Exploring the Water Management Sector in Bangladesh
Trends, Opportunities and Practical Information
Table of Contents

List of Abbreviations
Executive Summary
1 Introduction .................................................................................................................. 1
2 Background and objective of the study ......................................................................... 3
  2.1 Methodology and approach to the Study .................................................................. 4
  2.2 Products, goods and services for different market segments ................................. 5
3 Trade and investment relation with Bangladesh ......................................................... 6
  3.1 Introduction (political and social) ........................................................................... 6
  3.2 Economic situation .................................................................................................. 7
    3.2.1 Trade and investment - infrastructure ............................................................... 8
    3.2.2 Trade transparency in policy and regulations ................................................... 8
    3.2.3 Tariffs .............................................................................................................. 10
    3.2.4 Investment climate ......................................................................................... 11
    3.2.5 Bilateral trade between the Netherlands - Bangladesh .................................... 12
  3.3 Dutch business community BD ............................................................................... 13
  3.4 The ease of doing business ..................................................................................... 13
  3.5 Some business etiquette to consider ....................................................................... 14
  3.6 CSR and doing business in Bangladesh .................................................................. 15
4 The water-sector in Bangladesh .................................................................................. 16
  4.1 Institutional setting .................................................................................................. 16
  4.2 Water management and delta planning ................................................................... 21
  4.3 Water supply and sanitation (WSS) ....................................................................... 25
    4.3.1 Introduction ..................................................................................................... 25
    4.3.2 Water supply in the urban sector ................................................................... 26
    4.3.3 Sanitation in the urban sector ........................................................................ 27
    4.3.4 Investments in urban sector ........................................................................... 27
    4.3.5 Water supply in rural areas ............................................................................ 29
    4.3.6 Water sanitation in rural areas ........................................................................ 29
    4.3.7 Investments in rural areas ............................................................................... 30
    4.3.8 Public Private Sector Participation .................................................................. 31
    4.3.9 Estimation of total investments and funding for planned investments in WSS sector ... 31
  4.4 Water for agriculture and fishery ............................................................................. 32
  4.5 Water discharge: sewerage, drainage and wastewater .......................................... 36
5 Results water-survey Bangladesh .............................................................................. 37
  5.1 Set up of the survey in Bangladesh ....................................................................... 37
  5.2 Demand in Bangladesh for the water sector ........................................................... 38
6 Opportunities in the water market .............................................................................. 40
  6.1 Dutch companies on the Bangladesh market ........................................................... 40
  6.2 Reasons to have an interest in Bangladesh .............................................................. 40
  6.3 Positioning on the Bangladeshi market ................................................................... 41
  6.4 Future interest in Bangladesh ................................................................................. 41
  6.5 Hurdles and risks entering the Bangladeshi market ................................................. 42
7 Conclusions .................................................................................................................. 43
Annexes ......................................................................................................................... 46
  Annex 1: Sources ......................................................................................................... 46
  Annex 2: Code of Conduct Nyenrode .......................................................................... 52
  Annex 3 Trade and investment relation with Bangladesh ............................................ 55
  Annex 4 Trends in the water sector in Bangladesh ...................................................... 57
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AL</td>
<td>Awami League</td>
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<td>AUS AID</td>
<td>Australian Government Overseas Aid Program</td>
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<td>B2B</td>
<td>Business-to-business</td>
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<td>B2G</td>
<td>Business-to-government</td>
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<td>BADC</td>
<td>Bangladesh Agriculture Development Corporation</td>
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<td>BD</td>
<td>Bangladesh</td>
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<td>BIAC</td>
<td>The Bangladesh International Arbitration Centre</td>
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<td>BIWTA</td>
<td>Bangladesh Inland Water Transport Authority</td>
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<td>BMDF</td>
<td>Bangladesh Municipal Development Fund</td>
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<td>BNP</td>
<td>Bangladesh Nationalist Party</td>
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<td>CIP</td>
<td>The Country Investment Program</td>
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<td>CP</td>
<td>Cleaner Production</td>
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<td>CSR</td>
<td>Corporate social responsibility</td>
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<td>DAC</td>
<td>Development Assistance Committee</td>
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<td>Danida</td>
<td>Danish International Development Agency</td>
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<td>DECP</td>
<td>Dutch Employer's Cooperation Program</td>
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<td>DFID</td>
<td>Department for International Development</td>
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<td>DoE</td>
<td>Department of Environment</td>
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<td>DOF</td>
<td>Department of Fisheries</td>
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<td>BOT</td>
<td>Build Operate Transfer</td>
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<td>DMA</td>
<td>District Metered Areas</td>
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<td>DPHE</td>
<td>Department of Public Health Engineering</td>
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<tr>
<td>DWASA</td>
<td>Dhaka Water Supply and Sewerage Authority</td>
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<tr>
<td>EBA</td>
<td>Everything But Arms</td>
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<tr>
<td>EFR</td>
<td>Environmental Flow Requirement</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EKN</td>
<td>The Embassy of the Kingdom of the Netherlands</td>
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<td>EU</td>
<td>European Union</td>
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<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<tr>
<td>FDOV</td>
<td>Facilité Duurzaam Ondernemen en Voedselzekerheid</td>
</tr>
<tr>
<td>BRIC</td>
<td>Brazil, Russia, India and China</td>
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<td>BWDB</td>
<td>Bangladesh Water Development Board</td>
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<tr>
<td>CBI</td>
<td>Centrum voor de Bevordering van Import uit Ontwikkelingslanden</td>
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<tr>
<td>ICC</td>
<td>International Chamber of Commerce</td>
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<td>IDA</td>
<td>International Development Association</td>
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IEC  Information, Education and Communication
IFC  International Finance Corporation
IUCN  International Union for Conservation of Nature
IWM  Institute of Water Modeling
JICA  Japan International Cooperation Agency
BPSIG  Bangladesh Private Sector Infrastructure Guidelines
JRC  Joint Rivers Commission
IWMi  International Water Management Institute
K2K  Knowledge-to-knowledge
LGD  Local Government Department
LGED  Local Government Engineering Division
LGRDC  Ministry of Local Government, Rural Development & Cooperatives
MMF  Matchmaking Facility
MoA  Ministry of Agriculture
MFN  Most favoured nation
NGO  Non-governmental Organization
MVO  Maatschappelijk Verantwoord Ondernemen
MWh  Megawatt-hour
NWMP  National Water Management Plan
NWRC  National Water Resources Council
NWRD  National Water Resources Database
NWP  Netherlands Water Partnership
OECD  Organization for Economic Cooperation and Development
ORIO  The Facility for Infrastructure Development
PaCT  Partnership for Clean Textile
PICOM  Private Infrastructure Committee
PPP  Public Private Participation
PSP  Private Sector Participation
PSU  Policy Support Unit
PUM  Programma Uitzending Managers
PvW  Partners voor Water
RAJUK  Rajdhani Unnayan Kartripakkha
R&D  Research and development
R&M  the Roads and Highways Department
PaCT  Partnership for Clean Textile
RNF  Rural non-farm
RMG  Ready Made Garments
RRI  River Research Institute
<table>
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<tr>
<th>Acronym</th>
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<tr>
<td>SEDF</td>
<td>South-Asia Enterprise Development Facility</td>
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<td>SER</td>
<td>Sociaal Economische Raad</td>
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<td>SDC</td>
<td>Swiss Agency for Development and Cooperation</td>
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<td>SDP</td>
<td>Sector Development Plan</td>
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<td>SIP</td>
<td>Sector investment Plan</td>
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<tr>
<td>SIDA</td>
<td>Swedish International Development Cooperation Agency</td>
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<td>TLCC</td>
<td>Town Level Coordination Committees</td>
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<tr>
<td>ToR</td>
<td>ToR - Terms of Reference</td>
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<tr>
<td>UNCTAD</td>
<td>UNCTAD - United Nations Conference on Trade and Development</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>US$</td>
<td>United States Dollar</td>
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<tr>
<td>US AID</td>
<td>United State Agency for International Development</td>
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<tr>
<td>WB</td>
<td>World Bank</td>
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<tr>
<td>WARPO</td>
<td>Water Resources Planning Organization</td>
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<td>WASA</td>
<td>Water Supply and Sewerage Authority</td>
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<td>WASH</td>
<td>Water, Sanitation and Hygiene</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WMA</td>
<td>Water Management Associations</td>
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<td>WMG</td>
<td>Water Management Groups</td>
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<td>WSS</td>
<td>Water Supply and Sanitation</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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Executive Summary

Economic situation in Bangladesh

- Goldman Sachs named Bangladesh one of the ‘Next Eleven’ countries. The Next Eleven are the following eleven countries - Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkey, South Korea and Vietnam, identified by Goldman Sachs investment banker and economist Jim O’Neill for having a high potential of becoming, along with the BRICS, (Brazil, Russia, India, China and South Africa), the world’s largest economies in the 21st century.

- In 2013 the population in Bangladesh was estimated at 160 million, and forecast to increase to 169 million by 2020. Dhaka is expected to become one of the world’s mega cities, with the population increasing to 30 million in 2025 and 50 million by 2050.

- Bangladesh was ranked the 57th largest economy in 2012 in nominal terms, with a gross domestic product of US$ 115.6 billion.

- Bangladesh remains one of the poorest countries in the world; 27% of the population was undernourished in 2011, according to the definition provided by the Food and Agricultural Organization (FAO), (they are not having access to adequate amounts of safe, nutritious food to sustain a healthy and productive life). In the early 1990s, 38% of the population had no access to sufficient food.

- The economy is showing an annual average growth of six percent in recent years, but a smaller growth rate is expected for the coming years.

- Main issues and hurdles for economic growth include housing, infrastructure, food production, clean water, power supplies, an unstable political situation and financial issues.

- More than half of the GDP in 2012 is generated by the service sector, followed by industry with 28.6%, (including food industry 17%), and agriculture 17.3%. Bangladesh was the world’s fourth-largest rice producer in 2012.

- Nearly half of the Bangladeshi population is employed in the agriculture sector.

- Important export sectors include (frozen) fish and seafood, food products, textile, software and IT services.

- Due to Bangladesh’s low level of development, economic policy of the government is supported by international donors and is oriented towards poverty alleviation by means of considerable subsidies. Donors have released US$ 2788 million in 2012-13, or 1.8% of the gross domestic product of Bangladesh (BDnews24.com, 2013).
Institutional public setting

- Bangladesh is divided into seven divisions. The divisions are subdivided into 64 districts, the districts into 482 upazilas, (sub-districts), and the upazilas into 4,498 unions, (the lowest tier). Presently elected local governments exist only in the upazilas and the unions. In the urban areas, there are two types of local governments: seven city corporations for metropolitan cities and 308 paurashavas, (municipalities), for the large-to-medium size towns. The country is governed by a parliamentary democracy and it has a unitary national parliament. There are 35 ministries, those most relevant for the water sector are: Ministry of Water Resources (MoWR), Ministry of Local Government, Rural Development and Cooperatives (LGRD & C), Ministry of Agriculture (MoA) and the Ministry of Environment and Forest.

- Governance, infrastructure, (both physical and technological), social equity and environmental policy should improve to ensure sustainable and responsible growth for Bangladesh.

- Critical issues relating to public sector institutional performance include lack of coordination, lack of an integrated approach, lack of capacity, implementation of strategy, corruption and lack of transparency.

- The public sector within the water market plays a dominant role in the overall planning, design and implementation of programs and projects. In the majority of cases, the agencies within the public sector act as the regulatory body, and are responsible for the management and operation of relevant activities. The public sector is directly and indirectly involved in the planning, programming, management and operations of all activities for water resource management, water and sanitation supply, flood protection and drainage and coastal zone management.

Trends in the water sector in Bangladesh

Water management and delta planning

- The water sector in Bangladesh has to deal with increased demand of water in the urban and regional sector, reduced flows in the Ganges, increased pollution of surface water by the disposal of effluents and chemicals, salinity intrusion in the coastal areas and arsenic contamination. Furthermore, the availability of freshwater is highly seasonal depending on the presence and duration of the monsoon (Kahn, 2011).

- The Government of Bangladesh (GoB) also has to deal with increased flooding caused by climate changes.

- Water Supply and Sanitation
• The supply of clean and uncontaminated water is a major issue in Bangladesh. Groundwater levels are currently decreasing; deeper groundwater aquifers will be increasingly reserved for drinking water. Artificial recharge of groundwater by surface water, (or rainwater), can be a part of the solution.

• In the market segment “Water Supply and Sanitation” the public sector plays a major role. Public organizations are primarily responsible for the management of water supply and sanitation services. Some private sector contractors are engaged in works and services, but these are mostly restricted to small-scale contracts awarded to small and medium-sized firms. The value of the water services outsourced by the government is growing but is still relatively small. Selection of contractors and service providers is based on low cost proposals resulting in low quality construction and maintenance works (Mott MacDonald, 2010).

• Where the outsourcing of large-scale schemes exists, contracts are on fixed terms and there is a tendency to break the overall value into smaller parts (Mott MacDonald, 2010). In the last three years this situation has not changed - it seems difficult to improve cooperation between public and private organizations in the water sector in Bangladesh. The main reason for this is the insufficient institutional infrastructure and lack of experience with the implementation of Public Private Partnerships.

• The water markets have solid growth potential and could contribute to and support economic growth in Bangladesh (Mott MacDonald, 2010). The rate of population growth in Dhaka is the highest in the world and is projected to create a demand of 700 million m3 of water against a supply of 300 million m3 of water per annum (WB, 2006).

Water for agriculture

• Agriculture is the main water-consuming sector in Bangladesh. Currently, groundwater provides the main supply for irrigation of agriculture. Increasing food production and achieving food security are, amongst other factors, dependent on irrigation expansion. Balancing water supply between drinking water and agricultural water is a critical issue, especially in the dry season. A shortage of water is expected to become more and more of an important limiting factor for agricultural production.

• Another limiting factor for agricultural production is the salinity of the water (Chowdhury, 2010). Agriculture could use more surface water for irrigation instead of ground water, as a solution.

• Rainwater harvesting technology could provide an alternative source in the rural areas - especially in the areas where the availability of ponds for drinking water supply is an
issue, due to the competitive use of these ponds for fish farming (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

**Water for Industry**

Industry water is used mainly as an input in the production process and for cooling machines. The textile industry is the main user of industrial water. Some industries are connected to the municipal supplies through the urban distribution network and others are connected directly to surface or ground water sources (Chowdhury, 2010).

**Market entry of Dutch companies on the Bangladeshi water sector**

This Nyenrode research identified, in addition to opportunities identified by prior research, the following opportunities for the Dutch private sector. The opportunities mentioned below are related to the supply of goods as well as consultancy services and capacity building (B2G).

- **Rural drinking water:**
  - Extraction, purification, treatment - services and goods (Nyenrode survey, 2013);

- **Water Harvesting**
  - Engineering options water harvesting - services (Nyenrode survey, 2013);
  - Harvesting technology - goods (Ministry of LGRDC, 2011 & Nyenrode survey, 2013);
  - and
  - Desalination - goods (Ministry of LGRDC, 2011).

- **Water for Agriculture**
  - Expertise on the recharge of groundwater basins to use less groundwater for irrigation - services (Ministry of LGRDC, 2011);
  - Increase water harvesting for irrigation - services and goods (Ministry of LGRDC, 2011 & Nyenrode survey, 2013);
  - Treatment and re-use of wastewater for irrigation - services and goods (Ministry of LGRDC, 2011 & Nyenrode survey, 2013);
  - Improve and increase efficiency of surface water irrigation, in particular in the South - irrigation management – services (Ministry of LGRDC, 2011);
  - Development and maintenance of dams and canals - works and goods (Mott Macdonald, 2010); and
  - Reduce impact of saline water intrusion in the South and enhance river water flow (Ministry of LGRDC, 2011).
The opportunities mentioned above have been identified through desk research and a survey of 27 Netherlands companies. The Dutch companies surveyed by Nyenrode indicated that they are interested in Bangladesh as a country to export consultancy services and affordable innovative goods to. The surveyed companies were not yet interested in investing in Bangladesh. Their strategy is often to access the market by participating in donor-funded projects. These projects ideally provide them with networks and lead to further commercial spin-offs.

The total amount of Dutch exports of goods and technology to Bangladesh is still marginal, but considering the relative share of Bangladesh to Dutch total exports, (0,03%), it is fair to conclude that there is room for growth. Spanning all sectors, the Netherlands was the third largest investor in Bangladesh (WTO, 2012).

Financing

- The Water Supply & Sanitation (WSS) Sector Development Plan (SDP) (2011-2025) and the related Sector Investment Plan of the Policy Support Unit / Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives estimated that investments needed in the WSS sector amounted to US$ 209,36 million. In the short-term, the budget gap is estimated to be 50%. Potential financing of government outsourced services and related offers of works and goods could come from the GoB and international finance organizations like the World Bank, (WB), and the Asian Development Bank, (ADB).

- The development of innovative water products for agriculture could be supported by the GoB and international finance organizations. The public priority investments related to water mentioned in the SDP have an estimated value of US$ 583 million. Besides this pre-competitive phase, the agricultural sector also offers opportunities for water-technology and services in a regular business-to-business market.

- The Dutch Government recently began supporting a process for the development of a long term, (up to 2050), Delta Plan for Bangladesh.

Potential funding for follow up investments could come from the GoB and from international financial institutions like the WB and ADB.

Hurdles to enter the market

Dutch companies that participated in the Nyenrode survey and expressed interest in the Bangladeshi water segments indicated that they face the following primary hurdles in entering the market:
- Lack of market information, local partnership and financial constraints, (banking operations, organizing trade finance, profit repatriation, payment collections, fiscal structure and administrative hassle), as their main hurdle to enter the market in Bangladesh; and
- Some companies also mentioned a lack of information about competitors, local regulations and to a certain extent location choices as hurdles.

**Demand for goods and services by Bangladeshi**

Nyenrode research shows that:

- Bangladeshi NGO’s are most interested in cooperating with a Dutch partner on waste water, rural drinking water, urban drinking water and water harvesting;
- Bangladeshi public organizations are most interested in developing a cooperation with a Dutch organization on waste water, rural drinking water, urban drinking water and water harvesting;
- Nine out of fourteen agro-food companies in Bangladesh showed interest in having Dutch companies fill gaps in management, organization, skills and knowledge; and
- Three out of fourteen Bangladeshi agro-food companies surveyed by Nyenrode were interested in investing in commercial relations with Dutch companies to improve their water efficiency.

**Doing Business in Bangladesh**

According to the World Bank (2013), the ‘ease of doing business’ rank for Bangladesh in the year 2013 is 129th out of 185 economies. A low ranking means that the government has created a regulatory environment conducive to operating a business compared to the situation in other countries. Bangladesh ranks higher than India, (129th and 132nd, respectively), and just below the regional average of South Asia, which is 121. ‘Getting electricity’ (185) and ‘enforcing contracts’ (182) score low in Bangladesh while the country scores high in the category of ‘protecting Investors’ (25).

- With regard to ‘getting Electricity’, in 2012 the Government of Bangladesh, (GoB), made getting electricity more difficult by imposing a moratorium on new electricity connections from April 2010 to March 2011, due to an electricity shortage. The moratorium led to long delays for customers and has increased the time to obtain an electricity connection. In 2013, Bangladesh impeded getting electricity even more by requiring all customers to meet seven percent of their electricity needs through solar energy, making it necessary to install solar panels.
• With regard to ‘Enforcing contracts’: in order to improve this in lower-income countries, the judiciary must be improved.

Other investment climate constraints include the lack of serviced land and availability of land for market-based prices, poor road networks and transportation, difficulties with financial transactions such as L/C, (Letters of Credit), guarantees and customs regulations (Mott Macdonald, 2010).
1 Introduction

The Embassy of the Kingdom of the Netherlands (EKN) in Dhaka, within its scope of economic diplomacy, has partnered with Nyenrode Business Universiteit (Nyenrode) in order to stimulate economic relations between the Netherlands and Bangladesh. The strategic aim of the Embassy with regard to trade and economic development is to strengthen bilateral commercial ties in a responsible manner and support the improvement of the Bangladeshi business environment with a spillover effect that improves the lives of the poor.

Putting theory into practice, Nyenrode facilitates business-to-business activities in order to link local actors to Dutch parties. The aim of the program is to have a positive impact on the volume of new trade relations contributing to development, the volume of follow-up investments, employment generated (with a specific focus on female entrepreneurship), innovation and the provision of widespread general economic information. The foundation of the program lies in the realization that companies can contribute to social and economic development through their core business, their operations and supply chain, as well as the products and services they produce and through social investment in the communities and regions in which they operate. Four priority sectors have been identified for the Nyenrode program: water, agro-food, logistics and the IT-sector, with a special focus on outsourcing activities. Nyenrode, within the framework of the Bangladesh Trade and Investment Program, values ‘doing what is right’ and demands of its cooperation partners to read and voluntarily apply the Code of Conduct guidelines (annex 3) in order to ensure good business practices.

The underlying research focuses on the water sector, and specifically on the development of a number of water segments in Bangladesh: integrated water management (surface water and groundwater), the water use for consumption purposes (urban, rural drinking water), use for agricultural water and water discharge. To develop this report Nyenrode carried out desk research and field research, the latter in Bangladesh and the Netherlands. The companies and organizations that were surveyed have indicated that they are interested in bilateral cooperation and business development.

The challenge is to understand what business opportunities exist to provide services, to export technology and to invest in the Bangladeshi water sector, as well as to determine what roles and capacity the Bangladeshi public and private sectors have in realizing possible cooperation with Dutch partners. To deal with this challenge, Nyenrode first identified the demand of Bangladeshi public water organizations as well as bilateral and international donor funds that could contribute to
finance this demand. Next, Nyenrode identified opportunities and barriers for Dutch entrepreneurs to enter the Bangladeshi market, and examined the potential contribution of the Netherlands water sector to develop a sustainable use of water in Bangladesh.

