

11.3 Sustainability and Higher Education in Asia and the Pacific

Ko Nomura and Osamu Abe

Abstract

Higher education institutions in Asia and the Pacific have endeavoured towards sustainability, which has been propelled by government policies and agencies in many cases, as well as several regional and subregional efforts.

To cope with the complexity and uncertainty embedded in sustainable development, networking, multi-stakeholder approaches and community engagement/outreach are often seen in the region to promote education for it. The region has also witnessed the start of several significant research projects and centres in this field, which tend to emphasize community engagement and outreach as well as action-research. The strong commitment to, and the emphasis on the community-based approach in, sustainability education and research can be considered as a means to respect the region's rich social and environmental diversities that are under threat against the backdrop of rapid globalization. Actions for sustainable management, such as campus greening, are also popular in the region.

For the further progress of sustainability efforts in higher education, this paper highlights the importance of the following points:

- to review the impact of existing policies that have been significant in shaping the current actions
- strategic developments of the community-based approach
- to promote the whole-institution approach in each local context

INTRODUCTION

DIVERSITY AND GLOBALIZATION: CHALLENGES FOR SUSTAINABILITY

Asia-Pacific is such a vast and diverse region. This is particularly so when one follows UNESCO's definition, which encompasses Russia to the north, New Zealand to the south, Turkey to the west and the South Pacific Islands to the east.

Its diversity, which is evident in comparison with other UNESCO regions, is reflected in each of the three pillars of sustainable development – environmental, economic and social sustainability. The climate in the region ranges from tropics to arid and polar, including the world's highest mountains (the Himalayas), the deepest sea (the Mariana Trench), the driest deserts (for example Gobi), rainforests and permafrost tundra. It accommodates the world's largest countries (for exam-

ple China and India) and smallest island nations (for example the Pacific Islands), where one can encounter a large number of ethnic groups with diverse languages, cultures and different religions (for example Hinduism, Buddhism, Islam, Christianity). There is also a significant economic disparity between the highly developed nations (for example Japan), the least developed (for example Nepal), the smallest (for example Tuvalu), and the fastest growing economies. In such a situation, effort to achieve sustainability, including education for it, should require diverse action.

This diversity defies simple generalizations; however, it may be possible to illustrate a map of how the region is advancing with regard to education for sustainable development (ESD) at the higher education level and identify some trends by referring to common challenges among the Asia-Pacific countries. Perhaps the most significant one is the challenge of globaliza-

tion. In fact, its impacts seem more significant for the Asia-Pacific higher education institutions (HEIs).

Many Asian economies were hit hard by the economic crisis in the late 1990s. Strong demands for recovery increased the drive for rapid industrialization and exploitation of natural resources. Further integration into the global market economy and the introduction of foreign capital damaged local industries in many Asia-Pacific countries, creating various social problems. Accordingly, research and education on the socioeconomic and environmental implications of economic globalization have become significant.

At the same time, the economic crisis forced governments to reconsider their policies on higher education (HE). In many cases, HE policies have shifted to lay more weight on producing human resources that can lead national development in a competitive global economy. Also, guided by market principles, governments have increased the autonomy of the universities (for example Thailand, Indonesia, Singapore) and/or corporatized them (for example Malaysia, Japan, South Korea, Australia, Singapore) to assist flexible management for increasing competitiveness, while cutting government expenditure on them.

These factors have promoted the internationalization of university education. For example, most Australian universities have off-shore programmes in Asia in addition to increasing foreign students in their home campuses. The Japanese and South Korean governments launched a plan for '300,000' and '50,000' foreign students respectively. Malaysian universities are the pioneers of twinning programmes with foreign (mainly Anglo-American) universities, in which students spend a part of their study time in Malaysia to obtain degrees from foreign universities, which can help save on their expenses. 'Boston of the East' programme was launched in Singapore to increase the number of potential foreign students by inviting the world's leading universities to create a centre of brainpower for Asia's industries. Countries in the Asia-Pacific region started UMAP (University Mobility in Asia and the Pacific) in 1991 to promote student exchange programmes. These have promoted the Anglicization of the programmes in many of the countries (for example Japan, South Korea, Thailand, Malaysia, and Indonesia).

In terms of research, many Asia-Pacific governments started establishing Centres of Excellence (CoEs), which are intended to be hubs for world-class research (for example the Chinese '211 Project', the 'Brain Korea 21', the CoE Programmes in Japan and the Philippines). The globalization of the HE market has increasingly pressurized HEI staff members to

publish their research outcomes in English regardless of their local languages.

Globalization can also harm social diversity, an essential element in sustainable development. Globalization is more often than not about globalizing Western culture, knowledge and values. Since the universities in the Asia-Pacific have been in the vanguard of Western knowledge in the process of modernization and economic growth, the challenge of sustainability in the era of globalization has required them to reconsider their roles both in local and global contexts.

In other words, the challenge of sustainable development requires significant transformation for educational institutions in Asia-Pacific, for regional diversity and the impact of globalization upon it. Accordingly, the region has shown strong commitment to ESD. For example, the adoption of the United Nations Decade of Education for Sustainable Development (UN DESD) is based on the proposal by the Japanese government and NGOs at the Johannesburg Summit (Nomura and Abe, 2009), and Japanese-Fund-In-Trust is a major resource for UNESCO to promote ESD worldwide. A strong commitment to sustainability in higher education is also established in the region.¹

This paper first introduces relevant 'policies and international efforts' in the following section, which will illustrate the levels of consciousness about the need to shift HEIs toward sustainable development within the region. Then, the progress in the 'curricula/learning process', 'research' and 'institutional management and operation' are introduced in turns, with reference to the efforts made on community engagement in each aspect, which the authors consider as a regional characteristic. This is followed by a section on 'future directions', which identifies the issues to be addressed for further progress.

POLICIES AND INTERNATIONAL EFFORTS

REGIONAL EFFORTS/NETWORKS

Since UNESCO is the lead agency of UN DESD, its Asia and Pacific Regional Bureau for Education has given guidance for its progress. Although the ESD programme of the Bureau generally works in a comprehensive manner, with regard to HE, the Bureau started the Asia-Pacific Regional Network of Teacher Education Institutes for ESD (ESD-Net) in 2006.² It has provided training workshops on reorienting educational programmes as well as opportunities to share information and experiences through the internet. The Bureau's Asia-Pacific Programme of Educational Innovation for Development (APEID) has also hosted several international conferences on ESD, covering the HE sector.

