Identification mission K2K, Water Mondiaal Delta Alliance reconnaissance visit to Dhaka Bangladesh, 20 – 24 June 2010

Mission Report (draft)

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1. Background and aim of the mission

1.1 International Policy in the Dutch National Water Plan / "Water Mondiaal"

In the National Water Plan of 2010, the Netherlands has formulated its ambitions for its international water programme, called 'Water Mondiaal' (Global Water). This programme (2010-2015) envisages the Netherlands to co-operate actively with countries in low-lying delta areas. Objectives of the programme are to reduce vulnerability against floods and the effects of climate change and ensuring supply of sufficient and clean water. Central thematic are of the programme are Water Supply & Sanitation, Water & Food and Ecosystems, Water & Safety as well as two transversal themes: Climate Change Adaptation and Water Governance. The Water Mondiaal programme will focus its attention on five deltas and envisions long term co-operation agreements with the countries of these deltas. These partnerships will build upon existing bilateral cooperation programme in the respective countries. Bangladesh is one of these five delta countries.

1.2 Relation with Water Mondiaal pre-identification mission to Bangladesh, April 2010

In view of the implementation of the Water Mondiaal Programme a pre-identification mission has visited Bangladesh from April 24 till 30 2010 in order to define jointly with the Bangladesh government and water sector institutions and organisations (private sector, knowledge institutes, civil society and government) priority fields of cooperation.

The aim of the mission was to identify fields for cooperation between the Netherlands and Bangladesh in the framework of the Water Mondiaal of the Dutch Government.
In the Netherlands the mission was coordinated by the Dutch Ministry of Foreign Affairs, in close consultation with the Inter-ministerial Steering Board members of the Dutch Water Mondiaal Programme. In Bangladesh the mission was coordinated by the Embassy of the Kingdom of the Netherlands (EKN) with its BD counterparts.

The present identification mission for (the preparation of) the Knowledge to Knowledge component (K2K identification mission) is a direct follow up of the Water Mondiaal pre-identification mission of April 2010. The K2K identification mission builds on the established contacts, findings and conclusions of the Water Mondiaal pre-identification mission.

1.3 Synergy between Water Mondiaal and Delta Alliance

Delta Alliance is an emerging international network devoted to successful response to the most critical present and future problems that deltas are facing worldwide. The overarching objective of Delta Alliance is to support the development and dissemination of new knowledge on how river delta regions can respond to the challenges, in particular those that come with a changing climate. The specific objectives of the network are :

- to coordinate and stimulate the development of innovative solutions and the dissemination of existing and emerging knowledge;
- capacity building on delta issues;
- to increase international recognition of delta as specifically vulnerable areas and of the urgent need for international action towards adaptation measures.

Delta Alliance will achieve this through international research coordination in a network of dedicated individuals and organizations. Delta Alliance will be amongst others active in the five deltas of the Water Mondiaal Programme, including Bangladesh.

Through the present mission Delta Alliance aims to initiate its activities in Bangladesh. While discussing this initiative with the Dutch Ministry of Foreign Affairs it was concluded that optimal synergy between Water Mondiaal activities and Delta Alliance activities in Bangladesh should be pursued.
Therefore it was agreed that the identification mission of Delta Alliance to Bangladesh should be strongly connected to the development of the Knowledge to Knowledge component of Water Mondiaal. Or in other words: the K2K identification as described in the Terms of Reference (annex 3) will be undertaken by the Delta Alliance identification mission. The composition of the Delta Alliance team has been adapted to this new situation.

1.4 Scope and vision for the Knowledge to Knowledge component

The Programme Water Mondiaal envisages to contribute to the broadening of the existing cooperation programme with Bangladesh in the water sector by intensified and high level exchange of knowledge and experiences, capacity building and institutional strengthening between all components of the Bangladesh en Netherlands water sector.
This K2K identification mission has built on the contacts, findings and conclusions of the above mentioned Water Mondiaal pre-identification mission, focussing in particular on the capacity development aspects.
The mission explored further the capacity development needs and the cooperation possibilities between Bangladeshi and Netherlands knowledge institutions and programs.
For that purpose the mission visited the relevant ministries (Agriculture, Water and Environment), relevant international organizations (e.g. FAO) and a number of knowledge institutions (like IWM, CEGIS, BARC and BRAC University).
The added value of Delta Alliance involvement in the K2K component of Water Mondiaal is the window it is opening for sharing and developing knowledge with other deltas in the region (e.g. Vietnam, Indonesia) and in the world (e.g. California, Netherlands, Egypt)

1.5 Objectives of the K2K-identification mission

Water Mondiaal objectives
Building on the contacts, findings and conclusions of the above mentioned Water Mondiaal pre-identification mission, the K2K identification mission had the following objectives:

- Further identification of and shared vision on capacity needs in the field of spatial planning, salinity, sediments and river and coast morphology, ground water, agricultural water use, fresh water conservation and management versus drought, waste water, monitoring and data management, water governance and local empowerment, climate proofing (of national plans like NWMP), PPP models (BOT, BOO, DBFM), operation & maintenance, water treatment and water quality management.
- Prioritize, if needed, between the abovementioned themes.
- Exploration and confirmation of existing and possible future cooperation between Bangladeshi and Netherlands knowledge institutions and programs.
- Identification of (additional) potential funding mechanisms for capacity building (e.g. NufficNICHE, adaptation funds)

Delta Alliance objectives

- Identification of interest of Bangladeshi government and knowledge institutions for participation in the International Delta Alliance Network
- Identify Bangladeshi representatives for the International Conference “Deltas in Times of Climate Change”, Rotterdam 29 September – 1 October

1.6 Acknowledgements

The mission members express their gratitude to all the persons and organisations who shared time and resources to exchange their views with them and for the hospitality encountered during their stay. The IWM staff , Dr. M.A. Quassem and Ad Spijkers are especially thanked for the preparation of the mission, the use of their network, logistical support and extreme flexibility during the mission.

2. Main findings and recommendations

2.1 Knowledge2Knowledge themes and structure

The mission has explored through meetings and a workshop the themes that are prioritized by the Bangladeshi parties in view of the themes of the Water Mondiaal program.

It makes sense to structure the discussion about Knowledge2Knowledge because many different activities can be considered, and without structuring the risk exists that there is a competition between themes rather than a harmonized implementation. Three categories are proposed:

- Knowledge development (~ research)
- Capacity building (~training/education)
- Knowledge valorization (~TA/ implementation/(pilot) projects)

For each category activities have been mentioned as priority by persons and institutions during the mission. Activities in one category need interaction with similar activities in the other categories to achieve impact. For instance developed knowledge should be made available for capacity building and effectively used in demonstration or pilot projects by technical assistance experts. On the other hand knowledge users can also identify and formulate knowledge and capacity needs. As such this structure will support a balanced and effective approach.

In addition to the categories proposed above the Water Mondiaal program also has identified themes:

- Water Supply and Sanitation
- Water for Food and Ecosystems
- Safety/flooding
- Governance (cross cutting theme)
- Climate change (cross cutting theme)

By combining the categories of Knowledge2Knowledge with these themes a logical framework emerges identifying components that will meet priorities, address relevant themes and will have impact in practise.

2.2 Knowledge development

This category involves the generation and development of new approaches, concepts, methods, models or the adaptation of existing working approaches, concepts, methods, models to the Bangladeshi circumstances. Based on the lessons learned in the long relationship between The Netherlands and Bangladesh and the new challenges in view of climate change key areas of attention can be identified where this development is needed. The institutions logically involved in this category are Universities and Knowledge Institutions in both countries (e.g. BUET, IWM, CEGIS, Wageningen UR, TUD, Deltares)

2.3 Capacity building

This category involves the transfer of knowledge, the building of capacity to use knowledge both in government and non-government organisations with operational and implementation responsibilities as well as training of trainers programs to ascertain sustainability of the capacity building program. The institutions logically involved in this category are Universities

and Training Institutions in both countries (e.g. BUET, training centres, Universities, IHE, ITC, Alterra).

