Disciplinary competences
A sustainably competent professional possesses a rich variety of competences for sustainable development that is specific for his or her profession.

D1, D2, D3, …: to be specified separately for all kinds of sectors, disciplines, professions, etc.
**RESFIA+D** is a tool that can be used in three ways: (1) to design individual development plans; (2) to facilitate a strategy for human resource development (HRD) within a company; and (3) to (re)develop curricula in institutions of higher education. Before these three kinds of applications are to be explained, first some more details of the model have to be added, starting with an explanation of the roots of the model.

### 5. Theoretical backgrounds of **RESFIA+D**

In several European countries, a strong impulse for the definition of generic graduate qualifications came from the Bologna Agreement of 1999. Around 2001, Flanders and the Netherlands were preparing their accreditation system of higher education. As a consequence of the Bologna Agreement, they needed a clear distinction between the “first, second and third cycle” of higher education (in many countries equal to the Bachelor, Master and Doctor level). A “Joint Quality Initiative” was set up, together with several other European countries. During a meeting in 2004 in Dublin, the so-called “Dublin descriptors” were agreed (also called the “Bologna Qualification Framework”). This set of qualifications defines the differences between the three cycles, as Table 2 shows.
Table 2. (Selection of) Dublin Descriptors

| Qualifications that signify completion of the first cycle are awarded to students who: | - have demonstrated knowledge and understanding in a field of study that builds upon and extends their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;  
- can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study;  
- have the ability to gather and interpret relevant data (usually within their field of study) to form judgements that include reflection on relevant social, scientific or ethical issues;  
- can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;  
- have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy. |
| --- | --- |
| Qualifications that signify completion of the second cycle are awarded to students who: | - (…)  
- can apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;  
- have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;  
- can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;  
- (etc.) |
| Qualifications that signify completion of the third cycle are awarded to students who: | - (…)  
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity;  
- are capable of critical analysis, evaluation and synthesis of new and complex ideas;  
- (…)  
- can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society. |


The Dublin descriptors were used by many universities and study programs as one of the starting points for the definition of professional competences of their graduates. In the Netherlands, the national accreditation system of existing and new study programs in higher education was defined through an “Evaluation Framework” (“Toetsingskader”). One of the demands in this framework deals with
the end terms of the programs, which are explicitly based on the Dublin descriptors (NVAO 2003). An example of such a set of end terms, formulated as general competences, is shown in Table 3.

Table 3. General competences for Engineers

<table>
<thead>
<tr>
<th>Segment</th>
<th>Key competence</th>
<th>Key terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineer</td>
<td>Thinking in models, systems, processes</td>
<td>Find solutions through models, systems, processes; Analyze, evaluate, synthesize, solving problems; Transfer of knowledge and information</td>
</tr>
<tr>
<td></td>
<td>Working with innovation cycles</td>
<td>Applied research; Phases in design or innovation cycle</td>
</tr>
<tr>
<td></td>
<td>Role fulfilment</td>
<td>Making: project leader; Translating: salesman, consultant; Managing: manager, entrepreneur</td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td>Awareness to use societal, ecological and economic boundaries; Awareness to transcend disciplinary boundaries; Strategic thinking; Sustainable development; Acting from relevant physical and business concepts, methods and tools</td>
</tr>
<tr>
<td>Self-guidance</td>
<td>Learning to learn</td>
<td>Attitude aimed at life-long learning; Independently decide and implement learning goals and -strategies, evaluating the results; Reflect on own behavior to give and receive feedback</td>
</tr>
<tr>
<td></td>
<td>Take own responsibility</td>
<td>For professional and ethical dilemmas, make a decision based on solid societally accepted standards and values</td>
</tr>
<tr>
<td></td>
<td>Take initiative</td>
<td>Adapt quickly to changing labor circumstances; Intrinsicly motivated; Result oriented working based on perseverance</td>
</tr>
<tr>
<td>Social-</td>
<td>Functioning independent or in a team</td>
<td>Carry out tasks according to planning, which contribute to a chosen result; As an expert, alone or as a team member, act according to customer wishes; As an expert, alone or as a team member, give advise about disciplinary or professional issues; Pay responsibility about own acting to oneself and to others</td>
</tr>
<tr>
<td>communicative</td>
<td>Interdisciplinary communication</td>
<td>Function socially and communicatively effectively in a multidisciplinary environment within the professional context; Good oral and written expression within the professional context</td>
</tr>
<tr>
<td></td>
<td>Leadership</td>
<td>Based on own leadership style, encourage employees to persevere, accept and learn from mistakes; Stimulate employees to take personal initiatives; Be a role model for employees; Show confidence and self-assuredness; Give a feeling of shared responsibility to employees</td>
</tr>
<tr>
<td>Profession-specific</td>
<td></td>
<td>To be detailed by separate disciplines</td>
</tr>
</tbody>
</table>

Source: Authors’ own elaboration.
5.1 Competences for sustainable development

In discussions with professors and lecturers in higher education, many times the same question has arisen: “Should ‘sustainability’ be added as an extra competence to our existing competence profile?”

This question raises the issue of the relation between competences and sustainable development, or more specifically: education for sustainable development (ESD).

The question shows that a lot of teachers find it hard to make a connection between ESD and competence-based education. If a “sustainability competence” is formulated as “the ability to think and act in a sustainable way” (as has been proposed by some), that does not really meet a desired characteristic of a competence profile, i.e. that the curriculum can be deduced from it. What exactly would “think and act in a sustainable way” mean? In which critical professional situations is it expressed, in what roles and with which tools?

Several approaches to “SD competences” are possible, as De Kraker et al. (2007: 105) describe. One is the “instrumentalist” approach, offering lists of knowledge, skills and values. Opponents advocate an “emancipatory” approach, putting an emphasis on raising a critical attitude of the students. A typical example is described by the so-called “Gestaltungskompetenzen” (lit. “shaping competences”).

“Within the international discussion about ESD different sets of competencies as educational objectives of ESD exist but still a broad consensus can be found of the basic aspects that need to be involved. The German debate about ESD led to a definition of key competencies (“Gestaltungskompetenz”) to provide for an active, reflective and cooperative participation in the obligation to shape a sustainable development. This definition is based upon an understanding of education which is marked by the education-theoretical premises of openness, reflexivity and future viability:

- **Openness**, because the existing stock of knowledge has proved to be subjective and relative.
- ** Reflexivity**, because subject and object underlie dynamic changes which may only be grasped by a higher-level reflexivity.
- *Future viability*, because in the increasing dynamic of global change, only he who has learned to responsibly cope with insecurities and risks will remain functionable.

The acquisition of Gestaltungskompetenz is seen as central educational objective of ESD. The term is used to describe the forward-looking ability, “to modify and to shape the futures of those societies we live in via active participation in terms of a sustainable development” (Barth, Burandt 2008, citing De Haan 2002, and De Haan, Harenberg 1999).

According to De Kraker et al. (2007), this concept of “Gestaltungskompetenz” offers a combination of the instrumentalist and the emancipatory approach. The concept was detailed by De Haan (2006) as a set of key competences:

1. competence in foresighted thinking;
2. competence in interdisciplinary work;
3. competence in cosmopolitan perception, transcultural understanding and co-operation;
4. participatory skills;
5. competence in planning and implementation;
6. capacity for empathy, compassion and solidarity;
7. competence in self-motivation and in motivating others; and
8. competence in distanced reflection on individual and cultural models.

This list has its roots not in the process of educational developments but rather in the development of the science and philosophy of sustainable development. It is striking that the above list of SD competences shows a strong resemblance with the various sets of generic competences that were described in Tables 2 and 3. The two concurrent developments, within education and within sustainability science, have led to conclusions that are remarkably similar. This is illustrated by the fact that Barth et al. (2007) applied De Haan’s model in order to specify the characteristics of ESD. It appears that SD competences are not far from general competences that one might expect from any graduate, whether sustainable development is in mind or not. In other words: actually, sustainable development is mainly a matter of common sense and sound professional behavior.
Nevertheless, there is a difference between the sets of generic competences, shown in Tables 2 and 3, and the above set by De Haan. Where most of De Haan’s competences are value-free, describing desired professional behavior in a “technical” way, just as the generic competences of Tables 2 and 3, there is one competence which is normative and not value-free, and which refers to an attitude or to personal emotions rather than to behavior: #6, the capacity for empathy, compassion and solidarity.

Not all ESD developers added such values to their sets of SD competences. One such set was published by the Commission on Education and Communication of the IUCN, which stated (Hopkins, McKeown 2002):

“To be successful, ESD, like all good education, must blend knowledge and skills. ESD must provide practical skills that will enable people to continue learning after they leave school, secure sustainable livelihoods, and live sustainable lives. These skills will differ with community conditions. The following partial list of skills will help initiate discussions about the types of skills students will need as adults in those communities. Note that these skills, while totally consistent with good basic education, also fall into one or more of the three realms of sustainable development:

- the ability to communicate effectively both orally and in writing;
- the ability to think about systems (both natural and social systems);
- the ability to think in time – to forecast, to think ahead, and to plan;
- the ability to think critically about value issues;
- the ability to comprehend quantity, quality, and value;
- the capacity to move from awareness to knowledge to action;
- the ability to work cooperatively with other people;
- the capacity to use various processes – knowing, inquiring, acting, judging, imagining, connecting, valuing, questioning and choosing; and
- the capacity to develop an aesthetic response to the environment”.

In this set, values are mentioned several times, but there is no clear indication that the authors wish that the professionals act based on a set of ethical or normative values, let alone compassion. This may be a consequence of the characteristics of professional profiles in general, which usually are formulated in terms of behavior
rather than on attitudes or internal motivations or emotions. However, another author, Van der Woude (2008), expressly includes such elements. He describes SD competences as a set of professional roles:

- The global citizen / steward
- The professional
- The equilibrist
- The forward thinker
- The connector
- The steersman
- The function-oriented innovator
- The creatively involved

Van der Woude explains each of these eight roles. For example, the “global citizen / steward” is described as follows:

“The global citizen / steward cares for himself, for others and for the physical reality. He is convinced that we should carefully deal with the finite stock of resources and that we should prevent environmental pollution and damage to nature in order to preserve our planet. He understands that this is only possible if we do not transfer our problems to others, don’t live at the cost of others, but share prosperity and well-being equally among the world population. North cannot over-consume at the cost of South. To reach a global balance, the global citizen / steward thinks we should be prepared to listen to each other, and that, instead of competition, we should seek cooperation and that we should work on a safe environment in which it is good to live and work”.

Such a description is clearly value-driven, and goes beyond the generic competences shown in Tables 2 and 3. Other proposed sets of SD competences seem to be somewhere in between, e.g. Heideveld (2003) and De Groene (2003: 26). The same is true for the ESD competences defined in the Barcelona Declaration of 2004 (see: Segalàs 2009).

Other sets of SD competences come from a slightly different angle, that of transition management. Andringa & Weterings (2006, 2008) designed a competence profile for transition professionals. Jansen, Weaver & Van Dam-Mieras (2008) added more details, out of which Table 4 was formed.
The seven sustainability competences … Conceptual background

Table 4. Competences of transition professionals

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Role</th>
<th>Competence</th>
<th>Methods &amp; techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern recognition</td>
<td>Manager</td>
<td>• Integral thinking</td>
<td>Integral system analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Frankly interviewing</td>
<td>Actor and network analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Analytical skills</td>
<td>Historic regime analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Conceptual power</td>
<td>Fact finding</td>
</tr>
<tr>
<td>Reorientation</td>
<td>Innovator</td>
<td>• Vision and inspiration</td>
<td>Scenario analysis</td>
</tr>
<tr>
<td></td>
<td>Researcher</td>
<td>• Guts and Power of persuasion</td>
<td>Future explorations</td>
</tr>
<tr>
<td></td>
<td>Team worker</td>
<td>• Creativity and new ideas</td>
<td>Backcasting</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>• Consciousness of history</td>
<td>Reframing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Integral system analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Actor and network analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Historic regime analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fact finding</td>
<td></td>
</tr>
<tr>
<td>Experimenting</td>
<td>Innovator</td>
<td>• Alliance management</td>
<td>Actor and network analysis</td>
</tr>
<tr>
<td></td>
<td>Networker</td>
<td>• Mobilizing power</td>
<td>Strategic niche management</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>• Organizational skills</td>
<td>Flexible design</td>
</tr>
<tr>
<td></td>
<td>Team worker</td>
<td>• Second order learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scenario analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Future explorations</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Backcasting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reframing</td>
<td></td>
</tr>
<tr>
<td>Anchoring and scaling up</td>
<td>Net-worker</td>
<td>• Anticipation skills</td>
<td>Actor and network analysis</td>
</tr>
<tr>
<td></td>
<td>Researcher</td>
<td>• Entrepreneurship</td>
<td>Integral system analysis</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>• Power of persuasion</td>
<td>Strategic niche management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lobby and networking skills</td>
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Sets of competences like the above may offer some clarity to lecturers wanting to integrate sustainable development into competence-based education. Nevertheless, in the eyes of many university lecturers they were not sufficiently operational, as meetings and discussions in the years around and after 2005 made clear.
Besides, managers of companies indicated that such competence sets were too abstract to allow them to apply the sets in real life, e.g. as a tool for HRM.

Repeated requests were received by the author of the present chapter from business managers and university lecturers to create practical clarity concerning the relations between competences and sustainable development. Hence, a project was started with the aim to design a model for competences for sustainable development that could be applied in higher education, in companies and other organizations, and by individual professionals who want to plan the next steps in their careers. Based on the above-mentioned sets of competences, RESFIA+D was developed, validated and improved between 2006 and 2012. It has been applied since 2009.

5.2 Later developments

Several researchers have studied RESFIA+D, applied the model, and compared it with other competence models. Lambrechts et al. (2013) compared RESFIA+D with De Haan (2006) and with Sleurs (ed., 2008), and next applied RESFIA+D in order to analyze the education of two Belgian universities.

The need for new paradigms in order to design and realize ESD strategies was emphasized by Martens et al. (2010), for which RESFIA+D was applied. The results were applied in Lambrechts et al. (2019) as a coding tool to describe the roles of individual sustainability competences in eco-design building projects.

More recent competence models were published by Wiek et al. (2011); UNECE (2011); Rieckmann (2012); and Dentoni (2012). Naturally, these were not applied for the development of RESFIA+D, since they were published after the model was completed. They were, however, applied when an extension of RESFIA+D was designed in the form of a set of disciplinary competences of educators, as will be described below.

An overview of these and other recent models for ESD competences, including RESFIA+D, was offered in Lambrechts et al. (2017).
6. Levels of competence

Professionals are either sustainably competent, or they are not? Of course not; that would be an oversimplification. In reality, it is more complicated; with respect to a variety of competences, some persons are more competent, while others are less so. A person may be a well-educated and experienced professional who is held in high esteem by everyone or a novice who has learned quite a few things but doesn’t have much practical experience yet. A suitable model is the medieval concept of the master and the apprentice. The former has mastered the profession deeply. The latter is only allowed to work, for the time being, under the supervision of the master. He or she still has to acquire more skills and is not yet considered highly competent in the discipline.

To describe the sustainability competence levels, RESFIA+D applies more than just the two competence levels of the medieval guilds. Seven levels are distinguished.

**Level 1: Apprentice**

At the first level, you are an apprentice or a student. You have not yet gathered sufficient competences to practice your profession. You may assist your more experienced colleagues or teachers in the execution of their jobs, the main goal of which is not that you realize concrete achievements, but that you learn from your tasks. You may perform some of your activities in simulated work circumstances instead of real ones. Whenever you do work in a real professional context, your primary obligation is not to produce a result but to show your effort.

**Level 2: Work under supervision**

At the second level, you are able to perform your job fully or partially – under supervision. You are the “journeyman”, the trainee who is able to achieve solid results with the aid of experienced colleagues. A typical example in the health care field would be the recent medical school graduate who is completing a residency under the supervision of a medical specialist.
**Level 3: Self-direct**

At the third level, you are able to bring into practice what you have learned as a self-directed professional. Not more, not less. At a practical level, you perform tasks that are in line with the usual demands of your profession. Your vision, your opinions, and your activities are mainly related to your personal expertise, your immediate work environment, and the customary work methods. Creativity is not demanded and generally not even appreciated.

**Level 4: Integrate**

At the fourth level, you are able to position your work within a wider context and benefit from that. In the performance of your job, you navigate a complex range of topics, work styles, persons, and cultures. You may do this:

- beyond the limits of your own expertise;
- taking into consideration different cultures, value systems, traditions;
- beyond the usual expectations and work methods of your profession; and/or
- in flexibly changing roles, e.g. managing.

**Level 5: Improve**

At the fifth level, you are able to implement concrete improvements in the work that you and others are doing. You oversee – both at a detailed level and at a systems level – your work and the system within which you perform your professional activities. You judge your own work and that of others with whom you cooperate critically, and you estimate its consequences in the widest sense. Based on that, you constantly aim at improving the work to which you contribute, and in doing so, you achieve noticeable results.

**Level 6: Innovate**

At the sixth level, you are the source of innovation within your discipline. You introduce innovative insights into your work, concerning:

- the goals or targets that have been set
- the means and methods that are applied
- the effects of the work
- the scope of those effects in space and time
- the underlying vision
- the relations inside and outside of your work environment or your discipline, e.g.: society as a whole

These innovations are demonstrably visible in your professional activities and in their results.

**Level 7: Master**

At the highest level, you are prominent within your discipline. You have reached “mastership”. Others learn from you. You are their role model, their “archetype”. Your inspiring leadership is recognized and accepted by all. Such masters are extremely rare. You may think of Nobel Prize winners and Oscar winners, or others who perhaps have not won official awards, but who are recognized at a conference or meeting because when they start talking, everybody else becomes silent and listens. Probably, you can name one or a few of those special persons within your own professional sector.

**All levels**

In order to contribute to sustainable development, you don’t have to be a master. Every professional, working at whatever level, can be a sustainability hero. In order to prove this strong claim, several books have been written by the authors of the present article. These books establish this claim with the aid of a long series of practical examples, in which actual professionals, working in a wide range of disciplines and levels, tell their stories. Each of the RESFIA+D competences is illustrated, based on one or more such stories.

The first book in this series was written in Dutch (Roorda 2015), who also developed the RESFIA+D model. For the second version, written in English and based upon stories about American and Canadian professionals, Roorda cooperated with an American professor of Miami Dade College (Roorda, Rachelson 2018). The English book has the same structure and theoretical contents as the Dutch one; only the stories have been replaced.
Experts on sustainable development, education and management are invited to contact the first author and propose a cooperation on the development and production of a similar book in another language and/or geographical region.

The RESFIA+D assessment model is a part of a larger set of management tools, together called Future-Focused Entrepreneurship Assessment (FFEA). The FFEA model, its backgrounds and its practical applications are described in Roorda (2018).

The theoretical aspects of RESFIA+D, including its validation, are treated in Roorda (2016). Many details about both RESFIA+D and FFEA can also be found online (Roorda, n.d.).

7. Specifying the levels

As stated in the introduction, RESFIA+D can be applied in three ways, which will be described in Section 8. For all three of them, the tool is used as an assessment instrument, paving the way to create development plans.

In order to create a genuine and practical assessment tool, it is not sufficient to define a set of levels in general terms. It will also be necessary to define those levels in some detail: specified for all different competences. This is what was done during a project between 2007 and 2010, when RESFIA+D was first developed and theoretically and practically validated (Roorda 2010).

For this purpose, concrete behaviors were formulated for each of the six generic competences. More precisely, this was done for all three achievements of those six competences. This resulted in separate descriptions linked to the various competence levels of all 18 (6 x 3) achievements.

One example is shown here. For this purpose, Competence S is selected: System Orientation. Next, out of the three achievements that were defined for this competence, S2 is taken as an example, dedicated to weaving faults and sources of vigor. The achievements of S2 are described in Box 1.
Box 1. Example: general behavior of a generic competence

**Competence S: System Orientation**

*A sustainably competent professional thinks and acts from a systemic perspective.*

**Achievement S2**

*You recognize flaws in the fabric and sources of vigor in systems, and you use the sources of vigor.*

**S2 behavior (general):**

- You are aware, or you investigate, which flaws in the fabric are deeply integrated in the systems with which or for which you work. These flaws are the ultimate causes of un-sustainability
- You discover which sources of vigor are available in or around these systems in order to correct the flaws in the fabric. These sources of vigor are the powers we possess towards true sustainability.
- You succeed in effectively utilizing or mobilizing the sources of vigor, enabling you to contribute to diminish or even eradicate the flaws, or at least to decrease the negative consequences of them.

These achievements have been elaborated for several separate level descriptions. The separate level descriptions were defined for the competence levels 3 to 6, as these four levels are considered to be realistic levels, either as present or desired levels of professionals with practical experience during a number of years, or as realistic targets for education programs in higher education. The achievements of levels 3 to 6 of S2 are shown in Box 2.

Box 2. Example: levels of a generic competence

**Competence S: System Orientation**

*A sustainably competent professional thinks and acts from a systemic perspective.*

**Achievement S2**

*You recognize flaws in the fabric and sources of vigor in systems, and you use the sources of vigor.*

**S2 behavior (levels):**
Level 3: Apply
- You analyze the structure of your immediate working environment.
- Based on this, you make a SWOT analysis.

Level 4: Integrate
- You make this SWOT analysis for the organization of which you are a member and its surroundings.
- You do so from a perspective of sustainable development, for example from the Triple P.

Level 5: Improve
- You make the SWOT analysis in close collaboration with representatives from all levels of your organization.
- Based on the SWOT analysis you formulate recommendations to use strengths and opportunities, to improve weaknesses and to anticipate on threats.

Level 6: Innovate
- You make the SWOT analysis also in close collaboration with representatives in the wide surroundings of your organization.
- You make recommendations to strengthen the structure of the system considerably.

Together, the descriptions of the various levels for all eighteen (6 x 3) achievements form a **Set of Competence Cards**, a reference map that can be used to assess the competences of individual professionals. The complete set can be downloaded as a pdf file; see Roorda (n.d.) in the References of this article.

**Disciplinary competence levels**

As stated earlier, an infinitely large set of disciplinary competences exists, due to the fact that there is an unlimited and ever-growing number of professions. If one wanted to define concrete competence levels for some of them, they would first have to develop a valid set of competences that are specific to a certain profession.
This is what was done in 2016, as a part of a Europe-wide project aiming at developing a set of sustainability competences for educators. The project, called A Rounder Sense of Purpose, was funded by the European Commission (Vare 2018). After studying relevant sources (Sleurs, ed. 2004; De Haan 2006; Wiek et al. 2011; UNECE 2011; Rieckmann 2012) and discussing the topic with the members of the international project team, a set of Educator Competences for Sustainable Development was proposed. By coincidence, this set consists of three achievements, just like the six generic competences. This is not a necessity; for other professions, the number might just as well be different. Anyway, the three achievements are:

**+D for Educators:**

D1. Innovate education, regarding structures, methods, and contents
D2. Offer challenging, learner-centered education within real-life contexts
D3. Involve sustainable development in learner assessments

After these three achievements were defined, it became possible to develop the competence level descriptions. As an example, Box 3 shows them for D2.

