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Keraminiyage, KP, Haigh, RP and Amaratunga, RDG

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# Role of Built Environment Education Curricula in Post-Disaster Recovery Management

K. Keraminiyage, D. Amaratunga and R. Haigh

*The Research Institute for the Built and Human Environment, University of Salford, Salford, M5 4WT, UK; [k.p.keraminiyage@salford.ac.uk](mailto:k.p.keraminiyage@salford.ac.uk)*

This paper explains the rationale behind the European Commission-funded EURASIA research project, emphasising the importance of the role of built and human education curricular in post-disaster recovery management. The project is an international collaboration between five European and Asian higher education institutions. This research specifically uses the post-tsunami recovery of Sri Lanka as a case study to identify the current gaps in built and human environment education, specifically related to post-disaster recovery management.

The objective of this paper is to improve the academic rigour of the EURASIA research through presenting the justification of this research to a wider research community along with its proposed methodology and the expected outcomes.

**Keywords:** post-disaster recovery, Indian Ocean Tsunami, built and human environment curricular, international research collaboration.

## INTRODUCTION

Recent large-scale natural disasters such as the Indian Ocean Tsunami of December 2004 reminded the world that the natural disasters can occur any time, any place and that there are no 'safe heavens' in the world. Moreover the devastation triggered through this natural disaster reminded us once again of the strength of the link between the built environment and natural disasters. Despite the fact that the importance of the built environment and related disciplines towards successful post-disaster recovery has been a significant body of research during the recent past (for example see: Karim 2004; Lizarralde and Boucher, 2004; Nikhileswarananda, 2004; Young, 2004), recent natural disasters prompted researchers to review the existing body of knowledge related to post-disaster recovery management and the built environment as a highly relevant matter of global importance.

## THE INDIAN OCEAN TSUNAMI AND THE CASE OF SRI LANKA

The case of Sri Lanka provides a valuable insight to the link between the built environment and disaster management. Before the Indian Ocean Tsunami, Sri Lanka was known to be a 'safe haven' where outrages of nature scarcely occurred, except for occasional floods and landslides during the rainy seasons. However, the Tsunami affected 75% of the coastline of Sri Lanka. It also resulted in the destruction of more than 100,000 houses (UNEP, 2005). The destruction of houses also resulted in the discontinuance of several livelihoods such as fishing, farming, tourism and handicrafts-related activities. In addition to commercial and non-commercial property damage, the number of deaths apportioned to the Indian Ocean Tsunami is estimated to be in excess of 250,000, with at least 40,000 of those in Sri Lanka (BBC, 2005). A lack of awareness has been identified as a major reason behind the huge loss of life (Karim, 2005). Indeed, the term "Tsunami" was heard by most of the ordinary Sri Lankans only

after this devastation. Both awareness and preventive steps are needed to prevent huge loss of human life in the future. However, the problem continues beyond the pre-disaster stage into recovery, where Sri Lanka has again demonstrated the need for proper information and knowledge dissemination - often highlighted as the reason behind unsuccessful post-Tsunami recovery activities. A lack of prior knowledge and proper point of references have rendered most of the recovery plans 'guessing games', eventually failing without adding appropriate values to the recovery attempts (Banerjee, 2005).

## **BUILT ENVIRONMENT AND DISASTER MANAGEMENT**

The UNEP report (2005) highlights the context in which the current post-Tsunami rehabilitation is operating. Within this report, factors such as the pre-existence of very high densities of unplanned settlements in the southern part of Sri Lanka have been highlighted as having significant influence over the operation of rehabilitation programs. To add to this, the post-Tsunami rehabilitation operations have been affected due to the lack of response capacities in local government institutions to address needs of such a magnitude. This is mainly because, before the Tsunami, as a 'safe haven' the strategic and operational level capacities of the Sri Lankan institutions responsible for public and commercial facilities were not expected to cater for devastation of this nature or scale. Due to these factors, capacity building has been identified as an important requirement of post-Tsunami rehabilitation in Sri Lanka (UNESCO, 2005; ADPC, 2005). As identified by Lagcao,

*Capacity building is a continuing process that creates an enabling environment with the appropriate policy and legal framework in place. It is not just training but rather a combination of interventions focused to improve an organization's performance in relation to its mission, environment, resources, and sustainability (2003).*

Furthermore the primary goal of capacity building has been identified as increasing an organisation's access to information and technical know-how by improving internal management structures, processes and procedures, as well as strengthening partnerships among the various players in the development process (Lagcao, 2003). Accordingly, the aim of providing access to information and technical know-how within the context of post-Tsunami Sri Lanka largely resides within the capacity and capability of higher education (HE) institutions in Sri Lanka.

