Approved mobility projects 2007

1. Training and joint research on Linear Quadratic Differential Games
2. Geochemical monitoring of coral growth banding in *Porites* corals as a proxy of anthropogenic induced pollution and environmental modification: case study Kepulauan Seribu - Jakarta Bay, Indonesia
3. Development of laser-based trace gas detection methods with applications in biology and medical sciences
4. Integration of the West Java Environmental Protection Agency into the Asia-Link RECREATE network for the coming call of the Asia-Link funding scheme of the EU Commission
5. Multilateral Network Building to strengthen a regional collaboration and partnership on Innovation, Technology and Knowledge Transfer in the Construction Industry particularly for Sustainable Post Disaster Construction
6. Poisson intensity functions and saddlepoint approximations
7. Fostering resilience, post-traumatic growth, health and psychosocial well-being in Indonesian Red Cross disaster volunteers
8. Food Safety and Quality Control in Agricultural product Chains: Case-study in Mycotoxin
9. Adult meningitis in Indonesia
10. Aspects of Tsunami Simulations
11. Searching for sustainability in Eastern Indonesian coastal waters

1. Training and joint research on Linear Quadratic Differential Games

Dr. J. C. Engwerda, Tilburg University
Dr. Salmah, M.Sc., Universitas Gadjah Mada

Abstract:
For the years 2007-2008 a joint research project entitled “Open-loop LQ Game Descriptor System and Application on Monetary Cooperation in ASEAN” has been granted by the Indonesian International Joint Research Program (participants from FMIPA Universitas Gadjah Mada: Dr. Salmah (coordinator), Dr. Ari Superwanto, Dr. Bagus Santoso, Drs. Sumardi and Dr. Ch Rini Indrati; participants from Tilburg University (The Netherlands): Prof. Dr. J. M. Schumacher and Dr. J. C. Engwerda).
For the scope of this project funding is asked from the KNAW for Dr. Engwerda to visit Universitas Gadjah Mada in Yogyakarta for 2 weeks. Dr. Engwerda will give during his stay at the university a tutorial (2 days) on “Linear Quadratic Differential Games” based on his book “LQ Dynamic Optimization and Differential Games” that was published in 2005 by Wiley (ISBN-13 978-0-470-01524-7). Furthermore he is invited as a speaker at the fifth ASEAN mathematical conference that will take place from July 24-27 at the Gadjah Mada University. The rest of the time will be used to discuss research issues and prepare research papers based on the joint research project.

2. Geochemical monitoring of coral growth banding in *Porites* corals as a proxy of anthropogenic induced pollution and environmental modification: case study Kepulauan Seribu - Jakarta Bay, Indonesia

Dr. Simon Troelstra, Vrije Universiteit Amsterdam (VU)
Dr. Sri Yudawati Cahyarini, Research Centre Geotechnology, Indonesian Institute of Sciences (LIPI)

Abstract:
In this project a unique set of coral core material from the Bay of Jakarta will be analysed to answer the question how natural climate change and anthropogenic induced land-use changes and pollution have affected the reef complex during the 20th century. We aim to establish quantitative measures of natural variability before intense industrialisation of Jakarta Bay in the early 20th century and to determine how it compares to the late 20th century. A multidisciplinary approach (biology, geology, meteorology and environmental sciences) is required to provide coherent advice to policy makers for sustainable future planning and management. In light of the most recent catastrophic flooding of Jakarta, knowledge about the impact of severe flooding events on the natural resources within Jakarta Bay can be provided by this study.

To meet this goal, we will examine several biological and environmental parameters, i.e. 1) coral growth rate as an indicator of reef health in response to sedimentation stress by X-rays and fluorescence, 2) nutrient flux and pollution using trace elements incorporated in coral carbonate such as Ba, Y, Cu, Zn, Mn, Hg and Pb, 3) source region of pollution and river runoff using Pb, Sr and Nd isotopes, 3) variations in sea surface temperatures using Sr/Ca ratios and 4) hydrological modeling of Jakarta Bay. In this study, we will concentrate on yearly samples from the longest available coral cores from 2 inshore (Bokor, Untung Java) and 1 offshore locality (Jukung).

