Report of the 4th Asia-Netherlands Water Learning Week

Final Report 23 November 2015
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The 4th Asia-Netherlands Water Learning Week

Spurred by agreement in Rio+20 on *The Future We Want*, government water leaders in Asia and the Netherlands are searching for innovative solutions to secure their countries’ water futures and green their economies. How to mainstream R&D to boost water productivity, conservation and reuse across sectors, reduce water footprints, clean up waterways, and create multifunctional and green infrastructure? How much space do rivers need? What makes communities more resilient, and water agencies more adaptive in the face of rapid changes? How can the corporate sector help governments manage for results?

To answer these and more questions, the 4th Asia-Netherlands Water Learning Week brought water leaders together in dialogues and knowledge sharing on ‘Water-related Disasters and Climate Change, managing vulnerability and risks within the Asia Pacific region’.

Project teams from Armenia, Bangladesh, India, Indonesia, Pakistan, Sri Lanka and Vietnam attended this 4th Asia-Netherlands Water Learning Week. Members of these teams contributed project case studies from Asia and learned together with Dutch water experts in an intensive program on how to leverage results from collaborative approaches in water projects for river basins, coasts and cities.

The program has built on the successful experience of the previous three Learning Week events (2012-2014) in which more than 100 Asian water leaders compared experiences with colleagues in the Netherlands in making smart choices for increasing water security and green growth. More information on the previous learning weeks available on our ADB-UNESCO-IHE Partnership website: http://adb-knowledge-partnership.unesco-ihe.org/projects.

This learning week was organized under the water knowledge partnership between the Asian Development Bank (ADB) and UNESCO-IHE Institute for Water Education, supported by the Netherlands Ministry of Foreign Affairs through ADB’s Water Financing Partnership Facility. Great support was given by the Ministry of Infrastructure and the Environment and the Netherlands Water Partnership. Moreover a large number of Dutch water professionals and organisations contributed to the programme as counterparts and host organisations. They displayed and explained best practices, and shared their knowledge with the participants.

We would like to thank all participants for their active contributions and the Dutch organisations and experts that supported us by offering their kind hospitality and for sharing the best of their knowledge with us. You all made this week a great experience for us as well.

Gil-Hong Kim  
Director ADB

Michiel de Lijster  
ADB Focal Point

Jan Luijendijk  
LW Coordinator
The Theme of the Learning Week

Water Related Disasters and Climate Change:
Managing vulnerability and risks within the Asia-Pacific region

‘Modern society has distinct advantages over those civilizations of the past that suffered or even collapsed for reasons linked to water. We have great knowledge, and the capacity to disperse that knowledge to the remotest places on earth. We are also beneficiaries of scientific leaps that have improved weather forecasting, agricultural practices, natural resources management, disaster prevention, preparedness and management . . . But only a rational and informed political, social and cultural response –and public participation in all stages of the disaster management cycle– can reduce disaster vulnerability, and ensure that hazards do not turn into unmanageable disasters. (Kofi Annan, Message on World Water Day 2004)

Disaster trend analysis shows that water-related disasters are increasing every year, causing enormous damage to life and property, some of which could have been prevented through appropriate development choices. Disasters triggered by hydro-meteorological and geological events outnumber all other disasters combined. The World Economic Forum’s 2015 Global Risks report concluded that water related risks rank highest on impact and highly on likelihood. Some notable recent examples are Hurricane Katrina in 2005 (New Orleans), Cyclone Sidr in 2007 (Bangladesh), Cyclone Nargis in 2008 (Myanmar), heavy monsoon Pakistan in 2010, Typhoon Haiyan in 2013 (Philippines), Cyclone Komen 2015 (Myanmar). Alarmingly, between 1980 and 2006, more than 71% of natural disaster fatalities occurred in Asia, of which more than 83% were flood-related.

The socio-economic impact of such disasters is huge. In the period 2005-2014 alone, water related disasters in Asia caused $326 billion worth of direct physical losses, while almost 219,000 lives were lost and 1.3 billion people affected by disasters. Over the past four decades, direct physical losses as a consequence of natural hazards have increased more rapidly than economic growth in Asia and the Pacific.

Historically, water-related disasters have been treated as one-off events, triggering responses in their aftermath as reactive crisis management. Compared to these ad hoc "relief and response" actions, much less attention has been paid to the more effective governance and management of "prevention and risk reduction". In recent years, a strong preference and demand for an integrated and adaptive approach has emerged based on the recognition that risks, if not properly addressed in advance, may lead to disasters. This requires a reframing of the paradigm of disaster risk management: from its traditional focus on managing the impacts of disasters using stand-alone and ad hoc interventions to a broader focus on vulnerability reduction, risk reduction, prevention, and preparedness. In short: from a reactive to a pro-active or preventive approach.

Preventive action against disasters by necessity requires a long-term development perspective and needs to be embedded in an integrated process that incorporates water resources management and climate (change) adaptation. It is highly advisable to mainstream this concept into national policy and planning processes. There is growing international recognition of the dynamic nature of disaster risk, reflecting constantly changing exposure and vulnerability as well as changing climate related hazard and frequency. Therefore, water related disaster risk management should be a programmed and flexible process of continuously improving institutional and management practices and processes in which:
- short term actions are linked to long term goals,
- flexibility is valued and incorporated,
- multiple strategies are considered in a rational manner, and,
- different investment agendas are inter-linked (including the private sector).

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2 UNESCO 2009: Global Trends in Water-Related Disasters: an insight for policymakers
3 Defined as river floods, droughts, extreme winds, storm waves and storm surge
4 Figures mentioned in ADB presentation on Tokyo Conference on International Study for Disaster Risk Reduction and Resilience, January 2015
Although climate change is not the only reason for the drastic increase of water-related disasters, it is anticipated that climate change driven variations in environmental forcing (e.g. sea level rise, storms, storm surge) will exacerbate risks particularly in the already highly vulnerable Asia-Pacific region, hindering sustainable development, poverty reduction, and other important UN goals/targets in the region. Exposure and vulnerability are also increasing.

ADB has provided significant assistance to its developing member countries for both disaster risk reduction and for post disaster response. Between January 2005 and December 2014 it approved some $20 billion — equivalent to 17% of total sovereign loans, grants, and technical assistance approvals — for a total of 561 Disaster Risk Management/DRM and DRM-related approvals (380 projects). Of this, almost 25% was for early recovery and reconstruction, 3% for stand-alone DRR, 73% for projects with embedded DRR elements, while about $10 million was allocated for ex ante disaster risk financing. ADB recognizes the importance of establishing adequate financing arrangements both to sustain risk reduction investments and to cover the disaster relief, early recovery and reconstruction costs associated with the residual risk.

In 2014, ADB launched a new operational plan focusing specifically on DRM realizing that investment in resilience pays off and that strong preparedness and early warning systems are essential in saving lives and economic values. ADB also recognizes the importance of scientific and technological knowledge and how, as well as public awareness and good governance including financing principles in enhancing disaster resilience and is supporting the development of capacity at national and local levels.

Like many countries in the Asia-Pacific region, the Netherlands is extremely vulnerable to impacts of climate change. This is because of its unique location in the delta of larger rivers with over 26 % of its land lying below mean sea level, 60 % directly threatened by flooding and a total coastline of over 1250 km (including Wadden Sea islands). For centuries the Dutch have been adapting themselves to cope with water-related threats: initially as response actions, but later on more and more as prevention measures. Clear examples of that is the Delta Plan for the south-western estuaries after the storm surge disaster in 1953, as is the "Room for the River" program after the near river flood disasters in 1993 and 1995.

