
Pas op!
glad wegdek


Falcon

4 Communication and public involvement

In a transnational project like SDF, there are two different levels of communication. On the one hand, there is communication about the project, i.e. the overall SDF communication strategy, addressing a wider public or experts on different occasions, such as scientific conferences, to spread the message of the SDF project and to discuss the results with other experts. On the other hand, there is the communication with the public and the involvement of stakeholders in planning and implementing the project locally. This kind of communication is discussed in more detail in this chapter.

Floodplains are an integral part of a region and its environment. They have social and economic values and interactions, and they are of importance to the public. Through an active involvement of the public, growing interest, identification with and acceptance of the projects in the region are expected. Regional developers and project manager should be aware that an early involvement of the stakeholders at the project planning stage is as crucial as an involvement in further implementation steps. Even though – or precisely because – the SDF activities are focused on technical implementation and landscape development, communication with the public and residents is vital.

This approach is in line with European policy (e.g. the Water Framework Directive and the EU Flood Directive) that also seeks for public participation in catchment areas.

In the SDF project, communication and public participation were handled as a component of an overriding spatial planning policy. This was based on the idea that water should be regarded as a cross-border resource within the whole catchment and has to be managed by responsible bodies (often public bodies and water boards) and citizens together.

At the start of the project, the cultural differences between Germany and the Netherlands were not considered, but some very basic differences were discernable in the ongoing work. On the German side, the official organisations (such as authorities or water managers in general) have the required experts and know-how for the fulfilment of their technical tasks. Therefore in the past, they often felt qualified to find appropriate technical solutions, and their engineers were convinced that they could develop perfect plans that only needed final public consultation in formal permission procedures. However, those involved should be aware that this expert and responsible culture needs to be overcome and that this may take some time.

In the Netherlands, another culture – the polder culture – developed in the 1990s. The public is used to being involved from a very early stage, especially in water management projects. After all, people are far more used to living with water than in other countries. Public participation and interactive projects are recognised as the best way to deal with conflicting aims. Experiments of the Ministry of Transport, Public Works and Water Management showed that the involvement of strong, influential stakeholders was much more important than involving the general public. However, interactive processes and public participation often result in high costs and sometimes a greater project duration.

In addition to the obligatory legal steps to inform and involve other parties, the SDF partner implemented informal measures of social action and participation in floodplains due to the awareness that improved governance and integrated solutions are required to deal with the complexity of the sustainable development of floodplains. Experiences have shown that additional participation in the project cycle lead to quicker and smoother project implementation. As several target groups, levels, affected people and partners had to be taken into consideration, the SDF pilot projects differed in size, structure, as well as with

respect to the partner's self-image. A wide range of instruments and tools were practised and tested and are presented in the next sub-chapters. The objective is to share experiences gained from the activities and to introduce a mixture of possibilities for additional participation.

Figure 4.1: Public perception in Germany and the Netherlands regarding water issues

Levels of participation	
Participation: allowing influence on the outcome of plans and working processes	
Information:	Lowest level of participation providing access to information and disseminating information actively (often legally required, basis of involvement) by: brochures and newsletters, information meetings, exhibitions, websites, excursions
Consultation:	public can react to government proposals. It is often legally required to publish drafts and to allow the public to comment by: objections/hearings in regional planning and planning approval procedures, advisory work groups, bilateral meetings
Active involvement/ cooperation:	public has a real voice and an opportunity to change and plan actively by: project group, politics, press, workshops, committees of representatives of affected interest groups, municipalities, science, round table, working groups with the authority to decide, polder advisory committee
Public participation	consists of different mechanisms for action. Participation can take place in the following ways: before authorities make decisions by: giving advice, participating in consultations, and promoting projects after decisions are made by: acting in the implementation of such decisions or by controlling their implementation

Step	Style of Governance	Role of Participant	
6	Facilitative	Initiator	*Interactive*
5	Co-operative	Co-operating partner	
4	Delegating	Co-decision maker	
3	Participating	Advisor	
2	Consultative	Consultant	*Not-interactive*
1	Open authoritative	'Target group' of information	
0	Closed authoritative	None	

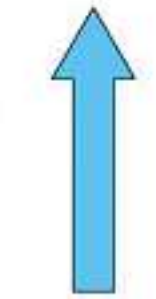


Figure 4.2: Ladder of participation

Box 4.1: Levels of participation

Participation can be differentiated by the people addressed (stakeholders or general public) or by involvement through formal or additional informal instruments. Public participation by informal instruments is explained in detail in chapter 4.1 while the other characters are described in the following paragraphs.

Participation of stakeholders
Stakeholders are important persons, a group of persons, institutionalised organisations or spokespersons who are or can be affected by the activities in the project or have an interest in the project or project area. As already stated, it is of great importance to involve these persons or groups actively in the project processes beyond the level of just providing information.

While planning and implementing the local project, the SDF Partners applied several instruments and gained experiences in the participation process. Advisory and project groups (mostly consisting of stakeholders) were installed as accompanying project councils. To solve certain difficult tasks, it proved wise to discuss matters bilaterally in order to reach stakeholders on a more personal level. This allows a deep insight and better understanding of the project plans compared to instruments such as field visits or workshops.

Participation of the general public
General public is defined as including all non-governmental stakeholders. In densely populated countries like the Netherlands or Germany, proper communication with the general public is an essential precondition for carrying out a project. A plan can be sustainable and can contribute to improving the quality of life in an area only if it is accepted and supported by local people who are very well informed with transparent information.

In the past, there have been both successes and failures with projects in which communication with local people played a crucial role. Effective communication starts by developing good and if possible long-term contacts (continuity). Therefore, the communication should not focus solely on the period up to and including implementation but also the post-implementation period.
It is necessary to gain public confidence and never to damage it. This is easier said than done, and unexpected events can cause public opinion to turn against a project. It is necessary to adopt a public-friendly approach that also ensures the required continuity in public confidence. Decisions must always be explained in a clear and transparent manner, although some information is confidential and cannot be made public. One problem is the working method: the necessary deployment of funds and manpower, continuity as regards contact persons, and the ability to cope with changes. How can the best possible service be provided?

Public involvement in formal procedures
The legal permit procedures in both countries impose the requirements of public participation at different stages of the legal procedure. The Dutch and German planning systems are different. Differences even exist between the German federal states, e.g. due to the responsibilities for flood prevention or spatial planning levels.

Both countries have similar criteria for Environmental Impact Assessments (EIA) (e.g. list of measures based on EU rules where EIAs are obligatory). The differences are in the procedure itself, the time-line (what step comes before and after) and how the public is involved in the procedure (e.g. in the Netherlands anybody may provide input, in Germany only organised public *(TÖB)* and directly affected residents).

The main difference seems to be that in Germany, the *Planfeststellungsverfahren* sums up all potential impacts and relevant rights/rules, leading to a decision by the competent authority *(Bündelungswirkung)*. In the Netherlands following the EIA procedure, the permission process starts with a great many procedures relating to impact on private rights, excavations procedures, law on surface water contamination and many more. Setting up a permission management system is important to keep an eye on the process and to start procedures simultaneously and to work more efficiently. For further and detailed information on public participation in permit procedures in Germany and the Netherlands, please refer to see Annex 2.

4.1 Public communication by informal instruments
The formal participation process is defined by planning legislation and allows only a temporarily limited and restricted influence in the permit procedure. Real influence by the broader public on the development and implementation of the project is limited in most cases, as decisions are still taken on the basis of technological (often hydraulic) reasons and participation is supplementary. For a more democratic and reliable public involvement, project planners seek additional support by implementing further informal participation tools. Through a guided process of transparent knowledge transfer and practical involvement, the voice of residents should be enlarged. A well thought-out participation process from the beginning of a project phase will lead to an increased public commitment and creates a win-win-situation. Furthermore, measures in floodplains cannot be implemented successfully if they do not meet with broad public acceptance and if they are not supported by key stakeholder groups. Therefore, public participation in decision making about future development is fundamental in achieving lasting solutions.

Participation implies a dynamic interactive process. This relies on building trust and confidence that the public will have real influence. The important requirement for successful participation of residents is the access to transparent information that can easily be understood, with gradual updates that reflect ongoing work. In any case, providing information is an important preparatory step for the planning process. In general, the stable involvement of the identified stakeholders during the planning and implementation period by giving clear rules of participation from the beginning is advisable. The use of instruments and their target group should be worked out in a communication plan.
In the case of Hondsbroeksche Pleij, for example, a communication plan was developed which indicated the broad outlines of how communication should take place. Due to the fact that the project is a long term project, a decision was taken to use a dynamic document that could be continually updated. The main message of the Hondsbroeksche Pleij project was emphasising general familiarity with the name and objective of the project and getting people to understand that protection against flooding is not just a foregone conclusion. The attitude adopted for communication focuses on improved, cost-conscious, and predictable services. Account was taken of the needs and wishes of users of the main water system. Products and services will only be promised if they can actually be delivered. The various stakeholders have been considered and efforts have been made to ensure the cooperation of various groups representing the public. Targeted public information programmes in the Westervoort area during planning and preparation of the project have made local people more aware of the river. They have become increasingly aware of the need for proper discharge distribution and room for the rivers.

Informal instruments are used in the SDF activities to boost additional social action and participation processes to respond to the increased demand for involvement of local people in their own environment. Due to different demands of land use and conflicts of interests between the various stakeholders, delays often occur, which alters the planning and implementation of a measure. The delay can result in a loss of confidence and trust with regard to achieving results within a reasonable time frame. The SDF project agreed that a project leader must have and demonstrate a cooperative attitude. For the residents and the authorities, he or she has to have great personal credibility. It is important for the process to be open to unexpected results, as well as a political will to accept unexpected changes. Nevertheless, a time limit for the participation process has to be set, otherwise it drags on for far too long and the stakeholders loose interest.

Without claiming to be complete, the objective of this chapter is to pass on experiences and tools for a suitable and effective informal participation process, by describing experiences and lessons learned from the viewpoint of planners and engineers working on floodplain projects. In the following sub-chapters, the measures taken are introduced and various selected examples will be highlighted to provide an insight into the benefit gained by the SDF partners while using extra communication tools. The following table provides an overview of the communication tools which were additionally embedded by the SDF partners and outlines the cases that are examined more closely in the following sub-chapters.

Chapter	4.1.1 project group and advisory group		4.1.2 informative involvement of the public			4.1.3 workshops		4.1.4 bilateral meetings and field visits		4.1.5 politics and press	
	Tool										
Project	Project group	Advisory group	Information meeting	Newsletter	Website	Exhibition	Workshop	Bilateral	Field visit	Politics	Press
Kirschgartshausen	●		●			●		●	●	●	●
Ingelheim	●		●				●	●	●	●	●
Emscher	●	●	●	●		●	●	●	●	●	
Emmericher Ward	●		●	●	●		●	●			
Bislich-Vahnum	●	●	●	●	●		●	●	●		
Lohrwardt	●		●	●	●	●	●	●	●	●	●
Rijnwaarden	●		●	●				●		●	●
Bemmelse Waard	●		●	●	●	●		●			●
Fortmond	●	●	●	●			●	●	●	●	●
Hondsbroeksche Pleij	●	●	●	●	●	●		●	●	●	●
Lexkesveer	●	●	●	●	●	●		●	●	●	●
Heesseltsche Uiterwaarden	●	●	●	●	●			●		●	●

● measure implemented
● explained in detail in the following chapters

Table 4.1: Applied informal and additional instruments in the SDF project and target groups

4.1.1 Project group and advisory group

In addition to the project team which undertakes the project, the most effective way to integrate authorities and organisations is to implement a project group. Project groups accompany a planning process for a longer period or at various planning stages. The initiative has to be taken by the responsible authority, where the project leader – in coordination with other decision-makers – analyses the associated authorities, which should be invited. The meetings take place when requested by one of the parties, e.g. when first planning steps are complete or when the results of a study are available.

The overall objective for establishing project group is to develop commitment and facilitate decision-making. The participating parties ensure that the policy of their own organisation is successfully embedded in the project. The very positive effect of a project group is the broad political commitment after discussing important planning steps and results of the project, which leads to a harmonised and balanced project. All participating bodies speak with one voice. Since the assigned organisations are the responsible bodies for implementing the project, the project group has a great deal of responsibility for decision making, in which the authority undertaking the project has the lead.

After a stakeholder analysis, the project group or the implementing body may decide to offer/invite an advisory group, which will contribute its specialist knowledge. The objective of engaging an advisory group is to make and remain in contact with stakeholders and to

identify possible difficulties and conflicts of interests while the project is being implemented. The overall aim is the provision of a smooth project process without surprise obstacles. The advisory group is regularly informed about the process of the project. The findings of the advisory group are discussed in the project group where decisions are possible. Consequently, the advisory group has influence, e.g. by providing expertise or by contributing new points regarding the process, but it has no decision-making authority.

The advisory groups may accompany a planning process for a longer period or during various planning steps. This type of group often comprises agricultural organisations and land owners, nature conservation and environmental initiative takers and/or organisations, cultural heritage organisations, private companies and many others. Additional representatives of the above project groups may be involved.

By actively involving these organisations or stakeholders in the project, their interests can be taken into account right from the start of the project and its planning. This means that it is relatively easy to reach a large group of the public within the area. An advisory group is seen as a feedback panel in which not only information about the project is provided, it also receives information from many people and ensures that important issues remain the focus of attention. This benefits the project process and the development of alternatives, finally leading to a better commitment. As a result of this integrated approach, the conflicting interests inside the advisory group can be discussed and taken into account. The members of such a group may also act as ambassadors for the project content.

