Building Bridges for Education for Sustainability:

2013 Report for the Development of Education for Sustainability through the Monash-Warwick Alliance

Research at the Institute for
Advanced Teaching and Learning (IATL)

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THE UNIVERSITY OF
WARWICK

Acknowledgements

Executive Summary

This report presents findings from a research project that focused on the potential to expand Education for Sustainability (EfS) related activities at Monash and Warwick Universities, through the Monash-Warwick Alliance. It provides details of existing EfS programmes and activities at both universities. It also discusses the level of enthusiasm for and interest in a combined EfS initiative. Finally, it signposts the future development of EfS at Monash and Warwick, whilst acknowledging the challenges to innovation. The report is informed by interviews with university stakeholders, including academics, support staff, senior management and students. Findings are placed within a wider context through a review of the current EfS literature.

Key Findings

The potential for Monash and Warwick Universities to utilise mutual strengths through the Alliance to enhance the EfS curriculum was recognised by research respondents. It was also acknowledged that associated processes would need to be carefully orchestrated in order to maximise benefits.

Having a **durable vision for the development of EfS curriculum** was seen as paramount. Key suggestions included putting in place effective structures for academics to engage with EfS initiatives, providing the time and space for EfS iniatives. Many stakeholders at both Universities already had a strong involvement in sustainability-related teaching and research. EfS activities were also seen by many respondents as exciting in the potential opportunities they offered to undertake innovative curriculum development, through establishing new courses and the renewal of existing programmes. A key priority, therefore, is to nurture current 'communities of practice', while seeking to expand this network gradually through international research collaborations and events.

With regards to curriculum development, many stakeholders agreed upon the value of an interdisciplinary, place-based approach that would unite academic study with a wide range of extra-curricular, estates-based and community-focused activities, connecting students to their campuses. The importance of developing **a holistic, university-wide commitment to EfS** cannot be underestimated; this includes recognition of how campuses can operate as living laboratories for EfS, as well as underscoring the importance of including EfS within university strategy.

The Road Ahead

A number of specific recommendations for the further development of EfS through the Alliance were made, including:

Short term goals:

• **Establish an alliance academic EfS network,** to nurture research and teaching collaborations, made possible through, for example, hosting regular internal workshops and events and identifying and connecting with departmental champions;
• Enhance the provision of **EfS related Continuous Professional Development** opportunities for staff.
• **Integrate EfS into the curriculum**, including through conducting an EfS audit of existing curriculum, developing an interdisciplinary Master's programme, as well as interdisciplinary undergraduate modules and piloting curriculum renewal.
• **Raise the profile of existing extra-curricular activities** by, for example, connecting those working in EfS with student societies.

Medium-term goals:

• Further **curriculum renewal,** including added innovative module development.
• Increase intensity of **site based EfS behaviour change initiatives**, led by the Estates department at Warwick.
• **Increase external visibility of EfS initiatives** to engage industry, the wider community and to benefit from positive PR.
• Create an **EfS research centre**, consolidating the activities of the Monash-Warwick EfS network.

Long-term impacts:

In achieving such goals, many stakeholders felt there would be benefits for students, academics, and in terms of the universities reputation. The Monash-Warwick Alliance presents a unique context for the development of EfS initiatives. The global setting within which students and academics will interact with each other to debate key universal issues, presents a tremendous opportunity to explore innovative and creative solutions to such issues, whilst taking into account global complexities. Such interaction has the potential to help create globally aware students and to nurture strong international research collaborations. In this respect, the Monash-Warwick Alliance could make a unique and leading contribution to the global development of the EfS movement.

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Introduction

While scientific knowledge of the existence of dangerous climate change and resource depletion is increasingly widely regarded, at present there is insufficient political will to mitigate the extreme effects that climate scientists foretell. As a result, in both the UK and Australia, governments have failed to take a leading role in building sustainable societies. Despite claims of a desire to build the 'greenest government ever', David Cameron failed to attend Rio+20 and the closure of the UK's Sustainable Development Commission, in 2011, signalled a further lack of commitment. In Australia, opinion regarding the need to build a sustainable society is divided to the point where politicians avoid the issue (Miller 2013).

Universities are increasingly expected to make significant contributions towards building a sustainable society through research, teaching and community engagement (Yarime and Tanaka 2012). Higher Education (HE) contributes positively towards addressing environmental, social and economic problems encouraging pro-environmental behaviours on campus, devising solutions through research and providing spaces for students to think critically about key 21st-century issues. The last of these roles is arguably the most essential given the responsibility HE has for nurturing future leaders, business people, and citizens.

Within the HE sector there are several pockets of sustainability-focused innovation, not least in the UK. Many universities have now invested in estates-based initiatives, for which the Higher Education Funding Council for England (HEFCE) have provided direction and funding. While the more challenging and contested area of curriculum renewal has been given less attention, changes are underfoot, with increased recognition of the need to act and the benefits of doing so early (Dobson, Quilley and Young 2010). For example, the Universities of Keele, Gloucester, Plymouth, Bradford, Bath, Sussex and the University of East Anglia (UEA), all have specialised sustainability science research expertise, while they also coordinate learning and teaching projects with an Education for Sustainability (EfS) focus. Such initiatives are increasingly supported in the UK, by organisations including the Higher Education Academy (HEA) and the National Union of Students (NUS) who recognise the drivers of an increasingly aware student body, eco-efficiency and the ambition for a Green Economy.

Education for Sustainability (EfS) is acknowledged by both policy makers and scholars as fundamental to Sustainable Development (SD) (for background information on SD and EfS, see Appendix A and B). Yet the field has a chequered history. Since Environmental Education (EE) came to the fore in the early 1970s, a wide range of terms have been coined for the study and operationalisation of the topic. This is largely a result of the myriad global summits and subsequent declarations that have attempted to unify the education sector on the matter. Nevertheless, the field remains divided over both terminology and approach, which is not least a result of a radical-reformist divide concerning effective approaches to educational renewal (Sterling 2004, Kahn 2010).

At a national level, significant ground has been gained on the EfS agenda in some countries, while less has been made in others. For example, in the UK approaches to EfS vary, as a result of devolution. The Scottish Executive has put in place a holistic strategy for the second half of the Decade for Sustainable Development (DESD), which demonstrates that EfS is taken seriously. However, in Wales, though beginning promisingly, EfS developments have been hindered by the removal of responsibility for Education for Sustainable Development and Global Citizenship (ESDGC) from the mandate of the Department for Education and Skills, while in England, the approach to EfS is far more laissez faire (Martin, Dillon, Higgins, Peters and Scott 2013). Since 2010, the UK coalition governmental focuses on SD and ESD have diminished and the removal of the Sustainable Development Commission has served to weaken the EfS agenda at a national strategic level.

Research Approach

Between October 2012 and March 2013 the findings presented in this report were gathered to provide an insight into the potential for expanding the EfS offer through the Monash-Warwick Alliance. The research was invited as part of the Monash-Warwick Strategic Funding Initiative for Joint Research and Education Programmes. Through this process, the capacity of both universities to offer learning experiences that lead towards transformational societal change was addressed. Existing provision for EfS is discussed within the context of each university individually, as well as the potential for future joint initiatives. It is important to note however, that due to UK base of the research, there is a greater emphasis on Warwick University.

As part of the research a series of 31 in-depth interviews, held between November 2012 and February 2013, engaged a range of university stakeholders, including students, academics, senior management, representatives from student support bodies, the Estates Department and Warwick Arts Centre. These interviews are the basis of the documentation of existing activities at both universities. Interviewees also proposed plans for EfS collaboration in both the short, medium and long term and highlighted challenges to the development of EfS across the alliance, including ways to overcome them. Insights were also gathered through participant observations of university events and meetings, and a review of both academic and grey EfS literature.

More broadly, through exploring the evolution of EfS at the two partner institutions, this study also adds to the field of Sustainability in Higher Education (SHE) research. Relevant findings will also contribute to the next stage of development for the Monash-Warwick Alliance for EfS: a proposal for an interdisciplinary Masters in Sustainability.

Main Findings

Reflecting larger trends, attention is increasingly being given to sustainability at both Warwick and Monash Universities. Senior management recognises the need to address sustainability as a means of retaining position and achieving a competitive advantage, by attracting students who will become future leaders.

They also recognise a necessity to adapt their organisations to comply with anticipated legislation requirements. For students, a desire to know more about the issues that face humanity combines with a recognition of the employability gains of sustainability literacy, in a workplace where employers increasingly require such knowledge and skills. Academics are also aware of the benefits of sustainability literacy and skills to graduate profiles, while many also want students to gain an education that will enable them to engage with issues of the 21st-century critically and creatively.

Within pedagogic theory transformative, experiential learning, rooted in lived experience is emphasised as imperative for effective education. Moreover, EfS is widely regarded to necessitate a transdisciplinary, holistic approach to learning. The need for holistic learning experiences is one that emerges centrally from this research. For EfS to be effective, it was widely acknowledged that it was necessary to consider the built and natural campus environment and university communities, as well as the wider community.

Overall, the level of enthusiasm and the amount of research and teaching already happening at Warwick and Monash in sustainability-related fields, was commendable. There is huge potential to bring endeavours together, through a focus on EfS, in a similar way to how Warwick's Global Research Priorities (GRPs) have brought together academics to focus on critical 21st-century issues from across the university.

Yet developing EfS at Warwick and Monash comes not without challenges. Along with institutionalised issues, for example funding and administrative difficulties associated with curriculum renewal, issues also emerged relating to academic identity and a deeper questioning of the purpose of HE. Related issues included the difficulties associated with value-driven education and the challenges that EfS poses to academic freedom, the difficulties associated with interdisciplinary research and teaching, as well as a need to privilege research over teaching in order to build an academic career, which can relegate pedagogy to a lower priority.

What then is to be done, through the Warwick-Monash alliance, to enhance EfS at both institutions? This question focused discussions with Warwick-Monash stakeholders, as well as reflections on the practices of other institutions.

The key recommendations that emerge and are summarised within the concluding chapter chiefly indicated: the importance of nurturing a network for EfS; the significance of holistic curriculum renewal and development; and the importance of place-based approach to holistic SD within the universities. The end of the United Nations Decade for Education for Sustainability (UNDESD) is nearly here. At a time when EfS is being re-evaluated, there is opportunity to make a unique contribution to the process of curriculum renewal, both through the derivation of new EfS opportunities on an international scale, as well as through reflection on the pedagogical processes involved. The extent of existing sustainability-related research and teaching across the Monash-Warwick alliance makes the alliance a powerful means by which to allow EfS to ferment. As interdisciplinary research centres, the Institute for Advanced Teaching and Learning (IATL) and Monash Sustainability Institute (MSI) are in a strong position to act as central hubs for students, support services, estates, academics and senior management to converge in precisely the ways that leaders in the EfS field argue are necessary for a rounded approach to the sustainable development of universities.

Report Structure

Chapter one contextualises of the study, delineating research approach and summarising main findings. Chapter two provides a review of existing literature concerning the relationship between HE, sustainability and EfS. Chapter three discusses the research methodology in more detail. Chapter four explores research findings, with a specific focus on the existing situation in relation to EfS at both institutions, stakeholder perceptions of EfS, potential areas for the expansion of EfS through the Monash-Warwick alliance as well as possible challenges and ways to overcome them. Finally, chapter five offers some concluding thoughts and recommendations for the road ahead.