At present, the central government, regional water boards, provinces and municipalities in the Netherlands are collaboratively developing a new Delta Plan on Water Risk Management. Its primary goal is to protect the Netherlands against floods and ensure the availability of fresh water, for present and future generations. The new Delta Programme has developed a new, adaptive and flexible management strategy that takes into account uncertainties and dependencies in decision-making on Delta Management to reduce the risk of overspending or underinvestment (optimized risk management).

Within the framework of their partnership ADB, the Government of The Netherlands and UNESCO-IHE have been organizing annually a water learning week since 2012. The aim is to stimulate dialogues and knowledge sharing between experts and policy makers from the Asia-Pacific region and The Netherlands. The 4th Asia-Netherlands Water Learning Week will be held 26-30 October 2015 in The Netherlands and aims to share knowledge and experience on the above topical area. The water learning week comprises an intensive program focusing on how to leverage results from collaborative approaches in water investment projects for countries, cities, river basins and deltas.

Although the vulnerability for water-related hazards of most countries in Asia and The Pacific is on average quite high the objective of the 4th Water Learning week is to focus on a mix of the most vulnerable countries and on countries with a low coping capacity as well as more successful countries. These are developing member countries in East Asia, South and Southeast Asia and in The Pacific.

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5 Embedded projects are defined as projects that take account of disaster risk and incorporate actions to address it but do not identify DRM as a primary project objective.
**General overview of the Learning Week Program**

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<th>Sunday 25 October</th>
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<th>Welcome drinks and dinner in Grand Café Verderop (Building next to UNESCO-IHE)</th>
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<td><strong>Monday 26 October</strong></td>
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<td>Plenary Sessions with introductory presentations on the theme of the week, disaster risk reduction,</td>
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<td><strong>Afternoon:</strong></td>
<td>Plenary Session with short presentations on theme related topics, experiences and tools;</td>
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<td>Boat trip through the canals of Delft</td>
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<td><strong>Tuesday 27 October</strong></td>
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<td><strong>Afternoon:</strong></td>
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<td>- &quot;Maeslant&quot; Storm Surge Barrier</td>
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<td>- Rotterdam Municipality</td>
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<td><strong>Afternoon:</strong></td>
<td>- &quot;Room for the River&quot; Project in the Noordwaard/Biesbosch</td>
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<td>- Visit to Kinderdijk (with 19 historic windmills)</td>
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<td>Reflection &amp; preparation of the final presentations</td>
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<td><strong>Afternoon:</strong></td>
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<td>Facilitated interaction with representatives of the Dutch Water Sector</td>
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<td>Farewell Dinner</td>
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Sunday's warming-up meeting

Sunday 25 October:

The learning week started with a first get-together on Sunday afternoon in the Grand Café next to UNESCO-IHE. Michiel de Lijster and Jan Luijendijk welcomed the participants and informed them in detail on the up-coming program of the week. Also a movie on Water and The Netherlands was shown to give them a glimpse of what they might see and experience during the rest of the week. Participants shortly introduced themselves and asked many practical questions related to the program and the organization of the week. The meeting was concluded with a buffet dinner with a mix of Dutch and oriental food.
Day 1 - Introductory sessions

Welcome and Learning Week Objectives

Participants were welcomed by Drs. Greet Vink, Business Director of UNESCO-IHE Institute for Water Education at the official opening of the 4th Asia-Netherlands Water Learning Week. She underlined the importance of the Knowledge Partnership with ADB also for the UNESCO-IHE staff.

After the official opening, Jan Luijendijk unfolded the programme and learning objectives for this week. He stated that according to a Chinese proverb, learning should be seen as “A treasure that will follow its owner everywhere”. His main message for the participants of the learning week was to learn as much as possible during this event. The programme has been tailored towards the specific needs and demands of the project teams in order to enable all project team members to learn as much as possible.

Ms Lydia Cumiskey, Disaster Risk Management Advisor and Researcher at Deltares presented the broader Disaster Risk Reduction (DRR) framework as adopted by the Sendai meeting earlier this year. She presented the Disaster Management Cycle and stated that only 13% of development assistance funds for disasters between 1991 and 2010 were invested in DRR in comparison to emergency response, reconstruction, and recovery.

Michiel de Lijster, Senior Water Resources Specialist at the ADB explained what ADB’s response is to disasters. He stated that ADB’s Mid-term review of Strategy 2020 re-emphasized the importance of strengthened disaster resilience and the need to secure greater integration between work on disaster risk management and climate change adaptation. He mentioned that ADB is strengthening its capacity to provide timely assistance to post-disaster affected countries. He recalled also the four main Sendai Framework priority areas, being: 1. Understanding disaster risk; 2. Strengthening disaster risk governance; 3. Investing in disaster risk reduction, and 4. Enhancing disaster preparedness and “building back better”

Prof. Eelco van Beek explained further that the resilience to Water-related Disasters in Asia-Pacific region has been adopted as the 5th Key Dimension in the "Asia Water Development Outlook" (AWDO). He also presented the different scores of the participating countries and compared them with the score of New Zealand.
After the coffee break Jan Luijendijk gave an historic overview of water-related activities in The Netherlands during the last millennium. He explained that the Dutch have learned from the many mistakes in the past and their centuries of hard battles against water, but that they have learned more and more that the better strategy now is to "Build with Nature", rather than to fight it.

Prof. Dr. Rosh Ranasinghe gave an introduction to Climate Change and stated that the consequences due to coastal hazards are already high. Even under the most optimistic mitigation scenarios the effects of climate change will be felt beyond the 21st century. In the heavily developed and populated coastal zones of the world, appropriate adaptation measures have to be developed and implemented urgently. He concluded that risk informed decision making is essential to balance rewards and losses due to climate change, especially in high value land zones (coasts, estuary margins, ports).

The last speaker before the lunch was Prof. Dr. Matthijs Kok, CEO of HKV company and professor of the TUDelft. He gave a presentation on "Flood Risk in an uncertain world" and gave an analysis of extreme weather, risk profile, impact of risk reduction measures and of a flood risk app.

Prof. Dr. Chris Zevenbergen, Professor of Flood Resilience of Urban Systems at UNESCO-IHE presented his approach "Towards Disaster Resilient Cities". He made an analysis of what frontrunner cities have in common:

-Embracing a whole system approach – integrated vision
-Leadership and inspirational long-term vision
-Recognition of the role of urban ecosystems
-Opportunistic attitude
-Adaptive & flexible strategy
-Emphasis on learning

Dr. Uta Wehn de Montalvo, Senior Lecturer/Researcher in Capacity Development and Innovation at UNESCO-IHE, presented her experiences in the development of ICT-enabled citizen observatories through the European "WeSenseIt" project. The key lessons learned are that "people should be put before sensors’. Therefore we should not think about "plug and play" solutions. In this way there will be a great potential for citizen observatories to change role of citizens in FRM: granted by authorities & claimed by citizens.
Jurjen Wagemaker, CEO of Floodtags, gave in line with the previous speaker an interesting presentation on how to make use of Social Media for better informed Water Management. He presented a number of examples from all over the world where “observations” of citizen could be used as valuable information, in particular in areas where no other sensors are installed. However, there is no organized analysis of this data to make it valuable for flood managers. **Floodtags has built a web-service** that collects ground-truth data for analysis that provides information to decision makers.

Dr. Biswa Bhattacharya informed the participants on an UNESCO-IHE initiative to develop a course on **Flood Risk management** for The Erasmus Mundus Master Programme. This 2 years Masters course is offered by a consortium consisting of UNESCO-IHE Institute for Water Education (the Netherlands), Technical University of Dresden (Germany), Technical University of Barcelona, University of Ljubljana (Slovenia) with associated partners: Deltares (the Netherlands), Danish Hydraulic Institute (Denmark), HR Wallingford (UK), Rijkswaterstaat (Netherlands), ICHARM (Japan), Institute of Water Modelling (Bangladesh).