UNEP's Regional Office for Asia and the Pacific (UNEP-ROAP) established UNEP Asia-Pacific Regional University Consortium (RUC) with eight HEIs in the region.³ It strives for cooperation in interdisciplinary education and research, and the provision of expertise that can help efforts for sustainable development, with particular attention paid to the Chinese context. RUC started a leadership programme on the environment and sustainable development at Tongji University in China (Niu et al., 2010).

The United Nations University's Institute of Advanced Studies (UNU-IAS), located in Yokohama, Japan, has developed two international networks on ESD, with significant support and commitment from the Japanese Ministry of Environment. One is the Regional Centres of Expertise in ESD (RCEs), a network of formal and non-formal education organizations for promoting and putting into action ESD at the local and regional community level, in which many Asia-Pacific HEIs are involved (Mochizuki and Fadeeva, 2008).⁴ The other is the Promotion of Sustainability in Postgraduate Education and Research Network, or ProSPER.Net (Nomura et al., 2011; see Box II.3.1).⁵

SUBREGIONAL EFFORTS

This vast region can be divided into several subregions in many ways. According to international efforts concerning ESD, it can be divided into the following: Southeast Asia, Northeast Asia, the Pacific Islands, Australia and New Zealand, Central Asia and Russia, South Asia and West Asia.

In *Southeast Asia*, the 10 member countries of the Association of South-East Asian Nations (ASEAN) are engaged in ESD based on the ASEAN Environmental Education Action Plan 2008–2012, which replaced the preceding plan for 2000–2005. The Plan features environmental education and is initiated by the ASEAN Senior Officials on the Environment; however, as it is subtitled 'Environmental Education for Sustainable Development', it aims at contributing to the global endeavours of ESD such as UN DESD. This Plan serves as a main reference document for ASEAN member states in developing their national environmental education and ESD plans, which in turn influence their higher education policies.

In *Northeast Asia*, one cannot find an established framework such as ASEAN's plan for ESD. However, there are several subregional efforts on environmental

BOX II.3.1: PROSPER.NET

ProSPER.Net is a network of postgraduate institutes in the Asia-Pacific region set up to promote education and research in the field of sustainability. Launched in 2008, it consists of 21 HEIs (as of February 2011) from nine countries in the region, including two regional universities.

In addition to information sharing through various means, the network has conducted joint projects among its members. One of them is the *development of business school curricula*, which is led by the Asian Institute of Technology (AIT). It includes activities such as creating new courses on related topics (for example social business and poverty reduction at AIT; sustainable development and East Asian business at Yonsei University, South Korea; and leadership for sustainable development at Gadjah Mada University, Indonesia), curriculum development (for example MBA curriculum on sustainable development at Universiti Sains Malaysia), and case studies by Shinshu University, Japan.

Another is the *programme in public policy and sustainable development* led by TERI University, India, targeted at mid-career government officials. Three fully developed course modules first became available online between August and October 2009, followed by the second and the third cycle of curriculum delivery. Students completing three separate course modules over a one-year period are awarded a diploma from a ProSPER.Net consortium.

The lead institute for the project of *training of educators (and researchers) on sustainable development* is Universiti Sains Malaysia, which aims to develop a generic model for teaching postgraduate educators and researchers in the field of sustainable development through the development of a model and a manual for SD.

Other network activities include the ProSPER.Net summer school and the 'Prosper.Net-Scopus Young Scientist Award in Sustainable Development' which is to be given annually to a young scientist or researcher in the region who has made significant contributions in the field of sustainable development. It has also started a project to develop an alternative university appraisal system, based on the recognition that the current mainstream assessment and ranking systems are not guiding HEIs in the direction of sustainable development (Fadeeva and Mochizuki, 2010).

education such as the Tripartite Environmental Education Network (TEEN), a major project of the Tripartite Environment Ministers Meeting including China, Japan, and South Korea (TEEM).⁶

For the *Pacific Island Nations*, the Pacific Regional Environmental Programme (SPREP) and the Pacific Island Forum (PIF) provide regional frameworks for ESD. SPREP provided Education and Communication for a Sustainable Pacific Guiding Framework: 2005–2007 against the backdrop of the launch of the UN DESD in 2005.⁷ The education ministries of the PIF member countries endorsed the Pacific Education for Sustainable Development Framework in 2006 as the regional response to UN DESD,⁸ followed by its Action Plan for Implementing Education for Sustainable Development in the Pacific Islands 2008–2014.⁹

Although *Australia and New Zealand* are in Oceania in a geographical sense, it seems better to deal with them independently when it comes to ESD. As English-speaking developed countries hosting many HEIs, the situation concerning education and sustainable development is considerably different from that of the Pacific Island Nations. In fact, HEIs in these two countries often work closely together, and the governments of Australia and New Zealand do not participate in the PIF frameworks.

The countries in *Central Asia and Russia* tend to promote ESD in relation to the United Nations Economic Commission for Europe (UNECE) Strategy on ESD,¹⁰ instead of Asia-Pacific frameworks. The EU also provides financial assistance to this subregion through the Regional Environmental Centre for Central Asia (CAREC: see CAREC, 2009; Kasimov et al., 2005).

In *South Asia*, the South Asia Cooperative Environment Programme (SACEP) plays an important role in promoting ESD through the ‘South Asian Environmental Education and Training Action Plan 2003–2007’, and by providing various opportunities for training.¹¹ Also, the South Asia Youth Environment Network, which was set up in July 2002 with support from the UNEP-ROAP, aims at ensuring the participation of HEIs and university students in the subregion for the progress of ESD at an HE level.¹²

In *West Asia*, regional initiatives for promoting environmental education or ESD are not as evident as in other subregions. However, UNESCO’s Teheran Cluster plays a coordinating role in this field for countries such as Afghanistan, Iran, Pakistan and Turkmenistan (although Turkmenistan can be considered a Central Asian country).

