



Knowledge
for Climate

Launching Delta Alliance

Final report of phase 2





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Launching Delta Alliance

Final report of phase 2

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1 Summary

This report presents an overview of the 2nd phase (1 November 2009- 31 December 2010) of Delta Alliance. Delta Alliance is a network that aims to improve the resilience of the world's deltas. It provides a foundation and framework for international knowledge sharing and development around delta issues. Phase 2 focussed on three components: developing the Delta Alliance organization, initiating network activities and (development of) research and knowledge sharing projects. These activities led towards the big launch event of Delta Alliance in September 2010.

The network activities undertaken preceding the launch comprised workshops and events organized by the Delta Alliance Wings, and various missions to build the international network. The Delta Alliance organization evolved towards the establishment of a foundation called "Delta Alliance International". The Delta Alliance network currently counts 7 delta members, 3 candidate members and several potential candidate members.

Two projects were carried out under Delta Alliance while two other projects are currently being worked on. A project portfolio with 23 project suggestions for phase 3 was developed with the active input of the 10 (candidate) Wings. The third phase of Delta Alliance starts in January 2011. The focus will be on the execution of inter-delta cooperation projects, exchange of staff and students, search for additional funding and expansion of the network.

For more information about this report and Delta Alliance, contact Ir. Wim van Driel, program manager of Delta Alliance at wim.vandriel@wur.nl.





2 Samenvatting

Dit rapport geeft een overzicht van de 2e fase (1 november 2009 - 31 december 2010) van Delta Alliance. Delta Alliance is een netwerk dat zich richt op het verbeteren van de veerkracht van delta's in de wereld. Het biedt een basis en kader voor internationale kennisdeling en -ontwikkeling rond deltavraagstukken. Fase 2 was gericht op drie onderdelen: de ontwikkeling van de Delta Alliance organisatie, het ontwikkelen van het netwerk en het uitvoeren van projecten. Deze activiteiten hebben geleid tot de grote lancering van Delta Alliantie in september 2010.

De netwerkactiviteiten voorafgaand aan de lancering bestonden uit workshops en evenementen georganiseerd door de Delta Alliance Wings in de aangesloten delta's, en diverse missies om het internationale netwerk op te bouwen. De ontwikkeling van de Delta Alliance organisatie heeft geleid tot het besluit om een stichting genaamd "Delta Alliance International" op te richten. Het Delta Alliance netwerk telt thans 7 Wings, 3 kandidaat Wings en een aantal potentiële kandidaat Wings.

Twee projecten werden uitgevoerd in het kader Delta Alliance, terwijl aan twee andere projecten momenteel nog wordt gewerkt. Er is ten behoeve van de 3^{de} fase een portfolio met 23 projectideeën ontwikkeld met behulp van een actieve input van de 10 (kandidaat) Wings.

De derde fase van Delta Alliance start in januari 2011. De nadruk zal liggen op de uitvoering van de inter-delta samenwerkingsprojecten, uitwisseling, aantrekking externe financiering, en de uitbreiding van het netwerk.

Voor meer informatie over dit verslag en Delta Alliance, neem contact op met Ir. Wim van Driel, Programma Manager van Delta Alliance via wim.vandriel@wur.nl.





3 Extended summary

Deltas around the world experience many common problems and face increasing challenges as a result of climate change, rapidly expanding populations and economic development. Research and investment in addressing the unique challenges of river delta regions are happening around the world. Valuable experiences and research outcomes from across river deltas should be shared, and collaborative research must be undertaken to support delta regions in responding quickly and effectively to their mounting challenges. Delta Alliance is being established as a network for international knowledge sharing and development and other activities that support improved resilience in deltas. The central objective of Delta Alliance is “to create the foundation and framework for a sustainable international network that will support more effective (improved responses) and efficient (faster adaptation, building upon knowledge from other deltas) responses to increasing pressures in river deltas worldwide”. The underlying report gives an overview of the activities under the second phase of Delta Alliance (1 November 2009- 31 December 2011). These activities are centred around three components: developing the Delta Alliance organization, initiating network activities, and initiating and carrying out research projects that link delta regions and address critical delta issues.

Organisational development

The launch of the international Delta Alliance network was a central focus point in the second phase. In order to launch the network, the creation and operation of an effective organization was critical. Activities under this component focussed on building the organizational structure, creating a Strategic Framework and developing communications tools and materials. The organizational structure in phase 2 was centred around Chair, Advisory Board and Program Manager. Their main responsibilities were to discuss the development of Delta Alliance and to share experiences. During the advisory Board meeting on October 1, 2010 it was decided that steps should be taken to legally establish Delta Alliance as a foundation with the name “*Delta Alliance International*”. Delta Alliance International will become a non-profit organization comprised of the following bodies: International Governing Board, Director, Advisory Committee and International Secretariat. The International Secretariat was already in place in phase 2 and consisted of a program manager, launch officer and launch secretary. In order to outline the objectives, working strategy and financial plan, a *Strategic Framework* was created and updated regularly during the second phase. Inputs for the Framework were gained through scoping activities which explored opportunities for the international delta network with partners in California,



Indonesia, The Netherlands and Vietnam. The Strategic Framework was discussed during a strategy session of the Advisory Board in Shanghai in June 2010. The many comments derived from this meeting were used to create the “*Delta Alliance Declaration*”; a declaration which outlines the mission of Delta Alliance and guides its members through its activities. A strategy to attract external funding during the next phase was developed. In addition to the organizational development, communication was taken care of by the International Secretariat to inform (potential) network members about the latest developments. Communications in phase 2 comprised a website, LinkedIn group, Twitter account, a newsletter and various materials and tools used to present Delta Alliance during conferences. Further, the first steps to create an online information platform were taken.

Network development

The development of the Delta Alliance network in phase 2 included the organization of scoping workshops and follow-up meetings in various Wings, missions to expand the network and (co)organization of various events and workshops by Delta Alliance representatives. At the beginning of phase 2, Delta Alliance started with 4 core delta regions or delta Wings, namely Indonesia, Vietnam, California and The Netherlands. These 4 Wings have built the network and organized various events to identify critical issues in their delta and to expand the network in their respective region. Network development under the *Netherlands Wing* consisted amongst others of organizing a scoping workshop in April 2010, active participation in the conceptualization of the development of Delta Alliance International and in the discussion on cooperation with Water Mondiaal, the execution of the Comparative overview of deltas project, an Electronic Board Room session during the Rotterdam conference and the implementation and coordination of the Assessment studies for the Mekong Delta Plan project. Activities under the *Vietnam Wing* were the organization of a scoping workshop and follow-up workshop on capacity building. Furthermore, alignment with the Water Mondiaal activities in Vietnam were coordinated. The *Indonesia Wing* organized a round table meeting, a scoping workshop and, together with Bakosurtanal, the Indonesian Delta Forum conference in Semarang. The workshop and project “Methods and tools for water-related adaptation to climate change and climate proofing” was also organized in cooperation with the Indonesia Wing. The Indonesian Wing is also involved in the implementation of the Jakarta Climate Change Adaptation Tools project. Finally, the Indonesian Wing is preparing for the organization of the World Delta Summit to be held in November 2011 in Jakarta, which has to become the follow up of the Rotterdam Conference. The *California Wing* worked closely together with the San Francisco Bay Conservation and Development Commission to launch a new initiative called “Adapting to Rising Tides”. Steps have been taken to link Delta Alliance to the newly established Delta Stewardship Council which aims to develop a new Delta Plan for



California by 2012. Next to the four initial core delta regions, at the end of the 2nd phase 3 more delta members joined Delta Alliance (Egypt, USA-Louisiana and China). Further, there are 3 candidate member deltas (Bangladesh, Brazil and Argentina) and several potential candidate members (Mozambique, Taiwan, other USA deltas, European deltas).

A large network activity undertaken by Delta Alliance was the participation in the *World Estuary Alliance conference* in Shanghai. Next to these network activities, various missions were undertaken to visit conferences, and potential funding agencies.

The network activities reached a climax with the conference 'Deltas in Times of Climate Change' from September 29 to October 1 in Rotterdam. Various sessions were organized by Delta Alliance in which the focus of Delta Alliance was further defined, examples of current projects were given and the winners of the DeltaCompetition 2010, organized in cooperation with Royal Haskoning, were announced. The most important event during the conference was however the Delta Alliance Launch ceremony.

Launch of the Delta Alliance

The Delta Alliance launch ceremony took place on September 30, 2010. Ms. Tineke Huizinga, the Dutch Minister of Housing, Spatial Planning and Environment kicked-off the launch. She stressed the importance of international cooperation in adaptation to climate change, stating that "international cooperation, sharing knowledge, and exchanging ideas about water management and policy are vital for peace, security, and prosperity in our deltas." Subsequently Mr. Kees Slingerland, chairman of Delta Alliance, introduced Delta Alliance to the conference participants by explaining its mission, objectives and activities, followed by a panel discussion focussing on delta challenges to cope with global change. Finally the official launch of Delta Alliance took place by Ms. Huizinga and the five panel members signing the Delta Alliance Declaration. Conference participants were invited to sign the declaration during the reception following the ceremony.

Projects

Two KfC funded projects were carried out during phase 2: the "Bandung workshop" and the "Comparative overview of deltas". Another KfC funded project, "Jakarta climate change adaptation tools" initiated and implemented by Royal Haskoning was also brought under the umbrella of Delta Alliance in phase 2. Additionally, Deltares, Alterra en Infram are currently working on a Partners for Water project called "Assessment studies for the Mekong Delta Plan" under the umbrella of Delta Alliance.

After the Rotterdam conference, the various Delta Alliance Wings were approached and encouraged to come up with project suggestions for inter-delta cooperation. The 18 project suggestions received by the International



Secretariat together with the 5 project ideas already included in the Strategic Framework form a good basis for a project portfolio for phase 3.

Delta Alliance: strong position, great momentum

Delta Alliance has developed well during phase 2. The Delta Alliance gained a strong position in the national and international arena and the success of the official launch ceremony during the International Conference Deltas in Times of Climate Change on September 30, 2010 in Rotterdam created great momentum.

- The idea of starting with 4 core deltas has worked well. The discussion in the relatively small Advisory Board and the support of its members contributed largely to the current position of Delta Alliance.
- The Delta Alliance network currently counts 7 delta members, 3 candidate members and several potential candidate members.
- Good contacts have been established with many other initiatives and networks that are already contributing to the development, integration, and exchange of knowledge related to deltas networks.
- As well as in the policy as in the science arena the creation of the Delta Alliance has been warmly welcomed.
- There is a niche for the Delta Alliance. The mission, objectives and activities are largely supported.

Delta Alliance: many challenges ahead

At the end of the second phase and the start of the 3rd phase, a number of challenges are ahead, e.g.:

- The remaining funding from the Knowledge for Climate program is limited (approximately 800 k€ for the period 2011-2014). Will Delta Alliance be able to find enough external funding to keep the network running?
- Will the international secretariat have enough capacity to organise all the activities?
- The real added value for Delta Alliance would be inter-delta cooperation projects on knowledge sharing and development. Will there be enough interest from member organisations and donor organisations to make such projects possible?

Outlook to the third phase

The start of the third phase of Delta Alliance is foreseen on January 1, 2011. It still has to be discussed with the Board of the Knowledge for Climate program whether its duration coincides with the remaining program duration of the Knowledge for Climate Program which ends in 2014 or whether it will be shorter, for instance one year. Delta Alliance will continue its existence and activities also after the closure of the KfC program. Therefore, activities in



phase 3 will be focused on concrete projects, expansion of the network, strengthening of the organizational structure and attracting funding.





4 Introduction

4.1 Background

Deltas around the world experience many common problems and face increasing challenges as a result of climate change, rapidly expanding populations and economic development. Greater cooperation within and across deltas is needed to address these threats. Primarily, knowledge that exists and is being developed in deltas must be made accessible to those in other deltas to improve the quality and pace of responses to shared challenges.

Each delta in the world has developed on a unique path, experiencing its own problems and developing its own coping mechanisms. Yet deltas share some common challenges resulting from their geophysical situation and the large populations that are attracted by their wealth of natural resources. Research and investment in addressing the unique challenges of river delta regions are happening in deltas around the world. Valuable experiences and research outcomes from across river deltas should be shared, and collaborative research must be undertaken to support delta regions in responding quickly and effectively to their mounting challenges.

4.2 Objective

The mission of Delta Alliance is to improve the resilience of the world's deltas. To this end Delta Alliance is being established as a network that provides a foundation and framework for international knowledge sharing and development and other activities that support improved resilience in deltas.

The central objective of Delta Alliance is:

“to create the foundation and framework for a sustainable international network that will support more effective (improved responses) and efficient (faster adaptation, building upon knowledge from other deltas) responses to increasing pressures in river deltas worldwide”.

In Phase 2 of Delta Alliance there are three sub-objectives:

1. *Developing the Delta Alliance organization.* Components of this sub-objective are the building of the organizational structure of Delta Alliance and communications within the network.



2. *Initiating network activities.* This sub-objective includes the organization of scoping workshops in the respective Delta Alliance Wings, attendance and (co)organization of various events and workshops by Delta Alliance members, missions to expand the network, and exploring what Delta Alliance should provide to network members.
3. *Initiating and carrying out research projects that link delta regions and address critical delta issues.* Research projects include a “comparative overview of deltas”, “the Bandung workshop” and “Jakarta Climate Change Adaptation Tools”. Further, a list with possible projects for phase 3 is created.

4.3 Outline report

This report describes the activities and outcomes under the 2nd phase of Delta Alliance (1 November 2009- 31 December 2010). The report is structured as follows. First, the development of Delta Alliance will be described following the three sub-objectives as presented in the previous section. Then, the current position of Delta Alliance will be analysed. The report will conclude with an outlook to the third phase of Delta Alliance, starting in January 2011.



5 Organization development

In order to launch the Delta Alliance network, the creation and operation of an effective organization is critical. Activities within this component focused on building the organizational structure, creating a Strategic Framework and communications.

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5.1 Building the organizational structure

The organizational structure of Delta Alliance in phase 2 was centered around Chair, Advisory Board and Program Manager. The names and affiliations of the members of the Advisory Board are presented in table 1.

Table 1: Chair and Advisory Board members phase 2

Name	Country	Affiliation
Ir. Kees Slingerland (chair)	The Netherlands	Alterra Wageningen UR
Ir. Arjan Berkhuisen	The Netherlands	WWF Netherlands- Head of Freshwater Program
Dr. Cees van de Guchte	The Netherlands	Deltares- Head Climate Change Adaptation and Integrated Flood Management
Prof. Dr. Le Quang Minh	Vietnam	Vietnam National University, Ho Chi Minh City- Vice-President, International relations
Prof. Dr. Jan Sopaheluwakan	Indonesia	Indonesian Institute of Sciences (LIPI)- Deputy Chairman for Scientific Services
Ir. Peter Wijsman (Ad hoc)	USA	Arcadis US Inc.

The Advisory Board met regularly in phase 2 to discuss the development of Delta Alliance and to share experiences. Next to the meetings, regular email updates were sent to the Board from the Delta Alliance International Secretariat. A number of members met during COP15 in Copenhagen to discuss the network. A conference call held in February 2010 further introduced members to one another. Further, the Board came together during a session at the World Estuary Alliance conference in Shanghai in June 2010, followed by a meeting in Wageningen (The Netherlands) on June 25, 2010. As a closing of the Delta Alliance sessions held during the Rotterdam conference, the Board met on October 1, 2010 to discuss the outcomes of the conference and to define the pathway for the third phase of Delta Alliance. During this session a



discussion paper for the third phase was presented and commented upon by the various Wings. The outcomes of this meeting are included in chapter 10.

5.1.1 International secretariat

In phase two an International Delta Alliance secretariat was formed consisting of a program manager, launch officer, and launch secretary. The secretariat was based in Wageningen, The Netherlands. It was responsible for the development of the Delta Alliance organization, communication with the various Wings, preparation of the Strategic Framework, outreach during conferences and seminars, contacts with new potential Wings, maintenance of the Delta Alliance website and regular provision of the newsletter. The international secretariat will become part of the foundation “Delta Alliance International” (see section 5.1.2).

5.1.2 Establishment of Delta Alliance Foundation

During the first and second phase Delta Alliance has been running as a project funded by the Knowledge for Climate (KfC) program. The experiences gained during the second phase resulted in a reconsideration of the organizational structure of Delta Alliance. For three principal reasons the organizational setup has to be strengthened:

- Delta Alliance will continue its existence and activities also after the closure of the KfC program;
- Delta Alliance has to attract external funds to realize its ambitions and has to be able to sign contracts with third parties. For that purpose a legal structure is needed;
- Delta Alliance wants to have exposure as an international organization.

During the Advisory Board meeting on October 1st, 2010 it was therefore decided that steps should be undertaken to legally establish Delta Alliance as a foundation with the name “Delta Alliance International”. The draft statutes for the foundation are ready and the foundation will be established by the Board of the Knowledge for Climate program as soon as possible, hopefully in the first quarter of 2011. Delta Alliance International will be a non-profit organization and has the following bodies:

- a. *International Governing Board.* This Board will consist of three to nine natural persons and will be charged with managing the Foundation. The composition of the International Governing Board shall in principle reflect a good representation of the various continents and the types of



participating organisations. To ensure the scientific quality of the network activities at least one member shall be a worldwide renowned scientist in delta issues.

- b. *Director*. The Director will manage the secretariat and coordinate the interaction between the International Governing Board and the Advisory Committee.
- c. *Advisory Committee*. The Advisory Committee consists of the Wing Coordinators and representatives of organizations that contribute to achieving the objectives of the Foundation. Tasks of the Advisory Committee include formulating recommendations to the International Governing Board in the field of strategy, scientific tendencies and technologies in relation to deltas; reviewing and evaluating current projects in the field of scientific research and development; developing scientific policy plans and strategies; and giving solicited as well as unsolicited advice to the International Governing Board.
- d. *International Secretariat*. The International Secretariat will remain active under the Foundation and will amongst others be responsible for supporting the International Governing Board and the Advisory Committee; carrying out administration and documentation tasks; and organizing and taking part in international meetings, seminars and workshops.
- e. *Wings*. A Wing is a network of organizations in a specific country or area, who are dealing with delta-related issues in a specific country or area. A Wing must be recognized as such and admitted to the Foundation by the Board.

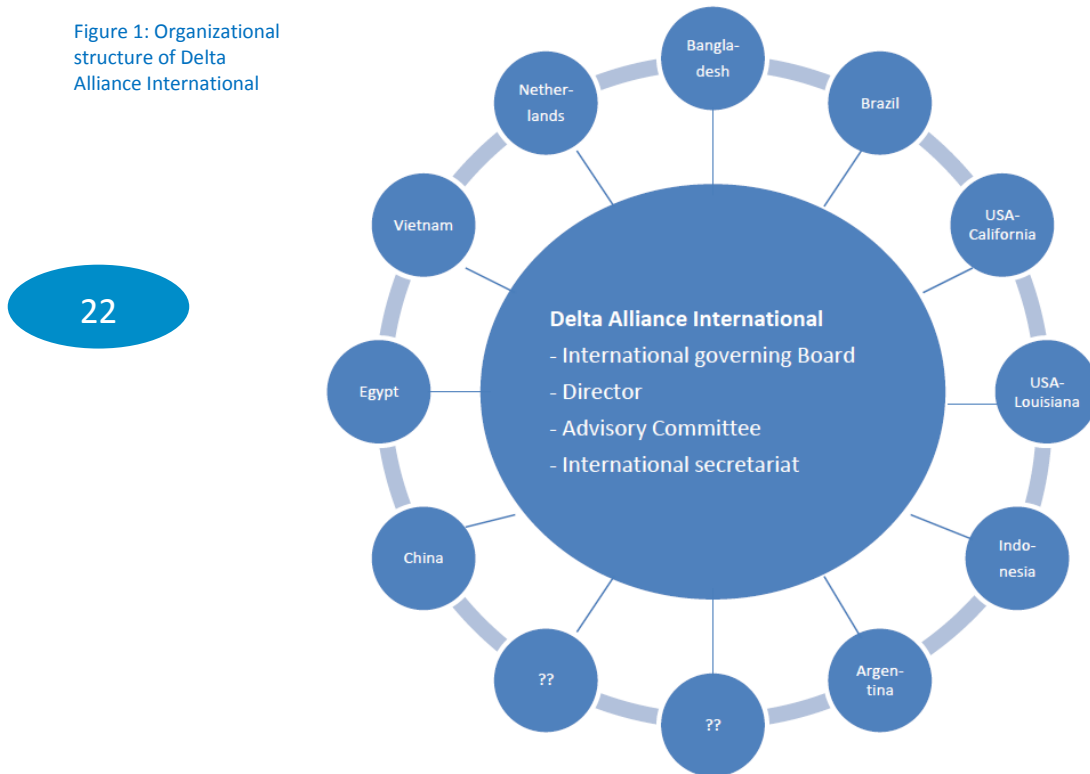
In order to simplify the organizational set up and to limit the number of bodies within the foundation it is decided to merge the previously foreseen Scientific Committee with the existing Advisory Board into one Advisory Committee. If needed, the Advisory Committee shall be authorized to call in the assistance of external experts. A graphic overview of the organizational structure of Delta Alliance International is given in figure 1.

For reasons of transparency it was decided that for the Netherlands Wing of Delta Alliance in principle a separate foundation will be established which will represent the Netherlands interests in the international Delta Alliance network. Another option still to be explored might be to have the Dutch Wing functioning under the umbrella of the Netherlands Water Partnership. For each of the other Wings it is also advised to establish a foundation or another type of legal entity adapted to the local situation and rules. Some guidelines for their institutional positioning will be distributed at the start of the third phase.



A more formal decision structure will be put in place once the Foundation is established with an International Governing Board and an Advisory Committee.

Figure 1: Organizational structure of Delta Alliance International



5.1.3 Project consultation

Consultation of experts from DHV (NL) and Quantum Strategy and Technology (UK) has resulted in recommendations for the development of the international network. These included the establishment of a Young Professional Delta Alliance Network and the necessity to have local champions in each delta to represent Delta Alliance and help build the network in each region.

5.2 Strategic Framework

A Strategic Framework for Delta Alliance was prepared before and discussed during the strategy session in Shanghai on June 7, 2010 (see section 6.6.5) and a subsequent meeting of the Advisory Board on June 25, 2010 in Wageningen. Some modifications were made after consultation with the Board of the Knowledge for Climate Program and other important stakeholders in The Netherlands. The Strategic Framework outlines the objectives, working strategy and financial plan for the development of the Delta Alliance network organization and is an outcome of the scoping activities. The version of the Strategic Framework attached in Annex 1 is the latest version of September



2010. As the development of Delta Alliance is a dynamic process, the strategy requires a periodic (preferably annual) review by the Advisory Committee and the International Governing Board. In this report the reviewing is partly being done by testing the objectives as formulated in the Strategic Framework to the results in phase 2. Through advanced understanding some changes have to be applied in the next version of the Strategic Framework, for instance with regard to the organizational structure which has been simplified in the meantime.

5.2.1 Delta Alliance Declaration

Working principles for Delta Alliance were discussed in a strategy session in Shanghai, June 2010, and the many comments have been used to create the Delta Alliance Declaration. Members of the Delta Alliance network will sign the Delta Alliance Declaration (see text box below). This declaration in combination with the Delta Alliance resilience strategy will be the guideline for the activities to be undertaken by Delta Alliance.

Delta Alliance Declaration

Whereas:

- Delta Alliance has the mission to improve the resilience of deltas worldwide;
- deltas are highly valuable and vulnerable locations; and
- economic, ecological, and social resilience are interdependent and essential for overall resilience.

The members of Delta Alliance will together develop and share knowledge to:

- envision resilient deltas
- measure, monitor and report resilience in deltas; and
- provide inspiration and support for improved resilience in deltas

In pursuing these goals, the members of Delta Alliance will strive to:

- share knowledge, expertise and best practices between deltas worldwide;
- co-create and integrate knowledge across deltas, sectors and disciplines;
- connect expertise and parties from throughout the watershed;
- incorporate local knowledge in research and knowledge-building activities; and
- provide knowledge and insight to support any use, including education, policy development, investments and disaster response.



5.2.2 International questionnaire

In order to get to know the expectations and ideas of interested parties about Delta Alliance and their willingness to contribute to the Delta Alliance network, an online electronic questionnaire was sent out by the secretariat to Delta Alliance contacts in May 2010. The first results of this questionnaire were discussed during the strategy session in Shanghai (see section 6.6.5). Ultimately, 32 persons from various deltas around the world filled in the questionnaire. The most important outcomes are outlined in Annex 2.

5.3 Communications

Communications under Delta Alliance in phase 2 comprised a website, LinkedIn group, Twitter account, a newsletter and various materials and tools to inform people about the network. Further, the first steps to create an online information platform were taken.