Motives for implementing a project group may vary. At **Emscher**, the decision to implement a project group was taken on the basis of the fact that one of the two planned floodplains is located on the borders of two cities and involved one sub-regional district, two regional authorities and two state environmental departments. Consequently, the working platform was created at the start of the planning phase, where representatives from the responsible authorities regularly met with the Emschergenossenschaft to discuss interim results and to give advice. An agreed decision of the project group was that the *Bezirksregierung Arnsberg* regional authority should be responsible for the entire permission-granting process.

The *Bezirksregierung Arnsberg* was continuously informed about the public involvement process (initiated informally by the Emschergenossenschaft), making the local discussions and problems transparent and ensuring that all planning steps responded to the people's demands at a very early stage of the project. The entire process led to a new, close and reliable form of cooperation between the Emschergenossenschaft and the competent authorities.

The project group met in four thematic working groups: Flood Protection, Hydraulics and Hydrology, Planning for water bodies and Design. They met several times between December 2003 and November 2004. Persons having overall responsibility from the five bodies involved met at the invitation of the Emschergenossenschaft.

The motivation of the **project group** at **Lexkesveer** was to conclude an agreement on the development of the project area between the participating bodies, which included representatives of three municipalities, two water boards, the Government Service for Land and Water Management *(Dienst Landelijk Gebied)*, the province and *Rijkswaterstaat*. In the end, the group was forced to conclude an agreement. The group handled policy and legislation relating to this project. At the end of the process, the group members had to communicate or report the results to their own organisation and facilitate decision-making by politicians and directors. An overall commitment was targeted.

In other cases, an advisory group was proposed by the project group. While at Emscher, participants indicated during a first information meeting that they were not interested in workshops on nature development, public involvement or technical planning aspects, but

more in continuous public information about the ongoing project. In other pilot projects the proposal was willingly accepted and an advisory group was implemented.

The planning process of the project **Bislich-Vahnum**, for instance, was accompanied by an **advisory group** that consisted of:

- The local cultural heritage club *(Heimatverein)*.
- Fishing commissioners *(Kreisfischereibeauftragte)*.
- Dike administration *(Deichverband)*.
- A private gravel company *(Kiesabbauunternehmen)*.
- The responsible authority for ecology *(LÖBF)*.
- Nature conservation organisations *(Naturschutzverbände)*.
- And landowners.

The group met in advance of important planning decisions as representatives of local stakeholders and initiatives to support the project managers with local identification and acceptance approaches. The advisory group also made site visits (e.g. to the Netherlands).

At **Hondsbroeksche Pleij**, the process was accompanied by an advisory group from the very start of the planning phase. Both the authorities and stakeholder associations (e.g. Westervoort Historical Society, the Westervoort Environmental Group, the various neighbourhood councils, the local business association, etc.) and private individuals were invited to participate. The advisory group was able to have its say and make recommendations in the context of the planning process. This approach made it possible to take explicit account of the wishes and needs of users of the main water system. Once all the plans were adopted via the relevant public consultation procedures – which went smoothly – a liaison group was set up in respect of actual implementation, which consists of users of the main water system, including numerous ex-members of the advisory group. The liaison group receives regular information on the progress of the project and is then asked for its views. This makes it possible to keep constant track of the arrangements made and take account of local residents. This method has increased public satisfaction.

4.1.2 Informative involvement of the public

Ordinary citizens, stakeholders and entrepreneurs want to be informed in detail before (political) decisions that affect them are taken. This demand for information can be accommodated by the project responsible authority by providing information at information events, newsletters or brochures, websites or exhibitions. All these measures have in common that they aim at informing the general public, while not providing any active possibility for participation. The aim of involving the public informatively is to make plans or decisions known and comprehensible to a wide public and thereby promote the project and increase its acceptance. This information can lead to a strong respectful partnership between the involved groups and individuals.

Information events can take place at every stage during the development of a project, either as a unique or a regular event. Openness and balanced discussions are important, and the use of a neutral and accepted chairperson may be helpful. There should be a possibility for additional discussions in smaller groups and an exchange with experts.

Figure 4.3: Impressions – opening ceremony, Emscher

Figure 4.4: Information event at the Emscher project

Information meetings were conducted at **Rijnwaarden, Bemmelse Waard, Fortmond** and **Hondsbroeksche Pleij**. During the information meeting in Bemmelse Waard, various issues could be solved with participants, whereas an appointment was made with other participants to discuss problems bilaterally.

In the Living Rhine NABU project, the completion of the first 600 m of near-natural riverbank on the Lower Rhine was celebrated by a beach party involving local people. As a result of this event on 17 July the project simultaneously participated in the Big Jump, the European River Swimming Day. A beach café, information stands and games served as an invitation to experience the Rhine with its new near-natural riverbank, and to see the river's potential for nature and people in an urban setting. Radio and local television stations were present.

Figure 4.5: Big Jump at Rheinhausen, 17 July 2005

In addition to personal contact, information about the project may be provided by means of printed matter. Consequently, brochures and newsletter were used to convey information to the public in several projects. Experiences of project managers show that people consider printed matter to be more reliable than spoken words in official presentations. On the other hand, the published information of, for instance, interim results needs to be handled very carefully. If the message 'basis discussion' or 'interim result' is intended to be conveyed, printed matter sometimes gives the impression of ready-made solutions. As a result, newsletters/ brochures are interpreted here as interim information to accompany the planning process. It is advisable to avoid printing a glossy folder, but rather to use coloured copies to underline the working process. People should be aware that the information is simple a statement of work in progress and not a final presentation.

Within the **Emscher** project, three eight-page brochures (of about 800 copies each plus a digital PDF version) were printed and distributed to inform political bodies and later, the wider public, of the interim results. Within the **Rijnwaarden** project, newsletters were used in combination with information meetings in the village of Pannerden to provide information about milestones (e.g. for the start of the EIA). Twelve hundred prints were distributed to local residents and parties involved.

Figure 4.6: Brochures Emscher: Transgenerational project - reshaping the Emscher, flood retention along the Emscher

Another tool to inform the public is a website. This may be a unique project website or information on the homepage of the responsible bodies. Internet presentations are easy to access and use, they provide free and extensive information, as well as additional links to support the themes. A disadvantage is mainly the cost factor. To run and develop a website is time consuming, and therefore expensive. Further information to be placed on a site has to be seen by various persons before it appears on the project website. An open source system of websites offers the possibility to place up-to-date information on the site directly from everywhere in the world. The Hondsbroeksche Pleij project website is shown below as an example.

Figure 4.7: Hondsbroeksche Pleij website

Plans, models, surveys or posters can be presented to the public in the form of an exhibition. Exhibitions can be organised within different frameworks and here, too, it is important for the project manager to place the message correctly. Work plans, sketches, simple report documents give the impression of being part of a process, while glossy posters and expensive models create the impression of finalised plans.

An old estate with a beer garden is situated close to the floodplain location at Kirschgartshausen, where information panels and a small brochure with data and project content are displayed.

As a follow-up of the architecture competition for the outlet building at Emscher (see chapter 4.1.3), the winning model and plans were displayed in an exhibition in the local library (Figure 4.8).

Emschergenossenschaft stellt Pläne in der Mengeder Bibliothek aus - Bürger haben Mitsprache

Rückhaltebecken in schlichtem Gewand

Mengede. (sot/PHU) Langsam aber sicher erhalten die beiden Hochwasser-Rückhaltebecken ein Gesicht. Gestern stellte die Emschergenossenschaft das Ergebnis des Werkstattverfahrens aus. Pläne und Modell sind für Bürger in den kommenden zwei Wochen in der Stadtteil-Bibliothek Mengede ausgestellt.

„Viele Ideen für die Gestaltung der Ausgleichswerke hat die Projektarbeit mit sich gebracht", sagt Sabine Brinkmann von der Emschergenossenschaft. Für eine externe sich die 17-köpfige Jury entschieden. Das „Büro für Architektur und Stadt" konnte mit seinem Entwurf für die Becken in Mengede und Lütgendortmund überzeugen.

Technik bleibt unverkleidet

Und der ist im Vergleich zu anderen Vorschlägen eher schlicht als prunkvoll gehalten. Die Ausgleichswerke, deren Schleusen bei Flutgefahr das Wasser zurückhalten, haben unverkleidete und lassen einen Blick auf die Technik zu. Zusammen mit den Überlaufbauwerken werden sie von einer langen Brücke zusammengehalten, die beide Einzelbecken miteinander verbindet. Diese besteht aus einer einfachen Stahlkonstruktion mit Holzbohlenbelag. Anders als bei anderen Vorschlägen, ist die Brücke als Kultur-Bauwerk gedacht.

Am westlichen Brückenkopf schließt sich das Betriebsgebäude an, das in seiner Kubatur eine weit sichtbare Landmarke darstellen soll. Auch hier kommen einfache, aber robuste Materialien zum Einsatz. „In der Tradition der für das Ruhrgebiet typischen Industriearchitektur wird es als Stahlkonstruktion mit Ziegelfassade konstruiert", berichtet Sabine Brinkmann.

Neben den betrieblichen Funktionen soll es zu einem Anlauf- und Informationspunkt für Besucher werden. Im Eingangsbereich des Flachdach-Gebäudes kann sich das Entwurfsteam gut einen gastronomischen Betrieb vorstellen. „Ob es dann kommen wird, steht noch nicht fest. In diesem Punkt sind wir hierbei auf gezielte Meinungen gespannt. Die einen begrüßen die Idee, andere wollen den Treffpunkt in diesem Gebiet nicht fördern", erklärt Sabine Brinkmann.

Im dritten Bauabschnitt schließt hinter dem Becken ein Raum für Abschlussarbeiten für zusätzliche Ausstellungen oder Informationsveranstaltungen an. Das Betriebspersonal sowie die Schulklassen soll sich langsam im 3. und 4. Obergeschoss befinden. Auf dem Dach plant das Entwurfsteam eine Aussichtsterrasse. Für den Standort Lütgendortmund ist ein Gebäude von gleicher Architektur angedacht, dass jedoch nur zwei Geschosse besitzt. Rund um beide Becken wird es ein Wegesystem für Wanderer und Spaziergänger geben.

Bezirksregierung eröffnet Verfahren

Ob der Entwurf so umgesetzt wird, zeigt sich aber erst in den kommenden Wochen, in den nächsten 14 Tagen eröffnet die Bezirksregierung Arnsberg das Planungsverfahren. „In diesen Tagen werden die Pläne im Amthaus Mengede öffentlich gelegt. Dann kann die Öffentlichkeit Einwände und Vorschläge einreichen", so Sabine Brinkmann.

In der Simulation ist das Mengeder Auslaufbauwerk bereits fertig. 2009 soll es dann soweit sein.

INFO

Becken 2009 betriebsbereit

- Die Emschergenossenschaft plant zwei Hochwasser-Rückhaltebecken. Mit ihnen sollen künftig Hochwasserabflüsse auf der Emscher gedrosselt und gespeist werden.
- Das eine wird 33 Hektar umfassen und auf der Grenze von Mengede zu Iden entstehen.
- Das in Lütgendortmund geplante Becken grenzt vorwiegend an das Gut Königsmühle und umfasst 30 Hektar.
- Beide Becken besitzen eine Tiefe von bis zu sechs Metern und sowie ein Stauvolumen von zwei Millionen Kubikmetern.
- Beim Bau werden etwa drei Millionen Kubikmeter Bodenaushub entstehen.
- Der Abtransport soll über Ackerbach-Trasse und Ausbaden erfolgen.
- Beide Becken sollen 2009 in Betrieb gehen.

Figure 4.8: Exhibition of model and plans in the local library (Emscher)

Het *Dijkmagazijn*, a nature information and education centre is located in Bemmel. This centre presents information about the river landscape, especially the Bemmelse Waard. It aims to inform school children, inhabitants of Bemmel and interested tourists. The *Dienst Landelijk Gebied* has been given the opportunity to present the progress of the masterplan here. From time to time, this presentation is brought up to date. Another exhibition took place at Hondsbroeksche Pleij as shown in Figure 4.9 below.

Figure 4.9: Exhibition at Hondsbroeksche Pleij

4.1.3 Workshops

While information meetings focus on the information flow from the competent authority to the general public, the implementation of topic-related workshops focuses on an interaction, i.e. active communication with stakeholders. In the case of this topic, participants at a workshop might have a certain level of decision making. This was the case at a workshop at the Emscher project, where stakeholders decided on the design of the project. In this context, it is very crucial to define a clear goal for the project and to communicate the level of influence of the workshop results.

The initiators of a workshop should therefore establish clear messages regarding targets, structure and schedule to prevent participant frustration due to wrong and or too high expectations. Transparent management structures and continuous reporting are important for the reliability and seriousness of the workshops initiator.

The 'region in consultation' project at Polder Ingelheim provides an example of successful workshops. As part of the regional planning procedure since 1995, residents were able to raise objections to various polder locations in Rhineland-Palatinate at an early stage, which often resulted in protracted planning and approval processes. For this reason, the Rhineland-Palatinate Ministry of the Environment and Forestry set up the Rhine Floodplain Development and Planning – a Region in Consultation model project, with the aim of initiating an open planning and administration culture in the area between Mainz and Bingen. This was based on the fact that dialogue and consensus with the people of the region is a necessary prerequisite for a sustainable spatial planning policy.

The core of the process was the involvement of different interest groups (schools, residents, agriculture, nature conservation, industry, tourism, association, clubs) in numerous planning workshops, where the interested groups had the opportunity to contribute their ideas, knowledge and experiences. They also had the opportunity to reveal faults and conflicts of use, to develop a mission statement together, as well as concepts and strategies for solving problems. For Ingelheim Polder, three key floodplain components *(Jungaue, Heidenfahrt, Alte Sandlach)* were planned and implemented. The close involvement of the farming community made it possible to use land division measures to differentiate land uses and improve the structure in the Rhine wetlands.
The interdisciplinary planning process for Ingelheim Polder took only 18 months. As the main results had already been discussed and agreed within the workshop process, only 18 objections were lodged. It was possible to issue the key planning decision as early as four months after the discussion stage. Finally, only two years had elapsed between the commencement of the planning work and the key planning decision.