Water management in Bangladesh is a critical issue. River morphology is affected by the annual flood and drought cycles. Demand for water is growing from agricultural, industrial and urban use. As a result the supply of clean water has fallen far short of demand, inhibited by inadequate river flows, pollutions caused by the disposal of effluents & chemicals, salinity intrusion in the coastal area and arsenic contamination.

Although the Government of Bangladesh plays a major role in the water sector, private sector involvement is increasing. The framework for public-private water projects is currently under development. This report provides an overview of outsourced works and services by the Bangladeshi government. Here, opportunities arise for the Dutch water sector. Besides this G2B market, the B2B market can be interesting for Dutch companies to deliver affordable and innovative products.

It is our pleasure to share with you the outcome of our research on business opportunities in the Bangladeshi water sector.

Nyenrode would like to thank Mrs Ahrari (Simavi), Mr Dietvorst, (IRC International Water and Sanitation Centre), Mr De Jager (Vitens Evides International), Mrs Meijer (Deltas), Mrs Ter Horst (Unesco-IHE), Mrs Kats (PvW - Agentschap NL), Mr Luyendijk (Unesco-IHE), Mr Nijland (NWP), Mr Oliemans (WUR), Mr Pannekoek (Waste), Mr Smits (Euroconsult Mott MacDonald), Mr Van Staveren (NWP) and Mrs Van de Wal Hubs (Agentschap NL) for their contributions to this research.

Prof. dr. Désirée van Gorp
Breukelen, December 2013

Report developed by:
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Norbert van der Straaten
Lisette Kuiperi-Blüm
Naomi Smeele
Michael McKay
2 Background and objective of the study

The objective of the underlying research is to unite Dutch and Bangladeshi commercial interests in light of existing development cooperation initiatives in Bangladesh (of the Netherlands Embassy, but also other donors and international organizations). This approach is in accordance with the basic principles of the Private Sector Development policy: economic interventions must be demand driven (Bangladesh) and Dutch supply must be complementary to existing activities in the beneficiary country’s economy (Sociaal Economische Raad, 2011).

This Nyenrode research analyzes the business opportunities present in the Bangladeshi water sector for the Dutch private water sector. The water sector covers a range of different market segments:

- Water surface (flood protection and drainage);
- Water harvesting;
- Water use for consumption purposes (urban and rural drinking water);
- Water use for non-consumption purposes (industry, agriculture, river and sea transport, dredging, tourism); and
- Water discharge (wastewater).

The study undertaken by Mott MacDonald in 2010, titled ‘Market Scan on the Bangladesh Water Sector’ has been used as starting point for the underlying research. This research aims to provide an update of the business opportunities identified by prior research.

Mott MacDonald concluded in 2010 that the business opportunities for the Dutch private sector:

- Most business to business (B2B) opportunities are in the supply of goods for urban drinking water, urban wastewater and water for agriculture;
- Most opportunities in business to government (B2G) outsourced work are in capacity building of public institutions, as well as in preparing long term integrated strategy and investments programs. Related opportunities are providing consultancy services for surface water, urban drinking water, drainage and sewerage;
- Netherlands companies operating in other countries of South Asia and not in Bangladesh perceive market opportunities to exist in surface and ground water, rural drinking water and agricultural water;
- The Bangladesh private sector indicates the need for partnering with foreign companies in order to fill gaps in management, technology, skills and knowledge of specific technical areas. Interests from Bangladeshi private sector range from forming joint venture partnership to design, construct, and operate shipyards, inland container terminal, water treatment plants,
effluent treatment plants, and providing water-based tourism marketing and technical assistance.

Additional business opportunities identified by Nyenrode are summarized in paragraph 2.4. With regard to water use for non-consumption, this report focuses on opportunities in the market segment water for agriculture.

Opportunities in the river, sea transport and dredging market segments have been omitted from analysis in this report as these have been researched within the sector analysis on transport and logistics undertaken by Nyenrode. Opportunities related to water use by industry have also been omitted from analysis in this report as these will be analyzed by The Partnership for Cleaner Textiles program (PaCT), funded in part by the Dutch Embassy in Dhaka and implemented by the International Finance Corporation (IFC) and Solidaridad. The PaCT program documentation can be referred to for a broad overview of identified potential, also for Dutch companies.

Lastly, this report provides an overview of publically funded programs being implemented by the Bangladeshi Government, through bilateral agreements and by international organizations, which could be of potential interest to Dutch businesses.

2.1 Methodology and approach to the Study

To develop this report, Nyenrode Business University carried out:

- Desk research on the water sector in Bangladesh;
- A survey in Bangladesh on the demand of the different water segments; and
- A market entry survey in the Netherlands for the identified water products.

Ad 1) Reports and documents relating to water management, water supply and sanitation and water for agriculture were collected and consulted. A list of the documents is attached in Annex 1. These were found to be useful sources of information; chapter 4 describes current trends in the water sector.

Ad 2a) In order to assess perceptions of the public sector, donors and NGO’s in Bangladesh, Nyenrode Business University carried out a survey in Bangladesh. The research results are based on the responses of 19 organizations that had indicated that they are interested in, or are already involved in, bilateral cooperation and business development with the Netherlands. Senior officials from relevant public sector institutions and donor organizations were surveyed, followed by Skype discussions with the individual representatives. Discussions within this targeted group focused on governance, their views on current policy development and implementation and the opportunities
for the Bangladeshi and Dutch private sectors within the different sub segments of the water markets in Bangladesh. A list of the organizations interviewed is presented in Annex 1. The surveys were carried out with a structured questionnaire and relied on qualitative assessments of the stakeholder’s perceptions and opinions. Results of the survey are described in chapter 5.

Ad 2b) In order to assess perceptions of the Bangladeshi private sector in relation to B2B opportunities, 14 agricultural companies were approached. The survey indicated that 9 respondents were interested in developing cooperation related to certain business processes, and 3 respondents were interested in cooperation/business specific related to water quality and quantity issues.

Ad 3) 230 Dutch organizations were approached for an online survey. The survey was carried out with a structured questionnaire presented in Annex 6. From those contacted, 27, (11,7%), indicated that they had an interest in the Bangladeshi market and as such completed the questionnaire. Results of the survey are presented in chapter 6. Comparatively, Mott MacDonald contacted 240 Dutch organizations/companies in 2010, surveying them to conduct his afore-mentioned research. From those contacted in 2010, 31 responded, (12,4%).

2.2 Products, goods and services for different market segments

Dutch entrepreneurs already provide goods, works and consultancy services to the water sector in Bangladesh. To identify the potential business opportunities, Nyenrode followed the same water segments as used by Mott MacDonald in 2010.

These segments correspond reasonably close to those defined by the Water Mondiaal Mission Report, the publication of the Dutch Water Sector 2009-2010, which provides a directory of companies under various market segments.

Further to prior research the underlying study has found that business opportunities exist in different water market segments in Bangladesh. This report will identify market product combinations that indicate feasible and viable opportunities for market development based on business-to-business, (B2B), and business-to-government, (B2G), cooperation as well as partnerships, (government to government or knowledge to knowledge). A product market combination is indicated as an opportunity in the case that a Bangladeshi company or public organization has a clear demand and in the case there are possibilities to finance this demand.
3 Trade and investment relation with Bangladesh

3.1 Introduction (political and social)

Bangladesh is a country in the south of Asia with a surface area of 144 thousand square kilometers, (about four times bigger than the Netherlands), and a population of 160 million people and growing rapidly. This makes it one of the most densely populated areas in the world. Bangladesh has a young population. Due to its geographical location, the country has a tropical climate; the inhabitants have to deal with natural influences such as monsoons, cyclones, droughts and floods. Bengali is the country's main language but English is commonly used. Bangladesh shares most of its border with India, but does share a border in the Southeast with Myanmar. It also has a coastal border at the Bay of Bengal. The national currency is the Taka. Most of the population is Muslim, (90%), the second biggest religion is Hindu, (9%). Since 1972, Bangladesh has maintained a parliamentary democracy. The two main political factions are, in the center-left the Awami League, (AL), and in the center-right the Bangladesh Nationalist Party, (BNP). The AL is the biggest faction and has held a parliamentary majority since the last elections in 2008.

The next election will be held on January 24th, 2014. For the past two decades, non-partisan caretaker governments have overseen preparations for parliamentary polls. The AL and the BNP previously agreed that the system was necessary to ensure free and fair elections, following a period of military dictatorships in the 1970s and 1980s. However, after a Supreme Court ruling in 2011 that deemed the arrangement invalid, the AL won parliamentary approval for a constitutional amendment abolishing the system. The BNP is opposed to ending the caretaker-government arrangement, as it believes that any election overseen by the AL administration will be flawed. Like other past and current opposition parties in Bangladesh, the BNP will continue to use hartals to express its objections to the ending of the caretaker-government system and other aspects of administrative policy. There has already been an intensification of hartals in recent months.

Aside from a likely program of street agitation led by opposition parties, there are other factors that could undermine political stability in 2013-17.

- First is Bangladesh's on-going war crimes tribunal. A number of senior figures in the BNP and its main ally, the Islamist Jamaat-e-Islami party, have been charged with committing atrocities during the 1971 war of secession with West Pakistan, (now Pakistan), and thus face possible execution. So far, every guilty verdict has been followed by violent street clashes between supporters of Jamaat and the police.
• The second potential source of instability is campaigns of violence by terrorist groups. Unlike Bangladesh’s previous democratically elected government led by the BNP, the AL administration has admitted that a number of such organizations are active in the country. The government’s proactive stance has helped to contain the threat, but violent attacks by such groups in the forecast period cannot be ruled out.
• Finally, social unrest could be sparked by shortages of food, power and/or water.

Foreign policy is crucial for water management issues. Developments in neighboring country India will have an increasingly large effect on the availability of water in the country’s rivers as most of their catchment areas are outside the territorial limits of Bangladesh. In order to negotiate with India on water sharing, the Joint Rivers Commission of the Government of Bangladesh is in need of scientifically justified approaches to articulate the flow requirements for ecological protection and human use.

Furthermore, improving economic and diplomatic ties with neighbors is a priority for Bangladesh, namely with India and China. Relations with India have improved in the last couple of years, but the Bangladeshi government is careful not to allow improved relations with India to damage its ties with China.

3.2 Economic situation

In recent years the economy is showing an average growth of six to seven percent (World Bank, 2013). The population is still expanding rapidly, up to an expected 169 million people in 2020. This demands improvements in a lot of problematic areas such as housing, infrastructure, food production, clean water and power supplies. Bangladesh’s domestic natural gas production can only meet 80% of the country’s energy demand, leading to power outages; petroleum imports have become essential. Although some efforts of improvement have been made in recent years, the country still cannot meet local demand. The main obstacle is the large number of old and inefficient power stations. A number of advances will be made, but electricity supplies are unlikely to improve significantly in the short term. In addition, there is uncertainty about the volume of gas-reserves. Extracting these resources will require significant infrastructural investment. There remains a political preference to retain gas solely for the domestic market, while mismanagement of the gas sector via state-owned companies has contributed to the crippling domestic energy shortage.

Bangladesh remains one of the poorest and most densely populated countries in the world. 53% of its rural population is classified as poor. Bangladesh’s weak infrastructure and public institutions, regular power outages and notorious and widespread corruption continue to obstruct stronger
economic growth. The garment industry is, at present, the backbone of the country’s manufacturing industry. In view of recent tragedies, the development and implementation of international standards, (labor conditions in general and worker safety specifically), is inevitable for further development of the sector. Almost 80% of Bangladesh’s population lives in rural areas, with 54% (two-thirds of the total labor force) employed in agriculture and the remainder in the rural non-farm, (RNF), sector. Because the majority of the labor force is employed in agriculture, this sector plays a key role in the country’s overall economic performance. In 2012 the agro-food chain provided for 35% of the country’s GDP (World Bank, 2013). Due to Bangladesh’s low level of development, economic policy is oriented towards poverty alleviation by means of considerable subsidies aimed at the agricultural sector. Bangladesh is the world’s fourth-largest rice producer. Aided by favorable weather, output has been steadily growing, although natural disasters such as floods remain a risk for the agricultural sector.

3.2.1 Trade and investment - infrastructure

Bangladesh has three major seaports, of which Chittagong is the largest and most important; it handles around 80% of total trade (Dun & Bradstreet country report 2011/2012). The port of Chittagong has significantly improved its competitiveness and efficiency relative to other ports in the region in terms of costs, vessel turn-around time and container handling productivity. Officials are expected to exploit Bangladesh’s strategically important location on the Bay of Bengal to extract concessions on trade and aid from both India and China during 2013-17. India has already shown an interest in being allowed to use the Chittagong port for its trade.

Bangladesh has 16 airports, including two international airports, (Chittagong and Dhaka). Owing to current public infrastructure investments, capital goods imports have become increasingly important.

In terms of lack of energy and urban development, foreign investors look for effective transportation systems to ensure cost efficient supply chains. It is no secret that moving around Dhaka is somewhat difficult. Not only that, the city is congested with buildings that offer little to no parking space. Investors value such details; failing to provide them with these facilities could demotivate any investment considerations. It is fair to say that much needs to be done in this field.

3.2.2 Trade transparency in policy and regulations

One of the main obstacles for trade and investment in Bangladesh is the continued lack of transparency in policy and trade regulations. Policy changes are not improving the conditions for entrepreneurs. Regulations are often unclear, inconsistent and implemented after long delays. As a first step towards establishing a local presence, foreign businesses often enter into contractual
agreements with a Bangladeshi company to act as a local distributor, supplier or agent. This strategy can help in getting to know a partner and establish trust before possibly progressing onto more involved forms of partnership. Most agency agreements have a clause permitting both parties to give due notice if they intend to terminate the agreement. The appointment of the right partner/agent is often fundamental to success. Usually, Dhaka-based agents should be in a position to cover the entire territory of Bangladesh.

When appointing a Bangladeshi agent, Dutch companies should consider the following:

- The agent has the authority to act or carry on a business and therefore should do everything lawfully necessary to execute such an act or business. The 1972 Contract Act prescribes the rights and liabilities of an agent and also of the principal. If an agent acts beyond the terms of the agency agreement, the principal will not be liable for these acts;
- Most agency agreements have a clause that permits either party to give due notice if it is intended that the agreement is to be terminated. It is prudent to include a contract clause that agrees to allow an independent arbitrator outside of Bangladesh to settle any disputes between parties. The Bangladesh International Arbitration Centre (BIAC) was launched in 2011, becoming the country’s first arbitration center for the settlement of commercial disputes; and
- BIAC is an initiative of the International Chamber of Commerce in partnership with the Dhaka Chamber of Commerce and Industry and the Metropolitan Chamber of Commerce and Industry¹.

Current customs procedures leave significant scope for corruption. This increases not only uncertainty and the cost of trading with Bangladesh but also ensures inefficient allocation of resources, preventing the country from benefitting fully from trade liberalization. Significant customs modernization is currently under way to facilitate speedy customs clearance and improve transparency through automation. Import and export procedures have been further simplified by reducing the number of signatures needed for clearance of consignments and the frequency of goods inspections.

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Another issue is the scarcity of skilled labor in different industries. The population structure of Bangladesh is furthermore noteworthy; most of the people building and sustaining the country are between the ages of 25 and 35.

In addition to the apparent challenges which pose short-term problems, there are many hurdles that may seem distant at this moment but can become problematic for the country in years to come. Good governance, macroeconomic stability, strong infrastructure, (both physical and technological), social equity and environmental reform are all factors that can positively contribute, and must be addressed now to ensure sustainable and responsible growth for Bangladesh.

The political instability coupled with hartals and violent demonstrations, which will prevail at least until the election has been held, as well as the recent tragedies in the garment sector have a negative influence on the perception of the country.

3.2.3 Tariffs
Bangladeshi exporters can benefit from the duty free export to several markets while the local industry is protected with import duties.

- Since January 2011, clothes and other finished goods made in Bangladesh, (and other least developed countries), have been granted duty-free access to the EU if their imported components do not exceed 70% of the total value, (GSP = Generalized System of Preferences of EU). Least developed countries, (49 including Bangladesh), enjoy the open-ended Everything But Arms, (EBA), scheme. They also benefit from the favorable GSP Rules of Origin scheme. For more information on GSP: http://ec.europa.eu/taxation_customs/customs_duties/rules_origin/preferential/article_781_en.htm. Previously, duty-free access was granted only to goods with a maximum imported content of 30%. Textile exporters will continue to benefit from this preferential EU import rules system. For more information, see: http://esango.un.org/lidcportal/documents/10179/22301/Bangladesh_case%20study%20summary.pdf. This change has given Bangladesh an advantage over its main competitors, notably China, Pakistan, India and Sri Lanka, as these countries’ goods are liable for duty in the EU owing to the fact that they are not classified by the UN as least developed countries.

- Bangladesh also gets GSP benefit in a number of countries like Canada, Japan, Norway, Switzerland, Australia and New Zealand, and is now working with the government to get GSP for the Russian market. GSP is a formal system of exemption from the more general rules of the World Trade Organization, (WTO). Specifically, it’s a system of exemption from the most favored nation principle, (MFN), that obliges WTO member countries to treat the imports of
all other WTO member countries no worse than they treat the imports of their ‘most favored’ trading partner.

- In addition to this, Bangladesh has preferential market access in countries like China, India, Malaysia and South Korea. The country’s overall exports grew by 2.1% to USD$ 6.3 billion dollars during the first three months of the financial year 2013 despite global weakness, particularly in the European Union and the United States, which are the country’s main export markets.

- Bangladesh employs import duties that are designed to strengthen domestic production. They provide new opportunities for industrialization, discourage the consumption of luxury goods and ensure a supply of essential goods for consumers. Duty rates tend to change on an almost annual basis in line with the government’s budget, which causes an unpredictable policy environment. Bangladesh also has a system of duty-free, (bonded), imports of certain raw materials to be used for producing finished goods for export. A few items, mostly manufacturing inputs, are subject to rates ranging from 0-3%; basic raw materials are subject to 0-5% as of the 2009/10 fiscal year; intermediate products 12%; and finished products up to a rate of 25%. Ready-made garment manufacturers that are 100% export-oriented can import duty-free through bonded warehouses. Other export oriented industries and indirect exporters can claim a duty-drawback at stated rates. Goods imported by the government for the use of the Defense Services are exempt from import duties.

3.2.4 Investment climate

Bangladesh has one of the most liberal investment regimes in the region. Bilateral investment treaties for the promotion and protection of foreign investment exist with a number of countries, including the Netherlands. There are no distinctions between foreign and domestic private investors regarding investment incentives or export and import policies. The government’s eagerness to attract foreign investment is understandable, given the low level of capital mobilization in the country. Despite possessing an attractive investment regime, and relatively low labor costs compared to other countries in the region, Bangladesh has had difficulty in attracting foreign investments. The slow pace of reform implementation, endemic corruption, political instability, continual strike action, poor infrastructure, inadequate legal and judicial system, as well as slow government decision-making have hindered this. Notably, six large-scale FDI proposals have been on hold for several years because of government indecision, and the country lacks a policy on coal and suffers from a chronic shortage of gas.

Corruption is often cited as a barrier for the effective development of the private sector, and poses business risks, which require pro-active management in the form of regular due diligence exercises
and up-to-date risk strategies. Procurement practices often lack transparency and are usually coupled with a significant bureaucratic burden.

3.2.5 Bilateral trade between the Netherlands - Bangladesh

Recent years have seen Bangladesh become a country with steady economic growth and an impressive decrease in the number of people living below the poverty line. The country offers competitive investment and trade incentives to its foreign partners and has a consumer market of 160 million people. The Netherlands was one of the first European nations to recognize Bangladesh. Since the independence of Bangladesh, the Netherlands has been extending continuous development and economic assistance, especially in the fields of water resources, sexual and reproductive health and rights and food security.

On the political level, Bangladesh is now a priority country for the Netherlands not only in terms of bilateral development cooperation but also in the field of economic cooperation. The transition of Dutch policy with regard to Bangladesh from ‘traditional aid to responsible trade’ illustrates the changing nature of the relationship between the two countries.

Concerning trade relations, almost 85% of exports to the Netherlands are garments in the textile and textile articles category, followed by exports in the frozen food sector, (specifically shrimp and prawn). Bangladeshi exports from the textiles sector are largely weighted towards readymade garments sent to Europe, leaving the country vulnerable to a further slowdown in global growth due to a lack of diversification in its export position. Dutch exports to Bangladesh are marginal, and mainly related to agricultural inputs and services (WTO, 2012).

- In 2012 the Netherlands was the 9th largest export destination for Bangladesh, (following: US, Germany, UK, France, Spain, Canada, Italy and Turkey). 2.8% of total Bangladeshi exports had the Netherlands as a destination (WTO, 2012).
- Bangladesh is, at present, only a marginal export destination for the Netherlands, in 2012 759 million US dollars, or 0.11% of total Dutch exports, had Bangladesh as destination (WTO, 2012).

Dutch companies have invested significantly in Bangladesh. According to the WTO figures of 2012, the highest investment in Bangladesh, USD 152.30 million, came from Egypt, USD 117.74 million from the US and USD 116.75 million from the Netherlands, making the Netherlands the third largest investor in Bangladesh. Investments from Dutch companies are mainly in textiles, which make up about 80% of all investments from the Netherlands. Furthermore, some investments have been made in agro-food, shipbuilding, IT, chemical and energy companies.
Considering however, the relative share of Bangladeshi products and services, (compared to the shares of, for example, India), in total Dutch imports and exports it is fair to conclude that there is room for growth in the trade relations.

### 3.3 Dutch business community BD

In 2011, 59 Dutch companies were registered at the EKN, which is strong growth when compared to the 20 companies registered in 2010. According to the Bangladesh Export Promotion Bureau, the largest amounts of exports to the Netherlands, other than RMG exports, (Ready Made Garments), were in the frozen food sector, (specifically shrimp and prawn). This does not differ from the general trade patterns between Bangladesh and the EU, as well as the US. The volume and direction of bilateral trade between the Netherlands and Bangladesh in the future will depend heavily upon how well Bangladesh can position itself to further attract Dutch exports and investments.