Thus, education for sustainability has been initiated and developed considerably in the Asia-Pacific region,

although one can see differences with respect to the rhythms of engagement according to the subregions. What seems to be a common factor is that the countries in this region based education for sustainability on environmental education. In fact, it is suggested that environmental educators took the initiative in developing ESD in Asia-Pacific, while people involved in citizenship education play an important role in the UK and Ireland (McKeown and Hopkins, 2007, p. 19). What has facilitated the involvement of environmental educators in the sustainable development education movement may be that environmental education has developed ‘ESD-ish’ in the region apart from the emergence of the concept of ESD, particularly in the developing part of the world, encompassing other socioeconomic issues such as poverty and population growth (for example Nomura, 2009; Deo, 2005; Chhokar, 2010).

A strong initiative from the environmental sector can also be seen in HE for sustainable development. Nomura et al. (2011) argue that one of the characteristics of cross-border partnership among the Asia-Pacific HEIs regarding sustainability are the initiatives by environmental ministries and organizations, with reference to the cases of ProSPER.Net and RUC, which were initiated by the Japanese Environment Ministry (through UNU-IAS) and UNEP-ROAP respectively. In contrast, many other international HEI networks on sustainability that have appeared so far were initiated by the agencies from the ‘education’ sector. For example, the Association of University Leaders for a Sustainable Future, the Co-operation Programme in Europe for Research on Nature and Industry through Coordinated University Studies, the Global Higher Education for Sustainability Partnership, and the Baltic University Programme were all initiated by either several HEIs themselves or ‘educational’ institutions such as the European Universities Association and the Swedish Ministry of Education. In other words, the region is demonstrating the possibility of cross-boarder HEI collaboration through ESD based on the commitment of the agents from the non-educational sectors, in order to support their policies. Another characteristic of sustainability in HEIs in Asia-Pacific could be that HEIs in the region do not seem to be enthusiastic about participating in global ESD networks in comparison with the active intra-regional efforts (Nomura et al., 2011).

POLICY DEVELOPMENTS

Government policies play a critical role in developing ESD, including in the HE sector, in many Asia-Pacific countries. This trend is particularly evident in North-

east and Southeast Asia. In Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) promotes ESD as part of its policies to cope with the challenges facing Japanese HEIs, such as the severe competition from globalization, recruitment pressure due to the decreasing 18-year-old population, and other demands to cope with various social issues (Nomura and Abe, 2010). The MEXT, together with the Ministry of Environment, has provided support to Japanese universities in terms of education and research for sustainability (see below). Interestingly, this kind of top-down approach, which can be found in the Japanese ESD movement in general (Nomura and Abe, 2009), has not only encouraged universities' effort for sustainability, but also guided them in certain directions. For example, the tendency for Japanese universities to emphasize community engagement in their ESD programmes (see below) cannot be understood separately from the selection criteria of the above-mentioned government assistances that mostly require collaboration with local communities (Nomura and Abe, 2010). In Japan, these sectoral developments are coordinated at the Inter-ministerial Meeting on the UN DESD with reference to the National Implementation Plan for the UN DESD.¹³

In Taiwan, sustainability education became an important topic for policymakers in the late 1990s. Since then, the National Council for Sustainable Development and the Ministry of Education have provided significant support to HEIs such as funding for programmes and facilitating module development (Su and Chang, 2010).

In China, ESD policies have been developing since the late 1990s when education was given an important place in the National Agenda 21. This can be seen in the rapid increase of HEIs in China engaging in ESD; since 1997, more than 50% of universities have improved the curriculum for ESD at different levels and in different subject areas (Niu et al., 2010). In 1997, with support from BP plc, the WWF and the Ministry of Education launched an initiative that resulted in the establishment of an ESD network and 21 ESD centres distributed across universities in different provinces (Niu et al., 2010).

In the Philippines, a National Environmental Education Action Plan 2005–2014 was introduced to support the implementation of UN DESD and ASEAN Environmental Education Action Plan (Galang, 2010). In India, the decision of the highest court to mandate environmental education at all levels of formal education, including a compulsory undergraduate course, has encouraged government support to promote ESD (Chhokar, 2010). In New Zealand, the government

identified environmental sustainability as a key national goal in the Tertiary Education Strategy in 2002 (although it is not a priority).

In some countries, the National Commissions for UNESCO take the lead in promoting ESD, including in the HE sector, in collaboration with the governments. One example is Indonesia, especially since the National UNESCO Commission appointed the Senior Rector Deputy for Education, Research and Society Services of Gadjah Mada University as the national ESD coordinator. Another example is South Korea, where the UNESCO National Commission established the National Committee on ESD in 2009. Together with the government bodies, the Korean Committee has made its efforts based on such legal frameworks as the national 'Green Growth' policies, the Environmental Education Promotion Law, and the Basic Law on Sustainable Development.

Not surprisingly, one may not see the same degree of government commitment in a few subregions in Asia-Pacific due to the different socioeconomic and political contexts. For example, the 'issues of ESD as well as sustainable development itself were not appropriately reflected in policy for Central Asian countries' such as Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (CAREC, 2009, p. 4). Still, even in such a subregion, there are significant policy developments. Take Kazakhstan HE policies for example, the government indicated that all HEIs must introduce a mandatory subject of 'Ecology and Sustainable Development' for bachelor's degrees (CAREC, 2009).

The Pacific Island Nations are unique in that policy development is generally initiated at the subregional level because of the limited scale of economies for each government to address national needs independently (Corcoran and Koshy, 2010). They include the above-mentioned SPREP's and PIF's frameworks. In fact, the University of the South Pacific (USP), which plays a key role in promoting ESD in the South Pacific, is the regional university of the 12 Island nations.

Thus, there are various policy frameworks for sustainability in HE in this region. In addition to sectoral policies made by the ministries of education and the environment, some countries developed the DESD action plan (for example Japan), environmental education action plan/environmental education promotion laws (for example the Philippines, South Korea). Others base their policies on existing sustainable development strategies (for example China, Taiwan, South Korea), or the regional frameworks (for example Pacific Island Nations). While ministries of the environment play an important role in the ESD policy process in many

of the countries in the region as mentioned, regular inter-ministerial meetings in Japan, UNESCO National Committees in South Korea and Indonesia, and the National Council for Sustainable Development in Taiwan have respectively played an intra-government coordination role. Although approaches are different, these policy developments have been significant in shaping sustainability in HE in each university function, as reviewed in this and the following sections.