With the implementation of the 'mixed in place' (MIP) technique in the Hondsbroeksche Pleij project, the Netherlands got the opportunity to learn more about this technique which is cost-effective and can improve a dike construction without any extra necessary space. Several workshops were organised to exchange the construction technique during execution of the works. Field trips were part of the workshops. A German subcontractor took the opportunity to reveal his knowledge. After completion of the project, experiences will be made available to other projects within the Netherlands.

Another example of what can be achieved within the scope of a workshop is the Emscher decision concerning the design of a local bridge. In 2004, the Emschergenossenschaft gave local people and students the opportunity to decide on the architectonical appearance of a technical building, i.e. the design of a local bridge. As a follow-up activity, a design workshop was held in spring 2006. The public discussion on the design of the floodplain outlet buildings and the landscape appearance was used as an opportunity to five teams of architects, landscape planners, water engineers and artists to develop ideas on architecture and the integration of the buildings. After a first working phase, the interim results were presented to a wider public and discussed at a meeting, where NGOs, politicians, nature conservationists, cultural heritage experts, representatives of local and regional administrations, etc. provided feedback. In the final jury session, a SDF representative from the Netherlands and children from the local primary school were involved in the jury. The whole process was accompanied by intensive media interest from the towns and villages. The results of the workshop were integrated into the permission procedures.

The above workshop on the design of the outlet buildings involved several local interest groups and politicians and not – as normally the case in design workshops – only architects or other experts. A certain amount of jealousy was expected from those who were not part of the jury (especially politicians), but every single person who was interested in the process had the chance to visit an interim meeting. Here, first drafts of the five planning teams were presented for feedback from the public (before the teams worked out the final plans for the jury session four weeks later). In general, the entire process was received very positively. A discussion was launched within the Emschergenossenschaft about new ways of communicating formal planning and permission processes with informal tools. Furthermore, local citizens and politicians felt really responsible and taken seriously as part of the project development, and they now rely far more on the Emschergenossenschaft than they previously did.

4.1.4 Bilateral meetings and field visits

Field visits and bilateral meetings are usually implemented mostly during the project process when difficulties and conflicts of interests occur or are expected to occur. In general, stakeholders and people living in the area are involved. In comparison with instruments which aim only at information flow, these two tools are problem-oriented and a solution has to be defined.

It is not an open participation process, as interaction takes place only with invited persons or persons with whom difficulties occurred.

Bilateral communication with stakeholders affected by the project activities is an important instrument in cases where conflicts are likely to occur or very private interests are at stake. In most cases, the group of participants will be limited in number to facilitate proper discussion of possible difficulties and solutions. In nearly all SDF pilot projects, bilateral talks with special stakeholders took place and project partners rated these talks as a success and as an important instrument. However, they are time consuming and require qualified and experienced project managers. In general, an objective should be established before such meetings to give both sides the idea of having achieved something.

Figure 4.10: Workshop on design at the Emscher project

Field visits may be divided into two general groups: those aimed at presenting the planning location to decision makers, stakeholders or interested groups, and those which are organised to show comparable projects in other regions. In the main, this sub-chapter refers to those field visits that are intended to broaden stakeholder's minds by showing them what comparable projects can be like. The normal daily experience of most people does not consist of construction sites, large scale technical projects and interpreting technical plans, so most people cannot imagine the dimension or meaning of complex water management projects. However, what you see is what you believe!

Despite the outcome of an extended survey and research, inhabitants may fear the measures and their effects. In order to convince stakeholders that potential negative impacts will be avoided, a field visit to a comparable project is an appropriate measure. It also offers the opportunity to talk to local professionals, politicians and the public.

For several reasons, bilateral communication was chosen in the case of some SDF pilot projects instead of or in addition to group meetings. In the SDF project area of Lohrwardt, five landowners with large agricultural fields were involved. In this case, various lakes in the area are used for fishery. Therefore, water quality is important as some houses in Lohrwardt will be removed from the floodplain and rebuilt on higher ground. The topics to be discussed concerned very specific problems. Furthermore, topics such as land acquisition, compensation, land prices and data protection were important. Consequently, bilateral discussions were thought preferable to group discussions. An arrangement was reached concerning the exchange of agricultural fields and financial compensation.

At **Bemmelse Waard**, the bilateral talks with the inhabitants focussed on the following issues. How would the project affect the inhabitants, would the inhabitants agree with the changes, and how could the plans be tailored to their situation. The result was that none of the inhabitants made an official objection to the legal permit procedure.

At **Lexkesveer** and **Heesselt**, the bilateral communication was organised in what were termed kitchen table meetings. These took place at the homes of the inhabitants and stakeholders and were considered a success, because they enabled direct communication between project leaders and stakeholder on specific items.

At Lexkesveer, objections were raised regarding important morphology values, including an old waterway surrounded by valuable willow vegetation, which could not be spared as a new summer dike had to be constructed at this location in order to avoid inundation of agricultural land. A solution was found by holding kitchen table discussions. A solution had to be found outside the project area. The southern border of the project area needed to be relocated 50 m to the south. In this way, the summer dike could be constructed on the new southern border, so the existing values could be spared. In order to implement this solution,

Figure 4.11: Lexkesveer: maintaining old pollard willows leading to greater commitment

additional land was purchased. The province needed to approve the enlargement, as the old project area was defined according to formalised boundaries determined for nature development. As the project area was enlarged, the discharge capacity also had to be enlarged as this area contributed directly to the discharge at the ferry bridge location. In the end, the commitment of the stakeholders was gained and the impact on the project goal was improved.

At Heesselt, kitchen table meetings were also organised to discuss the problems of stakeholders and to see what solutions could be found. Because these meetings had a low profile, people felt free to talk, discuss and ask. This was useful in getting to the point at issue and the plan (after some effort) was eventually adapted. This had the advantage that the quality of the plan improved, the conditions of the permits could be maintained and stakeholders were satisfied. In the end, the required commitment was gained. Direct communication with stakeholders regarding unexpected items resulted in commitment during the participation phase. Consideration should be given to improving and implementing house meetings as a general feature and at an earlier stage in projects.

Another method of direct communication to local stakeholders is organising field visits. One of these was organised at Emscher to give the local politicians, press, project residents, nature conservation and administrative representatives an idea of what the planned floodplain projects will look like. Such a visit in 2004 showed a comparable floodplain in the region, where the attitude towards the planning project started to change from NIMBY ("not in my backyard") to PIMBY ("please in my backyard"). The visitors understood for the first time what the planned retention floodplains would look like. Another excursion in 2005 went to a construction site in Baden-Württemberg, where an outlet building of comparable size was under construction. Here, the opinion of the local mayor and ecologists was vital for decision makers.

Figure 4.12: Example of site visit

At the **Bislich-Vahnum** project field, visits were organised for the advisory group. Excursions were made to several Dutch project locations to gain inform about structures and experiences with other side channels.

4.1.5. Politics and press

During planning and during the implementation process of a project, it is very important to address the political level of the project surrounding and to involve the press as a multiplier of a message. Both politics and press are important to spread the message of the project, to raise public awareness and to evoke general acceptance. In general, the experiences in many projects show that media like to connect abstract planning with personal stories, so directly affected residents or well-known animals are often in the focus of a story told. In Heesselt, for example, a work of art using a typical Dutch cow acted as a synonym for locally adapted landscape development and raised public interest.

Figure 4.13: Work of art in Heesselt: typical Dutch cow

Project managers need to be aware that living images by the press are generally preferred to plain technical information offered by planners.

Overall, it is helpful to be open to public debate and the pros and cons of the project. It will receive more credibility than simply emphasising perfect plans.

Finally, it should be remembered that technical language will not lead to better understanding but often to greater confusion. It is better to keep the message short and simple and offer additional information (e.g. on CD with maps and text) to the press rather than trying to explain everything in full.

At **Emscher**, political bodies were involved. As in large German cities, the sub-districts *(Bezirksvertretungen)* decide on local development. Politicians in the sub-district of Mengede (Dortmund) were very keen to be actively involved in the planning process (even though they were not co-financing), because the Emscher floodplains cover about 2.3% of this area. Consequently, from 2003, the ongoing process was presented several times a year to the politicians in question. As a follow-up, there was intensive reporting by the press. The political discussions were partly carried out at an emotional level and were occasionally time consuming. The benefits of new nature in the city and of flood prevention could be explained at an early stage, but the expected impacts from the construction phase were the main discussion items and worries. Finally, continuity and the credibility of the project managers led to general acceptance, although some doubts remained. The extensive information and discussion process eventually paid off. At the final formal public consultation, the contradictions relating to the Mengede floodplain were cleared up within two hours and those relating to the Ellinghausen floodplain within 22 minutes.

Press-Scans Pros and Cons

The way projects are reported in print depends on the material available to the press. The better the material the press receives (photos, figures, sketches), the more reliable the information that will be published. The aim of the project leader should be to provide information and not let emotions determine the reporting of the project.

Figure 4.14: Examples of positive press

Figure 4.15: Examples of negative press

Lake Lippe: Referendum on a water project

Hamm is a town with about 180,000 inhabitants and is located on the River Lippe. It has a coal mining history and now has urban, natural and social qualities. One of the features of the *Masterplan Hamm an's Wasser*, adopted by the town council in 2001, was a lake of 43 ha with positive impacts on flood prevention downstream. As this was a project with considerable consequences for Hamm's citizens, the Mayor of Hamm decided to hold a referendum. All citizens over the age of 16 who have the official right to vote were asked whether of not they wanted the lake. Referdums are not obligatory in North Rhine–Westphalia, so this decision was an extraordinary example of democratic public participation. On 18 June 2006, 42% of Hamm's inhabitants voted, which was a high turn-out rate. Of these, 57% said 'no' to the lake. This clear decision was endorsed by the town council two days later. For more details of the project, please see the final report of the Interreg IIIB Urban Water project at www.urban-water.org.

Box 4.2: Lake Lippe: Referendum on a water project

Political event

The aim of the meeting on 'Revitalising degraded Rhine riverbanks' held in Mainz in February 2007 was to present the results of the Rhine project and discuss them within the context of the current requirements in political terms and in terms of EU legislation for the development of rivers and waterways. Over 180 participants, including the President of the ICPR, Dr. Holzwarth, a number of representatives of the German Federal Water and Navigation Administration, various levels of the Nature Conservation Administration and other authorities accepted the offer. The three thematic workshops on the second day concerning the various areas of action to revitalise the river were intensively used as forums for the exchange of knowledge and experience which extended beyond the boundaries of responsibility. At the end of the event, a communiqué was defined according to follow-up activities.

Figure 4.16: State Minister Margit Conrad and Hubert Weinzierl, chair of the DBU

Box 4.3: Political event

In **Heesseltsche Uiterwaarden**, modified project goals (target reduction of high water level was modified from 0 cm to 8 cm to 5.5 cm to 19 cm and finally back to 5.5 cm) and the change of accompanying measures resulted in a need for political effort. These changes burdened the communication process with the inhabitants and the public regarding the Heesseltsche Uiterwaarden project. In addition, there was significant distrust of the government dating from the time that the dikes were strengthened. Overcoming this attitude of 'what are they going to do with our fields' was not easy. Furthermore, the above changes in policy were counterproductive. Combined with several changes in project leaders over the years, it resulted in poor communication and a need for an intervention.

In the area of Heesselt, a great deal of effort was required in communication with the inhabitants to remove the distrust that was felt with respect to Rijkswaterstaat. The people involved did not want to study theoretical alternatives, such as presented in the Initial Document of the EIA. They wanted only to talk about a real plan in which they could recognize their own input and values. The compromise plan for the Heesseltsche Uiterwaarden floodplain satisfied their wishes.

Lessons learned: Flood prevention in Cologne

The intensive work on flood damage prevention in Cologne started in the 1990s under the IRMA umbrella and continued in Interreg IIIB in various project partnerships. Public awareness and involvement were what the SDF social action & communication working group was particularly interested in when visiting the *Hochwasserschutzzentrale Köln* in 2005.

A main task of the *Hochwasserschutzzentrale Köln* is to raise awareness among the public ('absolute safety is not possible') and to initiate self-defence at a private level.

- All information about risks is available via Internet in flood maps, showing water levels at different flood events.
- People also receive information about risks behind dikes as seepage, rising groundwater or even bursting dikes or mobile flood defence walls are latent risks for residents.
- Transparency is obligatory for public services to guarantee the functioning of the task forces. People need to know and understand beforehand what police, fire brigades or emergency services do and how they can support them.

The *Hochwasserschutzzentrale Köln* builds up and supports networks to enable residents to help themselves and not to blame public services for everything that happens. For this reason, the Interessengemeinschaft Kölner Altstadt (NGO, local action group of residents who live and work in the historic centre close to the river) is actively involved in emergency plans and political decisions. Partnerships are also created with energy suppliers or engineer consultants to advise and inform house owners how to take precautions.
These partnership approaches are expanding and the *Hochwasserschutzzentrale Köln* is cooperating with other regions along the Rhine and other catchments (e.g. Elbe) to form a network of NGO flood defence communities.

For more information please visit www.hochwasserinfo-koeln.de

Box 4.4: Lessons learned: Flood prevention in Cologne

4.2 Conclusions and lessons learned

The emphasis in this chapter was placed on the use of informal instruments within the public participation processes of the SDF project, as informal instruments really make the difference in such projects. The legal information duties are obligatory and there is almost no difference in these procedures within Europe. The informal instruments are voluntary and therefore depend on the ambition, the initiative and finally the action of responsible actors.