### 3.4 The ease of doing business

A part of how to do business in Bangladesh is related to ‘the ease of doing business’ as measured by the World Bank in *Doing Business. Measuring Business Regulation* (2013). According to the World Bank, the ‘ease of doing business rank’ for Bangladesh in the year 2013 is 129th out of 185 economies. This is a decrease of 5 places, as Bangladesh ranked 124th in 2012.

Bangladesh ranks lower than India, 129 against 132 respectively. The regional average in South Asia is 121. Globally, Bangladesh stands at 95th in the ranking of 185 economies on the ease of starting a business.

The lowest ranks for Bangladesh are ‘getting electricity’ (185) and ‘registering property’ (175), which means registering and transferring property. ‘Enforcing contracts’ (182) also scores low. With regard to ‘enforcing contracts’, *Doing Business* has measured the efficiency of the judicial system in resolving commercial disputes before local courts.

Access to reliable and affordable electricity is vital for businesses. Globally, Bangladesh stands at 185th in the ranking of 185 economies on the ease of getting electricity. In 2011, the GoB decided to stop providing new gas connections to industries due to the shortage of gas in domestic use and electricity generation. This decision is still valid. Bangladesh ranks high, (25th), in the category of ‘protecting investors’. India ranks 49th and the regional average in South Asia is 82. Investor protection matters because companies need to raise the capital they need to grow, innovate, diversify and compete. *Doing Business* measures the strength of minority shareholder protections against directors’ use of corporate assets for personal gain - or self-dealing.
3.5 Some business etiquette to consider

Part of doing business is related to business etiquette and cultural differences, including knowledge of local circumstances. The success of doing business in Bangladesh partly depends on how well foreign entrepreneurs are able to adapt to the Bangladeshi business culture. The following aspects can be considered (not exhaustive):

- Adequate personal contact is very important for maintaining business contacts. To realize and maintain this personal contact, meetings outside the office, lunches/dinners, are highly appreciated;
- Hierarchy is important in Bangladeshi society, and differences in age and status are observed through language conventions. Individuals with higher status are not addressed by personal name; instead a title or kinship term is used;
- Be on time, even if you have to wait for a while;
- It is common practice to shake hands. Men do not shake hands with women unless the woman takes the initiative. Otherwise it’s acceptable to nod;
- Always use the right hand when shaking hands and accepting business cards, as the left hand is considered unclean. Bring a lot of business cards, as these are commonly exchanged;
- Do use titles wherever possible, such as “Professor” or “Doctor”. If your Bangladeshi counterpart does not have a title, use ‘Mr.’, ‘Mrs.’, or ‘Miss’;
- If you are not certain who is in charge, the best advice is to turn to the eldest person within the company;
- Usually, business meetings start off with small talk. Sometimes in the first meeting the actual business is not even discussed. It is important to establish a personal relationship before embarking on business related talks;
- Agendas are not set and negotiations can take a long time;
- The Bangladeshi people do not like to say ‘no’, instead they use expressions such as ‘maybe’ or ‘that might be difficult’ or ‘we shall try’;
- It is not common to bring personal gifts, however, presents given to business acquaintances are appreciated;
- In same-sex conversation, touching is common and individuals may stand or sit very close. The closer individuals are in terms of status, the closer their spatial interaction is;
- Face and self-esteem are essential parts of Bangladeshi culture, therefore any individual criticism in business situations must be done carefully and with sensitivity;
- When invited to a meal, do not start eating until the oldest person at the table begins; and
• Do not refuse any food or drink offered to you during business meetings as this may cause offence.

3.6 CSR and doing business in Bangladesh

Sustainability and corporate social responsibility, (CSR), policy allows companies to establish and maintain long-term success. CSR should, as such, be woven into the DNA of the organization and its management systems. Nyenrode believes that doing business in Bangladesh means taking responsibility for all aspects affecting the community. This refers to improved human well-being and social equity, including occupational health and safety standards and female participation in the workforce, as well as reducing environmental risks and ecological scarcities. Dutch companies should consider preparing a strategy related to corporate social responsibility before entering the market in Bangladesh. Such a strategy can be developed to conform to guidelines developed by the OECD, MVO Nederland and the Netherlands Ministry of Foreign Affairs. Please find related information enclosed within the Nyenrode code of conduct (annex 3). The sources mentioned in annex 3 can be found at: www.nbnp.nl. Developing such a strategy and working accordingly can avoid involvement with for example corruption issues.
The Ministry of Water Resources is responsible for flood management, irrigation, drainage control, erosion protection, land reclamation, integrated management of coastal polders, river flow augmentation, water sharing from trans boundary rivers and wetland conservation through participation of local people and coordinated programs with all ministries dependent on water resources.

The National Water Resources Council, (NWRC), is the highest national body for the formulation of water policy. It coordinates different water agencies and advises the cabinet on all water policy issues. The National Water Policy, formulated in 1999, has guidelines for agriculture, fisheries, industry, navigation, environment, basin-wide planning, water rights and allocations, public and private investment and water supply and sanitation (Ministry of Water Resources, 2013)

WARPO is a principal agency of the GoB under the Ministry of Water Resources. It has a mandate to ensure coordination of all relevant ministries through the NWRC and to plan all aspects of water development, including major and minor irrigation, navigation, fisheries and domestic water supply. It is responsible for three main assignments:

- Preparation of the National Water Management Plan, (NWMP), for the period until 2025 according to the National Water Policy formulated in January 1997;
- Establishing and updating the National Water Resources Database, (NWRD); and
- Acting as a clearing-house for all water sector projects undertaken by any agency involved in the water sector.

Major investments in the water sector are made by the Ministry of Water through the BWDB and by the Ministry of Local Government and Rural Development through its Local Government Engineering Department, (LGED). As WARPO is responsible for national and regional level plans, BWDB is supposed to develop projects fulfilling the requirements of their plans. BWDB is also a major collector of water resources information, and as such it is a major partner of WARPO in sustaining the NWRD.

The Joint Rivers Commission, (JRC), is responsible for 57 identified border rivers and has data on cross boundary water resources. All water sector projects need to conform to DoE rules and guidelines. It endorsed a set of EIA guidelines operated by the Ministry of Water Resources. Most of the Ministry’s projects are subject to DoE scrutiny when they are submitted to the Planning
Commission. WARPO and DoE share overlapping responsibilities like setting standards, monitoring compliance, data acquisition and storage. Special attention is needed to ensure cooperation between WARPO, NWRC, the Ministry of Environment and Forestry and DoE. Given the differential needs of the various water management issues, improved coordination of the activities of these institutes will improve the implementation of water policy (Chowdhury, 2010).

Bangladesh has six city corporations and 308 paurashavas, (municipalities). Out of the six city corporations there are separate WASAs operating in three large cities – Dhaka, Chittagong and Khulna. The other three city corporations and the 308 municipalities themselves manage their own water and sanitation services.

In the WSS Sector Development Plan of 2011, the following types of service delivery modalities in urban areas are presented:

- **WASAs**: WASAs are large WSS utilities, which operate the systems, collect fees and implement development projects. Bangladesh counts three WASAs - Dhaka and Chittagong WASAs were created in 1963, Khulna in 2008;
- **Urban LGIs, (Local Government Institutions)**, operate in three city corporations and 308 municipalities (paurashavas). These LGIs are responsible for the Operation and Maintenance (O&M) of the water supply systems. Present skills and capacity levels hardly permit these local organizations to realistically implement the water supply policy;
- **The Department of Public Health Engineering, (DPHE)**, carries out the majority of construction of new water supply systems and major rehabilitation programs. After completion of the works, the DPHE hands over the WSS systems to the city corporations and paurashavas for their O&M. The LGIs usually carry out small extensions of the piped system, and provide tube wells and other water points, (including sanitation units), particularly for the low-income communities;
- **Small-scale Service Providers**: at present, the small-scale service providers are mostly the NGOs operating water points connected to piped water systems in low-income communities. There is no formal private operator managing piped water supply, except for a few service contracts for billing;
- **Private Individuals**: in addition to the public services of piped water supply and sewerage, private individuals (households) install their own tube wells; and
- **NGOs**: The NGOs provide tube wells, other water points, community latrines and pit latrines for the low-income communities.
An overview of the different institutions involved in the water sector is provided in table 4.1 below.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Function</th>
<th>Site</th>
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<tbody>
<tr>
<td><strong>Water Management</strong></td>
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<tr>
<td><strong>Ministry of Water Resources (MoWR)</strong></td>
<td>Approval of national water policies (see paragraph 4.2)</td>
<td><a href="http://www.mowr.gov.bd/">http://www.mowr.gov.bd/</a></td>
</tr>
<tr>
<td><strong>National Water Resources Council (NWRC)</strong></td>
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<tr>
<td><strong>Ministry of Environment and Forest, Department of environment (DoEF),</strong></td>
<td>- Monitoring pollution level of rivers, underground and drinking water</td>
<td><a href="http://www.moef.gov.bd">http://www.moef.gov.bd</a></td>
</tr>
<tr>
<td></td>
<td>- Collection and analysis of data concerning the environment</td>
<td></td>
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<td></td>
<td>- Assist in preparation of EIP for different agencies (see paragraph 4.2)</td>
<td></td>
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<tr>
<td><strong>Planning Commission</strong></td>
<td>- Processing and approval of all development projects</td>
<td><a href="http://www.plandiv.gov.bd">http://www.plandiv.gov.bd</a></td>
</tr>
<tr>
<td></td>
<td>- Establish multi-sector investment priorities</td>
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<tr>
<td><strong>Water Resources Planning Organisation (WARPO)</strong></td>
<td>- Macro level water resource planning</td>
<td><a href="http://www.warpo.gov.bd">http://www.warpo.gov.bd</a></td>
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<tr>
<td></td>
<td>- Maintenance of water resources database</td>
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<td></td>
<td>- Preparation of reports on major water programs</td>
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<tr>
<td></td>
<td>- Preparation of national policies for water resources (see paragraph 4.2)</td>
<td></td>
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<td></td>
<td>- Prevention of salinity intrusion and desertification</td>
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<tr>
<td></td>
<td>- De-siltation of channel for navigation, fisheries, forestry, wildlife development and improvement of the environment</td>
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<tr>
<td></td>
<td>- Collection of ground and surface</td>
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<tr>
<td>Organization</td>
<td>Activities</td>
<td>Website</td>
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| River Research Institute (RRI) | - Surface water (scale and physical) modelling  
| Institute for Water Modelling (IWM) | | [http://www.iwmbd.org/](http://www.iwmbd.org/) |
| Centre for Environmental Geographical Information System (CEGIS) | | [http://www.cegisbd.com/](http://www.cegisbd.com/) |
| Water Supply and Sanitation (WSS) | | |
| Water and Sewerage Authority (WASA) (Dhaka and Chittagong) | Construct, improve and operate water supply and sewerage works | [http://www.dwasa.org.bd](http://www.dwasa.org.bd) |
| Public Health Engineering (PHE) Department | The construction of new water supply systems and major rehabilitation programs  
| Urban LGIs (Local Government Institutions) & Municipal Corporations/Municipality | Operation and Maintenance (O&M) of the water supply systems:  
- Providing sanitation services  
- Manage underground sewerage systems  
- Supply water for public and private purpose  
- Undertake schemes for provision, storage and distribution of water | |
- Regulate, control and inspect all private sources of water in the urban area
- Sanction new wells
- Sanction water pumps and other sources of drinking water in the urban area.
- Provide a system of public drains undertake drainage schemes and manage public watercourses in the urban area.
(see paragraph 4.3.1)

### Agriculture & Water

| Ministry of Agriculture (MoA) | - Information dissemination on agricultural technology including water and land use  
| Department of Agricultural Extension (DAE) | - Operation of low lift pumps and tube wells  
| Bangladesh Agricultural Development Corporation (BADC) | - Harnessing of hill streams  
|  | - Salinity control, distribution of water for irrigation  
|  | (see paragraph 4.4)  

| Department of Fisheries (DoF) | - Develop inland and offshore fisheries  
|  | - Development of rules and regulations for utilization of fisheries resources  
|  | - Planning for fish cultivation  
|  | (see paragraph 4.4)  

| Ministry of Local Government, Rural Development and Cooperatives (LGRD & C) | - Planning, designing and implementation of rural infrastructure development projects.  
| - Local Government Engineering Department (LGED) | - Thana/Union drainage and embankment planning, irrigation planning, land and water use planning.  
| - Local Government Division | - Small scale water resources schemes  
| - Rural development & Cooperatives | - Canal digging programs  
|  | - Some of the secondary roads  
|  | - Roads and Highways Department (R&HD)  
|  | - Establishment and maintenance of highways, feeder, approach and link  
roads; including the construction of bridges
(see paragraph 4.4)

Financing

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<tr>
<th>Ministry of Finance</th>
<th>Bangladesh Municipal Development Fund (BMDF)</th>
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Table 4.1 Water Sector Related Institutions

### 4.2 Water management and delta planning

Bangladesh is divided into seven hydrological regions. The water management in Bangladesh is developed upon the following river basins

- Rajshahi and Khulna are in the Ganges basin in the western part of Bangladesh, which is drought prone and receives the least average rainfall in the country;
- Rajshahi is in the Northern region of the country;
- Khulna is also in the Southwest region which suffers from salinity intrusion from the sea;
- Cox’s Bazar is in the Southeast Hill basin and experiences heavy rainfall owing to its location on the Bay of Bengal; and
- Sylhet is in the Meghna basin and is in the Northeast region, which receives the highest average rainfall in the country.

In Bangladesh 80% of the land is covered by the floodplains of the Brahmaputra, Ganges and Meghna rivers. The discharge of these three rivers is second only to that of the Amazon river.

Of the country, 60% is lower than 6 meters above sea level. Flood events occur frequently during the wet season, which are able to inundate up to 65% of the country, while droughts are a general cause of water scarcity during the dry season (Worldbank, 2005).

The ratio of peak to low season flow is approximately 25:1. Only 7% of the country's water surface flow has a source within the country borders, the other 93% comes from trans-boundary rivers shared with India, Myanmar, Nepal, Butan and China (Kahn, 2011). Bangladesh has limited control over rivers entering its borders; future developments, (especially in India), will increasingly have an effect on the availability of water in the rivers in Bangladesh.

**Rainwater**

In Bangladesh, rainfall varies widely, not only from season-to-season but also from region-to-region. The mean annual rainfall varies from 1,400 mm in the western part to almost 5,000 mm in the
Northeast and is characterized by wide seasonal fluctuations. About 90% of the total rainfall occurs in the period between June and September.

Rainwater is re-used through rainwater harvesting systems, (RHSs), in some rural areas, mainly in those places where no suitable ground or surface water sources are available. Artificial recharge of groundwater (by rainwater) has potential and is being tried on a pilot basis in Dhaka city by the WASA.

**Groundwater**

Groundwater management in Bangladesh is important as groundwater accounts for over 90% of the drinking water supply sources in the country (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011). Groundwater management concerns the following tasks:

- Assessment and monitoring of deep aquifers;
- Arsenic assessment, monitoring and management;
- Monitoring abstraction;
- Protection of groundwater quality and remediation of polluted soil and groundwater;
- Licensing of groundwater abstraction;
- Licensing for well drilling;
- Artificial recharge to reduce the impact of declining groundwater levels;
- Increased groundwater reservoirs by subsurface dams;
- Assessing the sustainability of current and planned practices; and
- Creating the necessary legislative framework.

Water management has to be integrated for surface water and groundwater. The following issues illustrate the relevance of an integrated approach:

- Withdrawal of surface water in the upstream reduces the groundwater level in Bangladesh and increases the salinity of the shallow aquifers in the coastal region.
- Heavy rainfall and annual inundation on the other side recharge the groundwater during the monsoon.
- Management of wetlands is important for the recharging of groundwater aquifers.
Surface water

The use of surface water for drinking purposes requires, at present, an elaborate and expensive treatment process. River water is used in large cities like Dhaka and Chittagong in addition to groundwater, where it alone cannot meet the total water demand. In some towns like Gopalganj, Sunamganj and Pirojpur, river water is solely used, as there is no suitable aquifer. Lake water, (Kaptai), is only used in Rangamati. Due to rapid urbanization and increased water demand, more and more surface water is being used. With the growing urban population, the use of surface water will increase in the future (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011). The environmental impact of freshwater use for economic purposes has led to the recognition that there is also a need to allocate water for the rivers itself to preserve its ecology and associated functions.

Water quality

The rivers in and around Dhaka are heavily polluted. The situation is becoming worse as population densities and economic activity are increasing, and water quality is deteriorating. The institutional capacity at the responsible institutes DPHE, DOE and the Bangladesh Standards and Testing Institution, (BSTI), to monitor the water quality is limited.

The major source of this pollution is domestic and industrial wastewater discharges. Arsenic contamination of groundwater is seriously threatening safe water coverage. Iron and Manganese are a second level of priority. Furthermore, the shallow aquifers in the coastal areas are saline. Finally, microbiological contamination is a major concern in all water supply systems of the country, as human and animal waste contaminates the unprotected surface water sources. Shallow groundwater is also contaminated by leachate from pit latrines and solid waste dumps.

Floodings

Bangladesh consists mainly of floodplains that are vulnerable to flooding. Floodplains constitute about 80% of the total land area while terraces and hills account for about 8% and 12% respectively. The altitude normally does not exceed 11m above sea level except in the hilly areas of Chittagong and Sylhet (Kahn, 2011). The Sundarban has an important function in shoreline protection from storms and cyclones but it is threatened by a lack of freshwater in the North, and intrusion of saline water from the South (Chowdhury, 2010).

Water management in Bangladesh is a critical issue influenced by the growing demand of private sector and private consumption, urbanization, climate changes and regular flooding. Groundwater is
the main source of water supply, but availability is limited. The availability of freshwater is highly seasonal depending on the presence and duration of the monsoons. Demand for water is growing from the urban sector, from agriculture, the industrial sector and from inland navigation and salinity control.

Finance

The Dutch and Bangladesh Government signed a MoU on May 22, 2012 to develop a Delta Plan for Bangladesh. The aim is to develop a plan to realize a sustainable water management plan for Bangladesh. The Delta plan is a long-term framework for water management and the prevention of flooding. It is an integrated plan and it will be the reference for investments of the Bangladeshi government in infrastructure. The Dutch Embassy recently tendered a project to finance the development of the Delta Plan. The implementation of this project will facilitate the involvement of Dutch expertise to develop water management in Bangladesh.
4.3 Water supply and sanitation (WSS)

4.3.1 Introduction

In 2009, there were around 7.0 million tube wells, (hand pump tube wells, deep set tube wells, and deep tube wells), in the country, 5.5 million of which were constructed by the private sector for private owners, the rest by the Government (1.2 million) or by NGOs (0.3 million). The average number of people served by one tube well is twenty (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011). The tube wells have ensured basic levels of drinking water to most of the population. Although 80% of the population has access to
some form of improved water supply, arsenic contamination of wells has complicated the situation by causing considerable health problems since it was discovered in 1993 (Asian Development Bank, 2009). Due to the arsenic problem in groundwater, alternative solutions like the pond and sand filter are being used.

4.3.2 Water supply in the urban sector

In the cities Rajshahi, Sylhet and Barisal as well as other municipalities, periodic maintenance of the water supply system is not done properly. Due to a lack of maintenance, the systems deteriorate quickly. Many of the production wells remain nonfunctioning and pipelines continue leaking. Usually, the municipalities do not disinfect the water supply (from groundwater). Water is supplied only during a few hours of the day, there is no pressure in the pipeline during non-supply hours, and as a result the water quality is not guaranteed. The municipalities do not have water meters. Water is often wasted at the user level. There are not yet provisions for incentives to conserve water and penalties for overuse or misuse.

Piped water supply coverage is 73% in Rajshahi, and 40% in Sylhet and Barisal. All three cities have water supply for about 12 hours per day. In addition to the piped system, Rajshahi and Barisal have 6,500 and 1,700 hand pump tube wells respectively. There are an insignificant number of hand pump tube wells in Sylhet due to the absence of a suitable aquifer.

Of the 308 total municipalities, there are piped water supplies in 102 municipalities and, in another 58 municipalities piped water supplies are under implementation. In the non-piped water supply municipalities, hand pump tube wells are used. The piped water supply systems in the municipalities cover only a limited population, (40%), mostly located in the center of the town.

People use hand pump tube wells in non-piped areas. In houses with piped connections, many also use hand pump tube wells, as they cannot entirely depend on the irregular piped supply. There are 152,007 hand pump tube wells in the paurashavas. The combined water supply coverage by piped system and hand pump tube wells is estimated to be 85% (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

There are several constraints on using surface water in urban areas:

- Drinking water quality is not available year round in many parts of the country;
- The investment and O&M costs of a surface water system are much higher than of a groundwater-based system;
- Salinity is another limiting factor in the coastal districts; and
- Industrial pollution in and around the large cities is also a major concern.
The water supply sector is mainly supported by multilateral agencies like UNICEF, IDA, ADB, WSP-World Bank and WHO, and bilaterally by DFID, JICA, the Dutch Government and a few more international NGOs like WaterAid, CARE and Plan Bangladesh. Pourashava (Municipal) towns received bilateral support by Danida, the Netherlands, and JICA of Japan, and multilaterally by the Asian Development Bank. Assistance has been extended to Dhaka and Chittagong by IDA, Danida, JICA, JBIC and by the Asian Development Bank (Washwatch.org, 2013).

4.3.3 Sanitation in the urban sector

In urban areas sanitation coverage is still unsatisfactory. While many have septic tanks and sanitary latrines, much of the sludge is discharged through open drains into rivers. Dhaka has only one first-stage sewerage treatment plant, and it can receive wastewater from only a small portion of the city. The country has few sanitary landfills; only a portion of garbage is collected and much open dumping occurs in unsanitary conditions - some of it in rivers (ABD, 2009).

The municipalities use onsite sanitation options. The desludging of the pit latrines and septic tanks and safe disposal of waste are the most worrying environmental problems. Although the sanitation coverage in urban areas is comparable to the rural ones, the negative impact is worse because of the high population density.