5.3.1 Website

Delta Alliance has actively used its website (<http://www.delta-alliance.org>) during the second phase. The website informs people about the network, participating delta regions, news, upcoming and past events and includes documents to disseminate the knowledge gained through the network. The website further played an important role during and after the official launch of Delta Alliance in September 2010. During the conference “Deltas in Times of Climate Change” people were encouraged to go online and sign the online Delta Alliance declaration which embodies the mission, principles and goals of Delta Alliance. By signing the declaration, people became members of the network. Further, the website links to the Delta Alliance LinkedIn group and the Delta Alliance Twitter (<https://twitter.com/ClimateNL>). In 2010 the website has been visited 7368 times with an up-going trend towards the end of the year with on average approximately 600 visits per month during the last quarter. Recently, the website has been extended by including a specific page for the Wings.

5.3.2 Newsletter

Newsletters have quarterly been published and distributed among people involved in delta issues around the world. The contact details of these persons were for a large part gained through personal contacts during international



conferences, whereas a small number of people approached Delta Alliance themselves to receive the newsletter. The current mailing list counts more than 500 addresses. The newsletters give an overview of the latest developments in the network, conference sessions attained or (co)organized by Delta Alliance and introduce various network members to the readers. All newsletters can be found on the Delta Alliance website (<http://www.delta-alliance.org/nl/25222876-Newsletters.html>).

5.3.3 Materials and tools

To inform potential partners about Delta Alliance, various materials have been developed, sometimes in cooperation with partner organizations. Standing banners were created together with Connecting Delta Cities and the City of Rotterdam. Several pamphlets were made to inform people about the development of Delta Alliance and notebooks with the Delta Alliance banner were handed out during events. A successful communication tool used during the Rotterdam conference was the so-called “Sandwich board”. It informed people about the Delta Alliance launch event (see chapter 8) and participants were encouraged to pin their business cards to it (fig. 2). Almost 100 business cards were collected this way.

Figure 2: Sandwich board as communication tool during the Rotterdam conference



5.3.4 Online information platform

Introduction

An online Information Platform around delta issues has been developed in cooperation with the World Estuary Alliance. Goal is to facilitate knowledge exchange and to build a network with delta experts. The platform can function as a dynamic networking site and should include references to already existing



websites and detailed information on initiatives, research projects, expert contacts and events. The aim is to have specialists, organizations and project managers involved in delta and estuary management around the globe, filling and maintaining the database underpinning the site; it should subsequently become the go-to site for people seeking information, persons, projects or organizations active in deltas. On the basis of a Functional Specification Document, the technical body of the information platform has been developed by an external firm called Project Platforms and limited basic information about deltas was incorporated. The platform called 'delta-zones' was delivered and put online in April 2010.

Experiences with the Online Platform

The experiences with the platform were discussed during a well-attended special Delta Alliance session on communication tools during the Rotterdam conference. The results of the meeting have been passed on to and adopted by the Advisory Board.

In May 2010 approximately ten organizations with strong links to Delta Alliance, as well as the four Wing Coordinators, were asked to upload information on the Information Platform. However, it turned out to be difficult for people and organizations to spend time on this activity. Further, some of them argued that their information is already available to the public through their own websites. Despite the fact that the online questionnaire (see Annex 2) indicated that an online information platform was highly ranked on the list of services to be provided by Delta Alliance, there thus seems to be a discrepancy with the knowledge providers. Moreover, perceptions about such a platform differs.

Although the project team agreed from the start of the project that the Information Platform should follow a 'growth model', it was also concluded after the above mentioned experience, that the Platform should contain a certain minimum amount of information before putting it online. It was concluded that it would only be possible to achieve this minimum level of information, if additional capacity would be made available to actively approach relevant people and organizations in order to make the information available and to guarantee the quality of the content. To make the platform fully operational and useful it was calculated that an extra initial investment of approximately 50 k€ would be needed to fill the website with a minimum quantity of information, followed by a yearly investment of approximately 50 – 75 k€ for maintenance. These costs turned out to be considerably higher than was initially foreseen while developing the idea of establishing the platform. Costs could be reduced if part of the work would be done in one of the Wing secretariats. The platform thus does exist, but structural additional funding have to be found to continue with the development of the platform and make it online available for the public. The platform can currently be consulted at <http://test.delta-zones.com/> (user name: delta; password: onlyyou).



Decisions of the Advisory Board

In view of the priorities to be set for the third phase in relation to the limited funds available, the Advisory Board decided in its meeting at the Rotterdam conference to put the establishment of the platform temporarily “on hold”. To compensate for this decision the Advisory Board decided to add more information about the member deltas on the Delta Alliance website and to improve the functionality of that website. Delta Alliance related information which would be uploaded to the Online Information Platform should now be accommodated by the Delta Alliance website. Moreover, every wing should have its own section and provide information for the site. The Advisory Board decided that as soon as more funds would become available or if donors would like to support the Online Information Platform, this platform could be further developed.

Follow up of the decisions of the Advisory Board

Recently some Deltares experts concluded that it should be possible to combine the Information Platform and the Delta Alliance websites, either by fully integrating parts of the delta-zones platform into the Delta Alliance website or by placing parts of the delta-zones platform in the Delta Alliance website using a so-called ‘IFRAME’. Alternatively the current Delta Alliance website can be ‘upgraded’ by incorporating additional functionalities based on available (free-of-charge) tools. It is expected this can be done rather quick and with limited efforts (rough estimation around 10.000 euro). Finally, to make the Delta Alliance more dynamic and interactive for its members, the possibilities of a WIKI environment within the website are being investigated.

Conclusion

Since the operational costs of maintaining only one website will be lower, it is not advised to continue the development of a separate Online Information Platform as initially planned. We propose to continue improving the Delta Alliance website by integrating parts of the Information Platform and/or by adding extra functionalities to it.

5.4 Funding Strategy

Funding needs

The realization of the ambitions as described in the Strategic Framework implies the need for significant external funding. It is estimated that a yearly total budget of at least 2 to 3 m€ is needed to create a sustainable alliance that has impact with worldwide recognition.



The funding needs can be distinguished in:

1. Funding for the international organisation: operational costs of international secretariat, International Governing Board and Advisory Committee, and costs for e.g. communication, website, travel, participation in conferences and workshops (approx. 700.000 €/year).
2. Funding for the operational costs of the various Wings (between 50.000 € and 100.000 €/year/Wing).
3. Funding for inter-delta cooperation project activities on research, knowledge exchange, capacity building, organising conferences, etcetera, including support activities by DA (e.g. scoping studies, project proposal development, building consortia, etc.) (ca. 1,5 – 2 Mo euro/year).

Until now the Delta Alliance initiative has been funded by the Knowledge for Climate program with cofunding from the participating partners in the Netherlands (Deltares, Alterra, Royal Haskoning, Arcadis) and the partners in the various Wings outside the Netherlands. Just over 50% of the total available Knowledge for Climate budget for Delta Alliance (1.8 m€) has been used during phases 1 and 2.

The creation of a legal entity (Foundation) for Delta Alliance International, which is scheduled for April 2011, should facilitate the acquisition of additional funding. During phase 2 several actions have been undertaken to explore future (additional) funding possibilities. The long term funding is a major challenge to be addressed in the 3rd phase of Delta Alliance.

Funding initiatives in Phase 2

Examples of concrete steps that have been undertaken during phase 2 are:

- Building up a relation with the Asian Development Bank during two visits to Manila and discussions with ADB representatives at other occasions. The ADB has a real interest in Delta Alliance and they had the intention to participate in the launch of Delta Alliance with some kind of commitment, which could unfortunately not be realized due to agenda problems. Follow up activities will be undertaken in 2011. Commitments will relate most probably to project related activities (item 3 above).
- Scanning the funding possibilities from the World Bank. Possibilities for structural funding of the International Secretariat seem to be very limited. Project funding is likely to be more successful, especially in view of the gradual release of climate change adaptation funds (item 3).
- Strengthening and exploring the cooperation opportunities with the Water Mondial Program focussing at the Knowledge to Knowledge component. This has already resulted in a project of 125.000 € called Water Resources Assessment Studies for the Mekong Delta



Masterplan (see paragraph 7.4). Cooperation and support will probably be limited to project related activities, funded through Partner for Water, 2g@there, etc. (item 3).

- Paying much attention to public relations and networking activities. The latter has led to the fact that there is actually much interest from deltas worldwide to join Delta Alliance, which means implicitly also that we can afford to request a contribution from the member deltas. This can be used for the operational costs of the international organisation (item 1).
- Undertaking initiatives for co-creation of research programs with other partners, for instance with NWO/WOTRO that has the intention to create a several-million research program on deltas with a focus on urban regions and water and climate issues. Preliminary negotiations with NWO (Netherlands Science Council) have taken place since fall 2010 to explore how Delta Alliance could become partner in this research program. The envisaged win-win situation will mainly relate to project-related collaboration and support (item 3). Some of the funds might become available for the International Secretariat for coordination and knowledge management (item 1).
- Establishing contacts with the America's Wetland Foundation, giving access to large private companies as potential funding partners. The coordinator of the Mississippi Wing is closely connected to this Foundation. Possible future support may relate to projects as well as more general support to respective Wings and/or the international secretariat (items 1-3).

Funding strategy for the future

The funding sources for each of the three 'funding needs' mentioned above may be different. The funding of the operational costs of the various Wings (item 2) should ideally be supported by the member organisations of each Wing, although the Dutch Wing in this respect may have a different position due to its direct links to the Knowledge for Climate programme and its partners. The principal funding sources to support project activities will be sought mainly from national and international donor organisations, International Financial Institutions (WB, ADB) and Climate Change Adaptation Funds, but might also be governmental agencies as in the case of the California Bay and Delta. Access to funding for the international organisation (item 1 above) is considered to be most difficult and delicate: both national and international organisations generally tend to spend their money easier on concrete project activities than on maintaining and supporting a network organisation.



Concrete funding actions proposed for Phase 3

Concrete actions proposed for Phase 3 are listed and prioritized below. Priority levels indicate the urgency of respective actions, including a ranking of possible spin-off with respect to non-project based funding opportunities. High ranking priorities do not exclude the necessity to work on other priority level actions simultaneously.

Priority level 1

- 1.1 Gradual introduction of a membership fee;
- 1.2 Exploring support from the Partners for Water program for both the International Secretariat and the Dutch Wing;
- 1.3 Continuation of negotiations on cooperation with Water Mondiaal program;
- 1.4 Supporting individual Wings in getting access to funding from national or regional budgets/sources.

Priority level 2

- 2.1 Continuation of negotiations with NWO on the co-creation of a delta research program;
- 2.2 Exploring possibilities of support from targeted NGO-funds and other possible donors, such as the Bill & Melinda Gates Foundation and the Clinton Foundation;
- 2.3 Continuous efforts to co-create new projects/programs, including c.q. dependent on funding opportunities;
- 2.4 Bidding on delta related calls for knowledge development and sharing and capacity development.

Priority level 3

- 3.1 Follow up to contacts with the Asian Development Bank;
- 3.2 Visit to the World Bank, other IFI's and donor organisations.

In support of these fund-raising activities a Delta Alliance Prospectus will be compiled.

Additional information

ad 1.1: Membership fees.

It is proposed that member organizations will contribute financially and in kind to the Delta Alliance. The charges will be dependent on the financial capacity of the organization. The contribution confirms that the services provided by the Delta Alliance network are of value to the members; it confirms commitment and ownership. It is proposed that individuals can only be asked for an in kind contribution. The charges must be such that sufficient income is received to support network activities. It is suggested that member organizations contribute 0,02 - 0.05% of their yearly turnover to Delta Alliance in cash and



also 0,02 - 0,05% in kind. The final decision on the introduction and height of membership fees will be determined by the International Governing Board after having heard the advice of the Advisory Committee. The membership fees will be used to support the operational costs of the international organisation as well as those of the various Wings. It is envisaged that each Wing will in the near future contribute between 30 k€ and 50k€, depending on the financial carrying capacity of the country and the size of the Wing, to the international organisation. It is being realised that membership and related fees can only be introduced gradually.

ad 1.2: *Program support from the Dutch Partners for Water (PfW) program.*

This program might offer possibilities to support the International Secretariat and/or the operational costs of the Dutch Wing from a special fund that is destined for activities that contribute:

- to strategic positioning of the Dutch water sector e.g. through the promotion of The Netherlands as the location for international organisations;
- to the international positioning and profiling of the Dutch water sector through the development of international networks, business development and participation and/or organisation of international events).

Over the last years for instance CPWC has been funded through this special fund of PfW.

The Dutch Partners for Water program offers also possibilities for project related (co-)funding through regularly published open tenders .

ad 2.2: *Donor organizations*

Donor organisations that could be approached are for example the Bill & Melinda Gates Foundation and the Clinton Foundation. Possible support may relate to project related co-funding as well as specific activities of the secretariat and/or specified wings, for instance for the execution of certain monitoring or awareness raising programs.

ad 2.3: *Co-creation of knowledge projects or programs.*

It is envisaged that Delta Alliance members will actively develop knowledge sharing, knowledge development and capacity building programs together with potential funding agencies like the Regional Development Banks, the World Bank, the EU delegations in member countries and other international or bilateral development agencies. Also the private sector shall be approached to actively participate in the development of these programs either from a corporate societal responsibility point of view or by a commercial interest. A concrete example of co-creation is the above mentioned delta research program with NWO.



ad 2.4: *Bidding on calls for project funding.*

Once Delta Alliance International is established as a legal entity it can participate on behalf of its members in bidding procedures for publicly announced or restricted tenders for projects. Also individual members of Delta Alliance can with the support of the International Secretariat or the Wing Coordinators apply for projects under the umbrella of Delta Alliance, using the brand of Delta Alliance and/or attributing a remunerated coordinating or knowledge management role to Delta Alliance.

Support to 2.3 and 2.4: *Participation in the development of adaptation and development projects.*

It is expected that in due time significant funds will become available for investment in climate change adaptation projects. Delta Alliance and its members could assist in the development of fundable projects through fact finding, feasibility studies, development of business cases, the preparation of investment programs and the monitoring of the impact of the realized projects.

ad 3.1 *Asian Development Bank (ADB)*

Contacts with the ADB will be continued during 2011, most likely in combination with other missions to South-East Asia.

ad 3.2 *World Bank*

A visit to the World Bank, other IFI's and donor organisations like USAID is planned for end of April 2011 by participating in an economic mission organised by NL EVD International.

*Ambitions 2011 -2014*

Ambitions for the continued fundraising activities are outlined in table 2.

Table 2: External funding ambitions in millions of euros for

Funding type	2011	2012	2013	2014
Knowledge for Climate	550	150	100	0
Projects through bidding on calls	200	400	500	600
Co-creation of knowledge projects	200	300	500	600
Delta Research program NWO	pm	pm	pm	pm
Adaptation/ development projects	150	300	400	600
Donor organizations	0	50	100	100
Membership fees	100	300	400	400
Partners for Water program support	pm	pm	pm	pm
Total	1200	1500	2000	2300

The funding ambitions can change considerably if we succeed in the co-creation of large research programs like the one that is currently under consideration with NWO.

5.5 Analysis and results

In terms of organization development, the following results have been reached in phase 2. A number of them can be linked to the objectives as outlined in the Delta Alliance Strategic Framework (Annex 1).

- The definition, objectives, mission and strategy of Delta Alliance have been confirmed and refined with partners in the founding delta regions. During the second phase gradually more interested deltas became involved in this process.
- A Strategic Framework document outlines the Delta Alliance resilience strategy, the Delta Alliance declaration, strategy components, Delta Alliance projects, and funding.
- An international governance structure for Delta Alliance has been created and will soon be implemented including the establishment of a



Foundation called “Delta Alliance International” with an International Governing Board.

- Written support for Delta Alliance has been secured by the signing of the Delta Alliance declaration by high level representatives from 6 delta countries during the conference “Deltas in Times of Climate Change” in Rotterdam on September 30, 2010.
- The website <http://www.delta-alliance.org> is actively used as a tool to disseminate information about the network. Thousands of unique visitors are registered from January- November 2010, with an average of 420 unique visitors per month.
- Four newsletters have been sent out, respectively in April, July, September and October 2010, where the September issue was entirely concerned with the conference “Deltas in Times of Climate Change”. At the beginning of the second phase, the newsletter was sent to approx. 300 people, while the latest issue of the newsletter (October 2010) was sent to more than 400 interested persons.
- Various materials and tools have been developed to promote Delta Alliance. These materials include standing banners, flyers, and notebooks and can be used during future Delta Alliance activities.
- The international questionnaire provided insight in most important topics and issues as identified by respondents.
- A website functioning as online information platform to share delta related information worldwide has been created. However, in view of the high costs for developing, filling and maintaining this website, it is not advised to continue the development of a separate Online Information Platform as initially planned. Instead, it is proposed to continue improving the Delta Alliance website by integrating parts of the Information Platform and/or by adding extra functionalities to it.
- Several activities for external funding have been undertaken during phase 2. The long term funding is a major challenge to be addressed in the 3rd phase of Delta Alliance, for which a strategy has been developed.



6 Network development

The development of the Delta Alliance network in phase 2 includes the organization of scoping workshops and follow-up meetings in various Wings, missions to expand the network and (co)organization of various events and workshops by Delta Alliance representatives. These activities, presented below in more or less chronological order, led to the big launch event of Delta Alliance during the Rotterdam conference in September 2010. The development of networks in each focus delta (“network Wings”) has been organized with individuals in each location. Workshops were held by the Wings to help expand the local network and to gain input for the strategic sessions during the conferences in Shanghai and/or Rotterdam (see section 6.6.5 and 6.7.5). The outcomes of the Wing scoping workshops, presented in table 6 are synthesized in the analysis and results at the end of this chapter (see section 6.9).

6.1 Netherlands Wing

Network development under The Netherlands or Dutch Wing consisted amongst others of organizing a scoping workshop in April 2010. The Netherlands Wing and its Wing coordinator(s) participated also actively in the conceptualization of development of Delta Alliance International, in the discussion on cooperation with Water Mondiaal (see section 6.8.1), the execution of the Comparative overview of deltas project (see section 7.2), an Electronic Board Room session during the Rotterdam conference (see section 6.7.2) and the implementation and coordination of the Assessment studies for the Mekong Delta Plan (see section 7.4).

6.1.1 Scoping workshop

On April 22, 2010 a kick-off workshop was organized to seek contributions and guidance on how to further build and focus the Delta Alliance Dutch Wing. Many key stakeholders of the Dutch delta sector were invited to discuss and confirm a shared vision for the DA Dutch Wing, and to elaborate this by identifying most relevant delta themes and opportunities for (inter)national cooperation and to generate ideas for future projects and activities. An ‘Electronic Board Room session’ (EBR) was organized to facilitate the brainstorm and to be able to identify and prioritize many issues in short time. The workshop provided insight into the opinions and ideas of people working on delta issues in the Netherlands. The main results of the Dutch Wing workshop are outlined in table 3.



Also coordination with already on-going national and international initiatives was addressed, such as NWP country platforms, Dutch Delta design, Connecting Delta Cities, Delta technology network and Aquade. It was concluded that working together by a 'learning-by-doing' process can lead to complementary and better results for knowledge exchange and development on delta management issues. This event was a good starting point for the development of the DA Dutch Wing and to build upon towards an international learning environment jointly with the other Delta Alliance Wings and beyond.

Table 3: Most critical problems in delta areas as identified by participants of the Dutch Wing workshop

Theme	Most critical problems
Safety against flooding	<ol style="list-style-type: none"> 1. Use of natural systems to protect from flooding 2. Training and capacity building 3. Adapting land use
Water supply and sanitation	<ol style="list-style-type: none"> 1. Conflicts in (natural) water availability and water demand 2. Drought 3. Integrated ground water management
Urban areas	<ol style="list-style-type: none"> 1. Climate robust building and spatial planning 2. Coordination spatial planning 3. Combine urban functions with water management
Modeling and tools	<ol style="list-style-type: none"> 1. Vulnerability assessments tools 2. Training and capacity building 3. Decision support tools
Environmental quality and biodiversity	<ol style="list-style-type: none"> 1. Building with nature 2. Training and capacity building 3. Interaction between nature, agriculture and aquaculture
Governance of adaptation	<ol style="list-style-type: none"> 1. Training and capacity building 2. Participatory approaches 3. Long term financial arrangements
Water for food	<ol style="list-style-type: none"> 1. Water efficiency 2. Adaptation strategies for agriculture 3. Balancing competing claims on water
Spatial planning	<ol style="list-style-type: none"> 1. Need for further integrated approach, in relation to policy 2. Lack of long term vision and integrated planning 3. Integrated approach including sustainable natural resource management
Other	<ol style="list-style-type: none"> 1. Public private partnerships 2. Comparative analysis and assessments of delta's 3. Private sector commitments, innovative collaborations



Other noteworthy outcomes of the Dutch Wing workshop were remarks about projects for harmonization and/or integration of available data and information, including recommendations that Delta Alliance should not only focus on developing countries, but also on deltas in the European Union and the USA. The results of the workshop were discussed during the Delta Alliance strategy session in Shanghai on June 7, 2010 (see section 6.6.5).

6.2 Vietnam Wing

Activities under the Vietnam Wing were the organization of a scoping workshop and follow-up workshop on capacity building, both attended by the Program manager. Furthermore alignment with the Water Mondiaal activities in Vietnam were coordinated.

6.2.1 Scoping workshop

On July 20, 2010 a scoping workshop was organized by the Vietnam Wing. 25 participants from universities, research institutes and local governments discussed the establishment of the Vietnam Wing. Objectives of the workshop were amongst others the identification of most relevant adaptation issues, identification of champion institutions that will help build the network, identification of initiatives that local parties are already involved in and generation of ideas for collaborative projects between Delta Alliance focus regions. The most important findings of the Vietnam Wing workshop are outlined in table 4.



Table 4: Propositions per theme of participants in the Vietnam Wing workshop

Theme	Propositions
Network building	<ul style="list-style-type: none"> Vietnam National University (VNU) will act as a <i>hub</i> of a local network. Members of the local network are other institutions in Vietnam. Vietnam Wing need to involve more institutions: local authorities, research institutes, associations and the media.
Research and study	<ul style="list-style-type: none"> Research on the Mekong Delta has to take into consideration the changes and development of the whole Mekong river catchment Farmers in the Mekong already introduced a number of cases of climate change adaptation, e.g. new cropping systems and new types of crops. Research which helps to secure and expand results can be in the top priority of research topics. Other proposed research topics include scenario analysis of climate change impacts, tools to assess damages to natural resources, tools to predict social-economic changes and green technology
Training	<ul style="list-style-type: none"> Proposed focus groups: university teachers, mid-career/ mid-level officials, reporters

6.2.2 Follow-up workshop in high grade capacity development

In November 2010 a workshop on high grade capacity development (“Demand for high grade training experts for Mekong delta's climate change resilience plan”) was organized by the Vietnam National University of Ho Chi Minh City, the Peoples Committee of Can Tho and Can Tho University. 50 representatives from 13 Vietnamese provinces participated in this workshop which was a follow-up of the scoping workshop organized in July. Various presentations around this theme were given by Vietnam Wing representatives as well as by the Dutch Program manager of the Delta Alliance. On the basis results of this workshop the Vietnam Wing coordinator, prof. dr. Le Quang Minh, and his staff of Vietnam National University will prepare a Master Plan for high grade capacity development, that will be presented and discussed during a workshop in March 2011.

6.2.3 Alignment with Water Mondiaal activities

Many activities have been undertaken jointly by the Vietnam and Netherlands Wings and the International secretariat to align the activities of Delta Alliance with those of Water Mondiaal. The Program manager took part in the First March 2010 in Hanoi and Can Tho) and the Second (April 2010 in Delft) High



Level meeting “Towards a climate change response plan for the Mekong Delta” headed by prof. Veerman and the vice ministers Lai (MoNRE) en Hoc (MARD). Delta Alliance is also represented in the Mekong Delta Team by prof. Eelco van Beek (Deltares), who joint also, together with prof. Le Quang Minh, the mission for the Third High Level meeting in November 2010 in Ho Chi Minh City. With the support of the Water Mondiaal coordinators and the Vietnam Wing coordinator and the Nuffic NICHE program for Vietnam has a strong focus on climate change and water management. The Vietnam Wing coordinator created within his university a Centre for Water Management and Climate Change. Hopefully this Centre will soon receive support from Nuffic NICHE through a project on Institutional Capacity Building. For further information on cooperation with Water Mondiaal see section 6.8.1.

6.3 Indonesia Wing

The Indonesia Wing organized in phase 2 a round table meeting, a scoping workshop and co-organised with Bakosurtanal the Indonesian Delta Forum conference in Semarang. In chapter 7 the proceedings of an International Workshop held in Bandung are presented. This workshop was organized in cooperation with the Indonesia Wing and presented as one of the projects carried out in the second phase (see section 7.1). The Indonesian Wing is also involved in the implementation of the Jakarta Climate Change Adaptation Tools project (see section 7.3). Finally, the Indonesian Wing is now preparing for the organization of World Delta Summit to be held in November 2011 in Jakarta, which has to become the follow up of the Rotterdam Conference.

6.3.1 Round table meeting

On June 29, 2010 a round table meeting was held in Jakarta. The meeting was attended by 33 participants from the Indonesian government, research institutes, NGO's, commercial companies and Delta Alliance representatives. A presentation was given by the chairman of Delta Alliance, Ir. Kees Slingerland followed by a presentation of the Indonesia Wing coordinator, Prof. Jan Sopaheluwakan. The emphasis of the meeting was on the added value of Delta Alliance and the specific issues and problems in Indonesian deltas. Special attention was paid to the organization of and participation in the Indonesian Wing.