**Box 3. Example: levels of a disciplinary competence**

**Competence D: Educator competence**

A sustainably competent educator involves sustainable development in his or her professional activities wherever it makes sense.

**Achievement D2:**

You offer challenging, learner-centered education within real-life contexts.

**D2 behavior (levels):**

**Level 3: Apply**

- You apply a variety of pedagogic and didactic methods, enabling the learners to understand the basic notions of sustainable development.
- You also stimulate learners to discover the relations between sustainable development and their own (present or future) neighborhood and/or profession.

**Level 4: Integrate**

- You guide learners to discover the relations between sustainable development
and all topics in the curriculum, causing sustainable development to be a continuous thread or fundament throughout the curriculum.

- Doing this, you enable the learners to act in a multidisciplinary way.
- You enable the learners to act within a real-life context, or at least within a realistic context.

**Level 5: Improve**

- Feedback from learners, colleagues and experts is used by you to systematically improve the learning process and your role in it.
- Topical developments are constantly observed by you, and used to keep the learning process up to date.

**Level 6: Innovate**

- You cooperate with colleagues from different topics, and with external experts, in order to let the learners operate in an interdisciplinary or even transdisciplinary context.
- Doing this, you show leadership among your colleagues and all others who are involved in the learning process in an educating capacity.

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**8. The toolbox of the professional**

Earlier in this article, competences were defined as follows: A **competence is the ability to deliver, in a given context, in a certain role, solid achievements making use of appropriate tools.**

In many cases, the tools of professionals are tangible such as hammers, pipe wrenches, or computers. Other tools are in your head: for instance, people skills or architectural insight. There are four kinds of such “mental” tools. Together, they are referred to as “KISA”, an acronym that stands for these four words:

- **Knowledge** = what you know
- **Insight** = what you understand
- **Skills** = what you are able to do
- **Attitude** = who you are
Examples of those four kinds of mental tools are (see also Table 1):

**Knowledge:**
The concept “consequence scope” and “consequence period” (related to competence R1: *Responsibility*)
The Triple P: people, planet, profit (competence S2: *System orientation*)
Linear and non-linear processes (competence F2: *Future orientation*)
Maslow’s hierarchy of needs (competence F3: *Future orientation*)

**Insight:**
You distinguish between facts, assumptions, and opinions (competence E2: *Emotional intelligence*)
You position the system within its context (competence S1: *System orientation*)
You recognize flaws in the fabric and sources of vigor (competence S2: *System orientation*)
You understand the difference between tackling symptoms and removing causes (competence F1: *Future orientation*)

**Skills:**
Create a stakeholder analysis (competence R1: *Responsibility*)
Listen actively (competence E1: *Emotional intelligence*)
Cooperate in interdisciplinary and transdisciplinary ways (competence E3: *Emotional intelligence*)
Perform a function analysis (competence F3: *Future orientation*)

**Attitude:**
You feel and show personal responsibility (competence R2: *Responsibility*)
You respect values (competence E1: *Emotional intelligence*)
You think and act integrally and chain oriented (competence S3: *System orientation*)
You think innovatively, creatively, and out of the box (competence F3: *Future orientation*)
If you have all these tools in your repertoire, you possess a well-equipped toolbox to work sustainably. All of them are explained in more detail in the earlier mentioned books offering practical examples of the RESFIA+D competences.

9. All the competences of the rainbow

RESFIA+D, as a set of sustainability competences, claims to be complete.

This is quite a claim! Is it possible that such a model – any model – is complete? Surely there will be people who, immediately after reading such an ambitious claim, will prove it wrong by mentioning a competence missing from the set. How about ethical consciousness, inspiration, leadership, or – if you are Christian – stewardship? In other words, how complete is the model really?

The answer can be given by comparing competences with colors. Of those, there exist an infinite number. If one mentioned a long series of colors and then claimed all of colors were listed, it would not be very hard to point out shades that would still be missing. There would be every chance that Bulgarian rose, Vegas gold, or Harvard crimson were not yet included. Eggplant, mint, or vanilla. Perhaps, the list failed to mention a nameless color that is indicated by its RGB values (red-green-blue), each expressed as a number between 0 and 65,535: This offers a variation of more than 280 million shades. That is a lot, but it is nothing compared to the infinity of all colors. No, an enumeration of colors can never be complete.

The same applies to competences for sustainability. Whoever attempts to find more, will be able to express hundreds of them in the English language, and if you think that is still not enough, you can make up your own new words or borrow them from other languages. In short, the quest for completion is at best a hopeless effort and at worst a desperate exercise.

To deal with the enormous variety of colors, people have chosen to give names to a limited number of main colors and to consider the rest as mixtures, blends, or combinations of them. Since this has been done independently throughout many eras and in different cultures, it has rendered a fascinating diversity. Western culture
traditionally distinguishes seven colors of the rainbow, plus black and white. In
total, this makes a set of nine:

- Red, orange, yellow, green, blue, indigo, violet, black, white
- However, the Candoshi, a Peruvian tribe, distinguish only eight basic colors
  (Kay et al. 1997):
  - Chobiapi, ptsiyaro, kamachpa, kavabana, tarika, kantsirpi, ponzani, borshi
- It is not easy to translate them into English, but if you try, you get
  something like: red, yellow, bright green, greenish blue, purple, black, pale
  & grey, white.
- According to Kay et al., the Kwerba, a tribe in Irian Jaya, Indonesia, know
  even fewer, namely four colors:
  - Asiram, nokonum, kainanesesenum, icem
  - In English, this is roughly equal to red, yellow, green & blue & black, white.
- Knowing only four colors may seem rather primitive. But a hypermodern
  laser printer does not possess many more, as it is a five-color printer:
  - Magenta, yellow, cyan, black, white
  For four of those colors, a color printer has separate toner cassettes. The fifth
  color, white, is produced cleverly by not using each of those four toners
  simultaneously. How could the Kwerba be primitive? They are hardly second to a
  printer from the 21st century.

Why are there such huge differences between color schemes? Because every
scheme you design will always be a simplification of reality. What you do is cut a
continuous color spectrum into a finite set of separate colors. Actually, this is simply
wrong, but what are you going to do? If you don’t wish to make this mistake, you
can never define a color, and so the rainbow is cut into pieces: nine in Europe and
North America (if you include black and white), eight with the Candoshi, four with
the Kwerba, and all kinds of numbers with hundreds of different cultures.

This dividing of a continuous spectrum into a finite set of separate elements is
something we do all the time. Here are some examples from management science.
9 is the number of criteria of the EFQM Excellence Model for quality management
(Nuland et al. 1999):

- Leadership, strategy, people, …
8 is the number of fields in *Leary’s Rose* (Leary 1957):
- leading, helping, co-operative, …

7 habits are what highly effective people possess, according to Stephen Covey (Covey 1989):
- proactive, begin with the end in mind, first things first, …

6 M’s are basic to the *Six Sigma* method for quality management (Tennant 2001):
- machines, methods, materials, …

5 layers together form the hierarchy of Maslow, a model for the needs and motivations of people (Maslow 1954):
- physiological needs, safety, social needs, …

4 steps are what Deming’s control cycle (Deming 1986) consists of:
- plan, do, check, act

3 is the number of elements in the Triple P (Serageldin 1996) of sustainable development:
- people, planet, profit

2 basic principles exist according to traditional Chinese philosophy:
- yang, yin

1 is the number of universes we live in:
- reality

Do you really think there are cosmic laws prescribing that a quality cycle consists of precisely four steps as Deming proposed? Of course not, and no doubt Deming realized that, too. Or do you believe, as Covey taught us, that effective leaders possess exactly seven habits? Covey himself does not think so since he “discovered” an eighth habit a few years later (Covey 2004):
- find your voice, in other words: inspire others

What all of these designers of the above models and systems have done is split reality into parts. While doing this, they corrupt reality, but that is *all right* as it provides us with methods to deal with reality effectively.

Mathematicians speak of a “cover”. The nine criteria of the EFQM model “cover” the wide area of quality management, roughly equal to the way in which a window screen covers an open window: hermetically closed for mosquitoes and
other bugs and thus effective, but not 100% closed, therefore allowing fresh air to enter.

In the same way, the sustainability competences of this book cover the wide range of competences of a sustainable professional. The RESFIA+$D$ spectrum (see Figure 2) includes:

- responsibility, emotional intelligence, systems orientation…

**Figure 2. A spectrum of a hundred thousand and eighteen competences**

- Responsibility
  - Stakeholder analysis
  - Responsibility
  - Transparency

- Emotional intelligence
  - Values
  - Facts, opinions
  - Interdisciplinary

- System orientation
  - Zoom in & out (place)
  - Faults & vigors
  - Integral, circular

- Future orientation
  - Zoom in & out (time)
  - Non-linear
  - Out-of-the-box

- Personal involvement
  - Sustainable attitude
  - Passion, ideals
  - Conscience

- Action skills
  - Unweighables
  - Uncertainties
  - Action without action

Source: Authors’ own elaboration.

This is not airtight, but it is effective. If you mention competences that are not literally there, they probably present variations or combinations of competences discussed in the book.
Are you looking for ethical awareness? Go to competence I3, dedicated to the Conscience. Do you want to find the concept of inspiration? Have a look at competence I2 about Passion, dreams and ideals. Aside from that, turn to Innovative, creative, out of the box in competence F3. You are interested in stewardship? Search for Responsibility in competences R1 to R3, and you will find related information.

Concerning leadership: this concept is considered to be of a different nature, not so much a competence but rather a competence level, so you can find it in section 4 of this article, where varying degrees of leadership are explained, ranging from Apprentice (developing) to Master (advanced).

All in all, this means that the “rainbow” of sustainability competences in this book is complete, not in the sense of “airtight”, but certainly in the sense of a “cover”.

This “cover” principle may immediately be tested by making a comparison between the competences set of RESFIA+D and other, recent models. One such model was published by Wiek et al. (2011), who defined a set of five competences: Systems-thinking competence; Anticipatory competence; Normative competence; Strategic competence; Interpersonal competence.

This model was extended and slightly adapted to a set of seven competences by Dentoni et al. (2012), which was applied by Lans et al. (2014) and Ploum et al. (2018). Their seven competences are: Systems-thinking competence; Embracing diversity and interdisciplinarity; Foresighted thinking; Normative competence; Action competence; Interpersonal competence; Strategic management. Table 5 compares the two sets with the RESFIA+D set.

It is evident that all competences defined by Wiek et al. (2011) and by Dentoni et al. (2012) can easily positioned within the RESFIA+D model. Wiek et al. did not define equivalents of RESFIA+D’s Responsibility and Emotional Intelligence. Dentoni et al. added Embracing diversity and interdisciplinarity which comes close to Emotional Intelligence, especially E1 and E3, respectively. Both Wiek et al. and Dentoni et al. don’t explicitly define a competence which is comparable to Responsibility, although Dentoni et al. indirectly mention it by writing about “responsible action”.
Table 5. Illustration of the “cover” principle

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<tr>
<td>Responsibility</td>
<td>(Action competence)</td>
<td>Embracing diversity and interdisciplinarity</td>
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<td>Emotional Intelligence (e.g. E1. Recognise and respect his or her own values and those of other people and cultures; and E3. Cooperate on an interdisciplinary and transdisciplinary basis)</td>
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<td>Systems Orientation</td>
<td>Systems-thinking competence</td>
<td>Systems-thinking competence</td>
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<td>Future Orientation</td>
<td>Anticipatory competence</td>
<td>Foresighted thinking</td>
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<td>personal Involvement</td>
<td>Interpersonal competence; Normative competence</td>
<td>Interpersonal competence; Normative competence</td>
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<td>Action Skills</td>
<td>Strategic competence</td>
<td>Strategic management; Action competence</td>
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More such comparisons can be made, e.g. with sets of competences designed by Kearins and Springett (2003), by Sipos et al. (2008), and by Sterling and Thomas (2006). As an example, a comparison is made here with Sipos et al. (2008). They don’t exactly define a set of competences, they rather define – as they call it – “Transformative sustainability learning” (TSL). For this purpose, they propose a list of 18 TSL characteristics in their Table 2, divided into three groups, “Head”, “Hands” and “Heart”:

Head: Cognitive engagement; transdisciplinary curriculum; critical thinking; systems thinking; understanding of sustainability; understanding of global citizenship.


Heart: Empowering; creative; fun; values-focused thinking; inclusive; place-based.
All or most TSL characteristics can be interpreted as competences, and next be related to the 6 main or the 18 detailed competences of RESFIA+D. This is done in Table 6, in which RESFIA+D is shown in more detail than in Table 5, because TSL also offers more details.

Table 6. Further illustration of the “cover” principle: comparison between RESFIA+D and TSL

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<tr>
<td>Responsibility</td>
<td>Service learning</td>
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<td>R1. Stakeholder approach</td>
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<td>R2. Personal responsibility</td>
<td>Experiential learning</td>
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<tr>
<td>R3. Accountability</td>
<td>Democratic and participatory; global citizenship</td>
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<tr>
<td>Emotional Intelligence</td>
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<td>E1. Values and cultures</td>
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<td>E2. Facts vs. assumptions, opinions</td>
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<td>Systems Orientation</td>
<td>Systems thinking; applied learning</td>
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<tr>
<td>S1. Analytic vs. holistic</td>
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<td>S2. Flaws vs. vigors</td>
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<td>S3. Integral thinking</td>
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<td>Future Orientation</td>
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<td>F1. Short-term vs. long-term</td>
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<td>F2. Linear vs. non-linear</td>
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<tr>
<td>F3. Innovative, creative</td>
<td>Creative</td>
</tr>
</tbody>
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Table 6. Cont. …

<table>
<thead>
<tr>
<th>personal Involvement</th>
<th>Cognitive engagement; place-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1. Sustainable attitude</td>
<td>Sustainability</td>
</tr>
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<td>I2. Passion</td>
<td>Fun</td>
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<td>I3. Conscience</td>
<td>Service learning</td>
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<td>Action Skills</td>
<td></td>
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<tr>
<td>A1. Unweighabilities</td>
<td>Conflict resolution</td>
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<tr>
<td>A2. Uncertainties</td>
<td></td>
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<tr>
<td>A3. Action without action</td>
<td>Conflict resolution</td>
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10. Concluding remarks

In a next article by the authors of this article, which can be found in this journal, called “The Seven Sustainability Competences according to the RESFIA+D Model. Part B: Practical Experiences”, some examples will be described of the application of RESFIA+D in real life. This next article will end with some concluding remarks concerning the theoretical and practical aspects of RESFIA+D.

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The seven sustainability competences according to the RESFIA+D Model. Part B: practical experiences

Niko ROORDA
Roorda Sustainability, The Netherlands

Anouchka RACHELSON
Miami Dade College, USA

Abstract:

Aim: In a previous article within this same journal, called “The Seven Sustainability Competences according to the RESFIA+D Model. Part A: Conceptual background”, the origins, structure and validation were described of a model for professional competences for sustainable development, called RESFIA+D. The model provides an assessment and policy instrument that can easily be applied practically. Examples of such applications are offered in the current article. Companies, NGO’s and other organizations may apply RESFIA+D as a structured tool for human resource development (HRD). Institutions for higher and vocational education can use the instrument for education (re)development, where curricula and didactic approaches are derived from a systematically designed competence profile in which sustainable development is integrated. Finally, individual professionals may use RESFIA+D as a tool for professional development.

Design / Research methods: The practical applications described in this article offered a way to evaluate and improve the RESFIA+D model, which contributed to the validation process of the assessment tool.

Conclusions / findings: Based on reactions of users, it is concluded that the RESFIA+D assessment is helpful to enable organizations and individual professionals to understand their strengths and weaknesses in their competences in relation to sustainable development; and to enable educational institutions, e.g. universities, to improve their educational goals, competence profiles and curricula related to sustainable development.

Originality, value of the article: The article focuses in a unique way on the roles of individual professionals towards sustainability, whereas most or all usual assessment models focus on the roles of either entire organizations, or of individual persons seen as civilians or customers.

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1. Introduction

In a previous article by the authors of this article, called “The Seven Sustainability Competences according to the RESFIA+D Model. Part A: Conceptual background”, the theoretical framework of RESFIA+D was explained. The current article continues, by offering examples of the application of RESFIA+D in real life.

RESFIA+D can be applied in three ways. For all three of them, the tool is used as an assessment instrument, paving the way to create development plans: for individual professionals (Section 2), for entire teams of an organization or department (Section 3), or for higher education (Section 4).

As an extra, Section 5 offers a simplified Self-Test that can directly be applied by the reader, followed by Section 6 in which a Pledge for professionals is proposed.

2. Individual professionals: Personal Development Plan

The first and easiest application is by an individual professional. It might be the reader, a colleague, a supervisor, a staff member, or an intern. Students can do it, as a part of their study program in a university, a college, or a school.

The assessment can be done repeatedly, for instance every one, two or three years, as a part of a cyclic professional development process.

Step 1: Your present competence, according to yourself

First, you go through all six generic competences one by one; and for each of them, you go through the three achievements that are defined.

If, as a preparation, a set of disciplinary competences has been defined for your profession (e.g. by an expert group, by the organization you work for, or by you), you include those as well.
THE SEVEN SUSTAINABILITY COMPETENCES … PRACTICAL EXPERIENCE

For each of these 18 or more achievements, you sincerely ask yourself, after reading the detailed level descriptions: Do I really do this, or at least do I do things that are comparable with these descriptions? At which level do I do it?

Don’t fool yourself by being too optimistic; why would you?

**Step 2: Feedback from others**

Next, you invite one or more persons who are familiar with you and your work and whom you trust to score the 18 or more topics with you in mind. If enough people do this, you get a 360° feedback.

Of course, if you cannot or don’t want to get this kind of feedback, you can leave Step 2 out.

**Step 3: Your ambition**

Then, you define your ambition for each of the topics. Before you do, you might select a certain period of time in which you want to realize this ambition: i.e. a target date. The result may look like Figure 1, which is an actual result, scored a few years ago by a Dutch professional working as a consultant.

**Step 4: Personal Development Plan**

After you complete the assessment, you use the results to think about how you can realize your ambition. This includes things like: setting priorities, selecting methods to improve your competence levels (e.g. reading a book, doing an internship, participating in a training course, playing a serious game, investigating internet pages, accept coaching), finding facilities to do this (e.g. time, money, equipment, teachers, permissions).
3. Organizations: Human Resource Development (HRD)

If you work in a company, it may be decided that not only you but also others perform an individual RESFIA+D assessment. Perhaps all the members of a certain team will participate: the consultants, the teachers, the doctors or nurses, the financial staff, the salespersons, and the top managers.

**Step 1: Minimum acceptable level**

As a preparation, a minimum requirement can be defined. This is a set of 18 (or more, if disciplinary competences were defined) levels that are the lowest acceptable level for anyone within the team.
Step 2: Ambition level

At the other end, also an ambition level is defined for the entire team. This does not require every team member to meet the demands of this ambition; it involves the combined strength of the team as a whole. It may, for example, be decided that all ambition levels need to be possessed by at least one or two team members; if not, the team may not be able to perform its tasks properly.

Step 3: Individual assessments

All team members – or at least those who were selected for the assessment – do the assessment, as described in 8.1. In this case, the 360° feedback should definitely not be left out!

After the individual assessments are finished, the result may look like Figure 2.

Figure 2. A RESFIA+D result of an organization
Step 4: Staff Development Plan

Based on this result, the team – or its managers – will develop a *Staff Development Plan*. This plan describes how the team is going to meet the formulated ambition within a limited period of time, e.g. a year. This may be based on negotiations with individual team members, resulting in agreements that certain members will follow courses, perhaps in-company, while others will find different ways to develop themselves. For those team members who don’t meet the minimum demands, such a development plan is especially important; if it were to fail, it might ultimately lead to a dismissal procedure.

4. Universities & Colleges: Curriculum Development

*RESFIA+D* has also proved to be valuable for educational institutions, especially for study programs and their curricula. You can think of scientific and vocational education, in universities, colleges and schools.

The method has been used for a wide variety of disciplines, e.g. technological, economic, social, agricultural, healthcare, law and teacher education.

If a curriculum is to be (re)designed, this process should always start at the end, that is by (re)defining the outcomes of the study program, formulated as a set of competences of the graduates. This is where *RESFIA+D* comes in. When the competence profile is defined in a proper way, the curriculum contents as well as the curriculum structure and didactic methods can be derived from it.

Step 1: Composing an assessment group

As a preparation for the assessment, a group of circa ten to fifteen people is formed. Together, they have to be representative of all those who are stakeholders of the study program.

Another demand for each of the group members is that they are sufficiently familiar with the current curriculum or, if no curriculum exists yet, with the demands of the professional field and of society in general in relation to the study program.
The seven sustainability competences ... practical experience

The group will consist of:

- lecturers, professors;
- learners, students;
- program managers, deans and/or even the institution board;
- recent alumni (with a fresh memory of the entire study program) – unless the program is brand new;
- and experienced representatives of the academic or professional field the study program aims at.

In some cases, also:

- representatives of society in general, e.g. community leaders;
- education financers;
- representatives of special interest groups, e.g. minorities or the environment.

**Step 2: Creating consensus on present state and ambition**

The group meets only once, for half a day or a few hours more. At the beginning, the assessor (someone who is highly experienced in applying RESFIA+D for this purpose) explains the goals and structure of the assessment method and the purpose of the meeting.

Next, the assessor goes through all 18 achievements of the “RESFIA” part, i.e. the generic competences, one by one. If disciplinary competences were defined beforehand, they are applied as well. For each of the 18 or more achievements, the assessor asks three questions, which the group discusses until consensus is reached.

The questions are:

1. **For this specific achievement, which is the competence level each student should at least have acquired when graduating? (the ambition).**
2. **Which is the level that is demanded in the present competence profile?**
3. **And which level is actually realized by each and every graduate at the very least?**

In many cases, the answers to those three questions may be different. It is not uncommon that the group concludes that the ambition for a certain achievement should be, for example, Level 6; while the profile of the program demands perhaps Level 5, and the level that is actually realized, at least by some graduates, may be...
Level 4. The overall result may look like Figure 3, which was an actual result of the assessment of a study program (Bachelor of Commerce) in 2014.

**Figure 3. A RESFIA+D result of a university curriculum**

![Diagram showing a RESFIA+D result of a university curriculum](image)

Source: Authors’ own elaboration.

**Step 3: Selecting priorities**

After the group has reached consensus (majority voting should *never* be applied!) on the answers to the three questions for all 18 or more achievements, its task is nearly finished. What remains is setting priorities for an improvement project.

The strength of the assessment is that it is not some external expert who is going to tell the study program team that *their program is not good enough*. If there are differences between the ambitions and the present state – and there always are – it is the members of the group, including those who are responsible for the program, who draw the conclusions. They themselves determine the necessary improvements; they are the ones who give themselves a task. *They own the conclusions.*
On the other hand, there may perhaps be as many as 15 or more improvements that are to be realized. But you probably know that any plan with more than—say—three to five main goals is bound to fail. That is why it is important to select a limited set of highest priorities, out of all suggested improvements. Usually this appears to be an easy task. Each desired improvement has been discussed in detail. The group will probably know already, which of them are crucial first steps, and which others will follow easily as a result of the crucial first improvements. Selecting the priorities is usually done in ten minutes.