2.4 Knowledge valorisation

This category involves the actual implementation of knowledge in pilot and demonstration projects proving the practical value of the knowledge in actually solving problems and improving the conditions for the population of Bangladesh. The lessons learned from these projects provide valuable feedback to the knowledge development and capacity building programs. It must be noted that the projects implemented in the past still contain a wealth of knowledge that is partly unexplored. The institutions logically involved in this category are Knowledge Institutions and consultants in both countries (e.g. IWM, CEGIS, Alterra, Deltares, DHV, Royal Haskoning).

2.5 Knowledge2Knowledge table

The results of the discussions are presented along the structure described above in the scheme on the following page. This scheme can also be used to prioritise between themes and activities and to facilitate an integrated delta approach.

:

	Knowledge development (~ research)	Capacity building (~training/education)	Knowledge valorization (~TA/ implementation/(pilot) projects)
Governance (cross cutting)	• Conflicting interests agriculture and aquaculture • Participatory approach • Competing claims • Institutional and legal arrangements • Socio-economic research	• Development of interdisciplinary programs • Participatory management • Leadership • Organizational management and development	• Plan implementation • Integrated approach • Sustainable HRM • Program management • Institutional reform
Climate change (cross cutting)	• Downscaling global models • Impact studies and models • Adaptation strategies	• Climate change modeling • Impact assessment • Adaption strategies → Delta approach	• Climate changes (assessment and impact) atlases for various regions and sectors
Safety/flooding	• Building with nature o Mangroves o River training • Improved flood forecasting: storm surge along the coast and flash floods in N.E. Bangladesh) • Coastal hydrology and morphology	• ICZM • Delta approach • Integrated dredging approaches • River erosion management (embankments) • Disaster and risk management	• Integrated delta plan • Apply flood forecasting models in other deltas in Asia • Land reclamation • Integrated river management (dredging) plan • Operation and maintenance of infrastructure • Disaster and risk management plan
Water for Food and Ecosystems	• Adapted varieties (drought/salinity resistant) • Conflicting interests agriculture, aquaculture, nature and sea defense • Adaptive water management (dealing with changing delta dynamics) • Environmental flows • Land reclamation	• Adaptive management: water, food and ecosystems • Spatial planning • IWRM • River basin approach • Water productivity	• Integrated delta plan • Adapted agro- and aqua-production systems • Food security plan • Application IWRM • Land reclamation • Integrated river management (dredging) plan • Increase water productivity
Water supply and sanitation	• Fresh water availability • Arsenic pollution • Industrial waste water treatment	• Public health • Waste water treatment technology • Monitoring water quality	• Apply Khulna resilience study for other cities • Adapted industrial waste water treatment installations • Monitoring system water quality

3. Water Mondiaal and Delta Alliance.
All organisations and individuals met during the mission support the Delta Alliance initiative. Especially the knowledge sharing between and the knowledge development with other deltas in the world and with those in Asia in particular are highly appreciated. As concrete examples was mentioned for instance the exchange on existing drought and0or salt resistant rice varieties between Bangladesh and Vietnam.
Some of the organizations envision Delta Alliance even as a window to extend their activities to other deltas outside Bangladesh.
Some of the organizations acknowledge also that Delta Alliance can stimulate the cooperation across sectors and disciplines and therefore be a link between K2K on one hand and G2G and B2B on the other.
The close cooperation between Water Mondiaal and Delta Alliance was generally appreciated.

4. Recommendations on operationalisation
The mission fully confirms the findings and recommendations of the Water Mondiaal pre-identification mission of April 2010.

The challenges Bangladesh is facing are enormous and an integrated interdisciplinary approach will often be needed to find solutions. In view of the fact that such approaches have not been very successful in the water management sector until now, a new approach using climate change adaptation and food security as new points of entry. Although it was difficult to achieve some prioritization in K2K themes, there was general consensus that future food security (2 million more mouths to feed every year) will be very dependent on better integrated water resources management and on developing adequate adaptation strategies and solution for climate change. As the pre-identifivcation mission stated, it may also lead to opportunities for innovative views on water management. The K2K program could be an initiator of improved cooperation between sectors and supportive and facilitative to the introduction of the delta approach.

Compared to the enormous size of the problems and challenges in Bangladesh the Water Mondiaal program may seem a small program when considered in financial terms. However, the potential strength of the approach lies in synergy options between Government to Government (G2G), Knowledge to Knowledge (K2K) and Business to Business (B2B) . When the knowledge program succeeds in addressing key solutions to present daily paralyzing problems and when the implementation pilots prove their applicability and effectiveness, more funds may be attracted for large scale implementation from International Financing Institutions like ADB and World Bank as well as through the financial resources of the Bangladesh Government. A well thought through K2K program can be of great value for the implementation of the Bangladesh strategy on climate change adaptation and the effective use of the for this purpose established national and multi-donor trustfunds for climate change adaptation.

Several times a regional focus on the S.W. delta was proposed.

In the implementation of the Knowledge2Knowledge program of Water Mondiaal, coordination with co-funding programmes such as NUFFIC-NICHE, NWO-Wotro, EuropAid, Framework Programme of the EU may provide additional funds.

To ensure that indeed a harmonized approach is followed it is recommended to form a Bangladesh Advisory Panel that will provide guidance to the process in the coming years. Such a panel could function in the following ways:

- Agenda setting on priorities, next steps and new issues
- Monitoring progress of program

- Advise Local Consultative Groups and financing organisations how they can contribute to the program
- Take ownership of the program and ensure its embedding in the structural integrated approach within the Bangladeshi Government

It is evident that the relevant ministries within the Bangladesh Government should be represented in the Panel, possibly with expert advisors from key institutes.

To strengthen this Panel, to exchange experiences and to ensure a good link with the Water Mondiaal program it is recommended to create a Netherlands mirror-panel as a partner to the Bangladesh Panel, where both panels will meet twice a year.
It is advised to have G2G, K2K and B2B representations in both the Panels.
In both countries the panels should be supported by a small but effective secretariat.

5. Suggestions for follow up actions

- The mission supports the idea of the pre-identification mission to organize a two-three day Delta seminar in autumn of 2010.
- In preparation of this seminar a reflection should take place within the Bangladeshi and Netherlands knowledge communities based on the results of the pre-identification mission and this K2K mission. The reflections should lead to a balanced program for the seminar focusing at an integrated delta approach.
- The feasibility of the establishment of the abovementioned Advisory Panels should be studied. The main activity of the panels (with regard to K2K) and their secretariats would be to develop a bilateral knowledge program based on a more detailed inventory of (mutual) knowledge gaps and cooperation potential and to actively support the strengthening (in size and on a more strategic level) of the cooperation between Bangladeshi and Netherlands knowledge institutions. As also the pre-identification mission indicated, the water-climate-food link appears to be the key issue for Bangladesh.
- Financial support for the execution of such a program should be further investigated.
- Active participation of Bangladesh in the Rotterdam Delta Conference should be supported.

ANNEX 1 MISSION ITINERARY

Sunday 20 June

11:00 Departure by car to Dusseldorf

15:25 Departure from Dusseldorf (Flight EK 056)

Monday 21 June

8:40 Arrival (Emirates flight EK582)

9:30 Meeting with RNE was cancelled due to late arrival in town

11:00 Meeting with IWM

15:00 Meeting with Ad Spijkers, FAO-representative & staff and with Dr. Quassem, Chairman National Disaster Management Advisory Committee.