6.3.2 Scoping workshop

The Indonesian scoping workshop took place on August 3 and 4, 2010. The workshop was a follow-up of the round table meeting. Fifty persons representing a number of (inter)national institutions, local governments, universities, and private sector attended the workshop. Before the scoping workshop, a series of small workshops (pre-scoping workshops) was organized. Also a short questionnaire was distributed among various stakeholders concerned with Indonesian deltas as a preparation for the scoping workshop. The main objectives of the scoping workshop was to consolidate the Delta Alliance International Indonesia Wing (DAII) network, to define DAII and its initial activities in Indonesia, and to discuss the concept of resilience in the Indonesian context. The most important results and findings of the Indonesian workshops are outlined in table 5.

Table 5: Activities and focus of Indonesian Wing per theme as identified by participants in the Indonesian Wing workshop

Theme	Activities and focus of DAII
Data sharing and interoperability	<ul style="list-style-type: none"> develop a data sharing system for Indonesian research network, focusing on specific areas of the network interest
Risk assessment and ecosystem services	<ul style="list-style-type: none"> scenario based risk assessment of integrated natural and social hazards, spatial management, integrating ecosystem and disaster risk management; ecosystem economic valuation.
Planning and design	<ul style="list-style-type: none"> ecosystem based planning with a vision on ecosystem service conservation for rural deltas
Governance issues	<ul style="list-style-type: none"> establishment of a communication forum; integrated data management; development of model for integrated delta management (IDM), including training of trainers in IDM, training and socialization of IDM at national and sub-national levels, implementation of IDM in potential areas, and comparative study on IDM for benchmarking; development of educational modules targeting young generations.
Implementation, operation and adaptation	<ul style="list-style-type: none"> strengthen the existing activities with the threats from climate change.
Inter-regional delta cooperation	<ul style="list-style-type: none"> Development of adaptation road map of delta cities, using examples from the Netherlands; Dissemination of integrated delta management in the forms of modules; Implementation of pilot projects;.



6.3.3 Indonesian Delta Forum in Semarang

Following increasing attention on delta city problems worldwide, the Indonesian National Coordination Agency for Survey and Mapping organized a two-day workshop in Semarang, a delta city on the north coast of Java island, Indonesia. This event was well supported by the Diponegoro University, Gadjah Mada University (UGM), Delta Alliance International and International Centre for Interdisciplinary and Advanced Research – Indonesian Institute of Sciences (ICIAR-LIPI). This is the first workshop in Indonesia focusing on deltas.

The workshop took place on October 21 and 22, 2010 in Grand Candi Hotel, Semarang. It was officially opened by the Vice Governor of the Central Java Province, Ms. Rustriningsih. She emphasized the need of clear job description and distribution of institutions involved in the delta management, and a synergy among them. She appreciated the initiative to create a delta forum, which is very useful for knowledge and experience exchanges, which is in-line with the effort to increase understanding on Indonesian deltas in order to reduce natural and human induced disaster risks associated with deltas.

More than 170 people attended the workshop, representing academic institutions, international and national research organizations, government, consulting firms and practitioners. The workshop presented a number of keynote speeches, including speeches by Prof. Jan Sopaheluwakan from ICIAR-LIPI representing the Delta Alliance Indonesia Wing, and Mr. Jan-Jaap Brinkman representing Delta Alliance International. A number of scientific papers and posters from various case studies in Indonesia were discussed and displayed that enriched the exchange of knowledge. On this occasion, the Vice Governor Ms. Rustriningsih urged Delta Alliance to help the planning of the City of Semarang. On the second day of the workshop, the participants visited Wulan Delta in Demak, West Java. The participants could see the delta problems and monitoring activities in the field.

By: Heru Santoso, member Delta Alliance Indonesia Wing



6.3.4 Preparing for the World Delta Summit

The Indonesian Wing of Delta Alliance is now preparing for the World Delta Summit to be held in Jakarta on November 14 – 19 , 2011. The subtitle of the Delta Summit reads: 'The pulse of deltas and the fate of civilisation'. This conference has to become the follow up of the international conference on Deltas in Times of Climate Change held in September-October 2010.

The Delta Summit will be organized to:

- Share a common but differentiated responsibility on securing the deltas' functionality for our survivability;
- Call for an immediate action with long term shared vision;
- Produce acceptable and robust worldwide policies, and
- Address the challenges and to create new opportunities as well, while reducing the disaster risks and properly alleviating the poverty under the changing climate.

The organisation of the Summit has already gained the support of the Provincial Government of DKI Jakarta and the Central Government through the Coordinating Ministry of Social Welfare.

6.4 California Wing

After the initial focus on San Francisco Bay in 2009 the scope was extended to the Sacramento-San Joaquin Delta with the establishment of the Delta Stewardship Council. This section describes the main activities of the Wing, various developments in California and proposals that were developed for collaboration with Delta Alliance in the future.

6.4.1 San Francisco Bay

The involvement of Delta Alliance in California started with the project and symposium 'San Francisco Bay: Preparing for the Next Level' in 2009. A Dutch team of ARCADIS, ALTERRA and Deltares studied the impacts of sea level rise on San Francisco Bay and proposed potential adaptation strategies. This project was executed in partnership with the San Francisco Bay Conservation and Development Commission (BCDC). Delta Alliance supported the project by sponsoring the highly successful symposium. In 2010 BCDC continued its efforts to provide insights and planning guidance on the impacts of sea level rise to Bay Area region. Through the efforts with Delta Alliance and various other



projects BCDC launched a new initiative called 'Adapting to Rising Tides' (<http://risingtides.csc.noaa.gov/index.html>). The aim of this project is to work with a sub-region in San Francisco Bay to develop sub regional adaptation plans. BCDC has already started the sub-regional pilot with a number of workshops and has selected a sub-region. Delta Alliance went through a number of iterations for a scope of involvement in this project.

6.4.2 Delta Stewardship Council

In February of 2009 the Delta Stewardship Council (DSC or Council) was established with the primary charge of developing a new Delta Plan for California by January 1, 2012. The DSC is a strategic partner for Delta Alliance as it is the main state entity in the Delta and operates at a similar level as BCDC. At the Agency level it was proposed by Assistant Secretary Brunello that the Delta Alliance would work in the Delta with DSC and in San Francisco Bay with BCDC. The Delta Stewardship Council is very enthusiastic about collaborating with Delta Alliance. Proposals for student exchange and a technical exchange workshop were developed.

6.4.3 Other activities

The 'Deltas in Times of Climate Change' Conference in Rotterdam at the end of September was attended by a large California delegation. The California-Delta was moderated by Murray Starkel, retired Lieutenant Colonel with the Army Corps of Engineers San Francisco District. The California speakers in the session were: Will Travis, Executive Director at the San Francisco Bay Conservation and Development Commission, Paul Bunje, Executive Director of the University of California in Los Angeles Center for Climate Change Solutions, Mike Urkov, Principal Scientist at NewFields and Peter Wijsman. Other non-delegate California attendees included representatives from the University of California in Berkeley and Davis and the United States Geological Survey.

6.4.4 The proposed next steps for Delta Alliance California Wing

The following steps are proposed for the start of the 3rd phase of Delta Alliance:

- Visit of Delta Alliance to California in early 2011 to reconfirm commitment and establish path forward for participation of Delta Alliance in California
- Assign California Wing Coordinator and connect with Brown Administration



- Explore possibilities for cooperation with the San Francisco Bay sub-regional pilot project
- Participate in one California event, symposium or workshop
- Focus on connecting with other Delta Alliance deltas

6.5 New Delta Alliance Wings

Next to the workshops and missions to the delta regions mentioned in the previous section, activities have been undertaken to reach out to other deltas as well. We distinguish three categories: new Delta Alliance Wings, candidate Wings and potential candidate Wings.

6.5.1 New Delta Alliance Wings

USA –Louisiana Wing (Mississippi delta)

At various occasions, such as the Dutch Dialogues, meetings of the American Planning Association, the Strategy session in Shanghai and the Rotterdam Conference, as well as through the California Wing coordinator strong contacts had been established already with individuals and organisations in the Mississippi Delta. These contacts have been strengthened during the participation of the Program Manager in the Deltas 2010- World Delta Dialogues conference from 17 – 21 October 2010 in new Orleans. At that occasion Dr. Robert Twilley of the University of Louisiana at Lafayette accepted the invitation to become the coordinator of the Mississippi Wing of Delta Alliance. He played a key role in the scientific debates of the conference and he is in charge of the Coastal sustainability Studios a project funded by the America's Wetlands Foundation. His role as Wing coordinator was confirmed by the Chair of Delta Alliance at a dinner party with Delta Alliance during the mission of Senator Mary Landrieu and her delegation including Dr. Twilley. Dr. Twilley is currently preparing an action plan for the Mississippi Wing.

Egypt Wing (Nile delta)

On 29 and 30 November, 2010 a mission to Egypt was undertaken by the Program Manager as a follow up of the signing of the Delta Alliance Declaration by Dr. Hussein El Atfy, Deputy Minister of Water Resources and Irrigation, during the Delta Alliance launching session in Rotterdam. A meeting was organized by Dr. Shaden Abdel Gawad, President of the National Water Research Centre (NWRC) which was attended by representatives from the twelve research institutes belonging to NWRC. In earlier contacts with Dr. Hussein El Atfy and the Netherlands Embassy it was already suggested that Dr. Shaden and her Centre should coordinate the Egyptian Wing. Goal of the meeting was to introduce Delta Alliance and to agree of the role of NWRC in



the Delta Alliance network. Also, participants were challenged to give “project ideas” around issues of which they thought are important in relation to deltas. The Delta Alliance initiative was also discussed with the Agricultural Research Centre (ARC), the Netherlands Embassy, a representatives of the EU delegation and UNDP and with the manager of a large irrigation improvement project. The future role of Dr. Shaden en her centre have been confirmed during the mission by Dr. Hussein El Atfy and the Netherlands Embassy.

China Wing (Yangtze delta)

It is through the close cooperation with World Estuary Alliance that the Yangtze delta has become a Wing of Delta Alliance. Unlike the other Wings, where a knowledge institution, university or governmental agency is coordinating the Wing, in case of the Yangtze Wing it is an internationally renowned non-governmental organisation, WWF-China, which is the focal point. This was formalised during the official launch of the Delta Alliance on September 30, 2010 through the signing of the Declaration by Dr. Wenwei Rei. It was confirmed by WWF-China that the Chinese universities they are cooperating with will be included in the network. Further modalities of cooperation have to be detailed at the start of phase 3, also in the light of the foreseen closer cooperation between Delta Alliance and World Estuary Alliance.

6.5.2 Candidate Delta Alliance Wings

These are deltas for which it has already been agreed upon that they will join the Delta Alliance. At the start of the 3rd phase further arrangements will be made and the Wing coordinators (and their institutions) will nominated.

Bangladesh Wing

From 20 - 24 June 2010 a Delta Alliance mission to Bangladesh took place to identify the interest of Bangladeshi governmental and non-governmental organisations, research institutions and universities in Delta Alliance. Especially the Institute for Water Modelling (IWM) and the FAO representative (office) have been very helpful and supportive in organising the mission. All the visited ministries and organisations showed great interest and offered support for organising the Bangladesh Wing of Delta Alliance. This was also confirmed during a visit of the Secretary of the Ministry of Water to The Netherlands in September 2010.

The mission served also a second goal. In a discussion with the Dutch Ministry of Foreign Affairs it was concluded that optimal synergy between Water Mondiaal activities and Delta Alliance activities in Bangladesh should be pursued. Therefore it was agreed that the identification mission of Delta



Alliance to Bangladesh should be strongly connected to the development of the Knowledge to Knowledge component of Water Mondial. Therefore, during the mission capacity building and knowledge development and valorisation needs in relation to water management (in a broad sense) and climate change were discussed with Bangladeshis representatives from universities, meteorological departments, NGO's, and government officials. The results have been reported to the Water Mondial coordinator for Bangladesh.

Brazil Wing

Monday 30th of August 2010 the kick-off meeting of the Delta Alliance Brazilian Wing took place. The venue of the meeting was the head office of the Brazilian Agricultural Research Corporation (Embrapa) in Brasilia. Delegates from Embrapa, the Federal University of Mato Grosso (UFMT), the State University of Mato Grosso (UNEMAT) and WWF Brazil were present.

The morning was dedicated to a mutual acquaintance of the Delta Alliance and Brazilian partners by means of presentations about the Pantanal, a huge seasonal floodplain of 150,500 km², which is surrounded by highlands. Unlike the deltas of the other Wings being coastal deltas, the Pantanal is an inner-delta. Intensification of agriculture, construction of dams, and climate change bring about disturbance in the natural processes of flooding, causing high rates of soil erosion, loss of biodiversity and threats to local communities. Both from the side of Delta Alliance as from Brazilian side there was an interest to cooperate around delta issues in the Pantanal.

A project proposal has been submitted that aims to provide knowledge for decision making about the construction of future dams. For comparison, this study could simultaneously be carried out in the Okavango inner- delta, as the same issues are also of importance there.

Argentina Wing

Argentinian universities and research institutions in Buenos Aires, notably Universidad de Buenos Aires and the Centro de Estudios en Cambio Global, have shown great interest in establishing an Argentinian Wing with a focus on the Parana delta. Contacts were made through Veronica Zagaré, a PhD researcher at TU Delft, who participated actively in all the Delta Alliance sessions during the International Conference Deltas in Times of Climate Change. Her PhD research is part of the Mapping Urban Deltas program of TU Delft led by Prof. Han Meyer, in which six deltas around the world are participating: Goaping River Delta (Taiwan), Mekong Delta (Vietnam), Mississippi Delta (USA), Parana Delta (Argentina), Pearl River Delta (China), and Rhine-Meuse Delta (The Netherlands). In view of the overlap with the Delta Alliance deltas and the objectives and the activities of this network mutual cooperation is very welcomed.



6.5.3 Potential candidate Delta Alliance Wings

Meanwhile, organizations in other deltas have shown interest in joining Delta Alliance. In the course of the 3rd phase the International Secretariat will investigate the various applications for further discussion by the Advisory Committee and the Governing Board. Some of these interesting options are:

- The suggestion of the Dutch Ministry of Transport and Water to include also other deltas in the USA (e.g. New York – Hudson delta), the Incomati “Water Mondiaal delta” in Mozambique and an Australian delta.
- A network of European deltas. A proposal called EURO-DELTA has been prepared by a consortium of Wageningen UR and FFCUL (Portugal) for the CIRCLE-2 ERA-Net European transnational research activities focusing on Deltas, Estuaries, Lagoons and Tidal flats Adaptation.
- Spontaneous demands from delta organizations in e.g. Japan, Senegal, Iraq and Taiwan.

6.6 Other network activities and events

6.6.1 COP15 side event

On 16 December 2009 Delta Alliance was officially announced by dignitaries of Indonesia, Bangladesh, California and The Netherlands. This side event took place during the COP15 in Copenhagen. Tineke Huizinga, the then Dutch Vice Minister of Water and Transport, hailed the Delta Alliance initiative by stressing the importance of international cooperation among delta regions in the context of climate change.

6.6.2 Washington mission

A scoping event for the DELTAS2010 event brought together parties working on deltas from both the Netherlands and US to present relevant work and organizations that should be involved in the event. Delta Alliance was also asked to assist in identifying international partners to attend DELTAS2010.



6.6.3 Asian Development bank meetings

Two meetings of the Program manager with the Asian Development Bank (ADB) in Manila, Philippines on March 10, 2010 and July 10, 2010 (in the company of the Chair of the Delta Alliance) regarding potential for cooperation between ADB and Delta Alliance (amongst others through the Knowledge Hubs network, see section 6.8.2) resulted in ADB expressing a strong interest in the development of the Delta Alliance, especially due to the strong representation of Asian deltas in the network: China, Indonesia, Vietnam and Bangladesh.

6.6.4 World Estuary Alliance Conference

The first World Estuary Alliance Conference was organized from 6-8 June 2010 in Shanghai. The conference marked the launch of the World Estuary Alliance (WEA), a WWF initiative based in Shanghai that aims to raise awareness of the economic and ecological value of healthy estuaries and to stimulate exchange of knowledge and implementation of best practices as co-organiser. Delta Alliance has provided strong support to the WEA events. The two initiatives will continue to partner in activities to improve the quality of estuaries and deltas.

6.6.5 Delta Alliance strategy session during WEA conference

A strategy session was held during the WEA conference to discuss the development of Delta Alliance, during which there were presentations on work done so far in defining the network, and preliminary results were presented from an international questionnaire on what Delta Alliance should aim to become. During the session the mission of Delta Alliance "to improve the resilience of deltas worldwide" was confirmed, and discussions led to the creation of the Delta Alliance Resilience Strategy - a framework for network activities. The strategy session brought together about 30 partners from California, Indonesia, Vietnam and The Netherlands - the four delta regions where outreach of the emerging network has focused - as well as partners working in other delta regions.



6.6.6 DELTAS 2010 event

Delta Alliance has given assistance to the organization of the international DELTAS2010 event, which is being hosted by America's WETLAND Foundation. This event was organized in October 2010 and brought together experts from deltas worldwide to focus on solutions for the Mississippi delta, built upon experiences from other deltas.

6.7 Rotterdam conference "Deltas in Times of Climate Change"

From September 29 to October 1, 2010, Rotterdam was the venue of the international conference "Deltas in Times of Climate Change". Delta Alliance hosted a number of sessions during this conference. Next to these sessions, outreach to inform people about the network took place by means of a booth (shared with Connecting Delta Cities and the World Estuary Alliance). The official Delta Alliance sessions were preceded by an inspiration evening on September 28 in the "Zeetoren", located along the Dutch coast of Hoek van Holland. A workshop was held in which participants from research institutes, governmental bodies, NGO's and companies from various countries together created a story about the building of Delta Alliance (fig. 3). A cartoonist depicted the atmosphere and common to start working on delta challenges during the meeting. This resulted in the comic as presented in chapter 9. This informal gathering created a positive atmosphere among the participants to start with the conference the next day.

Figure 3: Participants of the Delta Alliance meeting in "de Zeetoren", preceding the Rotterdam conference



6.7.1 DeltaCompetition2010

The DeltaCompetition2010 was jointly organized by Delta Alliance, Royal Haskoning and the City of Rotterdam to challenge students to craft solutions



for climate change adaptations in the world's delta cities. It built upon the success of the 2006 and 2008 Delta Competitions hosted by Royal Haskoning. The worldwide competition challenged students to come up with creative and innovative solutions for delta cities that are under increasing pressure due to climate change. The three winning submissions were presented during the Rotterdam conference (fig. 4).

The winning topics were:

- “Ecology as Industry” by Haein Lee, Gyoung Tak Park and Soomin Shin, Harvard University, Landscape Architecture. The students designed a vision for de-engineering water management in the Rhine-Meuse delta (The Netherlands) and presented this as a regional plan for capitalizing upon the local ecology while addressing increasing flood hazards and land subsidence.
- “Groundwater zoning as spatial planning in Semarang” by Novi Rahmawati, Gadjah Mada University (Indonesia), Water Resources Management. Intensive groundwater abstraction in the coastal areas of Semarang is addressed by this student through the idea of groundwater zoning – spatial planning based on identifying the areas most degraded and at risk of degradation through groundwater abstraction.
- “The Big Leak: Adaptive responses to New Orleans’ land subsidence crisis by David Wooden, Virginia University (USA), Landscape Architecture. The land subsidence crisis of New Orleans is tackled with the proposal of an adaptable storm water conveyance system that intentionally “leaks” to maintain water tables in the city.

In total, the competition attracted 24 high quality submissions from students all over the world. The ten best submissions are published in the DeltaCompetition2010-book. The three winning teams presented their designs during a special conference session and were put in the limelight during the Delta Alliance launch session. More information about the competition can be found at www.deltacompetition.com.



Figure 4: Winners
DeltaCompetition2010

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6.7.2 Delta Alliance Electronic Board Room session

During the Electronic Board Room session, representatives of the Rhine- Meuse Delta, Ganges-Brahmaputra, Mekong Delta, California Bay, Ciliwung Delta, Mississippi Delta, and Yangtze Delta gave a presentation of the challenges in each delta. Each presentation was structured along the approach taken in the study “Comparative Overview of Deltas” (see section 7.2), combining the DPSIR framework (drivers, pressures, state, impact, and response) with the 3-layer spatial planning model (base, network and occupation layer). Using the same structure for all 7 deltas appeared to be a step forward in jointly exploring and identifying common themes of interest, taking into account the respective national socio-economic and cultural contexts. The speakers, and also the subsequent “Electronic Board Room” session, highlighted the need and mutual interest for exchanging knowledge and experiences in adaptive approaches.

The outcomes of the Electronic Board Room session were analysed by means of Mindjet MindManager software to produce various mind maps. These outcomes were discussed during a working session on October 1, 2010. During a subsequent session specifically dealing with the comparative overview approach, follow-up activities were defined which should lead to a report, book and scientific article.

In de follow-up of this second workshop it is being explored how the DA Dutch Wing activities can further elaborate the workshop results, strengthen other Dutch delta initiatives (a.o. in the framework of Water Mondiaal, PvW, NWP) and enhance collaborative project development and knowledge exchange with other (DA) deltas, building upon the results of the DA project ‘Comparative overview of deltas’ (with already 10 deltas involved now). Discussions with key stakeholders are on-going.



6.7.3 Delta Alliance Work Session- Network Communications

In this session various communication tools were discussed. Next to the website, e-newsletters, brochures, and seminars, conferences and workshops which are already used to disseminate knowledge about Delta Alliance, communication tools as LinkedIn, Twitter and Video-conferencing were discussed. Specific attention was paid to the Online Information Platform. Its operation and maintenance costs were discussed, as well as (temporal) alternatives.

6.7.4 Showcasing Inter-Delta Cooperation

Three cases of inter-delta cooperation were presented during this session- DRAGON, an initiative of the US Geological Service; WISDOM, a Vietnamese-German initiative in the Mekong Delta; and Dutch collaboration with New Orleans. These cases provided useful information about initiatives in place.

6.7.5 Delta Alliance Work Session- New Delta Wings

This session aimed to clarify and identify the further development of Delta Alliance. Representatives from Argentina, Louisiana, New Orleans, China, Bangladesh and The Netherlands discussed the organization, projects, products and communication of the network.

6.8 Partner Cooperation Initiatives

To implement the Delta Alliance Resilience Strategy Delta Alliance must work closely with the many initiatives that are already contributing to the development, integration, and exchange of knowledge related to deltas. During scoping activities a number of relevant initiatives have been identified. These initiatives are described in the Strategic Framework (Annex 1). No other network initiatives have been identified that support international cooperation between river deltas and are focused on delta regions as a whole and on an integration of knowledge across sectors. This has meanwhile been proven to be a niche for Delta Alliance. A number of initiatives exist that are encouraging and facilitating cooperation between river delta regions internationally, yet are distinct in their scope and approach. Delta Alliance will continue to seek and actively partner with other initiatives that share common objectives with Delta Alliance, to avoid duplication of activities and achieve a larger impact from activities undertaken.



During the second phase many activities have been undertaken to partner with these initiatives. The most important activities and connections are listed below.

6.8.1 Delta-specific cooperation initiatives

Knowledge for Climate (KfC) and Climate for Spatial Planning

During the 2nd phase Delta Alliance has strived for direct connections between the activities in its international Wings and the activities in the regional hotspots and within the research themes of KfC. A good example is the involvement of the consortium leader (Prof. dr. E.C. van Ierland) of the KfC theme “Decision support tools” in the Delta Alliance project “Jakarta Climate Change Adaptation tools”. Furthermore, Delta Alliance has actively contributed to the organization of the International Conference Deltas in Times of Climate Change, through a number of workshops organized by Delta Alliance as well as through the organization of a number of the Delta sessions, notably Bangladesh, Egypt, Indonesia and USA-California. Also, the recent invitation to the Program Manager of Delta Alliance to become member of the KfC Program Council will likely enhance cooperation between Delta Alliance and KfC. During the 3rd phase Delta Alliance will continue to develop initiatives together with KfC partners. In this respect promising meetings have been held with representatives of the Dutch hotspot South-West Delta and the province of Zeeland to explore the cooperation in the field of agriculture and aquaculture under salinizing conditions with projects in Vietnam and/or Bangladesh.

Water Mondiaal

At the initiative of the KfC coordinator of the Ministry of Spatial Planning and Environment (VROM), the coordinator of Water Mondiaal and the Program Manager of Delta Alliance, three meetings have recently taken place between Delta Alliance and Water Mondiaal to explore the possibilities for alignment and cooperation. Water Mondiaal consists of three main components: Governance to Governance (G2G), Knowledge to Knowledge (K2K) and Business to Business (B2B). The discussions focused on how Delta Alliance (members) could play a more important role in the development of the K2K agenda of Water Mondiaal in the various deltas. The following conclusions were drawn: i) there are good perspectives for cooperation: objectives and activities of Water Mondiaal coincide well with the ambitions of Delta Alliance; ii) cooperation not by a pre-cooked template: cooperation activities need to be tailor made; iii) tender procedures do not allow for exclusivity (no 1st supplier role) for Delta Alliance, but they have to look for the opportunities; iv) cooperation should be



developed gradually from now onwards, v) good communication is needed to enhance alignment and cooperation, and vi) “we should just do it”.