The result, which is to be turned into a report, formally has a status of recommendations to the management. Of course, the management is likely to accept and embrace these recommendations since they participated in the discussions, and the conclusions were drawn in consensus. It is a truly democratic process, creating a lot of support and enthusiasm.

**Step 4: Education Development Plan**

The final step will be for the management, i.e. for those people who carry the responsibility for the quality of the study program.

Preferably, the management team meets the very next day, when memories of the assessment are still fresh. During this meeting, the set of recommendations is turned into a solid *Education Development Plan*.

This plan arranges how and when the current competence profile will be adapted, followed by the necessary changes to the curriculum. The plan will involve a time schedule, a budget, the responsibilities of those who are going to do the actual work, their facilities, etc.

It will also contain an overview of the competences that the education team will need in order to be able to develop the improved program and to teach it. Consequently, a new staff development plan may be needed, if not all necessary competences are present within the team. If so, *RESFIA+D* may again be useful, this time along the lines of Sections 2 and 3, above.
After the plan is constructed, a period follows in which it is executed. At the end of this period, another round may follow in which RESFIA+D is applied again, leading to new conclusions, and so on. In this way, a quality circle of continuous improvement is closed.

5. And now some action: The Self-Test

While reading this article, you, the reader, may have become curious concerning your own current competence profile. And how about your ambitions: Would you perhaps aspire to reaching the master level of sustainability competence, at least for some of the competences?

Personal growth toward sustainable mastership

In the previous article, explaining the theoretical framework of RESFIA+D, seven levels of competence were described. They are:

- Level 1: Apprentice
- Level 2: Work under supervision
- Level 3: Self-direct
- Level 4: Integrate
- Level 5: Improve
- Level 6: Innovate
- Level 7: Master

It stands to reason that nobody will ever attain absolute mastership in every aspect. Universal masters don’t exist and have never done so. You can be a master in one area while being a fool or a novice in another. Life is a process of growth that doesn’t end with official retirement.
The Self-Test

The Self-Test is an easy way to apply RESFIA+D as an individual professional, as described in Section 2. In the form below (Table 1), you can insert your personal level for each of the RESFIA+D competences. If you want to learn more about the background of the competences and how they relate to sustainable development and corporate social responsibility (CSR), you can read more about them in the university textbook Fundamentals of Sustainable Development (2nd edition, Roorda 2017). In the form below, a column was added, referring to the appropriate sections in that book.

If you want, you can download the detailed level descriptions for each achievement, as explained in the previous article about the theoretical framework. If you don’t want to do that, you can estimate the contents of the levels in a more intuitive way.

In Table 1, you can fill out three columns. In the first, you insert your personal scores, based on your own judgment and feelings. (Of course, you may insert very high scores everywhere if that makes you happy, but whom are you really fooling?)

In order to compare your personal judgment to the observations of others, you can ask one or more trusted persons to complete the second column. If you wish, you can even turn this into a parlor game by discussing all of your personal competences with a group of people and determine the scores together.

The right column represents your wish list. Select a concrete moment in the future that is meaningful to you, for instance, one, three, or ten years from now. What sort of professional do you want to be by then? What are your ambitions?

The bottom of the form is about $D$, i.e. the disciplinary competences. You will find a number of empty boxes into which you can write the competences you consider relevant. Room has been reserved for six such competences, but you may limit or expand the list to any number you want.
Table 1. The RESFIA+D Self-Test

<table>
<thead>
<tr>
<th><strong>R: Responsibility</strong></th>
<th><strong>Explanation</strong> (Fundamentals of Sustainable development)</th>
<th><strong>Your level</strong> (According to you)</th>
<th><strong>Your level</strong> (According to trusted person)</th>
<th><strong>Your ambition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R1. Create a stakeholder analysis on the basis of the consequence scope and the consequence period</strong></td>
<td></td>
<td>5.5</td>
<td></td>
<td></td>
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<tr>
<td><strong>R2. Take personal responsibility</strong></td>
<td></td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>R3. Be held personally accountable with respect to society (transparency)</strong></td>
<td></td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>E: Emotional intelligence</strong></th>
<th><strong>Explanation</strong> (Fundamentals of Sustainable development)</th>
<th><strong>Your level</strong> (According to you)</th>
<th><strong>Your level</strong> (According to trusted person)</th>
<th><strong>Your ambition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E1. Recognize and respect his or her own values and those of other people and cultures</strong></td>
<td></td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E2. Distinguish between facts, assumptions and opinions</strong></td>
<td></td>
<td>8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E3. Cooperate on an interdisciplinary and transdisciplinary basis</strong></td>
<td></td>
<td>1.3, 4.8</td>
<td></td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th><strong>S: System orientation</strong></th>
<th><strong>Explanation</strong> (Fundamentals of Sustainable development)</th>
<th><strong>Your level</strong> (According to you)</th>
<th><strong>Your level</strong> (According to trusted person)</th>
<th><strong>Your ambition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S1. Think from systems: flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn</strong></td>
<td></td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S2. Recognize flaws in the fabric and sources of vigor in systems; have the ability to use the sources of vigor</strong></td>
<td><strong>Chapter 2 - 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>S3. Think integrally and chain oriented</strong></td>
<td></td>
<td>8.3</td>
<td></td>
<td></td>
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</tbody>
</table>
### Table 1. Cont. …

<table>
<thead>
<tr>
<th>F: Future orientation</th>
<th>Explanation (Fundamentals of Sustainable development)</th>
<th>Your level (According to you)</th>
<th>Your level (According to trusted person)</th>
<th>Your ambition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F1.</strong> Think on different time scales – flexibly zoom in and out on short- and long-term approaches</td>
<td></td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F2.</strong> Recognize and utilize non-linear processes</td>
<td></td>
<td>7.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F3.</strong> Think innovatively, creatively, out of the box</td>
<td></td>
<td>8.4</td>
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<tr>
<th>I: Involvement</th>
<th>Explanation (Fundamentals of Sustainable development)</th>
<th>Your level (According to you)</th>
<th>Your level (According to trusted person)</th>
<th>Your ambition</th>
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<tr>
<td><strong>I1.</strong> Consistently involve sustainable development in his or her own work as a professional (sustainable attitude)</td>
<td></td>
<td>4.7</td>
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<tr>
<td><strong>I2.</strong> Passionately work towards dreams and ideals</td>
<td></td>
<td>4.2</td>
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<td><strong>I3.</strong> Employ his or her conscience as the ultimate yardstick</td>
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<td>8.2</td>
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<tr>
<th>A: Action skills</th>
<th>Explanation (Fundamentals of Sustainable development)</th>
<th>Your level (According to you)</th>
<th>Your level (According to trusted person)</th>
<th>Your ambition</th>
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<tr>
<td><strong>A1.</strong> Weigh up the unweighable and make decisions</td>
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<td>8.5</td>
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<tr>
<td><strong>A2.</strong> Deal with uncertainties</td>
<td></td>
<td>6.3</td>
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<tr>
<td><strong>A3.</strong> Act when the time is right, and not go against the current: “action without action”</td>
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<td>4.2</td>
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### Table 1. Cont ...

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<tr>
<th>D: Disciplinary competences</th>
<th>Your level (According to you)</th>
<th>Your level (According to trusted person)</th>
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<td>D1.</td>
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<td>D2.</td>
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<td>D6.</td>
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Source: Authors’ own elaboration.

You can insert your scores in the empty diagram of Figure 4, if you wish.

**Figure 4. An empty RESFIA+D graph, to be used for the Self-Test**

Source: Authors’ own elaboration.
If your ambitions exceed your present scores – hopefully they do, because: who does not want to improve? – then think of a plan to make your ambitions come true. Who knows? Maybe, within a couple of years you may have excellently mastered (certain aspects of) sustainable development. Anyway, you don’t have to be a master to be able to act as a sustainably competent professional, as this article has shown.

6. The Pledge

Finally. Medical doctors have their Hippocratic Oath, which they pledge during their graduation ceremony at the end of their academic education program. This is with a good reason, since they are about to start their professional careers, during which, with some regularity, they – or at least some of them – will have the lives of their patients in their hands. Those are responsible professionals!

And others? Those of us who are not medical specialists? They, too, hold the lives of others in their hands, albeit in a more figurative sense: the lives of humans, of animals, or of nature in general. Managers may support or crush the careers of their employees. So may teachers in the course of the school lives or university programs of young individuals. Engineers design products in such a way that they may destroy or strengthen the natural environment. Caretakers make the lives of their clients bearable – or not. Artists represent the conscience of society – or they don’t. Aren’t those responsible professions too? They definitely are.

Hence the question: Do you have the courage to make a pledge? Promising you will behave as a responsible and sustainably competent professional? This section offers one. The Pledge is inspired inter alia by the Pugwash Declaration (Pugwash 1995), the INES Appeal to Engineers and Scientists (INES 1995), and of course by the Hippocratic Oath itself (KNMG 2003). More information about the Pledge is available online (Roorda, n.d.).

You can make your pledge to your husband or wife. To your children, your forefathers, your colleagues, The Bible, the Quran, the Bhagavad Gita, your stamp collection, or whatever is sacred to you. Legally binding it will not be. Morally binding it is.
Here is the

**Pledge**

I promise that in my work I will consistently consider the consequences of my actions for society and for the environment, both today and in the future. I shall, before making decisions and whilst making them, conscientiously assess issues. I shall not undertake any actions geared towards harming people or the natural environment. I shall use my education, talents and experiences in order to make a contribution to a better world through sustainable development. I accept that I am personally responsible for my choices and actions, and I promise that I will be held publicly accountable for my work by everyone for whom that work holds consequences. I shall not appeal to the fact that I acted on the instructions of others. I promise that in my work I will not only make an effort for my own interests and my career, but also for my dreams and my ideals. In this I shall respect the values and the interests of others. I understand that there will be times in the course of my career when it will be difficult to do what I am now promising to do. I will adhere to this pledge, even in those times.

7. Concluding remarks

*RESFIA+D* has been applied in companies and various other organizations, where the model proved to be valuable as an HRD tool for the structured development related to sustainable development of staff members and entire teams.

It was also applied successfully to educational programs in various universities and colleges. There, it was a source for the development or improvement of the graduate profiles, expressed in the form of professional competences. Based on the results of the *RESFIA+D* assessments, the educational teams were able next to integrate sustainable development systematically in the curriculum, both at the content level and the didactic methodologies.
THE SEVEN SUSTAINABILITY COMPETENCES … PRACTICAL EXPERIENCE

Besides, RESFIA+D has been applied by individual professionals and students, who wished to acquire insight in their abilities to contribute through their work to sustainable development, aiming at a continuous improvement of those capabilities.

Feedback from the users of RESFIA+D has made clear that the instrument was appreciated as an easily applicable and effective tool. No other assessment tools were known to the users that are comparable with RESFIA+D, regarding both its focus on individual professionals and its applicability.

Using the principle of a “cover”, derived from a comparison with various sets of colors, the RESFIA+D model is in accordance with, and complements other models for SD (sustainable development) competences.

References
For references related to the theoretical framework of RESFIA+D, see the previous article by the authors of the current article: The Seven Sustainability Competences according to the RESFIA+D Model. Part A: Conceptual background, published in this volume.

Other references:

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Pugwash (1995), Pugwash Declaration, Student Pugwash USA, Washington DC.


The role of higher education in preparing youth to manage a sustainable future workplace

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Abstract:

Aim: This paper aims to highlight the different forms, levels and pathways of engagement with climate change and sustainability of young people living in different contexts of vulnerability and adaptability. It explores different perspectives and viewpoints of youth regarding complex and uncertain issues related to climate change and sustainability as well as their future role on the workplace.

Research Methods: The critical interpretivist study was conducted in the Netherlands and South Africa, and participants were undergraduate and postgraduate university students from diverse socio-demographic and academic backgrounds in the two countries. The study applied various methods of data collection including focus groups, interviews, policy document reviews as well as participant-observation at several youth and environmental events and forums.

Conclusions/Findings: Key findings highlight the importance of building resilience and empowering academic and civic platforms that enhance young people’s competences to manage sustainability-oriented lifestyles and workplaces through critical, creative, and collaborative processes.

Keywords: youth education, engagement, empowerment, climate change, sustainability.

JEL: I20, I23, J24, Q01, Q56
1. Introduction

Young people in (higher) education constitute the key (business) leaders, decision-makers and citizens of future society. University and college students therefore need to develop the skills and competences to live and work in an increasingly globalized world, climate-threatened future, and sustainability-oriented economy (Nyoni 2009). Coping with the growing complexity and uncertainty of global sustainability issues, often described as super wicked problems (Levin et al. 2012), requires specific skills and competences, related to systems thinking, anticipatory thinking, diversity, emotional intelligence, strategic management and action, and normative aspects (Ploum et al. 2018; Wiek et al. 2011), as well as frustration tolerance (Rieckmann 2012) and dealing with uncertainty (Tauritz 2012). In the current timeframe, often referred to as the “post-truth” age, critical and interpretational competences play an important role as well (Lambrechts, Van Petegem 2016; Lambrechts et al. 2018). Yet it can be argued that the prevailing educational system has partly contributed to widening the global climate crisis through unidirectional and individualistic worldviews which promote unsustainable values and practices (Sterling 2008). Orr (2004: 2) argues that “the ecological crisis concerns how we think and the institutions that purport to shape and refine the capacity to think.” UNESCO’s Decade of Education for Sustainable Development (DESD) put forward a new purpose for education to replace the traditional informational approach. The core vision of the DESD was to engage all stakeholders in critical, holistic and fore-sighted education and learning, and to encourage multi-stakeholder and intercultural dialogue and collaboration, promoting a pathway towards positive and sustainable societal change (Tilbury 2011).

With current transitions towards new (green, sustainable, biobased, circular) economic models and important transformations in job requirements and tasks, the role of education and learning for sustainability in empowering young people is being increasingly emphasized (Stewart 2010; Wiek et al. 2011). Today’s higher education graduates will need to manage these transformations in their future lives and workplaces. According to Barnett (2000), climate change is characterized by super-complexity, necessitating new forms of education and learning that enable young
THE ROLE OF HIGHER EDUCATION IN PREPARING YOUTH TO MANAGE …

people to influence positive changes. Other authors, like Levin et al. (2012) refer to climate change as a super wicked problem, thereby highlighting the urgency, complexity, uncertainty and inability of current authorities to define solutions. The International Labour Organization (ILO 2012) and the United Nations Department for Economic and Social Affairs (UNDESA 2010) have also emphasized the importance of addressing the current skills gap in the workforce and young graduates to enable them to adjust to major shifts in the global market towards sustainability. Young people therefore need to be empowered through knowledge, skills and competences that enable them to contribute to the consultations, decisions and actions shaping their future quality of life and career prospects.

This study seeks to enhance understanding about the ways in which Higher Education Institutions (HEIs) are mobilizing and empowering young people to manage complex and global environmental and societal challenges. The research was undertaken in the Netherlands and South Africa throughout 2011, coinciding with the International Year of Youth and the 17th Conference of the Parties (COP17) of the United Nations Framework Convention on Climate Change (UNFCCC) held in South Africa. This paper reports on one particular theme within the study findings pertaining to the educational opportunities and challenges for youth engagement with climate change and sustainability issues. The two main objectives of this paper are to:

- Identify the educational challenges and opportunities for university students in the Netherlands and South Africa to manage and lead the transition to sustainability in future workplaces.
- Generate recommendations that can inform policy and practice in key priority areas to enhance the education and learning experiences of university students in contributing to sustainability.
2. Theoretical background

It is generally acknowledged that higher education prepares its students for their future role in society, whether as a citizen, consumer, professional, or entrepreneur (Cortese 2003; Lambrechts et al. 2013). As an academic discipline, the field of Higher Education for Sustainable Development (HESD), also referred to as Sustainable Higher Education (SHE), the role of higher education in sustainability transition processes is often clarified by defining and conceptualizing competences (e.g. Barth et al. 2007; Rieckmann 2012; Wiek et al. 2011). Following Rychen and Salganik (2003: 43), a competence is “the ability to successfully meet complex demands in a particular context through the mobilization of psychological prerequisites (including both cognitive and non-cognitive aspects).” The competence concept therefore includes knowledge, skills, values and attitudes (Rychen, Salganik 2003; Baethge et al. 2006).

Different competence frameworks comprising individual sustainability competences have been presented (e.g. de Haan 2006; Barth et al. 2007; Rieckmann 2012; Wiek et al. 2011; Ploum 2018), yet many of these were criticized for being mere laundry lists, as well as for the lack of holistic integration of knowledge, skills, values and attitudes (Lambrechts, Van Petegem 2016; Wiek et al. 2011). In their seminal article, Wiek et al. (2011) present a framework of “sustainability research and problem-solving competence,” comprising five key competences for sustainable development: systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence. Several other competence frameworks (e.g. Rieckmann 2012, presenting twelve competences) as well as further conceptual refinements (e.g. Ploum et al. 2018, presenting six competences; Salgado Perez et al. 2018, exploring the role of intervention competence) have been presented since then.

Interestingly, as noted by Ploum et al. (2018) most of the studies regarding individual sustainability competences were conducted within the context of higher education, leaving the perspective of professionals untouched (recent contributions however do investigate these competences in the workplace, e.g. Lambrechts et al. 2019; Salgado Perez et al. 2018). Yet, as Lambrechts et al. (2018, p.563) point out,
“the perspective of the student is often neglected within the discourse of defining competences”. Studies regarding further conceptualization and integration of individual sustainability competences focused on the perspective of the university educators, more specifically professional development and empowerment of academic staff (e.g. Cebrián et al. 2015; Di Giulio, Defila 2017; Lambrechts et al. 2017; Mula et al. 2017), as well as different transdisciplinary or “real-world” educational approaches in order to better prepare students for their future role (e.g. Brundiers et al. 2010; Tejedor et al. 2018). Specifically within the context of teacher training, Cebrián and Junyent (2015) analysed student perceptions regarding competences in relation to education for sustainable development, and concluded that existing competence frameworks need thorough revision in order to “promote the awareness and development of ESD competencies amongst student teachers” (Cebrián, Junyent 2015: 2768). Certainly in times when students around the globe protest for climate (Vaughan 2019), it is important to explore the students’ perspective in further conceptualizing individual sustainability competences. As Lambrechts et al. (2018: 566) state: “students show complex, layered and multi-dimensional attitudes toward sustainability.”

3. Research context and methods

This research was conducted in the Netherlands and South Africa. The Netherlands is a developed country with a high vulnerability to climate change from sea level rise and associated risks, but has a wealth of human, financial and technical resources for adaptation and mitigation. The climate risks however require continuous management, innovation and action. Dutch young people will be the frontrunners in dealing with these challenges in their daily lives as well as in working towards solutions in their communities and jobs (Van Heeswijk 2009). In South Africa, university students are facing long-term risks from climate change as well as overlapping social and developmental stresses including widespread poverty, social and economic inequities, complex governance and institutional problems and limited access to capital (Madzwamuse 2010). Overall, such complexities overburden South
Africa’s higher education graduates in particular, who will need to drive sustainability whilst managing existing socio-economic and environmental difficulties. Such contextual country differences in terms of climate change vulnerability and adaptability present valuable settings for exploring the diverse forms, opportunities and challenges for youth engagement with climate change and sustainability.

The study applies a critical interpretivist research approach. It seeks to understand young people’s experiences through their own accounts and interactions in a reflective and dialogic setting. The focus is on the role of local country context (social, educational, political and institutional systems) in influencing youth opportunities and challenges for engagement with climate change and sustainability. The study methods included focus groups with youth, semi-structured interviews with young people and experts, participant-observation at various youth events, and a review of policy documents.

The study participants included Dutch and South African university students, undergraduates and post-graduates between 18 and 30 years old, both male and female. Participation in the focus groups and interviews was voluntary. In South Africa, a total of 10 focus groups were conducted with total of 117 students from more than 12 universities in different regions (including KwazuluNatal, Durban, Johannesburg, Pretoria, Grahamstown, Port Elizabeth, CapeTown). Semi-structured interviews were also held with university students from different academic fields and with key informants or experts including government officers, academic researchers and coordinators in youth or environmental organizations. The first author also attended three youth events as a participant-observer: a southern African regional media conference, a national sustainability conference, and a youth leadership forum. These events included youth participants from different regions of South Africa and ranged from university students to young professionals. In the Netherlands, a total of 8 focus groups were conducted with a total of 66 participants from more than 10 universities (including Amsterdam, the Hague, Utrecht, Rotterdam, and Wageningen). Semi-structured interviews were also conducted with Dutch university students and with key informants. Three events were attended as a participant-observer: a two-day reunion by a youth nature group; an on-campus workshop by a student sustainability committee; and a youth-run energy efficiency campaign. The
on-campus youth event mainly targeted university students, whereas the other two events included a broader cross-section of young people from different academic and professional backgrounds. The study applied thematic analysis using an inductive analytical approach. Research ethics were maintained through ensuring privacy, confidentiality and anonymity (Willis 2007).

4. Findings and discussion

The study captured important findings regarding forms of engagement of young people with climate change and sustainability issues and the role of their education and learning experiences in hindering or enhancing this engagement. These findings are presented below and discussed in relation to the relevant literature.

4.1 Lack of critical reflection and solution-based approaches in current education

A majority of the study participants highlighted weaknesses in the current way education prepares young people to manage real-world problems such as climate change. They particularly pointed out the prevalent disconnected thinking amongst the public, which they considered to have been shaped by educational approaches that do not promote critical and systemic thinking among young learners. A Dutch focus group (FG) participant discussed such shortcomings of current education:

“When people buy a car they don’t think of kids in Africa or how much energy and resources are needed. We need to see the bigger picture, realize we are all interconnected. We have to change education. Most educational programmes don’t address these problems and this way of thinking. They teach small basics on environmental awareness but not the overall picture, or an understanding of a sustainability worldview. It wasn’t really presented as an issue that we all have to work on.”
A South African student participating in a national youth forum also highlighted the lack of space for critical and reflective thinking in current modes of schooling and education:

“Usually there is no reflection. For example in school, if environmental issues are raised, the teacher shows a picture, asks students what do they think about it; then switches off projector and that’s it, back to normal class, no reflection, no discussion.”

Many study participants also emphasized the need for educational reforms that incorporate more holistic thinking and integrate sustainability education and learning into various educational spaces and disciplines. For example, a Dutch FG participant discussed the need for teaching students through hands-on/practical and solution-based learning approaches:

“Schools should do more. For me it was an important place where I got information. Not just by telling kids and giving info, but in giving them assignments, asking them to go and find out how the world works, doing research, letting them understand and look it up for themselves. Make them think about it. For example, I wrote an essay about different types of vegetarianism and looked at different arguments, it made me understand and I got convinced.”