Background

EfS and the Higher Education Landscape

Universities arguably play a significant role in 'fostering a deep understanding of sustainability in students' which is crucial to creating 'a new generation of leaders' (Wright and Defields 2012:101). Martin *et al* (2013) emphasise the role of universities in SD by drawing attention to links to industry and ability to focus on employment-related education and training. Fadeeva and Galkute (2012: 97) argue that 'the values of a higher education system are often linked to a vision of the future and the transformative role of higher education in shaping this future'. Consequently, they claim that the current challenge for HE is to champion the 'transformation of society towards more equitable, just and environmentally sustainable development'.

However, despite the centrality of HE to SD, the sector has been criticised for not equipping students with the necessary tools for addressing 21st-century 'wicked problems' (Wright and Defields 2012). Nevertheless, the results of the GUNI Report (2011) showed that despite previous evidence of slow progress (Toyne Report 1993, Hopkinson, James and Van Winsum 2004, Yarime and Tanaka 2012), some ground is now being gained on this agend throughout HE (Tilbury 2012). To this end, Krizek, Newport, White and Townsend (2012: 32) state that:

> Universities that once relegated sustainability to the provinces of grassroots efforts that were largely ignored at the top are now making serious structural and philosophical changes in recognition of the challenges and opportunities a resource-limited world brings.

While a recent study of the opinions of presidents and vice-presidents of Canadian universities revealed that university senior management saw the task of providing graduates with ecological and sustainability literacy to be of paramount importance (Wright 2010).

The sustainability agenda acts as a driver for several reasons, one of which is the coming of increased assessment which means that universities are not the 'secret gardens' they once were (Cullingford 2004: 13). Authors have drawn attention to the pressures that universities face in maintaining their relevance to society, in an era when many organisations are becoming involved in knowledge creation (Hegarty 2008 and Wright 2010). According to Considine (2006: 255) they are under 'titanic pressures to reinvent themselves' as they struggle to mark out their territory of what they do that is distinctive, while also 'responding to the very needs of a global workforce' (Hegarty 2008: 683). Another key driver is that of the competitive advantage that the sustainability agenda offers. For example, there are potential short-term marketing opportunities for organisations that are early to adopt, as well as more long-term benefits concerned with compliance with anticipated increased government legislation in the field. Dobson *et al* (2010: 21) identified four key benefits of early adoption: increased student and staff recruitment; increased access to research grants; increased access to infrastructure funding; and reputational benefits. The authors go as far as to state that: 'Perhaps the best chance of survival, for those best-placed to take advantage of it, is in an aggressive pursuit of the 21st-century's scientific, social and economic holy grail: the sustainable community'.

The business case for adopting sustainability as a guiding principle is echoed by Krizek *et al* (2012: 29) who state that more than two-thirds of prospective students in the US are thought to consider a university's green credentials when making decisions about where to attend university. To this end, they argue that universities that adopt a sustainability agenda will 'redefine the nature of higher learning for the better', while 'embracing this challenge will be a "win-win" for the universities that choose to take it on: they will become the most prominent institutions in the eyes of both their direct constituents (students, faculty, and staff), and the community at large'.

Nevertheless, global progress on the sustainability agenda within HE has been variable. Consequently, Martin *et al* (2013: 1523) call for a strategic framework for EfS as a central tenant of educational policy in every jurisdiction. They also suggest developing a pan-UK 'forum for overseeing the promotion, implementation and evaluation of ESD'. Meanwhile, Yarime and Tanaka (2012) suggest that existing assessment measures in HE, for example the QAA and the REF, could in part explain the slow progress made within academia on EfS. Such measures focus strongly on quantifiable outputs and are also powerfully influential in terms of institutional direction. Subsequently, large-scale changes could be possible were sustainability considered within such frameworks.
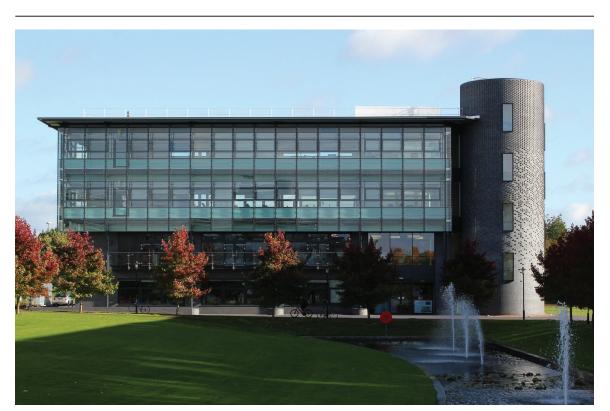
Not all agree with this drive for further assessment. For example, Dobson *et al* (2010) argue that an unintended consequence of increases in auditing may be the stifling of innovation. While the current absence of centralised control of HE curriculum could arguably lend itself to innovation processes (Parker, Wade and Atkinson 2004). Moreover, a redirection of the curriculum towards EfS relates fundamentally to questions regarding the scope and purpose of HE which tends to evoke strong debate.

The Facilitation of EfS in Higher Education

In tandem with a growing international focus on SD, a wide range of charters and declarations, supporting organisations and awards have been developed in the HE sector to facilitate SD. In the UK, the Environmental Association of Universities and Colleges (EAUC), supports SD within HE, through, for example, its Learning in Future Environments (LiFE) initiative and the Sustainability Exchange network. The HE Funding Councils in the UK have also assisted through funding environmental improvement programmes. For example, HEFCE initiated the Higher Education Environmental Performance Improvement Initiative (HEEPI). As part of HEEPI, funds were awarded to Bradford, Loughborough and Lincoln Universities, 'to support bottom-up and practitioner-led approaches to supplement, and to help overcome, some of the barriers to top-down approaches' (Hopkinson *et al* 2004: 78). HEFCE was also responsible for setting

Carbon Reduction Targets for HE and is perceived as still taking these seriously, despite some recent restructuring (Martin *et al* 2013). Moreover, it has funded centres for excellence in teaching and learning in ESD across the UK, through the University of Kingston, the University of Plymouth, University College, London, the University of East London and to the University of East Anglia. It also awarded leadership, governance and management awards to Hertfordshire and Bradford Universities.

HEFCE is thought of as becoming less focused on ESD, passing on this responsibility increasingly to the HEA (Martin *et al* 2013), which is partially due to recent budget cuts that will inevitably lead to a weakening of their authority (Smith 2013). For its part in supporting the development of ESD in HE, the HEA has an ESD advisory group, conducts policy think-tanks and leads on initiatives, for example the Green Academy for institutional development. The National Union of Students (NUS) is also becoming increasingly active in this field, including through initiatives funded through the HEA and placing a direct emphasis on EfS, for example the 2013 Green Fund. Furthermore, NGOs such as Forum for the Future, People and Planet, and the World Wildlife Fund (WWF) are also becoming increasingly involved in extra-curricular initiatives that seek to widen the provision of EfS on campuses, as well as to evaluate the impact of such processes (see for example Forum for the Future's HE21 initiative and its Masters in Sustainable Leadership, as well as People and Planet's Green League).

More broadly to ESD, a most effective collaboration between UNESCO and the United Nations University (UNU), is through the UNU Regional Centres of Expertise in ESD (RCE) (Hopkins 2012a). These centres have been mobilised to deliver ESD to local and regional communities. In Wales, an RCE is coordinated by Swansea University in Wales, while Gloucester University coordinates an RCE in England. However, awareness of the role of RCEs as well as their achievements to date are currently low (Martin *et al* 2013), while they can also be perceived as overly directive in their approach (Jickling and Wals 2012).

Universities are also directing SD-related innovation by working together to create change. For example, as part of the DESD, in 2008, the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net) was established in the Asia-Pacific region, with support from the United Nations University Institute of Advanced Studies (UNU-IAS) (Tanaka and Tabucanon 2012). Other organisations, such as the North-American Association for the Advancement of Sustainability in Higher Education (AASHE) and the COPERNICUS Alliance (European Network on Higher Education for Sustainable Development) are thought to provide the sector with 'invaluable resources that in part, help spur a positive arms-race of sorts' (Krizek *et al* 2012: 30).

Civic engagement 'presents a challenge to universities to be of and not just in the community; not only simply to engage in "knowledge transfer" but to establish a dialogue across the boundary between the university and its community which is open-ended, fluid and experimental' (Fadeeva and Galkute 2012: 97-98). Universities can arguably 'exemplify a sustainable human community' (Levett and White 2006: 55), through the adoption of institution-wide initiatives, which could have further implications for wider society. For example, the University of Bradford is considered to have devised a holistic approach to sustainability, building a sustainable community and using the sustainability narrative to reposition and rebrand itself as an 'ecoversity' (Dobson et al 2010). More recently, drawing on the Transition Towns movement, some universities have begun to develop Transition University networks. For example, St. Andrews University, Scotland, has recently received funding to deliver sustainability projects in collaboration with its local community. This is a significant development, given the distinct lack of synergy between formal and community-based learning initiatives that have recently been highlighted (Martin et al 2013) and the fact that there is a need for locally specific and culturally

relevant ESD (Hopkins 2012a). More ambitiously still, Transition Universities can be regarded as pathfinder institutions, which could operate as a test bed for the development of sustainable towns and cities (Dobson *et al* 2010).

Sustainability declarations and charters for Higher Education

Sustainability-related declarations for universities have:
> succeeded each other with bewildering rapidity in the 1990s and the first decade of this century…In most cases these charters and declarations committed signatory institutions to education for sustainable development, not just about it, thereby legitimating the calls of a growing band of HE practitioners for a more committed form of sustainability-related education (Dobson *et al* 2010: 2).

In 2004, Wright (2004: 13) stated that declarations placed less focus on sustainable practices adopted by the universities themselves, choosing instead to focus on 'the development of ecologically literate staff, faculty and students', as well as developing partnership with external governmental organisations and NGO's. Moreover, Dobson *et al* (2010: 4) state that a 'relative lack of attention that has been paid to sustainability in universities' operations, as opposed to in the curriculum and in research'. This has perhaps changed during the latter part of the last decade, arguably due to the allocation of, for example, funding for estates-based energy initiatives.

Declarations for sustainability have arguably 'gained broad acceptance in the higher education community' (Yarime and Tanaka 2012: 64). One of the best known of these is the Talloires Declaration (1990), which included a ten-point action plan to engage HE in the quest for a sustainable future and required participating organisation to 'raise awareness of environmental sustainable development, to create a culture of sustainability and to educate for environmental citizenship' (Blewitt 2004: 4). Another was the University Charter for Sustainable Development (1994), which was devised by COPERNICUS. This charter focused on interdisciplinarity, lifelong learning, sustainable production and consumption, partnerships and networking, teacher education and the creation of virtual learning environments (Blewitt 2004). In 2007, the American College and University Presidents' Climate Commitment (ACUPCC) established a

charter, to which 284 institutions are currently subscribed. The charter aims to demonstrate commitment to efforts to reduce campus carbon emissions and reorient education and research 'to equip society to re-stabilise the earth's climate' (ACUPCC 2013). More recently, at the Rio+20 conference, representatives for HE developed the People's Sustainability Treaty on Higher Education, which now has eighty international signatories. Furthermore, through the Summit, the 'Higher Education for Sustainability Initiative' called upon leaders in academia to commit to SD principles within HE.

In celebrating the importance of such declarations, Fadeeva and Galkute (2012: 91) advocate the addition of ESD to the strategic principles of the Bologna Process, given the potential that this poses in creating a cultural shift that could significantly assist in a transition to a more sustainable society. The Bologna Process, initiated in 2005, and the DESD are 'two political processes in education dealing, among other issues, with [student] competence development'. Although ESD is not recognised by Bologna as an important factor in HE development, the 'development of competences of responsible professionals and informed active citizens is a cross-cutting point for both initiatives' (Fadeeva and Galkute, 2012: 92).

