

EU-NICE, Eurasian University Network for International Cooperation in Earthquakes – A Development Cooperation Erasmus Mundus Partnership for Capacity Building in Earthquake Mitigation Science and Higher Education

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ABSTRACT: Successful practices have shown that a community's capacity to manage and reduce its seismic risk relies on capitalization on policies, on technology and research results. An important role is played by education, than contribute to strengthening technical curricula of future practitioners and researchers through university and higher education programs. EU-NICE is a European Commission funded higher education partnership for international development cooperation with the objective to build capacity of individuals who will operate at institutions located in seismic prone Asian Countries. The project involves five European Universities, eight Asian universities and four associations and NGOs active in advanced research on seismic mitigation, disaster risk management and international development. The project consists of a comprehensive mobility scheme open to nationals from Afghanistan, Bangladesh, China, Nepal, Pakistan, Thailand, Bhutan, India, Indonesia, Malaysia, Maldives, North Korea, Philippines, and Sri Lanka who plan to enroll in school or conduct research at one of five European partner universities in Italy, Greece and Portugal. During the 2010-14 time span a total number of 104 mobilities are being involved in scientific activities at the undergraduate, masters, PhD, postdoctoral and academic-staff exchange levels. Researchers, future policymakers and practitioners build up their curricula over a range of disciplines in the fields of earthquake engineering, seismology, disaster risk management and urban planning

Keywords: higher education, development cooperation, earthquake engineering, risk reduction.

1. INTRODUCTION

In recent years an increasing number of initiatives have been undertaken in the field of global cooperation for earthquake risk reduction and capacity building. The EU strategy for Regional Cooperation with Asia in 2007-13, (European Commission, 2007), stress on: 1) support to regional Integration, 2) key dialogue, 3) policy and know-how based cooperation in environment and climate change, 4) improved governance, 5) higher education and support to research institutes. Asian countries in the lot targeted by the Erasmus Mundus External Cooperation window call for proposals are prone to destructive earthquakes and other natural and man-made hazards that threaten both the environment and population and their assets, and can often impair development of proper governance. Catastrophic events showed the extremely high vulnerability of metropolises and towns due to lack of awareness, not-proper dissemination, lack of policy enforcement of seismic codes, no enforcement of urban planning and development, lack of awareness of seismicity and disaster exposure, high rate increase of population, (Tucker, 2004). Erasmus Mundus is a cooperation and mobility programme in the field of higher education aimed at the enhancement of quality in European higher education and at the promotion of the European Union as a centre of excellence in learning around the world. The programme seeks to promote intercultural understanding through cooperation with third countries and the development of third countries in the field of higher education (European Commission, 2010). It provides an important vehicle for the promotion or intercultural dialogue between the European Union and the rest of the world and seeks to promote European higher education, to help improve and enhance the career prospects of students and to promote intercultural understanding through cooperation with third countries, in accordance with EU external policy objectives in order to contribute to the sustainable development of third countries in the field of higher education. Based on these premises, the Sapienza University of Rome, Department of Structural and Geotechnical Engineering in partnership with the International Relations office, is leading an international consortium of European Universities and Asian Universities / research centers with a specific interest in earthquake engineering and risk mitigation. The higher education partnership runs from 2010 to 2014 and aims at realizing a 100+ mobility scheme with a core emphasis on earthquake mitigation, covering the whole higher education spectrum: undergraduates, masters, PhDs, post-docs and academic staff. The project is offering higher education and training based on case-studies in earthquake risk mitigation to a large number of participants and in different categories. This provides a unique opportunity to build curricula of actors from high-risk prone developing Countries and areas prone to different conflicts. The reintegration of participants in their home countries is expected to contribute to increasing local capacity to understand, manage and ultimately increase resilience against risks.