Similar insights into the need for critical thinking and problem solving skills were discussed by young participants in a study by Burandt and Barth (2010: 12) who found that “problem-orientation and the need to act and decide within complex real-life problems where multiple perspectives had to be integrated, was mentioned as the main precondition to acquiring new knowledge and skills.” Universities and colleges can optimize their role as key agents of social change by comprehensively integrating education and learning for sustainability into their framework of thinking through a comprehensive approach that engages students with research, education and learning, and outreach for sustainability (Wiek et al. 2011). Matthews and Waterman (2010) indicated that skills, values, and aptitudes are advanced through “learning by doing”
pedagogies for sustainability literacy. They emphasized that “learning by doing goes beyond the idea that core, disciplinary or technical knowledge is straightforwardly transmitted through uncomplicated processes of teaching and learning. Rather it involves hands-on activities which facilitate knowledge, skills application, and adaptation” (Matthews, Waterman 2010: 83). ESD can thus empower youth to become core stakeholders and collaborators towards a sustainable future. Yet, as pointed out by Lambrechts et al. (2018), the current “post-truth” timeframe requires a stronger framing of the individual sustainability competences within this context, e.g. by connecting to research competences and information literacy (Lambrechts and Van Petegem 2016) and critical and interpretational competences (Lambrechts et al. 2018), in order to enable students to critically reflect upon the complexity and uncertainty of sustainability issues.

4.2 Low priority for education for sustainable development

A widely shared theme amongst participants in both countries was the low priority given to climate change and sustainability education in their academic curricula. This is reflected in the following quotes by two participants from the Netherlands and South Africa, respectively:

“We have no university courses on the environment. In school we only get the basics, what pollution is...My main sources of knowledge or information on sustainability are climate scandals and social networks.”

“It’s growing but we’re still leaving it at an optional level. Right now in law, we have environment law as an option, then the lecturer became pregnant. They didn’t try to replace the lecturer, they scrapped the course. It’s that unimportant.”

Another FG participant from South Africa argued that such shortcomings in their education impeded their ability to develop skills which they considered necessary for their future jobs.
“We don’t have a lot of environmental courses in our curriculum. So usually about climate change I see it accidentally on the internet; through campaigns or from television coverage of climate events or scandals... Existing school structures can’t promote this knowledge. Students get no platform to expand their knowledge and skills and grow into a green economy.”

The literature highlights the importance of embedding education for sustainable development (ESD) across the functions of higher education institutions. It also highlights the importance of experiential and interdisciplinary learning for enhancing the holistic and critical understanding of different academic and social disciplines for young people and preparing them for professional work (Stewart, 2010). ESD provides an opportunity for reflecting and re-orienting current ways of relating to and valuing ecosystems, utilizing resources, and understanding the inter-connections of the natural and social world.

A distinct theme expressed by some Dutch participants was the lack of depth and skills development in sustainability courses. Two FG participants shared their experiences:

“I study entrepreneurship, and am now focusing a lot on people, planet and profit and how you have to consider all these. We have business presentations from companies who want to sell the fact that they are green. But we are not really educated on what the problem really is or how to manage it.”

“The sustainability course was very broad, too quantitative, not deep, – it was like children’s physics. Too focused on teaching physics and technique behind it…rather than impacts of climate change, or the diplomacy behind it and how we can change countries, or the policies that need to be adopted to get sustainability.”

In an interview with a policy maker on the political dimensions of sustainability education in the Netherlands, he explained that “the new government has announced 9 branches of industry for Netherlands to be leading in, such as chemistry; life sciences; bio-based economy; and the creative industry... the development agendas on
economic reform have sustainability as an underlying principle. But at the same time they are cutting a lot of funds and investments from arts, culture, environmental studies...sure this will have an impact on how higher education manages. But anyway in Netherlands HE can decide their own programmes. So it also needs to come from there.”

This reflects the institutional challenges of integrating ESD into higher education and the importance of attaining political and legislative support for sustainability education as reported in the literature (e.g. Leal Filho 2011; Lozano et al. 2013, 2015; Wals 2014). Educational change requires organizational change as well, yet different factors influence these change processes positively or negatively (Barth 2013; Disterheft et al. 2015; Hoover, Harder 2015; Verhulst, Lambrechts 2015), and the intertwined educational and organizational change poses challenges to higher education institutions (Lambrechts et al. 2015, 2017). As pointed out by Wals (2014: 8): “they are doing so amidst educational reforms towards efficiency, accountability, privatization, management and control that are not always conducive for such a re-orientation.”

A distinct theme expressed by many South African participants was the lack of teacher training and awareness on environmental issues such as climate change. Two FG participants stated:

“They introduced new subjects on sustainability and on corporate social responsibility but used the very same teachers that had been teaching other courses. They don’t have the background and understanding or skills to teach this new material... Course didn’t touch on anything new except what we all already knew. Save water, electricity... There was no real depth into what happens, the process, the outcomes, the long term issues we will have to deal with in our jobs.”

“Teachers are not properly educated about issues like climate change especially those in rural and under-privileged areas. We need proper teacher education... People in the community need to learn the skills to live sustainable and efficient lives.”
These insights resonate with findings in other studies exploring ESD in South Africa. For example, Moodley (2010) found that the environmental education programmes in the Gauteng province “had very little or no focus on the social and economic aspects of the environment... the practitioners sampled in the study were trained in environmental education and there appears to have been no formal training regarding education for sustainable development” (Moodley 2010: 64). Bopape (2009) similarly indicated the lack of teacher training within the South African academic context and recommended the incorporation of environmental education into teacher professional development programmes in South Africa. McKeowen and Hopkins (2010) also emphasized that educating for change requires engaging teachers in this change process, and that climate change and ESD education need to be locally and culturally appropriate.

Another distinct theme emerging from the South African data was the low priority given by students to environmental courses. Some participants indicated that this was influenced by the socio-economic context:

“The modern age is a service age, so fewer people are doing sciences. The focus is not on what’s the way forward. The focus is on how we can improve budgets and what we have already... Science majors are not getting as much money as business majors. Accounting is where most people are getting paid.”

“Students doing biology are pushed by their parents to do commerce – something with a real job. Most are first to get education in their households and are the main breadwinners. The family are dependent on them to get money... We need to link biology and science to business to show them possibilities.”

Lotz-Sisitka (2002) indicated that environmental education in southern Africa is the key to investing in both human development as well as the protection of the environment to ensure sustainable livelihoods and safe environments. She emphasized that environmental education processes are essential, particularly in contexts where livelihoods are dependent on natural resources; hence the need for re-orienting and
re-establishing the links between socio-cultural, economic, natural and political dimensions.

4.3 Contribution to positive societal change

This study captured important findings about young people’s perspectives regarding opportunities for personal and professional development through their responses to the global climate change crisis. Most participants discussed these opportunities in terms of the contributions they would like to make through their professional careers in enhancing awareness in society and action on climate change and sustainability issues. A law student from a South African focus group session expressed interest in working on sustainability policies that could better serve community livelihoods:

“I hope to see more and stricter environmental laws. Perhaps as a lawyer I will play a role in bringing these laws to pass. I would like to see those communities who rely on unsustainable resources for their livelihoods successfully find alternative occupations.”

Another FG participant from South Africa discussed the role of the media and art in raising public awareness on climate change:

“I’m studying drama because I think theatre is a way to educate people and bring change, to influence people... So we can use theatre to raise awareness on climate change.”

Similarly, a Dutch participant in a sustainability event hoped to work in sustainable agricultural production to meet the rising challenges from climate change:

“I am studying agriculture and I now see the effect of weather changes on produce. As a future farmer, my ideal would be to produce enough food of good quality and every year to improve soil health. That would be my
contribution; my own farm to increase soil health every year. It has to be worldwide, but I’ll try to do my part.”

Fritze et al. (2008) discusses the fact that climate change will generate the need for a range of different jobs and careers to support people and institutions and enhance people's resilience and “galvanize creative ideas and actions in ways that transform and strengthen the resilience of and creativity of community and individuals” (Fritze et al. 2008: 9). The ILO (2012) also indicated that climate change will have an impact on labour markets through the creation of new jobs and the substitution and transformation of existing jobs. Although some jobs might disappear, new jobs will be created, for example, in the construction sector building coastal defenses and green buildings. Certain job requirements will be redefined as society shifts from fossil fuels to renewables and with an increased focus of the industrial sector on clean technologies and of the service sector on energy savings. Such insights further highlight the importance of integrating ESD into academic curricula in order to build young people’s knowledge and competences to manage a transforming workplace through skills for critical and futures thinking, flexibility and adaptability, social learning, sustainable technologies and inter-disciplinary collaboration.

4.4 Innovation in future career

Many of the study participants undertaking environment-related studies or courses considered climate change as an opportunity for them to find jobs and to innovate within their career prospects. This viewpoint was especially prevalent amongst the South African participants, as demonstrated by the following quotes from various FG sessions:

“Climate change can be a threat to a future career or can be opportunity to study changes occurring and adaptations in different organisms. As an etiologist, climate change will have impact on my career because the ocean as an ecosystem is very sensitive to changes we are facing now.”
THE ROLE OF HIGHER EDUCATION IN PREPARING YOUTH TO MANAGE …

“It opens up job opportunities. Every company and government sector needs environmental experts, also for enterprise development… It’s a young field and it’s growing. Also internationally, wherever you go they will always need environmentalists, especially someone from ‘Africa’.”

“A lack of food and resources creates jobs for us as environmental scientists to study and find alternative ways of food production. The government would not need to invest its money in expensive technologies.”

Within the particular South African context, Lotz-Sisitka (2009) emphasized that the multiplicity of social and economic stressors present valuable opportunities for education for sustainability to be integrated into higher education, thus expanding the platform for South Africa’s higher education youth to learn and develop into a sustainable society and economy.

Furthermore, some participants discussed the ways in which their future jobs and careers would require competences and skills to perform well in an increasingly sustainability-oriented economy and market system. For example, a Dutch FG participant pointed out the importance of attaining the values and skills to adapt to the physical and structural changes happening in their everyday lives and for enhancing their performance in future careers.

“There are a lot of opportunities in businesses and industries. You have to know how to do things differently. So I’m here (in the sustainability leadership class) because I will need to learn these skills for my job… and it’s good on the CV.”

Similarly, a South African FG participant pointed out to the skills and competences that future engineers will need to acquire:

“Attitudes have to change in upcoming engineers and architectures. People in power are not really aware of these things (for example – climate change) and how to prevent them. So we as engineers, who are learning to make structures to
build houses, need to learn to do it sustainability. We should focus on structures that incorporate the environment into it instead of destroying it.”

Various scholars and institutions have emphasized that the future workplace will require skills in critical and fore-sighted thinking, collaboration amongst different disciplines and innovative solutions for efficient management of scarce resources (Fahey 2012; Wiek et al. 2011). The European Commission (2009: 2) considered that skills are “the best insurance against unemployment and an important factor for personal development and active citizenship.” In addition the Netherlands Environmental Assessment Agency (PBL 2011) warned that the Dutch and general European working population, is aging and expected to decline further, arguing towards more innovation, better education and a greener economy to maintain prosperity and deal with the long-term climate challenges. Yet a study on the integration of sustainability competences (Lambrechts et al. 2013) has similarly highlighted the lack of educational programs that promote competences for systems thinking, future orientation and personal action on sustainable development; hence further emphasizing the importance of revising HEI curricula to address sustainable development competences for empowering young people to manage a sustainability-oriented future workplace.

5. Conclusion

In this study, the participants’ discussions revealed important insights regarding the extent to which their current education and learning is equipping them with the necessary worldviews, skills and competences for a sustainability-oriented society and job market. Several participants criticized the low priority given to climate change and sustainability education in their current institutional programmes and courses, and that this impeded their ability to develop skills they consider necessary for future employment and social cohesion. The participants’ perceptions of power and opportunity for personal and professional development through their jobs, and of their agency to influence the changes they envision might be diminished in the absence of adequate education and training to enhance their employability and performance. The
THE ROLE OF HIGHER EDUCATION IN PREPARING YOUTH TO MANAGE …

study thus highlights the need for educational programmes that enhance young people’s critical and reflective thinking, holistic worldviews, and collaborations with stakeholders across different disciplines.

Several key recommendations for policy and practice that address the specific set of findings from this study are identified. First, integrating educational programs in HEIs that focus on competence development for sustainable development, particularly through promoting young people’s skills for social transformation including critical reflection, future thinking, creativity and innovation, and participatory and problem solving abilities. This will enable them to manage, personally and professionally, the complex real-world challenges such as climate change. Second, incorporating ESD concepts into teacher education programs and pre-service and in-service teacher training; establishing (on-line) platforms for teacher professional development, resources and teaching material on ESD; and developing ESD guidebooks for teachers and training teachers on their application in the classroom. Third, developing programs and mechanisms by the public and private sector for supporting and empowering young people with innovative ideas, solutions and community projects on sustainable development and climate change in order to encourage and enhance youth personal and collective contribution to positive societal change. At the public level, such mechanisms could entail establishing formal youth platforms and councils for meaningful youth consultation and participation in decision-making and action. At the private level, in addition to the role of HEIs, young people could also benefit from skill-enhancement programs by youth NGOs, sustainability-based internship programs by companies. Media exposure and awareness of youth initiatives on ESD and sustainability through journalist’s reports, youth and sustainability event coverage, and interactive sustainability-themed television, radio and social media shows that such activities can be led and managed by youth. Such programs and mechanisms provide diverse opportunities for young people with innovative ideas and who are keen to engage with sustainability issues in their future careers to enhance their skills, networks, experiences, competences, as well as contributions for sustainability. Fourth, devising formal and informal competence development schemes, especially in developing countries, that can fill the current skills gaps across
diverse youth and adult stakeholders and ensure social and gender equity in youth inclusion in the transition to a green economy.

Future research should explore the dynamics and possibilities for the political empowerment of young people and youth employment within the current complexities of development debates, the global economic recession, rising challenges from climate change, and the pressing need for a transition to energy efficiency and a sustainable economy. Key research questions need to address the competences and leadership potential of young people to participate in decision-making on sustainability issues; the ways in which changing environmental circumstances affect the working conditions of young workers; whether job creation in emerging sectors can address the rising problem of youth unemployment; whether students across diverse sectors and disciplines have adequate skills to adapt and manage a transforming lifestyle and working environment, and whether gender balance is being considered and addressed in policy consultations and the transition to green jobs (ILO 2012; Stevens 2009). Answering these questions requires multiple systematic studies using quantitative and qualitative tools and across different countries and youth populations.

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What’s being tested and what’s being learnt? A contribution to lessons learned evaluation methods for community-based sustainability initiatives

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Abstract:

Aim: There is little good practice guidance with respect to methods and skills for conducting lessons learned evaluations of community-based development projects. In this paper we utilise a mixed methods approach to evaluate the lessons learned by the team members and stakeholders of a funded five year “test-and-learn” UK-based sustainability initiative. The approach combines a statistical and a qualitative thematic analysis of transcribed textual data and presents an analytic framework with which to track the lessons learned by community development projects.

Design/Research methods: A mixed methods approach combining text and sentiment mining complemented by a qualitative thematic analysis is applied to the same data collected from stakeholder responses to an on-line survey and the transcribed audio recordings of four focus groups in which stakeholders participated.

Conclusions/findings: Employing replicable tools, augmented by qualitative research methods, provide a framework for a systematic approach to elicit and capture lessons learned by a sustainable community development project. These bear on how project activities, from engagement to supporting the local food economy, have been experienced by stakeholders and their learning acquired over the course of the project. Implications for future project design and funding options are considered.

Originality/value of the article: Despite the evident value of its contribution to improving project design and funding options, the evaluation of lessons learned in community-based sustainability work remains under-researched. This paper reflects a double description of the same data through the novel combination of text and sentiment mining techniques with more traditional qualitative thematic analysis, which demonstrates an alternative method of evaluation in this field.

Key words: lessons learned; evaluation; community development; sustainability policy; project management

JEL: R58, Q01, Z18

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1. Introduction

The modern emphasis on information and its strategic and competitive value as an organisational asset is rooted in the emergence of the knowledge management and organisational studies from the 1980s. Organisational learning (Argyris, Schön 1978; Levitt, March 1988; Schein 1996) and managing knowledge as a resource (Nonaka, Takeuchi 1995; Davenport, Prusak 1998; Boisot 1999) have long since been of strategic concern for organisations (Powell, Bradford 2000; Sutcliffe, Weber 2003; Moustaghfir, Schiuma 2013). It is therefore surprising to discover that as recently as the early 2000s, project experience was still under-utilised as a source of learning for organisations, far less for other projects (Williams 2003). Despite the value of knowledge transfer and learning among projects, to date, there is little good practice guidance available in the Project Management Body of Knowledge (PMBOK) literature to systematically inform the practice of evaluating and capturing project experience in the form of lessons learned.

As a result, the systematic capture of the lessons projects learn rarely actually happens (Duffield, Whitty 2016). If this is the status for large, complex and high-investment projects (Carrillo et al. 2013; Rolstadås et al. 2014), one may anticipate that the case will be even more pronounced when it comes to capturing the lessons learned from community development type projects that typically involve comparatively smaller budgets with fewer quantifiable objectives.

1.1. The case for lessons learned

In an age when project funding is ever more tightly constrained even while the expectations of project funders for projects to deliver on their objectives, on time and to budget continue to increase, there is an evident need for projects to both generate lessons that can be learned from by other projects as well as to acquire the receptivity and capacity themselves to, in turn, learn lessons from predecessors (Love et al. 2016).

For projects deployed to facilitate community learning about strategies for more sustainable living there is an increasing sense of urgency that they are able to articulate and share their experiential learning in order to reduce expending time and
resources on repeating those practices that have already been shown to be less effective in eliciting pro-sustainability shifts (Makrakis, Kostoulas-Makrakis 2016). To date, this exchange and transfer of learning has tended to be haphazard and sporadic rather than systematic (Newton et al. 2012). Moreover, the expectation of systematically acquiring the lessons learned from project experience is not satisfied by simply undertaking a post-project review (Anbari et al. 2008), despite the prevalence of this approach across different sectors.

This paper attempts to contribute to this sparse literature on methods for eliciting and evaluating lessons learned through the experiences of community development projects. It does so with reference to a community-based sustainability project that was specifically funded to more systematically identify points of learning, and therefore is uniquely suited for exploring the application of a lessons learned evaluation strategy. The evaluative work was commissioned by the Sustainable Harborough Project (SHP) in order to capture the lessons learned over the course of four and a half years of engagement with the town of Market Harborough, Leicestershire, England.

The SHP was one of twelve UK-based BIG Lottery grant-funded community-based sustainability projects between 2012 to 2017 under the Communities Living Sustainably (CLS) programme (Big Lottery Fund 2012). Each of the twelve funded projects were located in different geological and socio-economic regions in England and covered a mix of rural, semi-urban, and urban communities in efforts to mitigate and adapt to climate change, reduce fuel poverty, optimise the use of local natural and economic opportunities, and to contribute to community sustainability and resilience.

The CLS programme expressed the ideal of making living sustainably easy for people to do, and the programme’s emphasis has been explicitly on deriving lessons from that attempt. The emphasis on learning is such that the CLS programme has expected the funded projects to adopt a strategic attitude to testing activities and interventions, and trying to learn from these. Funded projects were expected to experiment with different approaches in order to see what worked, and then to accumulate learning from those experiences.
In light of the CLS programme’s emphasis on experimentation and learning this paper reports on research undertaken with the SHP staff team, steering Partnership Board and stakeholders to summarise what has been learnt during the course of a “test-and-learn” project. The lessons learned evaluation (LLE) was expressly to track what had been learned from implementing the SHP, to demonstrate the potential for communities to affect change themselves, and to identify approaches and drivers to support locally led approaches.

As a result, this research seeks to explore the value of taking a “test and learn” approach to project development as a source of experiential knowledge to feed forward into the prospective design and funding of future projects. This is to highlight key points of learning, including successful and unsuccessful aspects of governance and decision-making, and to identify those specific relationships associated with the relative success of the project’s activities.

### 1.2. Evaluating the lessons learned

A lessons learned process is an evaluation that seeks “to capture the results and experiences from successes, failures and near-misses” for purposes of absorbing these “in to the organisational structure for future use” (McClory et al. 2017: 1322). The temporary character of projects with a customary short-term focus on goals tends to pose a constraint on organisational learning (Bartsch et al. 2013) and this is exacerbated in time-limited projects where knowledge accumulation is dispersed with the dissolution of the project team (Lindner, Wald 2011). Nevertheless, conducting effective lessons learned evaluations is the bread-and-butter of the evaluation profession. As Patton comments, acquiring knowledge “about patterns of program effectiveness allows evaluators to provide guidance about development of new initiatives, policies, and strategies for implementation” (Patton 2001: 333).

A lessons learned evaluation therefore potentially mitigates a primary cause of subsequent project failures that has been attributed to the lack of recommendations for future project design and implementation in the final reports of projects that are terminating (McClory et al. 2017). Indeed, Patton (2001) reviewed cluster evaluation reports funded by the Kellogg Foundation, and found that the ubiquitous reference to “lessons learned” and “best practices” rendered such terms meaningless,
suggesting that in the evaluation profession, there is a gap in the development of guidelines for good practice lessons learned evaluations. Project learning is an asset, but despite the added value of LLE, with few exceptions (e.g., Thomas 2015), there is still a paucity of good practice guidance in the PMBOK literature on conducting effective LLEs, which may contribute to questioning LLE’s effectiveness in disseminating new knowledge for process improvements (Carrillo et al. 2013).

Although Patton (2001) does offer some suggestions for developing what he terms “high-quality lessons learned”, fundamentally these guides hinge on a strongly triangulated evidence base. He elaborates this by noting that, with a higher “number of supporting sources for a “lesson learned”, the more rigorous the supporting evidence, and the greater the triangulation of supporting sources”, then the greater the level of “confidence one has in the significance and meaningfulness of a lesson learned” (2001: 335, original emphases). Above all else then, what constitutes significance in the evaluation of lessons learned is the rigour of the triangulation among a robust evidence base. To date, Patton’s advice is the closest the profession appears to come to a set of guidelines for conducting good practice lessons learned evaluations.

The evaluation reported in this paper attempted to optimise the utility for the stakeholders who had commissioned the work (Patton 1997). Consequently, the evaluation deferred to the opinions and reflections of the project staff team, Partnership Board members, and involved community stakeholders as the knowledgeable (i.e., expert) informants about what was important and what was noteworthy with respect to the learning that had been acquired over the course of the project’s duration.

This approach is reflected in the data collection method that involved interviewing project staff about the range of project-based activities and work streams underway, their status and the measures of success relative to objectives, and capturing the input of all project and community-based stakeholders through an anonymised on-line survey and four focus groups.

The paper is structured as follows. In the next section, the method for approaching this evaluative research is discussed. Section 3 introduces and discusses the evaluation framework, which comprises: Project team interviews; stakeholder
survey and focus groups, and the computational analyses of both; the thematic analysis of focus group transcripts; and triangulation meetings. Section 4 considers the evaluation methodology employed, and the paper closes with some conclusions and implications for future lessons learned project evaluation.