The use of informal instruments, especially in the project preparation phase (such as participation or information events, etc.) depends very much on society in a nation or region. In addition, the style or view of the project leader and the organisation is of equal importance in determining whether and how informal instruments are used, as well as the kind of project and the project location.

The SDF partners experienced that more public participation in project planning and implementation is necessary and brings advantages in addition to the legal stipulated participation processes. But instead of developing new methods, existing communication tools should be applied in a planned and structured communication process.

SDF experiences and recommendations to set up a successful participation process

1. Process preparation: The participation process should be planned and well structured. The steering of the process must be controlled at all times by the initiative taker in order to prevent the risk of new or unforeseen actions that might lead to a delay in the whole process.

2. Communication and division of tasks: Involvement of the public and/or stakeholders means clear communication from the beginning. When working with advisory or project groups, their duties and responsibilities should be defined at first, so that no disappointment or frustration will arise in a later stage. A newly defined name can give identity to the group and might create solidarity amongst the members. Successful planning projects need common aims. These must be identified and discussed within the groups. Keep a focus on local relevant planning activities, otherwise the scope becomes too large and goes beyond the scope of the persons involved. Information transfer to the public should be well balanced but not too technical.

3. Reliability and continuity: The initiative taker needs flexibility, political will and openness to unexpected results and possible consequences or changes within the project. It is very important to speak with one voice (one consistent and reliable contact person) to the public. Project initiators and competent authorities should sell their project and should not to argue in front of the public. A neutral or an objective and reliable chairperson can be helpful in meetings to find constructive and commonly shared goals.

4. Dealing with protest/opposition: The initiative taker should take protest and opposition of the public/stakeholders seriously and should explain how the discussed issues will be further handled. Further discussion and a reassessment of the protest issues will be carried out and the results will be communicated to the public. Politicians and the press always find protest and opposition items most striking. Therefore, the responsible authorities should ensure that the process is effected carefully and try to obtain positive feedback on their engagement. That is the challenge.

5. Monitoring and Evaluation: The public involvement should be continuous to maintain reliance and credibility in the responsible bodies. For further planning projects, it is helpful for the initiative taker during the course of the process to monitor and evaluate the target groups and the interested parties (start/end) and to illustrate their points of view or interests.

Outcome with regard to additional participation

The experiences of the SDF activities, which were implemented against the background of different cultural and administrative history and present day attitudes, encourage the involvement of public participation in planning and implementation processes in floodplain development.

In any case, public participation particularly requires creative solutions and not just business as usual. The decision-makers of an organisation have to acknowledge the need for development of an effective public participation strategy and leave the practical side to the scientific project leaders.

Often there are concerns within organisations that plan and implement floodplain projects that the participation process might be too time and cost consuming. In addition, it is feared that a participation process draws attention to potential problems of the project.

In any case, implementing public participation may influence planning measures in a positive as well as negative way (Table 4.2). Moreover, implementing true or really effective public participation (according to the participation ladder) in floodplain planning projects is still in its infancy. With every step up the ladder, interaction between government and participants becomes more intense.

Positive aspects	Negative aspects
Better acceptance and agreement and reduction of maintenance costs (e.g. vandalism)	Delay in projects/processes
Decrease of costs (e.g. reduction of maintenance costs due to vandalism)	Increase of costs due to unforeseen measures or more expensive materials within the implementation
Knowledge-transfer to public and integration of (local, regional) knowledge	New additional tasks unforeseen at the start
Legitimating projects and removing fear/ protest among the public	Non-satisfaction, disappointment and frustration
Lean approval/assessment processes to prevent contradictions and to choose the best option	Delay/disappointment

Table 4.2: Brief assessment of public participation within the SDF project

The overall experience in the SDF project showed that a well organised public participation decreased the number of objections considerably and resulted in a positive long-term relationship between the public and the responsible authorities. Therefore, the use of informal instruments is certainly wothwile.

5 Land acquisition, tendering procedures and public-private partnerships

Before the implementation of a flood protection project can begin, there are a number of important issues that have to be tackled. Crucial is the landownership in the project area. The public authorities have to acquire the legal right to implement the planned measures in the project area. The purchase of the land by the public authorities is an option. A public-private partnership (PPP) might be another option, depending on the local situation.

The tendering procedure is another aspect to be considered for the implementation of the project. The various contract types for construction works, including the implementation by a public-private partnership, will be discussed in this chapter.

5.1 Before the projects starts: land acquisition for implementation

It is often necessary, especially in the field of flood protection projects, to acquire the legal rights for implementation of planned measurements if the land is not owned by the government. In general, there are two possibilities.

- Particularly if a change of function of a certain area is planned which is incompatible with the private ownership of the property, the public authority must acquire the land before it can actually carry out the measures.
- If feasible and if the present owner of an area cooperates in the implementation of the planned measures and in the management and maintenance, it is not absolutely necessary for the public authority to buy the property (land or buildings). It is, however, important to document the agreed cooperation in a contract. Generally, the measures to be implemented will also result in damage to the owner which will have to be compensated.

As an example, the official approval of plans regulates the marginal conditions under public law in Germany in accordance with which a measure – such as the construction of the Ingelheim Polder flood retention system – can be performed. All private law matters – such as the purchase of land – must be considered separately. This is achieved either in direct contact with the affected parties by the purchase of every required plot of land or by initiation of ground administrative proceedings in the scope of land consolidation proceedings.

The assessed damage to farming as a result of the official approval of the plan must be compensated in Ingelheim by means of land division proceedings.

Therefore, a management consolidation of arable land procedure was initiated after the plan approval procedure. In this respect, management consolidation of arable land means that the German federal state of Rhineland-Palatinate must cover 100% of the cost.

Due to the urgency of the implementation of the flood protection measure for protection of the Middle Rhine Valley, its importance in the European context and the fact that the project was included in the SDF project as part of the Interreg IIIB programme, the immediate transfer of the land was requested and approved. This contributed considerably to the speeding up of the construction start in Ingelheim.

The required volume for flood retention and the approximate size of the area of the two Emscher floodplain projects were known at an early stage of the planning phase. The ownership, ecological structure and construction obstacles very much influenced the decision

regarding the specific project location. Consequently, the shape of the floodplain, especially Mengede floodplain, is rather unusual. The planning approach focused on a common acceptance of the project development in general. In a step-by-step process, the regional spatial plans, the local spatial plans and the technical elaboration were worked out in such a way that the land could be purchased by the *Emschergenossenschaft* voluntarily (without expropriation). This was taken as a basis for the permission-granting process.
Finally, the outline of the floodplain is a compromise that minimises negative ecological impact, respects private land ownership but enables the ecological development of the river as far as possible.

Figure 5.1: Emscher floodplain

In comparison, there are generally different ways to purchase land in the case of public construction works in **the Netherlands.**

- Purchase on a voluntary basis at market value, usually the commercial value as agricultural land. This method is generally applied if there is no urgency to buy the land and no compelling legal need for the public authority to buy the land.
- Purchase on a voluntary basis at the open market value, but with a premium to compensate for the costs the owner will incur to purchase land elsewhere.
- Purchase on a voluntary basis but with full compensation (the capital value, loss of income and other losses). This method is applied in situations where the ultimate legal instrument of expropriation will be used. Expropriation involves two steps.
    - The administrative procedure, which concludes with a decision by the Crown (the highest decision-making body in the Netherlands) establishing precisely which land

is to be expropriated. Negotiations are conducted with the owner during this phase, since the government is obliged to show that it has done everything in its power to reach an amicable settlement with the owner.
  - The judicial procedure, which concludes with a ruling by the court that can be enforced with coercive measures, if necessary.
- Purchase on the basis of a judicial expropriation order. The owner also receives full compensation in this case.

The option of property exchange is frequently employed in the Netherlands. The government purchases land outside the area where the measure has to be implemented and exchanges this land for the land within the area where the measure is to be implemented. The area of land to be exchanged may be small, but it can also be large as in the case of land development projects.

In the project site at **Lexkesveer**, it was discovered that the expropriation act has restricted possibilities. Among others, it provides the possibility of expropriation but only in the case of implementation of safety against floods and not in the case of nature development. Eventually, the planned project had to be adapted as one landowner refused to cooperate. Expropriation was not a solution as the area concerned was planned for nature development.
Additionally, restricted appropriation may involve considerable risks for the project, as the project and its measurements are presented as a whole in the proceedings. The permits applied for are based on an integrated project. An appeal of interested parties against a part of the project is considered an appeal against the entire project. In the Lexkesveer project, the risk of having only scattered parcels remained present during the planning phase and during the preparation of the implementation. The plan had to be adapted to avoid these risks and new permits had to be applied for. This led to a delay of the project implementation.

The experiences gained with land acquisition at the **Hondsbroeksche Pleij** project were somewhat different. In order to relocate the dike and to construct the high-water channel, it was first necessary to acquire the required plots of land. The area concerned includes a composting plant and three houses. In order to create more room for the river, the land could have been acquired by means of compulsory purchase. In any event, this would have been the final option. First, an amicable settlement was explored. The public-oriented approach was successful and the land purchases were settled by mutual agreement. The opportunity to relocate the composting plant was crucial. The relocation of the people living in the area for generations required balanced compensation offers. This all took place under the strict regulations of the regional authorities and taking account of the arguments of environmental organisations. In the end, following intensive communication with the plant and house owners, the environmentalists and the authority, a balanced regional concept could be defined.

Conclusions and lessons learned

The need for land acquisition should be discussed with both private and public partners in order to obtain a supported solution. The following recommendations are made.
- Early contacting: in order to gain public support it is desirable to contact stakeholders at a very early stage of the project. Their wishes and needs can be discussed in order to acquire a supported solution.
- Personal approach: a personal approach to landowners is highly recommended, as project measures may be planned on private property.
- Need for private management: land acquisition should be considered in relation to the need and opportunity for private management after implementation of the project.
- Possibilities for exchange of land: creation of possibilities for land exchange may help considerably in the process of land acquisition.

5.2 Tendering procedure

Normally, the responsible authorities are not able to implement a project without contracting additional companies. This is especially true for construction works in the area owned by the government. Therefore, the authorities are obliged to follow a regulated tendering procedure to contract companies for certain tasks of the project. As experienced within the framework of SDF, there are different procedures along the Rhine for selecting appropriate implementing partners and defining the tasks required.

In the **Netherlands**, there are various types of contracts for construction work. The following types will be discussed:

- Traditional contracts.
- Integrated contracts.
- Public-private partnerships.
- Design and construction contracts.

Traditionally, the most common method is that the principal commissions a consultant to prepare the design and then outsource the work to a contractor. With this type of contract, the risks are divided more evenly between the principal and the contractor than in a regular contract. The principal provides the data from the soil survey to the contractor, which can then interpret them itself and, if necessary, verify them in situ. The contractor can then use the data to draw up its own working plan and make the most appropriate arrangements for selling the soil. The soil is therefore the contractor's responsibility and is not charged per m^3. The principal therefore runs no risk if the sales are disappointing or the quality or quantity of the soil is poorer than expected, nor does it profit from any windfalls.

The contractor can claim additional costs, after approval of the principal, only in the case of predetermined exceptional risks. If the contractor also had to bear those risks, the costs would be incorporated in the contract price, which would make the work too expensive. Consequently, with this method a relatively large project organisation is required to supervise the process and ensure that the final product can be delivered.

Political pressure in the Netherlands has led to a movement to cut back even further on government services. One way of doing this is to delegate tasks relating to the preparation and execution of assignments. The current vogue is to involve the market more in the preparation and execution of projects. One of the options in this context is to use **integrated contracts**, where the drafting of the plans and the execution of the work are more or less carried out by a single contractor. With this type of contract, the principal's task is to formulate the general requirements for the project as a whole and the quality standards that the completed project must meet. If such contracts are put out to tender, it is therefore crucial to be extremely clear and unequivocal when evaluating the offers. Figure 5.1 shows the consequences for the principal and the contractor. In the case of a traditional contract, the specifications are described in precise detail so the contractor has little influence on the ultimate construction. The principal therefore bears the risks associated with the preparation of the specifications. The situation is precisely the opposite with an **integrated contract**. A **public-private partnership (PPP)** is therefore simply a type of integrated contract.

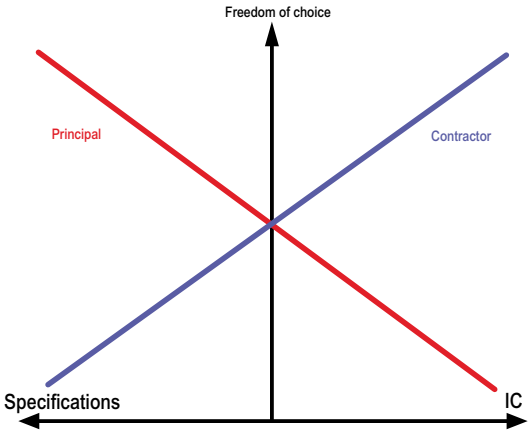
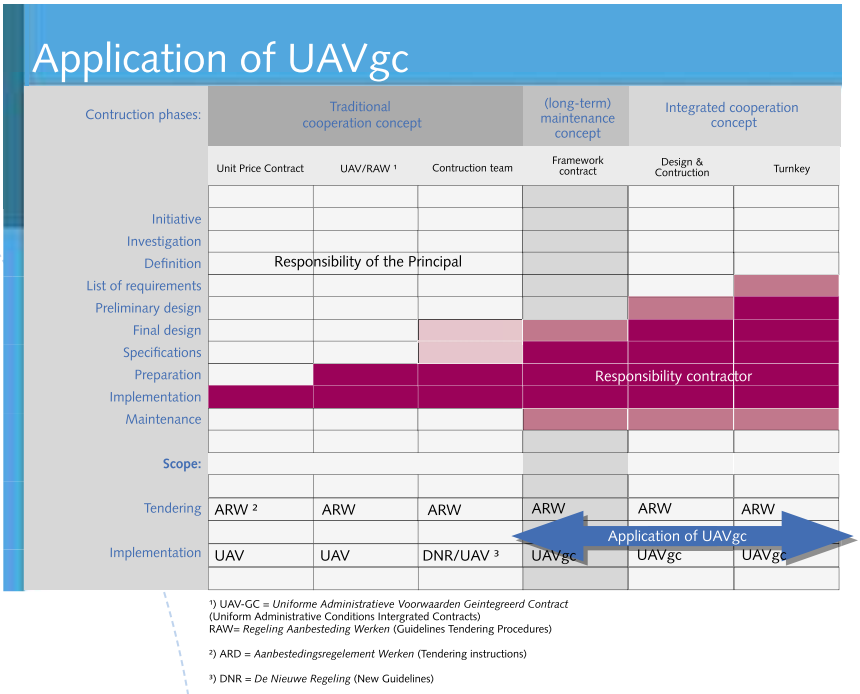


Figure 5.2: Freedom of choice, principal, contractor, specifications, IC (Integrated Contract)

Figure 5.3. shows which type of contract is most suitable at any given point in the course of a project. Yellow indicates the principal's influence/responsibility/risks and orange indicates the contractor's influence/responsibility/risks.