3. Development of laser-based trace gas detection methods with applications in biology and medical sciences
Dr. Frans J. M. Harren, Radboud University
Dr. I. E. Santosa, Sanata Dharma University

Abstract:
Training of Indonesian researchers from the Sanata Dharma University in laser-based trace gas detection. Within this activity a laser-based detector will be shipped to the Sanata Dharma University in Indonesia, where it will be used in research and education for applications in Biology and Medical sciences.

4. Integration of the West Java Environmental Protection Agency into the Asia-Link RECREATE network for the coming call of the Asia-Link funding scheme of the EU Commission
Dr. Justus Wesseler, Wageningen University
Dr. Ir. Setiawan Wangsaatmaja, Dipl. SE, M.Eng., West Java Environmental Protection Agency

Abstract:
The topic of the activity is joint research on wastewater management with comparative case studies in Indonesia, China and Vietnam in the Asia-Link RECREATE network. The Asia-Link RECREATE network is funded by the Asia-link Programme of the European Commission for a three-year period of intensive research and education in environmental economics. Partners are Wageningen University, the Institute of Social Studies in The Hague, Nanjing Agricultural University, University of Economics in Ho Chi Minh City, and Humboldt University Berlin. One experience of the Asia-Link RECREATE project is that despite the severe problems caused by wastewater in urban and rural areas in Southeast Asia, limited research is conducted on wastewater management. To fill this gap, one Post-Doc position based at Wageningen University and respectively one PhD position based at each partner in Indonesia, Vietnam and China are planned to be included in the next Asia-link call for proposals. The proposal for these Post-Doc and PhD positions will be drafted during the Asia-Link RECREATE seminar held in Ho Chi Minh City, Vietnam. Rika Winurdiastri and Winia Farida from the West Java Environmental Protection Agency/Indonesia will present their paper Industrial Water Reuse and Recycle Policy and its Impact on Economic Growth in West Java, Indonesia. Their research is motivated by groundwater stress and water quality problems. The West Java Environmental Protection Agency can contribute valuable insights about the policy design process on the planned research on wastewater reuse.

Three objectives are pursued with the proposed activity. First, the integration of the Indonesian West Java Environmental Protection Agency into the coming Asia-Link RECREATE proposal for the next round of the Asia-link funding scheme of the European Commission. Second, preparing a PhD research proposal on wastewater management with a case study of the Citarum River Basin in West Java/Indonesia. This PhD
position will be staffed with a promising young Indonesian researcher. Third, integrating Michel
Gengenbach as coordinator of the wastewater management part of the proposal.
The approach to reach these objectives consists of two parts. First, a meeting is summoned with all
partners after the Asia-Link RECREATE seminar. The strategy for the meeting concerning the proposal on
wastewater management consists of the following elements. Rika Winurdiastri and Winia Farida will
present their research to the network. Michael Gengenbach will present a first draft of the theoretical
economic background of the proposal. One member of Nanjing Agricultural University and University of
Economics in Ho Chi Minh City will be appointed to write the PhD proposal for China, and Vietnam
respectively. Second, a research visit of Michael Gengenbach to the West Java Environmental Protection
Agency directly after the seminar in Vietnam. A meeting during the seminar in Vietnam is the most cost
efficient opportunity to bring all partners together, since all partners of the Asia-Link RECREATE network,
listed under #4, are present. Merely funding for Rika Winurdiastri, Winia Farida, and Michael Gengenbach
need to be granted. Furthermore, the timing is optimal, since it enables them to actively participate in
shaping the proposal from the very initiating stage onward. The research visit to West Java stimulates the
personal exchange between the West Java Environmental Protection Agency and Wageningen University.
Furthermore, the methodology for the case study in the Citarum River Basin must be developed
considering data availability and possible scope for data gathering.
The success of finalizing the proposal is expected because there are strong incentives of all partners. The
West Java Environmental Protection Agency is eager to collaborate in the international network.
Wageningen University has the opportunity to strengthen its research position in the Asian region. The
Asia-Link RECREATE network fills a gap in the new proposal on a research topic that was observed to be
weakly researched in the region.