18:00 Check–in in hotel Sonargaon

19:30 Dinner with Ainun Nishat, Vice Chancellor BRAC University, and outgoing Country Director and Programme Officer IUCN

22:00 Return to hotel

Tuesday 22 June

09:00 Short visit to RNE

11:30 Meeting with Secretary of Ministry of Water Resources, Shaikh Md. Wahid-uz-Zaman and his staff

12:30 Meeting with Minister of Agriculture, Ms. Matia Chowdhury

14:30 Meeting with State Minister and Secretary of Ministry of Environment & Forests, respectively Dr. Hasan Mahmud and Mr. Mihir Kanti Majumder.

16:00 Meeting with the Netherlands Embassador, Mr Alphons J.A.J.M.G. Hennekens

17:30 Brainstorm meeting with representatives from IWM, CEGIS, BRAC University, WARPO,BCAS, BUET, BWDD, Bangladesh Meteorological Department/Meteorological Research Centre, Joint River Commission, etc.

19:00 Dinner hosted by IWM with about 20 guests from above mentioned institutions.

22:00 Return to hotel

Wednesday 23 June

07:00 Departure Kees Slingerland (EK 583, 10.15 hrs)

10:30 Meeting with Head of Flood Forecasting and Warning Centre of BWDB, Mr. Amirul Hossain.

12:00 Meeting with Member Director of Bangladesh Agricultural Research, Centre (BARC), Sk. Ghulam Hussain

13:30 Meeting with Executive Director of CEGIS, Mr. Giasuddin Ahmed Chodhury

16:00 Wrap up meeting with Executive Director IWM, Mr Emaduddin Ahmed, and staff

19:00 Dinner with 1st Secretary and Water Specialist of RNE, André Vermeer.

22:00 Return to hotel

Thursday 24 June

07:00 Departure Kees Bons and Wim van Driel (EK 583, 10.15 hrs)

19:40 Arrival at Dusseldorf (flight EK057)

22:00 Arrival in The Netherland

ANNEX 2 REPORTS OF MEETINGS AND WORKSHOPS

General

At the start of all meetings the context, scope and objectives of the mission were presented, paying attention as well as to the Water Mondiaal program as to the international Delta Alliance initiative. Most of the organizations and individuals were already familiar with the Water Mondiaal programme, as they had earlier taken part in meetings with the pre-identification mission of Water Mondiaal. Yet the rehearsal of the objectives of the Water Mondiaal programme was highly appreciated. For most of them the Delta Alliance was a new initiative.

Report of meeting with IWM

Date: Monday 21/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present IWM staff: Emaduddin Ahmad, Mahbuhur Rahman, Abu Saleh Khan, Asif M. Zaman, Mizanur Rahman

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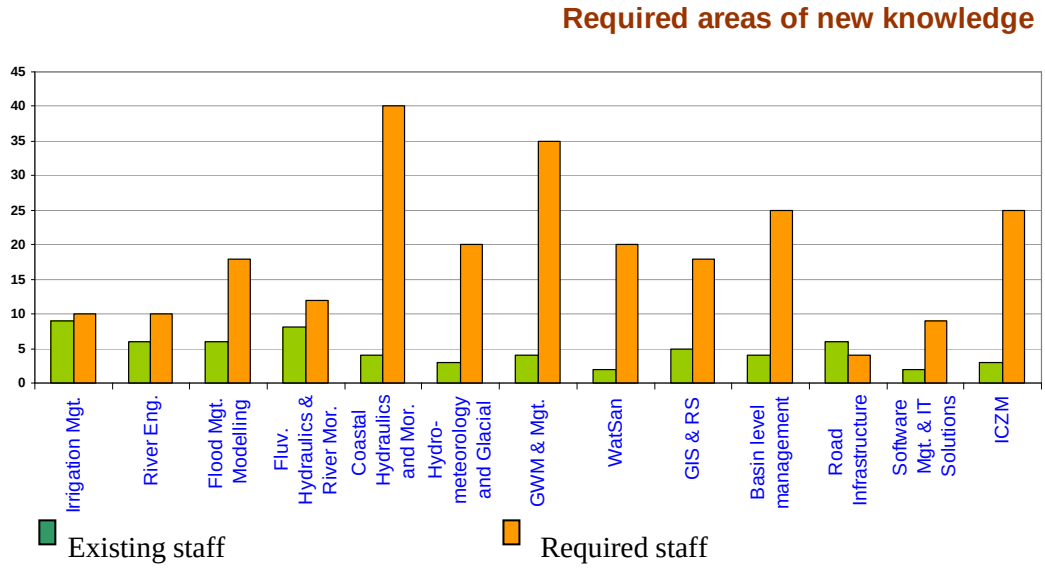
IWM is already familiar with the Delta Alliance. The Director General has taken part in a Delta Alliance event during COP15 in Copenhagen in December 2010 and in a workshop on 'Tools and methodologies for water related climate change adaptation' organized by Delta Alliance and CPWC and with the support of Unesco-IHE, Deltares and Alterra in Bandung Indonesia in March 2010.

Several presentations were given by IWM staff.
Presentation by Dr. Emaduddin Ahmad on the impact of Climate Change in Bangladesh (ppt available)
The impacts of climate change can be summarized as follows:

- *Increased risk of inundation of the coastal* polders through sea level rise and but more important through more frequent and more intense typhoons resulting in higher storm surges (2,5 m higher). No good functioning flood forecasting system. Models are being developed, but uncertainties about the track of the cyclones and bad topographical data resulting in bas prediction of flooding levels. Bad international cooperation with Myanmar and India. Existing flood shelters (mainly in the S.E. delta) need to be heightened, new flood shelters have to be built in the S.W delta. Coastal zone afforestation permits 50 cm lower embankments.
- *Salinity intrusion* as well as for surface water as groundwater (models for simulating salt intrusion available.
- *Water logging in the delta* due to sedimentation of the river branches is already a problem in certain areas in the delta, but will become probably more severe under climate change. An improved Tidal River Management system can improve the system.

There is a strong interest in closer cooperation with the neighboring countries, especially with respect to data and information exchange on rainfall, river flows and cyclones.

Required areas of knowledge as indicated by IWM staff:



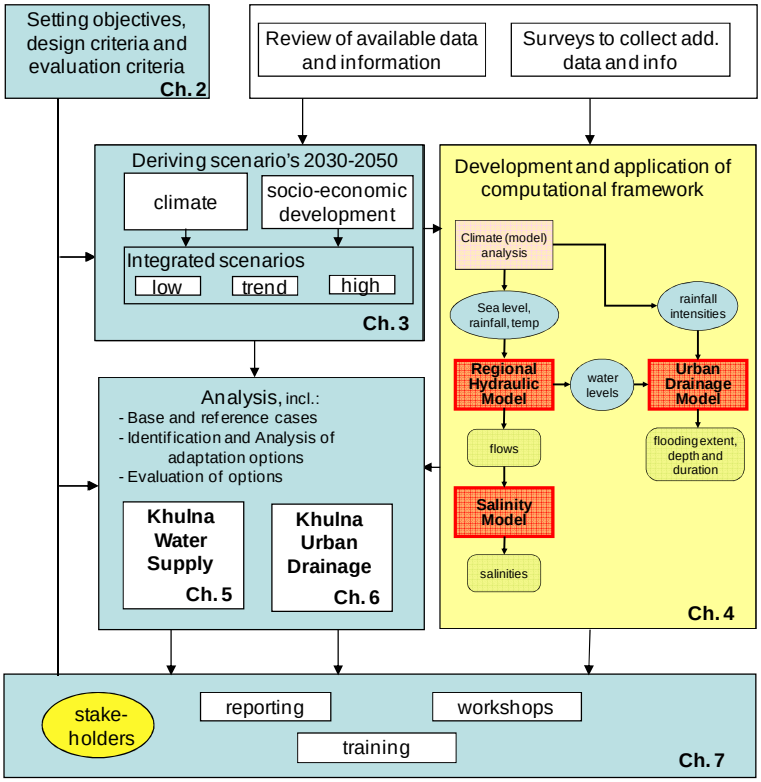
Knowledge gaps in relation to climate change

