



Fig. 1 Photograph of the participants taking part in the preliminary discussions related to the long-term cooperation between UNPAD, ITB and Radboud university Nijmegen (November 29th, 2011)

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Preface

During the KNAW “Open Science Meeting” (Serpong, Jakarta November 28th, 2011) and succeeding meetings in Bandung chaired by the deans of the Faculties of the Institut Teknologi Bandung (ITB), as well as the dean of the Faculty of Medicine and vice dean of the Faculty of Economics of the Padjadjaran University (UNPAD), ideas were exchanged concerning a long term cooperation between UNPAD, ITB and the Radboud University Nijmegen. This long-term cooperation should be focused on scientific support of sustainable development of river basins with special emphasis on the interaction of the water, development and health knowledge domains (see also POWER document). The envisioned cooperation has an interdisciplinary character. It was suggested to focus on two specific river sections; the Citarum river near Bandung (Indonesia) and the Waal river near Nijmegen (The Netherlands). The rationale for this choice is that rivers are the arteries of society and environment and that water management belongs to the priority domains of the Indonesian and Netherlands governments. The way river basins are used and managed has significant consequences for health and economical developments. On the other hand, economic development and wellbeing in general, but the presence of certain diseases in particular, also set conditions for river basin management strategies. Most of the “wicked” problems (floods, pollution, water related diseases etc.) that occur in stream basins or deltas emerge from neglecting the interrelations of these three domains.

The objective of this “consensus document” is to create a clear overview of the ideas and suggestions that were made during the various meetings that have been taken place in the period November 28th – December 2nd, 2011. This document will be sent to all the persons that participated in some or all of these meetings with the request to agree with or comment on the objectives, working methodology and actions that are described here. After incorporation of the comments this document will be used as a road map to realise the mutual desired long-term cooperation.

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Sustainable development of river basins; water health, economy.

Sustainable development becomes an increasingly important issue because of the accelerated population growth, increasing deterioration of the environment and the fast depletion of the planet’s natural resources. This accounts in particular for river basins where the population density is high. The competition for natural resources and space results in complex problems such as floods, water scarcity, water pollution and water related diseases such as dengue, malaria, leptospirosis and diarrhoea.

These so-called “wicked” problems are so comprehensive and intertwined that they only can be successfully addressed through an interdisciplinary approach and intensive cooperation between knowledge institutes, governmental and non-governmental stakeholders. The three knowledge domains that play a pivotal role in addressing these complex problems are Water, Health and Development. Interventions that are made in the river basin or its aquifer directly or indirectly affect the economic perspective of the region (e.g. through water availability for industries, potential flood hazards, etc). On the other hand the location and type of industry or agriculture also will have an effect on the water system (e.g. pollution of the surface water or use of the aquifer). Both the quality of the fluvial landscape and the economic developments will create conditions for public health (floods, water related diseases, water pollution). It is superfluous to explain that public health (well being) is the overall factor that will determine societal resilience towards man-made (economic crises, global warming) or natural disasters (epidemics, typhoons etc).

Therefore, the three domains “Water, Health and Development” are closely interlinked and should be addressed in their socio-economic context while addressing complex problems in river basins.

The opening speech of the dean of the Faculty of Medicine (Prof dr Tri Hanggono Achmad) during the master class of the KNAW “Open Science Meeting” in Bandung (November 30th, 2012), reflected very well the contemporary ideas of the scientific and societal communities; “..the academia can not be satisfied only by publications in peer reviewed journals [...] scientific work also should contribute to the sustainable development of society”.

“Citarum – Waal river” twinning project ?

Based on this idea that science also should be of practical value for society we explored how our mutual wish of scientific cooperation could be translated into a concrete project. Taking into consideration that “Water” is a shared priority domain for both the Indonesian and Netherlands government, it was decided to focus on the Citarum river near Bandung. The Citarum river basin is of great importance for Bandung and has a number of wicked problems that need to be addressed. The Institut Teknologi Bandung (ITB) and the Padjadjaran University could contribute considerably in solving these problems.