5. Multilateral Network Building to strengthen a regional collaboration and
partnership on Innovation, Technology and Knowledge Transfer in the
Construction Industry particularly for Sustainable Post Disaster Construction

Prof. Ir. J. M. Post, Eindhoven University of Technology
Prof. Dr. Ir. Happy Ratna Santosa, M. Sc., Institute of Technology Sepuluh Nopember (ITS)

Abstract:
The project envisages a Multilateral Network Building activity on Innovation, Technology and Knowledge
Transfer in the Construction Industry particularly for Sustainable Post Disaster Construction.
Furthermore, the objectives are threefold. First, to strengthen a regional collaboration and partnership for
capacity building on Innovation, technology and knowledge transfer in the construction industry
particularly with regards to Sustainable Post Disaster Construction. Second, to develop and discuss joint
programs and activities with regards to Innovation, technology and knowledge transfer in the
construction industry particularly with regards to Sustainable Post Disaster Construction. Activities of the
network could include joint research and education, harmonization of analytical methodologies and
standards. Third, to prepare (a) joint research proposal(s) for application of grants to be submitted to
funding agency(ies).
The overall objectives are thus to gain a better understanding of the mechanisms of Innovation,
technology and knowledge transfer in the construction industry with regards to innovative building
systems and procurement to contribute to Sustainable Post Disaster Construction to support Sustainable
Development.
The Network Building activity is based on a long standing collaboration agreement between the University
of Eindhoven and the Institute of Technology Sepuluh Nopember (ITS) which exists since the year 1998.
There are also other existing relations and collaborations between the participating institutes which are to
be intensified and combined in the new network. The MNB activity will take place by means of the
organization of a 4-days workshop with the following activities:
Determination of the state of art of research, applied methodologies and results with regards to above
mentioned topic.
Determination of the potential joint education and research on particular issues with regards to above
mentioned topic.
Determination of the appropriate additional funding agencies to support collaborative education and
research such as the EuropAid Asialink program 2007 International S&T Cooperation in the EU’s 7th
Framework Programme 2007-2013 like INCO FP7 Cooperation Work Programme calls under Theme 6
Environment: e.g. sub-activity 6.1. Pressures on Environment and Climate and 6.1.3 Natural Hazards.
Preparations of draft(s) for proposal(s) for application of grants to be submitted to funding agency(ies) such as mentioned above.

6. Poisson intensity functions and saddlepoint approximations
Dr. R. Helmers, Centrum Wiskunde & Informatica (CWI)
Dr. I. W. Mangku, Bogor Agricultural University

Abstract:
The purpose of this research is twofold. In a previous paper we construct and investigate a consistent kernel type estimator of the intensity function of a cyclic Poisson process in the presence of linear trend. Our estimation method also works for trends increasing slower than linear, but fails for trends increasing faster than linear, for instance for a quadratic trend. Our purpose here is to construct an estimator which will work for trends like a quadratic as well. We will also study the asymptotic properties of our new estimator, such as its (rate of) consistency, the asymptotic bias, variance, and mean squared error.
We will establish saddlepoint approximations for linear combinations of uniform order statistics, with an application to the Bayesian bootstrap for the case of the normalized sample mean. Our aim is to obtain precise information about the relative error of the Bayesian bootstrap, supplementing previous work by Weng (1989) on the absolute error of the Bayesian bootstrap approximation to the normalized sample mean.

7. Fostering resilience, post-traumatic growth, health and psychosocial wellbeing in Indonesian Red Cross disaster volunteers
Dr. Miranda Olff, Academic Medical Center/De Meren/University of Amsterdam
Prof. Dr. Amal Chalik Sjaaf, University of Indonesia