A further means of spurring the development of the sustainability agenda within HE is through sustainability-related awards for good practice, which are also on the increase. In the UK the HEA, in collaboration with the NUS, offers incentives, for example the Green Gown Awards, the Green League and the recent launch of HEFCE's Student Green Fund. Such award processes encourage universities to compete for recognition of good practice in the sphere of sustainability. Arguably, the most comprehensive is the Austrian Sustainability Award, which Mader (2012) suggests is the first attempt to assess the sustainable performance of universities at a national level, developed in 2008/09 from funding from the Austrian National Bank.

Factors influencing the success of EfS Curriculum Development in HE

Several universities are making strides in EfS, including those in the UK. For example, Plymouth University, the University of Gloucester, Kingston University and the University of Bradford all have burgeoning reputations for EfS innovations. Undergraduate and postgraduate courses in SD are on the increase; for example, the University of Bangor offers a BA/BSc in Sustainable Development, while the University of Cambridge offers a Master of Studies in Sustainable Leadership. Furthermore, the vast majority of universities in the UK now offer modules and units in sustainability-related fields (Dobson and Tomkinson 2012).

A number of universities have used a combination on internal and external funding to develop interdisciplinary sustainability science research centres. Examples include: MSI in Australia, the STEPS (Social, Technological and Environmental Pathways to Sustainability) centre at the University of Sussex, the Manchester Sustainable Consumption Institute at Manchester University, the Tyndall Centre at UEA and the Sustainable Places Institute at Cardiff University.

As Krizek *et al* (2012: 28) state, 'universities embody multi-headed monsters, each with unique recipes for success'. Moreover, they share collective and individual values and beliefs (Hegarty 2008) which will uniquely shape their pedagogy processes (Wright and Defields 2012). Consequently pathways to integrated holistic, campus-based sustainability initiatives 'are far from clear', with sustainability initiatives developing at different rates across campus (Kurland 2010). While studies have explored the key subjects to be covered by an undergraduate sustainability curriculum (Wright and Defields 2012), so far, and despite the DESD, there has been no systematic approach to EfS in HE (Henry 2009, Rusinko 2010). Innovative approaches to whole institutional approaches to sustainability, while in existence, remain marginal (Jickling and Wals 2012). Furthermore, despite the belief held by university presidents that teaching and learning made a valid contribution to the creation of a sustainable society in a recent study none stated a need for the reformation of pedagogy or disciplines (Wright 2010).

Blewitt (2004: 5) drew attention to the difficulties associated with inspiring sustainable change on campus and he highlights the lack of progress made towards sustainability in HE since the Toyne Report (1993). He draws attention to the importance of the everyday in effecting sustainability in HE in stating that:

> Although declarations of principle are important signposts, the everyday reality of educational administration, management, funding, career development, teaching and learning in its various forms offer more than a 'challenge' to champions of education for sustainability (EFS) within the university sector.

Resultantly, he emphasises the importance of enabling academic staff to facilitate sustainable change, 'from the bottom up', as recognised by several declarations for EfS, including the Earth Charter (2000) and the Talloires Declaration (1990).

In sum, shifts towards SD in HE often prove challenging for reasons including:
• competition priorities of research, education and service which may dilute efforts;
• the differing demands of service users (students, faculty, staff and alumni (as well as the wider community)), which makes it difficult to establish synergies across sustainability initiatives – for example, between estates initiatives and the curriculum);
• distinct management challenges that come with facilitating campuses akin to small cities;
• the increasing commodification of HE, resulting in market share cuts and shrinking revenues;
• pressures brought by the recession, which require universities to do more with less resources;
• the structure of HE, with control concentrated at a high level, and where academic freedom could stifle change (Krizek *et al* 2012).

Methodology

Gaining a holistic perspective on the current circumstances for EfS at both Warwick and Monash Universities is a crucial first step in expanding capacity in EfS through the Monash-Warwick alliance. Given a lack of data concerning existing approaches to EfS at both institutions, this study gathered such insights through primary research. As well as documenting past and present approaches to EfS at both universities, this report also makes a series of recommendations for the expansion of EfS through the Monash-Warwick alliance. These recommendations are based on feedback received concerning the appropriateness of particular pathways to innovative, as well as the barriers that will need to be overcome in order to progress towards them. With this in mind the following aims and objectives were set:

Aim

To explore the potential for the expansion of Education for Sustainability provision through the Monash-Warwick alliance.

Objectives

• To explore the existing activities within both Monash and Warwick, considered to be sustainability and EfS focused;
• To gauge levels of support for the development of an EfS academic programme through the Monash-Warwick alliance;
• To deliver a plan of action for the short, medium and long term that would help Monash and Warwick develop a collaborative approach to EfS;
• To assess the barriers to such an initiative and ways of overcoming them;
• To contextualise the progress made at Monash and Warwick University in terms of EfS within the HE sector.

Research outline

An immersive, qualitative, ethnographic research approach was chosen to gain a meaningful insight into EfS provision at Warwick and Monash. During a six-month period, October 2012 to April 2013, insight was gathered using a range of methods including reviews of both academic and grey literature, participant observations of internal and external events and lectures. These included internal events such as the Warwick Food Security Group seminars, relevant lectures as part of the Warwick Distinguished lecture series and sustainability-focused workshops offered by Warwick's Institute of Advanced Study (IAS). External events

attended as part of this process included the annual Environmental Association of Universities and Colleges (EAUC) conference (2013) and the International Greening Education Event (IGEE) (2012).

Furthermore, a series of 29 in-depth interviews were conducted, to include a total of 31 respondents. Interviews were structured through nine guiding questions (see Appendix C); however, there was also space within the process to allow individuals to elaborate on issues they felt pertinent to the research. This methodology was chosen on the basis of offering a means to gain a meaningful insight into the views and experiences of university stakeholders (Geertz 1973, Holliday 2002).

23 men and eight women occupying a variety of roles at both Warwick and Monash participated in the research process. 20 were academics, three were students, three occupied senior management positions, and five were representatives of the wider campus community, including representatives from MSI, the Estates department at Warwick, Warwick Arts Centre, the Warwick Students' Union, and the Warwick Centre for Student Careers and Skills. As well as providing an insight into the existing situation at both universities, these interviews also gave insights into the attitudes and perceptions of involved stakeholders, many of whom are experts in their own field of related sustainability research.

Analysis

All interviews were recorded and transcribed manually and then thematically analysed using NVivo software. NVivo proved effective in helping to identify themes, as well as in coding trends that emerged from the data. Literature sources were also organised using NVivo software.

Limitations

A narrow research timeframe meant that research findings are representative of the views of a limited number of stakeholders from across the Monash-Warwick alliance. Moreover, research findings offer a deeper insight into EfS at Warwick University, particularly in relation to an appreciation of the current situation at both institutions. This was a result of the availability of onsite access to Warwick academics, as well as the ability to appreciate Warwick's environment and structures, due to the researcher's location. Subsequently, future research could build upon this baseline study, through gathering insights from an increased number of respondents, including in particular those from Monash University.

"Having sustainability embedded within everything we do is a very major project because it touches on so many touch-points. There are considerable developments in both Warwick and Monash in these areas separately but it's exciting that the two together could achieve something that neither would by themselves.

My hope is that this will become a showpiece on what can be achieved by two universities holding hands across the globe working together on a global challenge and having, adding values to the educational delivery and the student experience of our students."

(Andrew Coats, Director of the Monash-Warwick Alliance)

The Monash-Warwick alliance and EfS

It is the ambition of the Monash-Warwick alliance that through their union, internationally collaborative education, research and student engagement projects will be initiated to address global interdisciplinary challenges. Professor Ann Caesar sees such an initiative as being particularly valuable, because:

"It goes much deeper than links normally go. We will be penetrating each other's institutional structures and we'll be gaining considerable insight from each other. And also through working productively, and that means economically productively as well, together in ways that otherwise, where links are inevitably more superficial, you can't achieve the same ends".

Many academics also appreciated the potential ability of the alliance to generate collaborations that would allow the universities to draw upon their mutual strengths. This view had, in some cases, been nurtured by positive relationships cultivated to date, through for example, the Green Chemistry partnership.

The benefits of cooperation were also beginning to reach students, through for example the delivery of interdisciplinary modules and student exchanges. Several respondents expressed hopes for the initiative to lead to further collaborative student projects and exchanges, given that such experiences would enable students from campuses in the UK and Australia and also in Malaysia and South Africa to share ideas, given the presence of Monash and Warwick Universities in all of these countries.

In discussing the alliance in the context of EfS, Professor Dave Griggs (Director of MSI) saw benefit in giving students the opportunity to encounter a wider range of expertise and to 'work across time zones and boundaries to learn about the sustainability situation in Australia and in the UK, where clearly politics are different, the environments are different and the challenges are different'. The benefits of global collaboration for sustainability were further emphasised by Dr Nicholas Monk (IATL) who stated: 'If you could bring people together from those various areas [campus locations] under this banner of sustainability, you've got a different kind of globalisation'.

At Monash, there is strong support for EfS across the university, including at a strategic level, while at Warwick the Estates department has led the way in terms of addressing sustainability issues to date. Joel Cardinal (Warwick's Energy Manager) is responsible for the implementation of Warwick University's Carbon Management Plan. He considers there to be tremendous support for sustainability initiatives throughout the campus, coming from students, academics and university governance. He believes that people perceive sustainability in a positive light for a number of reasons, not least on moral, economic (especially in the case of energy management) and practical grounds. This is supported by the vast majority of interviewees expressing willingness, in the constructs of their existing role, to supportive EfS activities. For example, some participants expressed a desire to contribute to developing curriculum, including the development of a Sustainability Masters, or in the delivery of guest lectures on new modules. Overall, all participants expressed, at the very least, a desire to be 'kept in the loop', including through attending meetings and to act as conduits for information regarding the wider EfS agenda. The follow sections consider progress in EfS at both institutions.

EfS at Warwick University

"For an institution like the University of Warwick, sustainability has the greatest chance of having the most impact both on the University and the society it operates in and the people it teaches through tackling the issue on three legs. One is through the research that we do as a University. The next part is through the teaching we do as a University and then the third part is through what we do as an institution ourselves in terms of the way we operate, the way we run ourselves and so on and I believe that the really successful institution manages to get all of those three working together and I think Warwick can go further in this."
(Professor David Elmes Director of Global Energy MBA)

Several respondents made reference to the current limited scope of EfS-related activities at Warwick, while many echoed Professor Elmes' view that a holistic approach was needed, to take into account the three essential activities of a university, while some added a fourth consideration of campus community activities. The main sustainability related initiatives at Warwick are outlined below, revealing that while sustainability initiatives thrive at Warwick, they are currently largely separate from one another.

Estates Department initiatives

Energy Manager Joel Cardinal exposes the reality of the pressure the university faces to reduce its emissions by 60% by 2020. This is being tackled in a number of ways, including through increases in efficiency and behaviour change initiatives. Estates activities to encourage behaviour change include introducing Energy Champions in individual departments, and implementing an interpretive campus Energy Trail, devised by Dr Stan Shire under the GRP for Energy. Estates has also collaborated with the Department of Psychology on a study of metering and behaviour. It has worked with final-year Engineering students, on place-based technology assignments, auditing buildings to assess energy savings. Finally it collaborates with the Students' Union on initiatives like the Student Switch off campaign (http://studentswitchoff.co.uk/), while more recently, it has begun to consider supply chain management, to devise sustainable transport, food procurement and recycling approaches.