Also from the perspective of international cooperation it is interesting to focus on the Citarum river basin. For some years, the Radboud University Nijmegen is playing a key role in the sustainable development of the Waal river (The Netherlands). A possible twinning project “Citarum – Waal” creates opportunities for knowledge sharing and joint research.

Apart from scientific papers the deliverables of such a project also



Fig. 2 Pollution of the Citarum

should comprise practical recommendations. These practical recommendations will address institutional and governance related issues as well as technological innovations that are relevant for sustainable development.

Suggested working methodology

Addressing complex problems requires apart from an interdisciplinary approach also a well thought process to identify the right decisions and actions. Frequently, the mistake is made that complex problems are addressed without having sufficient knowledge at the system's level. In particular, scientists have the reputation of knowing a lot of one specific issue and try to address complex problems from these so-called "drill holes". To prevent these traditional mistakes we will first assess at the system's level what is important for sustainable development and what is not and how the 3 domains water, environment and health are involved.

We foresee a number of actions that are in line with this working methodology and can strengthen our international cooperation. These actions are described below. For some of these actions funding is covered for other actions a joint effort is needed to find additional resources.

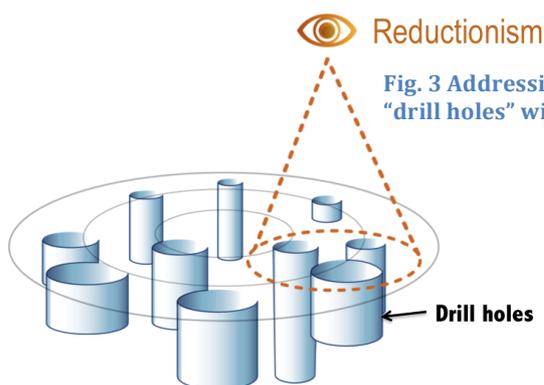


Fig. 3 Addressing complex problems from so-called "drill holes" will not work.

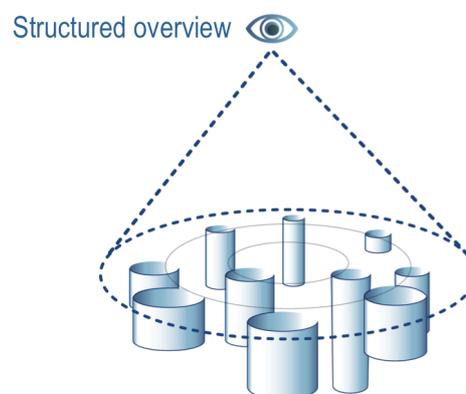


Fig. 4 A structured overview at the system's level is needed to be successful.

Working conference Bandung (Nijmegen?) March 2012

It is suggested to organise a working conference in March 2012 (Bandung or Nijmegen) where the deans of the Faculty of Civil & Environmental Engineering (ITB), Faculty of Medicine and the Faculty of Economy (Padjadjaran Univ.) are invited to present their knowledge of the Citarum river basin related to the water, development (economy) and health domain, respectively. These presentations will give all invited stakeholders a clear overview what is happening in the Citarum river basin and how the three domains are interrelated. The idea is to invite representatives of the provincial level, of the river

basin authority (e.g. mr Hasanuddin of the BBWS) and some public and private stakeholders to this conference as well.¹

Subsequently, the invited stakeholders are asked to participate in a brainstorm session to envision a desired sustainable outcome of the Citarum river basin on the long term. Through back casting the stakeholders can jointly determine which steps can be taken to move in the right direction. In this process various knowledge gaps will emerge. Some of these knowledge gaps can subsequently be translated in concrete PhD-research topics within the Water, Health and Development (economy) domains, including areas of joint work and integration.