2. PROJECT IMPLEMENTATION

The EU-NICE project (www.eu-nice.eu) represents a cooperative effort between partners from the Countries depicted in Figure 1, and is aimed at realizing a one-way mobility flow from Asia to Europe. The consortium comprises 5 European Universities: Sapienza University of Rome (Coordinator), (Italy), University "G. D'Annunzio of Chieti-Pescara (Italy), University of Basilicata (Italy), University of Patras (Greece), University of Aveiro (Portugal); 8 Asian Universities: Nangarhar University (Afghanistan), Tribhuvan University (Nepal), National Society for Earthquake Technology (Nepal), NED University of Engineering and Technology (Pakistan), University of Dhaka (Bangladesh), Prince of Songkla University (Thailand), Hunan University (China), Chongqing University (China); and 5 Associate Organizations and NGOs: Geohazards International Society (India), Rotary Club of Jalalabad (Afghanistan), Rotary International District 2080 Lazio-Sardegna (Italy), Italian Association of Earthquake Engineering ANIDIS (Italy), Chulalongkorn University (Thailand). The roles of partners have been chosen based on the organization of mobility and publicity. Given the absence of mobility flow towards Asian institutions (one-way Asia-EU mobility flow), Asian Partner Universities and organizations are responsible for promotion of the programme to external parties and recruitment of candidates. Asian partners sign learning agreements and facilitate the recognition of credits. The role of EU partners is to allocate the incoming mobility flow, and facilitate the enrolment of the incoming students into their academic programmes. The communication and promotion strategy adopted by the partnership focuses on promoting the Erasmus Mundus and the European higher education system together with the values relevant to the specific focus on earthquake mitigation and disaster management. The actors involved in the communication are the Asian partners, who advertise the program to their scientific groups in the earthquake engineering and seismology scientific community at the international level. This is a worldwide network of scientists that have tight international links through conferences, academic journals and liaisons with private industries and governments. The EU partners contribute to the increase of dissemination through the same community. The partners rely also on the academic network of the Institutions involved at the central level through their international relations offices. Among the associate member organizations are: ANIDIS, an Italian non-profit association active in dissemination of scientific and social values of earthquake engineering and disaster mitigation and GeoHazards Society, an internationally recognized Asian NGO with tight links with a vast cross section of stakeholders in the thematic focus. Other associates are: the Rotary Club of Jalalabad, a service group active in Afghanistan in the field of philanthropy for education, human rights and capacity building in the technical disciplines (<http://www.stevebrownrotary.com>), and the Rotary District 2080 of Lazio-Sardegna. Both organizations support and promote the project among their worldwide community of service groups. The cooperation with Nangarhar University in Afghanistan is established building on the initiatives of philanthropists from the La Jolla Golden Triangle Rotary Club, California. Rotary International is an international service organization strong of 1.2 million

members who make up more than 34,000 Rotary clubs in nearly every country in the world and share a dedication to the ideal of Service Above Self.



Fig. 1: Asia-Europe Partnership and eligible incoming Asian scholars countries for the 100+ mobility flow over the 2010-14 project implementation

Rotary is supported by The Rotary Foundation, a non-profit corporation supported solely by voluntary contributions from Rotarians, whose mission is to enable Rotarians to advance world understanding, goodwill, and peace through the improvement of health, the support of education, and the alleviation of poverty. Some contributors within Rotary (Malany, 2007) have explored its potential role in the field of Disaster Relief and Development, focusing on two aspects: (a) providing the local bonding to make international relief and development programs sustainable in developing nations; and, (b) providing the worldwide business participation management structure for effective and coordinated private sector action and capacity building assistance to developing countries. The European Union delegations in the third countries concerned by the lot have been involved in the dissemination of the project through their local networks, through a number of promotion events. The promotion among groups of scholars outside the network universities is done by partner institutions and by academic coordinators who diffuse the application through students of their colleagues from other national universities not included in the partnership. Asian partners together with technical NGOs involved in the partnership are also in charge of promotion among applicants who earned a degree and are currently working for governments, industry or NGOs and wish to increase the impact of their job benefitting of a higher education experience abroad, especially under a masters, a PhD or a post-doctoral programme. Asian universities together with associate NGOs and local service ad philanthropy groups diffuse the programme to vulnerable groups, with a particular attention to potential applicants from disaster-affected regions. Given the specific thematic focus of the project (earthquake engineering and disaster management) a Scientific Sustainability Committee was created in order to harmonize the mobilities around scientific activities that are relevant with the international key issues of the core scientific focus, specifically regarding the science and policy aspects. The International Relations Offices facilitate the admission of selected students, providing logistic and administrative support upon their arrival. The IROs liaise with the academic programmes where the mobilities are allocated and advise the coordinator regarding specific admission criteria and if needed solicit internal policy measures aimed at ensuring smooth implementation of mobilities and recognition of study credits and diplomas. Figure 2 represents the incoming mobility flow breakdown in terms of Country of origin, study/research category, field of study and host European Institution.

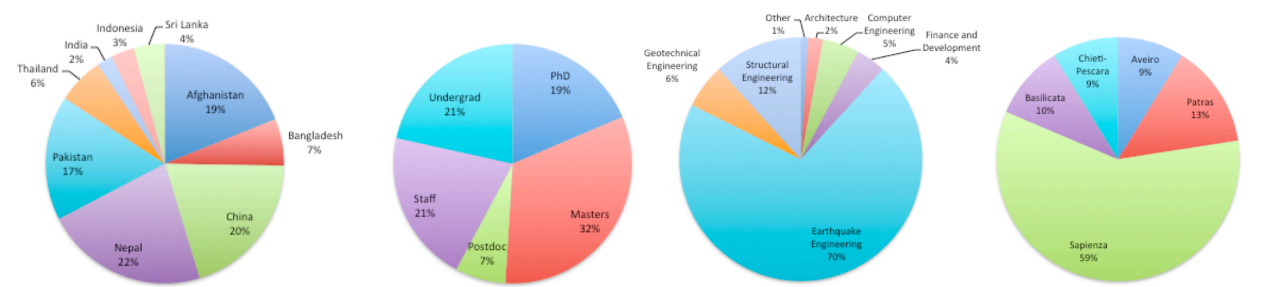


Fig. 2: Scholars' mobilities breakdown in terms of (1) Country of origin (2) study category (3) field of study and (4) assigned host European University. Percentages are over 104 total mobilities.