4.3.4 Investments in urban sector

The Sector Development Plan of 2011 of the Ministry of Local Government, Rural Development and Cooperatives mentions that the following investments are expected for the urban subsector:

A) General Actions

- Rehabilitate and upgrade the system. Many of the existing pipelines are leaking and the machinery is damaged or worn out, contributing to operational inefficiencies. There is a need for greater focus on the operation and maintenance of existing schemes;
- Expand the piped water supply and sanitation coverage. This will require, among others, construction of treatment plants, production wells and extensions of the piped network;
- Water meters are to be installed at all service connections and water sources;
- In areas where sewer lines cannot be constructed within a short period of time, appropriate onsite sanitation needs to be used along with safe handling and disposal of sludge. This could include setting up decentralized sewerage treatment plants specifically for the sludge collected from septic tanks and pit latrines;
- Drainage coverage needs to be extended;
- Customer care needs to be developed;
• Coordination between involved agencies should be improved; and
• Communities should be involved in designing the WSS systems, creating awareness and delivering public education on not disposing waste in drains.

B) WASA - specific Actions

• Explore new water sources. All three cities having WASAs are facing a shortage of water sources, and the ability of groundwater sources in and around the cities to meet water demand has reached its limits. As such, new water sources will most likely be surface water or groundwater transported from a distance. Both cases would require high investment. The potential for using rainwater also need to be explored.

C) City Corporation and Paurashava - specific Actions

• Ensure quality of services. The paurashavas and the city corporations should enter into quality service agreements with all providers of WSS services within their jurisdiction;
• Install water meters for all connections;
• Promote water conservation, including wastage reduction inside houses;
• Increase the number of connections to a production well. The small number of service connections is frustrating economies of scale principles; and
• Prepare master plans for the paurashavas that still do not have such plans.
4.3.5 Water supply in rural areas

The WSS Sector Development Plan mentions that there are three primary large-scale service delivery systems for water and sanitation in the rural areas.

- Individual households or buyers directly purchase tube wells and sanitation units from the market;
- The NGOs as “service providers”. They plan and implement schemes in close consultation with the communities. The implementation works are either carried out by the communities themselves or by a private contractor engaged by the NGOs; and
- The public agency DPHE, which plans and implements water and sanitation facilities. The DPHE engages private contractors to install the facilities.

A recent survey by UNICEF (MICS 2009) found that 97.4% of the rural population has access to improved water sources, (without adjustments for arsenic contamination), and the actual rural population having access to safe water sources is 83.8 percent, (with adjustment for arsenic contamination). However, the survey did not consider service standards like accessibility in relation to the number of people using a water point.

The rural water supply in Bangladesh faces the following three major challenges:

- Arsenic contamination;
- Lowering of groundwater levels: The excessive lowering of groundwater levels in many parts of the country, particularly in the Northwest and Central regions, is occurring mainly due to the withdrawal of groundwater for irrigation. As water levels drop, the shallow tube wells in those areas are not able to yield water, causing a serious threat to the present rural water supply system, which is dominated by shallow tube wells; and
- Hard-to-reach areas: There is a large gap in providing WSS services in the hard-to-reach areas.

4.3.6 Water sanitation in rural areas

The rural sanitation coverage was about 79% in 2009 (basic sanitation). This coverage has been increased due to cooperation between the government, NGOs and other stakeholders. When improved sanitation or hygienic sanitation is considered, the coverage is much lower. The status of rural sanitation is given in annex 4.4.
4.3.7 Investments in rural areas

The Sector Development Plan of 2011 of the Ministry of Local Government, Rural Development and Cooperatives mentions that following investments are expected for the rural subsector:

A) General Action Points

- Improved coordination between the public agencies, NGOs and private sector; and
- Integrate the approaches. Different approaches are practiced by different government projects and NGOs for delivering water and sanitation services and using different Information, Education and Communication (IEC) packages (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

B) Water Supply

- Focus on addressing the gaps in rural water supply. Rural water supply coverage is 71%, according to the Bangladesh basic standard and 51 percent according to the Bangladesh improved standard. The following two problems should be solved: i) problems of covering large areas and ii) problems of covering hard-to-reach areas. These two types of areas need two different approaches to resolve their problems. While a “blanket type” approach would be feasible for the large areas, specific “tailor made” approaches are needed for the small areas with unique problems; and
- Encourage the private sector to take on larger roles. Rural water supply is in a state of transition where it is switching from shallow tube wells to DSP tube wells to address falling groundwater levels in vast parts of the country. Rural piped water supply is an emerging technology. The private sector is the dominant factor in facilitating the high coverage with shallow tube wells. Thus, the private sector needs to be encouraged and supported to meet future challenges. The DPHE and the LGIs may make relevant local information available, such as aquifer characteristics and water quality, and government regulations, if any (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

C) Sanitation

- Moving up the sanitation ladder: converting unhygienic latrines and slab-only latrines, (without water seal, lid or flap), to hygienic ones;
Simultaneously, the still prevalent open defecation must be stopped and further use of higher level technology options, such as septic tanks and double pit latrines, be encouraged; and

- Sanitation for hard-to-reach areas: Development of appropriate technologies for the hard-to-reach areas, which remain under very low sanitation coverage. (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

4.3.8 Public Private Sector Participation

In the development of the WSS sector in Bangladesh, both the public sector and the private sector are involved in a variety of ways. Private sector participation can be categorized into three broad market segments.

For private organizations there are three WSS market segments:

- Small-scale Hardware Market: In this open or highly competitive market, the sellers are mainly hardware shop entrepreneurs selling tube well pipes and pumps, and latrine manufacturers. While the products are sold directly to buyers in both rural and urban markets, it is predominantly a rural market. There is also no direct intermediary role of the public sector between the buyers and the sellers. Further, in terms of market share, this segment is the largest;

- Small-scale Service Market: These are small businesses like the operators of rural piped water supply and the NGOs operating water points in slums. These businesses usually obtain licenses or contracts from the public agencies to deliver the WSS services; and

- Large-scale Urban Utilities Market: This is the traditional type of private sector participation in public services. The operating functions of the utilities, and sometimes the investments and the associated risks, are shared between the private and public sectors. The public agency forms a partnership with the private operator through a contractual agreement, the type of which varies from simple service contracts and management contracts to leasing or concessions. Private involvement within this last category in the short-term, (2013-2015), is still limited in Bangladesh (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011).

4.3.9 Estimation of total investments and funding for planned investments in WSS sector

The Ministry of Local Government, Rural Development and Cooperatives estimated the investment costs for the WSS sector for the different subsectors. The estimation for the short, medium and long term is presented in Annex 4.5.
Investment costs will be shared by the WSS sector partners, broadly classified into three groups:

- Public sector, like WASAs and PWSSs;
- Private sector (private household investments and private entrepreneurs); and
- NGOs (including direct funding from the donors and their own funds).

An estimation of the contribution of sector partners is presented in Annex 4.6

### 4.4 Water for agriculture and fishery

Agriculture comprises 17.6% of GDP and employs about two-thirds of the country’s labor force, with rice cultivation as the single most important activity in the economy.

Fisheries provide employment for another nine percent of the total labor force and account for six percent of total GDP (World Bank, 2006) and it’s the second most important earner of foreign exchange.

Agriculture uses more than 70% of all the fresh water extracted in Bangladesh, especially from groundwater (Mott Macdonald, 2010). Main water using sectors are rice and aquaculture. Currently out of 8.42 million hectares of cultivable land, 65% is irrigated.

Bangladesh was the world’s fourth-largest rice producer in 2012. The dominant food crop of Bangladesh is rice, accounting for about 75% of agricultural land use. The cultivation of rice in Bangladesh varies according to seasonal changes in the water supply.

- The largest harvest is aman, occurring in November and December and accounting for more than half of annual production. Some rice for the aman harvest is sown in the spring, matures during the summer rains and is harvested in the fall. The higher yielding method involves starting the seeds in special beds and transplanting during the summer monsoon.
- The second harvest is aus, involving traditional strains but more often including high-yielding, dwarf varieties. Rice for the aus harvest is sown in March or April, benefits from April and May rains, matures during the summer rain and is harvested during the summer.
- With the increasing use of irrigation, there has been a growing focus on another rice-growing season extending during the dry season from October to March. Where irrigation is feasible, it is normal for fields throughout Bangladesh to produce rice for two harvests annually. Between rice-growing seasons, farmers will do everything possible to prevent the land from lying fallow and will grow, for example, vegetables if water and fertilizer are available.
Shrimp farming has become the principal activity in coastal brackish aquaculture, as it is one of the fastest growing export industries in Bangladesh. Around 1 million people are employed in the shrimp sector in Bangladesh. It is becoming one of the most dynamic sectors of the economy. Inland capture fisheries have been declining, in part because of a lack of dry season water resulting from the loss of wetlands, irrigation abstractions and pollution. Inland and brackish water aquacultures are not so affected.

![Graph 4.1: Reported aquaculture production in Bangladesh (from 1950) (FAO Fishery Statistic, 2012)](image)

Water, as a basic resource, is instrumental in creating and sustaining employment opportunities and therefore in contributing to economic development. Optimal use of water for irrigation of rice and the preparations of ponds is significant to deal with water scarcity and is important for the economy of Bangladesh (Kahn, 2011). In this paragraph some major challenges will be described for the use of water by rice cultivation and aquaculture. Increasing surface water irrigation, reducing ground water depletion, enhancing on-farm water use efficiency and rehabilitating infrastructure are some of the improvements needed.

More sustainable and efficient water management is needed so that farmers will be able to respond to consumer demands and boost local food production. The main water management challenges in Bangladesh related to agriculture are declining aquifer levels, arsenic contamination, flooding and increased salinity in coastal areas.

- Over 1.2 million hectares of land are low laying, vulnerable to floods. Seed varieties have already been developed that are able to withstand germination for 15 days under water compared to 3 days for non flood resistant types. Increasing salinity of coastal land is also a growing concern. Each year from November to May, salt reaches the paddy fields in the mostly unprotected coastal belt in the South. And the supply of water is less reliable. In the
coastal zone this causes increased seawater intrusion, and saline groundwater. As a result, one million hectares of land are seriously affected by salinity.

- Saline resistant rice varieties have been developed. However, the adapted varieties are not yet available for the majority of farmers. According to the Ministry of Agriculture, the total requirement of seeds in 2008-09 was 1.17 million tons, of which only 20% was supplied by commercial ventures, (by both public and private entities), while the rest, (80%), are farmers' retained seeds. Of the 20%, the government has around 60% of the commercial seeds business, compared to the private sector’s 40%.

- Due to climate changes, flooding seems to occur earlier in the season, with consequences for the harvests. A solution could be to use varieties that can be harvested earlier.

- Instead of diesel, irrigations schemes powered by solar panels have been successfully piloted; these pilots should be scaled up.

Although many public water resources schemes have already been completed in Bangladesh, water distribution systems are still inefficient and on-farm water management practices are relatively poor. Most public programs were designed to increase crop production, provide flood control, drainage, irrigation, or some combination of these. Others provided riverbank protection or river dredging. Riverbank erosion destroys about 10,000 ha of land on an annual basis, and this has significant economic and social implications. To address this problem, the GoB should develop and implement master plans for river training and erosion control works for the preservation of scarce land. Government financing for the sector averaged about US$ 110 million annually and this has been consistent from 1985 to 2005 (Worldbank 2005). Project-related donor assistance declined from an annual average of about US$ 150 million during the first half of the 1990s to an annual average of about US$ 55 million in 2005. Since 2005, private sector investments for irrigation have exceeded public investments.

To improve the provision of water for agricultural production, irrigation and drainage infrastructure still need to be redesigned, repaired or even newly constructed. It is important that water management responsibilities will be decentralized. On the institutional level, the collaboration between the Ministry of Agriculture and the institutes of the Ministry of Water Resources (DAE, BWDB, LGED and BMDA) is also important. Same for the involvement of farmer organizations and farmers within water management projects.

The water infrastructure works should be designed for optimal utilization of water for the different producers, (cereals, fish, vegetables and livestock, etc.), and should result in efficient polder and on-farm water management systems. Research has demonstrated that the productivity of crops and fish
in the coastal polders could be profitably doubled by introducing new crop varieties and/or fingerlings and new technologies for land preparation and processing if water is effectively managed. The various technical options should be assessed related to surface irrigation, river dredging and flood control. This should be accompanied by a solid economic and financial analysis to avoid uneconomic investments. Attention must also be given to planning irrigation development in an integrated way at the national level.

The Country Investment Program (CIP) of the Ministry of Local Government, Rural Development and Cooperatives from 2011 indicated investment priorities for US$ 583 million related to improved water resource management and infrastructure for irrigation purposes. Investments are expected in the following areas:

- Increase surface water irrigation and reduce ground water depletion, enhancing on-farm water use efficiency through capacity development of water users, and rehabilitation of infrastructures.
- Improve & increase efficiency of surface water irrigation, in particular in the South.
  - Nationwide conservation and utilization of surface water by dredging of canals and rivers;
  - Surface water management in the South;
  - To promote water saving rice cultivation, technology for less dependence on irrigated Boro;
  - Improvement of drainage condition in the rainy season for the arable lands;
  - Capacity development of water users, providing training and support for protection of river erosion. Flood control measures. Establish effective drainage to prepare vast areas for timely planting of Boro rice in the South.
- Reduce impact of saline water intrusion in the South and enhance river water flow.
  - Dredging of Garai River to increase water in the South;
  - Rehabilitation of polders and their management. Protection of vast area of Rupsha-Terokhada Beel, Dakatia- Dumuria Beel against saline water intrusion;
  - Surface water irrigation in the South with improved brackish water management practices.

The GoB supported by international finance organizations and some bilateral donors will be responsible for the public investments. And related to irrigation, private investments are expected to exceed these public investments.
4.5 Water discharge: sewerage, drainage and wastewater

The volume of sullage water (kitchen, bath and wash water) in Bangladesh from houses increases with urbanization. Sullage water and stagnant storm water should be disposed of in an environmentally-friendly way. As sullage water is less polluted than sewage, it is still collected in open roadside drains and then discharged into rivers, canals or in soak-away areas. Only Dhaka city has an underground storm water drainage system, the rest use open drains.

Cities in Bangladesh are regularly flooded. Construction of drainage systems in the urban areas is expensive and has not kept pace with urban development. Many canals are being blocked by construction or are being filled up for housing and other purposes. Furthermore the present drainage system is not being fully utilized because of the poor O&M as well as the disposal of solid waste from the road into the drains.
5 Results water-survey Bangladesh

To analyze the water sector, Nyenrode Business University carried out a survey in Bangladesh. The research is done with companies and organizations that indicated that they are interested in bilateral cooperation and business development with the Netherlands. The respondents can be differentiated according to the type of organization they represent (see also graph 5.1):

- Public Bangladeshi Organizations (5);
- International Donor Organizations (3);
- NGO’s (8);
- Private Companies (14).

Ad 1) Five of the fifteen main public Bangladeshi organizations in the water sector participated in the survey.

Ad 2) Three of the five main international donor organizations participated in the survey. The main international donor organizations are mentioned in annex 6a.

Ad 3) Eight NGO’s have been surveyed, providing an inside in the demand of public and private organizations in Bangladesh.

Ad 4) The selected private companies, (14), representing the agricultural sector indicated that they are interested in developing a business relation with the Netherlands related to several business processes. Three of them were interested in developing cooperation on the efficient use of water. Nyenrode targeted the largest agro food companies, (criteria turnover), because of their possibilities to invest in expertise and new technologies.

5.1 Set up of the survey in Bangladesh

The central research question in this report is what business opportunities exist to provide services, export technology and invest in the Bangladeshi water sector. Services, works and goods can be provided to both public and private organizations.

Nyenrode first identified the demand of organizations active in the water sector. To identify the public demand and related business opportunities for Dutch companies, the questions mentioned in annex 5 have been asked to representatives of public organizations in Bangladesh. These questions have also been asked to international finance organizations and NGO’s. The following variables have been used:
• Market segmentation (water resource/water management, water for consumption, water for non consumption (agriculture) and discharge;
• Perception of the quality of implementation of current public tasks (policy, implementation, enforcement;
• Perception of possibilities to improve, on short notice/2 years, the fulfillment of these public tasks;
• Willingness to cooperate with a Dutch partner; and
• Availability of funding (open questions, results used in the report).

To identify business-to-business opportunities, the demand of agro food companies in relation to 13 business processes has been asked in the survey.

Graph 5.1
The purpose of the field research is to identify in which areas there is a demand for expertise/products and willingness to cooperate with a Dutch partner.

5.2 Demand in Bangladesh for the water sector
In the market segments waste water, rural & urban drinking water and water harvesting, Nyenrode found local NGO’s to have the highest willingness to set up new cooperation with Netherlands partners.

Nyenrode found donor organizations to have the highest willingness to set up projects with Dutch partners in the wastewater market segment, followed by drainage, sewerage, water harvesting and surface water.
Three of the 14 companies surveyed were interested in developing cooperation with a Dutch company to improve their water efficiency. Most companies did not see a direct economic benefit of introducing new technologies or expertise to increase the water efficiency, and instead gave priority to the improvement of other business processes like supply chain management, logistics and marketing.
6 Opportunities in the water market

Nyenrode Business University carried out a market entry survey in the Netherlands. Companies, (n=27), indicated that they are interested in the Bangladeshi market and that they are interested in different water segments in Bangladesh. 22 of these organizations are already active in Bangladesh.

To understand the needs of the Dutch companies and their perceived challenges, the team designed a questionnaire, see annex 6. This questionnaire consisted of thirteen multiple-choice questions, and to get deeper insights, the choices were required to be measured on a scale from 1 to 10.

The Dutch organizations looking for business-to-business relations indicated that exporting is their preferred business structure.

6.1 Dutch companies on the Bangladesh market

27 companies indicated that they are interested in Bangladesh

- 16 companies are already active in Bangladesh and indicated that they are interested in further expanding their current activities;
- 6 companies already active in Bangladesh but indicated that they are not interested in further expanding their current activities;
- 5 companies of these 27 companies answered that they are not yet active in Bangladesh and are interested in developing new business.

6.2 Reasons to have an interest in Bangladesh

The companies were firstly asked if they were interested in doing business in Bangladesh.

- The main driver for organizations already active in Bangladesh is to participate in donor financed projects, (projects with the objective to improve water management in Bangladesh).
- Organizations not yet active in Bangladesh value the market growth opportunities as the main driver to enter the market.
- The lowest score for both categories is outsourcing/low cost basis for operations in trade and/or investment. This relates to the fact that the companies surveyed prefer to deliver to the Bangladesh market via exports\(^2\). Furthermore, the companies surveyed indicated that they do not follow a price strategy to enter the market.

\(^2\) Exporters to Bangladesh should be diligent and precise in preparing export documentation. It is worth noting that any deviations can lead to delays and additional costs. Invoices should clearly state the goods being supplied (including specification, packing and country of origin) and correspond to the Letter of Credit.
- The main driver for the companies surveyed looking for clients in the Bangladeshi market segments ‘water for private sector’ is market expansion.
- The main driver for companies looking for public assignments in Bangladesh is to contribute to the development of Bangladesh, followed by market expansion.

The companies that participated in the survey are mostly exporting services. For these surveyed companies, Bangladesh is especially interesting as a country to export to. Their main reason to access the market in Bangladesh is still to participate in donor-funded projects. A local presence is perceived to be important for doing business in Bangladesh. The latter counts for services and especially for companies providing goods and works.

6.3 Positioning on the Bangladeshi market

The 27 companies interested in the Bangladeshi market were asked how they aim to distinguish themselves from competitors on the Bangladeshi market.

The Dutch companies looking for public assignments rated quality, innovation, cooperation abilities and service as their competitive assets. These companies also indicated that they could not distinguish themselves on the market via their networks.

The organizations not yet active in Bangladesh value their public and private network in Bangladesh very low:

- Development of relations with public sector and expertise on tender procedures are perceived to be important assets to win public water assignments. In order to gain these assets Dutch companies are setting up cooperation with local partners. The Dutch Embassy in Dhaka can be important in this respect;
- Business development in Bangladesh often starts via relations, therefore visiting Bangladesh and meeting potential private partners is crucial to developing business.

6.4 Future interest in Bangladesh

The companies were asked if they were interested in entering or further expanding their activities on the Bangladeshi market. Four companies indicated an increased interest in acquiring private assignments while nine companies indicated B2G relations were more important. Fourteen companies indicated an interest in both market segments. They were asked to rate their degree of preparedness in eight different areas.
Companies already active in Bangladesh rate their knowledge about the donor programs as their best-prepared subject, followed by the importance of local partnerships. These companies also indicated that they lack information on their competitors.

Companies not yet active in Bangladesh also rate their knowledge about the donor programs as their best-prepared subject. These companies also indicated that they lack information on location choices and developing a suitable marketing strategy.

The four organizations aiming at B2B relations scored lower on knowledge about the donor programs than the overall average of 7.2 on this preparedness aspect.

6.5 Hurdles and risks entering the Bangladeshi market

When asked what the top hurdles to do business in Bangladesh are, 11 companies not yet active in Bangladesh valued the overall hurdles at 5.5. They stated as specific hurdles: lack of market information and lack of local partnerships.

The 16 companies already active in Bangladesh valued the overall hurdles at 3.9. As specific hurdles they referred to financial constraints, (banking operations, organizing trade finance, profit repatriation, payment collections, fiscal structure and administrative hassle).

Prior research also mentioned the following hurdles:

- Continued lack of transparency in trade regulations;
- Current customs procedures leave significant scope for corruption;
- Difficulties with financial transactions such as L/C, (Letters of Credit), guarantees;
- Political instability, continual strike action, poor infrastructure; and
- Government decision-making, slow reform of policy implementation.