CURRICULA/ LEARNING PROCESSES

HEI NETWORKS AND MULTI-STAKEHOLDER APPROACHES

Curricula about and for sustainability must deal with the complexity and uncertainty embedded in this issue, which requires a trans/interdisciplinary method. An orthodox approach may be curriculum development by incorporating the relevant elements. However, as Chhokar (2010) reports in the Indian context, there is a lack of capacity among faculty staff to promote inter/transdisciplinary education against the strong influence of each discipline and the traditional examination/evaluation system that emphasizes information recall rather than understanding and critical thinking. Similar cases are reported from other countries in the region; for example, the analysis made in the Australian context shows there is an opposition to curriculum change due to the lack of organizational and resource support for staff (Thomas, 2004; Tilbury, 2004).

To address this issue, St Petersburg State University (Russia) has offered programmes and lecture courses to improve the qualification of university teachers through its specialized organizations to support the university's structural and curricular changes, including the establishment of a new department in ecological safety and sustainable development within the faculty of geography. Over 23% of the total courses at the university are relevant to sustainable development (Verbitskaya et al., 2002).

Considering the limited knowledge about this complex and uncertain issue of sustainability and the limited resources available for each institution, HEIs in the region are active in sharing experiences, expertise and resources by networking and employing multi-stakeholder approaches. In Japan, a forum of around 20 HEIs, HESD (Higher Education for Sustainable Development), was set up in 2007, which has organized annual meetings, symposiums and online exchange of information on sustainability education. Most of the members are recipients of the MEXT's fund called 'Contemporary GP' (GP stands for good

practices), which supports distinctive educational efforts for important contemporary social needs. The funding scheme included 'promoting environmental education for sustainable societies' as one of the six categories in the fiscal years 2006 and 2007 (Nomura and Abe, 2010). As the application guideline stipulated that successful proposals should emphasize student action in society and involve multiple stakeholders, the information exchanged at HESD tends to focus on community engagement in HE.

Several ESD networks concerning HE have also emerged in other countries. In Thailand, for example, the Environmental Education for Sustainable Development Network, consisting of environmental education experts, is actively developing ESD at the field level in collaboration with the Ministry of Natural Resources and Environment. The Teacher Education Network, which is composed of twelve teacher education institutions, is another Thai network contributing to the development of ESD in Thailand.

International networks are also established in the same context. As mentioned earlier, the Japanese Ministry of Environment has supported ProSPER.Net, a regional network of HEIs for sustainable development (21 HEIs in the region are participants as of 2010). UNEP-ROAP's RUC is another example of this kind; its members jointly provide an international Master's programme at UNEP-Tongji Institute of Environment for Sustainable Development, which emphasizes problem-oriented, field-based and interdisciplinary learning for sustainability. In Russia, 19 universities participate in the Baltic University Programme (BUP) and provide students with opportunities of education for sustainability through this cross-border network of HEIs. In the South Pacific, the USP initiated the 'Pacific Network of Island Universities' or NIU project in 2009. The NIU project aims at mainstreaming ESD in teaching and research at HEIs in the region, involving major universities in the subregion such as the University of Papua New Guinea and the National University of Samoa.

In addition to the networks of HEIs, the need for multi-stakeholder commitment is also recognized in the region for improving and supporting the learning process. One of the reasons is that education for sustainability requires connecting curriculum content with social needs and integrating practical and transdisciplinary knowledge from different sources. A series of university summits by Australia's National Environmental Education Council has encouraged the involvement of stakeholders from business, industry and government in sustainability education at a tertiary level (Tilbury and Cooke, 2001).

In Japan, the Ministry of the Environment established a government–industry–academia consortium in this regard, based on the Ministry’s ‘Vision for University-led Environmental Leadership Initiatives for Asian Sustainability’ (Environmental Leadership Vision), in addition to financial support for the inter/transdisciplinary model curriculum development that emphasizes the involvement of various stakeholders. The consortium is aimed not only at supporting the development and implementation of high-quality programmes through facilitating internships, fieldwork and other participatory learning opportunities, but also at serving as an employment matchmaker between the educational institutions that provide human resources and the organizations that employ them in order to facilitate practical environmental leadership training (Ministry of the Environment, Japan, 2008).

COMMUNITY ENGAGEMENT AND OUTREACH

As well as the networking and multi-stakeholder involvement, community engagement and outreach is another common approach that is popular in Asia-Pacific to cope with the obstacles facing the development of curriculum and learning processes towards sustainability. The significance of this approach is recognized by governments and other related agencies in this region, as demonstrated by funding policies of the Japanese government (mentioned above). This has steered the way for many good practices. Interestingly, many of them provide a *certificate* to motivate students to take related modules.

For instance, Ehime University in Japan changed its general education curriculum in 2006 so that students of any faculty and interested members of the public can pursue its ‘ESD Leadership Certificate’, which highlights fieldwork and action-research with local NGO groups for revitalizing local industries such as agriculture, forestry or fisheries (Nomura and Abe, 2010). Kobe University provides an ESD sub-course within the inter-faculty collaboration of Faculties of Human Development, Letters, and Economics. It emphasizes action-research at a local level, in such fields as disaster reduction and prevention, conservation, community building and the three-Rs of reduce, reuse and recycle (Itoh et al., 2008). The Kushiro campus of Hokkaido University of Education provides a teacher education curriculum with focus on sustainable community development with particular consideration for depopulated areas, the increase of which has thrown up many social problems in Japan. The curriculum features fieldwork and the university works closely with local stakeholders. Graduates are given the certificate of

‘ESD planner’. Nishinippon Institute of Technology certifies students who have successfully taken designated modules, which are provided in collaboration with various local stakeholders, as the ‘Environmental ESD Coordinator’.

Chhokar (2010) reports that locally situated practices have seen greater success in India, with reference to the case of the Samvardhan project and the curriculum activities linked to the RCE Pune in India. The Samvardhan project was an experiment in rural HEIs in the state of Gujarat, in which community engagement was centrally positioned in the learning process. Together with their teachers, the students of rural development were involved in development projects, which facilitated connecting curricula to real-life experiences. Some of the Samvardhan alumni are now working as successful community entrepreneurs in the villages of Gujarat. As for RCE Pune, instructors at the University of Pune have worked with local NGOs and help them through projects in which students can learn in real-world settings with regard to social issues such as labour and poverty.