The selected mobilities are allocated among EU partners based on the scholar's ranking of choice, based on the proposed research or study activity and on the actual capacity to allocate the proposed study projects/mobilities. Given the scientific focus of the program particular attention is given to allocating the incoming mobilities towards programmes of established excellence in the relevant scientific field and in the hosting of international scholars. The existence of international academic programmes has been a driver in the application and subsequent allocation of mobilities, however also courses in the local language are considered given the availability of language classes in all the institutions. Most of the graduate students mobility applications are being

allocated in the following courses: a) Sapienza University of Rome: MECRES Masters in Evaluation, Control and Reduction of Environmental Seismic risk offered at CERI, center of Excellence for Research and Reduction of Geological Hazards (<http://www.ceri.uniroma1.it/mecres>), AIRO Masters in Artificial Intelligence and Robotics, Masters in Computer Engineering, Masters in Finance and Development and Advanced Economics, Doctoral programme in Structural Engineering; b) University of Patras: Masters in Earthquake Engineering and Engineering Seismology; c) University of Basilicata: Doctorate in Computer Engineering, Doctorate “Pythagoras of Samo” in Mathematics and Computer Science (administered by the academic divisions of computer engineering and computer science), Doctorate in Structural and Geotechnical Engineering, Doctorate in Architecture and Urban Phenomenology; d) University “G. D’Annunzio” of Chieti-Pescara: Doctorate in Design, Rehabilitation and Control of Structures; e) University of Aveiro: Doctorate in Civil Engineering.

The Post-doctoral mobilities have been allocated based on the choice of specific research groups and the mobility foresees a research program to be carried out under the supervision of a university principal investigator and in collaboration with teams of researchers. Given the scientific focus on earthquake engineering and disaster management of the EU-NICE partnership, a specific task of the Scientific Sustainability Committee is that of harmonizing the education demand requirements of incoming scholars with the academic offer of the EU institutions and specific groups. This is allowing an a-priori focused and thematically targeted mobility pattern. This process is ensured by a careful screening of the motivation letters and proposed work plans and by an accurate communication between the Scientific Sustainability Committee and the Mobility Selection Committee. Within this thematic focus, the Scientific Sustainability Committee is ensuring that incoming staff and their proposed work program will be beneficial to interaction with incoming scholars, and will also be useful within the teaching context as in some cases visiting staff will be delivering lectures as well as conducting research or experimental activities.

4. ADDED VALUE TO INTEGRATIVE RISK MANAGEMENT

This project provides an important opportunity to build curricula of individuals and actors from high-risk prone developing Countries and areas prone to both natural disasters and man-made conflicts. The reintegration of participants in their home countries and communities is expected to contribute to increasing local capacity to understand, manage and ultimately increase resilience against risks. Participants in the academic programs carry out studies, learn best practice and analyse case studies relevant to earthquake mitigation focusing on methodologies that can be applied to other risks.

5. CONCLUSIONS

The partnership is currently running the 96% of its planned mobilities. The current exchange mobilities, especially PhDs, post-docs and Staff, are being incorporated into joint research proposals to match funding in a number of projects, where EU academic supervisors are partnering with their counterparts at the scholars’ home institutions. Along with strengthening curricula of Asian participants, the project is providing a unique opportunity for the internationalization of the academic offer at the EU host institutions, in particular undergraduate, masters and doctoral programs, where most of the mobilities are allocated. Given the current limitations set by the European policy for international development cooperation, only a one-way mobility flow is allowed under this project. Current cooperation is seeking other channels and funding instruments that can allow European researchers and academics to carry out research activities at the Asian partner institutions, and complement the Erasmus Mundus funding.

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7. REFERENCES

- European Commission, (2007). Regional Programming for Asia Strategy Document 2007-2013.
- Tucker, Brian, (2004). Trends in Global Urban Earthquake Risk: A Call to the International Earth Science and Earthquake Engineering Communities. *Seismological Research Letters*, volume (75), 695-700.
- European Commission, (2010). Erasmus Mundus 2009-2013 Programme Guide.
- Steve Brown Afghanistan website, <http://www.stevebrownrotary.com>.
- Malany, Lee, (2007). Rotary International and its Role in International Disaster Relief and Development. North American Rotary Disaster Workshop, New Orleans, Louisiana January 11-13, 2007.