Abstract:
The current project aims (using qualitative as well as quantitative measures) to assess needs, physical and mental health complaints and post-traumatic growth in Indonesian Red Cross volunteers in order to improve volunteer management and care. Improved volunteer management and care should lead to increased resilience, improved health and enhance post-traumatic growth in volunteers.
With the information gathered we intend to develop guidelines that can improve methods to recruit, select, train, manage, support and reward volunteers. The information will also help to develop tools that can be used to screen potentially vulnerable individuals out when assigning volunteers to highly stressful situations.
Humanitarian organisations take on a large responsibility by sending (often young) volunteers to work in disaster areas. Their care and management should therefore be seen as a vital factor of disaster management.
However, so far very little is known about the long-term effects of voluntary participation in an aid mission. How does it impact their health status and psychosocial wellbeing? How are the volunteers doing and what can be learned from their experiences in order to improve volunteer management?
The project will be set up as two PhD positions at the University of Amsterdam in order to secure scientific publications of the results and introduction of the results in a larger context. One of the PhD students is an Indonesian, Ms. Nelden Djakababa, MA living in Jakarta and the other is Icelandic, Ms. Sigridur Bjork Thormar, M. Sc. living in the Netherlands.
Indonesia was chosen due to its vulnerability to disasters and thereby the importance for them to implement good volunteer care. We aim our work to take into account the roles and possible contributions of the cultures, beliefs, and traditions of the country concerned.

8. Food Safety and Quality Control in Agricultural product Chains: Case-study in Mycotoxin
Dr. Chusnul Hidayat, Faculty of Agricultural Technology, Gadjah Mada University
Dr. Robert A. Samson, CBS Fungal Biodiversity Centre

Abstract:
Agricultural commodities are subject to fungal and mycotoxin contamination, especially in tropical countries such as Indonesia where the temperature and humidity are in favour to fungal growth and toxin formation. The contamination of fungal and aflatoxin B1 (Mycotoxin produced by Aspergillus Lavus and Aspergillus parasiticus) was found in grains since they were freshly harvested in the field in different regions in Indonesia, and the level of contamination increased during distribution and storage. Recently, black Aspergilli and Fusarium which known potentially capable of producing Ochratoxin and fumonisin, respectively, were also found. Currently, we run a project on good pre-and post-harvest management system in controlling mycotoxin in peanut and corn. The objective of the project is to prevent mycotoxin in contamination in those commodities. A strategy that includes pre and post harvest management has been set up to achieve this goal. This strategy includes: a mycotoxicological study and training of staff and students in mycology, an introduction of good material handling to farmers and an introduction of cost effective drying method to farmers to dehydrate their crop products.

9. Adult meningitis in Indonesia
Dr. Reinout van Crevel, Radboud University Nijmegen Medical Center
Ahmad Rizal, MD, Padjadjaran Univeristy / Hasan Sadikin Hospital

Abstract:
Meningitis is a serious disease with a high case fatality rate throughout the world. Recognition of the causative agent is a first step towards better patient management. However, in developing countries, (microbiological) diagnosis is often lacking, and reliable data to guide empiric treatment are missing. Even when a diagnosis is made and treatment is started, mortality of adult meningitis is high. Adjunctive treatment and/or neurosurgery may improve patient outcome, but their respective role remains to be established. The emergence of HIV has increased the incidence of adult meningitis, and has complicated its management due to the fact that HIV-infected people are susceptible to a much wider range of micro-organisms, each requiring specific therapy.

Integrated in a long-term program on tuberculosis (TB) in Bandung “TB in Indonesia; protection, care and cure”, we are focussing also on meningitis. We have first improved conventional diagnosis of TB-meningitis, and then performed an explorative study describing clinical and laboratory data of adult patients with clinical diagnosis of meningitis using a uniform diagnostic algorithm. Evaluation of the first 80 patients has raised new research questions, and identified possible ways to improve patient management. Further strengthening of patient management is needed to prepare an intervention study (clinical trial) related to treatment of adult meningitis.

The envisaged objective of this project is to strengthen the research infrastructure in Bandung, Indonesia, as well as the collaboration with leading groups in the Netherlands and Vietnam, with the ultimate goal of preparing an intervention study (clinical trial) on adult meningitis.

Our approach will consist of the following activities to be conducted:
Continuation and analysis of prospective cohort study in Bandung; development of evidence-based diagnostic algorithm; Improvement of neuroradiology and introduction of M. tuberculosis molecular diagnosis in Bandung.
Exchange visits / training of professionals involved in management of adult meningitis
Expert meeting: Preparation of joint research proposal for intervention study in Indonesia

In Bandung, there is long-term experience in patient-oriented research, especially in TB, the main cause of adult meningitis in Indonesia. Technical assistance will come from the two world-leading groups in adult meningitis, one in The Netherlands, the other in Vietnam.