The Universiti Sains Malaysia, which is the leader and secretariat of RCE Penang, expresses strong commitment to poverty alleviation as a part of ESD in its mission statement. It has employed an ‘inside-out’ approach in which the university began implementing ESD in the campus using the metaphor of the ‘University in a Garden’, and later expanded to the communities involving multi-stakeholders (Sanusi and Khelgat-Doost, 2008). Through this approach, ‘the complex and broad concept of sustainability or sustainable development can be translated into concrete practice first by the University and then by the community, thereby leading to better understanding and implementation of the concept’ (Sanusi and Khelgat-Doost, 2008, p. 490).

Gadjah Mada University in Indonesia established the Institute for Research and Community Services as one of its efforts made in accordance with its policy to be a world-class research university. It has made significant educational impacts – all the final-year undergraduate students at the university now must take the community service programme. This is an intra-curriculum activity aimed at applying and developing students’ knowledge outside campus and sensitizing students to social problems, while contributing to actual problem-solving in the communities in a participatory manner. In cooperation with Gadjah Mada and the National ESD Coordinator, who is the Senior Rector Deputy of the University, the Ministry of National Education is planning to disseminate this kind of community service programme to the other universities in the country.

In New Zealand, in collaboration with the Ministry for the Environment and Local Government New Zealand, the Centre for Continuing Education at the University of Auckland provides a programme designed to improve the decision-making of practitioners within a sustainable resource management context. The programme has accommodated over 1300 lay and professional decision makers since 2004, and it is evaluated as effective (Geertshuis, 2009). The core course of the environmental science programme at the University of Canterbury, New Zealand, incorporates many current local case studies, with the assistance of multiple stakeholders including local councils and local native tribes (Nobes, 2002).

In Australia, the 'Green Steps Program' started by Monash University students in 2000, offers opportunities for university students to link their studies to the environment through work experience and networking by such means as training and internships. The programme has involved other universities and organized 40 courses for more than 500 participants, in collaboration with stakeholders such as private companies and city councils.

RESEARCH

PROJECT-BASED AND INSTITUTIONAL ARRANGEMENTS

Like learning processes, research on sustainability and sustainability education requires inter/transdisciplinary approaches. The general ways to facilitate these approaches include participation in research projects on particular themes (mainly environmental issues) that require multiple disciplines, and institutional arrangements such as establishing interdisciplinary research centres.

In Japan, the MEXT allocated a considerable amount of funding for the University of Tokyo from 2005 in order to support sustainability research. Based on this funding, Tokyo University started the Integrated Research System for Sustainability Science (IR3S) project, involving four other national universities as the main members (Osaka, Ibaraki, Kyoto, Hokkaido) and six other cooperating institutions. The member universities conducted interdisciplinary sustainability research and education on such topics as 'global warming', 'population, water and food supplies', and the 'socio-economic system reform and technology strategy'.

There also emerged several research centres committed to sustainability education in the region, which employ researchers with various backgrounds.

For example, the Australian government established the Australian Research Institute for Environment and Sustainability (ARIES) at the Graduate School of the Environment, Macquarie University, to undertake projects on capacity development for sustainability. The research activities by ARIES include a series of national reviews of environmental education for sustainability in Australia, including the HE sector (Tilbury et al., 2005).

In Northeast Asia, Rikkyo University, Japan, established the Education for Sustainable Development Research Centre (ESDRC) in 2007, with the support of the MEXT's funding. ESDRC consists of four project teams (the Asian regional project team, the Pacific regional project team, the corporate social responsibility project team, and the overall project team), and conducts research and practices in each field. In China, with the help of UNEP-ROAP, UNEP-Tongji Institute of Environment for Sustainable Development was established at Tongji University in Shanghai in 2002 and is a prominent base for sustainability research and education.

In the South Pacific, the Pacific Centre for Environment and Sustainable Development (PACE-SD) based at the USP plays a central role in sustainability education research. Their activities include policy research – PACE-SD played a key role in developing the regional ESD frameworks mentioned above (Corcoran and Koshy, 2010).

In Southeast Asia, the Research and Development Centre on ESD Innovation was established at the Faculty of Education, Chulalongkorn University (Thailand) in 2007. It aims at being the centre of excellence on ESD at a national and regional level through its research and practical activities including material development, workshops, and networking teacher education institutes throughout the country.

COMMUNITY ENGAGEMENT, OUTREACH AND ACTION-RESEARCH

Community engagement is also a popular approach in sustainability research in Asia-Pacific. In fact, there seems to be a high social demand for universities to contribute to local issues through research, particularly in a participatory manner. In New Zealand, some councils are proactive in proposing research projects that are relevant to their needs and concerns for research students at the environmental science programme at the University of Canterbury, which is often accompanied with the councils' financial and logistical support (Nobes, 2002).

In Indonesia, HEIs' contribution to local communities for their livelihood, social development and

conservation has been emphasized since long before the term sustainable development gained popularity. The Indonesian government stipulated three missions for universities (*Tridharma*) in the Higher Education Law in 1961, namely education, research and community service. Since then, the universities' function in contributing to addressing various socioeconomic issues has been stressed in Indonesia, where poverty and related issues still prevail. This is reflected in the Environmental Study Centres which have been established at all state universities since the late 1970s. In addition to facilitating environmental studies on campus, the centres have provided various programmes at the community level, as well as training courses for the public such as environmental impact assessment, wastewater management, and forest management.

The USP is also active in community engagement and outreach. For example, given the significant vulnerability of the small island nations in the Pacific to the impacts of global climate change, the USP's PACE-SD and Institute of Applied Science conduct action-research on climate change adaptation targeting local communities in coastal areas, emphasizing the implementation of cost effective adaptation options through community level planning and capacity building.

In Japan, research on sustainability education at the tertiary level is not very popular, in contrast to active practices. In fact, there have been only a few articles on this topic in the Japanese *Journal of Environmental Education* as of yet, and other publications seem to focus on sharing information for practitioners without academic analysis (Nomura et al., 2010). However, the issue of community engagement and outreach has attracted some exceptional attention from researchers, who tend to employ action-research approaches to local issues (Nomura et al., 2010; Oguri, 2010). Like the ESD course mentioned above, Kobe University is active in action-research concerning local issues with the engagement of various stakeholders through its RCE network such as NGOs, the media, and international organizations. In order to facilitate communication with local citizens for the identification of local needs, the university opened a 'Science Shop' in 2007, which provides various events for information exchange as well as daily consultation. The Education and Research Centre for Lifelong Learning at Kagoshima University conducted an action-research project targeting the whole local town. The focal point of the project is the discussion at the Centre's open extension programmes involving town council officials and local residents, leading to comprehensive town planning (Oguri, 2010).