**Project Team presentations**
After these introductory presentations the floor was offered to the 10 delegations from the 7 participating countries to present their own project and team. A series of ten presentations were given by **Project Team** delegations from:

- Armenia
- Bangladesh-1
- Bangladesh-2
- India-1
- India-2
- Indonesia-1
- Indonesia-2
- Pakistan
- Sri Lanka
- Vietnam

All presentations were offered to all participants via Dropbox at the same day.
Boat tour

After these first new experiences in the Netherlands during the first day of the water learning week, it was time for a relaxing boat tour through the canals of the historical centre of the city of Delft. Participants of the learning week considered this boat tour to be a nice chance to meet other delegations in a more informal setting. Overall, it was a pleasant closure of a very informative first day.
Day 2 - Visit to Deltares and Ministry I&M

**Deltares**
During the morning the delegations visited Deltares, the world famous independent institute for applied research in the field of water and subsurface. Deltares has five areas of expertise: Flood, Adaptive Planning, Infrastructure, Water & Subsoil Resources and Environment.

We were welcomed by Mr. Maarten Smits, the Managing Director of Deltares who explained about the activities of Deltares in The Netherlands and abroad.

Mr Herman van der Most then gave a presentation on adaptive flood risk management in Thailand (Yom River) and examples of risk-based flood protection in the Netherlands.

Prof. Eelco van Beek presented a new framework for Plan studies explaining IWRM as a process with a focus on governance and the symbiotic relation with Water Security that specifies what we want to achieve. He explained the IWRM planning guidelines consisting of 5 main steps:
1. Inception,
2. Situation Analysis,
3. Strategy Building,
4. Action Planning and
5. Implementation

Ms. Lydia Cumiskey presented new modelling techniques for DRR like 3Di and storm surges and the experiences with the Netherlands DRR program.
After the presentations the participants were split up in 3 groups each visiting after another the following interactive sessions:

1. The iD Lab session

2. The Serious Gaming session

3. Physical Facilities
Ministry I&M
Participants were welcomed by Mr. Roald Lapperre, deputy Director General of the Ministry of Infrastructure and the Environment followed by a short movie on the activities of the ministry.

Mr. Jos van Alphen, Strategic advisor to the Delta Commissioner explained that 60% of the area of The Netherlands is flood prone with about 9 million inhabitants living below flood level. He stated that about 1% (7 billion Euro) of the Dutch GDP is spent on water management by the different agencies: Min. I&E (1.4), Municipalities (1.4), Water Boards (2.8) and for drinking water: 1.4 billion. He concluded that the Dutch response to Climate Change with an uncertain future requires a future water management approach characterized by:

- Adaptive, risk-based strategies
- Flexible measures, multifunctional design (“Building with Nature”)
- Tailor-made multi-level governance
- Adequate institutional arrangements

Mr. Jaap van Thiel de Vries from Ecoshape gave several examples of "Building with Nature" projects, both in The Netherlands and abroad. Ecoshape is a foundation founded by the two main contractors of the Netherlands, Van Oord and Boskalis and that coordinates the Building with Nature innovation program. A famous example in The Netherlands is the Sand Motor, a mega sand-nourishment project where 21 million m³ sand from the North is naturally spread by sea wind, waves and tide along a 17 km long coastal section between Rotterdam Harbor and The Hague, feeding the beaches and dunes here with sand for coastal safety in the coming 20 years. New follow-up applications of the Sand Motor are considered at other sites along the Dutch coast to strengthen the flood defense system of the Netherlands.

Mr. Boris Teunis gave a presentation on the important aspect of "Collecting data, monitoring and forecasting systems" in disaster risk reduction. He emphasized the importance of having data from hydrological and meteorological observations for forecasting and early warning. Building awareness among the different players is crucial for in particular for mayors and emergency managers.
With the knowledge and experience built up over centuries in their own delta, Dutch expertise is very valid to many other deltas in the world. **Ms. Renske Peters and Mr. Ivo Demmers** informed the participants about the initiative of **Delta Alliance** under the title: "Connecting deltas, a global knowledge network". The mission of DA is to contribute to improved resilience of the world’s deltas through:

- Sharing knowledge
- Identifying knowledge gaps
- Developing jointly knowledge/tools
- Research uptake
- Monitoring resilience in delta’s
- Building capacity

The successful visit, coordinated by **Ir. Martien Beek**, Deputy Program Manager for International Water Affairs of the ministry, was concluded by drinks and snacks and extended with a short tour through The Hague visiting the Peace Palace and the Scheveningen beach boulevard.
Day 3 - Field visits

Storm Surge Barrier "De Maeslant kering"
On Wednesday 28 October all delegations participated in a total of four field visits. The first visit was to an impressive hydraulic structure: The Maeslant Storm Surge Barrier, situated at the mouth of the main entrance channel to the Rotterdam Harbour: the river Meuse. After a movie on the construction of the barrier Mr. Peter Persoon explained the details of design and implementation of this giant structure that consists of two floating weirs each with the size of the Eifel Tower. At the information center participants became part of interactive simulations of the operation of the structure.

Rotterdam Municipality
At the top level of the Intel Hotel near the Meuse boulevard Mr. Arnoud Molenaar, Chief Resilience Officer and Manager Climate Proof of the municipality of Rotterdam presented the Rotterdam Approach and their Climate Adaptation Strategy. Rotterdam Climate Proof connects water with opportunities. Climate adaptation and spatial development are inextricably intertwined in Rotterdam. This approach allows urban planners to create new designs that effectively address the issue of climate change. At the same time, the necessity of investing in climate adaptation will create and sustain the momentum needed to enhance the city’s attractiveness and to create economic opportunities. Gaining knowledge and experience fast in combining water management, spatial planning and other innovative techniques will allow the corporate sector to build a powerful competitive advantage. Mr. Molenaar also explained about Connecting Delta Cities (CDC), a sub network within the framework of the C40 Cities Climate Leadership Group (C40), a network of the world’s mega cities committed to addressing climate change.
The "Room for the River" program
Many of the participants had looked ahead to get to know and see about this innovative program.
We visited one out of the 37 projects implemented under this program: De Noordwaard in the Biesbosch region. Mr. Hans Brouwer, project leader of this project, showed us first a series of short movies on the Room for the River Programme followed by a presentation on both the overall program and then on the specific Noordwaard project.
After two almost floodings near the two rivers Rhine and Meuse in 1993 and 1995 the government of The Netherlands made a paradigm shift in their approach towards its rivers. The new approach that was launched in 2000 by the Dutch parliament opted to protect the river area from flooding and to increase the safety of the people. As a consequence the river was to be expanded in more than 30 places along the rivers, while spatial quality had to be added, when possible. A total of 9 different options for increasing the discharge of the rivers were presented:

The responsibility for the program is with the Ministry of Infrastructure and the Environment, together with the Ministry of Economics, Agriculture and Innovation. The whole program took in total 16 years and will be completed by 2015. The costs were approximately 2.3 billion Euro's.

The success of the program is due to:
- Commitment and co-creation of all regional parties involved:
  - 2 Central Government,
  - 5 Provinces,
  - 5 Water boards and
  - 30 Municipalities.
- Broad regional political and administrative support
- Transparency in process and decision making
- Participation of non-governmental organisations

Mr. Daan Spitzers of the Evides Water Supply Company concluded the presentations by explaining the role of the Biesbosch reservoirs in securing the drinking water supply for a.o. the city of Rotterdam. The visit was concluded by a tour through the Noordwaard polder and a visit to Petrusplaat reservoir.