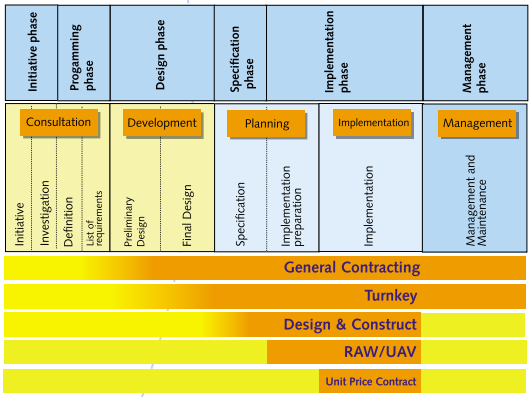


Figure 5.3: Type of contract most suitable at any given point in the course of a project.

The design & construct procedure (D&C) was applied for the tendering of the adjustable weir in the Hondsbroeksche Pleij. This means that the competent authority sets only the conditions and the functional criteria, which apply equally to all parties. The market determines the final design and construction. This principle creates more flexibility on the market, which must finally result in a cost reduction of the implemented work. Rijkswaterstaat awards the contract to the best offer and monitors the implementation of the work.

Advantages of a D&C contract

- The construction industry's know-how, and in particular empirical knowledge which is not documented for commercial reasons, is applied during the design phase of the project. However, this is only true in those instances where it is to the market parties' advantage.
- During the tendering procedure, market actors can carry out their own research and develop smart concepts for the work. Given the competition, the principal can benefit economically from these concepts during the tendering process.
- If the market is capable of executing a D&C contract independently, expertly and with adequate management of the risks, the principal is relieved of the responsibility and it may reduce the need for assessment by the principal.

Disadvantages of a D&C contract

- In view of their commercial interests, market parties are not inclined to share all their know-how with the principal. They will share information only if it is to their advantage to do so. Consequently, the principal may receive a distorted impression of what is actually possible.
- The principal is less closely involved in the actual implementation and knows less about the economic and commercial costs of development, construction and future management. The margin of error in the cost estimates becomes far greater.
- The maximum risk for the contractor is the contract price. The principal bears the remaining risk. That residual risk is often very great in projects involving the construction of primary dams and other water works, especially if a dike bursts, for example. Commercial players still choose to offer the minimum in terms of the margins for quality specified in the contract and to maximise profits.
- There will be no real innovation, which would benefit the principal, as long as commercial players, including suppliers, feel it would hurt their market position.

In general, there are differences in the tendering procedure in Germany in comparison to the Dutch design and contract system.

Functional invitations to bids. Invitations to bid with performance programme are only used in Germany in exceptional cases and after evaluation of the practicability. For example, if only a few construction companies have the know-how for a certain type of structure, such as the construction of large bridges over valleys, and if independent engineering consultants can only partially cover the special knowledge required.

But in most cases – including flood protection – the engineering offices elaborate detailed performance plans and specification texts with regard to a plan approval procedure. For these projects, public tendering is usually effected. This ensures that quality standards and marginal engineering conditions are met. The construction company must calculate each partial service (item), of which there might be hundreds during a large project, and it must guarantee that it can perform the work at the stated prices. This ensures that the structure is constructed in accordance with the standards and plan and that there will not be any changes to its construction. The performance of work is meticulously monitored by engineering offices – the clients' trusted engineers – within the context of the supervision of

the construction. Besides the geo-technical controls which can be demanded from the construction contractor, the clients will have additional third-party controls performed in order to ensure that the required material characteristics and the installation conditions are observed in the earthwork.
The construction contractors are mostly allowed to submit an alternative bid for the complete structure or for parts thereof within the scope of special suggestions as defined by design and contract. But in such a case, the specifications and the contract conditions set out by the client serve as the basis for the quality and the workmanship, and the responsibility and the liability pass to the construction contractor. Special suggestions do not have to be accepted. They are closely reviewed for their efficiency and quality within the context of the award procedure.

In comparison to the Dutch design and contract system, the invitations to bid are pre-contractual procedures. The design and contract procedure describes the desired result of a project, while an invitation to bid aims to define the desired results of a project.

Conclusions and lessons learned

The policy on tendering in the Netherlands is in development. There is a shift towards contracting the private sector both more and earlier. The following aspects are of interest.

- There is a political desire to continue with innovative constructing. This may be design and construct, but further possibilities are being applied, like contracting executive partners during the planning phase.
- Innovative contracting will be of influence on public organisations. There will be a shift towards a more specialised and professional project management as projects will be larger and will also extend beyond the execution phase. Both the planning phase and management phase may be included in the contract.
- More experience is needed and will gained with regard to innovative contracting. Lessons learned will be applied in future.
- As a consequence, there will be a shift towards an increase of scale on the private market. Smaller companies will be taken over by bigger professional companies. The increase of scale has caused Dutch politicians to express their concern about the loss of smaller companies. Further attention will be paid to this concern.
- German policy, however, supports smaller companies, as millions of jobs and a large tax yield are involved. For flood protection projects, detailed specification texts are usually elaborated by engineering bureaus and are tendered publicly. D&C is an exception.

5.3 Public-private partnership in water projects

Public-private partnership means a cooperation of public authorities and the private sector in which a project (e.g. infrastructure projects or providing services for the public) is implemented based on a division of tasks and risks. All parties involved keep their own identity and responsibility. The result of a PPP has added value, meaning the final product is of a higher quality. However, it was completed for the same amount of money or an agreed quality was reached for less money. There are advantages for both parties. For the private sector, new chances develop on a growing market and it can contribute to an interesting project from a commercial point of view. The planning and implementation can be influenced. The public authority can implement community objectives and create a higher quality perspective and a reduction of costs.

PPP arrangements, which typically involve complex legal and financial arrangements, have been developed in several areas of the public sector and are widely used within the EU. This is particularly the case for transport, public health, public safety, waste management and water distribution.
The P of partnership is most important in the case of PPPs in regional development. The integral scope of the project is guaranteed by this mixture of parties and interests. But the PPP is not an objective in itself; it is an instrument to complete better projects. In the 1980s and 1990s, the traditional way of project implementation was to choose one contract partner and to give all the work in that region/area to that partner. This working method was not very transparent and did not involve competition, meaning high risks and not necessarily leading to the best result.

Therefore, the EU introduced a treaty in order to increase competitiveness and transparency. But it should be clear that this should not result in a rejection of all good initiatives and plans of private parties in which no completion with public authorities can be expected. The existing EU Guidelines for concession of works and services are very complex, and although those have been published many years ago, the contents are not clear to every partner within a PPP. The interpretation of private companies differs from that of the public sector. In daily practise, there appears to be a grey area which can be interpreted and implemented differently. The public authorities are very interested in how to deal with PPP within regional development projects. The EU Commission adopted the Green Paper on Public Private Partnerships and Community Law on Public Contracts and Concessions on 30 April 2004 (IP/04/593).

Concerning the successful implementation of PPPs, housing projects are the most powerful projects. In the case of water and/or floodplain projects, the first problem is that there is often no real deadline. An option might be to divide projects in phases, so that the control on implementation might be handled better. The second problem is that in certain projects in a rural area, only one private partner is involved/interested and this means that no competition is possible in accordance with the rules of PPP. All contracts in which a public body awards work involving an economic activity to a third party, whether covered by secondary legislation or not, must be examined in the light of the rules and principles of the EC Treaty, in particular transparency, equal treatment, proportionality and mutual recognition.

Especially in urban-rural contact zones, the large number of interests and parties involved creates very complex situations. On the public side, different branches and layers of government all develop their own non-integrated policy plans with very often a shortage of budget to implement them. On the private side, we usually see a variety of private landowners and other interested parties, each with their own goals, plans and ideas. In many situations, both sides have used every opportunity to acquire land in the areas to be developed, thereby creating deadlock situations in which competing parties eventually cause a standstill in further development. In situations like that, PPP can offer a new approach in which former competitors become partners. In order for PPP to be successful, it is essential to understand that there must be added value in the cooperation for each individual party involved. The only sensible reason why each potential partner should want to participate in a PPP is to be better off with than without it. The added value usually consists of one of three factors.

- Partners can reach their respective goals quicker.
- The partnership results in better quality for the same money.
- Partners achieve the same quality for less money.

In short: to be successful, PPP should generate quicker, better or cheaper results.

What is PPP?
The traditional way of completing public construction and development projects usually starts with a public plan and a public budget. Subsequently, the plan is carried out by one or more private contractors, who will usually have acquired their contracts in some form of open competition. In this case too, both public and private parties are involved, but this traditional method is not what is generally meant by PPP.
Under the current definition, PPP projects answer to at least the following characteristics.

- Public and private partners each want to achieve their own goals and objectives, but have decided to implement the project in full together.
- The participating parties each recognise the mutual benefits they derive from the cooperation (quicker, better, cheaper…).
- Partners have reached agreement on how to share the profits and risks involved in the project.
- All aspects (financial, legal, etc.) of the agreed partnership are laid down in contracts (this is usually a very complicated and time consuming job, but absolutely necessary for the success of the partnership).

Box 5.1: What is PPP?

How to must a PPP be effected in area development?
In order to implement a project in cooperation with private partners, the following steps will have to be taken by public parties.

- First things first: make sure that all public parties and layers of government involved agree upon the public goals. These should be formalised in a public agreement signed by all parties.
- Determine which private persons or companies have existing interests in the area and which parties might have a potential interest in the planned development. Private parties are informally consulted on this.
- Select private partners, taking into account the EU and national regulations on state-aid and open competition. It is in the interest of both public and private partners to do this meticulously to prevent delay and other problems at the later stages of the project.
- Draw up a joint plan, including all interests involved, going through a repetitive process of designing/redesigning and calculating/recalculating.
- Sign contracts in which agreements on all aspects of the plan (intended results, financing, time planning, distribution of costs, benefits and risks, etc.) are included.
- Proceed stepwise during the entire PPP process. Generally, every single step is formalised in agreements like a signed policy agreement between public parties, a declaration of intent between public and private partners, a public-private agreement of cooperation, etc. At each stage, make sure all parties concerned are ready to take the next step.

Box 5.2: How to effect PPP in area development

Do's and Don'ts in PPP

For public parties interested in implementing a project together with private partners, it is important to be aware of some critical success factors for a PPP.

- Clearly determine your own goals and be open about them to both private and other public partners.
- Make sure to reach public agreement first, before consulting potential private partners. (Note that this agreement should be confined to goals and objectives at this stage. How to achieve them is a matter that should be dealt with later and together with the private partners, after they have had a chance to make clear their own objectives).
- Be aware of public accountability and the democratic process involved. This can be quite time consuming and should therefore be clearly explained to private partners.
- In order to facilitate the decision-making process on the public side, appoint a political manager at the most suitable level of government for a given project.
- Be aware of cultural differences between public and private partners and discuss those with the parties concerned.
- Invest in relationships and mutual trust.
- Make risk-management a continuous process. Long-term projects have to deal with ongoing changes in context (political, financial, etc.) which bring about changing risks that have to be dealt with.

Box 5.3: Do's and Don'ts in PPP

PPP in the Netherlands

In the Netherlands, many ministries have a regional office or advisory bureau on PPP implementation. The Ministry of Finance, *Rijkswaterstaat*, State Forestry Service and the Ministry of Economic Affairs have similar offices as the Governmental Services of Land and Water Management being a part of the Ministry of Agriculture, Nature and Food Quality. The advisors of the ministries may be described as being generalists, the more specialised people can be found on the market. In the Netherlands, PPP has become quite fashionable in the past years, but private partnerships are even more favoured. Therefore, it is very important that agreement between the public bodies involved is reached at first. Only after having reached this public agreement can private interests be assessed. The selection of private partners has become very complicated with the introduction of the EU legal aspects (EU rules). The EU rules are based on European competition and this can sometimes delay national implementation. Potentially interesting projects for a PPP are found within the red for green sector, but opportunities also exist in the case of recreation, water and mineral extraction sectors. PPP is appropriate for projects combining spatial developments and investments.

Box 5.4: PPP in the Netherlands

One example of a Dutch PPP in SDF is the **Bemmelse Waard** project. It started with a management plan in 2001. This plan was written by DLG *(Dienst Landelijk Gebied)* in cooperation with a public project group (Province of Gelderland, Municipality of Lingewaard, Water Board Rivierenland, the State Forestry Service *(Staatsbosbeheer)*, Rijkswaterstaat, Commission for Land Management Ooijpolder). The project area as described in the management plan covered the properties of two private parties, Wienerberger and DOS. To implement the plan, cooperation with the two private parties in the Bemmelse Waard appeared to be unavoidable as both private parties also had property as a concession for clay and sand extraction.