INSTITUTIONAL MANAGEMENT AND OPERATION

CAMPUS GREENING AND LEARNING

For many universities in Asia-Pacific, campus greening is a major approach to sustainability in practice. In fact, it can provide good learning opportunities for staff members as well as students. There are a variety of examples, such as campaigns for recycling and using energy and water efficiently. Interesting practices include an on-campus environmental tax at Kyoto University, Japan, which taxes each department for its use of electricity and water, and this 'tax revenue' is used for introducing eco-friendly facilities. Furthermore, Mie University is set to introduce a carbon-offset programme, in which the university pays 'eco-points' for the reduction of CO₂ at student and staff member households where eco-points can be used for payment at shops on and around campus. It aims not only to mitigate the university's greenhouse gas emissions but also to raise environmental awareness.

In Australia and New Zealand, the Tertiary Education Facilities Management Association, which is the peak university facility management body in both countries, is working towards capacity building of staff through workshops and resource material development (Tilbury et al., 2005). Also in Australia, Australasian Campuses Towards Sustainability provides opportunities for knowledge sharing for HEI staff, students and the wider community (Tilbury et al., 2005).

In Taiwan, the Taiwan Sustainable Campus Project has contributed to curriculum development as well as decreasing the environmental impact of campus operation since 2010 (Su and Chang, 2010).¹⁴ The project involves educational institutions from primary schools to universities nationwide, in total 507 schools as of 2009, which conduct activities such as the changing to renewable energy, rooftop gardening, and creating biotope spaces (Su and Chang, 2010).

In China, following financial support for Tsinghua University's Green Campus Plan, the government launched the 'National Green Campus Project' involving many other universities. Many excellent practices followed from this plan. For example, Tongji University succeeded in its effort for energy and water resource-savings (Niu et al., 2010). In South Korea, more than 20 universities took part in the Korean Green Campus Association, in relation to the motto 'reduce, reuse, recycle' (Park, 2008).

Environmental management systems are often used for campus greening. One of the systems is ISO 14000. The positive educational impacts of the use of ISO

14000 have been reported (for example, see: Fisher, 2003 in the context of New Zealand, and Hayashi and Sakurai, 2005 for Japan). Several universities in Japan have organized ISO student committees, and involved students in the process of environmental management and related actions such as environmental education (Nomura and Abe, 2010). These efforts have resulted in the establishment of the 'Environmental ISO National Student Committee' of Japan. In addition to international systems such as ISO, local systems are also often used by universities. Several Japanese universities have obtained the Eco Action 21, which is the environmental management system organized by the Japanese Ministry of the Environment.

The Environmental Education Network of the Philippines has hosted the Dark Green Schools programme since 2006. It is an accreditation process based on external and internal evaluation involving multiple stakeholders such as communities considering various aspects of university practices such as their policy statements, administration and finance arrangements, academic activities, community outreach and extension programmes/efforts, and income-generating projects (Galang, 2010). Through utilizing this approach, it is expected that it will assist in the 'whole institution' approach towards sustainability, which integrates various functions within the universities, taking into account social demands.

University students are also advocating for a sustainable campus operation. The nationwide environmental society of university students in Japan, called Eco-League, founded a project 'Campus Climate Challenge in Japan' in 2008, following pioneering action in the US and Canada. It has published annual reports on the environmental sustainability ranking of Japanese universities with focus on the emission of greenhouse gases.

FUTURE DIRECTIONS AND CONCLUDING REMARKS

CRITICAL ANALYSIS OF POLICIES AND INTERNATIONAL EFFORTS FOR EDUCATION AND RESEARCH

As we have seen, the Asia-Pacific universities are actively engaged in their efforts towards sustainability, although the degree differs according to subregions and countries, which may be reflecting the socioeconomic and environmental diversity in the region. Their commitments can be illustrated by the emergence of various HEI networks and multi-stakeholder partnerships for achieving sustainability.

The development process of these endeavours has been propelled by several factors including policy arrangement by governments in the Asia-Pacific region. While appreciating such government initiatives, Nomura and Abe (2010) consider the critical analysis and evaluation of them as necessary for the sustainability and effectiveness of university effort in the long run. In other words, it is warned that the universities' dependency on government resources may not always result in an appropriate and long-lasting commitment of universities for sustainability at a local, national and regional level, as government supports could shift to other policy areas at some point.

In fact, government policies do not always match local needs, particularly because of the embedded diversities in the Asia-Pacific context, although the policies have a strong influence in shaping practices. A collection of reports from several countries in the region on HE for sustainability point out that there is often a gap between government policies and the situation at a local level (Ryan et al., 2010). Thus, critical policy analysis together with theoretical/practical research on education for sustainability is important for the future of sustainability in HE in this region.

Against the backdrop of internationalization of HE, several HEI collaborations at the regional level have emerged. They have demonstrated the possibilities of cross-boarder partnership among HEIs through initiatives by environmental ministries and organizations. Based on the research on ProSPER. Net, Nomura et al. (2011) argue that efforts for diversifying sources of funds will be the key to its further development, given the reliance on the resources of one agency so far for the network's operation and core activities. This echoes the situation at a national level as mentioned above.

OPERATION: NEEDS OF THE WHOLE-INSTITUTION APPROACH

Efforts on greening university campuses are popularly initiated in the Asia-Pacific region. However, few cases integrate various functions of universities in the direction of sustainability. Even in Australia, which seems to be a leading country in the region in terms of sustainability at universities, it has been reported that there have been failures to embrace a whole-institution approach (Thomas, 2004; Gudz, 2004). The situation in other countries is more or less the same (see Nomura and Abe, 2010 for the case of Japan), although there are some innovative exceptions.

As Tilbury and Wortman (2008) point out, one of the key elements for the whole-institution approach

is multi-stakeholder engagement. The remarks by Corcoran and Koshy (2010), made in the context of Pacific Island Nations, about the importance of situating the whole-institution approach in the local context seem applicable to the other subregions in Asia-Pacific as well, considering the embedded diversity there.