- Sound knowledge on coastal land accretion, erosion, changes to shore line, sea beach, navigability, port and harbor, wet land
- Safety to coastal cities (drainage, flooding, salinity, sewerage and water supply)
- Monitoring of CC parameters (SLR, sea water temperature, salinity, turbidity, fisheries, mangrove (spatial change), wet land,
- Downscaling of IPCC predictions at local level
- Raising of coastal dykes (by phases?), drainage?
- Safety to islands – waves and storm surge?
- Non functional water management structures and means of reengineering
- Livelihood and safety (ecology and bio diversity, saline tolerant crops, draught resistant, flood submerged)
- Education, applied research and technology transfer

Presentation by Dr. Asif M. Zaman and Dr. S.M. Mahbubur Rahman on a ADB funded project on the resilience of Khulna with regard to fresh water supply and flooding in view of climate change. (ppt available).
Objectives of the project:

- Identify impacts of climate change on flooding, drainage, salinity and water availability aspects;
- Provide adaptation options based on social, economic, public health and urban planning aspects;
- Conduct workshops and trainings to develop capacity of relevant stakeholders/agencies to help combat the impacts of climate change scenarios

Approach and methodology:



Conclusions:

- Mathematical models vital for
  - Quantifying impacts and
  - Assessing different adaptation options
- Socio-economic scenarios can be included in computational framework
- Khulna water sector particularly vulnerable to A2 climate change scenario
  - River salinity likely to increase (concentration and duration)
  - Water availability likely to decrease
  - Urban drainage situation likely to worsen
- Climate change adaptations for water supply
  - Increase emergency reservoir storage
  - Relocate intake point further upstream

This is a nice example of an integrated modeling study in which climate change, hydrological and socio-economic information and models are integrated. This integrated approach is rather unique in Bangladesh. ADB is interested to have similar studies performed for other urban areas and for other sectors.

Presentation of Mr. Mizanur Rahman on the impact of sea level rise on the salinity of ground water. The main points of concern are:

- Salinity will encroach towards inland aquifer
- Further inland movement of saline and freshwater interface
- Fresh water aquifer will become saline even in the non-submerge area
- Fresh drinking & irrigation water will be more scarce
- Foundation of heavy civil works will be under threat

Report of meeting with FAO
Date: Monday 21/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present FAO staff: Ad Spijkers,
Dr. Quassem

Ad Spijkers underlines that food security will be one of the biggest challenges for Bangladesh for the coming decades. Bangladesh has the highest population in the world with exemption of some urban states: almost 1000 inhabitants/km2. Every year 2 million more mouths have to be fed. Over the last 40 years the rice production per hectare has doubled and instead of 1 crop year in many places 3 crops per year are grown. Agriculture is the motor of the economy. Although Bangladesh plans to become a middle income country in 2015 (?), modern agriculture and proper water management will remain the backbone of the economy. Land use has to be intensified and a good spatial planning is crucial.
For further increase of the food production improved water management is a crucial factor. During 4 to 5 months/year there is too much water with the risk of flooding and during the rest of the year there is too little water resulting in drought stress, especially at the end of the dry season. Low river discharges, sedimentation of river beds and expected lower rainfall during the dry season due to climate change imply the necessity of improved water management.
Ad Spijkers would like Water Mondiaal to undertake in Bangladesh the same kind of activities as in Vietnam, that is to say to give support to the development of an integrated Master Plan for the S.W. Delta. Delta Alliance could play an excellent role with regard to the transfer of knowledge and experiences between Bangladesh and Vietnam.
Dr. Quassem insists that we should certainly see the Minister of Agriculture and the Secretary of the Ministry of Water Resources. He offers to arrange the necessary appointments.
Ad Spijkers refers to some important projects:

- the Bangladesh proposal GAFSP funding
- the rehabilitation of the Gorai river. This river fulfills an important role for the fresh water supply (agriculture and drink water) for the S.W. Delta. However the river is blocked by sedimentation that the river falls completely dry during 6 to 7 months of the year. The Gorai is the lifeline for the delta. Studies are needed how this rehabilitation can be done in a sustainable and long lasting way. Nedeco has done already a study on the lower delta a number of years ago.
- A study on agro-ecological zoning
- The Padna bridge project. This project improve the accessibility of large areas of the S.W. delta considerably and will therefore have an important impact on the socio-economic development of those regions.

Ad Spijkers and Dr. Quassem both strongly support the idea that Water Mondiaal should focus on the development of an integrated plan for the S.W. Delta. They underlines also that Delta Alliance could play an important role in the Asian region in the exchange and development of knowledge and experience on integrated delta development. Ad Spijkers offers all support he can give.

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Report of meeting with Dr. Ainun Nishat, outgoing director programs IUCN, new Vice Chancellor BRAC University
Date: Monday 21/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present IUCN/BRAC staff: Dr. Ainiun Nishat

According to Dr.Nishat salinity intrusion will have a bigger impact than flooding. There is also the fact of salinisation of polders due to the intake of salt water for the rapidly increasing shrimp culture. The coastal belt used to be fresh, but is rapidly changing now with all the negative impact on the soils. The uncontrolled intake and outlet of salt water in the shrimp ponds have also weakened the coastal embankments, resulting in many breaches. Although economically a very attractive activity, the increase of shrimp culture creates also many socio-economic problems: small rice farmers are forced (or seduced) to sell their land, move to the urban areas with an uncertain future ahead. Shrimp culture has also a negative impact on the survival of the mangroves.
Better spatial planning and the introduction of participatory water and polder management could contribute to a sustainable development of the vulnerable coastal regions.
Dr. Nishat estimates that the worst threat of climate change will be the increase in frequency and intensity of cyclones. Yet, he is against the construction of new shelters. He thinks that more use should be made of the normal infrastructure of a delta.
Sedimentation of the river beds is another serious problem, especially in the dry season. The sediments should be used in an optimal way, such as for the elevation polders or the reclamation of new land, which is actually certainly not the case.
BRAC university is a private university, a not for profit foundation under the umbrella of BRAC International. BRAC is strong in Governance and Rural Development, has approximately 3000 students in BSU and MSc programs. Private universities are not allowed to have PhD programs. BRAC (University) (socio-economics, traditional knowledge, grass roots), IWM (Water modeling) and CEGIS (environment and GIS) can form a strong team with regard to delta development. Cooperation could be established in the field of capacity building, public health (in relation to climate change) and disaster management.
Largest obstruction for the development is the poor governance. There is no learning curve in the Water board(s). ‘Civil servants are not going to change, they are not allowed to’. Substantial institutional reform is needed, but not easy to realize.
Dr. Nishat indicates that there are already many studies available on the impact of climate change. Also funding is not the real problem: 100 m$ available in an international climate change trust fund and 200 m$ in a national trust fund). He advises to start with monitoring, which should lead to changes in practices and for that you need capacity building.
Delta Alliance could indeed play an important role in the transfer of knowledge as well as within a delta as between deltas.
Dr Nishat refers to the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) which has 6 pillars:

- food security
- disaster management
- infrastructure
- knowledge management
- low carbon development
- institutional aspects

44 programs and 136 activities are defined. That should also give inspiration for the K2K agenda.

Report of meeting with Secretary Shaikh Md. Wahid-uz-Zaman of Ministry of Water Resources and staff

Date: Tuesday 22/6/2010

Present mission team: Kees Slingerland, Kees Bons, Wim van Driel

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The Delta Alliance network is introduced and Kees Slingerland explains the combined objectives of the present mission in relation to the Knowledge to Knowledge component of the Water Mondiaal program.