In order to achieve the desired capacity and expertise for public and commercial facilities, re-creation, long-term maintenance and management of teaching, training and research will have to be strengthened. Since teaching and training sessions can be more effective in the short term, development of research within the discipline is required to establish the capacity to ensure successful maintenance and management of these facilities continuously. Thus from an academic point of view, the post-Tsunami rehabilitation in Sri Lanka demands an established academic knowledgebase in facilities and infrastructure management.

Facilities and infrastructure management (FM) is frequently described as

*an integrated approach to operating, maintaining, improving and adapting the buildings and infrastructure of an organisation in order to create an environment that strongly supports the primary objectives of that organization (Atkin and Brooks, 2000).*

The practical and strategic relevance of FM to organisations in all sectors of the economy is now increasingly recognised. FM is not just about the maintenance and operation of buildings, although much of its activities are building-related. More accurately it is about the management of a range of services, of a variety of forms,

which are necessary to support the primary activities of an organisation. These services are invariably people intensive, which mean that human resource management issues and the so-called 'soft' issues are highly significant.

However, within Sri Lanka, there are no universities with postgraduate degree programmes in FM. Despite the increasing recognition of the importance of establishing FM as an important knowledge area, it has been identified that the HE institutions in Sri Lanka do not have the required capacities in delivering training, teaching and research extensively in the area of FM in terms of initial local expertise and knowledge. Therefore there is a clear and timely requirement to enhance the capacities and research profiles of Sri Lankan HE institutes to support re-creation and long-term maintenance of the public and commercial facilities and related infrastructure through external (foreign) facilities management expertise.

On the other hand, application of direct foreign knowledge within the given context may not be the ideal solution; there may be mismatches in knowledge application within the Sri Lankan context due to some influential country-specific characteristics such as economic condition, government policies and cultural sensitivity. Therefore it is important to make sure that the capacity building related to the facilities management discipline in Sri Lanka is an attempt to re-create the foreign knowledge within a Sri Lankan-specific framework.

## **THE EURASIA PROJECT**

In addressing the above highlighted requirements at a manageable scale, a European Commission-funded international collaborative research project, the EUROpean and ASian Infrastructure Advantage (EURASIA) provides the required basic infrastructure. Five project partners are working in collaboration within this project: three European HE institutions and two Sri Lankan HE institutions. The two Sri Lankan partners - the University of Moratuwa and the University of Ruhuna - are the leading HE institutions that produce construction specialists for the country. The three European partners are located within United Kingdom, Estonia and Lithuania: the University of Salford (United Kingdom), The Tallinn University of Technology (Estonia) and Vilnius Gediminas Technical University (Lithuania). There have been a number of FM developments since the early 1990s, with the University of Salford being the leading UK-based institution. However as highlighted above, the problem at present is that current UK provision lacks contextual knowledge on facilities and infrastructure management (particularly in association with natural disasters such as the Tsunami) in the South Asian developing economy. Collaboration with Sri Lankan institutions will increase the relevance of such programmes with up-to-date embedded case studies. Both Sri Lankan partners are located within the Tsunami-affected areas; one, being situated within the worst affected southern province, will be able to contribute to the development of case study material in support of the programme. This will be a direct contribution towards support for implementation of capacity building.

In addition to the benefits provided to the Asian partners, this collaboration is beneficial to the European partners; a vital win-win situation is created, which in effect forms the important mutual benefit basis which constitutes an important part of any collaborative work.

## **PROJECT AIMS AND OBJECTIVES**

The main aim of the project is to foster cooperation in HE institutions in both Europe and Asia, improve reciprocal understanding of cultures, exchange best practice and strengthen mutual awareness of programmes specifically related to disaster recovery management and capacity building. The specific objective of the project is to enhance

the capacity of the partner institutions for training, teaching and research activities required for the creation and long-term management of public and commercial facilities and elements of infrastructure associated with post-Tsunami activities in Sri Lanka. The project will achieve this by:

- developing and improving the Sri Lankan, EU staff's and postgraduate students' professional and research skills associated with the creation and management of facilities and infrastructure. The teaching experience of the EU university partners will be utilized to develop a curriculum on the creation and long-term management of public and commercial facilities and elements of infrastructure.
- improving and consolidating academic networks by encouraging systematic exchanges so as to establish a sustainable link between EU and Sri Lankan partner universities.
- developing joint institutional systems and procedures for the provision and monitoring of training, teaching and research activities associated with the creation and management of facilities and infrastructure.
- providing career development opportunities to junior staff through postgraduate study and training programmes with partner universities.
- disseminating knowledge and interpreting information through joint publications and by conducting lectures, seminars, workshops and conferences.