Some successful examples of cooperation with Water Mondiaal are already available:

- During a pre-identification mission of Delta Alliance to Bangladesh, the mission paid at the special request of the Ministry of Foreign Affairs also attention to the further development of the K2K component of Water Mondiaal.
- The coordinator of Water Mondiaal Egypt requested the inclusion of the Nile Delta in the Comparative overview of deltas study.
- Deltares is currently, in cooperation with Alterra and Infram and under the umbrella of Delta Alliance, conducting water resources assessment studies for the development of the Mekong Delta Plan, the main activity of the Water Mondiaal program in Vietnam. This project has officially been tendered by Partners for Water. Delta Alliance not yet being a legal entity could not directly apply for the project.

World Estuary Alliance

Several cooperation activities between Delta Alliance and World Estuary Alliance have taken place:

- Joint development of an online information platform.
- Delta Alliance has been co-organizer of the first World Estuary Alliance Conference in Shanghai in June 2010 (see section 6.6.4).
- The two Alliances have expressed the interest to share annual conferences.
- WEA and its founding father WWF are important partners in the Delta Alliance Comparative Overview of Deltas project.
- A possible merge between Delta Alliance and WEA has been discussed during the Shanghai strategy session, but at that moment it was agreed that for the time being the two would continue in parallel to benefit from where their networks and objectives are unique. During recent discussions with WWF it was agreed that WEA will gradually merge into Delta Alliance over the coming years.

Connecting Delta Cities

Delta Alliance and World Estuary Alliance are cooperating with Connecting Delta Cities through shared communication materials, cooperation on select events, and assisting in developing networks in common regions. Through CDC the City of Rotterdam participated also in the Delta Competition 2010 primarily organized by Delta Alliance and Royal Haskoning.



Aquaterra

The Comparative Overview of Deltas project has been built on the results of Aquaterra 2009, which had also a focus on deltas. Aquaterra and Aquatech (with a focus on water technology) will join forces to organize jointly with RAI Amsterdam and other partners the International Water Week Amsterdam in November 2011. Delta Alliance will explore the possibilities to play an active role during this event.

Delta Research and Global Observation Network (DRAGON)

Delta Alliance has good contacts with this international community of practice to share data on the great deltas and rivers of the world. DRAGON has actively contributed to the session on Inter-delta Cooperation organised by Delta Alliance during the Rotterdam conference. DRAGON representatives participated also in other Delta Alliance sessions in Rotterdam and in the Strategy session in Shanghai. Delta Alliance will explore the possible role of DRAGON in the monitoring of the resilience of deltas. Outside the US DRAGON is mainly focusing on the Mekong delta in Vietnam through the Climate Change Centre of Can Tho University, partner in the Vietnam Wing of Delta Alliance and with which various Dutch Delta Alliance partners have joint projects. Overall, DRAGON officials have shown great interest in cooperation with Delta Alliance.

Dutch Dialogues

Delta Alliance took part in the third Dutch Dialogue design session held in New Orleans in April 2010, bringing together Dutch and Louisiana engineers, urban designers, landscape architects, city planners and soils/hydrology experts to tackle water safety and amenity in New Orleans. During the recent mission of the Program Manager of Delta Alliance to New Orleans at the occasion of the Deltas 2010 - World Deltas Dialogues conference it was confirmed that Delta Alliance will also be involved in future Dialogues in case of any continuation.

Delta Dialogues

Royal Haskoning has run a series of dialogues in deltas around the world. Delta Alliance has participated in some of these dialogues. Royal Haskoning has recently invited Delta Alliance to discuss any future follow up of the Delta Dialogues.

Deltas2010- World Delta Dialogues

Delta Alliance has actively participated in the preparation of this conference held in New Orleans in October 2010 and the Delta Alliance launch officer and the California Wing coordinator have acted as charette leaders for number of workshop sessions. During the conference the Program Manager of Delta Alliance established contacts with America's Wetlands Foundation, the main organizer of the conference. The follow up of this conference might be



organized by Prof. Le Quang Minh, coordinator of the Vietnam Wing of Delta Alliance and also present at the conference, at the Vietnam National University of Ho Chi Minh City, in fall 2012.

American Planning Association (APA)

The American Planning Association (40.000 members) has indicated to become a member of Delta Alliance and is willing to give publicity to the Delta Alliance activities. Representatives of the APA attended the Delta Alliance sessions in Rotterdam and Shanghai. Also a representative of Delta Alliance attended the Dutch Dialogues 3 and the APA national conference from April 10-13, 2010, which focused on Delta Urbanism in New Orleans.

6.8.2 Relevant cooperation initiatives not focused on deltas

Knowledge Hubs of the Asia-Pacific Water Forum

Discussion with ADB is on-going on the creation of links between the Knowledge Hubs and Delta Alliance.

Global Adaptation Network- UNEP

Delta Alliance is in communication with the Global Adaptation Network regarding possible collaboration and a mission to Nairobi is foreseen for spring 2011.

Netherlands Water Partnership (NWP)

It is expected that many members of NWP will also become member of Delta Alliance through the Netherlands Wing. Delta Alliance will consider to become a strategic partner of NWP. It must even be considered to position the Dutch Wing of Delta Alliance under the umbrella of NWP.

Cooperative Program on Water and Climate (CPWC)

In several aspects and countries Delta Alliance and CPWC are working closely together. The Bandung workshop has been jointly organized with CPWC and other partners. CPWC contributes also to the Jakarta Climate Change Adaptation Tools project which is described in chapter 7.

Partners for Water

Water Mondiaal initiated projects will regularly be tendered through Partners for Water. They could also be a partner for the funding of Delta Alliance initiated projects. The Mekong Delta assessments, executed by Deltares, Alterra and Infram, under the umbrella of Delta Alliance, have been tendered and are administered by Partners for Water.



Resilience Alliance

Delta Alliance will soon be in communication with the Resilience Alliance regarding collaboration on developing a resilience framework for deltas.

6.9 Analysis and results

The following results have been reached in terms of network development in phase 2:

- The Delta Alliance scoping workshops organized by the Netherlands, Indonesia and Vietnam Wings increased the visibility of the international network. The variety of backgrounds of participants (universities, research institutes, local governments, private sector) and the amount of participants (Netherlands: 28, Indonesia: 50, Vietnam: 25) laid the basis for a further expansion of the Delta Alliance network in the respective regions. In phase 3 the Wings need further strengthening through concrete activities and joint projects.
- The Delta Alliance scoping workshops, in addition to the Electronic Board Room sessions and in international questionnaire, resulted in an overview of most critical problems in the deltas and in propositions for projects and activities. A number of delta-specific research topics were identified (e.g. disaster risk management in Indonesia and a Mekong river basin wide approach in Vietnam) and a couple of similar topics can be identified (see table 6).

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Table 6: Similar research topics and activities identified in scoping workshops

Theme	Indonesia	The Netherlands	Vietnam
Models and Tools	Scenario based risk assessment of integrated natural and social hazards; model for integrated delta management; educational modules to target young generation	Vulnerability assessment tools; decision support tools	Scenario analysis of climate change impacts; Assessment tools for natural resource damage; tools to predict socio-economic changes
Training and capacity building	Training of trainers	Training and capacity building	Training of university teachers, mid-career officials, reporters
Planning and design	Ecosystem based planning	Building with Nature; Use of natural systems to protect from flooding	Green technology



Water for food		Adaptation strategies for agriculture	Climate change adaptation by farmers
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- Noteworthy is that in the Dutch scoping workshops the idea of a comparative analysis and assessment of delta's was indicated as an interesting option. This is elaborated upon by the Dutch Wing with the project "Comparative overview of deltas" (see section 7.2).
- The participation of Delta Alliance in the World Estuary Alliance conference strengthened the bonds between the two international networks. The meeting of the Delta Alliance advisory committee during the conference resulted in a definite strategic framework for Delta Alliance.
- Participation of Delta Alliance in the conference "Deltas in Times of Climate Change" resulted in a broad visibility of the network both in The Netherlands as in other (delta) countries. More than 1200 people visited the conference.
- The recent missions to respectively Egypt and USA-Louisiana resulted in the Nile and Mississippi deltas joining Delta Alliance as official Wings.
- The Delta Alliance network currently counts 7 delta members and 3 candidate members (see table 7).
- The various sessions organized by Delta Alliance during the Rotterdam conference further clarified the (future) activities of the network, strengthened partnerships and increased the visibility of the network:
 - The DeltaCompetition2010 strengthened the bonds of Delta Alliance with the private sector as the competition was organized in cooperation with Royal Haskoning. The award winning session during the Rotterdam conference was well attended (circa 80 persons) which increased the visibility of Delta Alliance. Further, the co-organisation of the competition can be a first step towards the creation of a "Young Delta Alliance network". Delta Alliance and Royal Haskoning in principal agreed upon the co-organization of a next DeltaCompetition in two years' time.
 - The electronic board room session and the "showcase inter-delta cooperation" highlighted the need and mutual interest for exchanging knowledge and experiences in adaptive approaches.
 - The meeting of the Advisory Committee resulted in the definition of a pathway for the third phase of Delta Alliance. The results are discussed in chapter 9.



Table 7: Delta Alliance member deltas, candidate member deltas and potential candidate member deltas

Country	Delta	Coordinator	Affiliation/Observations
Full Delta Alliance Wings			
The Netherlands	Rhine -Meuse	Dr. Cees van de Guchte	Deltares- Climate Change Adaptation and Integrated Flood Management
Vietnam	Mekong	Prof. Le Quang Minh	Vice President ,International relations Vietnam National University, HCMC
Indonesia	Ciliwung, Mahakam	Prof. Dr. Jan Sopaheluwakan	Deputy Chairman for Scientific Services Indonesian Institute of Sciences (LIPI)
USA-California	California Bay + Delta	Peter Wijsman (ad hoc)	Arcadis
Egypt	Nile	Dr. Shaden Abdel Gawad	President National Water Research Centre
USA-Louisiana	USA	Dr. Robert Twilley	Vice President for Research University of Louisiana at Lafayette
China	Yangtze	Dr. WenWei Ren	Head WWF-Shanghai office
Candidate Delta Alliance Wings			
Bangladesh	Ganges-Brahmaputra	??	IWM, CEGIS, BWDB, BUET, BRAC, FAO Water Mondiaal delta
Brazil	Pantanal (inner delta)	??	Embrapa, Federal University of Mato Grosso, State University of Mato Grosso, WWF Brazil
Argentina	Parana	??	Studied by Mapping Urban Deltas group in TUDelft (Han Meyer, Veronica Zagaré) Universidad de Buenos Aires, Centro de Estudios en Cambio Global
Potential candidate Delta Alliance Wings			
Mozambique	Incomati	??	Water Mondiaal delta
Taiwan	??	??	Interest expressed through TIIWE, Water Resources Board and Representative Office in the Hague
Other USA delta's	e.g. Hudson		Interest expressed by DGW
European deltas	e.g. Danube, Po, Taag, Ebro, Rhone	??	Proposal for CIRCLE-2 European transnational research activities focusing on Delta, Estuaries, Lagoons and Tidal Flats Adaptation (EURO-DELTA)



- The various missions undertaken in phase 2 resulted in a greater visibility of the international delta network in various countries and on various levels (e.g. local till national governmental bodies). Also, the missions provided insight in the problems and challenges facing delta areas worldwide which is useful in further defining the project activities under Delta Alliance.
- It is being observed that the private sector (despite some good examples like Royal Haskoning, Arcadis and the Institute of Water Modelling) is still a bit reluctant to join the Delta Alliance network and activities at this stage of network and organisational development. More involvement is expected, however, during phase 3 due to the fact that this phase will have more focus on project activities. The “Building with Nature” program could be taken as an example of successful cooperation with the private sector.
- The active participation of Delta Alliance in events organised by other organisations has been an effective way of networking. However, to create a sustainable network Delta Alliance has the intention to organise an important international event every year. For 2011 this will be the World Delta Summit in Jakarta in November.
- We are currently exploring the exploring the possibilities to organise/support/coordinate an “International Year of the Delta 2012”, sanctioned by UNEP or UN-Water.
- A gradual merger between World Estuary Alliance and Delta Alliance is being foreseen for the near future.



7 Projects

The focus in the first and second phase of Delta Alliance was mainly on developing the organizational structure and the international network. Next to these activities the Knowledge for Climate budget for the 2nd phase of Delta Alliance also allowed carrying out two projects: the “Bandung workshop” and the “Comparative overview of deltas”. Another KfC funded project, “Jakarta climate change adaptation tools” initiated and implemented by Royal Haskoning, was also brought under the umbrella of Delta Alliance at the end of this phase of the project. Additionally, Deltares, Alterra en Infram are currently working on a Partners for Water project called “Assessment studies for the Mekong Delta Plan” under the umbrella of Delta Alliance.

7.1 Bandung workshop

Delta Alliance has supported expertise exchange through the international workshop on ‘Methods and tools for water-related adaptation to climate change and climate proofing’, held from 8-9 March 2010 in Bandung, Indonesia (fig. 5). The workshop was co-organized by the Co-operative Programme on Water and Climate (CPWC) and also supported by the United Nations Development Program (Jakarta), the World Bank (Jakarta), UNESCO-IHE, KNMI (Dutch Meteorological Office) and BMKG (Indonesian Meteorological, Climate and Geophysical Institute). The workshop targeted some 110 experts and government advisors, government officials at central and provincial level and practitioners who deal with water and/or climate related issues in development. Delta Alliance arranged also the participation of representatives of Vietnam and Bangladesh. The workshop resulted in a booklet on the proceedings of the workshop. The topics covered during the workshop are outlined in the following textbox.

Figure 5: Key participants Bandung workshop





Bandung workshop on “Methods and tools for water-related adaptation to climate change and climate proofing”, 8-9 March 2010

Day 1

After introductions about the Indonesian and Netherlands co-operation and the Indonesian strategy towards climate change adaptation, overviews of the state of the art in research and management in this field were presented by experts from Indonesia, the Netherlands and Vietnam. Some case studies from Indonesia, Vietnam, and Bangladesh provided insight in the methods and tools used to adapt in those countries. The focus was on lowlands and especially delta areas. The presentations showed a variety of approaches but also striking similarities in issues and ways to tackle them. The objective of the Delta Alliance of co-operating between countries with low-lying deltas is supported by these similarities and certainly by the participants. It was felt that much could be learned from experiences in other countries with more or less similar conditions.

Day 2

During the second day discussions took place in break-out sessions on (i) methods to prepare for adaptation in the physical system; (ii) drought management and (iii) methods to use in forestry, agriculture and land management. The results of the break-out sessions were presented and completed during a plenary panel session.

The workshop indicated that there is a clear need for:

- Advanced modelling capacity of the climate-hydrology system, including data analysis, extreme events, scenario and down scaling;
- Monitoring and assessment (including combinations of remote sensing and field observations) of rainfall, impacts of climate change on the water sector, drought management, and morphology;
- Development of tools for management of water and land, including carbon stocks and fluxes, and interactions between nature and socio-economic development for livelihood support;
- Development of communication for science, policy and public, including training at various levels through master classes, workshops, seminars;
- Dedicated training on e.g. GIS, measurement techniques, using data and models in daily practice of farmers;
- Share experiences (with methods) in adaptation between countries on a regular basis through seminars and joint research. Here Delta Alliance can play a major role as a platform for knowledge development and sharing between deltas.

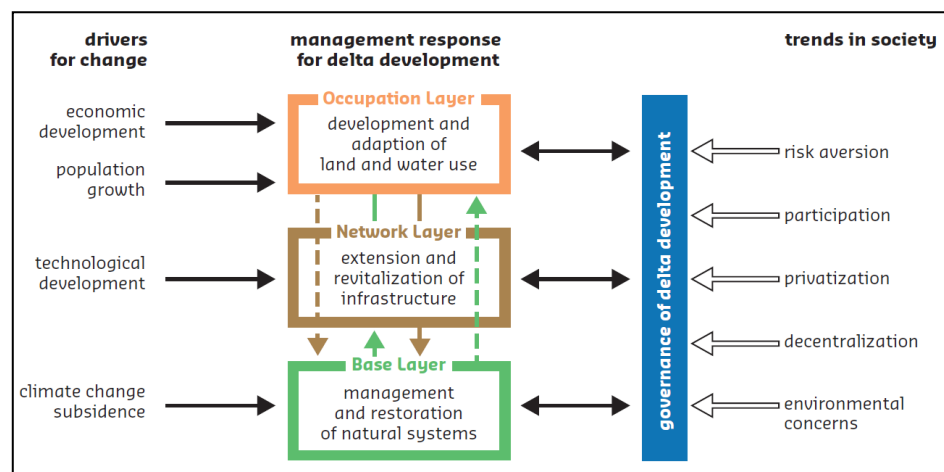
The report on the proceedings of the Bandung workshop can be found on the Delta Alliance website under “Projects”.



7.2 Comparative overview of deltas

The project “Comparative overview of deltas” is carried out by Deltares, Alterra Wageningen UR, WWF and (potential) Delta Alliance members. So, many scientific institutes from the various Wings were involved. The project proposes a framework for delta assessments. It builds upon the work done for the Aquaterra 2009 conference (Amsterdam, January 2009), on the project “Adaptation strategies for shoreline development in San Francisco Bay” and its corresponding workshop in September 2009 and on recent recommendations following the World Estuary Alliance conference regarding the development of a worldwide assessment of estuaries by means of “scorecards”. The project aimed to create a generic framework to study the physical, ecological and socio-economic impacts and adaptive response measures regarding the most affected sectors in deltas worldwide. Extensive descriptions of the Rhine-Meuse (The Netherlands), Mekong (Vietnam), Ciliwung (Indonesia), Bangladesh (Ganges-Brahmaputra), California Bay (USA), Mississippi (USA) and Yangtze (China) deltas were provided. The analysis was carried out by using the framework as depicted in figure 6. This framework provided the basis for the development of so-called “score cards”; a table representing a highly aggregated assessment of the current and future state of the delta. The scorecards make it possible to compare current and future states of deltas responding to changing conditions. Lessons learned, research gaps and opportunities for knowledge exchange and collaboration between deltas are identified in order to enhance resilience and sustainable development in deltas. The final report can be found in the Delta Alliance website, and a summary of the report is presented in Annex 3.

Figure 6: Framework for Delta Assessment as used in the “Comparative overview of deltas” project



For each delta an ‘indicative’ score card gives an impression of the current and future state of the different layers and governance issues, summarized in an overall Resilience and Sustainability Index. Two scenarios of future change are considered. The rationale of the resilience and sustainability indicator is that sustainable development of a delta depends on a combination of the status of



the three layers. Resilience and sustainability is good if the provision of goods and services equals the demand, without deterioration of the base layer.

Figure 7 : Comparative overview of the score cards of the 10 deltas studied

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Current situation	Land and water use (occupation layer)	Infra-structure (network layer)	Natural Resources (base layer)	Gov-ernance	Resilience & Sustainability Indicator		
					Current	Moderate Scenario	Extreme scenario
<i>Nile Delta</i>	--	0	-	0	-	-	--
<i>Incomati</i>	0	-	-	-	-	-	--
<i>GBM Delta</i>	--	--	--	0	--	-	--
<i>Yangtze Delta</i>	-	+	-	0	0	0	--
<i>Ciliwung Delta</i>	--	-	--	-	-	--	-
<i>Mekong Delta</i>	0	0	-	0	0	+	0
<i>Rhine-Meuse Delta</i>	+	++	0	+	+	0	-
<i>Danube</i>	+	+	+	0	+	0	0
<i>California Bay-Delta</i>	0	-	-	0	-	0	-
<i>Mississippi River Delta</i>	0	0	-	0	-	0	-

The main authors of the delta descriptions were responsible for using as much possible scientific and reliable data and information for their descriptions. It has to be borne in mind though that this a daunting task because of the interdisciplinary nature of the approach. Moreover it is a first rough inventory, analysis and comparison of the 10 deltas, in which an innovative framework for delta assessment is applied. Therefore, it is stated in the synthesis report that the descriptions and scorecards should be regarded as a foundation on which to build improvements and elaborations for future comparisons.

This study is also meant to feed the discussion on which data are most relevant for main indicators and would should be the basic requirements for data quality. This issue will be further addressed in the follow-up of this study.

7.3 Jakarta Climate Change Adaptation Tools

The project "Jakarta Climate Change Adaptation Tools" is carried out by a consortium consisting of Royal Haskoning, VU University and Wageningen University. The project is carried out under the banner of the Indonesian Delta Alliance Wing, but is funded by KfC and co-financed by the Cooperative Program on Water and Climate (CPWC), the Dutch ministry of Economic Affairs, Agriculture and Innovation, VU University, Wageningen University and others. The project started in 2009 and is planned to finish in 2013. The project



consists of a scientific “research and development” branch in which applied scientific research by two Indonesian PhDs takes place, coached by professors from the two Dutch universities. At the same time they will work closely together with the “practical application” branch of the project, in which government agencies and consultancies are central. On 28 September 2010, a kick-off meeting of the definition phase of the project was organized in Rotterdam. Representatives from several institutions presented the project. Particular attention was paid to the two PhD topics and the planning of the project. Expected scientific outputs of the project are:

- One PhD-study plus joint Indonesian-Dutch articles in international scientific journals on climate proof risk mapping
- One PhD-study plus joint Indonesian-Dutch articles in international scientific journals on the application of SEA for integrated climate proof water and spatial plans
- Two international conferences (one midterm symposium and one final conference)
- Development of two teaching-modules (climate proof flood risk mapping and application of SEA) for university students and professionals in the field
- Toolbox of methods for spatial planning and decision support
- Presentation of results at international symposia and conferences

As the project continues until 2014, it will be part of the projects of Delta Alliance phase 3 as well.

7.4 Water Resources Assessment Studies for the Mekong Delta Masterplan project

During the Joint workshop for the Vietnam-Netherlands Mekong Delta Masterplan project (Can Tho, March 29/30) it was proposed to start with Water Resources Assessment studies in preparation of the activities of the Mekong Delta Masterplan. The Assessment studies project was tendered by the Partners for Water program. The project was awarded to the consortium Deltares (lead), Alterra en Infram. Delta Alliance not yet being a legal entity could not bid on the tender, but the consortium agreed to execute the project under the umbrella of Delta Alliance. The respective assessment studies will be carried out by (consortia of) Vietnamese institutions. Modest content-related support and coordination will be provided by Delta Alliance partners, among others to ensure that consistent and comprehensive reports are prepared (mid-term and final). The major objective of the Assessment Studies is to obtain good insight into the availability of data and information, as well as in the actual problems and constraints in the Vietnamese part of the Mekong Delta. Basic data and information with regard to the overall development policies of



the Mekong Delta can be derived from the Socio-Economic Development Plan (SEDP) 2011-2015. This will cover the middle- and long-term development goals, the market structure, urban development planning, land use etc., specified for all relevant economic sub-sectors. As the SEDP's in general do not give much detail within the sub-sectors, for related issues in the water resources sub-sector more investigations (desk studies) are needed.

The scope of the Assessment Studies is on eight specific subjects (themes), identified during previous workshops and meetings. These subjects/themes are:

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Table 8: Scope of assessment studies project

Assessment study subject	Topics, proposed content
1. Climate change	Climate scenario's, sea level rise, other effects
2. Water resources assessment	Surface water, groundwater, water quantity and quality, data available, modeling research, water balance, MRC, inter boundary issues, salinization
3. Water for food	Agriculture, land use, trends, potential production capacity, crop varieties, upstream developments
4. Water supply	Drinking water and waste water treatment, industry water use, hydropower demands, also upstream developments, demand management
5. Water infrastructure	Dams, dikes and barriers, flood protection measures, existing master plans
6. Water and environment	Living environment, eco-systems, mangrove, nature preservation
7. Water governance	Institutional setting, Human resources development, legislation, capacity strengthening, financing, stakeholder analysis
8. Spatial planning	Demographic growth, industrial developments, food security, preservation of ecological system, not yet considered with climate change. Consider Mekong Delta and HCMC region

The final report of the project will be ready in spring 2011.

7.5 Project portfolio phase 3

Anticipating the third phase of Delta Alliance in which projects are an important component, project proposals have been submitted at the end of phase 2 by members of the various wings. A total of 23 project suggestions were developed. These suggestions will be followed-up in the third phase



resulting in the selection of a number of projects which will be carried out under Delta Alliance.

The Delta Alliance strategic framework (annex 1) enumerates five project suggestions (see table 9).