Kinderdijk
The field visit day was concluded by a short visit to famous windmills at Kinderdijk, in the twilight of the evening. The 19 windmills were built around 1740 and are on the UNESCO World Heritage list since 1997.
Day 4 - Project team sessions

This Thursday program was fully dedicated to parallel team sessions focused on the specific needs of each delegation and their learning objectives.

Armenia: Water Supply & Sanitation Sector Project

<table>
<thead>
<tr>
<th>Armenia</th>
<th>Challenges and Learning objectives</th>
<th>Netherlands Country Team Coordinator and members</th>
</tr>
</thead>
</table>
| **Challenges:** | • Trans-Basin water supply,  
  • Highly mountainous region, uncertainty on the size of the aquifers, and complex orography,  
  | **Learning Objectives:** | • To apply lessons learned from the learning week to better address the above challenges |
| **Requested from Dutch expert team:** | • Hydrogeological expert,  
  • Water supply Engineer  
  • Contact through UNESCO-IHE the European Space Agency (ESA) to use ESA data for emergency situations |

The Armenian delegation had a constructive meeting with two UNESCO-IHE staff members: Mirror team leader **Dr. Jan-Willem Foppen** and **Dr. Yangxiao Zhou**.

The main interests from the delegation were on:

- Special Water Needs in Armavir And Ararat
- Floodable Areas for Aquifer Recharge.
- Water Supply.

Key challenges are the low ground water Levels and the need to identify unknown aquifers. As there is no similar project yet there is a need for specific technical expertise in the field of hydro-geology and water quality. Follow-up steps are:

- Check UNESCO/ADB Consultant Recruitment Procedure.
- Confirm that support is available when needed, and
- The wish to use UNESCO’s Know-How and the network of engineering firms in The Netherlands.

*The Mirror team was led by: Dr. Jan-Willem Foppen*
Bangladesh-1: Bangladesh Flood and Erosion Risk Management Project

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<th>Challenges:</th>
<th>Requested from Dutch expert team:</th>
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<tbody>
<tr>
<td>• To reduce flood and riverbank erosion risks.</td>
<td><em>The Mirror team was led by: Prof. Arthur Mynett</em></td>
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<tr>
<td>• To develop comprehensive and strategic water-related disaster management plans</td>
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<td>• Structural measures, construction of riverbank protection structures and flood embankments;</td>
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<td>• Non-structural measures, such as community-based flood management;</td>
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<tr>
<td>• Institutional capacity strengthening for strategic and sustainable flood and erosion risk management (long-term river stabilisation plan)</td>
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<thead>
<tr>
<th>Learning Objectives:</th>
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<tr>
<td>• To apply lessons learned from the learning week to better address the above challenges</td>
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Under the guidance of the Mirror team leader, **Prof. Arthur Mynett** a variety of presentations were given and in-depth discussions were held among the Bangladesh and the Dutch experts involved in the mirror team:

- Dr Alessandra Crosato (river morphodynamics)
- Mr Ferdous Rucknul (PhD candidate on socio-hydrology in river basins)
- Prof Eelco v Beek (River Basin Development / GWP TEC)
- Dr Michelle Kooy (socio-hydrology expert)
- Dr William Oliemans (Building with Nature / Delta Planning)
- Prof Arthur Mynett (Building with Nature / Disaster Risk Reduction)

Topics discussed were a.o.:

- **Building with Nature** and in particular the technical measures and socio-hydrological factors for long-term river bank stabilization and bank erosion prediction modelling;
  
  **Follow-up actions:**
  - Continue studies on concept and technologies
  - Selection of technologies and piloting

- **Community-based flood management**, including community awareness / community involvement in DRR and community capacity enhancement for regular O&M
  
  **Follow-up actions:**
  - Develop community capacity of coping mechanism against floods
  - Selection of technologies and piloting
  - Ensure coordination with other institutions and projects. (e.g. Dissemination through government’s community information centers developed under UNDP’s program)

- **Institutional capacity strengthening** in strategic river management and planning and strategic O&M planning
Cluster of Bangladesh-2, India and Indonesia-2

Bangladesh-2: Strengthening urban climate change resilience in Bangladesh

<table>
<thead>
<tr>
<th>Challenges:</th>
<th>Requested from Dutch expert team:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengthening the resilience of municipalities to the impacts of water-related disasters and CC</td>
<td>The Dutch expert team should include representatives from central, regional and local government including regulatory agencies, as well as private sector, infrastructure operators and community groups</td>
</tr>
<tr>
<td>Developing integrated urban development plans in selected BAN municipalities incorporating urban CC resilience principles</td>
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<tr>
<td>More effective governance and management of prevention and mitigation of water-related disaster and climate change including integrated and adaptive approaches moving towards a pro-active and preventive approach</td>
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</tbody>
</table>

Learning Objectives:

- Learn Dutch and international best practices for increasing resilience to water-related disaster especially for cities through climate-resilient integrated urban planning and implementation of engineering and non-engineering measures.
- Identify approaches and mechanisms to address water-related disasters through collaboration of various stakeholders including roles of civil society organizations.
- The team is able to apply the acquired skills and experiences to on-going and future projects.

India: Kolkata Environmental Improvement Investment Program (KEIIP)

<table>
<thead>
<tr>
<th>Challenges (KEIIP):</th>
<th>Requested from Dutch expert team:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing resilience and climate change adaptability of Kolkata Metropolitan Area</td>
<td>Dutch experts who can train on the “Adaptation Deficit” that Kolkata faces at present to cope with such events of water-related disasters.</td>
</tr>
<tr>
<td>Conservation of wetlands and other natural water bodies;</td>
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<td>Rain water harvesting;</td>
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<tr>
<td>Strengthening and regular maintenance of sewer network;</td>
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<tr>
<td>Restricting encroachment by settlements on canal banks;</td>
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<tr>
<td>Control of growth of aquatic vegetation which decreases the carrying capacity of canals;</td>
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<tr>
<td>Proper maintenance of the old pumps, increase the hydraulic capacity of sewerage system and discharge canal system by de-silting;</td>
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<tr>
<td>Use of state of the art technologies for integrated data management, information gathering, sharing, dissemination;</td>
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<tr>
<td>Use of modern technology: satellite remote sensing and Geographic Information System (GIS);</td>
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</tbody>
</table>

Learning Objectives (KEIIP):

- To learn the coping capacity and the adaptation methods to face water-related disasters;
- To learn more about the impact of climate changes;
- To learn about the ways to conserve wetlands, canals, and natural water bodies to counter the challenges of water related disasters.

Requested from Dutch expert team:

The Mirror team was led by: Prof. Chris Zevenbergen

Member: Dr. William Veerbeek

The Mirror team was led by: Prof. Chris Zevenbergen

Member: Dr. Biswa Bhattacharya
Indonesia-2: Green Cities in Indonesia

Challenges:
- Developing green city action plans and pilot test innovative financing urban development in four cities in Indonesia: Batam, Malang, Medan and Kendari.
- Implementing two pilot projects in Batam and Kendari and to upscale experiences to other cities in the context of a national urban green cities strategic plan.
- Formulation of priority and pilot projects that encompass principles of integrated economic growth and environmental sustainability with increased climate change resilience.

Learning Objectives:
- To provide the theoretical background and practical examples demonstrating the benefits and mechanisms of an integrated urban, climate resilient planning approach.

The city teams are expected to apply the newly acquired skills and experiences in the further development of the pilot project to be submitted to ADB for financing.