COMMUNITY-BASED APPROACH FOR EDUCATION AND RESEARCH: STRATEGIES TO COPE WITH GLOBALIZATION

It has been argued that community engagement and outreach programmes are a popular approach among Asia-Pacific universities for sustainability. Community engagement should be significant because the concepts of sustainability and sustainable development are so vague that it would be easier for the students to learn about them in real-world local settings. Besides, universities are expected to contribute to the local communities where they are based without being ivory towers; in fact, the challenge of sustainability in general requires active participation from all sectors within society.

In regard to Asia-Pacific, it also seems possible to argue that the stress on 'community' is a reflection of the respect for regional diversity in the face of globalization that can impair it. Sustainable development highlights social as well as environmental and economic elements, requiring respect for local diversity in these regards. Thus, it is not surprising for sustainability educators to underscore local community as the unit to confront the encroachment of globalization. Oguri (2010) remarks that the reaction to the impact of globalization is the main issue in Japanese social education research, which contributes to the emphasis of community engagement and outreach for research and practice for HE in terms of sustainability.

In this context, the challenge of globalization and sustainability requires the reconsideration of the shape of knowledge and the role of universities, resulting in restructuring the HE sector, since the HE sector in many countries in this region has developed under the strong influence of the Western world. In the era of globalization, where globalization very often means Westernization, the internationalization of education and research has increased the demand for the activities of university staff members that meet 'global standard'. Su and Chang (2010, p. 170) argue in the Taiwanese context that the adoption of the worldwide 'research excellence' trend in HE and the global ranking system based on quantitative

publication measures result in the discouragement of academic faculties to orient their commitment to sustainability education, which requires long timescales and qualitative assessment with respect for local values.

In other words, globalization can result in the 'detachment' of universities and their knowledge from the local contexts against the basic concept of sustainability. Concern regarding this point seems to have been the driving force for many university staff to stress local engagement and outreach in their effort towards sustainability. In the Pacific context, Thaman (2002, p. 237) argues that 'Western science and Western economic rationalism continue to dominate the global approach to development, which now pervades the lives of most people everywhere', and universities are facing challenges to incorporate traditional indigenous/local knowledge and perspectives in education and research as a means of achieving a more holistic and interdisciplinary way of thinking towards sustainability. Fadeeva and Mochizuki (2010) argue the need for an alternative university appraisal system with reference to the Asia-Pacific context and the principles of ESD, such as the idea that education must be culturally appropriate and locally relevant, although the current global ranking and appraisal system has failed to include them.

Thus, the active engagement of universities in Asia-Pacific for sustainability seems to be related to embedded local diversity and the impact of globalization, although further research is necessary to understand the relations in detail. This entails the reconsideration of the role of universities between the agency contributing to the local demands and culture, and the institutions that need to survive in the internationalized education and research sector that assists national development. Given the importance of the HE sector in shaping the future of our society, its successful transition to take on a new role, which is still halfway there, is key to sustainable development in Asia-Pacific.

ACKNOWLEDGEMENTS

The authors wish to thank Alex Ryan, Daniella Tilbury, Peter Blaze Corcoran, Kiran Banga Chhokar, H. Jenny Su, Angelina P. Galang and Dongjie Niu, who have worked together with the authors in a research project on higher education in the Asia-Pacific since 2008, for this paper owes much to their inputs.