Table 9: Project suggestions phase 3 as described in the Strategic Framework

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Project title	Description	Proposed DA budget (euros)
Improving the adaptation tipping point (ATP) method	The ATP approach is very useful for assessing the vulnerability of a delta to climate change. But the approach has not been tested on a range of different deltas. Hence the idea is to make the approach more robust by applying it along a range of deltas.	50,000
Risk assessment and modelling	Investigation of future application of downscaled regional climate models to study the impacts of both human welfare, economic perspectives and biodiversity preservation in an integrative way, on an estuary and coastal zone. Such models are used in a number of delta regions, and their outputs and effectiveness can be compared to identify what inter-delta cooperation on modelling may be useful. "Climate atlases" such as exist for The Netherlands may be created for other deltas.	75,000
Adaptation policies and strategies	Preparing a report and poster that compare adaptation strategies and policies in focus delta regions. This project can be inspired by and build upon a PEER project comparing adaptation strategies in European countries.	To be determined
Sea level rise challenges and responses	Creation of a book that describes the expected challenges brought by sea level rise in focus river deltas and presenting examples of how these deltas are responding to these issues. Special attention will be paid to the balance of economy and ecology. This project can be inspired by and build upon a project by Deltares, Alterra and Arcadis in the San Francisco Bay.	25,000
New approach to analysing governance in deltas	Introducing a new frame for multi-actor analysis and design of governance in delta management. Identifying new opportunities for improved governance in delta management. The project will be focused on a selection of deltas and should enable a comparison of existing governance institutions / arrangements for i) spatial planning, ii) resource use and iii) water infrastructure.	100,000

After the Rotterdam conference, the various Delta Alliance Wings were approached and encouraged to come up with project suggestions for inter-



delta cooperation. In total, 18 project suggestions have been sent to the International Secretariat. The suggestions varied widely both in topic (delta restoration, decision support systems, policy frameworks, coastal protection measures etc.) as in amount of requested money. The project suggestions are listed in table 10.

Table 10: Project suggestions as submitted by various Delta Alliance Wings

	Wing	Organization/person	Project Title	Other delta's to be involved
1	Mississippi (USA)	University of Louisiana at Lafayette (Robert R. Twilley)	Restoration Manual for the Mississippi River Delta: Prototype for Developing Coastal Sustainability Studios	California Bay Delta; the Netherlands
2	Rhine-Meuse (The Netherlands)	TU-Delft (Han Meyer)	Mapping Urban Deltas	Mississippi delta, Mekong delta, Pearl River delta, Parana delta
3	Yangtze (China)	WWF China (Wenwei Ren)	Wetland wise use and biodiversity conservation in Chinese major deltas	Yellow River delta, Pearl River delta
4	Nile (Egypt)	Nile Research institute, National Water Research Center (Medhat Aziz)	Study of the impacts of increasing inland navigation in the Nile Delta	
5	Nile (Egypt)	Drainage Research Institute, National Water Research Center (Alaa Abdel- Motaleb)	Assessment of the vulnerability of the irrigation and drainage infrastructures to the expected sea level rise and adaptation measures	
6	Nile (Egypt)	Drainage Research Institute, National Water Research Center (Alaa Abdel-Motaleb)	Assessment of land degradation due to climate change impact using RS&GIS in the north of the Nile delta, Egypt	
7	Ganges-Brahmaputra (Bangladesh)	Institute of Water Modelling (Zahirul Haque Khan)	Impacts of Climate Change on the Morphology of the Coastal Region of Bangladesh, Adaptation Measures and Sustainable Land Reclamation	Ganges-Brahmaputra-Meghna
8	Ganges-Brahmaputra (Bangladesh)	Institute of Water Modelling (Zahirul Haque Khan)	Impact of Climate Change on Water Logging and Proper Adaptation Measures in the Ganges Delta Region of Bangladesh	Ganges-Brahmaputra-Meghna



9	Brazil (Pantanal)	EMBRAPA Pantanal (Carlos Roberto Padovani)	A common decision support system for delta countries	
10	Parana (Argentina)	Centro de Estudios en Cambio Global (Verónica Zagare)	A framework for policy response and adaptation in the Parana Delta	
11	Parana (Argentina)	Instituto Superior de Urbanismo, University of Buenos Aires (Verónica Zagare)	Map of urban and environmental risk in the Parana Delta	
12	Parana (Argentina)	TU Delft (Verónica Zagare)	Deltas under changing conditions: planning strategies for urban growth	Rio de la Plata estuarine system, Rhine-Meuse-Scheldt delta
13	California Bay (USA)	BCDC (Will Travis)/ARCADIS US (Peter Wijsman)	San Francisco Bay sub-regional climate change adaptation planning	Rhine-Meuse delta
14	Pantanal (Brazil)	EMBRAPA Pantanal (Débora Calheiros)	Preliminary Evaluation of the Influence of hydroelectric Power Dams in the hydrodynamic and eco-hydrological Functioning of the Rivers that form the Pantanal Wetland in the Upper Paraguay Basin (Brazil)	Okavango delta
15	Nile (Egypt)	Coastal Research Institute (Ibrahim Abdelmagid Elshinnawy)	Soft Measures for Egypt's Coastal Protection	Mississippi River delta, Rhine- Meuse Delta
16	Rhine-Meuse (The Netherlands)	Wageningen University (Maxim Amosov)	Organic village, 100% organic: robust infrastructure	San Francisco Bay and delta, Mississippi delta, Indonesia
17	Mahakam (Indonesia)	ICIAR-LIPI (Heru Santoso)	Scenario-based Risk Assessment of Integrated Natural and Social Hazards	Bodri Delta (Semarang), Mekong, Rhine-Meuse
18	Ciliwung (Indonesia)	Pusair (through Ekko van Ierland)	PhD Hydraulic Changes in Jakarta Urban Area	



A more comprehensive overview of the suggestions is given in Annex 4, table A. Table B in the Annex reviews the proposals to the criteria as formulated in the call for proposals sent out by the Delta Alliance Programme Manager to the various Wings. Table C describes the projects using keywords derived from the proposals and links a number of proposals to each other based on similar topics, keywords and deltas.

The proposals are reviewed using the following criteria (in random order of importance):

1. Inter-delta cooperation
2. Societal relevance
3. Scientific quality/ involvement of institutions
4. Potential for co-financing
5. Link to Knowledge for Climate themes and national hotspots
6. Potential for exposure
7. Link with resilience strategy

A preliminary ranking of the project proposals has been carried out by the International Secretariat and the Dutch wing coordinator based on the criteria. In addition, some narrative arguments have been given to support pass or fail of this initial, tentative ranking exercise. Table 11 presents the project proposals which, using the preliminary ranking, will further be considered while table 12 presents the projects which do not sufficiently meet the criteria.

Table 11: Promising project suggestions based on preliminary ranking

Nr	Title Project	Budget requested from DA	Score based on criteria and narratives	Additional relevance	Proposed DA-budget (euros)
1	Restoration Manual for the Mississippi River Delta: Prototype for Developing Coastal Sustainability Studios	\$ 150,000	XX	Design studio, integrating disciplines	60,000
2	Mapping Urban Deltas	€ 40,000	XX	Layer approach, reference to the 10 Deltas assessment	40,000
17	Scenario-based Risk Assessment of Integrated Natural and Social Hazards	€ 50,000	XX		50,000



10	A framework for policy response and adaptation in the Parana Delta (Argentina)	€ 25,000	00/x	Only 1 delta, but possibly to be combined with no.2	5,000
11	Map of urban and environmental risk in the Parana Delta	€ 20,000	00/x	Only 1 delta, but possibly to be combined with no.2	5,000
12	Deltas under changing conditions: planning strategies for urban growth	€ 10,000	0/x	Only 1 delta, but possibly to be combined with no.2	5,000
9	A common decision support system for delta countries	€ 50,000	X	Might be complementary to 10 deltas assessment	50,000
15	Soft Measures for Egypt's Coastal Protection	\$ 100,000	X	Buy-in to GEF	50,000
3	Wetland wise use and biodiversity conservation in Chinese major deltas	€ 200,000	X	Possible commitments with WEA	50,000
13	San Francisco Bay sub-regional climate change adaptation planning	\$150,000	X/0	Only 1 delta, but possibly prior commitments with USA parties	60,000

Table 12: Project proposals which do not meet the requirements

Nr.	Title project	Budget requested from DA	Score based on criteria and narratives	Proposed Da budget (euros)
4	Study of the impacts of increasing inland navigation in the Nile Delta	€ 50,000	0	Only 1 delta
5	Assessment of the vulnerability of the irrigation and drainage infrastructures to the expected sea level rise and adaptation measures	€ 750,000	00	Only 1 delta and too expensive
6	Assessment of land degradation due to climate change impact using RS&GIS in the north of the Nile delta, Egypt	€ 600,000	00	Only 1 delta and too expensive
7	Impacts of Climate Change on the Morphology of the Coastal Region of Bangladesh, Adaptation Measures and Sustainable Land Reclamation	\$ 6,630,000	00	Only 1 delta and too expensive



8	Impact of Climate Change on Water Logging and Proper Adaptation Measures in the Ganges Delta Region of Bangladesh	BDT 55,000,000	00	Only 1 delta and too expensive
14	Preliminary Evaluation of the Influence of hydroelectric Power Dams in the hydrodynamic and eco-hydrological Functioning of the Rivers that form the Pantanal Wetland in the Upper Paraguay River Basin (Brazil)	€ 250,000	0	Only 1 delta and too expensive
16	Organic village, 100% organic: robust infrastructure	€ 250,000	0	Relevance not clear
18	PhD Hydraulic Changes in Jakarta Urban Area	?	0	Only 1 delta, overlap with other projects

While assessing the project proposals, the following items have been taken into account:

1. The project is being executed over more than one delta (hard criterion).
2. At least one knowledge institute or university is involved in the project.
3. Max €60.000 is to be allocated to Wing proposed projects, max €100.000 euro to be allocated to generic overall proposals, of use in at least half of the deltas involved.

For further assessment the following issues should be taken care of:

- An additional check is needed on direct relevance for current and upcoming projects under the Knowledge for Climate programme.
- The projects to be selected cover the majority of the Delta Alliance deltas.
- The projects to be selected cover a diversity of delta-issues, too much thematic overlap should be avoided.
- After revising the proposals it may turn out that some themes in delta development and management may be regarded as 'missing' in the selected set of proposals. However, some opportunities may arise here as these themes can be addressed in future calls from e.g. NWO/WOTRO, Partners for Water and others.

Further, a critical look to a combination of projects is very important in phase 3 since the total amount of requested money for the projects largely exceeds the total available amount of money. The ranking will therefore further be consulted with the respective Wing-coordinators. Final selection will also depend on funds available within Delta Alliance, as well as opportunities for touching upon funds from adjacent programmes. A formal procedure is



planned including discussion of the project suggestions within the Advisory Committee and International Governing Board. The pre-selected projects could also be integrated in a larger delta research program to be developed in cooperation with the Netherlands Science Council (NWO).





8 Delta Alliance Launch

On September 30, 2010 Delta Alliance was officially launched during the conference “Deltas in Times of Climate Change”. Ms. Tineke Huizinga, the Dutch Minister of Housing, Spatial Planning and Environment kicked-off the launch (see: [video](http://www.youtube.com/watch?v=uTpQiYN-KE8) (http://www.youtube.com/watch?v=uTpQiYN-KE8) 1 at 3"50' and [video](http://www.youtube.com/watch?v=59lpm5i5mCM) (http://www.youtube.com/watch?v=59lpm5i5mCM)).

She talked about the importance of international cooperation in adaptation to climate change, stating that “international cooperation, sharing knowledge, and exchanging ideas about water management and policy are vital for peace, security, and prosperity in our deltas.” Her integral speech can be found in Annex 5.

Subsequently Mr. Kees Slingerland, chairman of Delta Alliance, introduced Delta Alliance to the conference participants by explaining its mission, objectives and activities. He illustrated his presentation from personal experiences with examples of challenges deltas are currently facing. Then, Governor Fauzi Bowo of Jakarta, Deputy Minister Hussein El Atfy of Egypt, Prof. Le Quang Minh of Vietnam National University, Dr. Wenwei Ren of WWF China, and Mr. Will Travis of the San Francisco Bay Conservation and Development Commission discussed in a panel session chaired by Ms. Tracy Metz, member of the former Dutch delta Committee, the challenges and opportunities for “their” deltas and how they may learn from one another. Mr. Fauzi Bowo talked for example about adaptive measures which have been taken and continue to be taken to anticipate climate change, specifically on the problem of urban flooding.

Then, the 3 winning teams of the DeltaCompetition2010 “Delta City of the Future” were presented by Prof dr. Cees Veerman, former chair of the Delta Committee. Students from Indonesia and the USA won 3000 USD and a trip to Rotterdam to present their ideas on how urbanized deltas can respond to climate change.

Finally, the official launch of Delta Alliance took place by Ms. Huizinga and the five panel members signing the Delta Alliance Declaration, a statement on the value of the world’s deltas and the importance of international cooperation for improving their resilience. Conference participants were invited to sign the declaration during the reception following the ceremony.



Figure 8: Impressions of the activities surrounding the Delta Alliance launch ceremony

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9 Current position Delta Alliance

9.1 Delta Alliance: strong position, great momentum

Delta Alliance has developed well during phase 2. The Delta Alliance gained a strong position in the national and international arena and the success of the official launch ceremony during the International Conference Deltas in Times of Climate Change on September 30, 2010 in Rotterdam created great momentum. The expectations are high!

- The idea of starting with 4 core deltas has worked well. The discussion in the relatively small Advisory Board and the support of its members contributed largely to the current position of Delta Alliance.
- The Delta Alliance network currently counts 7 delta members, 3 candidate members and several potential candidate members (see table 7 in section 6.9).
- Good contacts have been established with many other initiatives and networks that are already contributing to the development, integration, and exchange of knowledge related to deltas networks. None of them have disputed or obstructed the creation of the Delta Alliance. On the contrary, good working relations have been established with most of them.
- As well as in the policy as in the science arena the creation of the Delta Alliance has been welcomed.
- There is a niche for the Delta Alliance. The mission, objectives and activities are largely supported.

9.2 Delta Alliance: many challenges ahead

How to fulfil the high expectations? To keep the ever growing network active and the involved organisations connected a lot of activities have to be organised by the member deltas and by the international secretariat.

There are many challenges ahead, amongst others:

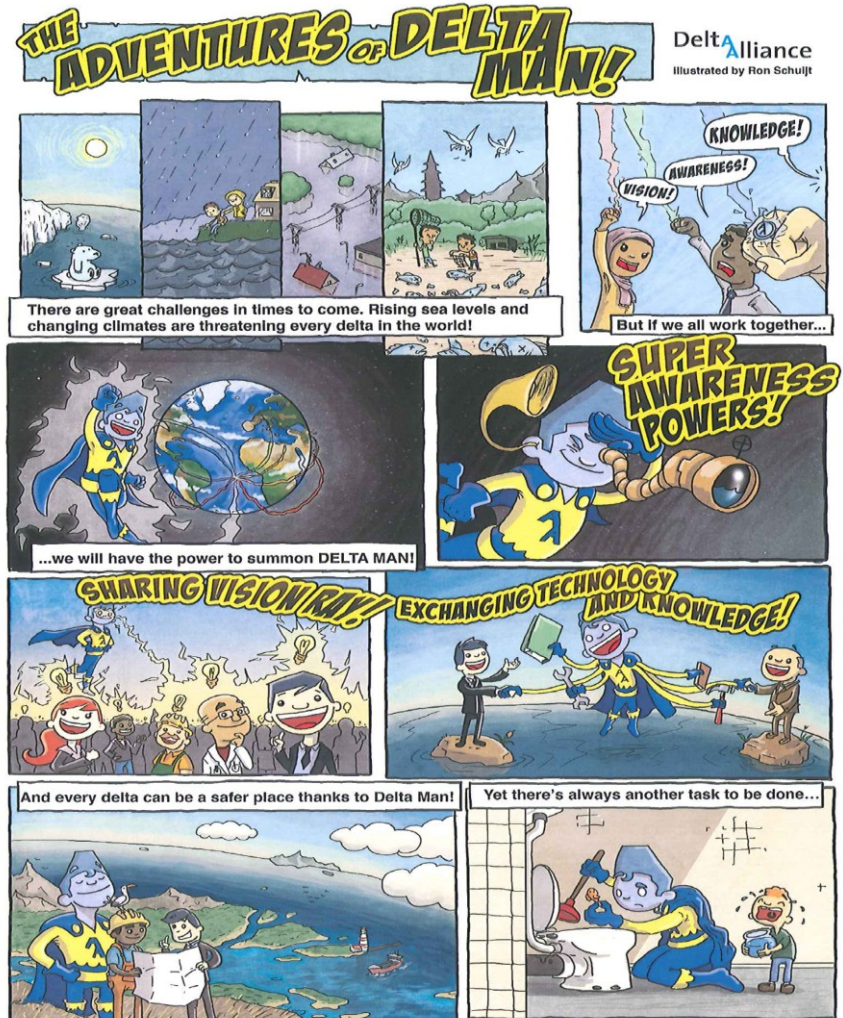
- The remaining funding from the Knowledge for Climate program are limited (approximately 800 k€ for the period 2011-2014). Will Delta Alliance be able to find enough external funding to keep the network running?
- Will the international secretariat have enough capacity to organise all the activities? In principle Delta Alliance prefers to continue working with a relatively small secretariat.
- The real added value for Delta Alliance would be inter-delta cooperation projects on knowledge sharing and development. Will



there be enough interest from member organisations and donor organisations to make such projects possible?

Figure 9: Cartoon illustrating the power of Delta Alliance; created on the basis of the Delta Alliance Inspiration Event on September 28, 2010

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10 Delta Alliance in Action: Outlook to phase 3

The start of the third phase of Delta Alliance is foreseen on January 1, 2011. It still has to be discussed with the Board of the Knowledge for Climate program whether its duration coincides with the remaining program duration of the Knowledge for Climate Program which ends in 2014 or whether it will last shorter, for instance one or two year(s). Delta Alliance will continue its existence and activities also after the closure of the KfC program. Therefore, activities in phase 3 will be focused on concrete projects, expansion of the network, strengthening of the organizational structure and attracting additional funding. This chapter describes the most important issues for phase 2 as identified during the meeting of the Advisory Board on October 1, 2010 in Rotterdam.

10.1 Focus is on projects

During the first two phases of Delta Alliance the focus has been on developing the vision, mission and principles, the organizational set up, the network itself and on the initiation of the first projects. The third phase will be dedicated to the extension of concrete project activities in the field of knowledge sharing and creation. The projects should contribute to the improvement of the resilience of deltas as indicated in the Delta Alliance Resilience Strategy by:

- Envisioning and defining resilience of deltas
- Measuring and monitoring resilience
- Reporting on (improved) resilience
- Providing inspiration for improved resilience
- Providing assistance for improved resilience

Some project ideas have already been identified in phase 1 and 2 and are mentioned in the Strategic Framework. Other ideas have emerged during the various scoping workshops in The Netherlands, Vietnam and Indonesia. In addition all Wings, including the new Wings, have been requested to propose additional project suggestions. As described in paragraph 7.5 a portfolio with in total 23 concrete project suggestions is available which will be followed up in phase 3.

10.2 Expansion of the network with more deltas

Initially, Delta Alliance focused on 4 delta countries: Vietnam, Indonesia, The Netherlands and USA-California. In phase 1 and 2 individuals and organizations in other deltas have expressed strong interest to join the international network. Meanwhile Egypt (Nile-delta), China (Yangtze delta, through WWF-



China) and USA-Louisiana (Mississippi-delta) have also become official members of Delta Alliance. In Bangladesh, Argentina and Brazil strong contacts have already been established through Delta Alliance identification missions and/or other strong contacts. That makes already ten committed deltas.

The network can further be strengthened through:

- Spontaneous demands from delta organizations in e.g. Japan, Iraq, Thailand and Taiwan;
- The suggestion of the Dutch Ministry of Transport and Water to include also other deltas in the USA (e.g. New York – Hudson delta), the Incomati “Water Mondiaal delta” in Mozambique in the network and a delta in Australia.
- A network of European deltas.
 - A proposal called EURO-DELTA has been prepared by a consortium of Wageningen UR and FFCUL (Portugal) for the CIRCLE-2 ERA-Net European transnational research activities focusing on Deltas, Estuaries, Lagoons and Tidal flats Adaptation.
 - Contacts have been established with an Interreg Project called DeltaNet, comprising 9 delta’s in 7 countries (Poland, Netherlands/Belgium, Spain, Portugal, Rumania, Germany ad United Kingdom). One of the deliverables in 2013 is a well-functioning deltanetwork.

Inclusion of these and other deltas, and as such the expansion of the international delta network, will be considered during the third phase. One of the criteria to include a delta in the network is the willingness and opportunities for inter-delta cooperation of the respective delta region. The future organizational capacity of the international secretariat could be another constraint.

10.3 Strengthening the organizational structure

In the second half of phase 2, steps have been undertaken to legally establish Delta Alliance as a foundation. These activities have to be continued in phase 3 in order to make it possible for Delta Alliance to continue its activities after the closure of the KfC program and to be able to attract other external funding. A special role is reserved for the Delta Alliance Wings in this respect; each Wings is challenged to create a similar (foundational) structure for its own organization, depending on the local circumstances and existing institutions in place.



10.4 Additional fundraising

As indicated in paragraph 5.4 fundraising will become an important and crucial activity for the sustainability of Delta Alliance. A strategy has been developed for that purpose, which will be rolled out during phase 3. At the same time it is realized that fund raising should also be opportunity driven.

10.5 Other activities

The cooperation with Water Mondiaal will be strengthened by amongst others aligning the focus delta areas between Water Mondiaal and Delta Alliance International. Inter-delta cooperation will also be promoted by an exchange of staff and students between deltas. Special attention will be given to more involvement of the private sector in the Delta Alliance network and activities. A marketing strategy for products and knowledge has to be developed. Delta Alliance could develop itself for instance as a 'brand' for project quality of inter-delta studies or as THE institute on developing sustainable and resilient deltas.





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<http://www.climatedeltaconference.org>





Annex 1 Strategic Framework



Strategic Framework

DeltA Alliance

September 2010

revised after:

- **7 June 2010 strategy session in Shanghai**
- **25 June 2010 Advisory Board meeting in Wageningen**
- **Meeting with Board of Knowledge for Climate**
- **Several meetings with relevant stakeholders in The Netherlands**

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1. Introduction

This Strategic Framework outlines the objectives, working strategy and financial plan for the development of the Delta Alliance network organization. The central motivation for creating Delta Alliance is to provide a foundation and framework for successful international cooperation that will support more effective and efficient responses to increasing pressures in river deltas worldwide. In short, to improve the resilience of the world's deltas.

Delta regions are especially vulnerable in the context of current and future global changes, including climate change, population growth, and increasing economic activities,. Each delta in the world has developed on a unique path, experiencing its own problems and developing its own coping mechanisms. Over time problems have become increasingly complex as they became embedded in complex human processes. The increasing stress that human activities have put on delta regions is approaching the limitations of the natural and human systems developed in these vulnerable regions.

The time available to address the global problems of climate change, population growth and economic development is short, and the challenges are huge. The current path is not leading us quickly enough to solutions. Delta Alliance should provide a framework to support the symbiosis of the countless activities ongoing in delta regions, reducing unnecessary overlap and identifying gaps in efforts. Delta Alliance will be a vehicle for increased cooperation between parties in river deltas worldwide, with the ultimate aim of improving the resilience of the world's deltas through more integrated and effective efforts.

Scoping activities for the Delta Alliance network have been led by Alterra / WUR since April 2009 , commissioned by the Knowledge for Climate programme of the ministries of The Netherlands. This Strategic Framework is an outcome of the scoping activities, which explored opportunities for an international delta network starting with partners in California, Indonesia, The Netherlands, and Vietnam. The development of Delta Alliance has been and will continue to be a dynamic process, requiring periodic review of the strategy for developing the network. This document is the first chart for navigating the development of Delta Alliance, laying out a mission for the organization and a strategy for embarking upon our mission realization. It describes the vision on the strategy per September 2010.

2. Mission Statement

The mission of Delta Alliance is to improve the resilience of deltas worldwide.

Delta Alliance will be a long-term partner to delta regions around the world as they strive to increase their resilience.

3. Delta Alliance Resilience Strategy

The strategy for realizing the Delta Alliance mission is summarized below. This strategy depends upon close cooperation with many partners, which will be detailed throughout 2010 and 2011.

The Delta Alliance mission will be realized by:

1. envisioning and defining resilience for deltas;

Short Term (2010 – 2012)

- create visions for resilient deltas with stakeholders in the deltas
- create a Resilience Working Group to formulate a resilience framework for defining and measuring resilience in deltas including criteria and measurable indicators.

Long Term (2012 onward)

- create visions with deltas where there is interest to join Delta Alliance
- refine and improve the resilience framework

2. measuring and monitoring resilience;

Short Term (2010 – 2012)

- Delta Comparative Overview in 2010

Long Term (2012 onward)

- annually measure resilience in select deltas according to resilience framework by integrating available data from across the delta
- identify gaps in available data and information

3. reporting and creating pressure for improved resilience;

Short Term (2010 – 2012)

- invite organizations and individuals, including high level representatives from across sectors, to sign the Delta Alliance Declaration

Long Term (2012 onward)

- Regular (every 2 years?) “Report Cards” on the resilience of select deltas, that give both a quick summary of the resilience of the delta and detailed information on specific indicators – to be presented at an annual Delta Alliance – World Estuary Alliance event
- prizes for deltas that have improved their resilience since the previous Report Card
- presentations at international events by members of the Resilience Working Group and Delta Alliance ambassadors

4. providing inspiration for improved resilience;

Short Term (2010 – 2012)

- showcase best practices and lessons learned from across deltas for both preparedness and response

Long Term (2012 onward)

- host design sessions in selected deltas during annual Delta Alliance and World Estuary Alliance event, which include practitioners and experts from deltas around the world

5. and providing assistance for improved resilience.