Extra-curricular activities

Warwick University is historically a politically active university. Currently, there are a number of extra-curricular activities concerned with sustainability on campus. These include:
• **Arts initiatives:** including those at Warwick

Arts Centre, largely driven by Sarah Shalgosky, head curator at the Mead Gallery, who is strongly personally motivated to consider such issues, as a result of living within a sustainable community. For Sarah, a change in cognition is needed regarding how we perceive our whole approach to living and working, the key question being *'is there a more sustainable way of doing things?'* The Arts Centre offers a unique meeting ground for staff, students and the public to discuss sustainability issues. Future related activities include a summer exhibition 'Artists Plans for Sustainability' (http://www.meadgallery.co.uk/events/visual-arts/artists-plans-for-sustainability) and the 'Warwick Oracle' project, which asks students to identify 24 essential questions for their generation. These students will then proactively work with researchers, peers, and global network of thinkers to develop the answers.
• **Students' Union initiatives:** are many and diverse, including Student Societies such as Warwick Volunteers, the Warwick Students Allotment Society and Warwick Climate Forum. There are also a range of initiatives run by People and Planet, including a recently established campus food cooperative, as well as the national 'Go Green Week'.
• **Sustainability Skills development programmes:** Green Steps, a sustainability skills programme, founded by Monash, is now in its second year at Warwick. Positive elements of the programme, expressed by both academics and students, included the fact that the experience complemented core areas of study, the opportunity for internships, the value of a practice-based approach and the interdisciplinarity of the programme. Furthermore, Warwick will this year host students as part of the Climate Kic programme (http://www.climate-kic.org/), a climate change summer school for Master's students, coordinated by the Business School.
• **Other activities:** occurring at Warwick include a range of conferences and events, for example an EfS Workshop hosted by IATL in 2012 and the 'Approaches to Sustainability' Workshop coordinated by the Environmental Studies Research Network.

Sustainability within the existing curriculum

Several participants recognised the lack of an institutionalised approach to EfS, either within individual departments, or as orchestrated by the university as a whole. Rather, sustainability was delivered as part of programmes where staff teaching them had an interest in particular issues. The reasoning suggested by research participants included that historically environmental issues had not been central to Warwick University's profile. Respondents also questioned whether a holistic steer on sustainability's incorporation throughout disciplines was achievable or desirable.

However, though occurring independently, sustainability was found to feature to some extent within many Warwick undergraduate and postgraduate programmes. For example, in the Sciences the following subjects address sustainability:
• **Chemistry:** where sustainable thinking is thought to be implicit. Furthermore, there will be a module on 'Renewable Materials', in a new Master's Course in Polymer Chemistry, set to begin in 2013.
• **Engineering:** where sustainability themes have been addressed since 1980 when the undergraduate degree 'Engineering Design and Appropriate Technology' was founded with a firm sustainability ethos. Since the closure of that course in 2005, sustainability has been subsumed into other areas of the curriculum and is now addressed within Master's level modules such as: 'Design for Sustainability', 'Energy Conservation', and 'Renewable Energy Systems'.
• In **Life Sciences**, sustainability is addressed in several Master's programmes, including the MSc in Environmental Bioscience in a Changing Climate, the MSc in Food Security, and the MSc Sustainable Crop Production: Agronomy for the 21st century.
• In **Physics**, sustainability-related issues such as global warming are discussed within undergraduate modules, including 'The Weather and the Environment' and 'Global Warming'.
• **Warwick Manufacturing Group (WMG)** offers postgraduate modules in 'Eco design and Sustainable Manufacturing' and 'Design for the Environment'.

In terms of the humanities, while there are no specific modules that address sustainability, in the **English Department** there is expertise in ecological writing, particularly in the field of eco-poetics, and thus individual academics deliver material on this theme.

Within the Social Sciences:
• In the **School of Law**, there is a module on 'Law Globalisation and the Environment', which focuses on issues of Climate Change, as well as Corporate Social Responsibility.
• In the **School of Politics and International Studies (PAIS)** there is an undergraduate module in International Development which addresses environment and international development; at Masters' level, there is a module in 'Global Food Systems' which addresses sustainability as a key concept in global food politics and a module in 'Energy in World Politics'.
• The **Department of Sociology** runs an MSc in 'Science Media and Public Policy', which has a module on 'Public Engagement with Sustainability'.
• In the **Institute of Education** there are undergraduate modules in 'Science, Environment and Technology' and 'Family International: Global and Environmental Issues'.
• In the **Business School,** sustainability as an issue for business is covered in modules on strategy, operations and marketing, as well as in specific modules on programmes such as the Global Energy MBA which includes courses on 'Sustainability and the Low Carbon Economy', 'Energy in Global Politics', and 'Innovation and Alternative Energy Technologies'.
• The **Centre for Lifelong Learning** also has an 'Ecology and Conservation' module.

Sustainability-related Research

There are several areas of sustainability-related research activity at Warwick. These include interdisciplinary initiatives; for example the themes of GRPs at Warwick relate strongly to issues of sustainability science, including Food, Sustainable Cities, Global Governance, and Energy. Other instances of interdisciplinary research include the 'Grow Warwick' initiative for a campus orchard, which includes researchers from the department of Theatre and Performance and Cultural Policy Studies, as well as the English Department and the School of Life Sciences. Furthermore, in the past a 'Low Carbon Initiative' brought together academics from different disciplines. The WMG also, by necessity, adopts interdisciplinary approaches to deliver innovative products to market, combining expertise from, for example, Engineering, Chemistry and Life Sciences.

Furthermore, in the School of Life Sciences there is expertise based at the Horticultural Research Institute, in Agriculture and Agricultural production systems. In the Social Sciences, within the Institute of Education and the Department of Sociology, there is interest in cultural change for sustainability through, for example, education and conservation initiatives, while academics within PAIS focus on the Politics of Climate Change. There are also several academics within the Business School with interests in Business Strategy and Sustainability. Within the Humanities, research is being conducted in relation to ecology themes, for example, Professor Baz Kershaw's 'Earth Rise Repair shop', while the English Department hosts 'ecopoetics' research and plans to build an International Eco-Poetics Research Centre.

EfS at Monash University

As is the case at Warwick, Monash has benefitted from the efforts of sustainability champions from within the departments who have done a great deal to take sustainability within the curriculum forward, through their individual interests. Monash is now committed to building on those initial achievements and has endorsed a strategy which will see EfS advanced as a key theme in the 'Better Teaching, Better Learning' initiative.

Estates Department initiatives

In Monash the Estates department are extremely proactive in terms of sustainability thinking, and there is a drive to make the campus a 'living laboratory' for students to consider issues of sustainability (http://fsd.monash.edu.au/environmental-sustainability).

Extra-curricular activities

Sustainability Skills:
Green Steps has been running at Monash University for 12 years and has alumni of over 700 students. An integral part of the programme is an internship scheme, through which some students have found employment as graduates.

Sustainability in the Existing Curriculum

Monash offers a number of academic programmes with an explicit sustainability focus. The Faculty of Engineering offers a Bachelor of Environmental Engineering, which is heavily grounded in sustainability, while there is a sustainability major available in the Bachelor and Arts and Bachelor of Commerce degrees. A cross-faculty undergraduate elective in sustainability was introduced in 2012 (http://www.monash.edu/research/sustainability-institute/programs/mon2222.html). The School of Geography and Environmental Science offers a Masters in Sustainability (see: http://monash.edu.au/study/coursefinder/course/3783/) while the Monash MBA features social responsibility and sustainability as guiding features.

Curriculum Renewal at Monash

The EfS strategy aims to embed sustainability across the curriculum by reviewing programmes and renewing curriculum accordingly. An initial pilot conducted in the Faculty of Engineering, developed an approach to enable sustainability to be integrated across the combined first year of the engineering undergraduate curriculum. From 2014, every degree in the Education Department will feature sustainability subjects. Professional capacity building is also a key feature of the Monash EfS strategy. A module on EFS is offered as part of the Graduate Certificate in Academic Practice (a programme developed for new academic staff) and a Professional Development Programme on embedding sustainability through curriculum renewal has been developed with the long term intention to offer it to all Monash academic staff (http://www.monash.edu/research/sustainability-institute/programs/efs-unit-renewal.html).

Sustainability-related Research at Monash

MSI conducts world-class research in many different areas of sustainability science, including water management, natural resource management, behaviour change, indigenous communities and climate change, and the interface between social and environmental sustainability. In the Sciences, green chemistry is also a significant field of expertise and in many faculties there are active research programmes and projects that have a sustainability focus.

EfS at Warwick and Monash – A Comparison

Krizek *et al* (2012: 19) propose that campus-based sustainability initiatives evolve through four phases: 'grassroots; executive acceptance of the business case for sustainability; the visionary campus leader; and fully self-actualized and integrated campus community'. Warwick University has a strong grassroots movement for sustainability, demonstrated by staff-led research and teaching initiatives, as well as efforts among the student body. Arguably, then, Warwick has transcended phase one of the typology and is most likely in phase two where: 'leadership easily sees the value of efficiency programmes that inspire cost savings and improve campus reputation. Accordingly, energy efficiency, water conservation, and green branding/ public relations programs are supported by campus leadership'. Monash University, which has a more mature EfS strategy, arguably occupies phase three, where 'leaders embrace the concept as a central value of the administration's goals and strategic plan and are supported or at least tolerated by their trustees. As part of this phase there is full executive leadership on sustainability, a keen understanding of its tenets, and an articulated vision for the future' (Krizek *et al* 2012: 22). The fourth and final phase of the typology is a state of fully self-actualised and integrated campus sustainability. This stage is rarely reached. However, notable examples of universities who have reached this status include the University of Gothenburg, Sweden; Leuphana University, Germany (the first zero-emission campus) and the Birkenfeld Campus of the University of Applied Sciences Trier, Germany.

'The great ecological issues of our time have to do in one way or another with our failure to see things in their entirety. That failure occurs when minds are taught to think in boxes, and (are) not taught to transcend those boxes or to question overly much how they fit with other boxes.' **(Orr 1993:10)**

A perceived need for EfS related Curriculum Renewal

The EfS agenda provides a necessary centralising context from which to debate the role of HE in the 21st-century (Blewitt 2004, Cullingford 2004, Krizek *et al* 2012). According to Cullingford (2004: 23-24), the meaning of a university is continually being dissolved, while 'one day, universities might be forced to reconsider what they have to offer in a world of global poverty, environmental degradation and uncivilized behaviour'. Many respondents recognised the need to reflect on the purpose and approach to university education, as a result of ecological crisis, climate change, rates of technological changes, resource depletion, the energy crisis, social equity and global poverty. Attempting to integrate EfS into academia presents the opportunity to rethink traditional, neoliberal approaches to educational, and to engage with fundamental pedagogic questions including: *'what is a university for? How can the university and university education represent the human at its most sustainable?'* (Jonathan Heron, IATL). Similarly, for Mark Boulet, Green Steps programme manager, EfS *'presents an amazing opportunity for universities to look at what they teach as well as how they teach and to renew this'.*

Moreover, for some, the integration of EfS was judged not only as an opportunity for positive change, but an imperative to the competitiveness of academic institutions. For example, Professor Dave Griggs (MSI) stated: *'I think it [EfS] will be so essential to a university's survival because sustainability will become so central to our survival that those that get a head start will be the universities that fly, and those that are left behind will see a serious struggle to attract the best students'.* Others drew attention to international competition; for example, Dr Rocio Valdivielso del Real (Centre for the Study of Globalisation and Regionalisation, Warwick University) said *'you cannot compete in a top league without having the concept of sustainability… we are one of the leading universities in the UK and this [EfS] is important to have in the curriculum because Stamford has this, and we are competing in that world'.*

Leadership support for EfS

Senior leadership and visible, meaningful commitment to pedagogic change for sustainability

is crucial (Dobson *et al* 2010, Wright 2010, Mader 2012). Senior support for EfS was demonstrated at both Monash and Warwick Universities. Considering academic engagement with sustainability, Professor Ann Caesar felt that academics were acutely aware of sustainability and its interconnectedness to 'tricky problems', yet tended to avoid the issue, which was problematic. To this end, Professor Caesar stated that *'because sustainability is kind of everywhere and nowhere, it is a question of increasing its profile and visibility within those global priorities and also within this curriculum as a whole'.*

Director of MSI Professor David Griggs argues that the inclusion of EfS into the HE curriculum is fundamental to a sustainable future, in stating that *'the case sold itself and we're going to have to have a sustainable future and the people who are going to create that sustainable future are the students of today so unless we teach them how to do that then, the world's stuffed. So, there's no argument about why we need to do it'.* Furthermore, Geoff Rose Professor of Sustainability at MSI, stated that he had: *'no doubt professionally that sustainability is a really important issue. But, it's also a big challenge to think long-term, to think about some of the broader impacts…I don't think the issue is going to go away'.*

Academic and wider stakeholder support for EfS development

All respondents had a connection to issues of sustainability, whether on a conative, cognitive or affective basis, or a combination of all three. Some respondents already had a strong involvement in sustainability initiatives, for example, through living in a sustainable community or being part of the permaculture movement. Subsequently, some questioned university practices, while also attempting to make their own working practices more sustainable. Furthermore, there was an acceptance among many research participants that addressing the issues of our time through EfS was a key responsibility of a university.