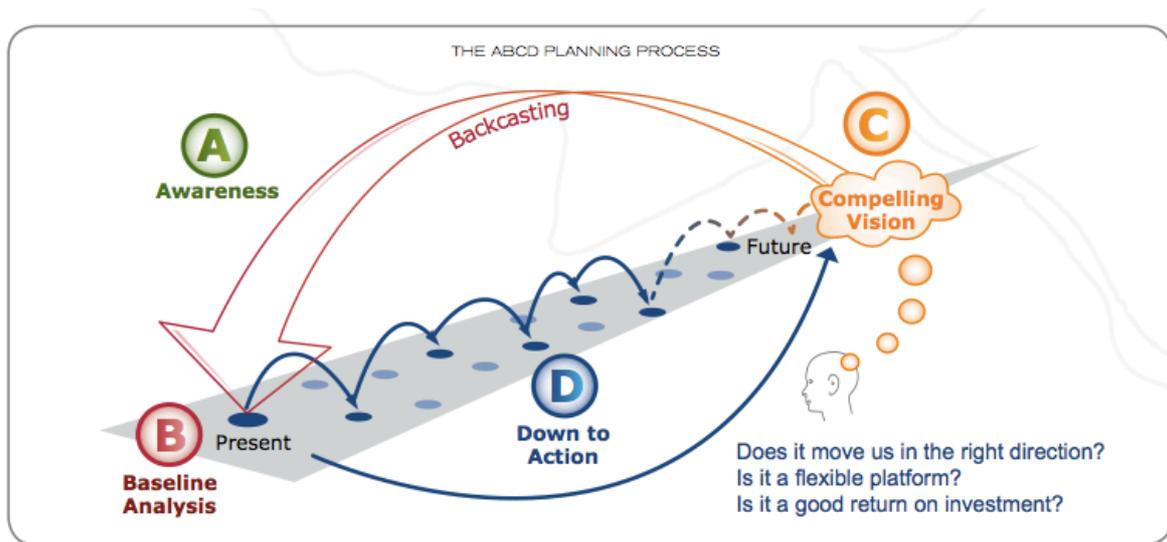


Fig. 5 Four stages to get in place towards sustainable development

The working conference would take 2-3 days (including excursions). If Nijmegen (The Netherlands) is selected Dutch and Indonesian partners will jointly apply for the necessary funds from possible donors such as the Royal Academy of Sciences (The Netherlands).

If Bandung (Indonesia) is selected as the place to convene the Netherlands participants will cover their own travel and accommodation expenses. It is suggested that the Indonesian partners will cover the conference facilities and excursion costs.

In January 2012 the Indonesian and Netherlands POWER members will decide if and where the working conference will take place.

Radboud Honours academy program

Another (ongoing) action that contributes to the proposed Indonesian-Netherlands cooperation is the so-called Radboud Honours program “Urban Regions in the delta; water, health economy”². The Radboud Honours academy program aims at

¹ Note: These presentations could be mirrored by Netherlands presentations related to the Waal river and how Dutch stakeholders are addressing their specific problems.

² see <http://www.ru.nl/reflectionsonscience/programme/virtuele-map/programme/urban-regions-delta/>

strengthening international cooperation between universities that recognise the importance of interdisciplinary research and education. Students can apply for participating in various so-called “think tanks” that focus on a number of societal relevant topics. In August 2011 the think tank “Urban Regions in the delta; water, health economy” was launched. A number of students from UNPAD and ITB were invited to participate in this think tank. The students will elaborate their recommendation report the coming months and finalise it during the so-called “spring school in April 2012 (Portland State University, USA).

The costs of the Radboud Honours academy are covered by Radboud University.



Fig. 6 Picture of the international Radboud Honours Task Force 2011-2012 at the storm surge barrier in Zeeland, the Netherlands.