Requested from Dutch expert team:
- The stakeholder session held in Kendari revealed that the 'Room for the River' concept and approach concept is considered as a preferred strategy
- The request is to provide theory and practical information on integrated, climate resilient urban planning and assistance with developing the pilot project for Kendari
- Need for a multi-stakeholder based participatory approach in developing priority and pilot projects, in anticipation of the completion of the green cities action plan.

Practical information on successfully implemented climate resilience measures in the Netherlands (structural and non-structural)

The Mirror team was led by: Prof. Chris Zevenbergen and Dr. Assela Pathirana

The three delegations had partly a joint program at the RDM Campus in Rotterdam. The plenary session started with 3 short introductions on:
- climate-resilient integrated urban planning and implementation
- participatory (multi-stakeholders incl. private sector) decision making
- city-to-city learning.

This was followed by reflections on the short introductions.

After lunch the three delegations were split up in separate groups, each with specific Dutch experts and discussing their own implications and follow-up actions:
- Bangladesh-2 hosted by William Veerbeek
- India hosted by Biswa Bhattacharya
- Indonesia-2 hosted by Assela Pathirana

The Bangladesh-2 team came with the following suggestions for follow-up:
- Active promotion of cities to join networks, projects, etc.
- Collaboration with relevant agencies in the Netherlands and other countries to improve governance and participation of stakeholders;
- Improvement of appropriate technology and non-technological measures for better flood management;
The India Team discussed their main challenges, like the lack of expertise and inadequate spatial planning and limited data, infrastructure deficits, a lack of political will and intergovernmental coordination. The team came with the following suggestions for follow-up: Link spatial planning with tools and to improve school curriculums with these emerging tools. They also proposed to establish coordination committees at state/local level and to do more on Capacity Building and Knowledge exchange (best practices) and setting up a dedicated fund for disaster risk management.

The Indonesia-2 team had a special program with a large number of invited Dutch experts to discuss a concrete pilot proposal for Kendari city:

- Mr. Maurice de Kok, Manager Strategic Business Development Dredging & Marine, Van Oord
- Mr. Harry van Huut, project manager (REOS), Ministry of Infrastructure and Environment
- Mr. Roel Marten, Ministry of Foreign Affairs/BEB/ Directorate International Trade
- Mr. Ben Spiering, Project director RWS, Ministry of Infrastructure and Environment
- Mr. Tadeo Culla, ADB, Associate Social Development Officer, Southeast Asia Department
- Mr. Assela Pathirana, UNESCO-IHE
- Mr. Jeroen Rijke, Triple Bridge/UNESCO-IHE
- Mr. Chris Zevenbergen, UNESCO-IHE

Pilot Kendari

The most pressing issues for Kendari City are the sedimentation of Kendari Bay and the regular flooding of Kendari city because of high discharges of the Wanggu river. Currently, Kendari City has commenced to excavate about 24 mln m3 of sediments from the bay. The excavated sediments will be used to reclaim and raise land. In order to support the transition towards a Green and climate resilient city, measures to effectively reduce the sedimentation loads to the bay and peak discharges of the river, will be essential and need to be therefore adopted in any future catchment management strategy of the city of Kendari. Based on widely acknowledged international experiences, eco-based engineering approaches will be likely most appropriate to address these two challenges in an effective and sustainable way. Along these lines the application of the Room for the River concept to “renaturalize” the Wanggu river by creating ‘space for water’ in conjunction with the installation of localized natural (wetland vegetation) sediment traps (to reduce peak flow and allowing sediments to settle out and retain) and to simultaneously improve the conditions of the existing (poorly maintained) dikes through relocation (to reduce dike erosion) are considered as a promising (and no-regret) eco-based intervention to deal with both challenges at the same time: reducing the sedimentation load and dampening the peak discharges (water levels).

A pilot will be required to assess the effectiveness of the proposed concept including:

- (i) technical aspects (a. an assessment of the sedimentation load reduction and b. an assessment of the water level reduction),
- (ii) financial aspects (an assessment of the construction and M&O costs),
- (iii) legal aspects (such as land acquisition), and
- (iv) governance aspects.
The objectives of the pilot are:

- to develop the required (technical and practical) knowledge and tools (models) to assess the effectiveness of the proposed eco-based approach;
- to enhance the city management capacity and local knowledge institutions required to support implementation of the proposed approach;
- to build trust and create stakeholders commitment for implementation of the approach.

The pilot consists of:

- The development of a hydraulic and sedimentation transport model and assessment to assist the designing and engineering of the pilot project.
- The design and implementation of two example projects along the Wanggu river: a dike relocation and a flood plain excavation; also localized wetland vegetation will be planted.
- Empowerment and increased governance capabilities through the development and application of a serious gaming platform and the development and implementation of dedicated capacity development, educational and research programs.

At the start of the parallel session the following short presentations were given:

1. Wanggu river/revitalization Kendari Bay project idea/Kendari – ADB/City Kendari
2. Dutch room for the river experience – relevance to this project idea -Triple Bridge
3. Financing opportunities – Ministry of infrastructure and environment (BuZa/I&M)
4. International experience on Public Private Partnerships in project realization - Van Oord

After these presentations the following questions were addressed:

1. How the pilot project idea can be transformed into a project with measurable impact?
2. How to move from pilot project toward the full project?
3. What are the financing options for the full project?

The following key recommendations were discussed for the pilot:

- Define clear objectives (technical and environmentally, but also on governance and financing)
- Have open and transparent procedures
- Make clear what the business case is (SME?! ),
- Make clear who benefits from the pilot? (transport, fisheries, tourism, other cities?)
- Design a masterplan
- Look for different sources of funding (public funding!)
- Select the right partners (but not too many)
Indonesia-1: Flood Management in Selected River Basins Sector Project

**Challenges:**
- To reduce economic and social losses from flood events in selected river basins.
- There is a need for integrating structure and non-structural measures to address the flood challenge holistically and for promoting flood sensitive spatial planning based on sound engineering knowledge and understanding of the socio-economic changes.
- To shift the paradigm from project-oriented flood control centered around structural measures, to process-oriented integrated flood risk management (FRM) that provides a well-balanced mix of non-structural interventions, institutional and capacity building, and structural works to mitigate the negative impacts of floods.

**Learning Objectives:**
- Advance flood hazard mapping techniques
- Different possible development scenarios and flood risk management
- Flood risk management lessons learned and best practices
- Flood risk assessment, mapping and uses in regional/spatial planning

**Requested from Dutch expert team:**
- Dutch expert team should include:
  - Flood modeller
  - Flood risk management specialist
  - Spatial planner/regional development specialist
  - Climate change adaption specialist
  - Institutional development specialist

**The Mirror team is led by:** Dr. Michael Hammond

**Members:**
- Michael Hammond
- Arlex Sanchez Torres
- Neilier Medina Pena
- Yared Abebe
- Alida Alves Belaqui
- Guy Alaerts
- Nora van Cauwenbergh
- Dimitri Solomatine
- Andreja Jonoski

The group consisted of technical specialists working on an ADB funded project to improve flood risk management in Indonesia, focusing on two river basins.

The delegation presented their project, and some of the specific challenges that arise from the two basins that they are focusing on. This was followed by two presentations by Michael Hammond and Arlex Sanchez Torres on two linked European projects, one completed in 2014 (Collaborative research on flood resilience in urban areas - CORFU) and an ongoing project coordinated by UNESCO-IHE (Preparing for extreme and rare events in coastal regions - PEARL). Then three PhD fellows from IHE presented their research briefly, which focused on tools for improved modelling of evacuation processes, understanding of institutional dynamics, and better selection of flood mitigation measures, with a focus on multifunctional defences.