The Secretary indicates the importance of institutes such as IWM and CEGIS in combination with government departments and also indigenous knowledge of the people. He also stresses that it is important to achieve implementation of knowledge gained through research.

Main theme of interest is the siltation/sedimentation issue. Rivers lose their supply and drainage function when they fill up with sediments, while the polder areas need those sediments to maintain their height in face of sea level rise and drainage position with respect to the river. The Secretary mentions the need for the Revival of the River system: through river training and dredging improvement in drainage, salinity reduction, water supply, transport, new land development can be achieved with a positive impact on food security.

Reforms in the Water Board are also mentioned to improve participation of local interest groups such as navigation, shrimp farmers and small farmers.

As Bangladesh is situated at the end of mighty river systems, transboundary cooperation is required.

The Secretary finalises the discussion by referring to regional development by creating new infrastructure (new bridge), zoning programs, wetland and agriculture development as an example of how water management is the key to creating employment opportunities in the regions.

Report of Meeting with HE Minister of Agriculture, Ms. Matia Chowdhury

Date: Tuesday 22/6/2010

Present mission team: Kees Slingerland, Kees Bons, Wim van Driel

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The Delta Alliance network is introduced and Kees Slingerland explains the combined objectives of the present mission in relation to the Knowledge to Knowledge component of the Water Mondiaal program. The minister stresses that the main problems lie in the freshwater availability and salinity issues in the SW Delta and with the availability of deep groundwater in the NW of the country.

Issues raised by the minister are:

- surface water irrigation with sometimes too much, and sometimes no water, plus the problem with flash floods
- siltation problems in rivers. This is like the clogging of arteries in the heart: it is life threatening. The solution is in dredging.
- Saline intrusion by flooding during storms and sea level rise, saline tolerant crops may be needed.
- Appropriate technology, example of rubber dams

According to the minister the main issue to be resolved is dredging. This has three benefits:

- Elevation of existing land or creation of new land in coastal areas
- Flow to agriculture improves as well as drainage from flooded polders
- Improved navigation

The main issue at present is the big effort and investment to clear the rivers. Maintenance dredging after that is not a big issue according to the minister.

The minister concludes with a more philosophical discussion on subsidies and the role of donors in policy setting.

Report of Meeting with HE State Minister of Environment & Forests, Dr. Hasan Mahmoud

Date: Tuesday 22/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present Min.E&F: Dr. Mihir Kanti Majumder, Secretary and S.M.Munjurul Hannan Khan, Dept.Secretary

The Delta Alliance network is introduced and Kees Slingerland explains the combined objectives of the present mission in relation to the Knowledge to Knowledge component of the Water Mondiaal program. The minister smiles and says that it would be logical for the most important delta in the world to be involved.
The minister refers to earlier discussions with the Water Mondiaal mission and with Ronald Waterman who introduced the concept of Building with Nature.
According to the minister the main issue to be resolved is dredging and land reclamation. Sharing of knowledge with other deltas (but also river basins) is a good concept. The minister explains that with the development of agricultural varieties there is already good experience with knowledge sharing. The minister concludes with a discussion on a more integrated approach where population growth, safe settlement, agriculture, food security are addressed in a combined way.

Report of Meeting with the Netherlands Ambassador, Mr Alphons J.A.J.M.G. Hennekens

Date: Tuesday 22/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present EKN: A.T.M. Khaleduzzaman, advisor water management

Kees Slingerland explains the combined objectives of the present mission in relation to the Knowledge to Knowledge component of the Water Mondiaal program and some of the confusion that has emerged through unclarity about embassy endorsement.
The Ambassador clearly states that EKN fully supports the Water Mondiaal program. The Programme Water Mondiaal envisages contributing to the broadening of the existing cooperation programme with Bangladesh in the water sector by intensified and high level exchange of knowledge and experiences, capacity building and institutional strengthening between all components of the Bangladesh en Netherlands water sector. Confusion is regrettable and due to miscommunication. The ambassador mentions that the mission has been fielded for the Nuffic-Niche program and expresses his hopes that these activities are coordinated. EKN is very interested to hear the active response of the Bangladesh parties to the earlier Water Mondiaal mission and the present K2K mission.

Report of Brainstorm meeting with representatives from IWM, CEGIS, BRAC University, WARPO,BCAS, BUET, BWDB, Bangladesh Meteorological Department/Meteorological Research Centre, Joint River Commission

Date: Tuesday 22/6/2010
Present mission team: Kees Slingerland, Kees Bons, Wim van Driel
Present workshop: see below

Kees Slingerland opens the workshop with a presentation on Delta Alliance and on Water Mondiaal. Then he invites the attendants to mention 2 or 3 priority subjects for the K2K cooperation:

Mahbubur Rahman	IWM	Better monitoring system Analytical tool for projections on the system
Atiq Rahman	BCAS	Climate change impacts and responses Delta development and food security
Monowar Hossain	BUET	Flood and sediment transport Coastal area and climate change
Zahir-ul Haque Khan	IWM	Land reclamation projects, building with nature Improve forecasting in case of cyclones
Abu Saleh Khan	IWM	Coastal hydromorphology Improve lead time in flood forecasting also in flash flood
Golam Rabbani	BCAS	Climate change strategy for water sector, climate resilient policy Coastal zone management irt climate change
Taher Khandakar	BWDB	Capacity building Coastal zone management
Mahfuzur Rahman	BWDB	Land reclamation in estuary Implementation of IWRM
Malik Fida A. Khan	CEGIS	Climate change models Coastal zone Adaptation measures
?? (institutional expert)	??	Pilots of lessons learned Integrated development of islands
Giasuddin Ahmed Chodhury	CEGIS	Management problems, disaster/flood management ICZM
Mizanur Rahman	IWM	Groundwater recharge / saline intrusion as a result of climate change Water storage for dry season/rain water harvesting
Emaduddin Ahmad	IWM	Management of Coastal polders River management
M.A.Ghassem	WARPO	
Sultan Ahmed	CEGIS	
Dhali Abdul Qaium	WARPO	
Mrs. Arjumand Habib	Meteo dept	
M.A. Quassem	NDMAC	

A discussion followed where a number of issues were addressed:

- The problem of project approach which leads to discontinuity
- Upstream-downstream, partnerships, ownership
- Understanding the system to assess whether for example dredging a part of the river is futile or not

Kees Slingerland summarizes the evening with the following main points:

- Focus on the SW regions
- More understanding of the (water and sediment) dynamics of the rivers and coast
- Land reclamation
- Coastal Zone management
- Governance
- In the light of Climate Change

- All of this including the knowledge and interest of local people and leading to down to earth practical knowledge that can be implemented.

Report of meeting with Engr. Md. Amirul Hossain Flood Forecasting and Warning Centre
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel

The Flood Forecasting Centre can give daily at noon water level forecasts for 1, 2 and 3 days. The border with India and the coast are the boundary conditions. They started forecasting on the basis of correlation in 1972. They use models since 1990. The model (MIKE) is adapted for the Bangladesh delta by IWM; they have also trained the staff. The accuracy of the forecast is limitation by the fact that they don't receive flood level and rainfall data from India, except when extreme water levels occur. With flood level data 100 km upstream of the Indian border the forecasting could be improved considerably: better and earlier. There is no flood forecast available for the 1/3 southern part of the delta because of the tidal influence. In the near future they like to start to forecast also low flow (important for the planning dry season agriculture) and salt intrusion.
Engr. Md. Amirul Hossain indicated that they would like to use also other models in order to improve the performance. Kees Bons advised not to introduce other models since it is costly, MIKE is a very good model and it would hardly improve the quality of the forecast. However, an important quality gain could be achieved if more and different data sources would be used. The N.W of Bangladesh encounters serious problems from flash floods. There is no flood forecasting system for this area. As the flash floods happen at the end of the growing season, flood forecasting could be very beneficial for farmers in view harvest planning. Rainfall data from the watershed (also in India) would be essential. Installation of a radar station could possibly help.
A model for storm surge forecast is available at IWM, but is not yet being exploited due to lack of funds.