The representatives of the surveyed companies were also asked if they would consider setting up business activities in other countries in the region (Vietnam, India, China or Myanmar for example). 26 of the 27 organizations answered positively to this question.
7 Conclusions

1. The population of Bangladesh is forecast to increase to 169 million by 2020. Urban centers are expected to grow the fastest. Dhaka is expected to become one of the world’s mega cities, with the population increasing to 30 million in 2025 and 50 million by 2050. This population growth combined with economic growth will place increasing stress on water resources.

2. Bangladesh has an excess of surface water during the summer months and water shortfalls in the winter months. Bangladesh has limited control over rivers entering its borders. The situation is progressively becoming worse as population densities and economic activity are increasing and water quality is deteriorating.

3. Significant investments in infrastructure will be required to provide potable water to the expanding urban centers. Meeting this demand is complicated by the problem of arsenic contamination. Furthermore, urban and industrial pollution around urban centers is currently affecting fresh water quality.

4. Bangladesh has made good progress in improving access to safe water. The water supply coverage has increased in both the urban and rural areas. A survey by UNICEF (MICS 2009) found that 97,4% of the rural population has access to improved water sources (without adjustments for arsenic contamination) and the actual rural population having access to safe water sources is 83,8% (with adjustment for arsenic contamination). The survey, however, did not consider service standards, (accessibility), in terms of the number of people using a water point.

5. To maintain food security, substantial increases in rice production and aquaculture will be required by 2050. Among other technological improvements, this will require increases in water use for agriculture and aquaculture.

6. Balancing water supply for drinking water and agricultural water is a critical issue, especially in the dry season. A shortage of water is expected to become more and more of an important limiting factor for agricultural production.

7. Expertise and adapted technology related to water management for agriculture are important for the economic development of Bangladesh.

8. Aquaculture production has increased from 600,000 tons in 2000 to 1,300,000 tons in 2010. Much of that increased production is a result of improved utilization of existing ponds and technologies.
9. Capture fisheries, both inland and marine, are declining, and this trend is likely to continue. Key issues for the sustainable use and preservation of capture fisheries include maintenance of dry season flows, protection of key aquatic habitats, creation and maintenance of fish sanctuaries and avoidance of further pollution and chemical degradation.

10. The availability of dry season water will be the most critical issue facing inland capture fisheries in Bangladesh. It is estimated that 50% or more of the perennial wetlands of Bangladesh have been lost in the past 30 to 40 years. This has negatively impacted fish production as well as plant & animal biodiversity.

11. Availability of water is a key issue for the development of agriculture and fisheries in Bangladesh. Water, as a basic resource, is important to create employment opportunities and to contribute to economic development.

12. In 2012 the Netherlands was the 9th largest export destination for Bangladesh (following: US, Germany, UK, France, Spain, Canada, Italy and Turkey). 2.8% of total Bangladeshi exports had the Netherlands as their destination (WTO, 2012). In 2012, 759 million US dollars, or 0.11% of total Dutch exports had Bangladesh as their destination (WTO, 2012).

13. Mott MacDonald identified in 2010 the following business opportunities related to the water sector in Bangladesh. These opportunities are still valid.

- Most business to business opportunities are in the supply of goods for urban drinking water, urban wastewater and water for agriculture;
- Most opportunities in business to government outsourced work are in capacity building of public institutions, as well as in preparing long term integrated strategy and investments programs. Related opportunities include providing consultancy services for surface water, urban drinking water, drainage and sewerage;
- Dutch companies operating in other countries in South Asia and not in Bangladesh perceive market opportunities to exist in surface and ground water, rural drinking water and agricultural water.

14. Nyenrode research identified, in addition to opportunities identified by prior research, the following opportunities for Dutch private sector:

- Rural drinking water:
  - Extraction, purification, treatment - services and goods;
- Water Harvesting
- Engineering options water harvesting - services;
- Harvesting technology - goods; and
- Desalination - goods.

**Water for Agriculture**

- Expertise on the recharge of groundwater basins to use less groundwater for irrigation and - services;
- Increase water harvesting for irrigation - services and goods;
- Treatment and re-use of wastewater for irrigation - services and goods;
- Improve and increase efficiency of surface water irrigation, in particular in the South - irrigation management - services;
- Development and maintenance of dams and canals - works and goods; and
- Reduce impact of saline water intrusion in the South and enhance river water flow.
Annexes

Annex 1: Sources

Articles


Mohammad Ismail Khan. February 8 2011. Water management in Bangladesh, Agriculture: optimal use and investment policies for adaptation to climate change.


Websites


CBS handelscijfers Bangladesh Nederland.


Dun & Bradstreet country report 2011/2012.


Trade Map WTO (2012). Import figures Bangladesh.


Reports


Van hulp naar investeren, een overzicht van instrumenten voor een beter ondernemingsklimaat en internationaal ondernemen in ontwikkelingslanden. Published October 2011.


Counting ecosystems as water infrastructure. IUCN. 2004.


Projecten Basis Informatie, NWP. March 2013.


Assessment of Environmental Flows for the Upper Ganga Basin. WWF-India. 2012.

Powerpoints


Strategische Landenaanpak, Stand van Zaken. NWP. 18 April 2013.

Dutch organizations and companies that participated to the market entry survey
Grontmij Nederland B.V.

IVAM UvA BV

Twynstra Gudde Advisors and Managers

FlexBase

Redox Water Technology B.V.

Simavi

Advanced Waste Water Solutions

Acacia Water
Aquaver
VISSE water management
Water Footprint Network
Royal HaskoningDHV
Hoogendoorn Automatisering B.V.
Eijkelkamp Agrisearch Equipment
Bosman
Euroconsult Mott MacDonald
Vitens Evides International
Simavi
Nijhuis Water Technology B.V.
AquaFarmingConsult
WaterPartner
EDC
Deltares
EARS Earth Environment Monitoring BV
VNG International
Siemens Nederland
Twyntstra Gudde
Euroconsult Mott MacDonald
Vitens Evides

**NGO's that participated in the survey**

WaterAid

Dutch WASH Alliance Bangladesh
Max Foundation

Hope for the Poorest (ASA)

BRAC

Institute of Water Modeling (IWM)

ICCO Cooperation Bangladesh

**Bangladesh Public Organizations that participated to the survey**

Ministry of Water Resources (MoWR)

Ministry of Local Government, Rural Development & Cooperatives (LGRDC)

Water cell, Policy Support Unit

Center for Environmental and Geographic Information Services (CEGIS)

Dhaka Water Supply and Sewerage Authority (DWASA).

**International Finance Organizations that participated to the survey**

WB - UNDP

Asian Development Bank

IFC

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Annex 2: Code of Conduct Nyenrode
Bangladesh Trade and Investment Program
Conduct Guidelines regarding Corruption and Transparency (Code of Conduct)

Introduction
The Embassy of the Kingdom of the Netherlands (EKN) in Dhaka, within its scope of economic diplomacy, has partnered with Nyenrode Business Universiteit in order to stimulate economic relations between the Netherlands and Bangladesh. Strategic aim of the Embassy is to strengthen bilateral commercial ties in a responsible manner and support the improvement of the Bangladeshi business environment with a spill-over effect that improves the lives of the poor. The partnership aims to increase sustainable bilateral trade and investment in four identified sectors: food(safety), logistics, water and the IT-sector, with a special focus on outsourcing activities. The focus of sustainability will be on employment generation (specifically targeted at women) and introducing clean (and where applicable innovative) technology.

Informing Dutch companies, entrepreneurs, stakeholders and cooperation partners about the risks of doing business in Bangladesh, especially with regard to integrity issues and corruption, is an intricate part of stimulating responsible business, and therefore it is an important component of the Bangladesh Trade and Investment Program. Nyenrode Business Universiteit has as such developed Conduct Guidelines to which not only Nyenrode itself must adhere, but is also provided to all cooperation partners of Nyenrode with the request to comply with it in their daily practice. Corruption risks will be considered and dealt with throughout all activities undertaken in the framework of the program.

The Conduct Guidelines
Nyenrode Business Universiteit, within the framework of the Bangladesh Trade and Investment Program, values ‘doing what is right’ and demands of its cooperation partners, in whatever legal form, to read and voluntarily apply the following guidelines in order to ensure good business practices. The Conduct Guidelines of the Bangladesh Trade and Investment Program are primarily based on the internationally accepted *ICC Rules on Combating Corruption* (2011) published by the International Chamber of Commerce (ICC).

The ICC Rules are intended as a method of self-regulation by business against the background of applicable national law and key international legal instruments. Their voluntary acceptance by Enterprises will promote high standards of integrity in business transactions, whether between Enterprises and public bodies or between Enterprises themselves. These Rules play an important role in assisting Enterprises to comply with their legal obligations and with the numerous anti-corruption
initiatives at the international level. They also provide an appropriate basis for resisting attempts at extortion or solicitation of bribes.

The Conduct Guidelines for the Nyenrode Trade and Investment Program dictate compliance with Part I (the Rules) and Part II (policies to enact in order to support compliance with the rules) of the ICC Rules on Combating Corruption:

Part I: Rules

1. Article 1: with regard to **Prohibited Practices**. Specifically, enterprises will prohibit the following practices at all times and in any form:
   - Bribery.
   - Extortion or Solicitation.
   - Trading in Influence.
   - Laundering the proceeds of the corrupt practices mentioned above.

2. Article 2: with regard to **Third Parties**. Specifically, with respect to third parties enterprises should:
   - instruct them neither to engage nor to tolerate that they engage in any act of corruption;
   - not use them as a conduit for any corrupt practice;
   - hire them only to the extent appropriate for the regular conduct of the Enterprise’s business; and
   - not pay them more than an appropriate remuneration for their legitimate services.

Part II: Policies

3. Articles 3-9 to be applied/enforced with regard to:
   - Business Partners.
   - Political and Charitable Contributions and Sponsorships.
   - Gifts and Hospitality.
   - Facilitation Payments.
   - Conflicts of Interests.
   - Human Resources.
   - Financial and Accounting.

Please refer to annex: ICC Rules on Combating Corruption, for details on the above rules and policies Nyenrode demands its partners to comply with. The underlying Conduct Guidelines are in line with
the Netherlands Embassy policy regarding integrity and corruption issues. Please refer to the brochure *Eerlijk zakendoen, zonder corruptie. Praktische tips voor ondernemen in het buitenland* published by the Rijksoverheid NL (July 2012) as well as the *Reporting Guidance on The 10th Principle Against Corruption* published by the United Nations Global Compact and Transparency International (2009) for further information. These reports serve as useful guides in favor of ethical business practices omitting corruption and Nyenrode stresses the importance of reading these guides.

Appendices:


Herewith I declare to:

1) Have read the Conduct Guidelines and the appendices referred to in the code;
2) Comply with these guidelines in all activities related to the cooperation with Nyenrode Business Universiteit.
Annex 3 Trade and investment relation with Bangladesh

<table>
<thead>
<tr>
<th></th>
<th>Total (mln. US dollars)</th>
<th>% Netherlands share (mln. US dollars)</th>
<th>% Total NL value (mln. US dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD</td>
<td>41.112</td>
<td>0,5% (219)</td>
<td>0,03% ex. (794.540)</td>
</tr>
<tr>
<td>India</td>
<td>586.356</td>
<td>0,6% (3,284)</td>
<td>0,4% ex. (794.540)</td>
</tr>
<tr>
<td></td>
<td>25.823</td>
<td>2,8% (759)</td>
<td>0,11% imp. (717.397)</td>
</tr>
<tr>
<td>India</td>
<td>441.138</td>
<td>1,3% (5,662)</td>
<td>0,8% imp. (717.397)</td>
</tr>
<tr>
<td></td>
<td>1.136</td>
<td>10,3% (116.7)</td>
<td>0,4% out (31.867)</td>
</tr>
<tr>
<td>India</td>
<td>31.554</td>
<td>3,4% (1.072)</td>
<td>3,4% (1.072)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>-</td>
<td>-17.129</td>
</tr>
<tr>
<td>India</td>
<td>14.752</td>
<td>-</td>
<td>-17.129</td>
</tr>
</tbody>
</table>

Table 3.1 BD total value of trade\(^a\) and investment (WTO, 2012)

<table>
<thead>
<tr>
<th>Global (general)</th>
<th>Netherlands (specific)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactures 59,8%</td>
<td>Machinery (31,7%)</td>
</tr>
<tr>
<td>Agricultural products 22,6%</td>
<td>Pharmaceutical products (8,5%)</td>
</tr>
<tr>
<td>Fuels and mining products 10,3%</td>
<td>Edible animal products, dairy, honey (7,1%)</td>
</tr>
<tr>
<td></td>
<td>Optical, photo, technical, medical, etc. apparatus (7%)</td>
</tr>
<tr>
<td></td>
<td>Electrical, electronic equipment (6,5%)</td>
</tr>
<tr>
<td>Manufactures 93,6%</td>
<td>Textiles and articles (85%)</td>
</tr>
<tr>
<td>Agricultural products 5,2%</td>
<td>Fish, crustaceans, mollusks (9,6%)</td>
</tr>
<tr>
<td>Fuels and mining products 1,1%</td>
<td>Footwear (2,8%)</td>
</tr>
<tr>
<td></td>
<td>Tobacco and manufactured</td>
</tr>
<tr>
<td></td>
<td>tobacco substitutes (1,2%)</td>
</tr>
<tr>
<td></td>
<td>Vegetable textile, woven fabric (0,8%)</td>
</tr>
</tbody>
</table>

Table 3.2 BD key trade commodities (WTO, 2012)

<table>
<thead>
<tr>
<th>Share in world trade (goods only)</th>
<th>Foreign Direct Investment in BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export of BD</td>
<td>Import of BD</td>
</tr>
<tr>
<td>1. EU 27 (51,2%)</td>
<td>1. China (15,6%)</td>
</tr>
<tr>
<td>2. US (25,7%)</td>
<td>2. India (13,2%)</td>
</tr>
<tr>
<td>3. India (4,0%)</td>
<td>3. EU 27 (9,7%)</td>
</tr>
<tr>
<td>4. Canada (3,5%)</td>
<td>4. Kuwait (7,2%)</td>
</tr>
<tr>
<td>5. China (1,7%)</td>
<td>5. Indonesia (5,1%)</td>
</tr>
</tbody>
</table>

Table 3.3 BD key international partners (WTO, 2012)

\(^a\) Goods and services
Export destinations for Bangladesh

<table>
<thead>
<tr>
<th>Country</th>
<th>In million US dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>5.100</td>
</tr>
<tr>
<td>Germany</td>
<td>3.700</td>
</tr>
<tr>
<td>UK</td>
<td>2.500</td>
</tr>
<tr>
<td>France</td>
<td>1.400</td>
</tr>
<tr>
<td>Spain</td>
<td>1.200</td>
</tr>
<tr>
<td>Canada</td>
<td>993</td>
</tr>
<tr>
<td>Netherlands</td>
<td>759</td>
</tr>
<tr>
<td>Belgium</td>
<td>742</td>
</tr>
</tbody>
</table>

Table 3.4 The Netherlands is the 7th export destination for Bangladesh (following: US / Germany / UK / France / Spain / Canada) (WTO, 2012)

<table>
<thead>
<tr>
<th>Topic Rankings</th>
<th>DB 2013 Rank</th>
<th>India DB 2013 Rank</th>
<th>Regional Average</th>
<th>DB 2012 Rank</th>
<th>Change in Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting a Business</td>
<td>95</td>
<td>173</td>
<td>86</td>
<td>89</td>
<td>-6</td>
</tr>
<tr>
<td>Dealing with Construction Permits</td>
<td>83</td>
<td>182</td>
<td>111</td>
<td>83</td>
<td>No change</td>
</tr>
<tr>
<td>Getting Electricity</td>
<td>185</td>
<td>105</td>
<td>128</td>
<td>185</td>
<td>No change</td>
</tr>
<tr>
<td>Registering Property</td>
<td>175</td>
<td>94</td>
<td>121</td>
<td>175</td>
<td>No change</td>
</tr>
<tr>
<td>Getting Credit</td>
<td>83</td>
<td>23</td>
<td>96</td>
<td>80</td>
<td>-3</td>
</tr>
<tr>
<td>Protecting Investors</td>
<td>25</td>
<td>49</td>
<td>82</td>
<td>24</td>
<td>-1</td>
</tr>
<tr>
<td>Paying Taxes</td>
<td>97</td>
<td>152</td>
<td>115</td>
<td>95</td>
<td>-2</td>
</tr>
<tr>
<td>Trading Across Borders</td>
<td>119</td>
<td>127</td>
<td>131</td>
<td>120</td>
<td>1</td>
</tr>
<tr>
<td>Enforcing Contracts</td>
<td>182</td>
<td>184</td>
<td>136</td>
<td>182</td>
<td>No change</td>
</tr>
<tr>
<td>Resolving Insolvency</td>
<td>119</td>
<td>116</td>
<td>103</td>
<td>116</td>
<td>-3</td>
</tr>
</tbody>
</table>

### Annex 4 Trends in the water sector in Bangladesh

**Table 4.1** Summary of water supply coverage according to different standards (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011)

<table>
<thead>
<tr>
<th>Areas</th>
<th>Bangladesh Basic Standard</th>
<th>Bangladesh Improved Standard</th>
<th>JMP Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>82</td>
<td>34</td>
<td>93.3</td>
</tr>
<tr>
<td>WASAs</td>
<td>84</td>
<td>72</td>
<td>-</td>
</tr>
<tr>
<td>City Corporations</td>
<td>76</td>
<td>61</td>
<td>-</td>
</tr>
<tr>
<td>Paurashavas and growth centers</td>
<td>85</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Rural</td>
<td>71</td>
<td>51</td>
<td>83.8</td>
</tr>
<tr>
<td>Country</td>
<td>74</td>
<td>50</td>
<td>85.5</td>
</tr>
</tbody>
</table>

**Table 4.2**: Summary of sanitation coverage (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011)

<table>
<thead>
<tr>
<th>Areas</th>
<th>Baseline status in 2003</th>
<th>Percentage of sanitation coverage in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Number of Households</td>
<td>Percentage of Households using Hygienic Latrines (basic standard)</td>
</tr>
<tr>
<td>Urban</td>
<td>3,067,761</td>
<td>60,0</td>
</tr>
<tr>
<td>City Corporations</td>
<td>1,216,424</td>
<td>69,9</td>
</tr>
<tr>
<td>Municipalities</td>
<td>1,851,337</td>
<td>53,1</td>
</tr>
<tr>
<td>Rural</td>
<td>18,326,332</td>
<td>28,8</td>
</tr>
<tr>
<td>Country</td>
<td>21,394,093</td>
<td>33,2</td>
</tr>
</tbody>
</table>


The estimated rural water supply coverage is given in Table 4.3. Except for high water table areas and deep aquifers in coastal areas, the coverage is low.

<table>
<thead>
<tr>
<th>Categories of Rural Areas</th>
<th>Percentage of Rural Population in the Category</th>
<th>Percentage of Coverage in the Category According to Bangladesh Basic Standard*</th>
<th>Percentage of Coverage in the Category According to Bangladesh Improved Standard**</th>
<th>Percentage of National Coverage According to Bangladesh Basic Standard*</th>
<th>Percentage of National Coverage According to Bangladesh Improved Standard**</th>
</tr>
</thead>
<tbody>
<tr>
<td>High water table areas</td>
<td>30</td>
<td>98</td>
<td>97</td>
<td>29,4</td>
<td>29,1</td>
</tr>
<tr>
<td>Low water table areas</td>
<td>27</td>
<td>64</td>
<td>32</td>
<td>17,3</td>
<td>8,6</td>
</tr>
<tr>
<td>Deep aquifers in coastal areas</td>
<td>15</td>
<td>95</td>
<td>54</td>
<td>14,3</td>
<td>8,1</td>
</tr>
<tr>
<td>Arsenic affected areas</td>
<td>19</td>
<td>36</td>
<td>18</td>
<td>6,9</td>
<td>3,4</td>
</tr>
<tr>
<td>Hard to reach areas</td>
<td>8</td>
<td>24</td>
<td>12</td>
<td>1,9</td>
<td>1,0</td>
</tr>
<tr>
<td>CHT</td>
<td>1</td>
<td>66</td>
<td>33</td>
<td>0,7</td>
<td>0,3</td>
</tr>
<tr>
<td>Total Rural:</td>
<td>100</td>
<td></td>
<td></td>
<td>70,5</td>
<td>50,6</td>
</tr>
</tbody>
</table>

Table 4.3: Rural water supply coverage (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011)

*Basic standard considers one water point for 100 persons.
**Improved standard considers one water point for 50 persons according to the National Policy for WSS 1998. Source: Estimated by SDP.