Before lunch, Nora van Cauwenbergh joined the group to discuss her experiences of the development of river basin plans and the involvement of stakeholders in those processes. Next, Prof. Guy Alaerts presented his experiences of working for the World Bank in projects in Poland, followed by a presentation of Prof. Dimitri Solomantine and Dr. Andreja Jonoski presented their experience in developing and working with Hydroinformatics tools for flood risk management.

Throughout the day, there were a number of fruitful discussions. The delegation was very interested in thinking more holistically about flood risk. It was agreed that UNESCO-IHE and the delegation would remain in contact about the project, and that there were opportunities to collaborate further, on either training or technical assistance.
Pakistan: Punjab Irrigated Agriculture Investment Program

**Challenges:**
- Improved agricultural production and reduced damage due to flood and drought
- Scale of operation is the biggest challenge.
- Low capacity of Punjab Irrigation Department and communities in irrigation water supply, flood and drought management, drainage, groundwater, and water quality management.
- Lack of water storage, weak infrastructure and lack of appropriate groundwater management.

**Learning Objectives:**
- Compared to relief and response much less attention has been paid to risk reduction, adaptation and pre-emptive measures.
- To learn from experience in the Netherlands with respect to drainage and flood issues.

The Pakistan delegation had a dedicated program with MetaMeta in 's-Hertogenbosch. MetaMeta director Frank van Steenbergen gave a presentation on "water management challenges in Pakistan", while Martin van Beusekom, also of MetaMeta, spoke about: "Introducing salt tolerant crops". Arthur Lutz introduced "Climate Change impacts on future water resources in the Upper Indus basin".

Dr Dietrich Bartelt from DB Sediments in Germany gave a very interesting presentation on "eco-friendly dredging".

From the presentations and discussions the following points were concluded:

- Glacier retreat in Hamalayan will impact future water supply and agriculture in Indus basin and should be integrated into future planning.
- Cost-effective sediment removal can provide new life to the existing storages and for that the delegation will contact DB Sediment about the sediment dredger.
- Conjunctive water use management can improve water reliability to meet its demand but has several implementation implications to large irrigation systems.
Mr. Arjen Luijendijk started the interactive session with the Sri Lankan delegation with a presentation on the Sand Engine Mega nourishment project at the North Sea coast of the Netherlands. The presentation and discussion were followed by a visit to the Sand Engine.

After the lunch break the kick off meeting for Sri Lanka East coast coastal risk project CRisP took place attended by the ADB/SL delegation and the NL CRisP project teams. Dirk Jan Walstra attended the discussion on determining Sri Lanka east coast river entrances that are vulnerable to climate change.

The delegation proposed the following follow-up actions:
- Replication of the sand engine
- Collection of data for the project with new techniques recommended
- Compilation of data available for the project and gap identification
- Sharing/transferring of knowledge
- Building links on dredging opportunities
- Setting up models
- Setting up wave measurements in the east

**Sri Lanka: Disaster Risk Reduction at river outlets in Sri Lanka**

<table>
<thead>
<tr>
<th>Sri Lanka</th>
<th>Requested from Dutch expert team:</th>
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<tbody>
<tr>
<td><strong>Challenges:</strong></td>
<td></td>
</tr>
<tr>
<td>• Identifying east coast river outlets that are highly vulnerable to climate change</td>
<td></td>
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<tr>
<td>• To find sustainable solutions to minimize risks in order to safeguard communities and livelihoods.</td>
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<tr>
<td>• Designing of engineering solutions for major river outlets – procurement of consultants</td>
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<tr>
<td>• Conflicting interests of agricultural &amp; fishery community – addressed through dialog</td>
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<tr>
<td>• Control further encroachment of flood plains and river banks – awareness, preparation of risk maps and zoning plans</td>
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<tr>
<td>• How to involve all stakeholders</td>
<td></td>
</tr>
<tr>
<td><strong>Learning Objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>• Expose the team to similar problems and different solutions to be adapted and applied in Sri Lanka.</td>
<td></td>
</tr>
<tr>
<td>• Expose the team to modern DRR techniques</td>
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</tbody>
</table>

**Requested from Dutch expert team:**
- At present the Coast Conservation Department (CCD) of Sri Lanka is working with U-IHE and would like to develop productive links with Dutch Consulting groups for coastal structure designs, Dutch dredging companies for maintaining lagoons and inland water bodies, and Deltares for state of the art numerical modelling.

**The Mirror team is led by:** Prof. Rosh Ranasinghe

**Members:**
- Dr. Ali Dastgheib, (UNESCO-IHE)
- Mr. Abdi Mehvar, (UNESCO-IHE)
- Dr. Ruben Jongejan (RMG, TU Delft),
- Mr. Arjen Luijendijk (Deltares, TU Delft)
- Mr. Dirk Jan Walstra (Deltares)
Viet Nam: Water Efficiency Improvement in Drought Affected Provinces (WEIDAP)

**Challenges:**
- Improve the water efficiency for drought resilient in the drought affected provinces
- To improve water efficiency through rehabilitation of irrigation and drainage systems for improved efficiency and sustainability of operations and to meet growing multi-purpose uses of water;
- Support reconstruction of on-farm infrastructure to support productive models based on large sample fields;
- Develop effective, climate-smart agricultural production models;
- Strengthen water user organizations.
- To promote the application of advanced water saving technology: water delivery and on-farm irrigation

**Learning Objectives:**
- To gain advanced knowledge and information about techniques and policy to cope with water scarcity under the climate variation applicable in Vietnam.

**Requested from Dutch expert team:**

**Composition of the Dutch expert team:**
- Drought resilient/irrigation specialist who provides advice on water saving technology identify and selection
- Development of business plan for irrigation services.
- An agricultural economist with experience on improvement of crop value chain

**The Mirror team is led by:** Prof. Petra Hellegers and Dr. Maurits Voogt

**Members:**
Dr. Gerardo van Halsema
Dr. Maurits Voogt
Dr. Gijs Simons

The Vietnamese delegation guided by Mr. Damien Allen and Mr. Tim Hessels took the train and the bus to Wageningen.

They were welcomed by Professor Petra Hellegers, Professor of Water Resources Management at the Wageningen University and Research Center (WUR), who gave a presentation on "Economical water productivity". After that Dr. Gerardo van Halsema presented "Options to increase productivity of rice". Also some PhD students of Prof. Hellegers gave presentations.

In the afternoon Dr. Maurits Voogt, Managing Director of eLEAF gave a presentation on "Irrigation scheduling from remote sensing". eLEAF is a Netherlands-based high-tech company that supplies reliable, quantitative data on water and vegetation on any land surface to support sustainable water use, increase food production, and protect environmental.

After that Mr. Gijs Simons of FutureWater gave a presentation on "Modelling of irrigation water resources availability". There was a great interest from the Vietnamese delegation for Drought Management by FutureWater: how to build a Drought Map and a Drought Monitoring & Impact Assessment Toolbox (DMIAT).
Day 5 - Delfland and Team Reports

Visit to Delfland

The final day of the 4th Asia-Netherlands Water Learning week started with a visit to the Water Board of Delfland. Delegations were welcomed by the Loco-Dijkgraaf Mr. Michiel A. Houtzager, who gave a short introduction on the Water Board. Then a movie on Delfland was showing the different tasks of this oldest democratic body of the world.

Mr. Peter Hollanders gave then an explanation of the role, tasks, governance and financing system of the Water Board followed by discussion with the participants who posed many questions. He explained that Delfland was experiencing more and more floods in its area.