It is important to note that the focus of this paper is on supporting a more systematic and replicable evaluation process; a summary of the data and substantive examples will be drawn from the Sustainable Harborough project but it is not our aim to provide an in depth analysis of it. Rather the objective is to learn about the process of evaluation from that reflection. Put differently, the emphasis in this paper is to not only to undertake the evaluation but also to evaluate the method of the evaluation.

2. Method

2.1. Overview of the approach to evaluation

The evaluation began with a scoping meeting with the Sustainable Harborough Project (SHP) team to identify priorities and clarify expectations, to scope out the project activities along with their perceived status and to elicit whether they had been successful, unsuccessful or inconclusive in their outcomes. A list of relevant stakeholders was identified, the method of research to be followed was agreed and a plan of work outlined.

The next stage involved a review of available project related documents. This primarily focused on official reports, including papers for the quarterly Partnership Board meetings and the end of year progress and accountability reports to BIG Lottery.

Following this, an on-line survey was designed, incorporating feedback from the Project team, and due to the time constraints of the evaluation contract, was hosted for four weeks using an independent Survey Monkey account. Stakeholders were invited to respond to the survey, and participation was not incentivised.

The survey responses were analysed and key themes identified which were developed into focus group prompts. Stakeholders were invited to select their
preferred date and time to participate in one of four focus groups. Participants in the
groups consented to the discussions being audio recorded, and were assured of
confidentiality and the anonymity of specific comments. No citations have been
attributed to any individual or to any one of the four groups.

The audio recorded focus groups were transcribed in near verbatim fashion,
excluding usual conversational stops, pauses, and cross-talk while preserving word-
for-word utterances wherever possible. In conjunction with the survey responses, the
focus group transcripts are the primary data source for the subsequent analysis and
evaluation.

The transcripts, and open text survey responses were analysed in two iterations.
The first used a text mining approach, which treats text statistically, and the second
involved a qualitative thematic analysis. Text mining is used here as a tool with
which to map out the conversational trends and focal points from the transcripts.
Text mining has increasingly been used in medical and business applications to
extract structured knowledge from documents which are in unstructured formats
(Ur-Rahman, Harding 2012; Kumar, Ravi 2016; Meaney et al. 2016).

The technique of text mining has also been applied to facilitate the detection and
exploration of emerging topics and technologies, for example in the domain of
forecasting (Kayser, Blind 2017). It is therefore an appropriate tool with which to
statistically parse unstructured data in order to map emergent structures and
meanings implicit in the text, and this is how it has been used here. Text mining is a
powerful technique which helps to reveal word use patterns which are strongly
associated with the predominant concerns and opinions expressed by the authors of
the text, in this case the focus group participants and survey respondents.

The text mining was supplemented with a sentiment analysis, which uses the
NRC lexicon of affective terms (Saif et al. 2012; Mohammad, Turney 2013), and
returns a bar graph of the content of text according to eight emotional parameters.
The benefit of this approach is that it enables the analysis to get at the emotional or
attitudinal base of text, shows the overall opinion of respondents to the focus of the
questions and is indicative of their general mood as expressed through word use.

Finally, the analysis was triangulated in consultation with the Project team as a
form of “sanity” check. This basically involved testing whether the analysis made
sense to the Project team, highlighting anything that may have been unexpected, and identifying any gaps in the analysis. The last stage in the process was a submitted report and summary presentation given to the Partnership Board.

2.2. Preparation of data for text mining:

A few words are warranted to explain how the textual data were managed and prepared for the statistical textual analysis. In text mining applications, passages of text are broken down into single words or “tokens” and it is the statistical relationship between tokens that is the focus of analysis. The analysis returns the frequency of word usage as well as the strength of associations among key terms in context. Text is unstructured data however, and requires pre-processing which converts raw text into a matrix format.

The source text files were reviewed using a find-and-replace text editor function, and permutations among words were systematically reduced. For example, multi-word names have been converted into acronyms – “Farm Community Garden” (or its variants “Farm Garden”, “Community Garden” and “Farm Community Garden”, etc.) were compressed into the single acronym “FCG” to preserve the meaning of the individual words used to collectively refer to something specifically: the community growing project at a local farm. This process was repeated for all multi-worded activities or outputs and organisations referred to in both the survey responses and the focus group transcripts.

The cleaned text files were read into the text-mining (“tm”) package (Feinerer et al. 2008; Feinerer, Hornik 2014), a text mining function written for the statistical and programming platform R (R Core Team 2014), and the package libraries were used to standardise the tokens. This involves removing punctuation marks, converting all letters to lower case, and removing common words that facilitate speech but which have negligible discriminatory value. The latter are “stop-words” and are ubiquitous in spoken and written speech, and include “and”, “the”, “a”, “an”, “or”, etc. Finally, words are stemmed, which converts all variations on a word stem to its lemma, such that “improv” refers to “improve”, “improvement”, “improved”, as well as “improving”, which reduces “noise”.
In this way pre-processing converts bodies of text into bags-of-words, wherein rarely occurring (sparse) terms are assumed to hold limited predictive power. Following data pre-processing, the data are parsed by the Document Term Matrix function which constructs a matrix of terms as columns and unique word occurrence frequencies as a row.

In addition to the text mining, a sentiment analysis, or opinion mining, was carried out, using the R “syuzhet” package (Jockers 2017), which references the NRC Lexicon of affective terms (Saif et al. 2012; Mohammad, Turney 2013).

Taken together, the text mining and sentiment analysis of the focus group transcriptions offers statistical and affective insight into the implicit structure of stakeholder reflections on project learning about eliciting community sustainability.

2.3. Thematic analysis

The second iteration analyses the transcribed contributions of focus group participants in a way that preserves the coherence of the whole corpus as a repository of meaning and sensibility. Words are used in coherent strings which generate meaning in their own right. This is the exact opposite of the text mining approach which disregards the meanings of words as they are used in relation to each other.

The process of thematic analysis involves reviewing the text several times and generating codes that describe what emerge as themes in the text (Braun, Clarke 2006; Rennie 2012). The occurrence of these themes is coded systematically, and the codes, over several iterations, are examined for what the referenced texts share in common. This review of the data gives rise to code categories which are meta-descriptions of the unifying thematic of text clusters across and within individual text files. The practice of thematic analysis is to bring latent narrative threads to the surface in terms of landscapes of consciousness and of action (Bruner 1986).

The identification and highlighting of narrative themes is a means of extracting meanings from the text (Braun, Clarke 2006), and these may take the form of contradictions and exceptions to the dominant narrative, alternate perspectives and interpretations of the same set of events, gaps and opportunities for action that weren’t initially apparent, and so on (Bryman 2012).
This type of qualitative analysis returns narratives which can be traced as traversing the text, as sub-texts and meta-themes. These are akin to plot lines and story arcs, and highlighting these adds a richer texture than may be apparent from an initial reading of the dominant text.

3. A framework for lessons learned evaluation:

Complex and dynamic community development projects are informed by diverse approaches to project management, work with and through a diverse range of professional and volunteer stakeholders, and are unlikely to operate with structured project management frameworks, such as PRINCE2 (Office of Government Commerce [OGC] 2009). As a result, efforts to capture lessons learned are likely to be even more heterogeneous than in projects that do operate with such structured governance standards.

In order to optimise eliciting, capturing and benefiting from the lessons learned by community development projects, we developed and applied a systematic methodological framework, consisting of four component processes, as discussed in this section. These are applied sequentially, beginning with a scoping interview with the commissioning Project staff team, the development and analysis of an on-line survey with stakeholders, the facilitation of four stakeholder focus groups, the content of which was analysed using quantitative text mining and sentiment analysis, as well as qualitative thematic analysis, and concluding with a triangulation meeting with the Project team and Partnership Board to present and review the findings.

3.1. Case study overview

As noted earlier, the Sustainable Harborough Project (SHP) was a fully-funded five year initiative under the UK’s BIG Lottery’s Communities Living Sustainably test-and-learn project, which was intended to generate good practice in the domain. In this instance, SHP was funded to deliver against six outcomes, supported by a
range of performance indicators. Table 1, summarises the outcomes and indicator framework for SHP.

Table 1. SHP Outcomes and Indicator framework (RCC-L 2012)

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| 1) Improve knowledge and skills on sustainable living amongst the local community, and increase public support and participation in activities to improve local sustainability | 1a: Number of people participating as volunteers, etc.  
1b: Number of people reporting improved knowledge/ skills |
| 2) Bring about practical action and behaviour change to reduce the environmental impact and carbon emissions of local households, businesses and schools | 2a: Reduction in CO2 emissions due to energy use in MH  
2b: Reduction in CO2 emissions per yr due to project  
2c: Number of interventions carried out by households  
2d: Number of interventions carried out by businesses  
2e: Number of interventions carried out by schools |
| 3) Increase the resilience of the local community to environmental change, through increased community use of local natural resources and assistance for vulnerable people to manage changes in the local environment and increasing food and fuel costs. | 3a: Economic value of local natural resources used per year in Market Harborough (+5 mile radius)  
3b: Number of vulnerable individuals and households with reduced food and fuel costs |
| 4) Establish local enterprises that harness local resources and increase local trade to sustain and develop the local economy. | 4a: Increased value of local trade due to project  
4b: Number of new community enterprises |
| 5) Preserve and improve biodiversity throughout the community, including public and private spaces and the River Welland. | 5a: Increase in number of bees counted on buzzing borders |
| 6) Improve and disseminate knowledge across UK communities on how to improve sustainability in an average-sized UK market town, targeting Market Towns in particular | 6a: Number of people from other communities reached via dissemination activities  
6b: Number of public reports produced describing learning from project |
The project is located in Market Harborough, a market town in a semi-rural area of predominantly livestock farming of south-east Leicestershire about 140 km north of London. The town has a population of almost 23,000 according to the 2011 census, and is generally considered relatively affluent and a desirable place to live. While the town is the seat for the Conservative-led district council, it has no town parish with governance responsibilities.

3.2. Project team interviews

During the initial scoping meeting for this evaluation with the Sustainable Harborough Project team in May 2017, the team were asked to generate a list of all the activities\(^1\) the Project had instigated. This generated 165 unique activities which were ordered into themes, such as energy-related, food-related, etc. A number of activities were grouped under several themes, for example one activity was classified as food-related and capacity building as well as biodiversity related (e.g., growing organic food crops in a local plot under the supervision and guidance of Master Gardeners). It should also be noted that although referred to generically as “activities”, this description covers a range of undertakings of differing scales and levels of complexity, from one-off public-facing events to on-going practices of building capacity in the local food and drink economy. For example, of the 65 activities identified as pertaining to energy-related work, 54 (83%) were also were classified under the capacity-building theme.

The results of this activity analysis are shown in Figure 1 which groups the activities by theme and relative proportion of all Project activities. Proportionately more activities were energy related; these also tended to be more technologically challenging and most subject to national and regional policy governance frameworks.

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\(^1\) A distinction is drawn here between “\textit{project}”, which refers to the Sustainable Harborough Project as an entity, which is realised through a range of “\textit{activities}” which are the actions, behaviours, processes and groups that the project has set in motion and/ or contributes to its continuance. The range of activities also vary considerably in terms of complexity, scope, scale, and the amount of engagement with local, regional, and national policy frameworks. Energy-related activities, for example, tend to be more complex, technical and constrained by policy frameworks, whereas capacity building activities are significantly more flexible, straightforward, and require less consideration of policy.
Once sorted in this way, activities were classified according to the degree of success associated with the relevant outcomes in terms of the activities’ objective (i.e., successful, unsuccessful, or indeterminate because they had yet to complete). Finally, activities were also classified in terms of whether the active was pending, active, complete, or dropped. Therefore, if an activity was assessed as being of indeterminate success, that activity would also be classified as “active” or “pending”.

From Table 1, it is apparent that the Project was involved in a range of activities converging around four themes: energy-related activities (including mitigating greenhouse gas emissions), the promotion of local natural resources, expressed through locally sourced food and drink supply chains, supporting biodiversity, and contributing to local capacity building.

**Table 2. Project activity analysis**

<table>
<thead>
<tr>
<th></th>
<th>Energy-Related</th>
<th>Food-Related</th>
<th>Biodiversity</th>
<th>Capacity Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>65</td>
<td>48</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Capacity Building (%)</td>
<td>54 (83.01%)</td>
<td>37 (77.01%)</td>
<td>11 (61.11%)</td>
<td>34 (25.19%)</td>
</tr>
<tr>
<td>Successful</td>
<td>36 (55.38%)</td>
<td>36 (75.00%)</td>
<td>14 (77.78%)</td>
<td>31 (91.18%)</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>15 (23.08%)</td>
<td>7 (14.58%)</td>
<td>2 (11.11%)</td>
<td>2 (5.88%)</td>
</tr>
<tr>
<td>Undetermined</td>
<td>14 (21.54%)</td>
<td>5 (10.42%)</td>
<td>2 (11.11%)</td>
<td>1 (2.94%)</td>
</tr>
<tr>
<td>Active</td>
<td>22 (33.85%)</td>
<td>22 (45.83%)</td>
<td>9 (50.00%)</td>
<td>11 (32.35%)</td>
</tr>
<tr>
<td>Dropped</td>
<td>13 (20.00%)</td>
<td>4 (8.33%)</td>
<td>1 (5.56%)</td>
<td>1 (2.94%)</td>
</tr>
<tr>
<td>Pending</td>
<td>5 (7.69%)</td>
<td>3 (6.25%)</td>
<td>1 (5.56%)</td>
<td>0</td>
</tr>
<tr>
<td>Completed</td>
<td>21 (32.30%)</td>
<td>19 (39.58%)</td>
<td>7 (38.89%)</td>
<td>22 (64.71%)</td>
</tr>
</tbody>
</table>

Source: authors’ own elaboration.

Table 2 above, summarises the Project team’s breakdown of activity across these themes. These activities are summarised in Figures 1 and 2 in terms of the

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2 The first author was commissioned by the Project to conduct a discrete piece of research into the lessons learned by the Project over the course of its five years of operation. The findings were intended to feed forward into the summative review of the Project which would be undertaken independently by another contractor.
assessment of relative successes and the delivery status of the activities, respectively.

Figure 1. Successes across activity themes as reported by Project staff team

![Successes across activity themes chart]

“Unsucc” refers to unsuccessful; “Undet” refers to “undetermined”.
Source: authors’ own elaboration.

It is evident that capacity-building activities were considered by the Project team as the most successful of the four activities, with biodiversity and food-related activities coming in second and third place respectively. Energy-related activities are considered the least successful activities, although they are those which are also most likely to be classified as pending clear outcomes, as illustrated in Figure 2. This shows the same four activity themes but this time in terms of their delivery status.

The activities which have been completed tend to be those related to capacity-building, while energy-related activities show a relatively low completion rate and a correspondingly high rate of being dropped or pending completion. When the activity themes are compared with respect to their active status, more biodiversity and food-related project activities are classed as active (or current), followed by energy and capacity related activities respectively.
In considering the Project activities overall, the majority (39%) of the work has been in the energy-related domain which has also been, overall, the least successful of the four domains and reflects the majority of those activities that were not completed or dropped because they were seen to be unviable. This may be partly attributable to the complex technological nature of the activity, and the policy environment within which it must operate.

The second most common Project activities were food-related (29%) which, when compared with energy, were considered to be more successful with a higher rate of completion and fewer activities deemed unviable. This may partly reflect the less complex and technological nature of the activity and the more permissive policy environment within which the activities take place, especially in contrast to the energy-related activities.

Capacity building (21% of activities), was widely regarded as having been the most successful activity area and the most likely to reach completion. This theme included a range of specific activities, from the purchase of kit, such as gazebos to loan out to other organisations, through to staff training and the recruitment of volunteers. Moreover, many of the energy, food and biodiversity-related activities
were also recognised to have a significant capacity-building component to them. For example, as summarised in Table 1, energy-related activities included a significant amount (83%) of capacity-building, 77% of food-related activities also included a capacity-building element, and 61% of biodiversity-related activities involved capacity-building.

Activities related to biodiversity not only include work on the “buzzing borders” indicator, which quantified the number of areas of specified dimensions planted with pollinator-attracting flowers, but also community gardening work. While comparatively few in number (11% of all activities), most are still active and have been deemed a success by the team. Of those that were dropped, the “Incredible Edible” scheme was not taken forward following extended delays by the district council in reaching a decision about support, which left inadequate time to effectively engage the scheme with the Harborough communities.

3.3. Stakeholder survey
A link to an on-line, anonymous survey was sent to 63 named stakeholders3 who had participated in the Project in some capacity and was completed by 47 stakeholders (75%). The responses suggest that the position taken by the Project team about the relative success of the SHP activities was broadly supported by the majority of stakeholders. Like the Project team, stakeholders overwhelmingly identified food-related activities to the most successful, while energy-related work was frequently seen as the most challenging. This was commonly attributed to the volatile policy environment and the lacklustre support for renewables by the UK government, as well as changes in tariff rates. In addition, several seemingly viable prospects for roof rental arrangements, as sites for solar PV installations, could not be realised, thereby raising issues of expectation management and exacerbating the difficulty in assessing the impact of policy and economic contexts on these failures.

In their response to on-line survey questions asking for project activities to be ranked, stakeholders identified food-related and capacity-building activities to be the most successful.

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3 Stakeholders were identified by the Project team in a facilitated brainstorming session and selected on the basis that they would be the most knowledgeable about the work of the Project.
WHAT’S BEING TESTED AND WHAT’S BEING LEARNT? …

Table 3. Successes across activity themes as reported by stakeholders via survey

<table>
<thead>
<tr>
<th></th>
<th>Very Successful</th>
<th>Quite Successful</th>
<th>Required Some Improvement</th>
<th>Required Significant Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>• Waterloo Community Garden</td>
<td>• edibLE16 Networking opportunities</td>
<td>• edibLE16</td>
<td>• edibLE16</td>
</tr>
<tr>
<td></td>
<td>• Local Food &amp; Drink Map</td>
<td>• Local food branding (Taste Harborough)</td>
<td>• Public home energy efficiency workshops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Newsletters &amp; communications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The “I Love Market Harborough” festival</td>
<td>• The “I Love Market Harborough” festival</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Networking opportunities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>• Opportunities for volunteers</td>
<td>• Raising public awareness about local food and drink in Market Harborough</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Newsletters &amp; communications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Raising public awareness about local food and drink in Market Harborough</td>
<td>• Opportunities for volunteers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Arts Fresco food area</td>
<td>• Green Open Homes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Local Food &amp; Drink Map</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Food Forum Steering Group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: authors’ own elaboration.

Table 3 summarises how stakeholders ranked the success of each Project activity using a five-point Likert scale\(^4\), from “Very successful” to “Required significant improvement”. This covered all of the main activities undertaken by the Project pursuant to the funded objectives summarised in Table 1. As can be seen in Table 3, only one of the activities was thought to have “required significant improvement”.

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\(^4\) The neutral response of “No opinion/ Don’t know” has been excluded for this ranking.
improvement”, whereas the majority appear to have been regarded by survey respondents as either “very” or “quite successful”.

From Table 3, it is apparent that overall respondents considered the Waterloo Community Garden to be the most successful of all of the activities, followed by a tie between the Local Food and Drink Map and the Project’s Newsletters and Communications activities. On the other hand, respondents generally saw the on-line retailer of local food and drink, edibLE16, as requiring the most improvement. That edibLE16 has been ranked as the highest across three orders of success suggests that the impression it generates is contentious.

In addition to questions concerning the perceived success of specific activities, a further set of nine questions asked respondents to rate the degree of impact a given activity was thought to have had on a baseline condition, and further asked respondents to elaborate on their selection using an open text response field.

Table 4 summarises how stakeholders rated the impacts on these parameters. It will be noted that the “Cannot say” option was selected the most frequently by survey respondents. This may be due to several reasons. First, because the impact of the Project on addressing fuel poverty and improving the energy efficiency of SMEs are less likely to be visible to those not directly engaged in those activity streams. Such activities do not generally manifest in observable changes unless one is somehow involved in those domains.

The second reason for a high number of “Cannot say” responses may also be attributed to the low degree of cross-over among respondents who are involved in the energy-related activity streams and those in the food-related streams. Those who are involved in one stream are less likely to be able to comment on the impacts of activities in a second stream.

Finally, the notion of “impact” implies change with respect to a given baseline. Where respondents are not familiar with baseline conditions, they may not feel qualified to comment on the degree of changes that may be attributed to a given

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5 “Fuel poverty in England is measured using the Low Income High Costs (LIHC) indicator. Under the LIHC indicator, a household is considered to be fuel poor if: they have required fuel costs that are above average (the national median level) and were they to spend that amount, they would be left with a residual income below the official poverty line” [https://www.gov.uk/government/collections/fuel-poverty-statistics](https://www.gov.uk/government/collections/fuel-poverty-statistics) [01.02.2018].
activity stream. On reflection, the use of the word “impact” in a broad-based stakeholder survey may constrain the granularity of the responses, and perhaps should be reserved for use with domain specialists who will be able to offer a more informed response.

In Table 4, the values in each cell refer to the number of responses that rated a field according to one of the Likert options. For example, one respondent rated “Improving domestic energy efficiency” as a “significant” impact of the Project’s activities, whereas a majority either thought that it had “some” impact or felt that they “cannot say”.

Table 4. Stakeholder ratings of the impact of Project activities

<table>
<thead>
<tr>
<th>Area</th>
<th>Significant</th>
<th>Noticeable</th>
<th>Some</th>
<th>Negligible</th>
<th>None</th>
<th>Cannot say</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving domestic energy efficiency</td>
<td>1</td>
<td>0</td>
<td>20</td>
<td>5</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Improving SME business energy efficiency</td>
<td>0</td>
<td>6</td>
<td>13</td>
<td>1</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Reduce Greenhouse gases</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>5</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Supporting local food producers</td>
<td>17</td>
<td>19</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Supporting local food retailers</td>
<td>11</td>
<td>18</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Addressing fuel poverty</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>Improving biodiversity</td>
<td>1</td>
<td>4</td>
<td>17</td>
<td>4</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Encouraging growing own food</td>
<td>5</td>
<td>13</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Contribution to overall sustainability</td>
<td>4</td>
<td>13</td>
<td>18</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Totals (%)</td>
<td>9.5</td>
<td>18</td>
<td>27</td>
<td>5.4</td>
<td>1.7</td>
<td>38.5</td>
</tr>
</tbody>
</table>

Source: authors’ own elaboration.
From Table 4, it is evident that overall respondents rated activities to have had, at least, “some” impact (27%), while the second most frequent option selected suggested that respondents thought that the project activities exerted “noticeable” impacts (18%). It is also apparent that respondents rated the food-related activities – supporting local food producers and supporting local food retailers – as having had the most impact overall. Those activities considered to have had negligible impacts appear to concern energy-related interventions, specifically domestic energy efficiency, reducing greenhouse gases, and addressing fuel poverty. As noted above, this may be partly attributable to the lack of visibility of such activities to those outside of that domain.

Two further analyses were undertaken of the open text responses from stakeholders participating in the survey. The first was to mine the open text responses to identify frequently used terms. Term use frequency is taken as a measure reflecting the significance or salience of those terms for respondents (Hahn, Mani 2000; Laver et al. 2003; Hillard et al. 2007; Grimmer, Stewart 2013). The second maps the open text survey responses to a sentiment analysis which yields insight into the attitudes or affective opinions of the stakeholders’ responses to questions about the Project’s work.