After investigations of the permits and concessions, DLG concluded that the impact of the concession and permits made it necessary for DLG to cooperate with the private partners. An important issue was that open tendering would be very expensive, as the property, including the concession for extraction of sand and clay, had to be bought from both parties. Therefore, DLG decided to start the negotiations with the private partners. Internal documents were written and agreed before negotiations started.
Negotiations with both private parties started in 2002 after a letter of intent was signed. The next step was to agree on a process plan to reach the common goal: the implementation of

the Bemmelse Waard management plan. Before the negotiations started, one of the private partners, DOS, had already developed its own management/development plan. This plan appeared to be an important input for the start of the negotiations, because it clarified the private interests. Wienerberger wanted the brick factory to continue and DOS wanted an efficient development of the natural materials.

After agreement on the interests of the three parties, a joint management plan was implemented. It took a year to reach agreement on the joint management plan. This year was also necessary for DLG to get support from the public project group. DLG made cost estimates and asked the private parties DOS and Wienerberger to tender for the work. They made their own cost estimates, which have been assessed by DLG.

New negotiations about the details, content and financing of the plan started. From that time, a design and finance discussion started in combination with the development of a contract. It took about six months to agree on the financial and contractual aspects. In January 2006 the contract was signed.

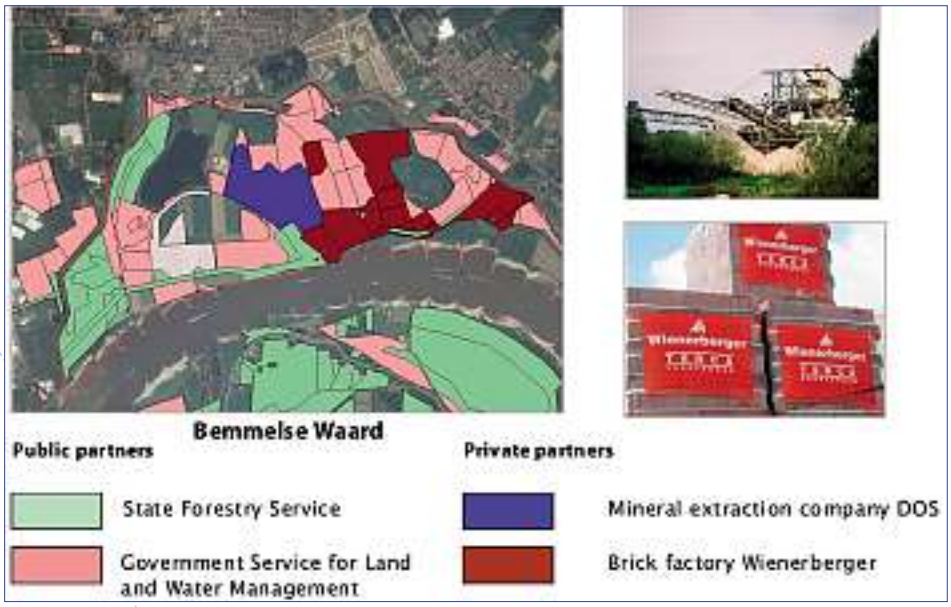


Figure 5.4: Interests of public and private partners at Bemmelse Waard

Content of the PPP

Results of the negotiations:

- Joint management plan.
- Adjustment of existing permits and rights.
- Management of the total area of 400 ha.
- Transactions of properties between partners to enlarge the brick factory area and to complete connections between the nature areas.
- Efficient exploitation of natural materials.

The contract is split up in 4 main parts:

- Intention to cooperate.
- Preparation and implementation of the plan will be effected by DOS.
- Transaction of properties for all parties.
- Some special agreements between private partners.

The contract in figures:

- About 280 ha total area nature.
- 159 ha new nature combined with existing nature.
- 30 ha transaction of properties.
- Costs for execution EUR 1,600,000.
- Excavation 2,000,000 m^3:
  - m^3 sand for industrial purposes;
  - 600,000 m^3 sand for infrastructural purposes;
  - 45,000 m^3 clay for brick factory.

The coming years:

- 1.5 year preparation (permits) up to mid-2007.
- 2 years implementation up to late 2009.
- 2010 project completed.

The implementation of the Bemmelse Waard project appeared only possible through cooperation with private partners. The PPP construction for the Bemmelse Waard results in a cheaper implementation of the project, as property and rights do not have to be bought. In addition, it may be argued that the project will be completed earlier and with a higher quality that if traditional tendering had been used.

The public-private agreement in the **Lohrwardt Polder** project consists of the following elements. After several years of preliminary investigations (e.g. Lohrwardt-Rees Rhine Floodplain Concept, 1990) and planning considerations, a joint agreement regarding the relocation of the dike and Lohrwardt summer polder was concluded between *Deichschau Haffen-Mehr*, which is now *Deichverband Bislich-Landesgrenze*, the state of North Rhine-Westphalia, Rees, and the Hülskens company on 28 January 1998. This agreement sets out the requirement to upgrade/relocate the dike and it arranges the course of the dike and the financial aspects. Besides the financing arrangements, the special aspect worth mentioning with regard to this agreement is the cooperation between the Deichverband and the Hülskens gravel mining company. The Reckerfeld open-pit mining area south of the Lohrwardt Polder, which is run by Hülskens, borders the planning area (compare Figure 5.5).

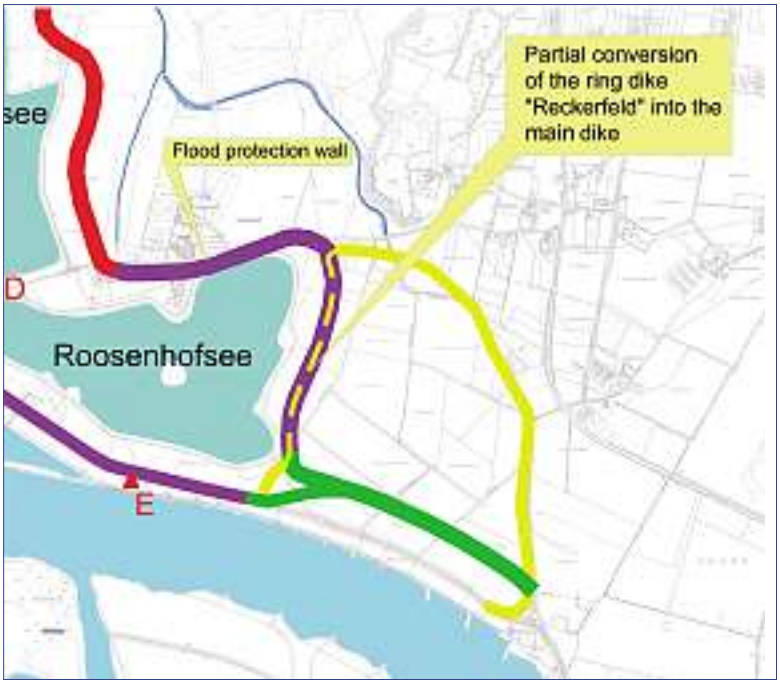


Figure 5.5: Lohrwardt Polder, Reckerfeld neighbouring open-pit mining area

The Reckerfeld area will shortly be excavated on the basis of the plan approval procedure of the Arnsberg Regional Government, Department 8 Mining and Energy Industries in North Rhine-Westphalia of 7 June 2001 (transaction number: 81.05.2-3-7) as open-mining area Reckerfeld by Hülskens, based in Wesel (construction of the ring dike 2006-2007).

Due to the fact that the damming-up situation of this section of the dike has changed during the excavation in comparison to the main dike situation, the following installation areas of this dike section must be adjusted when the Reckerfeld excavation is completed (compare Figure 5.6).

The filter body on the land side, which is highly permeable and serves as a superimposed load dike shoulder of gravel sand/filter gravel, will be relocated to the other side of the dike. If there are insufficient quantities, additional quantities will be delivered.

The dike body's top soil covering and the rounding of the dike's crest will be effected, if necessary. Any missing quantities will be supplied.

Due to the completion and recultivation of Reckerfeld, it will not be possible to perform all construction processes for Lohrwardt Polder at the same time and/or gradually. That means that only the work included in planning sections 2 and 3 can be performed in the time expected until completion of the Reckerfeld excavation and/or closing of the main dike and relocation of the ring dike (estimated time until approximately 2015).

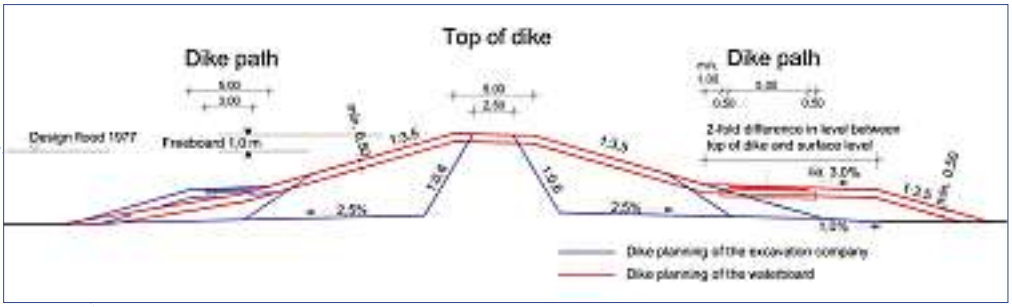


Figure 5.6: Polder Lohrwardt, cross-section of open-pit mining area Reckerfeld, during mining (blue), after completion (red)

The plan approval procedure of the open-mining area Reckerfeld included marginal conditions regarding to:

- The filling height.
- The required banking of the main dike especially in the areas of the filled site.
- The dike foundation of the future dike alignment.
- The required stability concerning the quality of the prefilling and the construction materials for the ring dike.

These conditions were allowed according to the established rules of technique for the further planning of the Lohrwardt dike relocation.

The two examples of the PPP procedure in the SDF project were started and agreed on the basis of the former EU public procurement rules. In late 2005, the EU made these EU public procurement rules more specific concerning the tendering procedure for the implementation of works. Recently (February 2008), the EU adopted the communication guidance document in which the EC rules are explained on how to comply with the selection of private partners for a PPP. In practice, this means that the process to set up a PPP in water projects might be more difficult or more time consuming in future. However, this depends on the nature of the task and whether a public contract or a concession is involved.

6 Transnational cooperation

6.1 How did it start?

Transnational cooperation was an important assessment criterion of project applications submitted for EU funding within the framework of the Interreg IIIB programme. The EU stimulates cooperation between the Member States of the European Union involving national, regional and local authorities.
European funding is a very important incentive for preparing transnational cooperation projects. Money is the economic driver convincing politicians and authorities to work together across borders between regions, provinces and countries. Funding produces innovative projects and encourages trials of new solutions and approaches that are not required by law. International cooperation is attractive to politicians and local and regional authorities, who are sometimes more willing to accept different approaches and knowledge from foreign agencies than from their own colleagues and compatriots. This is especially true in cross-border river catchments, where the positive effects of cooperation will be seen most clearly when risks of flood are reduced and improvements to the environment are introduced, such as the enlargement of Natura 2000 areas and improved leisure activities.

The SDF project partnership has its origin in the contacts established between German and Dutch organisations dealing with flood protection and nature development during the implementation of the EU funded IRMA projects within the framework of Interreg IIC. The transnational cooperation was then limited to national level, and exchange of experiences was rather general and took place only on occasions. Within a relative short period of time, the SDF partners agreed on a transnational cooperation programme to implement large-scale innovative approaches to water retention by creating room for the river and by redeveloping floodplains along the River Rhine.

Figure 6.1: The SDF partners at the kick-off

6.2 How was cooperation effected?

The SDF project has worked on an integrated approach in the Rhine catchment and has implemented various flood alleviation measures. As a result of the project, cohesion in the Rhine catchment was achieved between Germany and the Netherlands and the German federal states *(Länder)*. The knowledge exchange and mutual learning has reduced the implementation costs (in the Hondsbroeksche Pleij project, for instance) considerably, and furthermore, the project acted as a catalyst and boosted decision making in the partner organisation and surroundings, e.g. speeding up processes like approval and budgeting of pilot projects.

A strong bond developed between the partners during the frequent meetings of the steering group, transnational partner group meetings and the working group meetings. The transnational cooperation will not end when the SDF project finishes. It will be extended with some of the partners in Interreg IVB projects.

6.3 Cooperation with Interreg IIIB projects

The International Conference on Flood Risk Management and Multifunctional Land Use in River Catchments in Mainz in 2005, which was jointly organised by the SDF project and the INTERREG IIIB North West Europe Joint Technical Secretariat, had brought together 170 water experts from 10 European countries. The results were summarised in the Mainz Declaration, in which politicians emphasised the importance of adopting an integrated and transnational approach to the problem of flooding.

A cooperation agreement was signed between the SDF project and the NOFDP project in which both EU-funded projects benefited from one another. The SDF Emmericher Ward planning project was used to test the hydro-ecological model developed in the NOFDP project. The model output on floodplain vegetation patterns ranked planning alternatives of the NABU in Kranenburg to rehabilitate the floodplain area.

A cooperation at catchment level is quite time consuming and depends on regular meetings. A platform (or network) would be valuable to guarantee the further exchange and transfer of knowledge/experiences gained within NW Europe.

Figure 6.2: The panel members discuss the Mainz Declaration

6.4 Common challenges and benefits of transnational partnerships

Common challenges

- Partnerships take time and dedication to develop.
- Identifying the most appropriate transnational partners is a time consuming.
- Negotiating a common transnational work programme with potential.
- Working in partnership is a demanding business that requires flexibility and willingness to compromise, in addition to proper methods for work, documentation and monitoring.
- The process uses up significant financial and human resources.
- It involves taking risks if creative and innovative results are to be achieved.
- Transnational work makes new demands on staff and requires new skills and the ability to work with cultural, context and language differences.
- Successful transnational partnerships require continuous monitoring and ongoing evaluation.
- Intellectual property rights.
- Difficulties with changing partners in the course of cooperation.
- The continuity of staff from design to project implementation. Everything should be done to ensure that core staff remains or is at least available as a reference for the benefit of the work.