## **METHODOLOGY**

This project is designed to be delivered through seven work packages (WP). Each work package is administered by at least one lead partner, with all partners assuming responsibility for at least one package. The outline objectives of each work package are as follows:

**Project Management and Evaluation (WP1)** manages partner roles, coordinates the delivery of project outcomes, and develops and manages infrastructure to: establish working procedures and reporting structures; provide management time, administration, coordination functions; organise the Steering Committee, progress reports and maintain all records of expenditure; manage work package activities and deliverables against agreed milestones; and submit a final report to the funding body and relevant agencies.

**Curriculum Assessment, Systems and Procedures (WP2)** manages the development of (i) a joint curriculum at postgraduate level and (ii) joint institutional systems and procedures, for the provision and monitoring of training, teaching and research activities associated with the creation and long-term management of public and commercial facilities and elements of infrastructure.

**Module Development (WP3)** manages the development of a structured database of world-class teaching materials in support of a curriculum on the creation and long-term management of public and commercial facilities and elements of infrastructure.

**Split Site PhD Coordination (WP4)** manages a split-site PhD programme to develop long-term human resource capacity in the two Sri Lankan HE Institutes to carry forward the joint curriculum and to provide career development opportunities for Sri Lankan HE junior faculty members to follow postgraduate level study in partner Institutes.

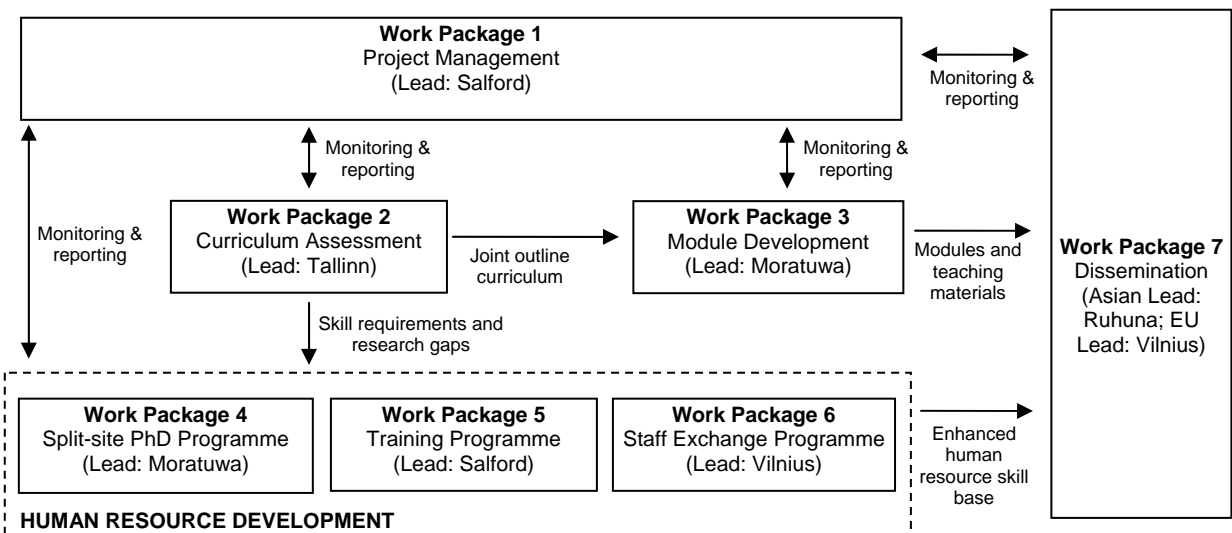


**Training Programme (WP5)** manages the development and delivery of a training programme on the creation and long-term management of public and commercial facilities and elements of infrastructure to develop capacity in the Sri Lankan and EU HE institutions to carry forward the joint curriculum and to enhance the skills of educators involved in the delivery of the joint curriculum.