Continuing this theme, Professor of Food and Social Policy Elizabeth Dowler had been inspired by the number of students she had met who returned to study after having gained an appreciation of global issues through work with NGO societies, from which she has witnessed *'huge innovation and energy thinking'.* Resultantly, Professor Dowler felt it would

be benefitial for universites to address issues within the curriculum, given the essential role they play in training *'students to think and act'*. Dr Rosemary Collier, Director of Warwick Crop centre, also felt that EfS was important to encouraging student to be *'aware'*, whilst highlighting the importance of *'encouraging them to think'*.

Mark Boulet (MSI) echoes this sentiment in stating:

"I think our biggest environmental impact is the knowledge and the ideas and the ways of doing things, that we stick into the heads of students that they then go and apply in their careers over a much longer time frame than they're with us... So from a sustainability practitioner's perspective, this is the university's greatest contribution to the global environmental challenge that's facing us. So we're actually engaging all students from all disciplines in a conversation about 'how does my discipline contribute to the problem?' and also 'how can my discipline contribute to the solution?'"

Student interest in sustainability

A number of academics indicated a level of interest amongst the student body regarding sustainability related elements of courses. For example, in the context of Chemistry, there was a perceived appetite for study of renewable aspects of Chemistry. While Dr Colin Oram (Warwick's School of Engineering), who has taught sustainability-related subjects in Engineering for over 25 years, stated that *'across the piece students have been very responsive to sustainability'*. Dr Benjamin Richardson (PAIS, Warwick) felt that there was a clear student interest as emphasised by the energy behind initiatives such as 'Go Green Week', an initiative led by *'the most passionate students'* who engaged a *'diverse group'* from across campus. For Muyiwa Oyinlola, an Engineering PhD student, who participated in Green Steps, an interest in sustainability stems from personal experience of pollution in his home Nigeria, caused by energy generation issues. Through his desire to address such issues, Muyiwa is completing a

PhD in renewable energy solutions. Joel Cardinal also expressed that the Estates department is increasingly engaging with students, primarily through behaviour change initiatives, as a result of a perceived interest amongst the student body for issues that are *'part of their lives'*.

Furthermore, corporations are increasingly adopting sustainable practice as part of their business activities. Consequently, an increasingly important feature in the conversation about HE's role in society is that of student employability. This is further enhanced by the UK government's concentration on the Green Economy, which was also a major theme at Rio+20 (Maden 2012, McKeown 2012). A recent HEA survey revealed that 80% of students surveyed believed sustainability skills were going to be important to their future employers. They therefore felt that universities should be responsible for incorporating and promoting SD in order to increase their employability (Bone and Agombar 2011). Given that sustainability principles can be applied to every role, preparing individuals for 'green careers' extends far beyond technical expertise (McKeown 2012), which has strong implications for HE.

In stressing the importance of employability to student, Dr Jonathan Skinner (English, Warwick) stated that:

"After several years of teaching an environmental studies programme in a small liberal arts college in the US, I came to two realisations. The first is that in terms of sustainability, first and foremost, the question for the students is whether they're going to get a job with this degree or not".

To underscore this, a third-year student who participated in Green Steps, states that she felt having knowledge of sustainable practice during times of recession would increase her employability:

"A lot of companies are looking for sustainable practices to reduce costs. So if you're equipped with these skills through education for sustainability then that really helps and I've – in so many applications...and I've always mentioned sustainability".

Furthermore, Dr Colin Oram (Engineering, Warwick), stated that in Engineering, students are increasingly interested in sustainability, as a result of, for example, the perceived opportunities in commercial renewable energy organisations. Emma Nugent, Placement Learning Manager at Warwick University further emphasised the benefits of EfS for business. She perceived the Green Steps programme as being a way of influencing businesses to become more sustainable, through the activities of enthusiastic students, while students themselves would gain transferable skills that would help them to achieve employment.

'Unless and until education goes beyond the classroom, until and unless it goes beyond the college, the school, the university, it will remain powerless. Education today must involve the mind, and the body, reason and imagination, intellectual and the instinctual needs, because our entire existence has become the subject/ object of politics, of social engineering.' (Kellner, 2005: 85)

Proposals for the development of EfS through the Monash-Warwick Alliance

Importance of a coordinating vision for EfS

For sustainability to be meaningfully embedded in the long term, all stakeholders need to accept and be involved in development processes, creating a vision and a common agenda (Wright 2010, Krizek et al 2012). Many respondents felt that an integrated, holistic, long-term approach to the development of EfS was needed, taking into account campus operations, administration, education and research. The significance of having a vision to guide the process was underscored by Dr Paul Taylor (Director of IATL), who suggested basing such a vision on the attributes that we hope our future graduates would possess:

"I suppose what we're aiming at is lots and lots of really bright Warwick and Monash students who are influencing the agenda. Students who can really solve the problems that no-one can solve... inviting people to think about what those students would be like, even if we can't say what they'd be like. It would be an interesting exercise- who would they be? What qualities would they have? What would they be doing?"

A Holistic approach to EfS development

Embedding Sustainability into the curriculum

Presently sustainability is addressed, implicitly if not explicitly, in almost every discipline at Warwick and Monash Universities. This includes, the arts and humanities and the social sciences as well as traditional Science, technology, engineering and mathematics (STEM) subjects. Dr Paul Taylor noted the further potential within many fields for the EfS agenda to be easily delivered by making connections to sustainability more explicit:

"in my own subject, in chemistry, if you're teaching a module on catalysis, making it explicit that by developing new processes in this way, you're saving, in terms of resources, you're saving in terms of energy, you're saving in terms of waste and you're saving in terms of health and safety. So we tend to leave that often implicit rather than explicit, I really think the students might value that being brought out more...I imagine there are areas where people are giving courses where it's not really linked into the wider effects".

What's more, there was also strong support for the development of new programmes and several respondents expressed a need to further embed sustainability agendas more firmly in the curriculum through the development of undergraduate and postgraduate courses. For example, Dr Eric Jensen (Sociology, Warwick) and Professor Liz Dowler had already begun to think about Master's course development, as a way of focusing sustainability initiatives across campus: *'you need something to hang this kind of collaboration on; you need some kind of practical focus'* (Dr Eric Jensen).

Nurturing an interdisciplinary approach

It is widely acknowledged that the complexities of sustainability justify a unified approach (Dobson 2003, Dobson and Tomkinson 2012, Tilsbury 2012). This was also recognised through UNESCO's rejection of any discipline claiming ownership of the ESD agenda (Hopkins 2012a). Interdisciplinarity also holds further significance for the consideration of the development of the contemporary university, for as Blewitt (2004: 6) stated 'if one of the principal purposes of universities remains the generation of new knowledge or the re-articulation of existing knowledge, then work within and between the disciplines is of primary significance for all our futures'.

Although there are few programmes that take an interdisciplinary or transdisciplinary approach at Warwick and Monash, over a third of all respondents highlighted the importance of sustainability being integrated into all disciplines, while academics saw the value of interdisciplinary courses, particularly at a postgraduate

level. As well as an awareness of the increased funding available for interdisciplinary research, academics also appreciated, as a result of practical research experience, that an interdisciplinary approach was required to provide sustainable solutions. For example, Dr Andrew Clark (Chemistry, Warwick) stressed the centrality of WMG in getting innovative technologies into the market.

Given the existing expertise and interest in sustainability at both Warwick and Monash, it is imperative that 'communities of interest' focused on EfS are nurtured. Such an approach would both encourage organic wellsprings to emerge from practices in any discipline (Blewitt 2004, Hegarty 2008), and provide opportunities for the generation of new and powerful ideas (Jickling and Wals 2012). The GRP groups at Warwick were established to encourage interdisciplinary collaboration and respondents recognised the potential in linking the EfS agenda into these, while engaging students from different disciplines through, for example, seminars and workshops was also seen as a positive move from an SU perspective. Furthermore, members of the senior management team were also supportive of activities to build networks:

"We need to be making sure that colleagues within the University are very aware of such a project, that it's not driven from one area only and actually we're really interdisciplinary in our approach with people from all Faculties involved…then you will really see the off-shoots develop"
(Professor Darrell Evans, Pro Vice-Chancellor, Learning and Teaching, Monash University)

Place-based EfS development

Currently, there is an increased international focus on the commitment of universities to integrate effective environmental management on campus (Wright 2010). Projects, including student-led recycling initiatives, offer experiential learning that can lead to lifelong, transformational change (Kurland 2010, Dobson and Tomkinson 2012). While collaborations between students, faculty and facilities are not common practice (Krizek *et al* 2012), the practices of a place arguably educate and challenge students (Dobson *et al* 2009). The EfS curriculum can be enhanced through student involvement in for example, estates and community initiatives (Blewitt 2004). Moreover, interacting with a campus's environment can provide tangible connections to the natural world, as well as (depending on the campus), an understanding

of the tenants of ecology. Such understandings are considered to be central to addressing environmental concerns (Porritt 1984, Blewitt 2004, Antunnes and Gadotti 2005, Wright and Defields 2012), while a lack of consideration for the built and natural environment can hamper EfS (Dobson *et al* 2009).

Several respondents talked about the significance of lived experience for EfS initiatives, while many drew attention to the opportunities to think critically about

campus activities as well as creatively about possible solutions. For example, Mark Boulet (MSI) thought of campus as a *'living laboratory to students',* while George Ttoouli (English, Warwick) agreed in stating: 'two thirds of university-owned land is farmland, it's rented and the land management is unsustainable…but that's an opportunity that if we're going to for a very ambitious restructure…I would love to see Warwick feed itself… stop importing food for the 22-25,000 people who live and work here'. He would also like to see students learning experientially, for example, through building sustainable structures or affecting societal change. To this end he states:

"You can teach with pen and paper in a field, you don't need lighting because the sun gives you that, you don't need heating because you wear clothes outdoors and move around".

Plans for place-based education are already underway, for example, Dr Jonathan Skinner (English, Warwick) intends to plant raised beds on campus, as a starting point for creating affective connections to the land, through student engagement activities. Furthermore, in summer 2013, the Estates Department will begin to collaborate with IATL and the SU on departmental-based curriculum renewal projects, which will be enhanced through campus related sustainability activities. Estates will continue to offer placements both to students on Engineering courses, and as part of the Green Steps summer school.