Short Term (2010 – 2012)

- create international Delta Response Team to provide rapid support when damaging events occur
- attract funding and invest in projects that contribute to improved resilience in deltas
- co-create innovative projects with partner organizations, funding agencies, governmental and non-governmental organizations, private sector and/or research and policy programs
- strengthen the international delta network in exchanging information and expertise resources in and between deltas worldwide
- create Young Delta Alliance to support the Resilience Working Group and Delta Response Team

Long Term (2012 onward)

- prepare “guidelines” for delta management and response
- host courses on delta management and response

4. Delta Alliance Declaration

Working principles for Delta Alliance were discussed in a strategy session in Shanghai, June 2010, and the many comments have been used to create the Delta Alliance Declaration. Members and ‘ambassadors’ of the Delta Alliance network will sign the Delta Alliance Declaration. This declaration in combination with the Delta Alliance resilience strategy will be also the guideline for the activities to be undertaken by Delta Alliance.

Delta Alliance Declaration

Whereas:

- Delta Alliance has the mission to improve the resilience of deltas worldwide;
- deltas are highly valuable and vulnerable locations; and
- economic, ecological, and social resilience are interdependent and essential for overall resilience;

The members of Delta Alliance will together develop and share knowledge to:

- envision resilient deltas
- measure, monitor and report resilience in deltas; and
- provide inspiration and support for improved resilience in deltas

In pursuing these goals, the members of Delta Alliance will strive to:

- share knowledge, expertise and best practices between deltas worldwide;
- co-create and integrate knowledge across deltas, sectors and disciplines;
- connect expertise and parties from throughout the watershed;
- incorporate local knowledge in research and knowledge-building activities; and
- provide knowledge and insight to support any use, including education, policy development, investments and disaster response.

5. Milestones and Objectives

Milestones

Objectives are focused on three milestones in the development of Delta Alliance:

1. **Shanghai World Expo, June 2010** - The World Estuary Alliance (WEA), a partner initiative of Delta Alliance, was announced at a conference organized by WWF. Delta Alliance was co-organiser of this Conference and hosted a strategy session with representatives from California, Indonesia, The Netherlands, Vietnam, China, Louisiana, and the Ukraine to create a mandate for the development of Delta Alliance.
2. **Rotterdam Deltas in Times of Climate Change Conference, Sep – Oct 2010** – The launch of Delta Alliance will be celebrated with representatives of amongst others California, Indonesia, The Netherlands, Vietnam and Bangladesh, and the 2010 - 2012 work plan for Delta Alliance will be approved. This conference is co-organized by Knowledge for Climate and the City of Rotterdam.
3. **End of Knowledge for Climate (KfC) Programme, Dec 2013** – By the time the KfC programme ends Delta Alliance will be fully funded and governed by other institutions.

Objectives

Fulfilled by the end of Shanghai Expo, June 2010

1. Confirm and refine the definition, objectives and strategy of Delta Alliance with partners in founding delta regions

To be fulfilled by the end of Rotterdam Conference, October 2010

2. Prepare a smart 2010 - 2012 work plan for implementing the Delta Alliance Resilience Strategy with the Advisory Board and key partners
3. Create an international governance structure for Delta Alliance
4. Initiate an international partnership with World Estuary Alliance
5. Secure written support for Delta Alliance in the form of signees to the Delta Alliance Declaration
6. Preliminary results from the Delta Comparative Overview led by the Dutch Wing, as a first step to monitoring and measuring resilience in select deltas

7. Create strategy for identifying long-term funding for Delta Alliance operations and activities
8. Publically launch the online information platform

To be fulfilled by the end of the KfC Programme, 2013

9. Create a Resilience Framework
10. Contribute to Delta Visions for a number of deltas
11. Co- organise annual Delta Alliance and World Estuary Alliance Conferences
12. Publish the first annual Delta Report Card
13. Create Young Delta Alliance
14. Execute initial Delta Alliance projects
15. Secure structural funding for the continuation of Delta Alliance
16. Implement an international governance structure

6. Strategy Components

Initial Focus Delta Regions

Partners in a select number of deltas will initially be involved in developing the network. Once the network is operational the intention is to broaden the scope of activities and governance to include additional delta regions. Selection of the initial Focus Delta Regions was based on the review performed in the exploration for the KfC International Hotspots. Focus Delta Regions share critical issues with other deltas in the network and also span the issues that are most important to delta regions worldwide.

1. Preliminary Focus Delta Regions are **California, Indonesia, Vietnam and The Netherlands**. These locations each have a representative on the Delta Alliance Advisory Board who also acts as regional coordinator for the network.
2. The locations where contacts have been made and communication initiated are: **Bangladesh, Brazil, China, Egypt and Louisiana**. Partners in these and possibly other delta locations will be invited to participate in Delta Alliance activities in 2010 – 2012.

Mandate Development

During initial outreach to parties in California, Indonesia, The Netherlands, Vietnam and Bangladesh people and organisations expressed much interest in the idea of being involved in an international delta network. A successful network must be designed and built by the network members themselves. For this reason a three-step process is being carried out to develop the Delta Alliance network with partners in each of the four focus deltas.

- 1) **Scoping workshops** will be held and **online questionnaires** distributed in focus delta regions to get input from parties on what they want to get from Delta Alliance, and what they are willing to contribute. Scoping workshops will be held in the focus delta regions in April – August 2010. Efforts will be made to reach representatives from all major stakeholder groups in the regions.
- 2) A **strategy session** in Shanghai (June 2010) brought together the initial scoping workshop and questionnaire outputs to define the objectives and strategy for developing the international network. Participants included members of the international Advisory Board, interested parties from other delta regions, and the international secretariat. The output from this session was then finalized in a meeting with the Advisory Board in Wageningen.
- 3) A **planning session** in Rotterdam (October 2010) will operationalize the strategy and set an action plan for Delta Alliance for 2011 and 2012. Participants will include the international Advisory Board and Wing coordinators, and international secretariat.

Online Information Platform

Delta Alliance has a website (www.delta-alliance.org) through which information on the network and its activities is shared. The website is maintained by the Delta Alliance secretariat and is information-giving only. To support interactions and knowledge exchange within an active international delta network, Delta Alliance is developing an interactive online platform in cooperation with the World Estuary Alliance. The aim is to create *the* go-to site for people seeking information, persons, projects or organizations active in deltas, through links to relevant sites and a database that is populated by website users (specialists, organizations and project managers involved in delta and estuary management around the globe). The information platform should not duplicate existing databases. Objectives for the platform are to:

- Provide information on delta and estuary regions worldwide;
- Profile active organizations, projects and research in delta and estuary regions; and
- Announce and report on events that support information exchange and collaboration across sectors, disciplines, and delta and estuary regions.

The site URL is www.delta-zones.com. The platform was announced in Shanghai, June 2010, and will be publically presented in Rotterdam at the Delta Alliance launch celebration.

Organizational Structure

The development of the international Delta Alliance is currently managed by a small project team at Alterra / WUR in Wageningen, The Netherlands. Delta Alliance will become a registered organization (foundation), and a proposal for the organizational set-up of Delta Alliance including stepping stones will be prepared and discussed in Rotterdam in September 2010 with the Advisory Board. Figure 6.1 shows a potential set up for the Delta Alliance organizational structure. Components of the organizational structure may include:

1. **Network Members** - individuals and organizations from across sectors will sign up as Delta Alliance members by signing the Delta Alliance Declaration and will lead and

contribute to Delta Alliance activities. Communities of practice may be developed within the membership. A policy for attracting and securing network membership must be developed;

2. Scientific Panel – in partnership with the World Estuary Alliance, providing input for Delta Alliance and World Estuary Alliance activities ;
3. Advisory Board and Wing Coordinators – providing recommendations on network development and coordinating the regional Wing;
4. International Secretariat – managing daily operations to support the network;
5. Governing Board – determining strategy for network development.

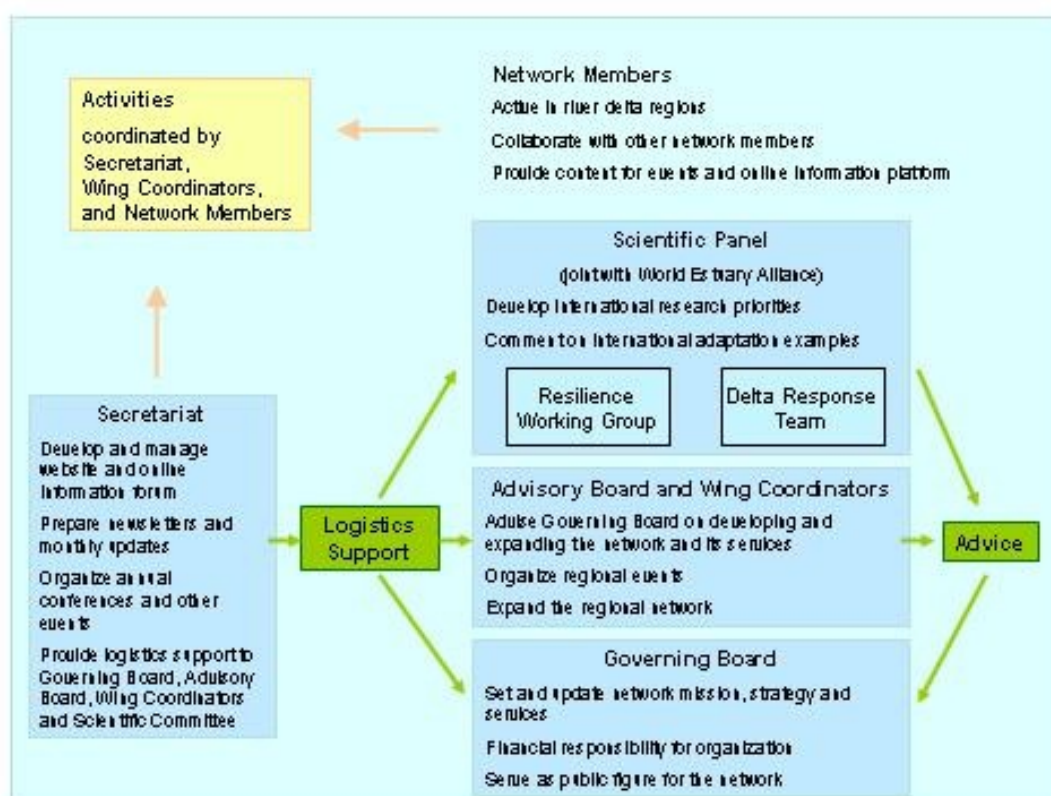


Figure 6.1: Potential Delta Alliance Organizational Structure

Table 6.1: Wing Coordinators and Host Organizations

Wing	Wing Coordinator and Advisory Board Member	Wing Host Organization
California	Peter Wijsman, Arcadis (Interim)	Bay Conservation and Development Commission and Delta Stewardship Council (proposed)
Indonesia	Prof. Jan Sopaheluwakan, LIPI	BAKOSURTANAL – national mapping agency
Netherlands	Dr. Cees van de Guchte, Deltares	Deltares

Vietnam	Prof. Le Quang Minh, Vietnam National University Ho Chi Minh City	To be determined
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Network Wing Development

In each location a Wing Coordinator has been identified who is leading the organization of the scoping workshop, making initial outreach to potential network members in that Wing location, and serving on the Delta Alliance Advisory Board. Additionally, a Host Organization has been identified for three of the wings, which will provide support to the Wing Coordinator and may rotate between member organizations in a network Wing (see Table 6.1). The tasks of the Wing Coordinator include: (i) operationalising the Delta Alliance Resilience Strategy with activities in their Wing; (ii) exploring the possibilities for cooperation with other deltas; (iii) attracting Wing members from a broad range of sectors; and (v) defining an organizational set up of the Wing.

Cooperation Agreements

To build support for Delta Alliance high-level representatives from across sectors will be invited to sign the Delta Alliance Declaration in Rotterdam during the Delta Alliance launch celebration. To ensure long-term financial and structural support for Delta Alliance cooperation agreements will be sought with representatives of international organizations.

Building the Network and Events

The Delta Alliance network is being built through numerous activities, including hosting and representing Delta Alliance at relevant events.

Hosting Events

Delta Alliance is hosting or co-hosting events that bring together individuals and organizations active in delta regions. Delta Alliance is largely organizing events in conjunction with existing events to benefit from relevant groups coming together and minimize travel time and carbon footprint.

The first annual World Estuary Alliance Conference was held in Shanghai in June 2010 and co-organized by Delta Alliance. This was the promising start of a joint Annual Delta Alliance and World Estuary Conferences, alternately hosted by Delta Alliance and World Estuary Alliance. Delta Alliance will host the Conference in 2011. The annual conferences will include design sessions focused on the delta location of the event.

Workshops and courses that bring together parties from multiple deltas and focus on specific issues of interest in delta regions will be organized to build the network and

contribute to providing inspiration and assistance for improved resilience in deltas. As a first example, Delta Alliance supported expertise exchange through the International Workshop on 'Methods and tools for water-related adaptation to climate change and climate proofing', held 8-9 March 2010 in Bandung, Indonesia. The workshop was co-organized with numerous regional and international organizations. Workshops and dialogue sessions will likely be organized by Delta Alliance in the future as a means of contributing to capacity building and implementing the Delta Alliance Resilience Strategy. Partnering with additional organizations to organize and fund the workshops will be a specific focus.

Delta Alliance has hosted or co-hosted the following events:

Symposium: California and The Netherlands - A New Alliance for Climate Adaptation San Francisco, September 2009. Co-organized with Arcadis, the Bay Conservation and Development Commission, The Netherlands Consulate, Alterra / WUR, Deltares, Fugro, and the American Institute of Architects.

Workshop: Methods and tools for water-related adaptation to climate change and climate proofing - Bandung, Indonesia, March 2010. Co-organized with The Cooperative Programme on Water and Climate, Deltares, PusAir, Unesco-IHE, KNMI, BMKG, LIPI, and UNDP.

Visit of High Level Vietnam Delegation to Zeeland and The Hague, April 2010. Co-organized with LNV as part of a larger mission of the delegation to The Netherlands organized by VenW.

Delta Alliance Netherlands Wing Workshop – Rotterdam, April 2010

1st Annual World Estuary Alliance Conference - Shanghai, June 2010. Co-organized with the World Estuary Alliance.

Delta Alliance Vietnam Wing Workshop – Ho Chi Minh City, July 2010

Delta Alliance Indonesia Wing Workshop – Jakarta, August 2010

Delta Alliance Brazil Exploratory Workshop – Brasilia, August 2010

Delta Alliance already has plans to host or co-host the following events:

Sessions of the Deltas in Times of Climate Change Conference - Rotterdam, Sep-Oct 2010. The conference is organized by Knowledge for Climate and the City of Rotterdam.

Indonesia Delta Forum 2010 – Semarang, Central Java – Indonesia, October 2010. Co-organized with Bakosurtanal (National Coordinating Agency for Surveys and Mapping

of Indonesia), University of Diponegoro, PUSPICS, University of Gadjah Mada, and International Center for Interdisciplinary and Advanced Research (ICIAR-LIPI).

Delta Summit, Jakarta, November 2011. This conference could act as the yearly joint Delta Alliance and World Estuary Alliance Conference 2011.

Attending Events

To build the international delta network Delta Alliance has been and will be presented at international events of relevance to deltas and climate change. During these events the objective is to broaden the network through:

- informing people about the Delta Alliance network;
- gathering contact details and information about existing delta-related initiatives; and
- identifying individuals to take part in Delta Alliance activities and help broaden the network.

Delta Alliance members have been or will be actively representing Delta Alliance at the following events and missions:

Missions of The Netherlands Government to develop and implement Water Mondiaal (description in section on Partner Cooperation Initiatives) - Vietnam, October 2009 and March 2010 to support the development of a Delta Plan for the Mekong Delta

Combined Delta Alliance and Water Mondiaal mission - Bangladesh, June 2010 to explore the opportunities for knowledge-to-knowledge cooperation.

Scoping Workshop for DELTAS2010 - Washington, November 2009

UNFCCC Climate Change Negotiations - Copenhagen, December 2009

American Planning Association Meeting on Delta Urbanism, and Dutch Dialogues III - New Orleans, April 2010

Day of the Deltas International Water Conference – Amsterdam, August 2010.

DELTAS2010 Event - New Orleans, October 2010

Student DeltaCompetition 2010 and Young Delta Alliance

To involve students and young professionals in the work of Delta Alliance a student DeltaCompetition is being hosted in 2010 and a Young Delta Alliance will be initiated.

The DeltaCompetition 2010 is jointly organized by Delta Alliance, Royal Haskoning and the City of Rotterdam. It builds upon the success of the 2006 and 2008 DeltaCompetitions hosted by Royal Haskoning. The event will serve to support the work of exceptional students, encourage interdisciplinary and innovative solutions for problems in delta regions, raise

awareness of the emerging Delta Alliance network, and serve as a recruiting opportunity for Royal Haskoning and Young Delta Alliance.

Young Delta Alliance should involve students and young professionals in the activities of Delta Alliance, specifically in supporting the Resilience Working Group and the Delta Response Team of the Scientific Panel. This is to be developed in the first years of Delta Alliance.

Partner Cooperation Initiatives

To implement the Delta Alliance Resilience Strategy Delta Alliance must work closely with the many initiatives that are already contributing to the development, integration, and exchange of knowledge related to deltas. During scoping activities a number of relevant initiatives have been identified, including delta-specific international cooperation initiatives, and cooperation initiatives relevant to but not focused on deltas.

No other network initiatives have been identified that support international cooperation between river deltas and are focused on delta regions as a whole and on an integration of knowledge across sectors. This is a niche for Delta Alliance.

Delta Alliance will continue to seek and actively partner with other initiatives that share common objectives with Delta Alliance, to avoid duplication of activities and achieve a larger impact from activities undertaken.

Delta-specific cooperation initiatives

A number of initiatives exist that are encouraging and facilitating cooperation between river delta regions internationally, yet are distinct in their scope and approach. The initiatives that we are aware of and our partnership with them to date are as follows:

- **Knowledge for Climate (KfC) and Climate for Spatial Planning** – Dutch research programmes for the development of knowledge and services that make it possible to assess investments to be made in spatial planning and infrastructure over the coming twenty years in terms of their resistance to climate change, and for making changes where necessary. Governmental organizations and businesses actively participate in research programming through the input of additional resources. KfC is the main initiator and provides the initial funding for Delta Alliance. It is envisioned that Delta Alliance strives for direct connections between its international Wings and the regional hotspots and research themes of KfC.
- **Water Mondiaal** - the Dutch National Water Plan international chapter focuses on five priority delta countries and aims at establishing long-term strategic relationships between the Netherlands and Indonesia, Egypt, Vietnam, Mozambique, and Bangladesh. Water Mondiaal includes three main focuses: Governance to Governance (G2G), Knowledge to Knowledge (K2K) and Business to Business (B2B) - it is envisioned that Delta Alliance members will play an important role in the development of the K2K agenda of Water Mondiaal. In September and October

2010 negotiations will take place between Delta Alliance and Water Mondiaal on possible cooperation.

- **World Estuary Alliance** – a WWF initiative that aims to raise awareness of the economic and ecological value of healthy estuaries and to stimulate exchange of knowledge and implementation of best practices. The growing network includes representatives from NGOs, business, science and policy makers. The WEA is currently based in Shanghai. Delta Alliance has co-developed an online information platform with World Estuary Alliance, and the two initiatives will share annual conferences and a Scientific Panel and will partner in envisaged activities such as the regular publication of Delta Report Cards. A possible merge with World Estuary Alliance has been discussed during the Shanghai strategy session, but it was agreed that for the time being the two would continue in parallel to benefit from where their networks and objectives are unique
- **Connecting Delta Cities** – an initiative that serves under the umbrella of the C40 with a secretariat located in Rotterdam. A network that connects delta and coastal cities at the forefront of climate change adaptation, it aims to exchange knowledge, share best practices and operate as a showcase. Delta Alliance and World Estuary Alliance are cooperating with Connecting Delta Cities through shared communication materials, cooperation on select events, and assisting in developing networks in common regions.
- **Aquaterra** – an international conference and exhibition on development in coastal and delta regions hosted in The Netherlands every 2 years with the first forum in 2007 - the next edition of Aquaterra will be in 2011. The Comparative Overview of Delta Issues project planned in 2010 will build on the results of Aquaterra 2009.
- **DRAGON** - an international community of practice to share data on the great deltas and rivers of the world and to develop comparative models and visualization tools in order to facilitate ecological forecasting regarding climate change and development that ultimately helps in guiding decision making. Delta Alliance has good contacts with the initiator of DRAGON and will explore the possible role of DRAGON in the monitoring of the resilience of deltas. Outside the US DRAGON is mainly focusing on the Mekong delta in Vietnam.
- **Dutch Dialogues** – three Dutch Dialogue design sessions have been held in New Orleans, bringing together Dutch and Louisiana engineers, urban designers, landscape architects, city planners and soils/hydrology experts to tackle water safety and amenity in New Orleans. Delta Alliance took part in the most recent dialogue in April 2010 and will be involved in future Dialogues in case of any continuation.
- **Delta Dialogues** – dialogues run by Royal Haskoning in deltas around the world. Delta Alliance has participated in some of these dialogues in the past. Delta Alliance will discuss with Royal Haskoning in any future follow up of the Delta Dialogues.
- **DELTAS2010** – an invitation-only, hands-on conference focused on designing sustainable development, restoration and protection scenarios for world deltaic regions - being held in New Orleans October 2010, Delta Alliance is actively participating in this conference, the Delta Alliance launch officer will act as a charette leader for one of the sessions.

- **American Planning Association** – a Delta Urbanism Symposium was included in the 2010 National Planning Conference in New Orleans and will be included in their national conferences in Boston in 2011 and in Los Angeles in 2012. Their larger effort to raise awareness and advance research on delta and coastal development includes publications on delta urbanism and international workshops. The American Planning Association (40.000 members) has indicated to become a member of Delta Alliance and is willing to give publicity to the Delta Alliance activities.
- **World Delta Database** - An online database that users can upload information to, with a focus on geological information
- **World Deltas Network** - a data, information, and research support service for deltas, to advance integrated science in the coastal zone, spanning physical, biological, and sociological disciplines. No info/activity since 2005.

Cooperation initiatives relevant to but not focused on deltas

Many international initiatives that are not specific to delta regions are still important players in exchanging information and bringing together parties both in and between delta regions.

The initiatives that we are aware of and our partnership with them to date are as follows:

- **Knowledge Hubs of the Asia-Pacific Water Forum** - a network of regional water knowledge hubs launched in 2008 and supported by the Asian Development Bank (ADB). Each hub is a center of excellence committed to improving water security in the Asia-Pacific region by promoting knowledge sharing and championing feasible solutions for its priority water topic. Together, the hubs collaborate to generate and share knowledge and develop capacity in more than a dozen water knowledge domains. Discussion with ADB is ongoing on the creation of links between the Knowledge Hubs and Delta Alliance.
- **Global Adaptation Network** – UNEP initiative, a multifunctional Global Climate Change Adaptation Network that is being developed for mobilizing the resources of regional centers and ground networks to enhance key scientific, technical and most importantly institutional capacity for adaptation in developing regions. Delta Alliance is in communication with Global Adaptation Network regarding possible collaboration.
- **Netherlands Water Partnership** - a network that unites Dutch water expertise. The partnership, consisting of members from private companies, government, knowledge institutes and NGOs, acts as a centre of information on water expertise, policy developments and market opportunities. It also initiates, coordinates and executes projects for its members, such as trade missions, exhibitions and conferences. NWP is also hosting a Delta Technology Network within The Netherlands. It is expected that many members of NWP will also become member of Delta Alliance through the Netherlands Wing. Delta Alliance could consider to become a strategic partner of NWP.
- **Cooperation Programme on Water and Climate (CPWC)** - aims to stimulate activities in the water sector that contribute to managing the effects of climate variability and change, in particular for the most vulnerable communities. CPWC builds bridges

between water managers and the climate community, from the local up to the global level. Through increasing awareness of the issues and of potential solutions we seek to set in motion social and political processes that will lead to the adoption of coping strategies and best practices. In many aspects and countries Delta Alliance and CPWC are working closely together. A clearer agreement on the division of objectives and activities should be envisioned before the launch of Delta Alliance.

- **Partners for Water** is a programme that aims to strengthen the international position of the Dutch water sector by uniting forces (private sector, public sector, non-profit sector and knowledge institutes). Partners for Water could be a partner for the funding of Delta Alliance initiated projects.
- **Resilience Alliance** - a research organization comprised of scientists and practitioners from many disciplines who collaborate to explore the dynamics of social-ecological systems. The body of knowledge developed by the Resilience Alliance, encompasses key concepts of resilience, adaptability and transformability and provides a foundation for sustainable development policy and practice. Delta Alliance will be in communication with the Resilience Alliance regarding collaboration on developing a resilience framework for deltas.