Report of meeting with Bangladesh Agricultural Research Council (BARC)
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel
Present BARC staff: Sk. Ghulam Hussain PhD, Member Director, Planning and Evaluation Division

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Within the National Agricultural Research System (NARS) BARC is the apex body and ten Agricultural Research Institutes (ARI's) are the constituent units. All the institutes are very crop or product oriented and don't work much together. BARC is faced with brain drain. Recent salary rise should halt this undesired outflow of bright scientists, but Mr Hussain indicates that more incentives will be needed. They are in need of capacity building and human resource development.
Good water management is the biggest challenge for the necessary increase in food production:

- periods with too much water
- periods with too little water: low flow, sedimentation of river beds, especially the N.W, delta is very drought prone.
- not much ground water available and the needed electricity is often not available
- salt intrusion during the dry season because of the low river flows (and in the future also by sea level rise) is one the biggest threats for agriculture in the southern delta.

- increasing shrimp culture is causing problems in rice polders because of the inlet of salt water.
- The area with saline soils have increased from 0,83 milion hectares in 1973 to 1.06 million hectares in 2009. An increase of 26%.

Actions undertaken by the agricultural sector to cope with these problems and with the increasing demand for food production:

- instead of 1 crop/year up to 3 crops/year (in 1972 10 million tons/year, now 30 million tons/year)
- introduction of Boro rice variety during the dry season
- upland rice varieties that use less water
- alternate irrigation (wet/dry) can reduce the water demand by 30%
- the minister wants them to develop more salt resistant varieties.

The Dutch cooperation has mainly focused on the water sector; no assistance has been directed toward agricultural development. Cooperation is mainly with the CGIAR institutes like IRRI, CYMMIT, ICRISAT, etc. and in the near future also with USAID.

Upon the idea of Mr. Hussain to reserve water from the monsoon season, a discussion took place about a proposed research project in Vietnam where an increase of the fresh (and brackish) water retention is one of the adaptation options towards climate change. Each of which can be accommodated within the nature, aquaculture and rice sectors. Regenerating mangroves for coastal defense. Whereas a dual strategy for fresh water retention can be pursued within the rice sector: (i) adapt agronomic and water management practices within irrigation schemes to maximize rainwater retention; (ii) invest in flood recession rice cultivation that can be combined with freshwater aquaculture along the floodplains of the rivers in order to maximize the flood retention capacity.
Mr. Hussain will reflect on the opportunities for similar research in Bangladesh.

Report of meeting with Centre for Environmental and Geographic Information Services (CEGIS)
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel
Present CEGIS staff: Mr. Giasuddin Ahmed Chodhury, Executive Director

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Mr. Chodhury gave a presentation of the expertise and activities of CEGIS (ppt available). CEGIS is a scientifically independent center of excellence to support the management of natural resources for sustainable socio-economic development using:

- Integrated Environmental Analysis
- Geographical Information Science
- Remote Sensing
- Information Technology

CEGIS is a not for profit public trust. The board of trustees consists of governmental representatives and non-governmental organizations like IUCN.
The yearly turnover is approximately 2 m€.

The range of projects CEGIS is involved in comprises amongst others the following:

- Environmental Impact Assessment (EIA)
- Social Impact Assessment (SIA)
- Environmental and social monitoring
- Integrated planning and management of water resources
- Socio-economic and institutional analysis

- Development of GIS databases, GIS based software and Web GIS
- Spatial modeling
- Design and development of Spatial Decision Support System
- Mapping and GPS/DGPS/Total Station
- Remote sensing and image processing
- Natural resources assessment and land use monitoring
- Disaster monitoring and damage assessment
- Land use zoning/mapping
- Design and development of database, MIS and IT solutions
- Development of WEB portal
- Development of data quality standard and guidelines

According to Mr. Chodhury is 'bad management' the most important problem. The mindset should change. He suggests to train the top 5 layers of the governmental organizations for 6 months in The Netherlands. They could subsequently train the other staff.
Mr. Chodbury is very interested in the in The Netherlands developed provincial climate change (impact) atlases.
CEGIS is very keen on participating in the Delta Alliance.

Report of meeting with DHV
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel
Present DHV staff: Gerard Pichel, Team leader, Emergency disaster Damage rehabilitation Project – 2007, Part E: Water resources

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Mr. Pichel has been working for 5 years in water related projects in Bangladesh. He is at the point of moving to Vietnam. Activities of DHV in Bangladesh are declining steeply.
He states that Bangladesh should apply a much more strict policy, especially in the water sector. Public procurement is generally speaking a disaster: working with non-governmental organizations and institutions (such as IWM and CEGIS) is the way out. But there are also some positive trends: more attention for institutional aspects and governance, broader interventions than only civil engineering.
Expertise of CEGIS is limited because of the absence of mathematical modeling; the base their analyses mainly on remote sensing techniques and images. IWM is much stronger in mathematical (water) modeling.
Some of the challenges in the water sector are:

- Assure minimum flows in the rivers during the dry season, e.g. the Gorai River would need a minimum flow of 150 m3/s.
- Water availability for food security: 75% of the groundwater is used for irrigation
- Dhaka is constructing new wells for drinking water at a depth of more than 500 m.
- Arsenic pollution of the groundwater.
- Sedimentation in the rivers.

Bangladesh has made a budget available for dredging projects. Also Water Mondiaal should pay attention to the dredging issue: dredging in combination with training of the rivers, stimulation of meandering processes, assuring minimum flow velocities, etc. He fears that the large dredging project as planned by the government will fail due to the existing corporate culture.
Another niche for Water Mondiaal is building with nature, e.g. for coastal defense and land reclamation; innovative solutions, robust, using local construction materials like geo-textile
Bangladesh should promote the construction of small hydropower stations (20 Mw); also irrigation needs electricity as most of the water is pumped into the polders.

He supports the idea that Water Mondiaal should support the development of an integrated plan for the S.W. Delta.
From 5 July Mr. Pichel will be in The Netherlands and available for consultation.

Report of wrap up meeting with IWM
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel
Present IWM staff: Emaduddin Ahmad, Mahbuhur Rahman, Abu Saleh Khan

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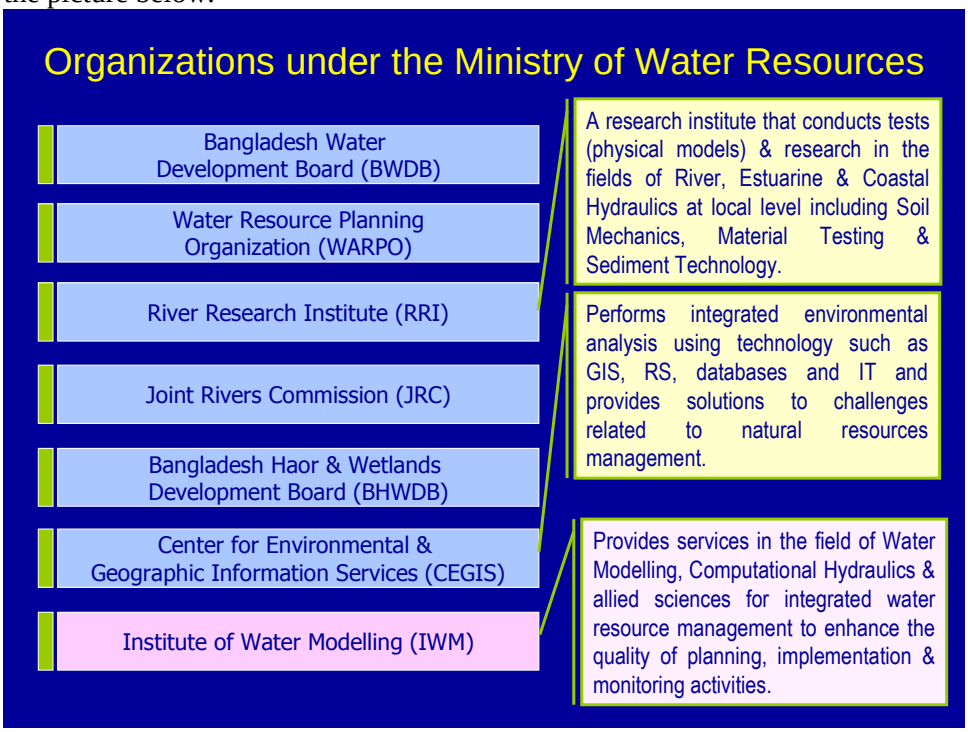
Dr. Emaddudin gave a presentation on all the activities of IWM (the ppt is available).
A distinction in activities between IWM, CEGIS and the River Research Institute is given in the picture below.