Mr. Martijn Heinhus, hydrologist and 3Di specialist explained the new 3Di model of Delfland. 3 Di is an Integrated Interactive state of the art modelling Instrument for water management issues that combines faster and more accurate a Water Information System with a 3D visualisation technique. This 3Di model gives detailed and more accurate understanding of the functioning of the water system.

Mr. Bart Teeuwen gave a presentation on "Climate change adaptation and liability of water managers. A serious problem?", followed by a presentation on "Building partnerships with regional water authorities", by Mr. Marcel de Ruijter of the Dutch Water Authorities.
Team Reports
During the Friday afternoon closing session the 9 delegations that participated in the 4th Asia-Netherlands Water Learning Week presented their reports, structured by sheets on:
1: What is your project about?
2: Your main challenges and learning objectives
3: Key Lessons Learned during the learning week
4: Follow-up actions

Hereafter a summary of the sheets on "Key lessons learned" and "follow-up actions" are presented.

Armenia:

Key Lessons Learned during the Water Week.
- Needs To Invest Before The Crisis.
- Coordinated Approach (Regions).
- Create Technical Expertise In House.
- Continuous Corrective Measures.
- Always Be Alert.

Follow Up Action
- Check UNESCO/ADB Consultant Recruitment Procedure.
- Confirm Support Is Available When Needed.
- Use UNESCO Know-How and network of Engineering firms.

Bangladesh-1:

Key Lessons Learned
- Building with nature
  - Philosophy – not to fight with the nature, but to use soft technologies taking advantage of natural processes.
  - May be useful for riverbank stabilization in Bangladesh, but need to explore and pilot unique technologies suitable to each site.
- Roles of stakeholders in DRM
  - Involvement of communities, public representatives, local elites and local administration is important.
  - Action plans for DRM and training to local level committees are important.
  - Information sharing with and dissemination to the public have to be ensured (be special care of negative information).
- Room for the river
  - This is a new term of flood management. The concept has been applied to Asian countries including Bangladesh.

Follow-up Actions
- Building with nature
  - Continue studies on concept and technologies
  - Selection of technologies and piloting
- Disaster risk management
  - Develop community capacity of coping mechanism against floods
  - Ensure coordination with other institutions and projects, e.g. Dissemination through government’s community information centers developed under UNDP’s program

Bangladesh-2:

Options/solutions
- Community involvement is essential;
- Enhancement of current mayor-comiitee network;
- More revenue/fund generation;
- Timely intervention;

Next steps
- Active promotion of cities to join networks, projects, etc.
- Collaboration with relevant agencies of Netherlands and other Countries to improve governance and participation of stakeholders;
- Improvement of appropriate technology and non-technological measures for better flood management;

India:

What did we learn?
- Availability of diverse tools (modelling, GIS)
- Political consensus for policy continuity
- Support for R&D
- Multi-stakeholder coordination
- Integrated approach of development for sustainability.

Way Forward/Next Steps
- Link spatial planning with tools
- Improve institutions curriculums with emerging tools
- Quantify specific outcomes – identify good indicators
- Coordination committees at state/local level
- Knowledge exchange [best practices]
- Capacity building – need pool of experts
- Dedicated fund for disaster risk management.
Indonesia-1:

Key Lessons Learned

1. Define clear objectives (tech & env but also governance/financing)
2. Open & transparent procedures
3. What is the business case? (MFF1)
4. Who benefits? (transport, fisheries, tourism, other cities)
5. Design & masterplan
6. Different sources of funding (public funding)
7. Select right partners (not the whole world)

Follow Up Actions

1. Proposal UCCRTF submission (take lessons into account)
2. First ideas about roadmap to upscaling pilot, involve all stakeholders (incl Dutch Ministries & dredging company)

Indonesia-2:

Key Lessons Learned

1. Proposal UCCRTF submission (take lessons into account)
2. First ideas about roadmap to upscaling pilot, involve all stakeholders (incl Dutch Ministries & dredging company)

Pakistan:

Key Lessons Learnt

1. Define clear objectives (tech & env but also governance/financing)
2. Open & transparent procedures
3. What is the business case? (MFF1)
4. Who benefits? (transport, fisheries, tourism, other cities)
5. Design & masterplan
6. Different sources of funding (public funding)
7. Select right partners (not the whole world)

Follow-up actions

1. Replication of sand engine
2. Collection of data for the project with new techniques recommended
3. Compilation of data available for the project and gap identification
4. Sharing/ transfer of knowledge
5. Building links on dredging opportunities
6. Setting up models
7. Setting up wave measurements in the east

Sri Lanka:

Key Lessons learnt

1. Build communication & partnerships
2. Collect hydro info for other use
3. Identify risk & opportunities for future
4. Assessments & prioritization (pilot, tourism, etc)
5. Engage stakeholders (local NGOs, academia & government)
6. Improve connectivity
7. Identify best practices
8. Implement best practices

Follow-up actions

1. Replication of sand engine
2. Collection of data for the project with new techniques recommended
3. Compilation of data available for the project and gap identification
4. Sharing/ transfer of knowledge
5. Building links on dredging opportunities
6. Setting up models
7. Setting up wave measurements in the east

Vietnam:

Lessons learned

1. Learn from the experience of others
2. Bring all stakeholders on board
3. Build communication & partnerships
4. Collect hydro info for other use
5. Identify risk & opportunities for future
6. Assessments & prioritization (pilot, tourism, etc)
7. Engage stakeholders (local NGOs, academia & government)
8. Improve connectivity
9. Identify best practices
10. Implement best practices

Follow-up actions

1. Use the lessons learned to draft the workshop, whose relevant
2. Promote a management framework for adaptation and other plans that should be integrated into adaptive flood management frameworks at national level
3. Educate regional & national staff, data that are available at local level and other national staff to mitigate flood disasters making

After the presentations a panel consisting of:

- Ms. Karin Roelofs, Netherlands Ministry of Foreign Affairs
- Prof. Guy Alaerts, UNESCO-IHE
- Ms. Lydia Cumiskey, Deltares
- Prof. Chris Zevenbergen, UNESCO-IHE

reflected on the presentations and an open discussion with participants and guest experts from the Dutch water sector facilitated by Prof. Michael McClain.
General conclusion and recommendations for future Water Learning Weeks

The participants have appreciated the program and arrangements of the learning week in particular the good combination of interactive lectures and field visits. Many were motivated to adapt the new and innovative ideas they heard into their country specific water strategies and like to continue to interact with the Dutch counterparts. All delegations expressed their desire that their countries continue to participate in the next learning week. The participants highlighted that their key learning during the week was in getting a better understanding of the value of collaboration and coordination among and between government agencies, people, private sector and institutes in the design, planning and implementation of large infrastructural works. The most appreciated learning topics were: "Room for the River", "Building with Nature", "Sand Engine", "Multi-stakeholder engagements", and "IWRM in practice". These topics could be considered as more or less "compulsory" components of every future learning week event.

Recommendations for Future Learning Weeks

The following recommendations for future learning weeks were selected from various sources (mainly from Survey):

**Themes and topics** (in addition to the ones mentioned above)
- Water Governance
- Groundwater
- Modelling and Hydroinformatics
- Community participation in practice

**Timing and Duration**
- Preference for holding future learning week events during the summer period
- Consider extending by a few days to allow more time for discussion/interaction

**Program Structure**
- Keep the current program structure but allow more time for discussions and lesser time for presentations/lectures
- Field visits are a must
- Having a welcome session on the Sunday preceding the learning week proper is good

**Logistics**
- Preparations should start at least 4-5 months before the event
- More clarity on arrangements for accommodation, per diems, travel allowances, etc.