The frequency of words used by stakeholders in responding to the survey are shown as a “word cloud” diagram in Figure 3. Larger text correspond to higher use frequencies, suggesting that these terms are the more salient for respondents.
The terms “local”, “food” and “support” appear to sum up the contribution of the Project from the respondents’ perspective and substantiate the impact ratings given in Table 3.

The contribution of the Project to the energy (“energi”⁶) agenda may be less pronounced in comparison to the food agenda, but is cited as frequently as are “impact”, “improv” (improve, improvements) “communiti” (community), and “garden”. Together, these words seem to provide a synopsis of those areas within

⁶Due to the use of stemming, words are shortened to their respective lemmas.
which the Project made a contribution to Market Harborough from the perspective of the survey respondents.

To obtain insight into the mood underlying the responses, a second type of analysis was undertaken and summarised in a sentiment analytic graph. Figure 5 illustrates the general opinion or attitude of respondents through the words they chose in response to the open text questions. These responses are mapped on to the NRC Lexicon which associates words with eight emotional attitudes (Saif et al. 2012; Mohammad, Turney 2013; Jockers 2017).

**Figure 4. Sentiment analysis of survey responses**

![Sentiment Analysis Graph](Image)

Source: authors’ own elaboration.

The sentiment analysis suggests the overall mood, or emotional tone, of respondents to the survey questions expressed through their responses, and helps to
dig a bit deeper into the emotional valency of how the respondents were disposed with respect to answering the questions.

Trust, in Figure 5, may be indicative of goodwill and social capital (Putnam 2000; Maurer et al. 2011) and its high value interpreted as being a positive opinion among the respondents. This is further supported by the elevated parameters of “Joy” and “Anticipation” which are again both positively charged feelings that suggest participants responded positively overall to the Project.

The negatively charged emotional dimensions, such as “Fear” and “Surprise” (i.e., uncertainty), are slightly elevated, but these are comparatively low and attenuated, and overshadowed by the more significant positive emotions. When all of the open text responses are combined, the mood of the respondents tends to be generally positive – the analysis graphs high levels of trust especially, suggesting a solid reserve of social capital garnered by the Project.

3.4. Focus groups

The third data collection method in this lessons learned evaluation employed the focus group format with a cross section of 30 stakeholders, partners, and representatives from other involved groups. The responses from each of the four focus groups were transcribed from the audio recording and then analysed statistically for word use frequency and the strength of correlation among different frequently used words. As observed above, the assumption is that respondents will use words that reflect what is important to them in the course of conversation (Hahn, Mani 2000; Laver et al. 2003; Hillard et al. 2007; Grimmer, Stewart, 2013), and this becomes a computationally replicable means with which to identify topic salience in conversation transcripts.

In common with the findings from the stakeholder survey, the “food” activity is referenced most frequently, within the next most frequently occurring word context of “local” and “involv” (the stemmed term for words such as involve, involved, and involvement, etc.), and “busi” (business and so on). In the context of the word “food”, the most frequently associated terms food occurs with are “local” (a correlation of 0.71) and “map” (a correlation of 0.56). This isn’t really surprising
since most of the time, participants, when speaking of food, would specifically state “local food”, and also commonly included references to the food and drink map.

**Figure 5. Focus group – All responses**

Source: authors’ own elaboration.

If food was the most frequently discussed activity, edible16 and the relationship with producers were the third most frequently discussed aspects of the Project’s work, with “energi” (as pertaining to energy and its variants) among the fourth most frequently discussed aspects, along with “support”, “work”, “good”, “time” and “together”. The reference to “time” may also reflect a pattern that emerged from each focus group where participants responded to the opening question concerning the key lessons learnt over the life of the Project by observing the time lag in getting activities started and up and running.
WHAT’S BEING TESTED AND WHAT’S BEING LEARNT? …

Relatively few references are made to partner institutions. This may reflect how these institutional actors have been seen as playing small or low profile roles in the work of the Project and its different activities, at least from the perspective of the focus group participants.

When the sentiment analysis, or opinions, of the participants’ responses are taken overall, the mood appears to be positive.

Figure 7. Focus group – Sentiment analysis of all responses

Source: authors’ own elaboration.
Levels of trust are high, and as discussed in the previous section, this may be indicative of social capital generated among participants. The level of anticipation is high, indicating a sense of optimism, and joy is also elevated, suggesting overall satisfaction among the stakeholders. These results are consistent with those found in the sentiment analysis of the on-line survey open text responses.

The contribution of these computational analyses to a lessons learned evaluation is two-fold. First, because the algorithms used are open source and transparent, the methods employed here are replicable which facilitates increased confidence in the validity and verifiability of the findings. Given access to the same data set, the findings can be confirmed, and using the same methods, different data sets can be compared. Together, this methodological standardisation introduces a degree of rigour to the evaluative process that is otherwise lacking when the analysis depends on the interpretation offered by the evaluator alone.

Second, the computational analyses have facilitated insights into both the survey and the focus group data with respect to topic salience and affective loading that may not have otherwise been possible to access. By enabling additional perspectives to be brought to bear on the interpretation of data, the overall calibre and comprehensiveness of the analysis are enhanced.

When coupled with analytic transparency and replicability, this suggests that computational approaches offer a potentially significant contribution to the evaluator’s methodological tool kit. However, on their own, computational methods are not sufficient, and for this reason we also incorporated the qualitative method of thematic analysis, as discussed in the next section.

3.5. Thematic analysis

As noted earlier, a thematic analysis is an iterative process of reviewing textual data and identifying recurring patterns – themes – which occur at different points across the data set. The emergence of these patterns in the form of words, associations, and meanings are considered for their contribution to telling the story of how participant stakeholders engage with and make meaning about the Project and its different activities. As such, it is a qualitative method, which counter-balances the computational methods of text mining and sentiment analysis, and was
employed to obtain an alternate perspective on how stakeholders made sense of the Project’s activities.

Six themes were identified as follows: Milieu, Engagement, Networking, Governance, Outcomes, and Learning. Each was in turn comprised of a series of sub-themes.

Each theme is a narrative about the practical experiences of delivering a funded project within a given socio-political context. For example, the theme of “Milieu” identifies the influences of how the project is supported by local leaders, the time lag in getting things going, the challenges of changing habits, and how macro-economic and policy volatility has local micro-impacts. The theme of “Engagement” concerns the reach of the Project’s work and communications strategy, the receptivity to the Project by local people, and how well the Project’s own objectives feed into local priorities. The narrative accounts that concern the Project’s “Networking” activities position the Project as a catalyst of new opportunities, converging groups around points of common interest and enabling participants to realise their ambitions.

Some of the focus group discussions concerned “Governance”, particularly the processes of decision-making, how opportunities were negotiated and the Project’s strategising to achieve its objectives. The mechanisms for meeting these were clustered under the theme “Outcomes” and impacts, i.e. what worked well, and what required improvement. Finally, the thematic of “Learning” details the narratives that reflect on what might be done differently in any future iterations of the Project and also what was learned overall from the experience of being involved with doing the Project. These are summarised in Table 5, below.
<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Illustrative Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milieu</td>
<td>A need for greater engagement from/with political and community leaders</td>
<td>&quot;One of the lessons of Sustainable Harborough is that you won’t get the level of engagement and success with the community unless you’ve got the drive from the top with community leaders – such as Harborough District Council, the Leader of the council, MPs, commercial entities&quot;.</td>
</tr>
<tr>
<td>Milieu</td>
<td>Time-lag in starting new initiatives</td>
<td>&quot;As part of those enterprises, just didn’t realise how long it takes to get businesses established – we were thinking quite early on maybe twelve months before we’d be financing ourselves. It does take longer than you think.&quot;</td>
</tr>
<tr>
<td>Milieu</td>
<td>Inertia in changing habits</td>
<td>&quot;eddLE16 has been very good for one or two producers who have increased their turn-over quite substantially, but I don’t think it’s got the traction in the community that it should have had&quot;</td>
</tr>
<tr>
<td>Milieu</td>
<td>Volatility of regulatory and economic contexts</td>
<td>&quot;How difficult it is to sustain things in the face of changing politics, and policy and money around that&quot;</td>
</tr>
<tr>
<td>Engagement</td>
<td>Reach of Project to Market Harborough communities</td>
<td>&quot;The Project didn’t engage the economically disadvantaged in the community, because there’s a lot of expertise around, and we didn’t somehow manage to marshal that to help people who really need the help&quot;.</td>
</tr>
<tr>
<td>Engagement</td>
<td>Receptivity to the Project</td>
<td>&quot;A lot of the people involved in Sustainable Harborough are likely to be people who already think that way and are already sustainability-minded&quot;.</td>
</tr>
<tr>
<td>Engagement</td>
<td>Synchronicity between offer and local zeitgeist</td>
<td>The Project &quot;gave local producers […] a different kind of community – it wasn’t a for-profit cut-throat community, but we’re all in this together&quot;.</td>
</tr>
<tr>
<td>Engagement</td>
<td>Communications strategy employed</td>
<td>&quot;It’s a question of who the Project is targeting in the first place, and not everybody is going to be interested in being involved&quot;.</td>
</tr>
<tr>
<td>Networking</td>
<td>Project as catalyst</td>
<td>&quot;It takes somebody to make the decisions, to start the ball rolling, and all of the conversations we may have had in the pub about [doing something] together, until someone actually says ‘I shall look into it for you’, it doesn’t happen&quot;</td>
</tr>
<tr>
<td>Networking</td>
<td>Converging groups around common activities</td>
<td>The Project was &quot;a framework, a kind of lattice, to connect or bridge lots of things&quot;.</td>
</tr>
<tr>
<td>Networking</td>
<td>Enabling stakeholders</td>
<td>&quot;Having a focal group to pull all of those people together, so you do feel there’s some support for other little bits and pieces that are happening in the town, and you’re not by yourself trying to do everything by yourself&quot;</td>
</tr>
<tr>
<td>Governance</td>
<td>Decision-making</td>
<td>&quot;By letting people know that together we have brought about this project and that, and these collaborations, and being upfront about successes and failures, and things that hadn’t worked out, which is also a learning exercise for people&quot;.</td>
</tr>
<tr>
<td>Governance</td>
<td>Steering and strategy</td>
<td>&quot;Just don’t know what level of success Sustainable Harborough have. I don’t know how it’s measured, I don’t know what their targets are, so it’s difficult for someone else looking in to know how successful all of these things are&quot;</td>
</tr>
<tr>
<td>Governance</td>
<td>Negotiation of opportunity</td>
<td>&quot;[Sustainable Harborough] has done a good job of finding out where something might be successful and trying to run with it and see how far it can be taken, and have sometimes had to drop activities if they’re not working&quot;</td>
</tr>
<tr>
<td>Outcomes</td>
<td>What worked well</td>
<td>&quot;The food is a big success – we’ve got the Food Map that’ll link in with tourism, we’ve got local restaurants and we’ve got local food and we know that’s being promoted&quot;.</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Areas for improvement</td>
<td>&quot;We just didn’t take eddLE16 to where it should have been. We were all enthusiastic and had lots of meetings, but then it just tapered off&quot;</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Impacts</td>
<td>&quot;Would not have been a community energy organisation here; I cannot conceive of how that might have come about&quot;</td>
</tr>
<tr>
<td>Learning</td>
<td>What would be done differently</td>
<td>&quot;If we were to do something like eddLE16 again, it needs to get more producers involved and get them to commit to it or even split it, so that you have the marketing bit over here and the main bulk of it, is the producers&quot;</td>
</tr>
<tr>
<td>Learning</td>
<td>What was learned</td>
<td>&quot;One of the lessons is that one has to accept that the model you have in the beginning is not the model you end up with, and the lesson is remembering what the reason for doing it was about&quot;</td>
</tr>
</tbody>
</table>
The quotes cited above have been selected because they represent the impetus of each sub-theme. What is of interest here is when the thematic analysis, and the supporting quotes, are read alongside the word frequency analysis, a coherent account of the focus group conversations is generated. The word frequency analysis gives a statistical representation of the dominant – as in most frequently discussed – concerns of the focus groups, while the thematic analysis yielded a qualitative reflection of what focus group participants seemed to mean when voicing their concerns and opinions.

3.6. Triangulation

Triangulation is a means by which the findings of an evaluation are checked for credibility. Here, this process concerns less a confirmation of unchanging phenomena but more the verification of the constructs offered by stakeholders and the interpretation thereof from the perspective of the actors involved (Guba, Lincoln 1989; Patton 2001).

There were three points during the course of the evaluation that triangulation meetings were scheduled. The first followed the initial scoping meeting, and involved a confirmation of the information provided by the Project staff team in terms of scope, accuracy, and interpretation, and also to use the staff team as consultants on developing the survey questions.

The second triangulation meeting was held a few months later following the analysis of both the survey and focus group data collection processes. At this meeting, the results from the text mining, sentiment and thematic analyses were presented to the Project staff team. The methodology was introduced and explained, and feedback was elicited with respect to both content and presentation.

The final meeting was a presentation given to the Project team and Partnership Board by the lead author on the final report, where the method and findings were discussed, along with the implications arising from the lessons.

These triangulation meetings not only maintained transparency and accountability, but ensured that the final report would be of utility for the commissioning Project (Patton 1997).
4. Reflections on the methodology

This paper began by acknowledging that there is little in the way of good practice guidance for the methods by which an evaluation of the lessons learned by a project are to be captured, analysed, and interpreted. In effect, the extant literature on good practice for conducting a lessons learned project evaluation may be distilled to the advice of McClory et al., (2017: 1322) “to capture the results and experiences from successes, failures and near-misses”. However, to date, there remains very little detail on how this objective might be achieved.

Arguably, the emphasis given in the literature to evaluating the lessons learned by a given project remains more closely aligned to a project management perspective, with a focus on objectives, stages, data capture, and a linear delivery common to this discipline. Thomas (2015), for example, restricts his treatment to the process of managing the project of a lessons learned evaluation rather than the actual methodology involved in doing the work.

To address this apparent gap in the literature, we have envisioned a practical methodology for conducting a lessons learned evaluation which would include enhanced consideration of ways with which to identify and engage stakeholders, the facilitation of focused critically reflective conversations, ways for separating the “signal” from the “noise” in terms of topic salience, navigating and reconciling conflicting perspectives, and ways of tracking and bringing to the surface latent meanings and interpretations among stakeholder narratives.

As a consequence, the methodology proposed here is aligned more closely with research than with project management. The methodology described in this paper pays considerably closer attention to what the Project stakeholders identify as being important to focus on, what they deem to have been “successes, failures and near-misses”. As reported in this paper, this was accomplished by engaging the Project team as expert consultants to identify what they thought were the successes and failures, which were contextualised with reference to the delivery status of each activity, and these findings were subsequently triangulated through the on-line survey and focus groups. The Project team were also engaged in identifying stakeholders to be invited to participate in the survey and focus group, and care was
What’s being tested and what’s being learnt? …

paid to ensure that these represented a cross-section of the various Project activities, partners, and other relationships that had been key to the Project’s evolution.

Given that surveys and focus groups often generate a range of opinions, perspectives, and insights from engaged stakeholders, a strategy was required to parse the volume of data to distinguish “signal” from “noise”. The approach adopted here was to use the statistical rigour of text mining, specifically word frequency analysis, and to identify the strength of word associations. This approach yielded key word in context (KWIC) results which were systematically reviewed to identify and isolate what stakeholders thought was salient, across both the open text survey fields and the transcribed focus group discussions. Furthermore, through the use of sentiment analysis, an attempt was made to obtain insight into the affective mood of the respondents with respect to their responses to the survey questions and focus group prompts. The findings from this method yielded an impression that stakeholders held the Project and its activities in high esteem, as portrayed by the elevated scores in the trust parameter, which was interpreted to suggest that the Project had acquired considerable social capital among its stakeholder groups.

4.1. Critical reflections

However, text mining, by virtue of its statistical approach, does not generate insights into the latent meanings and narrative threads which permeate human discourse and give human communication its richness. To counterbalance this limitation, the thematic analytic method was employed to bring these latent semantic threads to the foreground. By doing so, we discovered, for example, key insights into how stakeholders themselves located the Project within the broader socio-political milieu, identifying the necessity of community and local political leadership as a key ingredient to Project success. As a result, while it may appear obvious, the implication for project design and funding is that these would benefit significantly from locking down such endorsement and support for the project from the outset, both in the spirit of furthering partnership working, but also to bring about greater synergies of purpose. Moreover, important connections were made by stakeholders between the local take up of community-owned energy micro-generation schemes and the broader policy environment of the UK at the time.
Again, this demonstrates the importance of a project’s context as a determinant of its ultimate success.

A second example concerns the contested value of edibLE16, first mooted in the survey responses (see Table 2), and explored further through the context of the focus group discussions. Although none of the focus group prompts tackled this activity directly, nor even alluded to it, participants themselves addressed this activity from multiple perspectives. By thematically analysing participants’ responses, it became apparent that the issue of success or failure is far more nuanced than one might at first think. In the case of edibLE16, for example, what we found was that from the perspective of using market reach and number of customers as a criterion for success, edibLE16 was less than successful.

However, as many participants observed, where edibLE16 was seen as having been very successful was in its provision of a safe, non-competitive space that brought together local food and drink retailers, producers and processors in a way that had never before been accomplished in the area, and which challenged the territorial defensiveness a competitive market tends to engender. This could not have been anticipated at the outset, and raises the important question for a lessons learned evaluation that restricts its focus to “successes, failures and near-misses” as to the criteria by which such judgements are being made. We believe that the methodology used here helped uncover some of the nuanced complexity of projects that a more project managerial approach would be less sensitive to.

The final report tested the findings, and the methodology, through a series of triangulation meetings, initially with the Project staff team, and subsequently with the Partnership Board. In both instances, feedback was invited, and provided, and this process gave the evaluation a “sanity” check with respect to the relevance, validity, and transparency of the findings.

While the methodology described in this paper appears to demonstrate a goodness of fit with this particular evaluation of the lessons learned by the Sustainable Harborough Project, caution is advised in terms of whether such a method is suitable as a one-size-fits-all approach. Clearly, the methodology adopted must be flexible to the nature, context, and scope of the project being evaluated. Some projects will necessarily be more linear, with clear project delivery stages,
strictly defined objectives and methods for delivery, and perhaps this method will be less suited to such projects. Large civil engineering and IT projects and corporate development projects come to mind as examples. However, unlike such examples, community development projects are unlikely to be so tightly managed and constrained by structured project management and accountability governance regimes.

As a result, the methodology reported on here is likely to be better suited for developmental type of projects, such as the case studied here projects that tend to learn as they go, involve a range of stakeholders, and which are more fundamentally “messy” in nature with stakeholders tending to be more interested in getting things done. This is because the method is adaptive, but more critically, because it locates the process of learning as the creation of new meanings. Consequently, from this perspective, the meanings that the stakeholders generate through the evaluative process are seen here as the most significant factors to emerge from this process and constitute, in effect, the heart of the lessons learned.

This raises more questions than can be answered given constraints of space. For example\(^7\), if the guidance outlined here amounts more to a research method, it raises the question about how probable it is for smaller-scale projects to attempt this form of evaluation, and whether doing so requires stakeholders to possess specific sets of skills. Not only does this problematise the distinction between research and evaluation, but also reiterates the need for the Project Management Book of Knowledge (PMBOK) literature to specify guidance for practitioners to draw on who may not, themselves, be researchers. This will likely remain a topic for future debate.

5. Conclusion

While knowledge and learning are considered organisational assets, the process whereby learning is captured to inform knowledge remains a project evaluation objective that is not well supported by methodological good practice guidance. As a

\(^7\) As pointed out by an anonymous reviewer about an earlier draft of this paper.
result, approaches to these important evaluative practices are diverse leading to variable benefits for the organisation attempting to transform its learning into knowledge. For small-scale community-based development projects which work through a range of stakeholders and often without structured project management frameworks, such as PRINCE2 (OGC 2009), efforts to capture lessons learned are likely to be even more heterogeneous than in projects that do operate with such structured governance standards. This means that a systematic framework and process may be even more important to follow, in order to track change in the same project across time or to contrast different projects at the same time. Such a framework is important for evaluating the learning that emerges from “complex” and continuously changing systems.

Some systematic (and replicable) tools were employed and have been reported in this paper. Specifically, this paper reports on the use of a mixed methods approach to evaluating the lessons learned by the staff team and engaged stakeholders of a case study community development project. The method adopted for this evaluation combined both a statistical analysis of transcribed focus group and survey responses as well as the qualitative thematic analysis of these responses.

The use of text mining for evaluating project learning is an original contribution to this field and was recruited for its statistical potential to bring to the surface those concepts considered salient by the respondents. The emotional tone of the responses was mapped against the NRC Lexicon, which returned significant loading in positive attitudinal affect among respondents with respect to their answers to survey questions and focus group prompts overall.

The treatment of text as a data set, effectively a statistical “bag of words” devoid of meaning, was complemented through a detailed thematic analysis of the transcribed responses. This helps bring to the fore the narrative threads that warp and weave throughout the transcripts, which contextualise and provide richer meanings to what respondents identified as salient learning garnered through their project experiences.
If projects, such as the case studied here, are construed as sites of experimental intervention in addressing such “wicked problems” (Rittel, Webber 1973) as sustainability, the learning and knowledge acquired over the course of implementing the intervention may be regarded as a potential asset for both present and future projects. By harnessing such knowledge assets, resources are less likely to be diverted towards covering ground that has already been found to be less than productive and can be released for more effective ambitions. However, this may only be achieved if the lessons learned are of a high-quality, in Patton’s (2001) sense, as based on robust triangulated evidence. The implication of this is that evaluation of the lessons that projects learn requires evaluators to adopt an approach akin to constructivist informed research (Guba, Lincoln 1989) with an emphasis on a triangulated evidence base linked to the attainment of project outcomes. The present study endeavours to exemplify this guidance.

Nevertheless, it is important to point out that no attempt has been made here to link the learning derived through this project evaluation to the wider literature on grassroot sustainability initiatives. We hope to explore these connections further in a subsequent paper which will devote greater attention to the findings within the context of the grassroots sustainability initiatives literature. The emphasis in the present work has been primarily on the use of a unique four-phase methodological framework as contribution to a perceived gap in the PMBOK good practice guidance on lessons learned evaluation.

Whatever the probative value of the actual findings with respect to the sustainability initiatives literature, the method discussed above represents an attempt to generate and contribute to the discussion about a vital skill set required for the 21st Century. This emphasises the need for learning to be reinvested in organisational development and future project design and funding policies so that hard-won experience, and the lessons acquired as a consequence, may be meaningfully captured, codified and utilised as knowledge assets. Guidance on how to do so effectively and consistently is a gap that needs to be met, especially for smaller-scale community development and sustainability initiatives, in order for

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8 Generally, wicked problems are those that have no clear solution or ending point, are contested and resist resolution.
practitioners, funders, and policy makers to divert limited resources away from continuously re-inventing the wheel and instead to concentrate these into using the learning from what has gone before to break new ground. We hope that through the present paper we have made a modest contribution to that process.