IWM provides:

- Mathematical Modeling
- Decision Support Systems
- Management Information Systems
- Internet Based Systems

The 1-dimensional River Models cover the significant river and flood plain system of the entire country, and includes:

- Hydrodynamic model
- Water quality model
- Flood forecasting model
- ST and morphological model
- Salinity model

The 2-dimensional River Models cover most of major rivers, and include:

- Hydrodynamic model
- ST and morphological model
- Erosion and sedimentation model

Within IWM there is a large need for qualified hydraulic engineers. The best hydraulic engineers come from BUET, partly due to the needed qualifications for intake.

IWM has a long lasting working relationship with Danish Hydraulic Institute (DHI) for the water modeling. Currently IWM is also collaborating with 3 US universities, amongst others on the impact of climate change on cholera spreading.

Knowledge needs for Bangladesh:

- downscaling of climate models. They have process models; in combination with the downscaled climate models they could produce impact models for various sectors. In this respect they have much interest for (the methodology, models and tools used for the development of) the provincial climate change (impact) atlases developed in the Netherlands.
- Impact of climate change on the various sectors: groundwater, salinity intrusion, water resources, socio-economic
- Coastal morphology: more insight needed in long term natural and human induced processes.
- More insights in the impact of the melting gletsjers of the Himalayas on river flow.
- Spatial planning as a tool for climate change adaptation and water resource management. ADB would be interested to support such kind of projects. The City Region Development project would need such an approach.
- The Khulna Resilience Project studied the impact of climate change on drink water supply and flooding. The same integrated (climate change downscaling, hydrological and impact modeling, socio-economic surveys and modeling) approach should be developed for the other sectors like agriculture, infrastructure, etc.
- The drinking water and sanitation sector should get more attention within Water Mondiaal.

Report of meeting with André Vermeer, 1st Secretary, Water Sector Specialist , Embassy of the Kingdom of the Netherlands
Date: Wednesday 23/6/2010
Present mission team: Kees Bons, Wim van Driel

The miscommunication around this mission was discussed. It would have been better if the intention, objectives and organization of the mission would have been discussed at forehand between the mission, the Netherlands Ministry of External Affairs and the Embassy. Part of this miscommunication is due to the recent change in the ToR of the mission: a change from a purely Delta Alliance mission (for which a number of contacts had already been established) to a combined Delta Alliance and Water Mondiaal K2K mission.
In view of the anticipated reform within the Bangladesh water sector the RNE likes to act in a very precautious way while implementing the Water Mondiaal Program. For that reason they like to be actively involved in the preparations of the activities taking place within the framework of Water Mondiaal. The mission fully acknowledges this position of RNE and will maintain an open communication with the embassy.

Water Mondiaal could be a vehicle to realize/support the anticipated reforms within the water sector and to initiate the participatory approach.

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Report of meeting with Jetze Heun, UNESCO-IHE
Date: Wednesday 7/7/2010
Present mission team: Kees Bons, Wim van Driel

The meeting with Jetze Heun took place in the Netherlands, but as he has visited Bangladesh on an earlier mission to enhance cooperation with knowledge institutions this meting is considered part of the mission in view of the coordination of K2K activities.
Mr. Heun explains his view on the developments in the water sector in Bangladesh. Mr. Heun is of the opinion that both the Bangladesh and Dutch water sector organisations are each in themselves too closely knit, and the combined implementing capacity of Bangladeshi institutions for a multitude of activities is too limited, to allow for too many separate initiatives and activities of the different parties potentially be involved. Besides that, many of the envisaged activities would highly benefit from complementing and strengthening each other. As such the Dutch organisations could develop a framework of goals and activities in which they operate. He proposes that the objectives of the Bangladesh –Dutch cooperation (especially in knowledge and capacity development) have the following objectives:

- assist institutes/organizations to create a learning environment and become learning organizations, reflective organizations
- assist the water sector to address specific water sector issues and to formulate policies and practices at different levels
- draw institutes/organizations into an international knowledge network

Main approaches could be:

- propose to develop a coalition of knowledge institutes in Bangladesh, which would feel responsible for the above objectives
- propose to develop a consultation mechanism between the water sector management organizations in Bangladesh
- develop a specific activities/programmes in support of the above:
    - developing and harnessing knowledge,
    - common language and policy development,
    - education and training programmes

To him an essential feature of the approach is that the Bangladesh water sector is owner of the programme, is stimulated and facilitated to fulfil such role.
Mr. Heun stresses that it would be good to select a few topics and not a multitude, and then to focus.

ANNEX 3: TERMS OF REFERENCE

Identification mission for the
Knowledge to Knowledge component of the
Water Mondiaal program
Netherlands – Bangladesh
20 – 24 June, 2010

(in connection with a identification mission of Delta Alliance)

(version 3, 11 June 2010)

1. Background and aim of the mission

1.1 International Policy in the Dutch National Water Plan / "Water Mondiaal"

In the National Water Plan of 2010, the Netherlands has formulated its ambitions for its international water programme, called 'Water Mondiaal' (Global Water). This programme (2010-2015) envisages the Netherlands to co-operate actively with countries in low-lying delta areas. Objectives of the programme are to reduce vulnerability against floods and the effects of climate change and ensuring supply of sufficient and clean water. Central thematic are of the programme are Water Supply & Sanitation, Water & Food and Ecosystems, Water & Safety as well as two transversal themes: Climate Change Adaptation and Water Governance. The Water Mondiaal programme will focus its attention on five deltas and envisions long term co-operation agreements with the countries of these deltas. These partnerships will build upon existing bilateral cooperation programme in the respective countries. Bangladesh is one of these five delta countries.

1.2 Water Mondiaal pre-identification mission to Bangladesh, April 2010

In view of the implementation of the Water Mondiaal Programme a pre-identification mission has visited Bangladesh from April 24 till 30 2010 in order to define jointly with the Bangladesh government and water sector institutions and organisations (private sector, knowledge institutes, civil society and government) priority fields of cooperation.

The aim of the mission was to identify fields for cooperation between the Netherlands and Bangladesh in the framework of the Water Mondiaal of the Dutch Government.
In the Netherlands the mission was coordinated by the Dutch Ministry of Foreign Affairs, in close consultation with the Inter-ministerial Steering Board members of the Dutch Water Mondiaal Programme. In Bangladesh the mission was coordinated by the Embassy of the Kingdom of the Netherlands (EKN) with its BD counterparts.

Conclusions of the mission

The following text has been abstracted from the 'mission report final draft May 2010'.