A Road Map for EfS through the Monash-Warwick Alliance

Finally, respondents were asked for their suggestions regarding the development of EfS through the Monash-Warwick alliance, in the short, medium and long term. Corresponding to the above constructs, specific tasks for IATL and MSI to orchestrate deemed helpful for and by staff and students included:

0-6 month actions

For academic faculty:
• Establishing an Alliance-wide EfS Network. Constructing a network was a suggestion made by a third of respondents, while placing emphasis on the need for:
> • New research collaboration;
> • Frequent events;
> • The importance of identifying and connecting departmental champions.

• Developing Continuous Professional Development (CPD) opportunities for staff relating to EfS. This refers chiefly to current activities at Monash in integrating EfS training into induction process.

For students:
• Conducting actions to ensure that EfS is further integrated into the curriculum. Suggestions for this included:
> • conducting an EfS audit of curricula
> • Developing a cross-institution, interdisciplinary Masters in Sustainability;
> • Developing interdisciplinary modules;
> • Integrating sustainability into student induction;
> • Piloting departmental EfS renewal.

• Raising profile of extracurricular sustainability activities through, for example:
> • Connecting Student societies with EfS
> • Further establishing Green Steps at Warwick.

Medium-term changes (6-16 months)

• Generate wider curriculum renewal including further innovative cross-institution sustainability modules and courses;
• Increase Estates activity for EfS: including further site-based awareness raising activities, to facilitate for example, the Warwick Carbon Action Plan
• Increase external visibility of EfS endeavours, including through:
> • Engagement with community and industry;
> • Increased PR for sustainability related initiatives.

• Create a new Research Centre, which would be an expansion and extension of the Monash-Warwick EfS network.

Long-term impacts (16 months+)

• Becoming competitive sustainable Universities, evidenced by:
> • Student engagement in and increased demand for sustainability courses;
> • Being viewed as competitive "green universities".

• Global collaboration, including:
> • Globally aware students;
> • Global research network – generated through, for example, the hosting of an International Sustainability Conference.

• Shift in university strategy for sustainability, to include a commitment to EfS within the curriculum, transport planning, food procurement and cutting carbon emissions.

Challenges for future development of EfS and Ways of Overcoming

In navigating a course for developing EfS through the alliance, a number of challenges were identified. Nevertheless, they were not considered insurmountable and many solutions were proposed, as delineated below.

Contemporary attitudes towards sustainability

Sustainability and SD are contested concepts (see appendix A and B), while the 'wicked problems' they seek to address are shrouded with uncertainty. Respondents were well aware of such issues and proposed that as a mirror of wider society, there could be difficulties in relation to engaging students and staff. The strongest of these was that the fundamental issues that contemporary sustainability movements seek to address, including climate change, can be perceived as irrelevant to the lives of individuals in the global North, where oil-dependency reaps good standards of living. Such concerns are not unfounded; studies of public opinion of climate change show a high level of awareness, but little evidence of emotional or behavioural engagement (O'Neill and Whitmarsh 2009). Participants gave both local and societal examples of engagement activities that had resulted in low attendance or low adoption rates. As one participant stated: *'There's a gap between the knowledge and the action'* and a range of social, cultural and behavioural reasons for this were acknowledged.

In addition, there was perceived widespread cynicism regarding the issues we face, as well as a despondency regarding what can be done about them. This is apparent, despite or perhaps because of the availability of masses of information regarding environmental, social and economic issues through the mass and news media. As Professor Dave Griggs (Director of MSI) stated:

"there are so many people who don't believe in sustainability, people who think they've got far more important things to do, everybody's busy, nobody's got money, it's all too difficult, it's all too complicated, it's not that important, you name it, we'll have those barriers".

By way of a solution practitioners and academics increasingly stress the necessity of empowerment in addressing such issues (Solnit 2005, Bird 2008, Pullman 2008, Smit 2009, hooks 2009). Moreover, in the context of EfS, Tilbury (2012) argues that the present challenge involves forming connections within students' minds between the pertinent contemporary issues that do concern them (the Arab Spring, the recession, the war in Afghanistan), to sustainability issues.

Engaging stakeholders across the Universities in the EfS agenda

The strongest institutional barriers to the development of EfS were perceived to be bureaucratic, including the systems and procedures to establish new curriculum structures, for example e-learning processes for delivering joint institutional programmes. Academic institutions are hierarchical by nature and power is spread amongst a Vice-Chancellor, Pro-Vice-Chancellors and Heads of Department, while academic departments work as administrative silos all of which 'run counter to the systems integration required' for EfS (Krizek *et al* 2012: 29, Parker *et al* 2004). Subsequently, there could be issues related to where to place new courses within the institutions or how, for example, to allocate degree credit points. Moreover, the curriculum is already considered to be crowded, while existing courses can be inflexible to change.

At a time when universities in both the UK and Australia are facing changes to funding, financial issues were also seen as a barrier. Some participants questioned how costs associated with, for example, developing new curriculum, internship programmes and recruiting staff to run courses, would be covered. An ambitious EfS programme would need leadership and administration; subsequently respondents drew attention to the importance of making a compelling case for how such a programme enhances the offering of the university.

Academics are extremely time pressured and prioritise existing responsibilities and research activity, given the centrality of research output to academic identity (Hegarty 2008). Consequently, EfS is often left to the enthusiasms of committed individuals in academia (Blewitt 2004, Dobson *et al* 2010, Krizek *et al* 2012). Therefore, while respondents felt that a 'top down' approach would be viewed unfavourably (and potentially as a superficial attempt to exploit the marketing opportunities that EfS offers); several agreed

with EfS authors who advocate rewards and incentives for existing and future EfS involvement (Rusinko 2010, Krizek *et al* 2012).

A further area of concern related to the delivery of EfS through the alliance, given the physical distance between the universities and difficulties associated with developing collaborations via digital technology.

Finally, existing pressures on student time, as well as student apathy, were considered to be factors that would influence the ability of those students to become involved in additional sustainability-related initiatives. Some respondents felt that some students would be unwilling to stray from the core concepts of their courses. Furthermore, whereas employability had been mentioned as a reason for the development of EfS, in some fields, it was felt that sustainability could clash with students' future career plans, in certain disciplines.

Specific challenges to teaching and researching sustainability science

Value-driven Teaching and Learning
Traditional academic constructs of value neutrality are brought into question through EfS. As Hegarty (2008: 685) states, 'any stroll through a generalist undergraduate sustainability subject demonstrates the centrality of political questions and values positions needed to engage with those questions: is it fair? Who is responsible? How might it be re-addressed? What needs to change?' EfS inevitably involves encouraging students to develop opinions (Dobson and Tomkinson 2012) and while some are concerned over potential indoctrination (Jickling and Wals 2012) and challenges to the academic integrity of free enquiry (Hegarty 2008) that EfS poses, others question whether the liberal education system is able to cope with such value orientation (Dobson 2003).

Many respondents felt that EfS led to positive opportunities for societal change. However, some stated that education was not the right route for solving the major issues of the 21st-century, questioning, for example, whether education's purpose was to inspire action. Dr Benjamin Richardson (PAIS, Warwick) stated that sustainability, unlike national security, is a topic that tends to become personalised. Therefore there is a need to avoid such personalisation. He states that in order to get people on board, there is a need to:

'suggest to people look, 'this isn't just for people who want to be activists', although I think they would be really great contributors to the course, but it's also for people who just want to know how the policy levers work and see how important it is to business'.

Challenges associated with Interdisciplinarity
Sustainability is a concern for all disciplines (Kahn 2010) and universities are increasingly being urged by governments to partake in knowledge transfer. Yet 'the lack of cross-disciplinary studies verges on the absurd' (Cullingford 2004:22). 'Crossing boundaries' both within academia and policy-making spheres is thus the greatest challenge to EfS (Tilsbury 2012). However, in discussions concerning EfS, disciplinarity has sometimes gone unrecognised and has sometimes been dismissed (Blewitt 2004).

Some academic respondents stated that getting involved in sustainability-related research in their fields could have a negative impact on an academic career, given a lack of opportunities for promotion, for accessing research funding and because such subjects were *'falling between stools*', in the REF.

At a deeper level, almost half of all participants in this study mentioned the difficulties associated with interdisciplinary research. Sustainability is a concept perceived in different ways by disciplines and by individuals. Therefore, sustainability is a widely used and misunderstood term that means *'everything to everybody'* (Dr Eric Jensen, Sociology, Warwick).

Furthermore, communication is not assisted by academic disciplines being segregated. While good practice emerges from the GRPs, communicating interdisciplinary research with peers and students across disciplines was perceived by many as difficult, particularly between the natural and social science. As Parker *et al* (2004:72) states, 'departments rarely talk to other departments; subject specialists usually only relate to other subject specialists'. As part of this study, one scientist expressed his concern with having to *'cater for the lowest common denominator'* in sharing scientific knowledge with those from non-scientific fields, whereas a social scientist expressed the need to convey to students studying interdisciplinary courses *'the value and the rigour involved in a social scientific approach'*.

Concluding Remarks and the Road Ahead

Main findings

The Monash-Warwick Alliance

The potential for the enhancement of the EfS curriculum though the alliance was recognised by many respondents. Both universities have teaching and research strengths that have the potential to complement each other's efforts as part of an EfS programme. Moreover, the alliance provides those involved with an appreciation of sustainability within a global context. However, processes for initiating this collaboration, through the development of innovative courses, will need to be carefully considered, given that there was some uncertainty among academics regarding the appropriateness of the alliance as a means of nurturing EfS at both campuses.

A long-term vision

Many respondents felt that universities had a role to play in creating a sustainable society. Consequently, there was a desire to progress EfS offerings at both universities. However, while there was an appreciation that unique EfS activities should be encouraged to flourish, it was suggested that an incentive and reward structure should be put in place to ensure meaningful, long-term engagement of academic staff with the agenda.

A holistic approach

An approach that was institution wide was seen as essential to fully embed sustainability into the universities. This was thought to be achievable through nurturing an interdisciplinary and place-based approach, which emphasised connections between students, estates, academics and communities.

The road ahead

Throughout the programme, participants offered useful guidance for the development of EfS within HE. On the basis of this, an outline future action plan for change is summarised in the 'road map for EfS through the Monash-Warwick Alliance' in chapter four of this report. Essentially the roadmap has three main strands, which bind the three proposed stages of development:

• **The importance of nurturing an EfS network:**
A widespread knowledge of EfS-related activity in other parts of the universities was rare. Consequently, bringing activities and individuals together across campuses would energise the EfS initiative. This would occur initially through events, publications and the coordination of 'communities of interest', while ultimately, an EfS research centre could be developed while further global collaborations would develop through,

for example, the hosting of international conferences. Given the difficulties associated with interdisciplinary effort alluded to by academics within this study, this initiative would need to be properly resourced to create time for building the network and to understand fruitful pathways to interchange. To this end, IATL and MSI could function as central hubs for EfS conversations, as well as for related project development between academics, the Estates department, students and support divisions operating across the two universities.

• **The significance of curriculum renewal and development:** The significance of developing the curriculum at both an undergraduate and postgraduate level will be central to the EfS initiative. A proposal is already in place for the development of an interdisciplinary, cross-university Masters in Sustainability, while an interdisciplinary undergraduate module in Climate Change will begin at Warwick in September 2013. Such opportunities for EfS should be explored and expanded upon, linking into other funding streams and mechanisms of support, so that academics from all disciplines are encouraged to become involved. As interdisciplinary institutes, IATL and MSI are ideally placed to coordinate such activities and to encourage holistic approaches to EfS through the alliance.