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Cooking up a Course: Teaching sustainable marketing at MBA

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Abstract:
Aim: To explore how a critical course on mainstream marketing and business theory can shift the perception of sustainability as an extrinsic goal to sustainability as an intrinsic boundary condition to business.

Design/Method: An introductory course is designed in which a system approach is introduced by assessing the purported marketing purposes of the firm relative to an increasing range of manifest and latent stakeholders. Key elements of the course are received elements of MBA programs to illustrate that education for sustainability does not mean teaching new topics, but means a new way to teach old topics.

Finding: It is shown that the course meets the requirements and recommendations that were derived from theory on teaching sustainability in higher education. Though the topics and theories covered are central to a mainstream MBA program, the way they are presented and questioned promotes learning critical thinking by doing. The long term effects of this approach cannot yet be tested, and require longitudinal research among participants and teachers of the consecutive courses.

Originality: Within the boundaries of mainstream MBA the course invites critical reflection of established theories from a sustainability perspective. Being presented as the foundation of an MBA program sustainability is offered as a boundary condition for corporate management.

Key words: sustainable marketing; education; MBA

JEL: A2, D4, M0
1. Introduction

The concept of sustainable economic development was introduced in 1987, but the “sustainable shift” is slow to reach academic marketing education. Even though sustainability related skills are viewed as increasingly important for managers (Fisher, Bonn 2017), academic business programs are reluctant to adopt sustainability related content and only a small portion of marketing courses is devoted to sustainability education (Barber et al. 2014; Fisher, Bonn 2017; Friel, McLaughlin 2013; Perera, Hewege 2016). Especially business schools tend to base their programs on a business-centred worldview in which the success of society depends on the success of companies (Beddewela et al. 2017) and in which the success of companies equals profit. For decades international business schools have focused on the shareholder model that reduces the success of companies to quarterly financial returns and stock market value (Barber et al. 2014; Exter et al. 2013). In this model the truisms that the long term survival of a company in a market economy requires it to be profitable has been turned around – making profitability and superior financial performance the main purpose of the company (Hunt, Morgan 1995; Kotler 1994). As a result cost saving and value appropriation are promoted at the cost of viability and value creation (Mouzas 2006). Consequently business schools are notorious for training prospective managers in using amoral linear models of growth, efficiency, selfishness, and greed (Capra, Luisi 2014; Koris et al. 2017; Örtenblad et al. 2013). These models may reflect the values of an industrial worldview (Thévenot 2001), but the single-minded focus on efficiency and short-term profitability does not educate managers in critical thinking nor in ethical reflection on the company’s processes that are vital for successful market performance in a changing environment (Alvesson, Spicer 2012; Beer 1981; King 1985; Palazzo et al. 2012).

For decades there has been little evidence of wider moral, societal, and political issues in the marketing curricula (Turnquist et al. 1991). Though some business students may adhere to sustainable values in their daily life (Ng, Burke 2010), they do not see ethics as relevant for entrepreneurship (Wilhelm 2002) and they have noteworthy little opportunity to apply these values as doctoral students in marketing
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or business (Wilkie, Moore-Shay 1997). The growing need for managers in sustainable, conscientious, and/or ethical companies should provoke business schools to reconsider not only their educational program but also their role in society (Kurucz et al. 2014), as reflected in the latest AACSB/ACBSP guidelines (Nicholls et al. 2013). This notwithstanding a critical reflection on the myopic profit focus of existing MBA-marketing programs may still be a certain way out of a business school career (Ehrensal 1999). Therefore the most common way to navigate the conflicting demands of the Anglo-Saxon and the critical business model in education therefore is bolting ethical and sustainable topics onto existing programs (Snelson-Powell et al. 2016). In practice this “end-of-pipe solution” implies paying occasional lip service to sustainability or ethics during mainstream courses, and topping off the finished program with a specialised ethics and sustainability course at the end. Bolted-on sustainability is succinctly reflected in some best-selling marketing textbooks (Kotler et al. 2013; Kotler, Keller 2016). In this way ethics and sustainability are effectively presented as external limitations that prevent some, otherwise highly attractive, marketing practices. At best this teaches students about sustainability and ethics, but at worst this provokes a legalistic approach to sustainability and ethics, culminating in the attitude that “anything that is not illegal is acceptable” (Schwartz 2012).

In the current paper the outline of an inclusive introduction of sustainability in higher business education is reported. Contrary to the bolted-on approach, an inclusive approach to teaching for sustainability requires weaving sustainability and ethics through every aspect of the curriculum (Snelson-Powell et al. 2016). Because a market orientation is key to business success a sustainable marketing orientation should be the key to sustainable business. Inclusive teaching of sustainable marketing should invite continuous reflection on the societal impact of marketing and on the limitations of marketing (Mitchell et al. 2010; Van Dam, Apeldoorn 1996). Therefore the “Leitmotiv” of this course is critical reflection on, and critical assessment of, the (lack of) sustainability of contemporary business and of the theories by which this is legitimised.
2. On recipes, cooking, and cookery

There is no single accepted methodology for teaching sustainability in higher education, though the need for integrating multidisciplinary sustainability teaching in university classrooms is hardly disputed (Schneiderman, Freihoefer 2009). It has been suggested that “how” critical sustainable reflection is taught is at least as important as “what” is taught (Robinson 2009; Schneiderman, Freihoefer 2009). Various learning models aim at challenging students’ preconceptions and raising uncertainty and ambiguity, in order to prepare students for developing fresh insights and understanding (Robinson 2009). Common denominators of several existing teaching methods are disenchanting, empowering, and system-oriented: disenchanting by identifying and critically reflecting on the assumptions, the paradigms, and the power relations that define the domain being studies; empowering by participatory, hands-on, direct training of relevant skills; and system-oriented by stressing the multidisciplinary interconnectedness of different viewpoints on contextual issues (Alvesson, Sandberg 2011; Burns 2009; Robinson 2009; Schneiderman, Freihoefer 2009). These teaching methods confront the students with critical perspectives that question dominant paradigms and hidden assumptions of the students in a participatory and experiential process (Burns 2009; Muijen 2004).

Education for sustainability should be built on various ingredients – like, e.g., systemic and holistic thinking, integration of different perspectives, self-transcendent values – translated into a range of skills that are required for critical and systems thinking, and for effective communication and collaboration (Svanström et al. 2008; Tarrant, Thiele 2016; Wals 2012). Turning these ingredients into a palatable mix of learning processes, philosophical and ethical perspectives, sustainability issues, didactics, and practical content has been likened to cooking (Muijen 2004). In cooking a recipe provides the instructions for preparation, but the hands of the cook and the quality of the ingredients are indispensable for a successful result. Maybe the better metaphor for teaching is not cooking but cookery, where recipes are not instructions but mere suggestions how ingredients may be handled and combined. Cookery is meant to trigger rather than confine the cook’s imagination (Leyel, Hartley 1925). Likewise a course on sustainable marketing systems should trigger the imagination of
the student to appreciate that every experience or every event is part of the environing world within a unique temporal and situational context (Dewey 1938; Tarrant, Thiele 2016). Likewise, as befitting a recursive system, any course on sustainable marketing is embedded in its own specific and unique situational context and the ideas presented here are mere suggestions to trigger rather than confine the imagination of the reader in cooking up a course on critical sustainable marketing.

The aim of sustainable higher education should not be to train dogmatic followers of critical theory, but to train critical users of mainstream theories (Alvesson, Sandberg 2011; Svanström et al. 2008). The guiding principle in teaching critical science is that critical thinking is learned by doing and not by reading about it (Tarrant, Thiele 2016). Of course it would be easy to combine the vast body of literature on critical marketing and critical management as required reading for students (see, e.g., Alvesson et al. 2009; Grey, Willmott 2005; Saren et al. 2007; Tadajewski, Brownlie 2008). Like in many other instances the effectiveness of such easy approaches is to be doubted as they often tend to be neat, plausible, and wrong (Mencken 1921). In the cookery approach therefore the instructor absorbs this body of critical literature and applies the acquired insights in teaching mainstream material. The critical twist is not in the ingredients but in their preparation and presentation, making students not only question the assumptions behind the mainstream models that are offered, but behind all management conventions they will meet in the career (Alvesson, Sandberg 2011). Rather than teaching different material in the traditional way, the instructor is challenged to teach traditional material in a different way.

3. Seasoning: critical marketing

Mainstream marketing education is being challenged for unquestioningly propagating and replicating the non-sustainable economic status quo (Tadajewski 2010b). Likewise many business schools are accused of delivering foot-soldiers to corporate capitalism (Ehrensal 2001) and of socialising students into exemplary managers of an imaginary ideal corporation (Smith 1994). Reflection on the implications of marketing to society may once have been the evident focus of
marketing education, as marketing and management were viewed as means to achieve societal goals (Priddle 1994). Nowadays it is taken for granted that these implications are beneficial by definition and marketing management is viewed as an end in itself. Therefore critical reflection on marketing is reduced to the issue of how students are best trained in marketing (Hyman 2004).

Marketing education that critically questions this status quo is gradually regaining popularity (Tadajewski 2010a) and various approaches to facilitate critical thinking in marketing education are being advocated (Barber et al. 2014; Borin, Metcalf 2010; Jonson et al. 2015; Roy, Macchiette 2005; Wieland, Fitzgibbons 2013). Still, the idea of critical marketing in a business program easily deters a majority of students, teachers, and program directors. This is caused at least partly by the ambiguous meaning of “critical” in education (Burton 2001).

In the popular vernacular being “critical” has the dual meaning of “expressing adverse and disapproving judgements” as well as “being in a state of a crisis and transition”. In this popular interpretation “critical marketing” suggests that marketing has a deplorable character and/or is on the verge of collapse. This view is reinforced by radical calls for a stop to teaching business students any theories or models that can be traced back to neo-classical economics and neo-liberalism, because they are antithetical to sustainable development (Wymer, Rundle-Thiele 2017). This strong definition of critical marketing education is poorly compatible with business programs as it would disqualify most, if not all, existing marketing models for teaching and disqualify most graduates for employment. This “popular criticism” obviously is not what is meant by “critical” in a (marketing) education program.

A weak definition of critical marketing education explains “critical thinking” as a process of “analysing merits and limitations”. This weak definition of critical thinking can be equalled to sophisticated forms of learning such as analysis, synthesis, and evaluation. Skills for critical thinking include being able to identify, analyse, evaluate and present arguments, and being able to distinguish fact from judgment and knowledge from belief (Roy, Macchiette 2005). These skills are trained by exercises in debating and by discussing contrary perspectives to improve intellectual standards – such as accuracy and clarity of argumentation, logical thinking, finding supporting and contrary evidence, and fairness. This type of critical academic reflection should
be a basic component of any academic training, though its presence apparently is not self-evident in marketing and business programs (Wilkie 2016).

Critical theory in marketing and management goes beyond mere academic reflection, but stops well short of creatively destroying marketing as an academic discipline. Critical theory implies questioning the assumptions of marketing and revising these were possible (Alvesson, Sandberg 2011), allowing one to continuously rebuild and redesign one’s knowledge while simultaneously using it to understand and explain reality (Hempel 1980; Neurath 1932; Tadajewski 2010a). Critical theory commonly combines reflection on fundamental assumptions with empowerment and emancipation (Mezirow 1981; Spicer et al. 2009). As such critical theory is easily equated to neo-Marxism, feminism, post-structuralism, and a host of other non-positivist positions (Fournier, Grey 2000). This easy equation misses the point that non-positivist and critical science only partially overlap, and that the dogmatic rejection of (post)positivist science is equally non-critical as the dogmatic adoption of either positivism or neo-Marxism (Alvesson, Sandberg 2011; Fournier, Grey 2000).

Over the past decades the traditions of higher education have been challenged by competence based learning (Brooks 2009; Hyland 1993a, 1993b; Tarrant 2000). With respect to sustainable development in higher education a set of “key competencies” are assumedly critical for sustainability (for an overview see, e.g., Wiek et al. 2011). Though willing to acknowledge that any qualified graduate must master competencies, one may doubt whether everyone trained in these competences should qualify as graduate. Competence based learning is in itself a paradox (Campbell 1976), but in relation to sustainable development doubly so. Acknowledging the need for a non-reductionist systems approach competence based education responds mechanistic-reductionist with offering an ubiquitous toolkit (Lester, Religa 2017; Tarrant 2000). Rooted in (anti-positivistic) social constructivism and phenomenology competence based education emerges as social engineering towards the positivistic outcome of real and known sustainability. And by focussing on competencies rather than the propaedeutic knowledge it may well deliver incompetent graduates (Brooks 2009; Grant 1999). The myopic focus on sustainability-competences has neutralised the emancipatory and transformational potential of critical science. Devoid of theoretical or epistemic background competence based learning has turned critical.
thinking in a management tool for the improvement of individual and corporate behaviour vis-a-vis a deteriorating environment (Velasco Arias 2019).

Critical reflection in marketing education aims at rendering visible the assumptions under existing theory and models. Empowerment in marketing aims at acting on these insights to transcend the structural conditions that limit marketing executives to the replication of existing undesirable patterns of behaviour. Critical reflection on marketing is not new to academia, but critical empowerment of graduates appears to be lacking. Marketing as a discipline is based upon many assumptions that are questionable, and these assumptions have been questioned for decades with regrettably few implications for teaching, research, or publishing (Burton 2001). Many of these questionable assumptions are directly related to the lack of sustainability in mainstream marketing (Jamrozy 2007), and to be viable within sustainable development marketing might be better off without blind adherence to these assumptions. This notwithstanding many academics implicitly or explicitly hold on to these assumptions, and routinely disseminate them as axioms to new generations of marketing graduates and marketing practitioners (Phelan 2006).

4. The Course

4.1. POSIWID and the purpose of the firm

Reflection on the assumptions of marketing in relation to the societal impact of marketing has generally been relegated to the domain of macromarketing (Hunt 1976; Priddle 1994). In macromarketing a system theoretic approach is being recommended for the study of marketing systems and market behaviour within a societal context composed of various stakeholders in an institutional environment (Arndt 1981; Carson et al. 1999; Fisk 1967; Layton 2007, 2015; Vargo 2011). In line with the systems view on marketing the implicit guideline used in this critical course on marketing systems is the cybernetic dictum “the purpose of a system is what it does” (POSIWID, see: Beer 2002). We can describe the marketing system from many angles, and we can describe individual firms as partially autonomous systems that operate within the marketing system. For each of these systems the dictum holds that
the purpose of that system is what it does. This POSIWID dictum is the guiding principle in problematising marketing and management (Alvesson, Sandberg 2011). Defining the purpose of the system as “what it does” distinguishes a system and its manifest purpose from the aim, goal, intent, or objective of the people who designed and/or are using that system. This avoids deontological or teleological moral judgements of the system, and allows a positive discussion of differences in observed purpose due to different perspectives. In this discussion claims on “what the system does” can and should be backed up with empirical evidence. If observed outcomes are deemed undesirable, understanding these outcomes as purposes rather than as side-effects of a system may facilitate the identification of their systemic causes. At the same time it should be noticed that what a complex (social) system does, and more specifically what that system does relative to each of its components and its environment, usually is a matter of unfolding perspective. Both the boundaries of a social system and the scope of the observed outcomes are not self-evident, and complex systems will generate an array of, sometimes conflicting, outcomes. Some of these outcomes only become manifest over time, and some of these outcomes result from interactions and frictions in an overarching metasystem. It very well may be impossible to know the full purpose of a complex system, but that merely means that understanding complex systems is an ongoing process.

The purpose of a firm, or the purpose of a marketing system, is not what it is meant to do, not what it is claimed to do, not what it ideally could do, but merely and exclusively what it does. Without further specification this purpose only can be formulated in general (prototypical and/or stereotypical) terms that are mostly confined to the internal machinations of the system and the hypothetical analysis of its external impact. What a system does relative to its environment only can be known when a specific system is studied in the situational context of its actual environment. As soon as different real existing marketing systems or a real existing firms are discussed the analytical focus can shift to comparative analysis of these systems and of the impact of these systems on their environment.

Within the firm the employee adapts his or her behaviour to the perceived purpose of the firm (Alvesson, Willmott 2002). What the employee does, i.e. the purpose of the employee, makes sense given the purpose of the firm, as unfolded to this
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employee. Likewise the purpose of the firm, i.e. what the firm does, makes sense given the purpose of the marketing system, as unfolded to this firm. And the purpose of the marketing system makes sense given the purpose of its social and institutional environment. Each of these consecutive levels of analysis may cast a different light on the perceived purpose of the firm. Therefore analysing the purpose of the firm at different levels of abstraction and from different angles, should change the perception of the purpose of the firm and thus of the appropriate behaviour of the employee.

Most of the salient assumptions that dominate mainstream marketing management are derived from those Chicago School economists who equal efficiency to effectiveness in achieving wealth and justice (Posner 2007), or who confine the purpose of business to maximising profit and creating shareholder value (Friedman 1962). This was worded concisely by a student as “the purpose of the company is to make money, and my purpose in the company is to count money”. This focus on the orthodox (neo)classical economic assumptions of profit maximisation is central to Western management (Mamman, Saffu 1998), although these assumptions have been dropped throughout most of institutional economy and organizational theory (Williamson 2002). Rather than challenging this core assumption head-on (Baden, Higgs 2015), it can be taken as a point of departure and narrowed down by shifting to the individual perspective. After all, not many people will explain their profession as “I maximise my income in a company that maximises profit”.

In order to recoup its costs and in order to generate an income a company has to exchange its products and/or services for money in the market. Successful or profitable financial performance therefore requires successful market performance (Hunt, Morgan 1995, 1996). The actual market behaviour of a company reflects a range of legitimate strategic and tactical choices that embody the company’s value-propositions relative to an identified market. The marketing goal of the company can be explained as achieving differential competitive advantage, i.e. a unique position relative to competitors. This competitive advantage is based on the unique access to (a combination of) resources (Hunt, Morgan 1995; Hunt 1997a). Unique and differential access to resources leads to asymmetric market opportunities that result in differential competitive advantage for companies within a marketing system (Hunt, Morgan 1996; Hunt, Davis 2008; Thévenot 2001). The differential resource advantage
of companies can be enhanced by technological development, but it is an ideological and strategic choice whether this technical development is focused on lowering the costs of resources and production processes or on increasing the value that is created and offered to customers (Habermas 1968; Kim et al. 2016; Porter 1985; Thévenot 2001). The resource advantage theory of competitive advantage offers a pragmatic understanding of marketing that exceeds the operational managerial perspective, by explicitly distinguishing between managing costs or efficiency and managing value or effectiveness to gain competitive advantage (Fearne, Fowler 2006; Hunt, Morgan 1996; Mouzas 2006). The market goal of the company may be competitive advantage, but the purpose of the firm is what it does, and when it is perceived to “make money” – that is the perspective that shapes the behaviour of the employees.

Shifting this perspective can change the behaviour of employees. Therefore it matters whether a company is seen to make profit by lowering its resource costs or by increasing the value that is added to its resources. It further matters whether lower resource costs are framed as efficiency, as exploitation, or as ephemeral profit, just like it matters whether higher added value is framed as effectiveness, as exploration, or as unprofitable growth.

4.2. The resources and strategies of the firm

The issue of differential access to resources could invite a more in-depth discussion around the observation that resources are not to be viewed as tangible and given (Peach, Constantin 1972; Zimmermann 1933, 1951). Resources are not tangible, because it is not the “thing or the substance” but the function that it may perform or the operation in which it takes part that constitues the resource. Resources are not given, because anything is neutral until people find a way to extract a service from it (Peach, Constantin 1972; Vargo, Lusch 2004). Resources are appraisals of affordances that are recognised in the environment. Technological and social developments allow virtually anything to become a resource, and it may remain a resource as long as it embodies a valued service. Many valued services are not embodied in natural resources, but in access to institutions. Eventually access to all resources is mediated by human beings and their labour, skills and abilities, decision power, goodwill, willingness to exchange, or spending power. Discussing the fluidity
of resources along these lines opens the way to both resource advantage theory and service dominant logic in marketing, and to the insight that innovation is not creating new products, but identifying new resources (Hunt 1997a; Vargo, Lusch 2004).

At least up to the 1960s it was self-evident that the value and legitimacy of marketing functions in the firm depend on their ability to embody and social services (Cox 1962 as cited in: Priddle 1994). Since the 1980s market growth and/or superior financial performance increasingly have become an end in itself (Hunt, Morgan 1995; Hunt, Davis 2008). Implicitly or explicitly this reduction of (social) corporate legitimacy to (private) financial goals is endorsed by all leading marketing textbooks. The reduction of social legitimacy to profitability affects the strategic decision whether to focus on added value or on resource costs in the quest for differential competitive advantage. Lower resource costs and higher added value both may increase the value-for-money that is offered to customers and the return on investment that is available for shareholders (Hunt 1997a), but the dominant focus determines whether a market will converge on price competition or on quality competition. If profitability is a sufficient condition for legitimacy, there is no normative distinction between a race-to-the-bottom and a climb-to-the-top in terms of product quality and/or sustainability (Ellickson 2006; Mosley, Uno 2007; Overton et al. 2012).

The didactic goal of critical marketing education should not be to challenge the validity of this reduction head-on, but to make students question the assumptions that legitimise this reduction and that encourage companies to change their purpose from “offering solutions” through “selling products” into “making money”. In systems theory the behaviour of a subsystem is explained by its place and its function within the higher level system, like the behaviour of an employee within a firm. Questions about the assumptions that explain the subsystem “firm” therefore requires shifting one level up to the purpose of the market.

4.3. The purpose of the market system

It might very well be that as long as one is concerned with firms and markets in general and with infinite numbers of abstract and anonymous actors the neo-classical perfect competition among self-interested actors is an adequate model of the market. Speaking about specific firms in specific contexts the basic assumptions of neo-
classical perfect competition increasingly fail to predict market behaviour. The key assumptions of resource advantage theory of competition may provide a superior explanation for both the micro-economic behaviour of firms and the macro-economic development of markets (Hunt, Morgan 1995; Hunt 1997a, b).

Even if the purpose of the firm is to make money or to maximise profit, it usually will not aim for a one-off performance in the market. Missing therefore is the most fundamental objective of a firm: to reproduce its position in a specific marketing system. One way to reproduce one’s position is by being a necessary component of the marketing system. This requires adjusting the firm’s processes to serve the purpose of the marketing system. Another way to safeguard one’s position could be by dominating and controlling the marketing system. This requires adjusting the purpose of the marketing system to make it serve the firm. Both require some understanding of the purpose of the marketing system and of the processes that govern the marketing system in its development.