EU benefits

- Flood alleviation will become more and more important in the future due to the expected climate change accompanied by an increase in rainfall. The densely populated river catchments have to find sustainable solutions. A reservation of sufficient floodplain areas is wise, as national programmes in many EU countries are already demonstrating.
- An integrated approach in European river catchments and a good mix of specialists (such as civil engineers, spatial planners, environmentalists and legal experts) is a favourable instrument for mutual learning and achieves cost efficiency throughout borders.
- New Member States can learn from the experiences gained and can attempt to reserve space along their rivers and therefore avoid creating problems similar to those that occurred in Western Europe in the past decade.

Benefits to organisations – strategic and long term

- Participating in European networks and building contacts in other Member States open up possibilities for future cooperation and add a European dimension to a work plan.
- Increases awareness and understanding of relevant European policy developments.

Benefits to organisations – operational and short term

- Allows accessing new ideas and sharing and discussing individual ideas in a wider context.
- Encourages using international experience and expertise to test and improve existing courses, materials and methods, and to develop new products.
- Provides an extended choice of new business partners, political allies, and technical collaborators.
- Facilitates acquiring new skills and competences.
- Enables experimenting in areas of common interest and enhancing mutual business opportunities.

Benefits for individual participants

- Extends personal experience, language, communication and other skills and offers a wider European perspective.
- Extends sources of information and contacts.
- Provides awareness and understanding of the strengths and weaknesses of national employment policies and learning systems.
- Gives improved self-awareness and growth in self-esteem and self-confidence.

6.5 Follow-up of SDF transnational cooperation activities

The SDF partners recognised that changes in management practice and public perception are long-term issues. The partners also acknowledged the need to continue this type of support beyond the end of the SDF project in order to consolidate achievements and secure long-term benefits. The Interreg IVB programme offers opportunities and challenges to continue this transnational cooperation at European level. Transfer of knowledge and experiences of the SDF project to river catchments in other regions in Europe would then be an opportunity.

The SDF project extended the partnership with partners from France *(Institution Interdépartementale des Barrages-Réservoirs du Bassin de la Seine)*, United Kingdom (Environment Agency) and Ireland (Office of Public Works). The extended partnership organised workshops to develop project ideas and prepare project proposals for submission to the North-West Europe (NWE) Interreg IVB programme.
The development of project proposals was supported by the NWE Interreg IIIB programme secretariat in Lille (France) by providing additional funding (seed money).

Two project proposals have been submitted to the NWE Interreg IVB programme secretariat. The project proposals were approved at the end 2007 and are now in operation.

The following two projects are involved.

1. Adaptive Land Use for Flood Alleviation (ALFA)
The general aim of the ALFA project is to protect the North-West Europe region against the effects of flooding due to climate changes. This will be effected in the project by creating new capacity for storage or discharge of peak floods within river catchments. For example, new floodplains will be created in areas that have not been flooded recently. The need for the creation of **new capacity for water storage or discharge** reflects the impact of climate change.

The objectives of the project are:
- **To develop and implement technical solutions** related to the creation of new capacity for water storage or discharge.
- **To raise awareness and increase solidarity** between and within upstream and downstream areas within river catchments in Europe. The project will focus on adaptation/intervention in one area to protect another more vulnerable (in economical, social and/or ecological perspective) area. The latter can be either an urban or a rural area, situated up or downstream of the intervention area.
- **To optimise the combination of functions** in the target areas by preserving the current function and developing desirable and suitable new functions, e.g. nature and recreation.

The work is carried out in different European catchments, but the challenges are the same in all countries. The following catchments are involved: River Meuse (The Netherlands), River Rhine and Emscher (Germany), River Eden (United Kingdom), River Seine (France), and the Kleine Nete (Belgium).
Transnational cooperation aspects include the following.
- All partners are implementing actions that are part of larger national schemes.
- These schemes are frameworks for the definition of concrete projects.
- Both schemes and projects within the schemes are dynamic.
- Knowledge and experiences will be shared and results tangibly transferred into the larger national schemes.

Figure 6.3: Signing of the Partnership Agreement by the ALFA Steering Group Members

2. Flood ResilienCity project (FRC)
The general project aim is to integrate the increasing demand for more houses and other buildings with the increasing need for more and better flood risk management measures in North-West European cities along rivers.
The objectives to achieve that aim are as follows.

1. Awareness: To enhance the awareness and engagement in all aspects of flood risk and the means of managing it at:
   - policy level (politicians/decision makers);
   - among professionals (of the involved authorities and elsewhere); and
   - at public level (people, companies, developers, insurance companies).
2. Avoidance: To limit flood damage and ease recovery by planning and adapting buildings, infrastructure, surfaces and economic activities and encouraging individuals and institutions to become more resilient.
3. Alleviation: To reduce flood risk by implementing physical, technical, non-structural and procedural measures for the management of water systems.
4. Assistance: To provide support to recovery processes and to engage and build capacity in communities prior to, during and after flood events
5. Strategy and capacity: To develop the capacity to engage in the processes above. to adapt to and manage flood risk by integrating the activities associated with objectives 1-4.

The project wants to effect a structural change in the mindset of politicians, professionals and public in Brussels, Leuven, Mainz, Paris, Orléans, Dublin, Nijmegen and Bradford. That change should mean that all those involved recognise the importance of addressing all four 'A's in their policies to achieve sustainable flood risk management. Moreover, they should recognise that location-specific application of each of the four 'A's delivers more policy options to facilitate new urban development plans.

Transnational cooperation will make it possible for each city to compare itself with other NWE cities, not only at the technology-oriented professional level, but even more important also at the levels of political decision makers and non-structural responses. This five-year cooperation will result in better solutions and greater awareness, capacity and engagement in flood management. It will be necessary for the partners to work together across borders

in a learning alliance to let go of preconceived national and local approaches and mindsets stemming from historical needs and traditional approaches to managing these problems. In this way, the partnership can question current methods without prejudice and create the environment for jointly developed innovative approaches. If the partners were to continue addressing the conflicts between urban development and flood risks on their own local and regional scales, they would have only a limited number of regionally proven solutions, constrained by regional conventions.

The project gives local politicians a legitimate reason to discuss new proposals with peers from other cities, in general terms without specific political consequences or media coverage. The transnational cooperation will raise politicians' awareness of increasing flood risks and the potential consequences for spatial development within their cities. It also provides the politicians with the results of different policies tested in similar cities, which will develop capacity in crucial policy and legislative areas

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International and national regulations and programmes

International regulations and programmes

European Spatial Development Perspective
The European Spatial Development Perspective (ESDP) was adopted by the Member States and the European Commission in May 1999 and contains the common spatial planning objectives and models. It states: "[...] endangered areas have to be recognised as components of urban and rural regions. [...] In decisions concerning territorial development, potential risks - such as floods [...] should be considered. In dealing with risks, it is important, in particular, to take the regional and transnational dimension into account." It further emphasises that "[...] Spatial planning, above all at transnational level, can make an important contribution to the protection of people and the reduction of the risk of floods. Flood prevention measures can be combined with nature development or restoration measures."
These conclusions in the ESDP were based on a number of statements made by ministers for the environment and spatial planning in the Rhine-Meuse region after the devastating floods of 1993 and 1995.

http://ec.europa.eu/regional_policy/index_en.htm

EU Water Framework Directive
The Water Framework Directive of the European Union (WFD) is a central pillar of the EU's water policy, which addresses water quality and transnational river basin management. The aim of the directive is to achieve a good level of water quality for all rivers, lakes, coastal waters and other water bodies in the European Union by 2015. Under the directive, Member States are obliged to adopt River Basin Management Plans by the end of 2009.

http://ec.europa.eu/environment/water/water-framework/index_en.html

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Directive on the assessment and management of flood risks
In January 2006, the European Commission proposed a Directive on the assessment and management of flood risks as a response to past floods and an effort to limit the fallout from future floods, which are likely to increase in frequency and severity due to more intense rainfall and rising sea levels.
Its aim is to reduce and manage the risks that floods pose to human health, the environment, infrastructure and property. Under the proposed directive, Member States have to follow three implementation steps.

1. Preliminary flood risk assessments of river basins and coastal areas by 2011.
2. Flood hazard maps for high risk areas by 2013.
3. Flood risk management plans by 2015.

In April 2007, the European Parliament adopted a compromise package agreed with the Council which in essence means the directive is agreed. Formal adoption is expected later in 2007 by the Council.

The "Directive on the assessment and management of flood risks" has been strengthened regarding the requirements on international cooperation in shared river basins and streamlined regarding the preliminary flood risk assessment and mapping.

In its amendments to the directive, the Parliament added the requirement that flood risk management plans include "measures that work with natural processes such as maintenance and/or restoration of floodplains in order to give back space to the rivers wherever possible."

http://ec.europa.eu/environment/water/flood_risk/index.htm

Nature policy

The EU nature conservation policy is based on two main pieces of legislation - the Birds Directive and the Habitats Directive - and benefits from a specific financial instrument, the LIFE-Nature fund. Its priorities are to create the European ecological network (of special areas of conservation), called Natura 2000, and to integrate nature protection requirements into other EU policies, such as agriculture, regional development and transport.

The network comprises Special Protection Areas (SPAs) for the conservation of over 180 bird species and sub-species and Special Areas of Conservation (SACs) for the conservation of over 250 types of habitat, 200 animal species and over 430 plant species. Natura 2000 now accounts for over 20% of EU land. The states of the EU are responsible for managing the SPAs and SACs.
Natura 2000 was introduced into the German law by the Federal Nature Conservation Act (BNatSchG) amendment in 1998.

http://ec.europa.eu/environment/nature/index_en.htm

ICPR – Rhine Action Programme

The International Commission for the Protection of the Rhine (ICPR) was founded in 1950 on the basis of international law by the following countries: Switzerland, France, Germany, Luxembourg, the Netherlands, as well as the European Community. It was forced into action after the contamination catastrophe as consequence of a fire at the Sandoz chemical plant in Basel.
In 1987, the Rhine ministers approved the Rhine Action Programme (RAP) in Strasbourg. It aimed at improving water quality and biodiversity and it was designated to achieve the following targets by 2000.

- Fauna species which had vanished from the Rhine, such as the salmon, should return to live in the Rhine.
- Drinking water production from Rhine water should continue.
- The pollutant contents of river sediments should be reduced.

The Rhine Action Programme marked the rehabilitation of this great river by the Rhine ministers.
The results are impressive.

1. Water quality has considerably improved as less polluted waste water is discharged into the Rhine.
2. Accidents resulting in the discharge of hazardous substances into the Rhine have been considerably reduced, as the companies along the Rhine are much better prepared for emergency situations.
3. The Rhine fauna has almost recovered. Apart from eel, fish caught in the Rhine are again edible.

http://www.iksr.org

ICPR – Convention on the Protection of the Rhine
On 22 January 1998, the 12th Conference of Rhine Ministers adopted the Action Plan on Floods in Rotterdam, resulting in spending of up to 12 billion ECU. This Action Plan, aimed at the improvement of precautionary flood protection, will be implemented within the next twenty years. Furthermore, the ICPR was assigned to draft a new programme on the sustainable development of the Rhine for the period following 2000 and the Rhine Action Programme. A new convention integrated ecology, water quality, water quantity and the protection of groundwater near the surface in alluvial areas. In addition, a shift towards an integrated policy approach took place.

When the new Convention on the Protection of the Rhine was signed in Bern on 12 April 1999, the governments of the five countries bordering the Rhine (Switzerland, France, Germany, Luxembourg, the Netherlands) and the representative of the European Community formally confirmed their determination to reinforce their cooperation with a view to continued protection of the valuable character of the Rhine, its banks and its floodplains.
The convention entered into force on 1 January 2003.

http://www.iksr.org

ICPR – Action Plan on Floods
The targets of the Action Plan on Floods were specified as follows.

- To reduce damages by up to 10% by the year 2005 and by up to 25% by 2020.
- Extreme flood levels downstream of the regulated Upper Rhine are to be reduced by up to 30 cm by 2005 and by up to 70 cm by 2020.
- Enhancement of public awareness through development of risk maps covering 100% of the floodplains and areas at risk for flooding by 2005.
- Advancement of the flood alert system by international cooperation. Extension of forecast up to 100% by 2005.

Implementation of the Action Plan on Floods by 2005
In its report concerning the implementation of the Action Plan on Floods in 2005, the ICPR stated the following.