REFERENCES

- CAREC (Regional Environmental Center for Central Asia) (2009) *Legal Acts, Programmes and Regulatory Frameworks of Education in the Central Asian Region: A Review*. CAREC, Almaty.
- Chhokar, K.B. (2010) Higher education and curriculum innovation for sustainable development in India. *International Journal of Sustainability in Higher Education*, **11**(2), pp.141–52.
- Corcoran, P.B. and Koshy, K.C. (2010) The Pacific way: sustainability in higher education in the South Pacific nations. *International Journal of Sustainability in Higher Education*, **11**(2), pp. 130–40.
- Deo, S. (2005) Pacific Island Nations, in *A Situational Analysis of Education for Sustainable Development in the Asia-Pacific Region*, UNESCO Asia-Pacific Regional Bureau for Education, pp. 65–72.
- Fadeeva, Z. and Mochizuki, Y. (2010) Higher education for today and tomorrow: university appraisal for diversity, innovation and change towards sustainable development. *Sustainability Science*, **5**, pp. 249–56.
- Fisher, R. (2003) Applying ISO14001 as a business tool for campus sustainability: A case study from New Zealand. *International Journal of Sustainability in Higher Education*, **4**(2), pp.138–50.
- Galang, A.P. (2010) Environmental Education for Sustainability in Higher Education Institutions in the Philippines. *International Journal of Sustainability in Higher Education*, **11**(2), pp. 173–83.
- Geertshuis, S. (2009) Improving decision making for sustainability: a case study from New Zealand. *International Journal of Sustainability in Higher Education*, **10**(4), pp. 379–89.
- Gudz, N. (2004) Implementing the sustainable development policy at the University of British Columbia. *International Journal of Sustainability in Higher Education*, **5**(2).
- Hayashi, H. and Sakurai, S. (2005) Daigaku ni okeru ISO 14000 Dounyu ni Kansuru Kenkyu 1. (Study on the ISO 14001 Introduction at Universities, No.1). *Otsuna Journal of Social Information Studies*, **14**, pp. 115–25.
- Itoh, M., Suemoto, M., Matsuoka, K., Ito Atsuchi, Yui, K., Matsuda, T. and Ishikawa, M. (2008) Contribution of Kobe University to the Regional Centre of Expertise (RCE) on Education for Sustainable Development (ESD) Hyogo-Kobe. *International Journal of Sustainability in Higher Education*, **9**(4), pp. 479–86.
- Kasimov, N.S., Malkhazova, S.M. and Romanova, E.P. (2005) Environmental education for sustainable development in Russia. *Journal of Geography in Higher Education*, **29**(1), pp. 49–59.
- McKeown, R. and Hopkins, C. (2007) Moving beyond the EE and ESD disciplinary debate in formal education. *Journal of Education for Sustainable Development*, **1**(1), pp. 17–26.
- Ministry of the Environment (2008) *Vision for University-led Environmental Leadership Initiatives for Asian Sustainability*. Japan: Ministry of the Environment.
- Mochizuki, Y. and Fadeeva, Z. (2008) Regional centres of expertise on education for sustainable development (RCEs): an overview. *International Journal of Sustainability in Higher Education*, **9**(4), pp. 369–81.
- Niu, D., Jiang, D. and Li, F. (2010) Higher education for sustainable development in China. *International Journal of Sustainability in Higher Education*, **11**(2), pp.153–62.
- Nobes, D.C. (2002) Building on the foundations: environmental science at the university of Canterbury, Christchurch, New Zealand. *International Journal of Sustainability in Higher Education*, **3**(4), pp. 371–9.
- Nomura, K. (2009) A perspective on education for sustainable development: historical development of environmental education in Indonesia. *International Journal of Educational Development*, **29**(6), pp. 621–7.
- Nomura, K. and Abe, O. (2009) The education for sustainable development movement in Japan: a political perspective. *Environmental Education Research*, **15**(4), pp. 483–96.
- Nomura, K. and Abe, O. (2010) Higher education for sustainable development in Japan: policy and progress. *International Journal of Sustainability in Higher Education*, **11**(2), pp. 120–9.
- Nomura, K., Natori, Y. and Abe, O. (2011) Region-wide education for sustainable development networks of universities in the Asia-Pacific. In: Sakamoto, R. and Chapman, D. (eds) *Cross-Border Partnerships in Higher Education: Strategies and Issues*. New York: Routledge, pp. 209–27.
- Nomura, K., Ota, E. and Takahashi, M. (2010) Research on ESD in higher education: taking stock and moving forward. *Kankyo Kyoiku* (Environmental Education), **20**(4), pp. 25–34 (In Japanese).
- Oguri, Y. (2010) How does ESD research deal with ‘local community’? *Kankyo Kyoiku* (Environmental Education), **20**(4), pp. 16–24 (In Japanese).
- Park, T.Y. (2008) ‘ESD of Korean Universities’, presentation at international symposium ‘Sustainability in Higher Education: Learning from Experiences in Asia and the World’, December 2008, Rikkyo University, Tokyo, Japan.
- Ryan, A., Tilbury, D., Corcoran, P.B., Abe, O. and Nomura, K. (2010) Sustainability in higher education in the Asia-Pacific: developments, challenges and prospects. *International Journal of Sustainability in Higher Education*, **11**(2), pp. 106–19.
- Sanusi, Z.A. and Khelgat-Doost, H. (2008) Regional centres of expertise as a transformational platform for sustainability: a case study of Universiti Sains Malaysia, Penang. *International Journal of Sustainability in Higher Education*, **9**(4), pp. 487–97.
- Su, H.J. and Chang, T.C. (2010) Sustainability in higher education in Taiwan. *International Journal of Sustainability in Higher Education*, **11**(2), pp. 163–72.
- Thaman, K.H. (2002) Shifting sights: the cultural challenge of sustainability. *International Journal of Sustainability in Higher Education*, **3**(3), pp. 233–42.
- Thomas, I. (2004) Sustainability in tertiary curricula: what is stopping it happening? *International Journal of Sustainability in Higher Education*, **5**(1), pp. 33–47.
- Tilbury, D. and Cooke, K. (2001) *Building Capacity for a Sustainable Future*. Sydney: Macquarie University.
- Tilbury, D. (2004) Environmental education for sustainability: a force for change in higher education. In: Corcoran, P.B. and Wals, A.E.J. (eds) *Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice*. Kluwer Academic Publishers, pp. 97–112.

- Tilbury, D. and Cooke, K. (2005) *A National Review of Environmental Education and its Contribution to Sustainability in Australia: Frameworks for Sustainability*. Australian Government Department of the Environment and Heritage and Australian Research Institute in Education for Sustainability.
- Tilbury, D., Keogh, A., Leighton, A. and Kent, J. (2005) *A National Review of Environmental Education and its Contribution to Sustainability in Australia: Further and Higher Education*. Canberra: Australian Government Department of the Environment and Heritage and Australian Research Institute in Education for Sustainability.
- Tilbury, D. and Wortman, D. (2008) Education for sustainability in further and higher education: reflections along the journey. *Planning for Higher Education*, **36**(4), pp. 5–16.
- Verbitskaya, L.A., Nosova, N.B. and Rodina, L.L. (2002) Sustainable development in higher education in Russia: the case of St Petersburg State University. *International Journal of Sustainability in Higher Education*, **3**(3), pp. 279–87.
- 3 RUC <<http://www.rrcap.unep.org/leadership/about/ruc.cfm>>
- 4 RCE <<http://www.ias.unu.edu/efsd/rce>>
- 5 ProSPER.Net <<http://www.ias.unu.edu/efsd/prospernet>>
- 6 TEMM <<http://www.temm.org/>>
- 7 Education and Communication for a Sustainable Pacific Guiding Framework: 2005–2007 <<http://www.sprep.org/topic/pdf/EduCommsFramework.pdf>>
- 8 The Pacific ESD Framework <<http://unesdoc.unesco.org/images/0014/001476/147621E.pdf>>
- 9 The Action Plan for Implementing ESD in the Pacific Islands 2008–2014 <http://www.unescobkk.org/fileadmin/user_upload/esd/images/asia_pacific/Pacific_ESD_Regional_Action_Plan.pdf>
- 10 UNECE Strategy for ESD <<http://www.unece.org/env/esd/Strategy&Framework.htm>>
- 11 South Asian Environmental Education and Training Action Plan 2003–2007 <http://www.sacep.org/pdf/SACEP_education%20&%20training%20action%20plan.pdf>
- 12 South Asia Youth Environment Network <<http://www.sayen.org/>>
- 13 The National Implementation Plan for the UN DESD (in Japanese) <<http://www.cas.go.jp/jp/seisaku/kokuren/keikaku.pdf>>
- 14 Taiwan Sustainable Campus Project <<http://www.esdtaiwan.edu.tw/>>

NOTES

- 1 See, for example, Vol. 11 No. 2 of *International Journal of Sustainability in Higher Education*.
- 2 ESD-Net <<http://www.unescobkk.org/education/teacher-education-and-training/esd-net-and-teacher-education/>>