Marketing systems are complex networks of individual and corporate actors that are connected by their shared participation in value creation through exchange (Layton 2015). Marketing systems typically follow a regular pattern of development from the trial-and-error economic offerings of individual entrepreneurs to the autonomous growth of a self-organising complex system that purges these entrepreneurs. Because these complex marketing systems develop and prosper in their situational context, they only can be understood by focusing on a specific marketing system in relation to its specific context. Adapting a definition from Layton (2007), each marketing system can be thought of as:

1. A network of individuals, groups and/or entities
2. That is embedded in a social matrix
3. Linked directly or indirectly through sequential or shared participation in the exchange of social and/or economic value
4. Which jointly creates, assembles, transforms and makes available
5. Assortments of products, services, experiences and ideas
6. Provided in response to or anticipation of customer demand.

In this definition, a marketing system primarily has a social function of offering assortments that enhance wellbeing and welfare of its stakeholders (Layton 2015).
Several limitations to this definition should be noted. One is that the purpose of a marketing system is what it does, and what it does is may be different from its alleged social function. Another is that the firm operates in many markets that are not covered by this definition. Firms operate in a financial market for insurance, documentary credit, hedging, foreign currency, investors, speculation, and other financial services. Firms operate in a labour market for hiring, training, and outplacing employees. Firms operate in a media market for image management, promotion and otherwise influencing public opinion. Firms interact with a wide variety of stakeholders in different markets or non-market contexts and firms interact with different stakeholders in different ways.

Formulated differently firms coordinate their behaviour with a range of stakeholders in different ways. The next steps therefore should introduce both stakeholder theory and governance before reaching social costs and sustainable market performance.

4.4. Systems of stakeholders

The marketing management of leading schools is grounded in the shareholder-centric Anglo-American governance systems (Epstein 2012). One of the consequences is that other stakeholders receive little attention (Kotler, Keller 2016), and this attention is mainly focused on the impact of these stakeholders on shareholder value. A more extensive approach acknowledges a wide range of different stakeholders that can be classified in terms of their defining attributes – power, legitimacy, and urgency (Mitchell et al. 1997). These attributes provide stakeholders with the ability (power), opportunity (legitimacy), and motive (urgency) to act upon a company. Depending on the presence or absence of one or more of these defining attributes eight categories of stakeholders have been identified (Mitchell et al. 1997), ranging from disregarded stakeholders that have none of the defining attributes to definite stakeholders that combine all. It is a highly instructive exercise to differentiate these eight categories of stakeholders and spend considerable effort to identify as many groups as possible in each category. Though it may be tempting to focus all attention on definite, dangerous, and dominant stakeholders in the centre of the model (cf. Kotler, Keller 2016), it could become evident that the largest number of groups
are found to the periphery of the model. Many different publics are characterised by only one defining stakeholder attribute, rendering them latent stakeholders. Each of these publics may build alliances with other latent stakeholders. More often than not “the likes will attract” and uniting stakeholders within a category on a common cause will not change their defining attributes. However, once latent stakeholders with different attributes are joined in a cross-category alliance their claim on a company may become a force to be reckoned with.

A cross-category union of latent stakeholders may manifest itself in many ways. A most constructive way is the creation of alternative provision systems and/or alternative marketing systems. Apple computers, Linux software, organic produce, and Fair trade are some notable results of the union of urgency with power and legitimacy among publics that were ignored by a seemingly incontestable marketing system dominated by unassailable firms. Less constructive may be (class-action) lawsuits, boycotts, protests, or other punitive actions against a firm. More in general the indiscriminate externalisation of costs to publics that can be ignored sooner or later may turn these disregarded stakeholders into demanding or discretionary stakeholders.

One of the most disregarded stakeholders may well be the planet itself. Having been a sink of industrial waste since the dawn of industrialisation it gradually gains urgency in terms of climate change and loss of biodiversity. Once these processes pass a tipping point they also gain the power to affect business performance. Though companies have found their way to deal with dangerous stakeholders, once the ecosystem shifts from a demanding to a dangerous stakeholder it may prove impossible to bargain with it.

4.5. Governance systems

Within the boundaries set by the institutional environment, firms and markets are viewed as different types of governance system for the coordination of economic transactions (Coase 1937; North 1984; Powell 1990; Williamson 1995). The classical distinction between internal coordination within firms and external coordination by markets (Coase 1937) has been expanded into a two dimensional space in which (top-down) hierarchy is opposed to (bottom-up) autonomy, and in which atomistic
competition is opposed to relational cooperation (Deshpandé et al. 1993). It should be noted that these governance dimensions are related to distinct regulatory styles and distinct motivations (Deci, Ryan 1985, 2000, 2008; Ryan, Deci 2000; Van Dam, Van Trijp 2016). This two-dimensional space allows for a classification of a range of alternative governance styles for firms and markets. Actual interactions between a company and its suppliers, customers, or other stakeholders can be located anywhere in this two-dimensional space: from long-term relationships to spot market transactions, and from contractual specification to innovative co-creation (Palmer 2002). It may be noted that in this two-dimensional space the neo-liberal ideal market of autonomous competition and the actual industrial market that is dominated by oligopolistic or monopolistic competition are positioned in different, though adjacent, quarters.

A governance system coordinates behaviour by influencing the behavioural choices of its subjects. A governance system influences these behavioural choices by applying an array of positive and negative incentives, often likened to carrots and sticks (Rothschild 1999). Any governance system is embedded in a social matrix of institutionalised norms, beliefs, and conventions (Biggart, Beamish 2003; Diaz-Bone 2009; Layton 2011). This institutional environment, or social paradigm (Kilbourne et al. 2009; Weiss, Bonvillian 2013), provides various beliefs about which goals are worth pursuing and which behaviours are legitimate ways of goal pursuit, and about which outcomes are legitimate rewards. It is likely that none of these beliefs have a general or universal validity, because the institutional environment normatively limits legitimate goals, legitimate actions, and legitimate incentives (valid carrots and sticks) to a given social context and a given social domain (Diaz-Bone 2009; Granovetter 1985). Within a single institutional environment different governance structures can rely on different sets of incentives to influence the behaviour that people choose to perform in a given context.

The efficiency of market or firm as governance mechanism is known to depend on a particular context, but also the legitimacy or appropriateness of a specific governance mechanism depends on the situational context. Next to markets and firms alternative governance systems for economic transactions may be, e.g., networks, cooperatives, reciprocity, plan-economy, or social anarchy (Coase 1937; Demil,
Lecocq 2006; Haase et al. 2018; Kropotkin 1927; Powell 1990; Williamson 1995). Each governance system is mediating between the institutional environment and the coordinated behaviour of different actors. Each governance system coordinates the behaviour of people by offering a mix of goals and incentives, but the social domain and the social context determine which incentives and which goals are (legally and/or morally) justifiable (Boltanski, Thévenot 1991). Depending on the social domain and the context the act of offering money to someone can be a payment, a bonus, a tip, a bribe, an insult, or a gift. Apparently the different contexts with their moral or legal implications are not unambiguously demarcated, as evident from the recurring incidents of indictments and litigations (Hummel et al. 2018).

Companies coordinate their behaviour with a range of stakeholders, and companies operate at the intersection of various social domains and social contexts. Therefore economic and non-economic transactions are compromises between different governance systems that rely on different incentive schemes (Finch et al. 2017; Thévenot 2001), and that represent different institutional realities (Demil, Lecocq 2006). Only a part of these transactions happen in a social domain that allows coordination by markets, and within this domain different marketing systems may govern these transactions differently depending on the social context (Layton 2015). Companies may employ a range of governance systems in different markets, to different suppliers, or to different customers. Within a company different employees therefore have different views of the dominant governance system of the firm, and at a higher level of analysis different actors within a value chain have different views of the governance system in that chain, depending on their specific context.

4.6. Shifting costs within the system

The governance of firms and marketing systems concerns the exchange of costs and benefits with the system environment, and the distribution of costs and benefits among the system components. Each marketing system, or marketing subsystem, can be analysed in terms of what it does for the market actors and in terms of what it does for other stakeholders. The purpose of a marketing system is what it does, including what it does to actors who are not directly involved in the marketing transactions of that system.
The productive activities of a firm – and of the value chain of which the firm is a part – can be summarised as coordinating the processes of appraising and tapping resources, and of transforming these into value proposals. A firm creates value proposals by consuming resources, which implies costly processes of acquisition, use, and disposal. All production comes at a cost, and some of these costs are (at least partially) borne by the firm and covered by the price of the offered value proposal. Some of these costs are shifted outside the firm, and at a macro level these costs of production should be outweighed by the benefits of the products in order for welfare to be created. Corporate social responsibility and sustainable management commonly refer to the triple bottom line as a framework to report sustainable performance (Elkington 1997; Hammond 2006; Zwetsloot 2003). The joint consideration of economic, social and ecological costs of production in itself offers little guidance to find an acceptable balance between corporate profit and social costs. The outcome of this balance depends critically on how the usefulness of the good and how the nuisances of the bad are valuated and how the benefits of the good and the costs of the bad are distributed, as worded in an oft-quoted Anglo-Norman legal ruling that “le utility del chose excusera le noisomeness del stink” (Coase 1960). Changing insights on the utility of the production or on the harm of the externalised costs may (and should) imply that the social or public acceptability of specific externalities will change over time, which is in essence a political issue that is covered by stakeholder theory. If stakeholders can combine the power, the urgency and the legitimacy to act then the firm will have to adapt to their needs or face the consequences. At this point it also can be noted that a political-economy in which profits are privatised and costs are socialised is essentially a kleptocracy (Dawisha 2015). Likewise any business that maximises its profit while shifting the burden of environmental costs and social injustice to tax-payers contributes to a system of kleptonomy rather than sustainable development.

Shifting costs of production outside the firm also has systemic consequences beyond the stakeholder model. All production comes at a cost. Some of these costs are shifted outside the firm, and that implies that one of the purposes of that firm is creating costs to the higher-order system of which it is part (Bailey 2005). These costs are absorbed by that higher-order system or shifted up to an even higher-level system.
of which this higher-order system itself is part. Any system that cannot absorb the costs and that cannot shift the costs up must collapse (Bailey 2008). A firm is part of a value chain within a range of marketing systems within a society within a planetary socio-economic system within a planetary ecosystem (Ulrich 1993). Each of these consecutive systems has some absorbency, depending on its capacity to turn the disposals of one subsystem into resources for another and its capacity to maintain balanced interdependencies between its subsystems.

The environment of a company consists of a wide variety of marketing and non-marketing systems. Each of these systems in the interaction with the firm can become a resource and/or a sink for the firm (Peach, Constantin 1972; Vargo, Lusch 2004). Because resources can be defined as perceived means of attaining valued ends, any change in the desirability of ends – be it at firm level or at societal level – and any innovation in the appraisal of resources may imply that existing resources become liabilities or costs. This explains that incumbent firms often exert considerable effort to thwart societal or technological change. If these firms have concentrated sufficient market power to become oligopolies or (de facto) monopolies, or if these firms manage to harness government support for their private vested interests, they can create “legacy sectors”. Legacy sectors are sectors of the economy that effectively block investments, research, technology, or opinions that may threaten the dominant business model, like e.g. global agribusiness or energy (Weiss, Bonvillian 2013).

5. Digestif: discussion

The purpose of a system is what the system does, and at the end of this course should be able to explain the purpose of a firm within its market system, positive and negative, in as much detail as possible. The key of teaching sustainable marketing is initiating a lasting change in the way students think about firms and markets in a society. In order to achieve such a change of paradigm “how” critical sustainable reflection is taught is more important than “what” is taught. Most MBA programs teach mainstream theories in order to imprint students with the proverbial myopic profit focus. This implies that any graduate with a critical, sustainable, and deviant
focus is likely to be challenged by the established mainstream “truths” of, e.g., neoliberal corporatism. The most effective way to prepare students for this opposition would seem to be using these same mainstream theories to challenge the myopic profit focus, and to support a sustainable business focus. One can only reflect meaningfully on what one knows.

Sustainability is not a goal (Marcuse 1998), but sustainable development is an open ended process of identifying and managing social and ecological constraints to economic activity. Because these constraints emerge and unfold over time companies may find at any moment that established resources and practices have lost their value and their legitimacy. The simple fact that an industry has invested all in exploiting a resource on which it depends, is not (and never has been in history) a guarantee for the future. In order to meet the unknown future requirements of sustainable marketing graduates should be able to reflect critically on what they think they know. This new way of thinking only can be learned by doing. The described course shows that students can learn critical reflection by practising on the theoretical and performative knowledge of the received management view.

Education for sustainable development is supposed to be disenchanting, empowering, and system-oriented. The described course shows that this can be achieved by questioning the assumptions of, e.g., resource advantage theory and the consequent marketing orientation relative to the market system and external stakeholders. Especially the observation that social costs create stakeholders can be disenchanting, and triggers a shift away from business centred thinking. Education for sustainable development should be built on systemic and holistic thinking, integration of different perspectives, and self-transcendent values. The described course shows that this can be achieved by subsequent shifts in focus, starting with the individual in the firm and ending with societies and ecosystems. In this shifting focus students are triggered to challenge assumptions of marketing and economics, which inevitable leads to challenging their own and each other’s assumptions and worldviews.
6. Epilogue

Managing the sustainable shift in business has been likened to learning a foreign language in an unaccommodating setting (van Dam 2016b). The language we speak influences the way we perceive the world, so if we want to perceive the world differently we need another language. The radical proposal to enforce a language of sustainability is to eliminate the language of neo-classical economics and neoliberalism by eliminating business education (Wymer, Rundle-Thiele 2017). In this paper I have proposed a moderate approach by making students question the established language of business. Merely acknowledging the possibility of less unsustainable marketing systems already requires a holistic approach. This holistic approach appreciates the embeddedness of the company in a network of human and non-human stakeholders and the balancing act of governing the interactions with these stakeholders successfully. Sustainable marketing requires integration of sustainability throughout the company, and values long term continuity over short term profit (Bridges, Wilhelm 2008). In fact any focus on short term profit that jeopardizes continuity is bad business, so it is not too difficult to make students reflect on the semantics and syntax of “profit” in business language. From this point onwards additional shifts in the language of business gradually become more easy. The sustainability of marketing action is inversely related to the social costs of the unintended and/or unacknowledged consequences of goal directed behaviour (Van Dam 2016a). Showing that, depending on one’s beliefs and paradigms, social costs can be seen as a fact-of-life, as a justifiable strategic decision, or as illegitimate kleptonomy (Coase 1960), turns these unintended consequences into intended oversights. As organisations adapt not only to technical changes, but also to what (they believe) is legitimate (Barber et al. 2014), this forces professional MBA students to reflect on how to prepare themselves and their companies for the future. Whether this course has indeed a long term effect on the students cannot be determined in the few years that it is being offered. Studying these effects by longitudinal studies may require more graduates than currently available, so it is possible that we’ll never know for sure – which applies to much education. This notwithstanding, the presented framework of embedding strategic management of the firm in marketing systems, in
governance styles, and in institutional theory, assists students in developing their own sustainable marketing orientation. Because sustainable development is an open ended process, teaching students to reflect on what to avoid may be the best preparation for sustainable business careers. Insights on how to avoid it, and what to do instead, develop so fast that they will have to reinvent this for themselves time and again.

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Sustainability in higher education from the perspective of business ethics and corporate sustainability

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Abstract:

Aim: In this epilogue to the special issue, the author provides a reflection on the commonalities between the origins of business ethics and corporate sustainability on the one hand, and Higher Education for Sustainable Development on the other hand.

Design / Research methods: The paper is reflective and provides future avenues to further develop the fields of business ethics, corporate sustainability, and Higher Education for Sustainable Development.

Conclusions / findings: Although both fields developed independently, they share the same focus on interdisciplinary studies, integrated thinking, and looking beyond the short term and local interests.

Originality / value of the article: In the end, both disciplines are carried by a fundamental normative choice for an inclusive, sustainable society, a choice that should never be forgotten and is the horizon of all our research.

Key words: business ethics, corporate sustainability, higher education for sustainable development, interdisciplinary approaches

JEL: I23, M14, Q01, Q56
1. Introduction

The British historian Tawney – well known for his study on the origin of the market – describes the medieval market as a place of usury and monopoly and it is therefore not surprising that for centuries vices instead of virtues were situated at the heart of the market (Tawney 1998). Even contemporary business ethicist David Vogel notes with almost Medieval indignation that three of the seven deadly sins, namely greed, envy and gluttony, are necessary for the well-functioning of the market (Vogel 2005). Business ethics is an oxymoron and the market is per definition an a-moral system in which people are driven by greed, and which can only be restricted through strict regulation. It is a popular view about the market, with which each business ethics teacher is confronted (preferably during the first lesson), and a public cliché that finds support in the post-war Western thinking about the market and its actors.

The dual conception of market versus state in which economic actors (consumers, producers) do not have to think about their moral action is a central theme in the post-war thinking, both on the left as on the right of the (political, economic, academic) spectrum. Neomarxist thinkers as Jurgen Habermas, Niklass Luhmann, György Lukacs and others see the market as a self-reproducing subsystem, for which the boundaries can only be provided by a tight legal framework (e.g. Sutton 1998). On the other side of the political spectrum, libertarians like Friedrich von Hayek, Milton Friedman and Alec Nove will describe the market as a complex information network that is driven by price information within a legal framework. Moral actors in the market are not mentioned in either of the two perspectives. Expecting moral reflexion from market participants is not only naive, it is also unnecessary given a sufficiently strong regulatory framework around the market.

Business ethics brought a totally different perspective in this intellectual debate. The big debates about the distinctiveness of “the economic system” were set aside by business ethicists, and replaced by micro studies about the actions of companies and business leaders in very specific situations. The focus moved from a dual view towards a triadic relationship between market, state and individual actors. Business
ethics starts from a number of propositions: (1) morality is inherent to the market, and a competitive free market requires of its participants that they adhere to a number of moral demands; (2) the legal framework supports these requirements but can never be effective unless the market participants themselves are convinced of the usefulness of this regulation, and take them into account in their actions; (3) since there is morality in the market, there is moral freedom and thus there are companies and business leaders that function better or worse from a moral point of view; (4) it is thereby possible to examine under what conditions a company and its participants function morally and support or undermine society (Van Liedekerke, Dubbink 2008).

Born on American campuses in the 1970s, business ethics came to Europe in the 1980s\(^1\), where it formed a counterweight to the dominant, institutional analysis of the market, and set focus on free choice and moral responsibility of the individual. People choose, people decide and their decisions have consequences for everyone. A central element in business ethics education, is the micro analysis of case studies in which decisions of actors are decisive in the ethical performance of companies, whether positive or negative. Business ethics academics tried to identify under which circumstances companies are performing within moral boundaries, through the analysis of hundreds of case studies and identification of best practices. Eventually, the answer to such issues cannot (solely) be provided by philosophers. Therefore, social scientists were involved in business ethics, and over time the ethical perspective was surpassed by organisational sociology, organisational psychology, strategy and other social science domains. On the one hand, the result is that business ethics today is a multidisciplinary science in which the purely ethical dimension seems to be marginally present. On the other hand, it led to a spectacular growth of the discipline. The introduction of social sciences also changed the research themes. It is no longer about controlling and protecting moral boundaries but much more about how we can incorporate companies in society where the economic requirements are increasingly connected to long term societal

\(^1\) Society for Business Ethics (SBE), the American organisation for business ethicists, was founded in 1980. The European Business Ethics Network (EBEN), its European counterpart, was founded in 1987.
requirements. The main research topic nowadays is the sustainable enterprise, and the Holy Grail is to demonstrate the business case for corporate sustainability, e.g. why would it make sense from an economic point of view to take people, planet and profit into account? It is clear that these problems are truly multi- and interdisciplinary, it results in a situation where business ethics, ethical entrepreneurship, corporate social entrepreneurship, etc., are difficult to position in the disciplinary structure of our universities. It can be positioned in the economic faculty, in business schools but also in philosophy, psychology, sociology, environmental sciences, engineering, product development etc. A successful research group focusing on sustainable entrepreneurship would have to bring together people from all backgrounds in one institute, and this seems to be an undertaking that has seldom been successful. In a timeframe where societal challenges are increasingly characterised as “super wicked problems” (Levin et al. 2012), interdisciplinary studies are needed, yet remain a sore spot in our university landscape.

The transition from business ethics toward sustainable entrepreneurship took place in the 1990s, and marginalised the role of the ethicist. In the same period the movement around Higher Education for Sustainable Development (HESD, also referred to as Sustainable Higher Education, Lambrechts et al. 2018) surfaced. In the wake of the Brundtland report and the resulting growing attention to sustainability, higher educational institutions also started initiatives to encourage the integration of sustainability (e.g. Dernbach 2002; Lozano et al. 2013). The Talloires Declaration from 1990 is an early example, in which twenty-two (mostly American) universities decided to give a greater role to sustainability in their organization. Several other declarations and charters followed in the 1990s, but the actual breakthrough for HESD followed in the 21st Century. The Association for the Advancement of Sustainability in Higher Education (AASHE) organised its first official meeting in 2006. Common themes that are reflected in the different charters and declarations are: the interdisciplinary character of sustainability; the need to encourage systemic thinking; strengthening partnerships with external stakeholders (companies, governments, non-governmental organizations); greening of campus operations; the moral obligation of universities to contribute to the societal transition toward
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sustainability. Although the connection between corporate sustainability and HESD is clear, and one would suspect them to be closely intertwined, in reality the two research themes developed next to each other and without much interaction. However, they share the same problems and strive for the same solutions: focus on interdisciplinary studies, integrated thinking, and looking beyond the short term and local interests. Both would also benefit from case based education, allowing teachers to illustrate the multidimensional nature of problems and demonstrate how these dimensions influence each other. Furthermore, both aim at shaping and preparing integrated/systemic decision makers, that are able to think multi- and interdisciplinary. The challenge is how to form such leaders without falling into fully diluted and superficial disciplinary education.

In this discussion, the position of ethics remains unclear, it seems marginalised, yet not totally unimportant. The social scientists that transformed “business ethics” as an academic discipline into “sustainable entrepreneurship” seems to forget that the choice to implement sustainability is in the end always a moral choice. Management academics often try to frame sustainable entrepreneurship in line with the economic necessity and strategic importance, but in the end this is just a legitimizing discourse for what is a fundamentally a normative choice. This becomes obvious in cases where sustainable entrepreneurship does not seem to create value at all. For example, what if there is no business case for banning child labour from a supply chain? Normative issues will always be present in business, and business leaders will need to make moral choices in their actions. Those who choose for sustainable business, make this decision because they find it important.

A similar situation can be found in the world of HESD. Again, there are many good reasons to integrate sustainability in higher education, but fundamentally it remains an ethical commitment. Universities prepare the future business leaders, politicians, citizens, consumers, and carry therefore an important responsibility in preparing these future leaders. HESD chooses to prepare people for their role within the complexity and uncertainty of sustainability issues, thereby focusing (among others) on systems thinking, anticipatory thinking, normative competences (Lambrechts et al. 2013), as well as advanced critical and interpretational competences (Lambrechts et al. 2018). HESD seems to be the logical way forward if
we want to transition towards a sustainable society. It is the environment in which our future business leaders should learn about sustainable entrepreneurship and the structure of wicked problems. This book contains many interesting contributions about how HESD should look like coming from scholars with diverse backgrounds in social science but in the end the choice to aim for HESD, the fundamental step to take this direction and not any other, remains an ethical choice and one that is unavoidable if we still want to have a future.

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