**Staff Exchange Coordination (WP6)** manages academic staff exchanges to provide external perspectives on developing a joint curriculum into the creation and long-term management of public and commercial facilities and elements of infrastructure and improve the mobility of teaching and research staff at partner institutions and so forth.

**Dissemination (WP7)** manages the dissemination of findings to communicate the results of the project, including the joint curriculum, research findings, exemplar strategies and practices.

Figure 1 below illustrates how the work packages integrate to meet the objectives of the project.



**Fig. 1: Integration of work packages.**

As illustrated in Figure 1, all the work packages are integrated with respective inputs and outcomes. As an example, the joint outline curriculum to be produced as the outcome of the work package 2 is expected to be an input to the work package 3, which will take the contents of that into consideration when producing the modules and teaching materials as its outcomes.

## EXPECTED OUTCOMES AND BENEFITS

It is expected that the outcomes of this project will be beneficial to different groups in different ways and in varying degrees. Groups which are likely to receive the potential benefits of this research are identified as target groups. The expected benefits to each target group are discussed below.

### Teaching and training staff

It is expected that this project will enable the Asian teaching and training staff to achieve the specialised knowledge in the area of disaster recovery management within a built environment setting, and in turn that they will be able to train trainees with better

knowledge. Staff will benefit from exposure to cross-cultural teaching activities through engagement in the exchange of experience and expertise to conduct teaching and training. They will be able to develop capacities at masters and PhD levels in the related subject area, thereby improving human resource capacity within academic institutions. Accordingly, this situation will improve within Asian universities as they will be able to utilise the teaching experiences of EU university partners to develop a curriculum that will contribute to the socio-economic development of Sri Lanka in achieving the long-term objectives after the Tsunami disaster.

### **Postgraduate and undergraduate students**

Postgraduate students will benefit through enhancing their knowledge and skills in the related field by means of combining and sharing resources in a network of five strategically chosen universities within EU and Asia (Sri Lanka). The project will further expose students to a different research and training environment when they interact with the EU partner institutions. Moreover, the development of new expertise, specialised academic staff members, new curricular, a greater knowledge base and enhancement of quality of staff members is anticipated. This will indirectly benefit the cohorts of undergraduate students.

### **Researchers**

Researchers across the partner network will gain access to the information regarding the latest developments and case study materials within the related knowledge area, particularly within an Asian context via the partners.

### **Higher Education institutions**

This project will allow EU institutions to improve human capacity on the current status of disaster recovery management by incorporating Tsunami related elements. It will further create a suitable basis for the introduction of suitable curricula at the two Sri Lankan universities within the related disciplines, thereby addressing the problem of the lack of local experts in the field in Sri Lanka by developing academic departments with multi-disciplinary staff who can then train others. Good relationships and long-lasting cooperation will be established among the participating universities, whilst Sri Lankan universities will be provided with systems, procedures and qualified resources so that they can become central actors of disaster recovery management and its associated developments. Furthermore, the project will enable the two universities in Sri Lanka to introduce new degree programmes as an immediate reaction to the necessity of such programmes following the recent natural disaster. Also the introduction of split site PhD programmes will strengthen the knowledge base of existing staff via staff exchanges.

### **Policy makers and governments**

The Sri Lankan Government's long-term reconstruction and recovery efforts post-Tsunami include a capacity building programme which will train workers in related fields such as management of facilities and infrastructure. The provision of human resources is also included. It is hoped that building local capacities through a decentralised implementation strategy will produce good technical standards and infrastructure. In this context, this project directly contributes to this aim of the Sri Lankan Government. In turn, this capacity would improve preparedness and reduce the future vulnerability of coastal communities to natural disasters such as tsunamis. In addition, the project will help to create awareness and knowledge of the importance of facilities and infrastructure management within the Sri Lankan context. The project will further contribute towards the establishment of a regional resources centre in the field of commercial and public infrastructure and facilities.

## **Consultancies**

Consultancies will be able to acquire new knowledge in the related fields. They will be invited to take part in the planned dissemination activities, creating added value. This will help to identify both best practice and the potential for collaboration between companies involved in facilities management, infrastructures, planning and development, and IT management.

Considering the overall project benefits, it is clear that the EURASIA project addresses the timely concerns and requirements of both European and Asian continents within a collaborative environment, in terms of developing built environment curricula to meet the current global needs of disaster recovery management.

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