<table>
<thead>
<tr>
<th>Area</th>
<th>Baseline Status in 2003</th>
<th>Sanitation Coverage Percentage in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Number of</td>
<td>Percentage of Households using</td>
</tr>
<tr>
<td></td>
<td>Households</td>
<td>Hygienic Latrines</td>
</tr>
<tr>
<td>Rural</td>
<td>18,326,332</td>
<td>28,8</td>
</tr>
</tbody>
</table>

Table 4.4: Rural water sanitation coverage (Ministry of Local Government, Rural Development and Cooperatives - Sector Development Plan, 2011)
### Categories

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban water supply</td>
<td>165,220</td>
<td>280,467</td>
<td>269,257</td>
<td>714,945</td>
</tr>
<tr>
<td>Urban sanitation</td>
<td>93,513</td>
<td>107,555</td>
<td>134,823</td>
<td>335,891</td>
</tr>
<tr>
<td>Urban drainage</td>
<td>40,485</td>
<td>65,449</td>
<td>74,538</td>
<td>180,472</td>
</tr>
<tr>
<td>Rural water supply</td>
<td>44,687</td>
<td>42,824</td>
<td>55,111</td>
<td>142,622</td>
</tr>
<tr>
<td>Rural sanitation</td>
<td>36,504</td>
<td>27,726</td>
<td>27,360</td>
<td>91,590</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>380,410</strong></td>
<td><strong>524,021</strong></td>
<td><strong>561,089</strong></td>
<td><strong>1,465,520</strong></td>
</tr>
</tbody>
</table>

Table 4.5 (in BDT million)

### Sources of Funding

<table>
<thead>
<tr>
<th>Sources of Funding</th>
<th>FY 2011-15</th>
<th>FY 2016-20</th>
<th>FY 2021-25</th>
<th>Total FY 2011-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Public Sector:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public sector investment</td>
<td>210,456</td>
<td>288,299</td>
<td>232,378</td>
<td>731</td>
</tr>
<tr>
<td>Revenue from WSS utilities</td>
<td>88,960</td>
<td>144,466</td>
<td>209,526</td>
<td>442</td>
</tr>
<tr>
<td>2. Private Sector:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community contribution as cost sharing</td>
<td>2,108</td>
<td>106</td>
<td>70</td>
<td>2,284</td>
</tr>
<tr>
<td>Private household investment</td>
<td>69,677</td>
<td>70,193</td>
<td>85,385</td>
<td>225,254</td>
</tr>
<tr>
<td>Private entrepreneur</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (BDT million)</td>
<td><strong>380,410</strong></td>
<td><strong>524,021</strong></td>
<td><strong>561,089</strong></td>
<td><strong>1,465,520</strong></td>
</tr>
<tr>
<td>Total (US$ million)</td>
<td><strong>5,434</strong></td>
<td><strong>7,486</strong></td>
<td><strong>8,016</strong></td>
<td><strong>20,936</strong></td>
</tr>
</tbody>
</table>

Table 4.6 Estimation of the contribution of sector partners (in BDT million)
### 4.7 Different standards for assessing water supply coverage

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh Basic Standard</th>
<th>Bangladesh Improved Standard</th>
<th>JMP Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The following water supply facilities should be provided to achieve, at least, the government’s target of providing water supply to all by 2011.</strong></td>
<td>The following water supply facilities should be provided to achieve, at least, the targets set in the NPSWSS 1998.</td>
<td>The following water supply facilities should be provided to achieve, at least, the targets of the MDGs.</td>
<td></td>
</tr>
<tr>
<td><strong>Individual or shared water supply facilities of the following types.</strong></td>
<td><strong>Urban and Rural</strong></td>
<td><strong>Urban and Rural</strong></td>
<td><strong>Urban and Rural</strong></td>
</tr>
<tr>
<td>· Piped water supply to households with multiple taps, yard connections or shared connections.</td>
<td>· Piped water supply to households with multiple taps, yard connections or shared connections.</td>
<td>· Piped water supply to households with multiple taps, yard connections or shared connections.</td>
<td></td>
</tr>
<tr>
<td>· Public standpipe shared by, at most, 100 persons.</td>
<td>· Public standpipe shared by, at most, 100 persons.</td>
<td>· Public standpipe shared by, at most, 50 persons.</td>
<td></td>
</tr>
<tr>
<td>· Safe water points, like hand pump tube wells, ring wells, PSFs, protected dug wells, protected springs and rainwater harvesting system; public water points are shared by, at most, 100 persons and private water points by 5 persons.</td>
<td>· Safe water points, like hand pump tube wells, ring wells, PSFs, protected dug wells, protected springs and rainwater harvesting system.</td>
<td>· Safe water points, like hand pump tube wells, ring wells, PSFs, protected dug wells, protected springs and rainwater harvesting system.</td>
<td></td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Piped water supply to households with multiple taps, yard connections or shared connections.</td>
<td>· Piped water supply to households with multiple taps, yard connections or shared connections.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Public standpipe shared by, at most, 50 persons.</td>
<td>· Public standpipe shared by, at most, 50 persons.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>· Safe water points, like hand pump tube wells, ring wells, PSFs, protected dug wells, protected springs and rainwater harvesting system; public water points are shared by, at most, 50 persons and private water points by five persons.</td>
<td>· Safe water points, like hand pump tube wells, ring wells, PSFs, protected dug wells, protected springs and rainwater harvesting system; public water points are shared by, at most, 50 persons and private water points by five persons.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Annex 4.8 Definitions of different types of standards to assess sanitation coverage

<table>
<thead>
<tr>
<th>Bangladesh Basic Standard</th>
<th>Bangladesh Improved Standard</th>
<th>JMP Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following sanitation facilities would be provided to achieve, at least, the government’s target of sanitation for all by 2013</td>
<td>The following sanitation facilities should be provided in accordance with the standard set in the National Sanitation Strategy 2005</td>
<td>The following sanitation facilities would be provided to achieve, at least, the targets of the MDG by JMP definitions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual or shared latrines of the following types:</th>
<th>Individual or shared hygienic latrines shared by maximum two households of the following types:</th>
<th>Individual latrines of the following types:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flush and pour-flush toilet/latrines to piped sewer system or septic tank</td>
<td>Flush and pour-flush toilet/latrines to piped sewer system or septic tank</td>
<td>Flush and pour-flush toilet/latrines to piped sewer system or septic tank</td>
</tr>
<tr>
<td>Ventilated improved pit latrines</td>
<td>Pit latrines with slab and water seal or lid or flap</td>
<td>Pit latrines with slab and water seal or lid or flap</td>
</tr>
<tr>
<td>Composting latrines</td>
<td>Ventilated Improved pit latrines</td>
<td>Pit latrines with slab but no water seal, lid or flap</td>
</tr>
<tr>
<td>Pit latrines with slab and water seal or lid or flap</td>
<td>Composting latrines</td>
<td>Ventilated improved pit latrines</td>
</tr>
<tr>
<td>Pit latrines with slab but no water seal, lid or flap</td>
<td></td>
<td>Composting latrines</td>
</tr>
</tbody>
</table>
Annex 5 Set up and results water-survey Bangladesh

5.1 Types of surveyed organizations

- 14 Private Organizations
- 7 NGO’s
- 4 International Finance Organizations
- 5 Public Organizations

Annex 5.2 Questionnaire for private organizations

CONTACT DETAILS REPRESENTATIVES PRIVATE SECTOR BANGLADESH

Name.

E-mail.

Telephone.

Website.

QUESTION 1

With regard to standards in Bangladesh, to what extent has your company managed to deal with mentioned business processes?

a) Available expertise and working procedures within the organisation.

b) Cooperation with other organisations within the water supply chain.

c) Availability technology/machines/ICT.

d) Access to finance.

SCALE

1 - Not optimal

10 – Optimal
QUESTION 2

To what extent could new expertise, innovation, methods, practical know-how, technology, machines and modern appliances help the company to improve the management of these essential business processes?

a) Available expertise and working procedures within the organisation.

b) Cooperation with other organisations within the water supply chain.

c) Availability technology/machines/ICT.

d) Access to finance.

<table>
<thead>
<tr>
<th>SCALE</th>
<th>1 - Not optimal</th>
<th>10 – Optimal</th>
</tr>
</thead>
</table>

QUESTION 3

Would you be interested to meet Dutch companies which are specialized in certain water segments that can support the company to improve the management of the business processes?

a) Available expertise and working procedures within the organisation.

b) Cooperation with other organisations within the water supply chain.

c) Availability technology/machines/ICT.

d) Access to finance.

| YES OR NO |

Annex 5.3 Questionnaire for NGO's & Donor organizations

CONTACT DETAILS REPRESENTATIVES NGO & DONOR ORGANISATIONS BANGLADESH

Name.
E-mail.
Telephone.
Website.

QUESTION 1

Which of the following market segments does your work relates to?

a) Water resource (surface, ground and harvesting water).

b) Water for consumption (urban / rural drinking water).

c) Water for non-consumption (industrial, agricultural and fisheries water).

d) Discharge (sewerage, drainage, and waste water).
**QUESTION 2**

<table>
<thead>
<tr>
<th>YES OR NO</th>
<th><strong>Do you work for?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Bangladeshi public organization.</td>
</tr>
<tr>
<td>b)</td>
<td>International donor organization.</td>
</tr>
<tr>
<td>c)</td>
<td>NGO.</td>
</tr>
<tr>
<td>d)</td>
<td>Private Sector.</td>
</tr>
</tbody>
</table>

**QUESTION 3**

<table>
<thead>
<tr>
<th>SCALE</th>
<th><strong>How do you value government policy development, policy implementation and maintenance of legislation in Bangladesh in relation to the following subjects?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Surface water</td>
</tr>
<tr>
<td></td>
<td>b) Ground water</td>
</tr>
<tr>
<td></td>
<td>c) Water harvesting</td>
</tr>
<tr>
<td></td>
<td>d) Urban drinking water</td>
</tr>
<tr>
<td></td>
<td>e) Rural drinking water</td>
</tr>
<tr>
<td></td>
<td>f) Industrial water</td>
</tr>
<tr>
<td></td>
<td>g) Agricultural water</td>
</tr>
<tr>
<td></td>
<td>h) Fisheries</td>
</tr>
<tr>
<td></td>
<td>i) Tourism</td>
</tr>
<tr>
<td></td>
<td>j) Energy Oil Gas</td>
</tr>
<tr>
<td></td>
<td>k) Sewerage</td>
</tr>
<tr>
<td></td>
<td>l) Drainage</td>
</tr>
<tr>
<td></td>
<td>m) Waste water</td>
</tr>
</tbody>
</table>

1 - Very low
10 – Very high
### QUESTION 4

<table>
<thead>
<tr>
<th>SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

To what extent do you see possibilities to improve, on short notice/2 years, the fulfilment of your public task?

- **a)** Surface water
- **b)** Ground water
- **c)** Water harvesting
- **d)** Urban drinking water
- **e)** Rural drinking water
- **f)** Industrial water
- **g)** Agricultural water
- **h)** Fisheries
- **i)** Tourism
- **J)** Energy Oil Gas
- **k)** Sewerage
- **l)** Drainage
- **m)** Waste water

### QUESTION 5

<table>
<thead>
<tr>
<th>SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

Are you interested to develop projects with Dutch organizations, aiming at the improvements that your organization would like to realize?

- **a)** Surface water
- **b)** Ground water
- **c)** Water harvesting
- **d)** Urban drinking water
- **e)** Rural drinking water
- **f)** Industrial water
- **g)** Agricultural water
- **h)** Fisheries
- **i)** Tourism
- **J)** Energy Oil Gas
- **k)** Sewerage
- **l)** Drainage
- **m)** Waste water
QUESTION 6

Is there finance available from a public Bangladeshi organization, aiming at the improvements that your organization would like to realize?

QUESTION 7

Which public program could finance the development of a project, aiming at the improvements that your organization would like to realize?

QUESTION 8

Is there finance available from a donor organization, aiming at the improvements that your organization would like to realize?

QUESTION 9

Which organization could finance the development of a project, aiming at the improvements that your organization would like to realize?

Annex 5.4: Questionnaire for public organizations

CONTACT DETAILS REPRESENTATIVES PUBLIC SECTOR BANGLADESH

Name
E-mail
Telephone
Website

QUESTION 1

Do you work for?

a) Bangladeshi public organization
b) International donor organization
c) NGO
d) Private Sector

Question 1

YES OR NO

a)
b)
c)
d)
**QUESTION 2**

Which of the following tasks describes your daily work best?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Policy development</td>
</tr>
<tr>
<td>b)</td>
<td>Policy Implementation</td>
</tr>
<tr>
<td>c)</td>
<td>Inspection</td>
</tr>
</tbody>
</table>

**QUESTION 3**

Which of the following market segments does your work relates to?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Water resource (surface, ground and harvesting water)</td>
</tr>
<tr>
<td>b)</td>
<td>Water for consumption (urban / rural drinking water)</td>
</tr>
<tr>
<td>c)</td>
<td>Water for non-consumption (industrial, agricultural and fisheries water)</td>
</tr>
<tr>
<td>d)</td>
<td>Discharge (sewerage, drainage, and waste water)</td>
</tr>
</tbody>
</table>

**QUESTION 4**

How do you value the current implementation of your public task?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very low</td>
</tr>
<tr>
<td>10</td>
<td>Very high</td>
</tr>
</tbody>
</table>

**QUESTION 5**

To what extent do you see possibilities to improve, on short notice/2 years, the fulfilment of your public task?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very unlikely</td>
</tr>
<tr>
<td>10</td>
<td>Very likely</td>
</tr>
</tbody>
</table>

**QUESTION 6**

Are you interested to develop projects with Dutch organizations, aiming at the improvements that your organization would like to realize?

**QUESTION 7**

Is there finance available from a public Bangladeshi organization, aiming at the improvements that your organization would like to realize?
<table>
<thead>
<tr>
<th>QUESTION 8</th>
<th>OPEN QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which public program could finance the development of a project, aiming at the improvements that your organization would like to realize?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUESTION 9</th>
<th>YES OR NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there finance available from a donor organization, aiming at the improvements that your organization would like to realize?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUESTION 10</th>
<th>OPEN QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which organization could finance the development of a project, aiming at the improvements that your organization would like to realize?</td>
<td></td>
</tr>
</tbody>
</table>
5.5 Demand in Bangladesh for the water sector, according to surveyed NGO's

The red bars in graph 5.5 indicate the possibilities that the representatives of the NGO's interviewed see to improve the implementation of public tasks related to the indicated market segments e.g. waste water, drainage and sewerage.

Next, the green bars indicate the willingness to set up cooperation with a Dutch partner. In the market segments waste water, rural & urban drinking water and water harvesting Nyenrode found most willingness to set up new cooperation with Netherlands partners.
5.6 Demand in Bangladesh for the water sector, according to surveyed international finance organizations

The red bars in graph 5.6 indicate the possibilities that the representatives of donor Organizations interviewed see to improve the implementation of public tasks related to the indicated market segments (waste water, drainage, sewerage...). Next, the green bars indicate the willingness to set up cooperation with a Netherlands partner. In the market segment waste water Nyenrode found most willingness from donor Organizations to set up projects with Netherlands partners.

5.7 Water efficiency

Three of the 14 companies surveyed were interested to develop a cooperation with a Dutch company to improve their water efficiency.
## CONTACT DETAILS REPRESENTATIVES DUTCH ORGANIZATIONS

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Telephone</th>
<th>Website</th>
</tr>
</thead>
</table>

## QUESTION 1A

**YES OR NO**

Is your company already represented or active in Bangladesh?

## QUESTION 1B

**YES OR NO**

Does your company deliver products or services related to the following market segments? (In general, not specific in Bangladesh). (Multiple answers possible).

### Wash:
- a) Capacity building
- b) Drinking water urban
- c) Sanitary services
- d) Hygiene advisory

### Providing water for industry:
- a) Industry water (textile, food industry, energy)
- b) Tourism
- c) Wastewater technologies

### Enabling delta life:
- a) Capacity building
- b) IWRM
- c) Delta technologies
- d) Water & Climate services
- e) Urban development / Climate adaptive planning
- f) Climate adaptation investments
- g) Maritime / Transport.

### Providing water for agriculture (growing more crop per drop):
- a) Capacity building.
b) Water & Climate services.  

b)

c) Aquaculture technologies.  
c)

d) Irrigation technologies.  
d)

**QUESTION 2**  
YES OR NO

If your company is not (yet) active in Bangladesh, would you consider, or have you researched the possibility of entering the Bangladeshi market?

**QUESTION 3**  
YES OR NO

In case you are interested in entering the Bangladeshi market, do you focus on?

a) Public assignments / Implementing projects of international or bilateral donors.  
a)

b) Business-to-Business development.  
b)

**QUESTION 4**  
YES OR NO

In case you are aiming to set up Business-to-Business relations, what is your preferred ownership structure and mode of entry in Bangladesh?

a) Exporting.  
a)

b) Licensing.  
b)

c) Franchising.  
c)

d) Turnkey projects.  
d)

e) Mergers & Acquisitions.  
e)

f) Joint venture.  
f)

g) Wholly owned subsidiary.  
g)

h) Others (please specify)/Preferred ownership structure not yet clear.  
h)
### QUESTION 5

<table>
<thead>
<tr>
<th>SCALE</th>
<th>1 - Very unlikely</th>
<th>10 – Very likely</th>
</tr>
</thead>
</table>

**If your answer to question 2 is 'yes'. What is the reason?**

- **a)** Possibilities to contribute to the realization of development goals and to participate in donor financed projects & initiatives.
- **b)** Economic slowdown of the western markets.
- **c)** Competitive pressure on the domestic market.
- **d)** Good enabling environment for trade and/or investments.
- **e)** Outsourcing/low cost basis for operations in trade and/or investment.
- **f)** Market growth opportunities.
- **g)** Better position to serve global clients.
- **h)** Monitoring competitors.
- **i)** Proximity and access to other (big) markets.
- **j)** Availability of natural resources.
- **k)** Exploring new talent and/or capacity.
- **l)** Exploring new sources of information.
- **m)** Engaging actively Corporate Social Responsibility (CSR) in the company.
- **n)** Other.

### QUESTION 6

<table>
<thead>
<tr>
<th>SCALE</th>
<th>1 - Very unlikely</th>
<th>10 – Very likely</th>
</tr>
</thead>
</table>

**If your answer to question 2 is 'no'. Why not?**

- **a)** Poor infrastructure such as ICT and/or logistics.
- **b)** Customs barriers.
- **c)** Lack of adequate skills such as engineering, software, marketing, finance, foreign languages.
- **d)** Difficulties in finding and/or scarce supply of local senior management.
- **e)** Poor quality control.
- **f)** Rising wages.
- **g)** Low productivity.
- **h)** Market saturation of fragmentation.
- **i)** Underdeveloped retail and distribution channels.
- **j)** Difficulties with business partners.
- **k)** Difficult relations with organized labour.
- **l)** Credit risks.
- **m)** Failure to comply with contracts, bribery, corruption, weak corporate governance.
- **n)** Non-transparency on bureaucratic level.
o) Not interested in public financed projects.  o)
p) Other.  p)

QUESTION 7

Would you consider setting up business activities in other countries in the region (Vietnam, India, China, Myanmar for example)? If your answer is 'yes', could you indicate which country/countries this might be and your main argument for choosing this country?

QUESTION 8

If your company is active in Bangladesh, how does it distinguish itself from its competitors?

a) Price.  a)
b) Quality.  b)
c) Innovation.  c)
d) Service.  d)
e) Total Solutions.  e)
f) Corporation abilities.  f)
g) Service reliability.  g)
h) Good network in private sector in Bangladesh.  h)
i) Good network in public sector in Bangladesh.  i)

QUESTION 9

With regard to entering a new Bangladeshi market, to what extent is your company prepared for the following?

a) Complete market information.  a)
b) Market entry strategy.  b)
c) Location choices.  c)
d) Marketing strategy.  d)
e) Local partnerships: with local supply chain players & partners for ICT, logistics, HRM and legal affairs.  e)
f) Information about competitors in the new market.  f)
g) Information about local regulations.  g)
h) Information about donor programs & subsidies.  h)

SCALE
1 - Very unlikely
10 – Very likely
QUESTION 10

What are the hurdles and risks delaying your entry into Bangladesh?

<table>
<thead>
<tr>
<th>a)</th>
<th>b)</th>
<th>c)</th>
<th>d)</th>
<th>e)</th>
<th>f)</th>
<th>g)</th>
<th>h)</th>
<th>i)</th>
<th>j)</th>
<th>k)</th>
<th>l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>b)</td>
<td>c)</td>
<td>d)</td>
<td>e)</td>
<td>f)</td>
<td>g)</td>
<td>h)</td>
<td>i)</td>
<td>j)</td>
<td>k)</td>
<td>l)</td>
</tr>
</tbody>
</table>

SCALE

1 - Very unlikely
10 – Very likely

QUESTION 11

With regard to entry into Bangladesh, what would be the expected timeline for completion?

<table>
<thead>
<tr>
<th>a)</th>
<th>b)</th>
<th>c)</th>
<th>d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>b)</td>
<td>c)</td>
<td>d)</td>
</tr>
<tr>
<td>0 - 6 months.</td>
<td>6 - 12 months.</td>
<td>12 - 18 months.</td>
<td>18 - 24 months.</td>
</tr>
</tbody>
</table>

QUESTION 12

Would you be interested to receive information related to the foreseen trade mission to Bangladesh?

YES OR NO
6.2 Targeted market segments of the 27 organizations interested in Bangladesh

- 14 B2B & B2G
- 9 B2G
- 4 B2B

6.3 Products and services of the 27 surveyed organizations

- Water for private
- Water management
- Wash
6.4 Preferred ownership structure

6.5 Dutch companies on the Bangladesh market

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already entered the BD market and interested to expand business activities</td>
<td>16</td>
</tr>
<tr>
<td>Not yet active on BD market, and interested in market entry</td>
<td>11</td>
</tr>
</tbody>
</table>
6.6 Reasons to have an interest in Bangladesh

- Engaging CSR in the company
- New sources of information
- Exploring new talent/capacity
- Availability of natural resources
- Proximity and access to other (big) markets
- Monitoring competitors
- Better position to serve global clients
- Market growth opportunities
- Outsourcing flow cost basis for operations in...
- Good environment for trade/investment
- Competitive pressure domestic market
- Economic slowdown western markets
- Development of Bangladesh and participate in...