Communications

To support Delta Alliance activities and build the network the following media are being used:

- Website
 - Information on Delta Alliance network and activities
- E-Newsletters (via email)
 - Information on upcoming and recent events and relevant news
- Brochures
 - Information on Delta Alliance for use at international events
- Online Information Platform
 - Online forum to support network development and information exchange in partnership with World Estuary Alliance

Other communication means that Delta Alliance intends to make use of include:

- Linked-In groups
- Video conferencing

7. Delta Alliance Projects

Next to the development of the network organization a number of projects will be formulated to implement the Delta Alliance Resilience Strategy, with a focus on providing assistance for improved resilience. Delta Alliance projects should also embody the spirit of the Delta Alliance Declaration.

Delta Alliance has designated funding for projects as follows: 100KEUR for a Comparative Delta Overview in 2010, and 660KEUR for projects starting in 2011.

Comparative Overview of Delta Issues

This project will contribute to the Delta Alliance Resilience Strategy in relation to measuring and monitoring resilience in deltas, and serve as the first Delta Alliance project to link member deltas. As a follow-up to earlier overviews on Delta development management and governance (such as Aquaterra), and based upon readily available information, an in-depth inter-delta collaborative desk study will be performed. This study will be executed among some 6-8 selected deltas, addressing socio-economic and natural impacts and adaptive response measures regarding the most affected sectors.

The output of the project will be a concise comparative overview (booklet) of the current and possible future state of selected deltas. Focus will be on existing state, forecasts, and plans for adaptation to changes, taking into account socio-economic as well as physical/natural aspects.

Lessons learned and the need for knowledge exchange on critical issues will be identified, as well as research gaps and opportunities for collaboration between deltas. Current, planned and considered adaptive measures and practical methods and tools for assessments, planning and decision making will be illustrated, based on current practices and innovative technological developments.

The project will be led by Deltares and executed by the partners of the Delta Alliance from the various deltas included in the study, specifically by the partners of the Delta Alliance Wings.

Projects starting in 2011

In Rotterdam a set of criteria and a package of projects demonstrating the types of projects that Delta Alliance would like to support to improve resilience in deltas will be presented. Delta Alliance will seek additional funders to contribute to the ambitious set of proposed projects. Connecting with the work of the Knowledge for Climate National Hotspots will be a priority for these projects. Projects may be chosen to focus on a select number of topics of themes to streamline the initial work of Delta Alliance and respond to areas of greatest priority to partners. During the Shanghai strategy session participants recommended that Delta Alliance focus on projects related to data access & interoperability, risk assessment & ecoservices, planning & design, with overarching attention to governance, implementation, operation & adaptation.

Examples of the types of projects that may be proposed for some aspects of the Delta Alliance Resilience Strategy are shown below.

measuring and monitoring resilience

- Comparative Overview of Delta Issues
- Improving the Adaptation Tipping Point Method (ATP)

- The ATP approach is very useful for assessing the vulnerability of a delta to climate change. But the approach has not been tested on a range of different deltas. Hence the idea is to make the approach more robust by applying it along a range of deltas.
- Risk assessment and modeling
 - Investigation of future application of downscaled regional climate models to study the impacts of both human welfare, economic perspectives and biodiversity preservation in an integrative way, on an estuary and coastal zone. Such models are used in a number of delta regions, and their outputs and effectiveness can be compared to identify what inter-delta cooperation on modeling may be useful. “Climate atlases” such as exist for The Netherlands may be created for other deltas.
- Adaptation policies and strategies
 - Preparing a report and poster that compare adaptation strategies and policies in focus delta regions. This project can be inspired by and build upon a PEER project comparing adaptation strategies in European countries

providing inspiration for improved resilience

- Sea level rise challenges and responses
 - Creation of a book that describes the expected challenges brought by sea level rise in focus river deltas and presenting examples of how these deltas are responding to these issues. Special attention will be paid to the balance of economy and ecology. This project can be inspired by and build upon a project by Deltares, Alterra and Arcadis in the San Francisco Bay.
- New approach to analyzing Governance in deltas
 - Introducing a new frame for multi-actor analysis and design of governance in delta management. Identifying new opportunities for improved governance in delta management. The project will be focused on a selection of deltas and should enable a comparison of existing governance institutions / arrangements for i) spatial planning, ii) resource use and iii) water infrastructure.

providing assistance for improved resilience

- San Francisco Bay Climate Adaptation Pilot – Planning for Sea Level Rise
- Delta Alliance envisions to jointly prepare with funding agencies like the Asian Developing Bank (ADB), the World Bank (WB) or other development agencies a set of comprehensive investment programs that improve the resilience of several Asian deltas. These investment programs could have a focus on different topics and with for instance water management and climate change as crosscutting issues. As examples based on foreseen and ongoing activities of ADB, WB and/or Delta Alliance members the following combinations of deltas and topics could be envisioned:
 - Ganges/Brahmaputra– salt intrusion and fresh water availability
 - Jakarta/Ciliwung – urban flooding / IWRM
 - Mekong – capacity development and/or agriculture
 - Yangtze – nature conservation

The funding mechanisms could indicatively be developed as shown in the table below supposing that Delta Alliance will attract enough core funding to initiate and support such activities. Preferably Delta Alliance members should be involved in all phases of the investment program. A first exploratory discussion on such a joint preparation of investment programs has taken place with the ADB in June 2010.

Project Phase	Funding		
	Type of funding	Delta Alliance	Funding Agency
Fact Finding	grant	50%	50%
Feasibility study	grant	25%	75%
Business case or investment preparation	grant	0%	100%
Investment program/project implementation	loan	0%	100%

8. Funding

The Knowledge for Climate Programme of The Netherlands has provided €1.8 million start-up funding for the Delta Alliance network. Equal co-financing is required for this funding. The budget for the development of Delta Alliance is divided as shown in Table 6.1.

Table 6.1: Overview Delta Alliance budget (in K€)

Activity	Phase 1	Phase2	Phase 3	Total	%
Organizational development	59	124	75	258	14
Networking	82	535	125	742	41
Projects	0	125	660	785	44
Miscellaneous	4	5	7	16	1
Total	145	789	867	1800	100

Co-financing for the €1.8 million will be calculated as a whole, e.g. not requiring 50% co-financing for each item, but 50% co-financing overall.

Co-financing for the Delta Alliance development activities will be partially secured through co-organizing events and projects with partner organizations and through building upon work previously done that contributes towards inter-delta cooperation activities. 50% co-financing will be secured for the entire project budget by the end of the project. During the first phases of the network development it is expected that co-financing will be less than 50%.

Long-term Financing

Long-term financing is critical for the continuation of the Delta Alliance network. A portion of the budget from Knowledge for Climate has been dedicated to supporting the network operations and cooperation projects in 2009-2012.

Knowledge for Climate, being a research programme with a limited lifespan, will not be a long-term financier of the Delta Alliance network. Long-term sponsors and/or income of the network must be confirmed before the financing from KfC comes to an end, and ideally by the time of the official launch of Delta Alliance in Sep-Oct 2010. A detailed strategy for attracting long-term financing for the network will be submitted to KfC after the Rotterdam Conference in September/October.

There are three primary methods for long-term financing of the network operations and activities: membership charges, sponsorship from organizations, and project financing.

Membership Charges

Membership charges may be a more reliable means of continuation financing than donor support. They also confirm that the services being provided by the Delta Alliance network are of value to members. Membership Charges must be formulated in such a way that both organizations and individuals can access the network and its services, and that sufficient income is received to support network activities.

Funding from Donor Organizations

The possibilities for further funding from governmental and non-governmental organizations and international funding institutes will be explored during the development of Delta Alliance, with results presented in December 2010 and at the end of the KfC programme.

Project Financing

Projects that are undertaken in the framework of Delta Alliance will be co-created with and (co-)financed by other partners.

Organizations with an interest in adaptation, and in particular in delta regions, will be invited to sponsor the activities and/or operations of Delta Alliance.



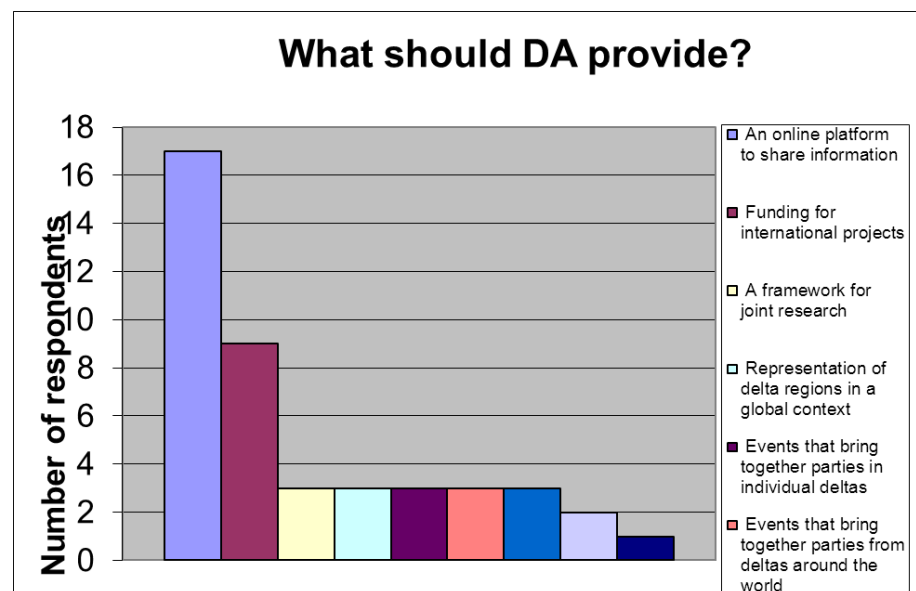
Annex 2 Results questionnaire

The following four tables present the findings of the International Delta Alliance questionnaire which are used during the scoping workshops of the various Wings and during the strategy sessions in Shanghai and Rotterdam. 32 persons from various institutions and nationalities filled in the questionnaire.

Question: What should Delta Alliance provide?

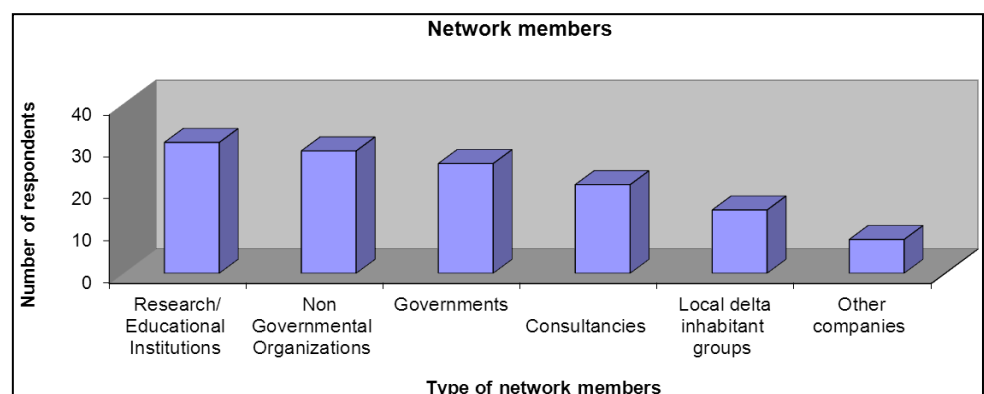
Clearly, most respondents prefer Delta Alliance to provide an online platform. Next to this they expect funding for international projects. Initiations have been undertaken to establish the online platform in the second phase, but due to high financial investments the development is currently on hold. Funding will further be elaborated upon in the third phase.

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Question: What type of network members should be included in Delta Alliance?

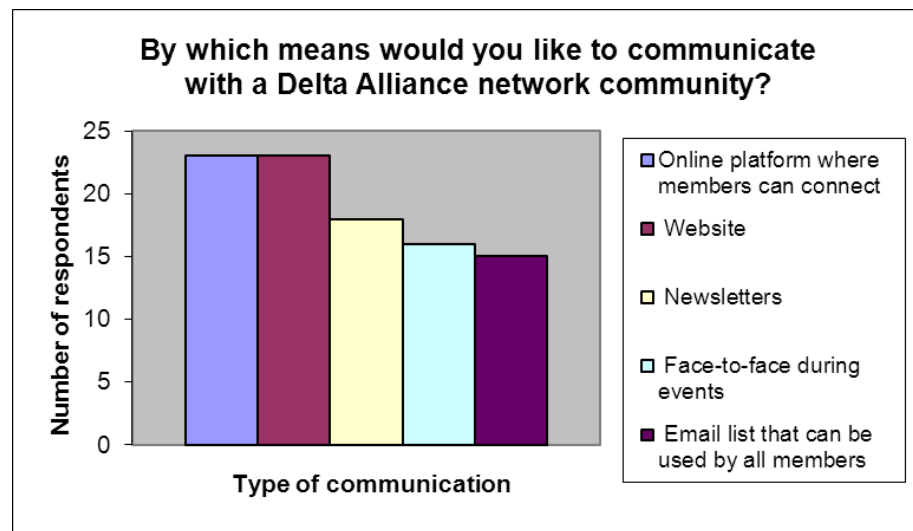
Concerning the type of network members, the responses are quite evenly distributed, with decreasing preferences for respectively research and educational institutes, NGO's, governments, consultancies and local communities.





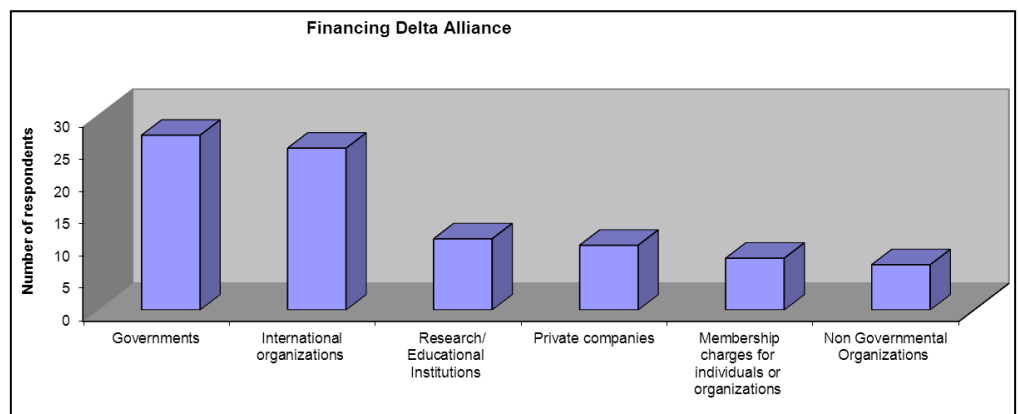
Question: By which means would you like to communicate with a Delta Alliance network community?

The communication tools as indicated in the questionnaire are all perceived as valuable among the respondents. An online platform and website rank the highest. Of all communication tools indicated in the answers, only the email list is not being used in phase 2.



Question: How should Delta Alliance be funded?

Two options are clearly preferred among the respondents: governmental funding and funding by international organizations. These two options are included in the funding ambitions for the third phase of Delta Alliance, as well as funding through membership fees.





Annex 3 Executive summary Comparative overview of deltas

Worldwide, deltas host dense populations and are important centres of agricultural and industrial production, and economic activity. Many deltas are areas of great ecological importance as well, featuring wetlands of high and unique biodiversity.

Deltas are vulnerable to changes by natural forces and human activities. Major drivers of change are population growth, economic development, climate change and subsidence.

Framework for delta assessment

In this collaborative project of the Delta Alliance a framework for delta assessment is proposed, building on the work done for the Aquaterra 2009 conference in Amsterdam and elaborating recent recommendations of the World Estuary Alliance conference (hosted by WWF in Shanghai, June 2010) regarding the development of a worldwide assessment of estuaries by means of 'scorecards'. This framework links the DPSIR approach with a Layer model for a delta, which should be seen as a first step towards a more elaborated framework, to be developed in due time with relevant stakeholders. The integrated approach takes into account the different 'layers' of the delta system and related governance issues. Three physical planning layers are recognized: the *Occupation layer* (land and water use), the *Network layer* (infrastructure), and the *Base layer* (natural resources), each with different but interrelated temporal dynamics and public-private involvement.

The advantage of this approach is that it is sufficiently generic which makes it applicable for all deltas. The framework provides relatively easy linkage with governance issues and with the different actors and agencies involved in delta management.

Pragmatic choice of 10 deltas

The framework is used for describing deltas in a uniform format in order to make a comparative overview and analysis easier. Building on the contacts of the Delta Alliance (and World Estuary Alliance) each delta description is prepared by a Delta Wing Coordinator of the Delta Alliance (or another main contact person), in most cases in cooperation with several (sectoral) experts.

For pragmatic reasons the delta wing coordinators themselves were free to choose the appropriate definition for their delta description, to decide which (sectoral) experts should be involved and to determine the score in the score card. We are confident that this does not significantly influence our overall conclusions, as long as due attention is given to referencing to the area of interest wherever quantitative indicators are used.



The following table gives an overview of the 10 deltas studied:

Continent	Country	Delta	No
Africa	Egypt	Nile	1
	Mozambique	Incomati	2
Asia	Bangladesh	Ganges-Brahmaputra-Meghna	3
	China	Yangtze	4
	Indonesia	Ciliwung	5
	Vietnam	Mekong	6
Europe	Netherlands	Rhine-Meuse	7
	Romania	Danube	8
N-America	USA	California Bay-Delta	9
	USA	Mississippi River Delta	10

This report provides a comprehensive overview of the current and future state of these deltas, based on the delta descriptions. The main items of the delta descriptions are summarized in Appendix A and the full delta descriptions are available in a separate 'Working document' (see <http://www.delta-alliance.org/> or CD on the back cover of this report).

Elements of delta descriptions

For each delta an 'indicative' score card gives an impression of the current and future state of the different layers and governance issues, summarized in an overall Resilience and Sustainability Index. Two scenarios of future change are considered. The rationale of the resilience and sustainability indicator is that sustainable development of a delta depends on a combination of the status of the three layers. Resilience and sustainability is good if the provision of goods and services equals the demand, without deterioration of the base layer.

The scorecards are based on an analysis of drivers of change and pressures on the different layers of each delta and governance issues, based on, as much as possible, quantitative indicators. It is emphasized that in this report first versions of delta score cards are presented, based on above mentioned 'framework for delta assessment'. The score cards need further development and elaboration, which is envisaged in the follow-up of this project.

Moreover for each delta a brief overview is given regarding currently applied adaptive measures and technical methods and tools to support delta management. Also an overview of research gaps and opportunities for collaboration is presented in order to contribute to the development of collaborative research projects across deltas.

The proposed framework for delta assessment and especially the score cards are intended to enhance awareness raising, discussion and prioritization on most relevant delta issues, in each delta but also in comparison with other deltas. This should lead to more efficient and effective (multi-sectoral) policy



formulation, management design and implementation, in concrete Delta plans, pilot-projects and (research) programmes. The target groups are all stakeholders who are involved in delta management at different levels and with different interests (government, private companies, NGOs, public), and who wish to contribute to the resilience of their own delta and other deltas worldwide.

Comparative analysis of delta scorecards

Comparison of the scorecards for the different deltas clearly shows that current overall sustainability is not satisfactory for most of them. Many are in the danger zone (orange), which means that they are very vulnerable to adverse drivers of change. The Ganges-Brahmaputra-Meghna (GBM) and Ciliwung deltas are in a critical state and scores lowest (red), because they have major problems for all layers and also governance has not yet been capable to improve this situation.

For the deltas that are in or beyond the danger zone the reasons for this position differ. The Ciliwung delta, GBM delta and Nile delta are examples of deltas that have to cope with very high land and water demands due to high population pressures, which combined with a moderate (Nile) to inadequate (Ciliwung and GBM) infrastructure lead to significant problems. The California Bay and Mississippi River deltas have moderate land and water pressures, but their major problem lies in the rapid declining nature values (e.g. ongoing wetland loss in Louisiana). Furthermore, their current flood vulnerability in combination with the weak flood protection system results in relatively high flood risks. Also the Incomati combines a moderate land and water pressure with degrading natural resources and an insufficient infrastructure.

Positive exceptions are the Yangtze, Mekong, Rhine-Meuse and Danube deltas. The Rhine-Meuse delta can currently be considered to have a relatively good sustainability, mainly because of the high score for infrastructure, moderate land and water use and relatively good governance. The Danube delta scores positive on the status of all three layers, which is not a surprise considering the very low population density of around 5 inhabitants per km². The Yangtze delta (and maybe the Mekong delta) seem to be in a transition zone: currently the demands on land and water use can be balanced by the infrastructure. But the natural resources are in decline and land and water use are on the rise, which in due time could affect sustainability negatively. (N.B. See section 4.4 for extensive explanation regarding Table A).



Table A: Comparative overview of the score cards of the 10 deltas studied

Current situation	Land and water use (occupation layer)	Infra-structure (network layer)	Natural Resources (base layer)	Gov-ernance	Resilience & Sustainability Indicator		
					Current	Moderate Scenario	Extreme scenario
<i>Nile Delta</i>	--	0	-	0	-	-	--
<i>Incomati</i>	0	-	-	-	-	-	--
<i>GBM Delta</i>	--	--	--	0	--	-	--
<i>Yangtze Delta</i>	-	+	-	0	0	0	--
<i>Ciliwung Delta</i>	--	-	--	-	-	--	-
<i>Mekong Delta</i>	0	0	-	0	0	+	0
<i>Rhine-Meuse Delta</i>	+	++	0	+	+	0	-
<i>Danube</i>	+	+	+	0	+	0	0
<i>California Bay-Delta</i>	0	-	-	0	-	0	-
<i>Mississippi River Delta</i>	0	0	-	0	-	0	-

resilience/sustainability: ++ (very good), + (good), 0 (medium), - (low), -- (very low)

Based on the aggregated scorecards we may conclude that for most of the deltas current resilience and sustainability is not satisfactory. The reasons for this vary from delta to delta, but the following general mechanisms seem to be prevalent (see Table A):

1. An imbalance between demands and supply with regard to land and water use.
2. An inadequate or ageing infrastructure.
3. Disruption of the natural delta processes.
4. Inadequate governance to address problems and implement solutions.

Drivers of change

The most important driver in the deltas studied is climate change, which is expected to have medium to severe impacts in seven out of ten deltas. This involves among others 1) sea level rise, resulting in higher flood risk, salt water intrusion, salinisation and coastal erosion, 2) more extreme weather events, especially in tropical areas and 3) change in distribution and extent of ecosystems/habitats. Often already existing problems in deltas will be exacerbated by the impacts of climate change. In half of the deltas studied



economic development is an important driver with medium to severe impacts on the natural system. In many deltas considerable subsidence is caused by human activities.

Many deltas are heavily affected by developments taking place upstream. For example, new reservoirs may trap sediments that are needed to prevent coastal erosion. Changes in land use and measures in the catchment will influence water and sediment fluxes to the delta (e.g. higher peak discharges because of reduced storage in the basin or loss of discharge due to irrigation). Also, water and sediment quality in the delta is largely influenced by upstream developments. In the envisaged follow-up of this project upstream developments will get more attention.

Governance and comprehensive delta plans

The need to tackle the problems at all physical planning layers poses a major challenge to the governance of a delta. Better interaction between the three layers necessitates a reorientation on the tasks and responsibilities between public and private actors. This new role division may require a change in governance style. Government services, citizens and other stakeholders need to cooperate with respect to integrated (multi-sectoral) policy formulation, management design and implementation, resulting in Delta plans and programmes, and better management upstream.

For a number of deltas the challenge is defining a comprehensive (multi-sectoral) delta plan, i.e., a delta-specific framework for future delta management and development, incorporating a common perception (vision) for all delta stakeholders at national and sub-national levels.

Comprehensive delta plans exist for few deltas. However, there is a growing number of collaboration structures within (and across) deltas, which are needed to develop such plans.

At the level of legal instruments, designed to support sustainable delta management and development, much work still needs to be done for most deltas.

Adaptive measures, methods and tools

Various types of adaptive measures can be proposed to improve resilience and sustainability of deltas. The types distinguished in this study are: technical, ecological, economic and institutional measures. In general the adaptive measures proposed for the deltas studied tend to be technical and ecological, rather than economic or institutional.

The inventory of available methods and tools yielded that there are many delta-specific process models, decision support systems and integrated assessment and management tools. Collaborative efforts in tool development



should focus on adapting existing tools for new situations rather than on developing completely new ones for each delta. Working with common tools will facilitate research collaboration and inter-delta data exchange.

Comparative analysis of research gaps

In Table B an overview is presented of issues for which research gaps have been identified in various deltas. The most prominent field of potential inter-delta research cooperation concerns various base-layer issues, ranging from monitoring and predicting changes, through understanding cause-and-effect relationships and ecosystem functioning, to natural safety and 'building with nature'. As to governance, the major issues identified for cooperation are 'governmental roles and arrangements' and 'integrated delta management'. The most important occupation and network layer issues relate to socio-economic scenarios, freshwater management and treatment, and innovative dikes and dams. In addition, the following general remarks can be made:

1. Recent research on delta issues tends to be problem-oriented and mainly focused on the base-layer. There are opportunities for solution-oriented research following the multi-layer approach used in this study.
2. Common delta research gaps have been identified in this study especially for base-layer issues. However, an integrated approach remains important because of relationships between the different layers and governance issues.
3. Although the problems in deltas may be very specific and need tailor-made solutions, collaborative research across deltas may result in a change of perspective and innovative solutions.