10. Aspects of Tsunami Simulations
Dr. Andonowati, LabMath-Indonesia
Prof. Dr. E. van Groesen, University of Twente

Abstract:
In a previous KNA-W-Mobility Project, 05MP08 ‘Development of a Variational Boussinesq model for tsunami simulations’, supported by a STW-project, basis elements of an accurate, robust tsunami model were developed and implemented in a code with Finite Elements. In a recently granted NWOAL project, so-called Effective Land-Sea boundary conditions (ELSbc) will be developed to be inserted in the code. In this Mobility Project, some further improvements and extensions of the code will be done as part of the following specific topics. The topics address important aspects that are not well studied yet. They are of
First, tsunami wave guiding: to explain the high variability of tsunami effects on the coast, the phenomenon of Near-coast Tsunami waveguiding has been discovered and published; in 05MP08 cases were simulated above synthetic bathymetry ([1,2]); in this project we will calculate cases above realistic Indonesian bathymetry.

Second, weave-generation from bottom excitations: the VBC can be easily extended to include precise bottom motions. Instead of using the most commonly used (Mansinha-Smylie 1972) method to take the bottom displacement (instantaneously) as initial water surface elevation, we will simulate the bottom displacement accurately. The research is directed towards the question if displacements above non-flat bottoms will give rise to much more energy input (side-wards directed) into the water than the MS approximation would provide. If this is indeed the case, this will have major effects on the tsunami-generation, and therefore on simulated wave heights.

Third, selection of tsunami scenarios: for an accurate simulation of tsunamis generated by tectonic plate motions, the precise position and character of the bottom motion is essential. This information is rather well known for previous cases, but prediction of possible future cases is difficult. Using tomographic methods, we will identify the most likely places which are close to tsunami.

11. Searching for sustainability in Eastern Indonesian coastal waters
Prof. Max Sparreboom, International Institute for Asian Studies (IIAS)
Dr. Dedi Adhuri, Center for Society and Culture (PMB) of the Indonesian Institute of Sciences (LIPI)

Abstract:
The project aims to strengthen existing academic collaboration between social scientists working in the field of marine and coastal resource management, nature conservation, and fisheries. The objective is twofold. First, to collectively write a research proposal (2009-2013) on the social-economic and governance conditions of Marine Protected Area development that builds on earlier experiences and collaboration between the partners (WU, LIPI, IPB, TNC, and Murdoch) and gives a more prominent role to the younger generation of Indonesian scholars in this field (LIPI, IPB). This first objective will be reached by carrying out the following activities:

1. Development of a joint research proposal for social-economic and governance research on coastal waters, especially regarding Marine Protected Areas in eastern Indonesia (Wakatobi, Komodo, Derawan, Raja Ampat). The research proposal involves comparative research (MSc and PhD) between the three marine areas and the multiplicity of claims for conservation, local development and livelihoods, and will be submitted for funding to NWO/WOTRO, KNAW, McArthur Foundation, etc.

2. Co-writing of two papers (Adhuri/Visser and Satria/Visser) aiming to better integrate theory development and field research data.

This project brings together an interdisciplinary group of scholars, who have an excellent record in social-anthropological field research and methodology development regarding fisheries, MPAs, and common property regulations concerning marine and coastal resources and space in Indonesia. Of the three core-partners, Dr. Adhuri is the most senior. Dr. Satria has obtained a PhD in fisheries economy, whereas Drs. Djohani is a natural scientist writing her PhD on MPA development; they will be given additional training on social-cultural aspects of artisanal fisheries together with their younger staff and/or colleagues in the respective Indonesian institutions. In the Indonesian academic context, age does not tell much about seniority as it is only recently that a considerable number of younger scholars is enabled to enrol in an MSc/MA or PhD study abroad at a younger age. Many of the academic staff - who may have excellent field research experience - do not necessarily have had the opportunity to be well trained methodologically, especially in the sociology/anthropology of coastal people and resource exploitation. All three Indonesian researchers will be hosted by IIAS, which provides them with an office and facilities. IIAS will also facilitate the researchers in finding accommodation.