Radboud University; fellowship PhD program

The Radboud PhD fellowship program also provides an opportunity to strengthen Indonesian-Netherlands scientific cooperation. During the Open Science Meeting in Jakarta (November 28th 2011) Indonesian and Netherlands supervisors have made a “silver list” of promising candidates (see appendix). Depending on the available funds and research priorities a final selection of candidates will be made in January 2012. In line with the selected working methodology these PhD candidates will work in an interdisciplinary context focused on the Citarum river basin. They will be supervised by Netherlands and Indonesian researchers (see appendix).

This Netherlands-Indonesian fellowship PhD-program runs from 2012 – 2016. Because of tax policies the Indonesian fellows will stay no longer than 3 months/year in the Netherlands. During this period they will be trained in interdisciplinary research, research methodologies and scientific writing. During this period they also will join other learning activities (such as research discussions and excursions) with Netherlands PhD-students working in similar areas.

Travel and accommodation costs during this period are covered by Radboud University. The costs of the remaining part of the year have to be covered by the Indonesian partners.

Funding possibilities

There are a number of Netherlands funding organisations and programmes that will be addressed to fund the described scientific cooperation between Radboud University, UNPAD and ITB.

In 2012 we will explore funding possibilities of:

- 1) NESO-Dikti fellowship program, which offers possibilities for PhD-funding. A new round is expected around March-April 2012.
- 2) Annual Radboud PhD fellowships.
- 3) Netherlands embassy in Jakarta, Netherlands Ministry of Foreign Affairs
- 4) Netherlands Water Partnership, The Hague, The Netherlands.

In addition, Indonesian and European funding possibilities will also be explored.

Conclusion

Through the topic of sustainable development of river basins and the proposed cases, Citarum river and Waal river, we have found an intriguing area to strengthen the international cooperation between UNPAD, ITB and Radboud University. Moreover, this topic is part of the priority program of both Indonesia and The Netherlands governments. The above mentioned actions and suggested follow-up actions will form a solid base for a more comprehensive and long-term project initiative that meets the ambitions of the involved academia and stakeholders of the Citarum and Waal rivers. During the meetings in Bandung (November 30th, 2011) with the dean of UNPAD's Faculty of Medicine, Prof dr Tri Hanggono Achmad, the vice-dean of UNPAD's Faculty of Economy, Prof dr Nury Effendi and ITB's dean and vice-dean of the Faculty of Civil and Environmental Engineering, Prof ir Suprihanto Notodarmojo and Prof ir Ade Sjafruddin respectively, the importance of the ambitions described in this document were recognised and underlined.

Appendix 1

List of potential PhD candidates for the Radboud fellowship PhD-program 2012.

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Prof Frans Wijzen	Faculty of Philosophy, Theology and Religious studies
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Dr. Ardini Raksanagara, dr, MPH	Faculty of Medicine Universitas Padjadjaran, Bandung
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Follow-up consensus document March 11th 2012

In February-March 2012 the Netherlands professors of the POWER consortium convened three times to discuss the follow-up of the consensus document. This paragraph describes the conclusions of these conventions that need to be discussed and agreed upon by the Indonesian part of the POWER consortium.

The following headings are used to discuss progress and the issues that need to be agreed upon:

- “Deltares” as new partner of the POWER consortium
- Start-up of the interdisciplinary PhD-pool
- Set-up of the Indonesian-Netherlands working conference
- Additional funds opportunities

“Deltares” as new partner of the POWER consortium “Water, Health & Development”

In the consensus document it was stated that also application of knowledge is an important goal of the POWER consortium. From this point of view it is important to consider participation of knowledge partners outside the academia and which are intensively involved in application of fundamental knowledge. The Netherlands partners suggest to involve DELTARES³ in this project. DELTARES is Netherlands most prominent knowledge institute in the field of water resources management and is already active in Indonesia and the Citarum river basin. Moreover, DELTARES recently adopted the “water, health & development” theme as one of their focal points for research and consultancy. Involvement of DELTARES will facilitate the translation of science to practical solutions. We suggest that dr Gertjan Geerling (former PhD-student of Prof Smits) will be the linking pin between DELTARES and the Netherlands-Indonesian POWER consortium. Dr Geerling will be involved in supporting and supervising some of the PhD-candidates. On the other hand scientific output of this research project will enrich DELTARES’s knowledge and skills in sustainable development oriented research. Therefore, involvement of DELTARES as a full partner in this POWER consortium is of mutual benefit.