Although new research is necessary, it should be remembered that optimizing the use of existing research results also deserves attention. Inter-delta collaboration is not only a way to reach joint research objectives, but may also facilitate sharing of existing research results for application in management and policy development. An inter-delta supply-and-demand inventory of research results was beyond the scope of this study but could be a fruitful exercise in a follow-up comparative delta study.



Table B: Inventory of issues for which research gaps have been identified in various deltas. Between brackets for each issue the number of deltas for which this issue is identified as a research gap

	Nile	Inco-mati	GBM	Yangtze	Cili-wung	Me-kong	Rhine-Meuse	Danube	Cal. Bay-Delta	Mississippi River Delta
Occupation layer										
Socio-economic scenarios (6)	X	X		X	X			X		X
Water use and treatment (5)	X	X	X		X		X			
Integrated spatial planning (5)	X	X	X		X		X			
Ecosystem services (5)	X			X	X		X	X		
Land-use change modelling (4)	X		X		X				X	
Adaptation to salinisation (2)	X		X							
Network layer										
Freshwater management (7)	X	X	X		X	X	X		X	
Dikes and dams (5)	X		X		X		X		X	
Transport (3)	X	X			X					
Flood forecasting/early warning systems (1)			X							
Base layer										
Effects of changes/ ecosystem functioning (9)	X	X	X	X	X		X	X	X	X
Building with nature and natural safety (8)	X		X	X	X	X	X	X		X
Monitoring changes (7)	X		X	X	X	X	X		X	
Predicting changes (7)	X		X		X	X	X	X	X	
Base-layer data management (3)			X		X					X
Governance										
Governmental roles and arrangements (6)	X				X	X	X		X	X
Integrated delta management (6)	X	X	X	X	X			X		
Communication/capacity building (4)	X	X	X		X					
Financial arrangements (4)			X		X		X		X	
River basin cooperation (2)		X	X							
Policy impact studies (1)					X					

Follow-up in next phase

The combined layer and DPSIR model approach has proven to be useful, workable and practical. However delta comparisons could become more robust if for at least a minimum set of indicators quantitative data is provided and a transparent scoring method is developed (to be elaborated in the follow-up of this project). This set of indicators will necessarily be a compromise between



completeness, practicality and availability. Accepting that the data availability and quality will vary somewhat among the deltas under study, the challenge is to identify the key indicators that provide a maximum of information on delta sustainability with minimum data. In further work on the scorecards scenario details and ranking methods need to be clarified.

In the next phase of the Delta Alliance it is envisaged to support a follow-up of this current comparative overview of deltas. In this research the delta assessment approach will be further developed and more deltas will be involved (a.o. Rhone, Po, Thames, Elbe, ...)

Moreover concrete collaborative research ideas across deltas will be elaborated and better implementation of existing research will be encouraged.



Annex 4 Project portfolio

Table A: Total overview of projects proposed

	Wing	Organization/ person	Project title	Other deltas to be involved	Duration	Total budget	Budget requested from DA	Co-funding organization
1	Mississippi (USA)	University of Louisiana at Lafayette (Robert R. Twilley)	Restoration Manual for the Mississippi River Delta: Prototype for Developing Coastal Sustainability Studios	California Bay Delta; the Netherlands	1 March 2011- 1 Oct 2011	\$ 300,000	\$ 150,000	Studio and Research Center (Mississippi delta)
2	Rhine-Meuse (The Netherlands)	TU-Delft (Han Meyer)	Mapping Urban Deltas	Mississippi delta, Mekong delta, Pearl River delta, Parana delta	1 March 2011- 1 March 2012	€ 80,000	€ 40,000	TU-Delft, Tulane University, Un. Hong Kong, Un. Buenos Aires, Un. Hanoi
3	Yangtze (China)	WWF China (Wenwei Ren)	Wetland wise use and biodiversity conservation in Chinese major deltas	Yellow River delta, Pearl River delta	March 2011- Feb 2014	€ 400,000	€ 200,000	WWF
4	Nile (Egypt)	Nile Research institute, National Water Research Center (Medhat Aziz)	Study of the impacts of increasing inland navigation in the Nile Delta		1 Jan 2011- 1 Jan 2014	€ 100,000	€ 50,000	Inland Navigation Authority (€ 20,000)
5	Nile (Egypt)	Drainage Research Institute, National Water Research Center (Alaa Abdel- Motaleb)	Assessment of the vulnerability of the irrigation and drainage infrastructures to the expected sea level rise and adaptation measures		March 2011- Feb 2013	€ 1,500,000	€ 750,000	
6	Nile (Egypt)	Drainage Research	Assessment of land degradation due to climate change impact		March 2011-	€ 1,200,000	€ 600,000	



		Institute, National Water Research Center (Alaa Abdel- Motaleb)	using RS&GIS in the north of the Nile delta, Egypt		Feb 2013			
7	Ganges- Brahmaputra (Bangladesh)	Institute of Water Modelling (Zahirul Haque Khan)	Impacts of Climate Change on the Morphology of the Coastal Region of Bangladesh, Adaptation Measures and Sustainable Land Reclamation	Ganges- Brahmaputra- Meghna	Nov 2011- Nov 2014	\$ 13,260,000	\$ 6,630,000	World Bank, DANIDA
8	Ganges- Brahmaputra (Bangladesh)	Institute of Water Modelling (Zahirul Haque Khan)	Impact of Climate Change on Water Logging and Proper Adaptation Measures in the Ganges Delta Region of Bangladesh	Ganges- Brahmaputra- Meghna	15 Oct 2011- 15 Oct 2013	BDT 110,000,000	BDT 55,000,000	World Bank, ADB
9	Brazil (Pantanal)	EMBRAPA Pantanal (Carlos Roberto Padovani)	A common decision support system for delta countries		July 2011- July 2013	€ 100,000	€ 50,000	CNPq (Brazil), European Agencies
10	Parana (Argentina)	Centro de Estudios en Gambio Global (Verónica Zagare)	A framework for policy response and adaptation in the Parana Delta (Argentina)		March 2011- March 2014	€ 50,000	€ 25,000	
11	Parana (Argentina)	Instituto Superior de Urbanismo, University of Buenos Aires (Verónica Zagare)	Map of urban and environmental risk in the Parana Delta		July 2010- July 2012	€ 60,000	€ 20,000	University of Buenos Aires (€ 40,000)
12	Parana (Argentina)	TU Delft (Verónica Zagare)	Deltas under changing conditions: planning strategies for urban growth	Rio de la Plata estuarine system,	Sep 2010- Sep 2013	€ 22,000	€ 10,000	University of Buenos Aires, TU Delft, individuals



				Rhine-Meuse-Scheldt delta				
13	California Bay (USA)	ARCADIS US (Peter Wijsman)	San Francisco Bay sub-regional climate change adaptation planning		1 Feb 2011- 31 Dec 2011	\$ 750,000	\$150,000	National Oceanographic and Atmospheric Administration (\$ 100,000), Federal Highway Administration (\$ 300,000), San Francisco Bay Conservation and Development Commission (\$ 200,000), Caltrans (\$ 50,000), Metropolitan Transportation Commission (\$ 50,000)
14	Pantanal (Brazil)	EMBRAPA Pantanal (Débora Calheiros)	Preliminary Evaluation of the Influence of hydroelectric Power Dams in the hydrodynamic and eco-hydrological Functioning of the Rivers that form the Pantanal Wetland in the Upper Paraguay River Basin (Brazil)	Okavango delta	July 2011- July 2013	€ 500,000	€ 250,000	CNPq (Brazil), European Union Agencies (FP 7)
15	Nile (Egypt)	Coastal Research Institute (Ibrahim Abdelmagid Elshinnawy)	Soft Measures for Egypt's Coastal Protection	Mississippi River delta, Rhine- Meuse Delta	1 Aug 2011- 1 Sep 2014		\$ 100,000	GEF financed ICZM project
16	Rhine-Meuse (The Netherlands)	Wageningen University (Maxim Amosov)	Organic village, 100% organic: robust infrastructure	San Francisco Bay and delta, Mississippi delta, Indonesia	1 Jan 2011- 31 Dec 2014	€ 500,000	€ 250,000	
17	Mahakam (Indonesia)	ICIAR-LIPI (Heru Santoso)	Scenario-based Risk Assessment of Integrated Natural and Social Hazards	Bodri Delta (Semarang), Mekong, Rhine-Meuse	1 Jun 2011- 1 Dec 2011	€ 100,000	€ 50,000	LIPI (€50,000), Other Indonesian sponsors (€10,000), Vietnam Nat. University HCMC (€15,000), Other Vietnamese sponsors (€10,000)
18	Rhine-Meuse (The Netherlands)	Wageningen University (Ekko van Ierland)	PhD Hydraulic Changes in Jakarta Urban Area	Ciliwung				



Table B. Proposed projects linked to review criteria

Project title		Criteria (randomly)						
		Inter-delta cooperation	Societal relevance	Scientific quality	Potential for co-financing	Link to KvK themes	Potential for exposure	Link with resilience strategy
1	Restoration Manual for the Mississippi River Delta: Prototype for Developing Coastal Sustainability Studios	Mississippi, California Bay and Rhine-Meuse	Achieve adaptive strategies for drowning deltaic coasts	Involvement of Uni of Louisiana at Lafayette, NSF National Center for Earth Surface Dynamics. System approach by means of 'coastal sustainability studios'.	Studio and Research Center in Mississippi Delta	Water safety at national and regional level, Freshwater supply at national and regional level; Climate-proofing rural areas; Governance of adaptation; Decision support tools	Restoration manuals and Sustainability Studios provide products that can be associated with DA	Achieve sustainable land use planning along deltaic coasts
2	Mapping Urban Deltas	Rhine-Meuse-Scheldt, Mississippi, Mekong, Pearl River, Parana	Layer approach as important method for spatial analysis and planning	Involvement of TU Delft, Tulane Uni, Uni of Hong Kong, Uni of Hanoi, Uni of Buenos Aires; layer approach	TU-Delft (20.000), Tulane (5.000), Uni Hong Kong (5.000), Uni Buenos Aires (5.000), Uni Hanoi (5.000)	Climate-proofing urban areas; Infrastructure and networks	Exposition of maps; Publication; Contribution to debates	The project will focus on the changing relation between the natural system, infrastructures-network and urbanization patterns, and will contribute to the development of a new balance between these three layers
3	Wetland wise use and biodiversity conservation in Chinese major deltas	Yangtze, Yellow river, Pearl river			WWF	Climate-proofing urban areas; Governance of Adaptation, Decision support tools	Exposure of WWF China, WWF Int, WEA through public communication events	Maintain wetlands and restore biodiversity



4	Study of the impacts of increasing inland navigation in the Nile Delta	Nile		Involvement of Nile Research Institute	Inland Navigation Authority (20,000)	Infrastructure and networks		Study the impacts of increasing numbers, size, and weight of navigation units on major channels within Nile delta, and subsequent impact mitigation
5	Assessment of the vulnerability of the irrigation and drainage infrastructures to the expected sea level rise and adaptation measures	Nile		Involvement of Drainage Research Institute and National Water Research Center, Egypt		Climate proof fresh water supply; Infrastructure and networks		Project will assess the resilience of the irrigation and drainage system to the expected sea level rise
6	Assessment of land degradation due to climate change impact using RS&GIS in the north of the Nile delta, Egypt	Nile	The project offers a base for an early warning and better management of the area	Involvement of Drainage Research Institute and National Water Research Center, Egypt. Spatial analysis using remote sensing and GIS		Climate proof fresh water supply; High-quality climate projections;		Assessment and mapping of the land degradation due to CC will improve the resilience of the Nile Delta
7	Impacts of Climate Change on the Morphology of the Coastal Region of Bangladesh, Adaptation Measures and Sustainable Land Reclamation	Ganges-Brahmaputra-Meghna	Devising adaptation measures for climate resilient coastal infrastructure	Involvement of Institute of Water Modeling; Bangladesh Water Development Board; Bangladesh Uni of Engineering technology, DELTARES, DHI.	World Bank, DANIDA	Climate proof fresh water supply; Climate proofing rural areas; Infrastructure and networks; Decision support tools		Adaptation measures will increase the resilience of the delta



8	Impact of Climate Change on Water Logging and Proper Adaptation Measures in the Ganges Delta Region of Bangladesh	Ganges-Brahmaputra-Meghna	Project can increase fisheries and agriculture. River network can be improved and mangrove afforestation can take place.	Involvement of Institute of Water Modeling; Bangladesh Water Development Board; Bangladesh Uni of Engineering technology, DELTARES, DHI.	WB, ADB	Climate proofing rural areas; Fresh water supply at regional level; Decision support tools		Adaptation measures will increase the resilience of the delta
9	A common decision support system for delta countries	All 10 DA deltas		Potential involvement of EMBRAPA, ITC Faculty of Geo-Information Science and Earth Observation, MLURI, Wageningen UR, Harry Oppenheimer Okavango Research Centre	CNPq- V=Brazil, European agencies	Decision support tools; Climate proof flood risk management; Climate adaptation for rural areas	Publishing on various homepages	
10	A framework for policy response and adaptation in the Parana Delta (Argentina)	Parana and other deltas	Set of adaptation planning recommendations for local implementation will be presented	Involvement of Centro de Estudios en Cambio Global		Governance of adaptation		Project will be developed within the CECG as part of a research programme in adaptation to CC in developing countries
11	Map of urban and environmental risk in the Parana Delta	Parana and other deltas		Involvement of Uni of Buenos Aires	Uni of Buenos Aires (40,000)	Decision support tools; Climate proofing urban areas		The objective is to develop potential adaptation measures
12	Deltas under changing conditions: planning strategies for urban growth	Parana , Rhine-Meuse-Scheldt		The project is a PhD thesis that will be developed at TU Delft (mapping urban deltas group) and Uni of Buenos Aires.	Uni of Buenos Aires; TU Delft	Climate proofing urban areas	Outcome is a doctorate thesis, scientific publications and presentations	The project will compare resilience and risks in both deltas



13	San Francisco Bay sub-regional climate change adaptation planning	California; Rhine-Meuse-Scheldt		Involvement of BCDC, UC Berkeley and Stanford Uni, National Oceanographic and Atmospheric Administration; Alterra	BCDC (\$200,000), Metropolitan Transportation Commission (\$50,000), National Oceanographic and Atmospheric Administration (\$100,000); Alterra; federal Highway Administration (\$300,000), Caltrans (\$50,000)	Water safety, Climate proofing urban areas; Infrastructure and networks; Governance of adaptation; Decision support tools		
14	Preliminary Evaluation of the Influence of hydroelectric Power Dams in the hydrodynamic and eco-hydrological Functioning of the Rivers that form the Pantanal Wetland in the Upper Paraguay River Basin (Brazil)	Pantanal; Okavango		Involvement of UNEMAT (Brazil), UFG (Brazil), Wageningen UR, MLURI (Scotland)	CNPq-Brazil, EU agencies	Decision support tools		
15	Soft Measures for Egypt's Coastal Protection	Rhine-Meuse-Scheldt, Mississippi, Nile	The pilot in Egypt can provide the basis for introducing soft measures in many vulnerable and high density deltas	Involvement of Coastal Research Institute (Egypt), Hydraulics Research Institute (Egypt)	GEF financed ICZM project	Climate proof flood risk management; infrastructure and networks		Improved resilience through a combination of hard and soft measures for coastal defence



16	Organic village, 100% organic: robust infrastructure			Involvement of Wageningen UR		Climate proof fresh water supply; Climate adaptation for rural areas; Infrastructure and networks	Media, posters, references in project documents	
17	Scenario-based Risk Assessment of Integrated Natural and Social Hazards	Mahakam, Bodri, Mekong, Eems		Involvement of ICIAR-LIPI, National Agency for Meteorology, Climatology and Geophysics, Diponegoro State Uni (Semarang), Vietnam National University, Alterra. DSPIR framework will be used	LIPI (15.000), Vietnam National University (15.000)	Governance of adaptation; Decision support tools	Mid-term results presented during Delta Summit. Final results presented during a policy brief workshop. Publication in peer-reviewed journal.	Hypothesis is that natural and social hazards can only be prevented if development is based on optimized ecosystem services.
18	PhD Hydraulic Changes in Jakarta Urban Area	Ciliwung		This project results in a PhD dissertation related to PusAir.		Climate proof cities; Infrastructure and networks		



Table C. Project proposals with keywords and linkages to other proposals

	Project title	Keywords	Link with other project proposals
1	Restoration Manual for the Mississippi River Delta: Prototype for Developing Coastal Sustainability Studios	Delta restoration; Coastal Sustainability Studios; Science, Engineering and Regional Planning	3, 15
2	Mapping Urban Deltas	Typology of urbanizing deltas; Comparative analysis; Layer approach	10, 11, 12
3	Wetland wise use and biodiversity conservation in Chinese major deltas	Chinese deltas; wetlands; biodiversity; scorecards; public communication events	1, 15, 17
4	Study of the impacts of increasing inland navigation in the Nile Delta	Inland navigation; navigation units; delta channels; Environmental and Morphological Impacts	
5	Assessment of the vulnerability of the irrigation and drainage infrastructures to the expected sea level rise and adaptation measures	Drainage and irrigation infrastructure; sea level rise; vulnerability	
6	Assessment of land degradation due to climate change impact using RS&GIS in the north of the Nile delta, Egypt	Land degradation; salinity; water logging; erosion; remote sensing	7
7	Impacts of Climate Change on the Morphology of the Coastal Region of Bangladesh, Adaptation Measures and Sustainable Land Reclamation	Erosion; coastal islands; salinity intrusion; fresh water scarcity; biodiversity loss; land reclamation; agriculture	6
8	Impact of Climate Change on Water Logging and Proper Adaptation Measures in the Ganges Delta Region of Bangladesh	Water logging, sea level rise; sustainable adaptive measures; sedimentation; embankment	
9	A common decision support system for delta countries	Inter-delta decision support system; GIS, Hydrological models; land use	
10	A framework for policy response and adaptation in the Parana Delta (Argentina)	Policy responses; adaptation; governance	2
11	Map of urban and environmental risk in the Parana Delta	Land use changes; urban growth; extreme climate events; demographic growth; risk assessment; modeling	2
12	Deltas under changing conditions: planning strategies for urban growth	Planning strategies; metropolitan scale; local scale	2
13	San Francisco Bay sub-regional climate change adaptation planning	Sea level rise; adaptation plans; vulnerability assessment; community level; public participation	



14	Preliminary Evaluation of the Influence of hydroelectric Power Dams in the hydrodynamic and eco-hydrological Functioning of the Rivers that form the Pantanal Wetland in the Upper Paraguay River Basin (Brazil)	Knowledge base for decision-making; impact of dams; water quality; wetlands; inland deltas	
15	Soft Measures for Egypt's Coastal Protection	Soft measures; coastal protection; stakeholder participation; coastal marshes; dunes	1, 3, 17
16	Organic village, 100% organic: robust infrastructure	Closed systems; reuse of waste; cost-benefit analysis	
17	Scenario-based Risk Assessment of Integrated Natural and Social Hazards	Ecosystem services; Natural hazards; Scenario development;	3, 15
18	PhD Hydraulic Changes in Jakarta Urban Area	Hydrological and hydraulical changes; urban areas; change management	



Annex 5 Speech Ms. Tineke Huizinga

Speech by Tineke Huizinga, Minister of the Environment and Spatial Planning, Delta Alliance, Rotterdam, 30 September 2010

Distinguished colleagues, ladies and gentlemen,

Each year images of floods dominate the news. More and more often we see these images several times a year. Sometimes we even find ourselves wading through water.

By now the images are familiar to us all. Large numbers of victims. Long lines of refugees who lack the most basic necessities. People whose lives are in danger or at least made terribly difficult. Enormous damage. And when the floods recede, people cleaning the mud out of their shops and houses.

Many coastal areas are under threat from seasonal storms at sea. Heavy rainfall or melting snow in the mountains makes rivers overflow their banks. In August this year the swollen River Indus made 20 million Pakistanis homeless. Last year, the global risk consultants Maplecroft published a Climate Change Vulnerability Index. The index rates 166 countries on their capacity to manage the risks to society and business posed by droughts, floods, storms, rising sea levels and other natural disasters linked to climate. It also takes account of the impact of these disasters on ecosystems.

The index ranks Somalia, Haiti and Afghanistan as most at risk. Most of Southeast Asia, except for Malaysia and Singapore, is rated as high-risk. Europe, Australia, Japan and North America are all rated low-risk.

Shortages of drinking water in some continents could lead to armed conflict. This is a tragic paradox: water is essential to life, yet it could lead to deadly violence. We have to prevent this from happening.

We have to keep adapting as well as possible to the effects of climate change. In doing so, we need to link water safety and water management to spatial planning.

Knowledge has been gained on these issues all over the world. It will be very useful to share and discuss it with each other here today. Climate change is highly unpredictable and knowledge development is a continual process. It is the scientists' job to inform world leaders as clearly as possible about the



effects of climate change on our physical environment, within the margins of uncertainty about the future.

As you know, in this European delta called the Netherlands we have already gained quite a lot of experience with coastal defences and water management. We have a national water plan called the Delta Programme, with its own Government Commissioner. This plan looks further ahead than the four-year cycle of governments, far into the future. A fund has been created so that the plans will not only exist on paper but also be carried out in practice – no matter what government may be in office. After all, our safety is at stake. As you know, this country is very much at risk from rising sea levels.

As I mentioned earlier, we need to include safety and the adaptations that will be required in an integrated approach to spatial planning. We set great store by the quality of our environment. We have to do a great deal in the Netherlands with relatively little space. And much of the land we have is either low-lying or near major rivers. In the urbanised western Netherlands – the area around our four largest cities, which we call the *Randstad* – we are now looking at integrated approaches to land use.

Can housing be built in areas that are vulnerable to flooding? Can flowers and vegetables be grown in floating greenhouses? Can we combine buffer zones for water with nature conservation? These are key questions for the development of effective land-use policy. And the answer to all three of them is yes. In the Netherlands we are building houses that can float. And in the province of South Holland we are combining greenhouse culture with water storage and creating natural climatic buffer zones, where high water levels can be catered for in combination with nature conservation.

South Holland is an interesting region. It is both the most densely populated and lowest-lying province of the Netherlands. The Port of Rotterdam takes up a lot of its land area. At the same time, the people of South Holland want room for housing and recreation. So if we can manage all these challenges here, it has to be possible in other regions too.

We are transforming part of Rotterdam's immense port area – an area of 1600 hectares close to the city – into a residential and business district. This is a fine example of reusing land that was already built-up.

We are renewing and revitalising urban port areas located outside the dikes, strengthening the city's position as a mainport, and building high-quality homes and offices. And we are making the whole development climate-proof by taking climate adaptation measures as we design the public space in buildings.



We have no intention of keeping our expertise to ourselves; we are glad to share our knowledge with others. For example, the Netherlands is helping Indonesia respond to the collapse of a dam. With our help, the Indonesian authorities are drawing up and implementing a plan to inspect around 200 reservoirs in the Jakarta area.

At the same time, a dredging project has recently been completed in Jakarta. The project's aim was to demonstrate small-scale dredging techniques with extensive community participation. The project started on 1 August 2008; the dredgers have now been turned over to Indonesia, and the training has been completed successfully. Dutch companies and research institutes are also helping Indonesia protect coastal peat areas and low-lying farmland. The aim is to strike a balance between environmental conservation and more efficient agriculture. Here adaptation and mitigation go hand in hand.

In New Orleans, Dutch know-how is helping to build stronger coast defences, using what they call 'the Delta Dike concept'.

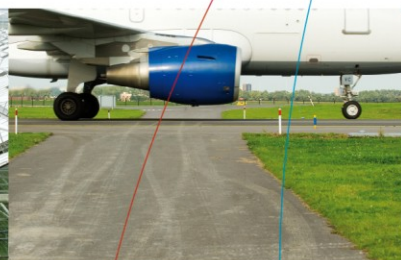
We recently concluded a far-reaching partnership with Vietnam. Our two countries have a great deal in common geographically, so we have much to learn from one another. We are trading lessons learned in the Mekong delta for expertise from the European delta, and vice versa.

With all these national and international projects under way, you can understand why I'm so delighted about extending the knowledge network of delta countries and regions. International cooperation, sharing knowledge, and exchanging ideas about water management and spatial policy are vital for peace, security and prosperity in the world's delta areas. It is our responsibility to see that all this happens. By founding the Delta Alliance, we are proving that we take this task seriously. And we are putting the adaptation agenda into effect.

This global partnership should lead to excellent projects, and to international agreements on climate, trade and biodiversity. Only when the agreements are signed and sealed will we be able to persuade companies and funds to earmark money for our work.

I wish the Delta Alliance every success with its joint projects, and hope that more countries will join us. In view of the ambitions that have been expressed in the past few days, I am confident that the Alliance will grow to be a lasting international partnership, which will carry on as programmes and governments come and go.

Thank you.



To develop the scientific and applied knowledge required for
Climate-proofing the Netherlands and to create a sustainable
Knowledge infrastructure for managing climate change

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