6.7 Positioning on the Bangladeshi market

- Good network in public sector BD
- Good network in private sector BD
- Service reliability
- Cooperation abilities
- Total solutions
- Service
- Innovation
- Quality
- Pricing
6.8 Future interest in Bangladesh

- Information about donor programs & subsidies
- Information about local regulations
- Information about competitors in the new market
- Local partnerships
- Marketing strategy
- Location choices
- Market entry strategy
- Complete market information

- Already active in BD
- Not yet active in BD
Annex 6.9 Index of water products

Surface water
- Spatial planning - service
- Water resource planning - service
- Water governance reform - service
- Remote sensing - service
- Climate proofing/adaptation - service
- Erosion control - works
- Data management - works
- Coastal Zone Protection - goods
- Flood control/protection - goods
- Management Information Systems - goods

Groundwater
- (Geo-) Hydrology services
- Ground water management
- Irrigation
- Pump technology
- Groundwater contamination
- Groundwater purification/filtration - goods
- Groundwater extraction – goods
- Groundwater pumps – goods

Water Harvesting
- Engineering options water harvesting - service
- Harvesting technology - goods
- Desalination – goods

Urban drinking water
- Planning and feasibility - services
- Operational management -services
- Water supply and sanitation -services
- Management contracts - works
- Treatment plant management - works
- Distribution and supply - goods
- Metering - goods
- Treatment and purification - goods

Rural drinking water
- Groundwater management - services
- Hydrology - services
- Extraction recharge - services
- Water supply and sanitation - services
- Arsenic reduction - works
- Extraction and purification - goods
- Distribution and supply - goods
- Treatment - goods
- Water security - goods
- Pump technology - goods
Annex 7a: Overview of public donor organizations active in Bangladesh

International donor organizations

- Asian Development Bank (ADB), http://www.adb.org
- United Nations:
  - World Health Organization (WHO), http://www.who.int/
  - Worldbank (WB), www.worldbank.org.bd

Bilateral donor organizations

- Australian Agency for International Development (AUS AID), http://www.ausaid.gov.au
- International Water Management Institute (IWMI), http://www.iwmi.cgiar.org/
- Japan International Cooperation Agency (JICA),
- Ontario Centre of Environmental Technology Advancement, www.oceta.on.ca
- Royal Embassy of Sweden,
- Swedish International Development Cooperation Agency (SIDA),
- Swiss Agency for Development and Cooperation (SDC),
- The Netherlands Royal Embassy,
- UK / DFID (Department for International Development)
  https://www.gov.uk/government/organisations/department-for-international-development
- United State Agency for International Development, Bangladesh (US AUD),
- Unit for Policy Implementation (UPI),
Annex 7b: Overview of bilateral and international programs relevant for the water sector in Bangladesh

7b 1 - Bilateral Programs - Dutch Support and Funding Programs for the Private Sectors

The Dutch government is committed to sustainable economic development in developing countries. It therefore works to create a stable business environment. Companies are given the opportunity to not only work on business success, but also to have an impact on the creation or profit of a sector. The Netherlands provides business instruments to this end. These programs have a dual purpose: they enhance your business and the development of the country you are operating in.

- Ontwikkelingsrelevant Infrastructuurontwikkeling (ORIO), www.agentschap.nl/orio
- Private Sector Investeringsprogramma (PSI), www.agentschap.nl/psi, psi@info.agentschap.nl, tel 088-602 8513
- Match Making Facility (MMF), www.agentschap.nl/mmf, mmf@info.agentschap.nl, tel 088-602 81 10
- Partners voor Water (PvW), www.partnersvoorwater.nl, tel 088-602 80 58
- Centrum voor de Bevordering van Import uit Ontwikkelingslanden (CBI), www.cbi.eu/buyers, marketinfo@cbi.eu, tel 010-201 34 21
- Programma Uitzending Managers (PUM), www.pum.nl, info@pum.nl, tel 070-349 05 55
- Dutch Employer’s Cooperation Programme (DECP), www.decp.nl, info@decp.nl
- Financierings Maatschappij voor Ontwikkelingslanden (FMO), www.fmo.nl/fom, fom@fmo.nl, tel 070-314 95 52
- YEP, http://www.yepwater.nl/financiele-ondersteuning
- Netherlands Ministry Foreign Affairs – IHE International Water management Projects
- Embassy Kingdom of the Netherlands (EKN) – Water Program, carel.degroot@minbuza.nl

7b 1.1 Private Sector Investment Program

Under the Private Sector Investment program, (PSI), subsidies are available for Dutch and foreign companies entering into long-term cooperation with local partners in developing countries. This
means that a company from Bangladesh needs to have an international project partner in order to be in a position to apply. The preferred, yet not exclusive, sectors for Bangladesh are agriculture and agro-business, and information technology. The objectives of PSI are to stimulate financial growth, create employment opportunities and generate income in developing countries. This is achieved by providing companies with an opportunity to make an innovative investment together with a local partner. The maximum budget per project is 1.5 million euros, of which 50% will be provided in the form of a grant. PSI has two granting procedures a year. The Netherlands Foreign Trade Agency, Agentschap NL, NL EVD Internationaal, carries out the PSI for the Dutch Ministry of Foreign Affairs/Development Cooperation.

Project criteria: Submitted projects are judged, among others, by the standard of local innovation. One of the beneficial effects of PSI is that it introduces developing countries to new knowledge. Furthermore, both parties must be financially sound. In addition, the scale of planned expenditure must ensure further investments in the future.

7b.1.2 Matchmaking Facility (MMF)

Serious companies in developing countries are often on the lookout for reliable business partners abroad. MMF puts those companies in touch with Dutch businesses. The goal is to stimulate joint business relations, (investment, trade, knowledge transfer), that will strengthen the private sector in developing countries and upcoming markets. Do you want to use the Matchmaking Facility? You can submit your request for MMF to the Dutch Embassy. Surf to www.minbuza.nl/en/services/embassies-and-consulates/embassies-and-consulates.html, select the website of the Dutch Embassy in your country.

7b.1.3 ORIO facility for infrastructure development

The ORIO facility for infrastructure aims to contribute to the achievement of the Millennium Development Goals by investing in public infrastructure in developing countries. For Bangladesh the applicable sectors are: water management, energy, environment, and agriculture. ORIO contributes to the development, implementation, (construction and/or expansion), and exploitation of public infrastructure in developing countries. After approval of the project proposal, funding is available for the further development of the project plan, (100% funding), and the implementation of the project procurement and installation, (50% funding). After completion of the implementation phase, also the operations and maintenance, (O&M), of the infrastructural works will be supported by 50% funding of the O&M costs up to 10 years. The total annual funds available for ORIO worldwide are €180 million Euro. The budget for each project must be between 2 and 60 million Euro. The Bangladeshi Government is the applicant for ORIO funding, but private sector companies are invited to initiate
project proposals. The ORIO program has two tenders a year. ORIO is funded by the Netherlands Minister for Development Cooperation and implemented by Agentschap NL/ NL EVD Internationaal, the Netherlands Government Agency for International Business and Cooperation.

**Bangladesh Rehabilitation water management infrastructure Bhola**

The project is defined as the development, construction and implementation of a complete rehabilitation of the water management structure of the Island of Bhola

Applicant: Ministry of Water Resources

Competent Authority: Bangladesh Water Development Board (BDWB)

Parties Involved in the Development Phase: Royal Haskoning DHV, TechForce Innovations BV and AGT Netherlands

EUR 24,334,753

River bank erosion is a big problem for Bhola. The dikes around the polders provide protection against ‘normal’ high water levels, but the height and strength of the dikes is often not sufficient to withstand surges caused by cyclones. If current water management structures are not upgraded and reinforced, breaches caused by cyclonic surge and wave action are to be expected in the future making Bhola practicably inhabitable in the longer term. The project aims to substantially increase safety and security for the Bhola community by improving the water management infrastructure. The project is defined as the development, construction and implementation of a complete rehabilitation of the water management structure of the Island of Bhola, (with a surface area of ca. 332,500 ha and over 1,6 million inhabitants), in Southern Bangladesh. The main elements or the project are: reinforcement of 200 km embankment dikes protecting Bhola, integration of a dike monitoring system, building 4 cross dams with lengths of ca. 1,000, 750, 1,500 and 1,250m and the training of local operators. It is expected that at least 1 million inhabitants of Bhola will benefit from this project.

**7b1.4 FMO Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V.**

With the Fund Emerging Markets (“FOM”) the Dutch Development Bank or Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (“FMO”) stimulates Dutch entrepreneurs to invest in Emerging Markets or Developing countries. In many cases commercial finance to fund expansion plans of production facilities or to finance the start-up of Greenfield projects in the local market is scarce or even not available to Dutch entrepreneurs. The tenors are too short; the collateral is not sufficient, the local bank requires a positive track record and presence in the country of at least three consecutive years etc. FOM is able to extend long or medium term loans to 100%
fully owned subsidiaries of Dutch corporates. Even joint ventures with local partners are eligible as long as these are for a majority controlled by Dutch companies. FOM is a joint initiative of the Ministry of Economic Affairs, Agriculture and Innovation (ELI) and the Nederlandse Financierings Maatschappij voor Ontwikkelingslanden. For more detailed information on the Fund Emerging Markets, please visit the FMO website.

Annex 7b 1.5 EKN - Water Program (2011-2015)

The program has a focus on

- Sustainable participative water management in the existing polders and in the reclaimed land of the coastal zone;
- River management;
- Drinking water and sanitation in rural and urban areas and
- Institutional strengthening.

Budget EUR 124,660,000
Through the "Blue Gold for Economic Development" program, the Embassy of the Kingdom of The Netherlands, (EKN), expects to contribute to a more effective use of water sources for agriculture, partly by reducing/optimizing water use in the dry season but also by increasing total production in the 160,000 ha of polders benefitting from the program. Strategy of the project is to combine investments in new and rehabilitated water infrastructure with activities to form, organize and train water management groups/cooperatives, improve farming and fishing methods, strengthen governance and business development aiming, ultimately, at economic development and increased income for the polder population.

**UNDAF/UNDP - Water Management**

The overall objective of the program is to contribute, in Bangladesh, to the achievement of the Pillar-5 Outcome of the UN Development Assistance Framework, (UNDAF 2012-2016), i.e., that “By 2016, populations vulnerable to climate change and natural disasters have become more resilient to adapt with the risk”.

**Satellite for Crops**

Dutch remote sensing technologies for improving information, which they provide to farmers, especially during monsoon and cloud, cover periods. Through this pilot BRAC and CEGIS will use additional optical and radar satellite data and technologies for all weather seasons to provide reliable information to the agricultural and water sector.

**Urban Dredging Demonstration Project**

The overall objective of the project is the improved performance of Dhaka’s urban storm water drainage system, with reduced incidences of inundation and flooding of urban roads and neighbourhoods, as well as more efficient use of potential retention capacity of the urban storm water drainage system.
**BRAC WASH II**
BRAC and IRC  
2015  30,084,335  
Cor Dietvorst, dietvorst@irc.nl

Improved access to and use of safe water and improved sanitation for underserved populations in hard to reach areas in 20 Upazila’s.

Sustainability of access to and use of safe water and improved sanitation in 150 Upazila’s of the WASH phase I and expanded toilet coverage and use to 90% of the population.

Strengthened communities and local government and other stakeholders for implementation and sustained operation and use of installed facilities.

Stimulate innovation in the WASH sector through action research on long outstanding issues such as low-cost sanitation technologies for areas with high ground water tables, safe and final disposal of human waste and water treatment technologies.

Improved health standard and livelihood conditions

**WOP DWASA**
Vitens Evides Intl. (VEI)  
2017  4,900,000  
Ir. Ad Doppenberg, Ad.Doppenberg@vitens.nl and Folkert de Jager, Folkert.deJager@vitens.nl

Performance improvement of DWASA through capacity development with a focus on sustainable operations and services.

Increase of water and sanitation access for the urban poor and the creation of a healthy living environment in low-income areas.

**Max Value for WASH**
MAX Foundation  
2017  3,000,000  
Riad Imam Mahmud, riad@maxfoundation.nl

Reduction in child mortality and morbidity in the poorest and most vulnerable areas of Bangladesh. Directly linked to this outcome is to create a nearly 100% coverage on MDG 7: drinking water and sanitation in each of the Unions where the project will intervene and as a result create a healthy living environment.

**Bangladesh Water PaCT**
IFC  
2017  4,000,000  
Nishat Chowdhury, NChowdhury2@ifc.org

The overarching objective of the project: Partnership for Cleaner Textile (PaCT) is to reduce environmental and related social impacts that result from prevailing practices in textile wet processing, particularly excessive groundwater extraction and surface water pollution, but including energy and chemical use.

The second most important outcome is that that healthy working and living conditions for the workers and the people living in the direct vicinity of the factories are improved.
<table>
<thead>
<tr>
<th>Organization</th>
<th>Institution</th>
<th>Year</th>
<th>Amount</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNDAF/UNICEF</td>
<td>UNICEF</td>
<td>2015</td>
<td>5.036.796</td>
<td>Fiona Ward, <a href="mailto:fward@unicef.org">fward@unicef.org</a> and Peter Ravenscroft, <a href="mailto:pravenscroft@unicef.org">pravenscroft@unicef.org</a></td>
</tr>
</tbody>
</table>

The main outcome for this project is: improved availability and use of drinking water and sanitation facilities in difficult and hard to reach areas in Bangladesh.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Institution</th>
<th>Year</th>
<th>Amount</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDPCR</td>
<td>IFAD</td>
<td>2013</td>
<td>1.252.901</td>
<td>Thomas Rath, <a href="mailto:t.rath@ifad.org">t.rath@ifad.org</a></td>
</tr>
</tbody>
</table>

The primary objective of the project is to improve the well-being and reduce the poverty of primary producers, char-based traders (both women and men), landless and single women and their households.

Secondary are: (i) improvement of the facilities and terms of access for men and women to rural markets; (ii) increase in wage employment for poor women during the project period; (iii) increased production and sale of products for the market; and (iv) movement of primary producers up the value chain.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Institution</th>
<th>Year</th>
<th>Amount</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South West Project</td>
<td>ADB</td>
<td>2014</td>
<td>3.922.000</td>
<td>Ataul Haq, <a href="mailto:ataulhaq15@yahoo.com">ataulhaq15@yahoo.com</a></td>
</tr>
</tbody>
</table>

To strengthen the capacity of the main institutions in the water sector, BWDB and WARPO. With ADB as contracting partner and RNE in a co-financing role, this project seeks to further institutionalize the principle of participatory water management, taking on broad lessons learned in the past in similar (smaller) interventions.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Institution</th>
<th>Year</th>
<th>Amount</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBWM-IUCN</td>
<td>IUCN</td>
<td>2014</td>
<td>3.227.331</td>
<td></td>
</tr>
</tbody>
</table>

The envisaged outcome of the project is: “Track III approach integrated with Track I and Track II processes and multi-stakeholder endorsed mechanisms established for integrated management of trans-boundary water regimes with a view to enhance food and livelihood security in the South Asian Region.”

<table>
<thead>
<tr>
<th>Organization</th>
<th>Institution</th>
<th>Year</th>
<th>Amount</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICZM (CDSP-4)</td>
<td>ERD, IFAD, EMM</td>
<td>2017</td>
<td>8.900.000</td>
<td></td>
</tr>
</tbody>
</table>

The goal of the project will be to reduce poverty and hunger for poor people living on chars. Its purpose is to provide improved and more secure livelihoods for 28,000 households in coastal chars. This would be achieved through the provision of support for rural livelihoods, legal title to land and climate-resilient infrastructure.
The most important outcome is a successful introduction of the Farmers Field School approach on irrigation practices in polders. This experience and the lessons learnt can be taken up as from the second quarter of 2013, thus coinciding with the start of Blue Gold. For Blue Gold the FFS is the selected strategy of extension services towards improving the production system.

The selected 75 WMG cooperative organizations will be strengthened which is an important step towards their business development and their becoming effective private sector enterprises.

Agricultural productivity on 750 ha of polder land will increase through crop diversification, the use of improved inputs, (seed and fertilizer), and optimized use of (scarce) water resources.

Bangladesh ERD, PC, 2017 7.600.000 Tender is currently going on

The Delta Plan has been designed on the request of the Government of Bangladesh. A Bangladesh Delta Plan Preparatory Team (DPT) was fielded during the period from July 2011 to January 2012 by EKN Dhaka. The DPT was funded through the Netherlands’ Government’s NL Agency, Partners for Water Program (PfW), with a close link to the Water Mondial Program (WM), as international part of the Netherlands National Water Policy. The main objective of the Delta Plan is to prepare a comprehensive strategic plan with a holistic approach and long-term vision, (50 years to 100 years), aimed at addressing natural resources management and climate change related issues of water safety, food production, salt intrusion, land reclamation and char development, environment and ecology, in order to reach an adequate level of safety and food security as well as sustained economic growth of Bangladesh.

*(Up to 2015, for longer running projects the mentioned budget is therefore not a total amount)*
<table>
<thead>
<tr>
<th>Implementing Organization</th>
<th>Project title</th>
<th>Duration</th>
<th>Budget (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Ecological Management Foundation</td>
<td>Sujol</td>
<td>30 June 2013</td>
<td>295,509</td>
</tr>
<tr>
<td>2) DLO Alterra</td>
<td>Climate Adaption Atlas Bangladesh</td>
<td>01-sep-13</td>
<td>329,577</td>
</tr>
<tr>
<td>3) DLO Imares</td>
<td>Eco-engineered coastal defence integrated with aquatic food product</td>
<td>1 January 2014</td>
<td>430,022</td>
</tr>
<tr>
<td>4) Dr Ten</td>
<td>Sustainable Clean Water</td>
<td>1 June 2015</td>
<td>397,517</td>
</tr>
</tbody>
</table>

Ad 1) SUJOL

- Project title: SUJOL (meaning good water in Bengali) http://www.sujol.com/ Sector: Water Supply & Sanitation:
- Dates: The action runs from 31 May 2011 till July 1st 2013. After this phase two will start.
- Long-term objective: Sujol is an ambitious social enterprise that aims to identify, develop and support micro drinking water businesses owned and operated by local entrepreneurs that provide affordable drinking water to their communities. Currently, an estimated 77 million Bangladeshi people have been exposed to contaminated groundwater. Our focus is on the rural and peri-urban areas of Bangladesh with serious arsenic contamination and salinity problems with existing tube wells. For this aim we will make use of CAPD-I solution, developed by Voltea, a Unilever Ventures company. CapD-I is an innovative, low energy, non-chemical breakthrough that can treat arsenic contaminated water in an affordable and effective way. Project success will result in an appropriate design adapted to work in the local market, and a sound understanding of the possible entrepreneur-based business models needed to introduce the technology on a larger scale. Our overall objective is to fulfill the need for affordable and safe water-solutions in Bangladesh for 30 million people by means of 30,000 micro-entrepreneurs in ten years time. The program will further include different training modules for the micro-entrepreneurs and local partners; technical training, commercial/marketing training and financial training. Towards the end-consumers, there will be awareness campaigns on arsenic poisoning by drinking contaminated water, as well as the importance of day-to-day hygiene and health. This will be done through the Tupperware model to reach women, through teashops to reach men, and through schools to reach children.
**7b Program's for public organizations in Bangladesh**

The Policy Support Unit, (PSU), under the Ministry of Local Government, Rural Development and Cooperatives, (LGRD & C), developed a Sector Development Plan (SDP 2011-2015) and Sector Investment Plan (SIP). BMDF and LGED are involved in managing, monitoring of investments and projects:

- BMDF – Bangladesh Municipal Development Fund, agency for Ministry of Water.
- Local Government Engineering Department, (LGED), agency for Ministry of Local Government and Rural Development.

**Annex 7b Bangladesh Municipal Development Fund (BMDF)**

BMDF is a company formed under the Ministry of Finance of the Government of Bangladesh in 1999. The administrative authority of BMDF is now vested with the Bank and Financial Institutions Division created recently under the Ministry of Finance. The BMDF was registered in 2002 under the Companies Act, 1994. The BMDF is guided under the Memorandum and Articles of Associations. The Memorandum of Association defines the Primary and ancillary objectives of the Company. The primary objectives, among others, are:

- To extend financial support to the City Corporations and Pourashavas (Municipalities) referred to collectively as Urban Local Government Bodies, (ULBs), with a view to strengthening their institutional and financial capacity to plan, finance, implement and operate infrastructure services;
- To procure, arrange, secure, receive and accept loans, aid, grants, and donations from any lawful source and to create a fund thereof and make available the same for utilization by ULBs;
- To provide and render financial and technical assistance and advice to ULBs seeking to develop infrastructure investment projects on a self selecting basis;
- To initiate and undertake appropriate training for company personnel as well as for staff of ULBs to promote greater efficiency on the part of company as well as to ensure better understanding by ULBs’s staff of the company’s procedures and operational requirements, particularly issues pertaining to inter alia, lending and financial policies, eligibility criteria and procurement.
The Articles of Association are the detailed legal instruments to guide as to how the company would carry out its day-to-day activities. The main purpose of BMDF is to bring about qualitative improvement of urban livelihood through infrastructure development and environment improvement. The eventual target of BMDF is to assist the ULBs becoming self-sufficient and independent.

BMDF is a small office of 28 staff. The Managing Director is its Chief Executive Officer. He is armed with Program Manager, Finance Manager and Company Secretary catering responsibilities of engineering, finance and administration respectively. BMDF hires third party consultants from outsourcers under appropriate terms of reference, (ToR), for preparation, review and appraisal of project documents as well as for the management and supervision of the works. The number and level of the consultants depend on the size and kind of the project. BMDF functions under the administrative control of a Board of Directors composed of 11 members. The General Body of BMDF remains as the top authority for making policy and guidelines for BMDF to operate. The Secretary, Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives of the Government of Bangladesh is the Chairperson of both Board of Directors and General Body.

7b 2.2 SDP Agriculture - Improved Water Resource Management and Infrastructure for Irrigation Purposes

Expected Aggregate Output: Sustainable and efficient water management is ensured for responding to farmer needs.

Priorities from the Consultation Process/ Current Challenges: There are many current challenges to water management in Bangladesh, including declining aquifer levels, arsenic contamination, silting and increased salinity in coastal areas. Stakeholders across the board prioritized the need to: increase surface water irrigation and reduce ground water depletion; enhance on-farm water use efficiency through capacity development of water users; and rehabilitate infrastructure. Considering all these challenges and the urgency to boost food production, augmentation of surface water and improvement of the distribution system is critical.

Proposed Focus and Priority Interventions (Sub-outputs):

1. Improve water resource management in water distribution systems and at farm level: suggested investment areas are assessment of availability of irrigation water and improvement of the water distribution system. This should include capacity strengthening at both the grass roots and system-wide levels in order to reduce irrigation costs by developing more efficient water saving technologies.
and promoting a more cost effective distribution system. The promotion of the alternate-wetting and drying technology should also be developed.