Question 1; can the Indonesian members of the POWER consortium agree with the accession of DELTARES (dr Gertjan Geerling) to the POWER consortium?

Start-up of the interdisciplinary PhD-pool

During January and February most PhD-candidates and their Netherlands supervisors wrote a draft research plan. The objective of this exercise was to identify the shared fields of interests and skills between supervisor and PhD-candidate. However, this joint research project is focused on sustainable development of the Citarum river basin with a special emphasis on the interrelations between the water management, health and development domains. This requires a joint fact finding exercise (workshop) to be carried out by both Indonesian and Netherlands supervisors and PhD-candidates. Taking the busy schedules into account (including the Radboud Honours summerschool in Portland, USA; 1st week of April, 2012) it is suggested to commence this workshop

³ <http://www.deltares.nl/en>

after the summer holidays (August/September 2012). This means that we have some months to plan and prepare this workshop. If we decide to organise this workshop in The Netherlands the PhD-candidates will remain after the workshop in The Netherlands (August-October). This period will be used for a thorough elaboration of the individual research plans, mutual alignment between the individual research plans and description of research activities to be carried out after the return of the candidates to Indonesia. Additionally, this period will also be used for lectures in water management, health and sustainable development.

Question 2; can the Indonesian supervisors of the POWER consortium agree with this schedule ? This means joining the one week workshop in The Netherlands in August/September (precise dates needs to be established). This workshop has the objective to define the outline and mutual alignment of the individual PhD research plans.

Set-up of the Indonesian-Netherlands working conference

As stated above the objective of this working conference is to define the outline and approximation of the individual PhD research plans. A well-known pitfall for interdisciplinary research is the so-called "drill hole approach" (see Fig. 4.). The scientists involved approach the complex societal problems from one angle without having a good understanding of the system conditions. Frequently this ends with results that can be published in scientific journals but are of poor practical value. Moreover, the proposed solutions are often supply driven instead of demand driven. To by-pass this pitfall we suggest to follow the road map (Fig. 5) which is designed to define successful steps towards sustainable development (of the Citarum river basin).

The basis of this road map is to have a thorough understanding at the systems level before we are focusing on details. In our case the "systems level" is the Citarum river basin. Therefore, the first day of the workshop is focused on sharing information of the Citarum river basin. There will be presentations about the geo-physical, hydrologic, biotic, land use, cultural, spiritual and administrative aspects. This provides all the participants a good overview at the systems level and a better understanding of present day situation.

The second day of the workshop will be used to define a desired outcome of the Citarum river basin based on sustainability principles (not yet explained). It is important to envision a status of the Citarum river basin, which allows the Indonesian population to prosper the river basin both now and in the future. Our main strategy for achieving this "success" status is backcasting from sustainability principles. This allows us to identify the gap between where we are now and where we want to be in the future (third day). During the fourth day we will define specific strategies and actions that will lead us to the desired outcome (so-called "success" level). Of course we will select strategies and actions to which we can contribute from our knowledge and skills of the water, health and development knowledge domains. Finally, we select among the many different available tools, concepts and metrics that can help us to monitor progress and support us on our journey towards sustainability. During this process various knowledge gaps will emerge that can be translated into specific research questions for the water, health and development domain to be addressed by the Indonesian PhD-students.

Question 3; can we agree with set-up of the working conference as described above?



Fig 6. Proposed set-up of the working conference Aug/September 2012 resulting in interdisciplinary research plans (Water, Health & Economy).

Additional funds opportunities

Netherlands Initiative for Capacity development in Higher Education (NICHE)