The ADB and UNESCO-IHE organizing Teams are grateful to all participants for their enthusiastic, active and constructive participation, and want to thank all Dutch organisations and experts that supported us by offering their kind hospitality and for sharing the best of their knowledge with us.

Yasmin Siddiqi
Ellen Pascua

Erik de Ruyter
Ewout Heeringa

Jan Luijendijk, Ela Fernando-Villamar, Michiel de Lijster, Roos ter Horst
## Annex 1: DMC PARTICIPANTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
<th>Organisation/Project</th>
<th>Country</th>
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<tbody>
<tr>
<td><strong>ARMENIA</strong></td>
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</tr>
<tr>
<td>1 Mr. Gagik Khachatryan</td>
<td>Advisor to the President of the Republic of Armenia and Former Deputy</td>
<td>State Committee for Water Economy</td>
<td>Republic of Armenia</td>
</tr>
<tr>
<td></td>
<td>Chairman the State Committee for Water Economy</td>
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<tr>
<td><strong>BANGLADESH-1</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 Mr. Aminul Haque</td>
<td>Project Director of Flood and Riverbank Risk Management</td>
<td>Bangladesh Water Development Board (BWDB)</td>
<td>Bangladesh</td>
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<tr>
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<td><strong>BANGLADESH-2</strong></td>
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<td><strong>INDIA</strong></td>
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<td>7 Mr. Shri Parmod Kumar</td>
<td>Director (UD)</td>
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<td>India</td>
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<td>Kolkata Municipal Corporation</td>
<td>India</td>
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<td>10 Mr. Abdul Malik Sadat</td>
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<td>12 Mr. Abdul Hanan Achmad</td>
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<td>15 Mr. Askar Mahmud</td>
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<td>16 Mr. Alamsyah Lotunany</td>
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<td>33</td>
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<td>36</td>
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<td>46</td>
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<td>47</td>
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<td>48</td>
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<td>49</td>
<td>Ms. Carmela Fernando-Villamar</td>
<td>Operations Analyst</td>
<td>Sustainable Development and Climate Change Department</td>
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</table>
Annex 2: Participants evaluation

A total of 46 participants responded to the post event survey given on the last day of the 4th Asia Netherlands Water Learning Week. Overall the participants rated the learning week positively.

1. Overall evaluation of the learning week

Overall participants valued the learning week as valuable and interesting.

![Overall rating of the Learning Week](image)

- Valuable: 54%
- Interesting: 46%
- Disappointing: 0%

2. Sharing and learning from participants' experience

The objectives of the learning week in terms of sharing and learning from participants' experience on water related disasters and climate change security and identifying innovative solutions were achieved with only 11% of the participants rating it as slightly achieved.

![Sharing and learning from participants’ experience](image)

- Fully achieved: 44%
- Almost achieved: 17%
- Moderately achieved: 11%
- Slightly achieved: 28%
- Not achieved: 0%
3. Identifying new ideas and smart choices

The figure below shows that the objective of Identifying Smart Choices was rated highly, 30% and 44% of the participants rated this category as fully achieved and almost achieved, respectively. Only 1 participant (out of the 46) found this objective only slightly achieved. Many of the participants coming from the developing member countries were very impressed with the Dutch projects and programs. However, participants see some of the Dutch projects and activities as expensive that it will pose difficulty for the developing countries to implement in their own situation.

Q3. Identifying new ideas and smart choices

A full report of the outcomes of the questionnaire survey is given in a separate document that is available on request to all participants and participating organizations and experts.
Annex 3: Organizing Team and Dutch experts

UNESCO-IHE
- Mr. Jan Luijendijk, Overall coordinator learning week
- Ms. Rozemarijn ter Horst, Communications officer
- Mr. Erik de Ruyter, UNESCO-IHE project leader
- Mr. Ewout Heeringa, Facilities officer

Asian Development Bank (ADB)
- Mr. Michiel de Lijster, Learning Week Focal Point and ADB mission Leader
- Ms. Yasmin Siddiqi, Principal Water Resources Specialist
- Ms. Ellen Pascua, Water Fund Manager
- Ms. Ela Fernando-Villamar, Operations Analyst

Partners
- Ministry of Infrastructure and the Environment (Ministry of I&M)
- Ministry of Foreign Affairs/Inclusive Green Growth Department (Ministry of FA)
- Netherlands Water Partnership (NWP)

Netherlands Team Coordinators and Experts:
- Mr. Roald Lapperre, Ministry of I&M
- Mr. Martien Beek, Ministry of I&M
- Mr. Jos van Alphen, Staff Delta Commissioner
- Mr. Boris Teunis, Ministry of I&M
- Mr. Hans Brouwer, Rijkswaterstaat, RvR
- Mr. Ralph Gaastra, Rijkswaterstaat, RvR
- Ms. Karin Roelofs, Ministry of FA
- Mr. Aart van der Horst, Ministry of FA
- Ms. Lies Janssen, NWP
- Ms. Greet Vink, Business Director, UNESCO-IHE
- Prof. Chris Zevenbergen, UNESCO-IHE
- Prof. Rosh Ranasinghe, UNESCO-IHE
- Prof. Elco van Beek, UNESCO-IHE/Deltares
- Prof Wim Bastiaanssen, UNESCO-IHE
- Prof. Arthur Mynett, UNESCO-IHE
- Prof. Michael McClain, UNESCO-IHE
- Dr. Uta Wehn de Montalvo, UNESCO-IHE
- Mr. William Veerbeek, UNESCO-IHE
- Mr. Assela Pathirana, UNESCO-IHE
- Dr. Michael Hammond, UNESCO-IHE
- Dr. Jan Willem Foppen, UNESCO-IHE
- Dr. Biswa Bhattacharya, UNESCO-IHE
- Prof. Matthijs Kok, CEO HKV and TU-Delft
- Dr. Nora van Cauwenbergh, UNESCO-IHE
- Dr. Arlex Sanchez Torres, UNESCO-IHE
- Dr. Ali Dastghieb, UNESCO-IHE
- Mr. Abdi Mehvar, UNESCO-IHE
- Dr. Ruben Jongejan RMC, TU Delft
- Mr. Jurjen Wagenmaker, CEO Floodtags
- Mr. Maarten Smits, CEO Deltares
- Ms. Lydia Cumiskey, Deltares
- Mr. DirkJan Walstra, Deltares
- Mr. Arjen Luijendijk, Deltares/TUDelft
- Ms. Renske Peters, Delta Alliance
- Mr. Ivo Demmers, Delta Alliance, Wageningen UR
- Mr. Jaap van Thiel de Vries, Ecoshape
- Mr. Peter Persoon, Maeslant Kering
- Mr. Arnoud Molenaar, Rotterdam Municipality
- Mr. Daan Spitzers, Evides Water Supply Company
- Dr. Frank van Steenbergen, MetaMeta
- Dr. Martin van Beusekom, MetaMeta
- Dr. Dietrich Bartelt, DB Sediments, Germany
- Mr. M.A. Houtzager, Water Board Delfland
- Mr. Peter Hollanders, Water Board Delfland
- Mr. Martijn Heinhius, Water Board Delfland
- Ms. Monique van der Hart, Water Board Delfland
- Mr. Bart Teeuwen, Teeuwen Advice
- Mr. Marcel de Ruijter, Dutch Water Authorities
- Mr. Maurits Voogt, Director eLEAF
- Mr. Remco Dost, eLEAF
- Prof. Petra Hellegers, WUR, Wageningen
- Dr. Gerardo van Halsema, WUR, Wageningen
- Mr. Gijs Simons, FutureWater
- Mr. Arthur Lutz, University of Utrecht/Future Water