The mission concludes that considerable interest exists for a strategic and long term partnership on delta management at high level government level and between knowledge institutions.. The mission found that all strata and organisations met recognized he need for an integrated approach based on optimizing the use of scarce resources (including water, land and space) in which water management is a key factor becomes more and more recognized driven by growing water scarcity, the impacts of climate change and the growing effort needed to guarantee food security to an expanding population.

Knowledge to Knowledge cooperation will be an essential complement of the Government to Government partnership as delta development in Bangladesh requires on the one hand management of the knowledge and on the other hand an innovative approach.

Capacity building has been and is a major component of Government to Government (G2G) and Knowledge to Knowledge (K2K) cooperation in the past. Besides the traditional water sector institutions (of which a large part of core staff is close to the retirement age) other government organisations involved in water management in a broader sense have a considerable need for capacity building in particular in new technologies related to the themes identified by the mission. The G2G and K2K partnership can play a role in focusing capacity development on these themes and target groups which are essential for effective and innovative approaches to delta management.
The mission observed that there exist already cooperation partnerships between Netherlands and Bangladeshi knowledge institutions. Possibilities exist to broaden this collaboration on a number of priority themes.

Main themes can be summarized in the following clusters: spatial planning, salinity, sediments and river and coast morphology, ground water, agricultural water use, fresh water conservation and management versus drought, waste water, monitoring and data management, water governance and local empowerment, climate proofing (of national plans like NWMP), PPP models (BOT, BOO, DBFM), operation & maintenance, water treatment and water quality management

Major application areas are coastal zone management (including land reclamation), river management (including dredging), institutional reform of water management, climate change adaptation, food security and agricultural land/water use, spatial planning, inland navigation and transport.

2. Context identification mission for Knowledge to Knowledge (K2K) component of Water Mondiaal

This identification mission for (the preparation of) the Knowledge to Knowledge component (K2K identification mission) is a direct follow up of the Water Mondiaal pre-identification mission of April 2010. The K2K identification mission will build on the established contacts, findings and conclusions of the Water Mondiaal pre-identification mission.

2.1 Synergy between Water Mondiaal and Delta Alliance

Delta Alliance is an emerging international network devoted to successful response to the most critical present and future problems that deltas are facing worldwide. The overarching objective of Delta Alliance is to support the development and dissemination of new knowledge on how river delta regions can respond to the challenges, in particular those that come with a changing climate. The specific objectives of the network are :

- to coordinate and stimulate the development of innovative solutions and the dissemination of existing and emerging knowledge;
- capacity building on delta issues;
- to increase international recognition of delta as specifically vulnerable areas and of the urgent need for international action towards adaptation measures.

Delta Alliance will achieve this through international research coordination in a network of dedicated individuals and organizations. Delta Alliance will be amongst others active in the five deltas of the Water Mondiaal Programme, including Bangladesh.

Delta Alliance is planning an identification mission from 20 -24 June to initiate its activities in Bangladesh. While discussing this initiative with the Dutch Ministry of Foreign Affairs it was concluded that optimal synergy between Water Mondiaal activities and Delta Alliance activities in Bangladesh should be pursued.
Therefore it was agreed that the identification mission of Delta Alliance to Bangladesh should be strongly connected to the development of the Knowledge to Knowledge component of Water Mondiaal. Or in other words: the K2K identification as described in these Terms of

Reference will be undertaken by the Delta Alliance identification mission. The composition of the Delta Alliance team has been adapted to this new situation.

2.2 Scope and vision for the Knowledge to Knowledge component

The Programme Water Mondiaal envisages to contribute to the broadening of the existing cooperation programme with Bangladesh in the water sector by intensified and high level exchange of knowledge and experiences, capacity building and institutional strengthening between all components of the Bangladesh en Netherlands water sector.
This K2K identification mission will build on the contacts, findings and conclusions of the above mentioned Water Mondiaal pre-identification mission, focussing in particular on the capacity development aspects.
The mission will further explore the capacity development needs and the cooperation possibilities between Bangladeshi and Netherlands knowledge institutions and programs.
For that purpose the mission will visit the relevant ministries (Agriculture, Water and Environment, preferably during an inter-ministerial meeting), relevant international organizations (e.g. FAO) and a number of knowledge institutions (like IWM, CEGIS, ICCCAD and BRAC University).
The added value of Delta Alliance involvement in the K2K component of Water Mondiaal is the window it is opening for sharing and developing knowledge with other deltas in the region (e.g. Vietnam, Indonesia) and in the world (e.g. California, Netherlands, Egypt)

3. Objectives of the K2K-identification mission

Water Mondiaal objectives
Building on the contacts, findings and conclusions of the above mentioned Water Mondiaal pre-identification mission, the K2K identification mission has the following objectives:

- Further identification of and shared vision on capacity needs in the field of spatial planning, salinity, sediments and river and coast morphology, ground water, agricultural water use, fresh water conservation and management versus drought, waste water, monitoring and data management, water governance and local empowerment, climate proofing (of national plans like NWMP), PPP models (BOT, BOO, DBFM), operation & maintenance, water treatment and water quality management.
- Prioritize, if needed, between the abovementioned themes.
- Exploration and confirmation of existing and possible future cooperation between Bangladeshi and Netherlands knowledge institutions and programs.
- Identification of (additional) potential funding mechanisms for capacity building (e.g. NufficNICHE, adaptation funds)

Delta Alliance objectives

- Identification of interest of Bangladeshi government and knowledge institutions for participation in the International Delta Alliance Network
- Identify Bangladeshi representatives for the International Conference "Deltas in Times of Climate Change", Rotterdam 29 September – 1 October

4. Output and deliverables

For Water Mondiaal

- Mission report
- Joint suggestions for the content of the K2K component of Water Mondiaal
- Suggested organisational arrangements in Bangladesh and the Netherlands for K2K component of Water Mondiaal
- Joint statement with Bangladeshi partners on the outcomes of the mission
- Arrangements with EKN staff on follow-up needed
- Calendar for follow up activities

For Delta Alliance

- Mission report
- Intention of Bangladeshi partners to become member in the Delta Alliance Network

- Identification of potential cooperation activities
- Names of representatives for Rotterdam Conference

5. Members of the mission team

The mission team consists of:

- Ir. Kees Slingerland, Acting Chairman Delta Alliance, Director General Environmental Sciences Group, Wageningen UR (for the K2K component of the mission only respondent)
- Ir. Wim van Driel, Program Manager Delta Alliance.
- Kees Bons , Director Subsurface and Groundwater systems, Deltares

6. Program of the mission

The mission should include:

- Meetings with Royal Netherlands Embassy at the start and the end of the meeting
- Inter-ministerial meeting with relevant Ministries (Water Resources, Agriculture, and Environment) and government organizations
- Meetings with knowledge institutes (CEGIS, IWM, BUET, ICCCAD)
- Meetings with relevant civil society organizations (IUCN, BRAC)
- International organizations in the field of water management (e.g. FAO, chair LCG Agriculture)

7. Enabling conditions and assumptions

- Assistance and continuous involvement of the Royal Netherlands Embassy, is crucial for the success of the mission.
- Provision of additional background information and documentation upon request by parties involved, like e.g. Partners for Water, the Netherlands Water Partnership, the Cooperative Programme on Water and Climate
- Attendance and active participation of representatives of relevant ministries (V&W, VROM, EZ, LNV, BZ) and of the water sector in briefing and debriefing sessions in the Netherlands.

8. Duration of the mission

The effective stay of the mission in Bangladesh will be 4 days**.**

9. Follow up of the mission (not part of these ToR)

Two activities are suggested as a logic follow up of the K2K identification mission:

- Organization of a workshop in The Netherlands in July with all relevant Netherlands partners (universities, research institutions, consulting firms) to discuss the content and the organization of the K2K component.
- Development of a strategy document with a concrete plan of action after this workshop.

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ANNEX 4 LIST OF PERSONS MET BY THE MISSION