• The final key strand to recommendations for EfS development concerns the **significance of a university-wide commitment.** Such an approach recognises the importance of learning that takes place outside of the curriculum, while also leading towards a more integrated approach to sustainability. Sustainability needs to become a central organising principle in HE and thus written into strategy, to demonstrate a university-wide commitment to its principles and to ensure that the campus itself becomes a 'living laboratory' for EfS.

As Blewitt (2004) states, there is no recipe for curriculum renewal: nevertheless, the findings presented within this report provide a starting point for the development of EfS through the Monash-Warwick alliance, which will grow and evolve, as approaches are reviewed and issues are addressed. Nevertheless, the challenge for integrating EfS within HE is not to be underestimated; as Martin *et al* (2013) state, there is a need for fundamental reform of education to lead to a more sustainable society. Such reform presents challenges in engaging stakeholders, many of whom will face barriers to engagement, whether psychological, financial, organisational or cultural. Yet in such a challenge is tremendous opportunity to revolutionise HE, in times when the sector is struggling to redefine itself. While providing graduates with the attributes, knowledge and skills to make a contribution to the transition towards a more sustainable society offers a means for HE to ensure it remains relevant to societies by helping to transform them for the better.

Acronyms

CPD	Continuous Professional Development
DE	Development Education
DESD	United Nations Decade for Education for Sustainable Development
EAUC	Environmental Association of Universities and Colleges
EE	Environmental Education
EfS	Education for Sustainability
ESD	Education for Sustainable Development
ESDGC	Education for Sustainable Development and Global Citizenship
GRP	Global Research Priorities
HE	Higher Education
HEA	Higher Education Academy
HEEPI	Higher Education Environmental Performance Improvement
HEFCE	Higher Education Funding Council for England
IATL	Institute for Advanced Teaching and Learning
IEEP	UNESCO-UNEP International Environmental Education Programme (1975-1987)
LiFE	Learning in Future Environments
MSI	Monash Sustainability Institute
NGO	Non-governmental Organisation
NUS	National Union of Students
PAIS	Politics and International Studies
RCE	Regional Centre of Expertise
SD	Sustainable Development
SHE	Sustainability in Higher Education
STEM	Science, Technology, Engineering and Maths
STEPS	Centre for Social, Technological and Environmental Pathways to Sustainability
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on the Human Environment
UNCSD	United Nations Conference on Sustainable Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNU	United Nations University
UNU-IAS	United Nations University-Institute of Advanced Studies
WMG	Warwick Manufacturing Group
WSSD	United Nations World Summit on Sustainable Development
WWF	World Wildlife Fund for Nature

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Appendix A: Defining Sustainability and Sustainable Development

With roots in forestry practices of the 17th Century (Mundt 2011), sustainability, in its simplest, environmental sense, refers to the long-term maintenance of resources, so as not to deplete associated systems beyond a level where they can be effectively replenished. Sustainability as a simple and moral concept 'means paying attention to the long-term consequences of actions and, by implication, thinking of others who might suffer from the immediacy of one's personal greed'. Yet in the present day the concept of sustainability has become a cliché, a 'victim of verbal dexterity', and has been widely misused to the point where it is arguably delegitimized (Cullingford 2004: 17).

The most commonly cited definition of the related modern concept of Sustainable Development, thought to have put sustainability on the political and social agenda (Peattie 2005), is drawn from the Brundtland Report (1987). In the Brundtland Report, SD is described as development that 'meets the needs of the present without compromising the ability of the future generations to meet their own needs'. The concept of SD is regarded as having longevity and is now established in policy, academic and educational institutions and communities (Tilbury 2012). Yet some view the Brundtland definition as both unhelpfully vague and broad (Hegarty 2008) as well as 'conceptually flawed and internally inconsistent' (Jickling and Wals 2012: 51). Its plasticity arguably leads to its misuse and makes it malleable to the plight of upholding the status quo. The non-inclusion of environmental or ecological concerns within the UN resolution for the DESD is seen as evidence of such manipulation (Jickling and Wals 2012). Thus rather than being a panacea for the 'wicked problems' of the 21st-century, as has been heralded, some argue that rather than solving crisis, the concept further legitimizes ecologically unsustainable globalization and colonialist values (Kahn 2010).

In addition to doubts concerning the capacity of SD to tackle local and global issues (Jickling and Wals 2012), there are also few genuine overarching international examples of a shift from economic development towards SD (Hopkins 2012a), nor have significant resources been allocated to SD (Cullingford 2004). Given the urgency with which such issues need to be addressed Jickling and Wals (2012) argue that more powerful concepts are needed to make sustainability a major civil and scholarly priority for coming decades. SD is thus best understood as an 'emergent quality' (Sterling 2004: 56), which is unlikely to consist of predefined behaviours (Vare and Scott 2007), but will evolve as a learning process.

Appendix B: Historical developments of Education for Sustainability

Education for Sustainability (EfS) has its roots in Environmental Education (EE), the origins of which can be traced back 'as far as the interested researcher wishes' (Sterling 2004: 44). As a field which emphasises the importance of interaction with nature (Vare and Scott 2007), Sterling (2004) traces EE back to John Locke, who influenced a series of environmental thinkers, while stressing that formal EE began in the 1940's in the form of rural studies, which evolved into environmental studies in the 1950's and environmental science in the 1960's. The term EE was first used in the 1960s and the Council for Environmental Education in England established in 1968. By the late 1970's and 1980's, EE came to be seen as inclusive of 'environmental studies and field studies, environmental science, environmental interpretation, urban studies, heritage education, conservation education and global environmental issues education' (Sterling 2004:45).

There was a clear ambition for EE to adopt an interdisciplinary approach; for example, the first goal of EE was 'to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas' (Tbilisi Declaration 1977). However, in the US-based movement, this did not materialise, thought to be the result of the media focus on environmental crisis in the 1960s and 1970s and the emerging prominence of deep ecology, through publications such as Rachel Carlson's (1962) 'Silent Spring' and the Club of Rome's seminal report – 'Limits to Growth' (Meadows, Meadows, Randers and Behrens 1972). Both these factors placed a strong focus on environmental concerns eclipsing 'environmental and social dimensions' (Monroe 2012: 44).

Simultaneously, the field of Development Education

(DE), or critical pedagogy, which places far greater emphasis on social issues, including injustice and poverty reduction, was evolving. DE was especially important during the 1990s when concepts of ESD and Education for Global Citizenship emerged and DE and EE were perceived as 'sister movements' (Sterling 2004: 46). Dobson and Tomkinson (2012) add an interesting dimension by stating that 'It might be added that in Business and Enterprise education, economic success is the main priority', while together, these three perspectives represent the three pillars of sustainability.

The United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro in 1992, is often hailed as the event which brought SD and indeed ESD onto the world stage. However in reality, conversations began a decade earlier, in 1972, at the United Nations Conference on The Human Environment (UNCHE) in Stockholm in 1972, an event which brought together government representatives to discuss global environmental issues. It was an event deemed significant because it was the first time that civil society groups had demonstrated about widespread pollution in the presence of the international media, while previously, environmental considerations had been 'addressed in their local/ national context or ignored as inherent in the cost of developing the economy' (Hopkins 2012a: 22). The Stockholm Declaration, which arose from this event, consisted of 26 principles (number nineteen being: 'environmental education is essential').

As a result of the event the United Nations Environmental Programme (UNEP) was established and environmental ministries were created in most countries. A resolution called for the formation of the International Environmental Education Programme (IEEP), as a joint venture between UNEP and UNESCO (Hopkins 2012a). The conference was followed by the International Workshop on Environmental Education held in Belgrade, when the Belgrade Charter was formed to build upon the Stockholm Declaration, while yet another pronouncement, the Tbilisi Declaration, emerged from the Tbilisi conference in 1977. Each helped to further emphasise the importance of EE, which 'focused on the environment, but recognised that environmental issues included a suite of other dimensions' (Monroe 2012: 44).

Brundtland, the Rio Summit and ESD

A decade after UNCHE, it became apparent that global legislation for environmental protection was a forlorn ambition. Consequently, Gro Harlem Brundtland was asked by the United Nations to form a commission that would address both environment protection, as well as the need for development (Hopkins 2012a). Their report 'Our Common Future' and proposal for SD, aligned economic development with a need to conserve the environment, putting sustainability on the global debate agenda, and gained the support of approximately 200 world leaders. The UN called for 'a global implementation plan to be negotiated over the next five years and to be agreed upon at a major gathering of world leaders' (Hopkins 2012a: 22).

The Brundtland Report gave rise to the UNCED 1992, or the Rio Summit, as it is also popularly known. It was hailed as the event which brought the consideration of society into the environment-development equation. Education was identified at UNCED as 'one of the key forces central to the processes of sustainable development during the 21st-century' (Blewitt 2004: 1). Despite earlier calls in the Tbilisi Declaration for EE to be embedded within all subjects, it remained an elective or an extracurricular activity. Subsequently, Education for Sustainable Development (ESD) was the adopted term at the Rio Summit. It was chosen over 'sustainable education' or 'education about sustainability', on the basis that ESD emphasised the role of education for change as key to SD.

The distinction between education for sustainability or sustainable development and education about sustainability has generated much debate. The EE community in particular questioned the underscoring of ESD both at the summit and in the years to follow. Some felt that adopting the term ESD implied a wide acceptance SD, as a socio-educational objective (Dobson *et al* 2010), others fundamentally object to the idea of education for any cause, thought of as a 'broad public sentiment in many parts of the world' (Jickling 2012: 51 in Jickling and Wals 2012). Yet the focus on ESD also signified a movement away from a dispassionate perspective towards a more proactive stance that recognised that education is 'only useful when we reflect on what kind of education and for what purpose' (Wals in Jickling and Wals 2012: 50).

Nevertheless, 'ESD was to be the contribution of the world's education systems, the world's public awareness infrastructure and the world's training systems' (Hopkins 2012a: 27). Its key principles included 'a value- orientation, a holistic approach, reflexivity and achieving transformation' (Fadeeva and Galkute 2012), while pedagogies associated with ESD are action oriented and participatory, 'empowering learners to explore challenges to the sustainability of their communities, find solutions, and implement them in a cooperative manner' (McKeown 2012: 39).

ESD in Agenda 21

Agenda 21, the UN's action plan for Sustainable Development emerged from UNCED and consisted of 40 chapters. Chapter 36 was dedicated to 'Education, Public Awareness and Training', though the importance of education to all dimensions of SD was also emphasised in all other chapters (Hopkins 2012a). In chapter 36, education is referred to as 'a process by which human beings and societies can reach their fullest potential' (Agenda 21 Chapter 36). The chapter was non-contentious and one of only eight to be selected for specialist work packages, and one of two designated a decade, to ensure its impact. Chapter 36 is thought to be both durable and of burgeoning significance, while also criticised as superficial in its brevity (Hopkins 2012a).

Following the Rio Summit, there was a strong need for leadership and synergy (Hopkins 2012a). Yet UNESCO, which was given the responsibility for ESD with no extra funding, had difficulty mainstreaming and establishing its identity and differentiating it from other adjectival education, including EE. A major failing was not engaging global education ministers, while at a time of global recession, the 'formal education sector largely turned its back on ESD' (Hopkins 2012: 29). The next large events that followed included the World Congress for Education and Communication on Environment and Development held in October of 1992 in Toronto and the Thessaloniki Conference in 1997, which celebrated the 20th anniversary of the Tbilisi Declaration, the organisers of which wanted to replace EE with ESD (Jickling and Wals 2012). Yet the move to see ESD as an evolution of EE was rejected by UNESCO, who sought to avoid the alliance of ESD with any adjectival education, because ESD was a 'goal for education rather than a prescribed body of knowledge' (Hopkins 2012a: 27).