2. Improve & increase efficiency of surface water irrigation, in particular in the South: there is a strong call for nationwide conservation and utilization of surface water by excavation/dredging of canals and river/water bodies with special attention to surface water management in the South. There is also a call for improvement of drainage conditions, capacity development of water users, and improvement of flood control measures.

3. Reduce impact of saline water intrusion in the South and enhance river water flow: The focused activities that emerged from the consultations are: rehabilitation of polders and their management; dredging of rivers; enhanced surface water irrigation; and improved brackish water resource management practices.

Additional Considerations/ Implementation: Collaboration between the Ministry of Agriculture and Ministry of Water Resources is essential, with DAE, BWDB, LGED and BMDA as the participating institutes. Involvement of farmer organizations and stakeholders from the private sector on farm level water management will also be key. Additionally, updated feasibility studies are required to assess the various technical options related to surface irrigation, river dredging and flood control. This should be accompanied by a solid economic and financial analysis to avoid uneconomic investments. Attention must also be given to planning irrigation development in an integrated way at national level.

Proposed Focus and Priority Interventions:
1. Improve water management in water distribution systems and at farm level
2. Improve & increase efficiency of surface water irrigation, in particular in the South
3. Reduce impact of saline water intrusion in the South
4. Enhance river water flow to the South

Main Institutions Involved: BADC, DAE, BWDB, LGED, BMDA

7b.3 Other bilateral donors

7b.3.1 Danish bilateral cooperation & HYSAWA Fund

The third phase of Danish support to the WSS sector (entitled Support to the Water Supply and Sanitation Sector - SWSSS) has a duration of 4 years (2012-2015) and will comprise two components:
1. ‘The Sector Policy Support Component’ and
2. ‘The HYSAWA Fund Component’.
The Danida contribution to the SWSSS totals DKK 200 million, (BDT 260 crore). This phase of Danish support to the Water Supply and Sanitation, (WSS), sector is focusing on support to policy and strategy work in Local Government Division, (LGD), and on provision of hygiene promotion, sanitation and water supply services through Union Parishads. The policy and strategy support will result in the establishment of a permanent WSS policy unit in LGD and in enhanced WSS Policy and Strategy Framework through implementation of the Sector Development Plan. The rural water supply and sanitation service provision will be made through the Union Parishads, (UPs), with funding from the HYSAWA Fund. The support covers improved water supply and sanitation services in approximately 350 UPs and increased capacity in those UPs to plan, implement and manage rural water supply and sanitation projects in 11 districts all over Bangladesh. It is estimated that approximately 1.200.000 and 800.000 people will get access to improved water supply and to hygienic sanitation, respectively, through activities implemented by the HYSAWA Fund. The union parishads are the key LGIs in rural WSS, but their leadership and capacity are not fully developed to manage planning and implementation of rural water and sanitation services. The HYSAWA Fund has been established by the GoB in cooperation with DANIDA to support the capacity building of the LGIs and to support the union parishads and the local communities in improving the coverage of the WSS in rural areas. A Board governs the Fund with representatives of senior government officials, local authorities, NGOs and civil society. The fund management office, headed by a managing director, carries out the administration and day-to-day management. The HYSAWA Fund works as a basket fund to mobilize funds from the government and the donor agencies. The Fund presently receives financial assistance from the governments of Bangladesh, Denmark and Australia. The establishment of the HYSAWA Fund as an independent financial institution has been a challenging task. A significant change in the funding procedure and a paradigm shift from “business as usual” to a direct demand driven approach to planning and implementing projects at the local level are the two challenging tasks being carried out at present.

The Devolution Approach

One vital objective of the devolution approach is to decentralize the decision-making and financial management to the LGIs in regard to hygiene, sanitation and water supply. Direct linkage with the funding source is a key to empowering the LGIs. This linkage, along with the capacity-building inputs, will promote greater devolution of administrative and financial powers to the local government. Thus, under this approach, a bottom-up planning process is being followed to enable the communities to plan their own projects for hygiene, sanitation and water supply interventions, according to their need and affordability. They submit the community schemes to the respective union parishads for implementation. The HYSAWA Company facilitates the establishment of
necessary institutional arrangements within the government institutions and engages the private sector management/engineering firms and the NGOs to provide the capacity-building support for the union parishads. The crosscutting issues like human rights, gender, culture and development, and transparency are part of the preparation and mobilization processes and mainstreamed into all stages of implementation and management. Communities are encouraged and supported to take the lead in the entire process right from the beginning to the end of the local project activities.

Outputs

Although the HYSAWA approach has been taken up as a pilot project in the selected areas, its outputs are promising for replication all over the country. By 2010, about 20,000 water points have been installed providing access to safe water with about 1.3 million people, which includes a significant portion of the poor and the hard-core poor. The HYSAWA Fund-supported campaign has also motivated over 350,000 households to install sanitary latrines. The HYSAWA Fund has proven its value in providing direct and effective support for the union parishads. The general experience in giving the union parishads a real role in and responsibility for management and execution of activities is promising. Most of the union parishads are now capable of engaging the service providers, (NGOs and contractors), to use the government procurement rules. Hopefully, the approach will establish a model for other development areas in the future.

7b 3.2 Australian Agency for International Development (AUS AID)

Australia’s aid to Bangladesh aims to increase access to quality health and education services for marginalised groups, especially women and children. It also aims to reduce poverty levels and vulnerability to economic and natural shocks, as well as increase the ability of marginalised groups to demand quality services and assert their rights.

Australia will provide $97.3 million in development assistance to Bangladesh in 2012–13, estimation for 2013/2014 is 111.4 million $. AUS AID will

- Help skilled birth attendants to attend an additional 84,800 births.
- Help 89,000 children to complete pre-primary school and 102,000 children complete primary school.
- Contribute to 88,000 women receiving cash, assets and skills training to lift their families out of extreme poverty.
- Support the Government of Bangladesh to expand its local disaster risk management activities to 32 vulnerable districts.
7b 4 Program's from international donors

- Asian Development Bank – Proposed projects
- EU
- IFC - Partnership for Cleaner Textile (PaCT, the Program)
- IFC - South Asia Enterprise Development Facility (SEDF)
- UN - IFAD - Ongoing Agriculture-Water projects
- UN – UNDAF.

Annex 7b 4.2 IFC - Partnership for Cleaner Textile (PaCT, the Program)

Background / General description

Bangladesh’s textile industry accounts for nearly 79% of export earnings and employs 4.2 million people. Almost 30% of Bangladesh's industrial sector GDP is fuelled by the USD 19 billion industry. The sector's overall use of water, roughly 300 tons water/ton fabric, is highly inefficient, and nearly three times the regional average. Energy use is also inefficient. In light of this, Bangladesh Water PaCT: Partnership for Cleaner Textile, (PaCT, the Program), program has been developed. The overarching objective of the Program is to reduce environmental and related social impacts that result from prevailing practices in textile wet processing, particularly excessive groundwater extraction and surface water pollution, but including energy and chemical use. Program results will improve the global and local 'license to operate' of the textile sector in Bangladesh and Bangladesh Water PaCT is an $11M program funded by the Kingdom of the Netherlands with sponsorship coming from international buyers, participating factories, International Finance Corporation, (IFC), and Solidaridad Network. PaCT is implemented by IFC, in partnership with Solidaridad Network, and in cooperation with the Bangladesh Garment Manufacturers and Exporters Association, (BGMEA),

Bangladesh Water PaCT: Partnership for Cleaner Textile Program is complex with multiple components. IFC is looking to recruit an Operations Officer to take on accountabilities for implementing components of the program and delivery of results.

The Program

Water sustainability - in terms of water consumed, and of waste water effluent released - is a key challenge for the long-term viability and growth of the textile sector in Bangladesh, as well as for other economic and social activities that depend on a clean and reliable water supply. Working in partnership with buyers, solution providers, financial institutions, donors, government and other key
stakeholders, the Program will support textile factories, concentrated in selected geographic clusters, to reduce their water footprints through:

- Increasing awareness among buyers, factory owner/managers and communities regarding water-related impacts of the sector and of resource efficiency options and benefits;
- Adopting low-cost/no-cost Cleaner Production, (CP), practices and measurement methodologies;
- Improving companies-internal management and business systems related to water, energy and chemical use;
- Investing in technologies that significantly reduce consumption of water and other resources; and engaging in collaborative approaches that align factories with sustainability goals of buyers, industry associations and clusters, and improve effectiveness of environmental policies and regulations.
- The Program will engage at three levels-participating textile buyers, wet processing factories, and key stakeholders such as communities, government, civil society, sector organizations, etc. - through the following three Components:

Component 1: Buyer Capacity Building The Program will develop a common 'voice' among buyers, many of whom procure from the same factories, on the need for greater water sustainability. Working with a target of 15 international buyers, the Program will:

- Develop harmonized procurement guidelines for buyers on sustainable wet processing in general and water consumption and waste water treatment specifically;
- Train buyers international and local procurement teams on harmonized procurement guidelines; and
- Provide guidance to buyers on how to conduct a Water Footprint Assessment for their textile wet processing in Bangladesh, including an understanding of the impacts of their water footprint on communities living near factories in their supply chain.

Component 2: Support factories setting and achieving Cleaner Production, (CP), objectives

Given the generally low level of awareness about CP among factory owners and managers, this Component is delivered in three steps:

Step 1: Build factory awareness of/motivation for CP.

Step 2: Provide factory-level advice on CP measures, water footprint reduction, leading to adoption of low-cost/no-cost measures (target: 500 factory engagements).
Step 3: Facilitating investment in technologies with significant water sustainability benefits (target: 100 factory engagements).

Factory implementation of the steps above will be supported by a Textile Technology Business Center to provide factory managers with technical and business case information, and B2B facilitation.

Component 3: Multi-Stakeholder Engagement in Support of Cleaner Textile and operational, multi-stakeholder Textile Sustainability Platform to raise awareness and build alignment among firms, associations, policy makers, donors, financial institutions, civil society and others, at both sector and cluster level. The Program incorporates several important innovations:

- The Program takes a cluster-based approach, focusing its efforts in four-textile wet processing clusters around Dhaka. The cluster approach will allow a measurable impact, qualitative as well as quantitative, on the water footprint of factories, buyers, and clusters, and on water quality and availability for local communities. Through vertical communication with national platforms, lessons on the ground will feed directly into the public-private dialogues and build greater momentum for pollution reduction and improved living conditions for communities and future generations.

- Water Footprint Assessment, (WFA), links initiatives at buyer, factory, and cluster level by establishing a common language across all stakeholders, including government and communities. WFA can be used to set baselines, measure improvements and track impacts on water quality and quantity for buyers, at individual factories, and for the cluster-level watersheds. Basic elements thereof are expected to be embedded in buyer’s procurement guidelines.

- The Textile Technology Business Center will host a dedicated best practice technologies and operations platform. The Center will reach out to global technology providers, creating an interface with factories, while simultaneously capturing the lessons and knowledge development of the Program for broad public dissemination. It will collaborate closely with other donor initiatives (such as GIZ-IKEA and EKN-yjenrode) to avoid duplication and leverage resources.

7b 4.2 IFC - South Asia Enterprise Development Facility (SEDF)

The South Asia Enterprise Development Facility aims to create opportunities and improve lives. SEDF is managed by IFC, in partnership with the UK’s Department for International Development and the Norwegian Agency for Development Co-operation. SEDF facilitates the growth of small and medium enterprises by helping improve their access to finance through a supportive financial infrastructure, financial products development and strengthening of financial institutions; providing quality business
services towards strengthening value chains; and helps businesses adapt to the impacts of climate change. SEDF operates in Bangladesh, Bhutan, Northeast India and Nepal.

7b 4.3 Asian Development Bank – Proposed projects

44212-013: Coastal Towns Infrastructure Improvement Project

- The project takes a holistic and integrated approach to urban environmental improvement in vulnerable coastal towns of Bangladesh, which suffers deficits in basic urban services and are severely at risk to the impacts of climate change. It will provide climate resilient municipal infrastructure, including water supply, sanitation, drainage, flood protection, urban roads, and solid waste management facilities, and will strengthen institutional capacity and local governance for operating, maintaining, and expanding access to such services. The project will also mainstream climate resilience into urban planning.
- Approved amount: 72.000.000 US$.
- Sector/Subsector classification: Water supply and other municipal infrastructure and services / Water Supply and Sanitation.
- Thematic classification: Capacity development, Environmental sustainability, Social development.
- For more information, http://www.adb.org/projects/.

44167-013: Flood Protection and River Bank Erosion Risk Management (formerly Main River Flood and Bank Erosion Risk Management Program)

- The Main River Flood and Bank Erosion Risk Management Program is the follow-on project of the Jamuna-Meghna River Erosion Mitigation Project (JMREMP). The expected impact of the program will be sustained incomes and livelihoods of people along the erosion prone main rivers in Bangladesh. The outcome of the program will be enhanced resilience to flood and riverbank erosion risks in the project area. The anticipated outputs are: (i) enhanced integrated flood and riverbank erosion disaster risk mitigation measures, which will consist of non-structural and structural measures for selected priority river reaches, effective measures to sustain infrastructures involving local communities, support for enhancing local communities, flood/erosion disaster risk management capacity in the subproject areas, and livelihood enhancement for project zone of influence; and (ii) a strengthened flood and river erosion risk management system, including an improved knowledge base and institutional performance in sustainable operation and maintenance (O&M) and long-term river erosion management.
- Approved amount: 250.000.000 US$.
7b 4.4 UN Bangladesh - UNDAF Action Plan 2012-2016

The formulation of Bangladesh's new UNDAF (2012-2016) began in 2010. The UN System and the Government of Bangladesh undertook a rigorous and comprehensive assessment of the status of the MDGs in Bangladesh. The results and findings were documented in the 'MDG Bangladesh Progress Report 2009' and served as Bangladesh's country analysis, replacing the need for a UN Common Country Assessment, (CCA). In addition to the results from the MDG assessment, the UNDAF 2012-2016 also builds on the key development priorities outlined in Government’s Outline Perspective Plan of Bangladesh 2010–2021 (Making Vision 2021 a Reality), the emerging Sixth Five Year National Development Plan. Seven UNDAF thematic pillars have been identified along with lead/convening UN agencies:

- Democratic Governance and Human Rights (Lead: UNDP).
- Pro-poor Economic Growth with Equity (Lead: UNDP).
- Social Services for Human Development (Lead: UNICEF).
- Food Security and Nutrition (Lead: WFP).
- Climate Change, Environment, Disaster Risk Reduction & Response (Lead: UNDP).
- Pro-Poor Urban Development (Lead: UNDP).
- Gender Equality and Women's Advancement (Lead: UNFPA). Implementation of the new UNDAF implementation began in 2012, under a common operational plan, the country’s first, the UNDAF Action Plan 2012-2016.

UNDAF Pillar 5: Climate Change, Environment, Disaster Risk Reduction and Response

- GoB Commitments: Pillar 5 in general has been incorporated in the Perspective Plan and Sixth Five-Year Development Plan and endorsed by the Government of Bangladesh. Climate change adaptation and mitigation are aligned to the Bangladesh Climate Change Strategy and Action Plan. Disaster Risk Reduction and Response are developed in line with the National Plan for Disaster Management 2007-2015 and will follow nationally standardized
methodologies for Community Risk Assessment and Risk Reduction Action Planning of the DMRD/MoFDM.

- MOEF has already provided around US$28 million to scale up UN-supported pilot initiatives in the areas of coastal biodiversity and afforestation programs. UN System Commitments: UNDP will undertake extensive and substantial interventions given its particular comparative advantages in this area, including technical assistance to meet the commitment of the GoB in response to all related international Conventions, protocols, declarations and frameworks.

- UNHCR will support Government efforts to enhance climate change adaptability around refugee camps and ensure that refugees and host communities have the capacity to prepare for and respond to natural disasters.

- FAO will support adaptation to climate change through the development of resilient plant varieties and adaptation practices. Consumption and agricultural practices that are IOM environmentally sustainable will be promoted to improve long-term food security.

- UNICEF will contribute to strengthening the national climate change policy framework to integrate health, nutrition, education, water and sanitation, child protection and HIV plans.

- UNESCO will support the improvement of science education at all levels, promoting indigenous knowledge and local practices to empower adolescent girls and young women.

- UNEP will support preparing and using scientific data in reporting on climate change to strengthen planning.

- IOM will provide assistance to vulnerable households, especially those displaced and affected by natural disasters and/or climate change, and support rehabilitation of food-insecure households.

- WFP will support the increased resilience of communities and individuals most affected by, or at risk from, natural disasters and/or climate change and ensure rapid provision of food assistance to victims of crises.

- UNFPA will contribute to strengthening national capacity on emergency preparedness and response. In addition,

- UNDP is uniquely positioned to leverage and scale up successful pilots currently on the ground (CWBMP, coastal afforestation, brick kiln, BRESL, ODS phase out, Montreal Protocol projects, PEI).

- UNDP will lead and support the national REDD preparedness activities, in partnership with FAO and UNEP. It will continue to support, with UNIDO, ongoing programs in the areas of introducing clean technologies and environmentally sound industrial practices.
• FAO will support sustainable natural resources management in agriculture and social forestry.
• UNEP will support Government efforts to mainstream poverty and environment into national and local plans.
• UNESCO will safeguard tangible and intangible world heritages.
• UNIDO will support the Government to develop rural energy services for the purpose of providing reliable energy for health centers and for productive purposes in rural communities.
• IAEA will focus on characterization and source identification of particulate air pollution, establishing a benchmark for assessing radiological impact of nuclear power activities on the marine environment, application of isotope techniques for planning and management of water resources in coastal areas, assessment of trends in freshwater quality, and determination of radionuclide and trace elements in the sediment and seawater of the Southeastern coast of Bangladesh.

UN - IFAD Agriculture – Water projects

IFAD is an international financial institution and a specialized UN agency based in Rome, with a local office in Bangladesh. The IFAD 2012 Country Strategic Opportunities Programme (COSOP) for Bangladesh has three main objectives:

- Enable poor people in vulnerable areas to better adapt their livelihoods to climate change.
- Help small producers and entrepreneurs benefit from improved value chains and greater market access.
- Economically and socially empower marginalized groups, including poor rural women.

The COSOP continues IFAD’s successful targeting approach in Bangladesh. The country program’s target group includes people living in extreme and moderate poverty. Its targeting strategy starts by identifying geographic areas of poverty and then assessing household assets and needs – including food supply – in those areas. The type of project activity determines which group is targeted. For instance, infrastructure development benefits the extremely poor, especially women, as well as other users of infrastructure in the target area. Value-chain development targets landless and marginal farmers, smallholder producers and rural entrepreneurs.

Project participants are chosen based on their access to credit and to assets such as land. IFAD’s participatory rural appraisal mechanism and similar tools help to ensure the inclusion of women and
indigenous peoples. Beyond the loan portfolio, IFAD grant-funded activities in Bangladesh include the following:

- A project led by the International Rice Research Institute, which aims to develop improved farming systems – and build the capacity of small-scale and marginal farmers in coastal saline areas to adapt to the adverse effects of climate change and food price inflation – with results that are already being scaled up in larger, loan-funded interventions.
- A partnership with the World Fish Centre, exploring the potential of small fish species to improve human nutrition.
- Support for the finalization of a new Multidimensional Poverty Assessment Tool, to track and demonstrate the results of poverty reduction interventions funded by donors and governments. In the coming years, IFAD will continue to build on effective partnerships with the Government of Bangladesh, its ministries and agencies, and with donor organizations and civil society. Furthermore, IFAD will seek new partnerships and cooperation arrangements with the private sector – especially through projects adopting a value-chain approach – and will partner with think tanks such as the International Food Policy Research Institute for policy collaboration.

**Char Development and Settlement Project IV**

The project is designed to develop improved and more secure livelihoods for poor people living on newly accreted coastal islands known locally as chars. It adopts an integrated approach to coastal zone development that will:

- Support water resource management on three of the five chars to protect land from tidal and storm surges
- Improve drainage and enhance land accretion.
- Finance climate-resilient infrastructure for communications.
- Improve access to markets, potable water and sanitation in all five chars.
- Help 20,000 households obtain secure land titles.
- Provide technical assistance to teach farmers to make better use of land resources.
- Establish a team to disseminate lessons in coastal zone development and plan the future development of new chars Additional support will be provided to the most disadvantaged members of the community, including landless households and women, who will be particularly targeted in NGO activities and labor contracting.
Participatory Small-scale Water Resources Sector Project

Bangladesh faces several challenges in water management, including severe annual flooding, river-induced erosion and water shortages in the dry season. These problems are compounded by inadequate water management infrastructure, low involvement of users in water management and lack of funds for maintenance and operating costs. This project supports the Government of Bangladesh’s National Water Policy and the development of flood management, better drainage and water conservation to improve the lives of small-scale and marginal farmers. An estimated 208,450 hectares of cultivable land will benefit from improved water management. A key feature of the project is the involvement of smallholders in small-scale water resource management through community-based associations. They also receive training in water management, agriculture and fisheries production.

UNICEF project: managed aquifer recharge in coastal Bangladesh

Turning research into Practice: upscaling recharge and storage of fresh water for sustainable water supply in saline areas of Bangladesh under a changing climate. On request of UNICEF, Acacia Water and Dhaka University started an action research project in 2009 to secure the availability of fresh water to the rural population in the saline coastal plain of Bangladesh. A system was developed to create fresh water bubbles in the shallow aquifer through infiltration of pond water and rooftop rainwater during (and after) the monsoon period. The systems are known as MAR system (Managed Aquifer Recharge). In total 20 schemes were constructed and tested in Shatkira, Khulna and Bathiapati Districts in 2009-2012 in cooperation with DPHE and 2 local NGO’s. With a financial
contribution of the EKN to UNICEF, we have started a new phase (2013-2014) to: Construct 75 additional sites including at least 10 at schools and at cyclone shelters Handover the 95 schemes to the water user groups with support of local NGO’s. Assess the feasibility of upscaling of this innovative solution in the three Districts (0.5-1 million people), and explore the application of MAR systems in other areas with fresh water scarcity or falling groundwater tables