The Situation at the Turn of the Century

Sterling (2004: 47) recalls that in the 30-year period from the Stockholm Conference in 1972 to the World Summit on Sustainable Development (WSSD), in Johannesburg 2002:

> we move from a limited conception of the nature and role of environmental education, through a period of conceptual expansion and logical alliance with parallel 'education for change' movements, to a call for the reorientation of education as a whole in the context of, and in the pursuit of, sustainable development.

Arguably SD and sustainability goals were 'slowly permeating the values, policies and practices of government, business and education' (Blewitt 2004: 1). EfS had achieved a great deal and despite some fragmentation and differences in terminology adopted, had come to be regarded, 'internationally as a critically important approach in education' (Sterling 2004: 60). Concurrently, evolution was hampered 'by a largely uncomprehending and resistant mainstream', as well as too great a focus on knowledge acquisition, as opposed to 'ethical and critically reflective competencies' (Sterling 2004: 43). This led UNESCO (2002) to report a lack of global progress on the ESD agenda in the early 21st-century. Yet undoubtedly, ESD was increasingly perceived as a necessity for ensuring the quality of life for future generations.

The UN Decade for Education for Sustainable Development (UNDESD)

The 2002 World Conference on Sustainable Development (WCSD) in Johannesburg celebrated the 10th anniversary of the Rio Summit. It saw an implementation of the four thrusts of ESD (Improving access and retention in quality of basic education; reorienting existing educational programmes to address sustainability; increasing public understanding and awareness of sustainability; and providing training). This was actualised through the proposal for the UNDESD, from 2005-2014.

According to Martin *et al* (2013: 1524), there are four key objectives to the UNDESD: 'facilitating networking and collaboration among stakeholders in ESD; fostering greater quality of teaching and learning of environmental topics; supporting countries in achieving their millennium development goals through ESD efforts; and providing

countries with new opportunities and tools to reform education'. The decade received resources from Japan, Sweden and Germany while coordinators of the decade UNESCO also assigned more resources to ESD through the decade. UNESCO's International Implementation Scheme required each country and institution within them to develop national and regional ESD strategies for the UNDESD (Hopkins 2012a).

DESD arguably gives visibility to 'the critical role of education and life skills programmes in enabling communities to devise sustainable local solutions to problems related to poverty and vulnerability' (UNESCO 2007: 5). However, even before its commencement, there was a concern that changes to mainstream education would be piecemeal (Sterling 2004).

In 2009, to mark the mid-decade point, a conference was held in Bonn, Germany, which resulted in the Bonn Declaration (UNESCO 2009a). The Bonn Declaration was an important policy statement that restated the need for an integrated approach to ESD and emphasised that 'engagement of formal education systems in ESD is not an option but an obligation' (Hopkins 2012a: 31/32). The need to accommodate emerging adjectival education fields, including climate change education, biodiversity education and green economy education were also stressed, as well as the need to link to existing drivers of education system (Hopkins 2012a).

It is difficult to determine with certainty the progress made by the decade thus far. The first global report on ESD demonstrates the increasing visibility of initiatives globally (UNESCO 2009b). However, the failure to mention the environment or ecology in the UN resolution for the DESD has been viewed sceptically by some (Jickling and Wals 2012), while others question the 'expert knowledge driven approach taken' by UNESCO (Vare and Scott 2007: 193). Global progress has also been variable, with some countries making progress, while within others, ESD is relatively ignored (Hopkins 2012b). The approach taken to ESD in the UK was described by Martin *et al* (2013: 1533) as 'patchy', 'partial' and 'at times modest in its ambition and impact', while the adoption of the ESD agenda has varied across sectors. Furthermore, they argue that 'purpose of the UN Decade, and the role of UNESCO in promoting this, is not widely enough understood or appreciated'.

The evolution of ESD

The terminology debates since the Rio Earth Summit (1992) have led to four stances. There are those 'who say that EE is synonymous with ESD; those who say that ESD is a component of EE; those who say that EE is a component of ESD; those who wish to do away with ESD altogether; and, conversely, those who feel that ESD is a better term than EE and the latter should be dropped' (Sterling 2004: 48). Sterling (2004) argues for recognition of the evolution of a field, and the value that each stage in that evolution brings to the present state. Monroe (2012: 44) echoes this in stating that EE initially had the same goals as ESD, in that both aim to prepare people to resolve environmental issues, whereas today the fields have 'an overlapping and intertwined existence'.

ESD is a term that has traction on a political level and in some education spheres and has arguably become an accepted global paradigm (Monroe 2012; Hopkins 2012b). This perhaps relates to the fact that it can be interpreted, as SD, in a variety of ways, lending to its flexibility. EfS followers argue that ESD is instrumentalist, particularly in its approach to developing blueprint models for communities and nations Jickling (2012: 50 in Jickling and Wals 2012) takes this further eluding the colonialist nature of ESD, which is an 'educationally limited conception', ultimately constrained by the concept of SD.

The behaviourist approaches adopted within an ESD agenda, were also dominant within EE, driven by a sense of urgency and resting on the assumption that people lack access to information regarding environmental issues, and that provision of such information leads to change. From this rationalist position, educating about the environment was considered adequate to ensure social change, while emphasis was placed on individual environmental responsibilities (Sterling 2004). Some criticise the ESD approach to reforming the curriculum, arguing that the dominant rhetoric for ESD perpetuates hegemonic discourses that reinforce unsustainable social structures. To this end, Kahn (2010: 16) states:

> The next decade will ultimately decide whether ESD is little more than the latest educational fad or, worse still, turns out to be a pedagogical seduction developed by and for big business-as-usual in the name of combating social and ecological catastrophes — the education arm of what Naomi Klein (2007) has termed disaster capitalism.

Yet while rhetoric and international movements appear to emphasise behaviourist perspectives, the professional ESD community has increasingly moved towards a constructivist base (Sterling 2004), which is more concerned with experiences, rather than the imparting of knowledge. Emphasis is placed on the quality of learning experiences and the enhancing of students' ability to think critically (Sterling 2004), as a result of an increasing scepticism regarding instrumentalist and universalist approaches, and the superficial impact of behaviourist initiatives.

The emergence of ecopedagogy

Ecopedagogy, defined as a utopian project that aims to transform human, environmental and social relationships, is an emerging field. It has been described as 'a pedagogy for everyday life' (Antunes and Gadotti 2005). While traditional pedagogies are anthropocentric, 'ecopedagogy is based upon a planetary understanding of gender, species, kingdoms, formal, informal, and non-formal education' (Antunes and Gadotti 2005: 136). In discussing ecopedagogy, Kahn (2010: 5) argues that along with 'an ecological crisis of serious proportions, there is also a crisis in environmental education over what must be done about it' calling for 'a much more radical and more complex form of ecoliteracy than is presently possessed by the population at large'. Kahn (2010) argues that ecopedagogy is the only way to ensure the shifts in mind-set needed to insure the continuation of our species.

The movement began with the First International Meeting on the Earth Charter and Education Perspectives in 1999 in Sao Paulo, and the First International Forum on Eco-pedagogy, in 2000. The movement, though not commonly recognised by Northern education scholars, 'has coalesced largely with Latin America over the last two decades' (Kahn 2010: 19). Its development within the global south has 'provided focus and political action on the ways in which environmental degradation results from fundamental sociocultural, political and economic inequalities'. Ecopedagogy also incorporates 'more typical northern ecological ideas, such as the intrinsic value of all species, the need to care for and live in harmony with the planet as well as the emancipatory potential contained in human aesthetic experiences of nature' (Kahn 2010: 19).

Authors who embrace this theoretical perspective emphasise the opportunities, within sustainability, for curriculum renewal 'of old education systems founded on competitive principles and values and based on a predatory view of the world. Educating for sustainability means educating for the emergence of a different, possible world' (Gadotti 2010: 204). To this end, they argue that ESD is not broad enough to allow for the dynamic pedagogy innovations needed. It is argued that 'Without a proliferation of sustainable education, Earth will be perceived as nothing more than the space for our sustenance and for technical-technological domination, the object of our research, essays, and sometimes of our contemplation' (Antunes and Gadotti 2005: 135).

Perceived as too radical by some (Francis 2011), ecopedagogy arguably occupies the reconstructivist paradigm (Sterling 2004), which draws upon elements of both constructionism and behaviourism. It is an approach that is rooted in critical pedagogic approaches, championed by Freire (1972) and thus also aligned to DE. This stance adopts a Participative Action Research (PAR) approach,

and places a focus on alternative development models. For example, as Kellner (2010: 153) argues, in 'this uncertain situation, it is up to critical educators and concerned citizens to reenvision the importance of education as a means through which we can engage our current set of crises, as we develop pedagogies adequate to the challenges of the contemporary moment that can promote social transformation guided by concerns of sustainability and justice'. Vare and Scott (2007) support this in stating that the issues we face are co-evolving, while the solutions to them must be adaptive. Subsequently, learning must be open ended and reflexive, allowing us to learn how we might live in the future, a contemporary perspective which is very much aligned to those of ecopedagogy.

The current situation

In the run up to Rio+20, in June 2012, it was still widely thought that too little had been achieved on the EfS agenda. To this end, Tilbury (2012: 60) stated that 'there continues to be a great disconnect between our quest for a sustainable future, and how we actually live our lives and develop our societies'. Subsequently, although there is greater social awareness of challenges and despite well-rehearsed arguments that still hold their poignancy, 'as a global community, we have not learned to change' (Tilbury 2012: 59). There were also concerns among EfS academics that the focus of Rio+20 would be placed too heavily on the 'green economy'. To emphasise this, Hopkins (2012a: 34) states 'ESD connotes not only a green economy but a fair economy to both present and future generations'. Hopkins (2012a: 34) argues that despite attempts to integrate ESD as a process of educational renewal, 'world leaders still perceive ESD as a synonym for EE and have a limited vision of what can be done'. To this end, he argues that those within the ESD movement are still seen as environmentalists and the terms 'eco' and 'green' suffuses, though initiatives including, eco-schools, green leagues and green funds. Notwithstanding this, some positive developments have emerged from Rio+20 (Sjerps-Jones 2013), including the launch of new initiatives and treaties for HE.

Future developments

In 2014, UNESCO will host a World Conference on ESD in Nagoya, Japan, the aim being to build on progress and to accelerate ESD efforts, as a continuation of DESD, rather than its end (Hopkins 2012a). The UNESCO Executive Board expressed in a meeting in October 2012 the desire to create a programme framework, which would last until at least 2021, for such a continuation. To this end, Martin *et al* (2013) have urged UNESCO to review the effectiveness of DESD in implementing ESD. Specifically, they recommend that UNESCO should raise awareness of existing efforts to embed ESD into mainstream educational provision.

Appendix C: Stakeholder Questions

Give background to the expansion of Education for Sustainability through the Monash-Warwick Alliance.

What is the context in which you are working or living that means you can see the value in setting up this project? (Or otherwise)

What are the activities and actions that are already being planned, or that you feel would need to be planned, as part of this project? (E.g. modules, extra-curricular activities, courses, planning and strategy).

What initial results (changes) would you expect to see once these activities and actions have begun and the project(s) is/are on its way?

What medium-term changes do you expect to see as a result of the project? (6 to 16 months)

What long-term changes do you expect to see as a result of the project? (16 months and longer).

'How do the short-, medium- and long-term changes you identify relate to each other?

What barriers do you foresee in implementing the actions or activities, and what might prevent the positive changes you have identified from coming about?

How, if at all, would you like to contribute to an Education for Sustainability Programme?

Is there anything else you would like to add, for example other people you feel should be included in this envisioning exercise?

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