1. Nearly all planned measures were implemented.
2. The changes in damage potential show a larger reduction at stretches without dikes then with dikes.
3. Flood retention areas directly located at the rivers main stream have the greatest effect with regard to reduction of extreme water levels.
4. The planned reduction of extreme flood water levels along the Rhine from 30 cm by 2005 in comparison with 1995 will be reached only at the Upper Rhine close to Maxau. At the Lower Rhine, the reduction will be up to 10 cm and more.
5. The Rhine Atlas showing flood risk and risk-potential maps (see Rhine Atlas 2001) have raised public awareness.
6. The planned extension of prediction time by 2005 of up to 100% could be achieved, but not with the same reliability as short-time predictions.
7. As a consequence of climate change, winter discharges are expected to increase and summer discharges are expected to decreased.

http://www.iksr.org

Rhine 2020 – Programme on the sustainable development of the Rhine
In 2001, the Rhine ministers adopted 'Rhine 2020 - Programme on the sustainable development of the Rhine' in Strasbourg. This programme focuses on ecology, nature protection, flood prevention and groundwater protection. Furthermore, monitoring and improvement of water quality will be continued and improved. In addition, it will implement the requirements of the EU Water Framework Directive and Swiss water policy along the entire Rhine.
In this way, the successful Rhine programme is being continued. The ICPR and the countries along the Rhine have a new vision of more room for the Rhine. They plan to open old alluvial areas to the river and therefore combine nature protection and flood prevention.

http://www.iksr.org

National regulations and programmes (Germany)

German legal framework
In Germany, the Spatial Planning Act (ROG) and the German Water Act (WHG) are of great importance for the implementation of SDF pilot projects. The communal development planning is based on the Building Code (BauGB).
The Act to Improve Preventive Flood Control of 2005 updated the statutory regulations for flood protection in Germany. The Act resulted in changes to several laws, including the Water Act (WHG), the Building Code (BauGB), the Federal Spatial Planning Act (ROG), the Federal Act on Waterways (WaStrG) and the Weather Services Act (DWDG).
Planning issues concerning water rights are regulated by the Federal Water Act and the State Water Acts of the various federal states.

http://bundesrecht.juris.de/bundesrecht//

Five-point programme of the Federal Government
After the River Elbe flood of August 2002, the German Federal Government adopted a five-point programme in which it laid down the main tools for effective preventive flood protection.
The action plans include cooperation and implementation in the field of preventive flood protection at European level, assessment of the bank reinforcements and similar constructions, the environmental impact of inland navigation, as well as short-term measures for crisis management.
Other activities concern protective dikes, adaptation of land use in floodplains, the preservation of wet floodplains and water retention capacities, renaturation of rivers and lakes and the improvement of the water retention and seepage capacity of the ground.
It also formed the basis of the Flood Control Act of 2005.

www.bundesregierung.de

Recommendations of the Standing Conference of Federal and State Ministers Responsible for Spatial Planning (MKRO)
In 2000, the MKRO published its recommendations for preventive flood protection measures in spatial planning. Apart from the general chapters on principles, etc., the document contains a number of practical recommendations for handling different tasks in connection with regional planning. Of importance to the SDF activities are the principles of the protection and extension of floodplains as well as the reduction of the potential dangers.

www.bmvbs.de

Guidelines of the Working Group of Federal States on Water Problems
The Working Group of Federal States on Water Problems (LAWA) is a working group of the Conference of Environmental Ministers of the Federation and the States. It brings together the ministries responsible for water management and water law of the Länder and the Federal Government which set up Guidelines for Forward-Looking Flood Protection. The conference of Environment Ministers agreed to these guidelines in May 1995.
The guidelines analysed the different causes of flood and flood damage and developed different strategies and actions to minimise the consequences of floods. Finally, the working group of LAWA, LABO, LANA and responsible Federal Ministries developed guidelines and recommendations for actions with regard to several stakeholders of flood prevention.
It emphasises the role of spatial planning in connection with preventive flood protection measures for areas at risk. The relevant statutory regulations and appointments are to be made at state, regional and local (i.e. land use plans) level.
In 2006, the recommendations of LAWA for the drafting of flood hazard maps were completed.

www.lawa.de

The German-French treaty
Due to construction work on the Upper Rhine, such as the Grand Canal d´Alsace and hydropower plants, the flood situation had deteriorated dramatically. In order to compensate the negative impacts of these constructions, a German-French treaty was signed in 1969 (revised in 1982) based on an investigation by an international committee (*Hochwasserstudienkommission*). The treaty aims at the restoration of floodplains and the construction of retention ponds, as well as other measures such as the emergency operation of the power stations. Germany had to finance all measures except the one concerning the power stations.
Following this international treaty signed by the German Confederation (Bund), a treaty between the Bund and the Länder in Germany had to be concluded. In 1977 and 1989, the German treaty stipulated that the costs of the measures in Rhineland-Palatinate would be shared between the Bund (40%), Rhineland-Palatinate (40%), and Hesse (20%). In Baden-Württemberg, the Bund bears 41.5% of the costs, excluding the Söllingen-Greffern Polder, where Rhineland-Palatinate and Hesse have to pay a part of the costs. Some locations for polders were also set out in the treaty.
The volume of the retention facilities agreed upon in the treaties (status 2007) is about 287 million m³, with 62 million m³ in Rhineland-Palatinate, 167 million m³ in Baden-Württemberg and 58 million m³ in France.
The German-French treaty, however, does not concern measures taken in North Rhine-Westphalia.

Baden-Württemberg Flood Strategy
Following the treaties of the 1980s, planning procedures were introduced. Since then, 13 locations for polders have been designated and agreed upon in the Integrated Rhine Programme Baden-Württemberg (IRP), which was adopted by Baden-Württemberg in 1996. The IRP aims to restore sustainable flood protection through the creation of flood retention and restoration of floodplain wetlands. The basis for the programme is the German-French treaty described above.

With about 167 million m³, the majority of the flood water retention area had to be constructed in the federal state of Baden-Württemberg. As the lowlands of the Upper Rhine are both intensively used (for agriculture as well as settlements) and ecologically sensitive (floodplain locations), the planning authorities had to face severe problems which led to the idea of an integrated approach.

Important steps leading to the IRP in Baden-Württemberg.

1919	Treaty of Versailles.
1928 – 77	Systematic development of the Upper Rhine.
1968 - 78	Establishment of the International flood study commission for the Rhine River.
1982	Franco-German agreement on the systematic development of the Rhine.
1988	Decision on the development of a framework concept by the State Government of Baden-Württemberg;
1996	Adoption of the framework concept for the implementation of the integrated Rhine Programme by the State Government of Baden-Württemberg.

The following figure (Figure A1.1) provides an overview of the planned and partly completed measures on the Upper Rhine from Basel to Mannheim and shows the 13 measures in Baden-Württemberg which form together the IRP.

Figure A1.1: Polder and dike relocations along the Upper Rhine

Comprehensive studies conducted over a period of several years have revealed that each of the proposed retention areas is suitable for the purposes of flood retention and the restoration of semi-natural floodplain conditions. However, not all sites will enjoy an optimum achievement of both objectives. Since both the timing of artificial flooding and the level of flood retention may be controlled to a large degree, polders may be used in a targeted and highly efficient way. All areas combined provide protection against a 1 in 200-year flood, the statistical mean measured at the Maxau gauging station. The flood retention measures reduce the discharge to 5,000 m^3/s downstream of Iffezheim up to the mouth of the Neckar and/or 6,000 m^3/s downstream the mouth of the Neckar, quantities which can be discharged without causing any harm.

The ecological flooding operation mode stands for the flooding of the retention areas, at higher but not extreme discharges from the Rhine. Ecological flooding serves to re-establish flood-tolerant vegetation similar to that usually existing in floodplains, which can withstand the rare event of flood retention without any harm.

As a result of the ecological flooding, less retention volume will be available for high water flood retention. Consequently, an assessment has been made as to whether flood protection

can be combined with ecological flooding in the same retention area. The efficiency of the retention areas has been reviewed.

1. Efficiency of the retention area without ecological flooding.
2. Efficiency of the retention area with ecological flooding.

The calculations were performed by the Environmental Protection Office (*Landesanstalt für Umweltschutz/LfU*) using a synoptically flood model.
The results of the investigations were as follows.

Option 1:
- All flood protection measures must include the assessed entire capacity in order to achieve the re-establishment of flood protection.
- Above all, the flood retention measures must be implemented in a controlled way along the developed stretch south of Iffezheim. Controlled means that the time of implementation, as well as the quantity to be retained must be determined in advance. Independent of this consideration, the positive effect of the 90 m wide flooding area along the Rhine south of Breisach can be taken for granted.

Option 2:
- The contractually agreed re-establishment of the flood protection can be achieved only if the retention areas intended for ecological flooding are drained again to a greater extent.
- On a stretch above Iffezheim, the ecological flooding must be stopped prior to flood retention. The pre-flood water can flow back into the river at the downstream end of the retention area.
- The ecological flooding for the measures south of Iffezheim may continue if it can be unequivocally predicted that the area will not be required for high water flood retention.
- The polders along the free Rhine stretch cannot be drained after ecological flooding prior to their operation in the case of floods. At flood events that, based on predictions, might require retention, no ecological flooding can be effected.

Altogether, the regulations for 200-year flood events have been optimised to a great extent. By influencing the effect of the retention areas on each other, even slight changes in the regulations may have visible effects on the effectiveness of the entire system.

Rhineland-Palatinate Flood Protection Concept
In essence, the flood protection concept is based on three pillars.
1. Promotion of the natural retention of water in the area.
2. Technical flood protection by means of safe dikes, retention areas and local protective measures.
3. Further flood prevention measures by avoiding damage and strengthening local precautionary measures.

1. Flood Protection starts in the area
Each cubic meter of water that can be retained in the catchment area contributes to the reduction of the flood effects. The worsening of the soils' retention capability and capacity caused by the sealing and compacting of the soils by humans will be reversed or compensated to a large extent. This will be achieved by environment-friendly cultivation of the soil as well as by reforestation measures. In the long run, the development of nature-oriented mixed forests adapted to the individual location will play a decisive role in the increase of water retention capability. Measures removing hard surfaces covering the soil, as well as rules governing the retention of rainfall in the area, which were already included in the Water Legislation of the State of Rhineland-Palatinate in 1995, supplement a modern concept for the use of rainfall in farming.

Operation Blue: Decentralised retention of water and the ecology of water bodies.
Operation Blue in Rhineland-Palatinate represents an attractive concept and promotion instrument, especially for communities responsible for maintenance measures by water bodies, for creating retention areas and for nature-oriented development of rivers and streams. Any measures taken by Operation Blue are also investments in the quality of water bodies, as well as in flood protection.

2. Technical flood protection by means of safe dikes, retention areas and local protective measures. In this connection, the reestablishment of a 200-year flood protection on the Upper Rhine has the highest priority.
This aspect involves the safety of 700,000 people for whom the lowland of the Upper Rhine region serves as living, working and cultural space. The area in question has assets totalling approx. 70 billion euros. Should the flood protection measures fail, damages of up to 13 billion euros must be taken into account. 'More space for the Rhine' is part of the international plan of action of all Rhine riparian states.
For this purpose, 288 million m^3 of usable retention area, 62 million m^3 of which will be in Rhineland-Palatinate will be created along the Upper Rhine. This will compensate the negative effects of the development of the Upper Rhine area, namely the reduction of dike safety to a 50-year flood protection level. The concept of Rhineland-Palatinate provides for floodwater retention measures at 10 locations, which are either embanked areas (polders), or areas of dike relocations.
The construction programme is in excess of 150 million euros. The Daxlander Au, Flotzgrün and Kollerinsel polders, as well as the Worms-Mittlerer Busch and Ingelheim Polder dike relocations have already been completed. These measures alone have already achieved an approximate 100-year dike safety. Upon completion of all measures, the main Rhine dikes on the Upper Rhine will guarantee a protection against 200-year floods. As a result of the Elbe and Mulde flooding disasters in 2002, as well as the findings of international committees, the State Government felt compelled to go beyond the stated measures and to create reserve space for extreme floods in order to avoid uncontrolled flooding and all its consequences.

3. Further flood prevention measures by avoidance of damages and strengthening local preventive measures
The new State Development Programme IV refers to areas in danger of being flooded, differentiated by risk classes. It also involves flood protection. By establishing priorities and reserve areas for flood protection, a context for the future development of communities in the new regional policies is stipulated. In Rhineland-Palatinate, all flooding areas have been covered.
A strategy for reducing damage during a flood event can be successful only if the responsibilities and preventive measures of all parties are strengthened. The federal state of Rhineland-Palatinate has been informing its citizens for over 10 year, even at times when floods did not occur. A flood manual 'Living, Residing, and Building in Areas Endangered by Floods' has been available since 1998 and it is currently being updated.
Moreover, a 'Safety check with regard to flood prevention' is being drawn up in cooperation with the associations of architects and engineers.
In order to strengthen the protective measures of all parties in areas endangered by flooding even though relative safety exists as a result of flood protection measures, maps are being drawn up showing the dangers ensuing from floods (the maps for the Rhine and Mosel areas are already available). These maps help communities to take specific flood preventive measures in the area endangered by flooding and to optimise their defensive measures in the case of a disaster. This project is being implemented across the borders together with Luxembourg and France and promoted by the European Union. Its findings will be incorporated into the action programme planned by the European Committee with regard to the management of flood risks.
The flood alarm service has become the most important source of information for people living along the Rhine, Mosel and Saar and their tributaries if a flood event is imminent or

has already occurred. It is also intended to develop the flood alarm system for smaller water bodies.
In order to reinforce the notion of solidarity along the rivers, support is being given to a Flood Precautionary Measures Network connecting the communities in the catchment area of these water bodies. For this purpose, flood partnerships are being founded to serve as a platform. Rhineland-Palatinate has a well-developed emergency management system, which has proven to be successful on many occasions during flood events. In order to guarantee effectiveness and coordination in the case of emergencies, alarm and duty schedules have already been in use for 10 years and their implementation is tested on a regular basis.
During the Florian flood disaster drill in November 2004 along the Rhine and Mosel, the state, together with the Military District Command II, was able to successfully test its plans of action for the first time. The cooperation of soldiers with the Voluntary Fire Brigade, the Technical Emergency Services and the Water Management Authorities was successful.

http://www.wasser.rlp.de/servlet/is/390/

North Rhine-Westphalia Flood Protection Concept
Together with the ICPR (Rhine Action Programme)) and on the basis of the 'Rhine in North Rhine-Westphalia – flood protection, ecology, and shipping' concept and the 'Flood protection on the Lower Rhine 1990 in the administrative district Düsseldorf' general plan, retention areas with a total size of approximately 4,700 ha and a retention volume of approximately 175 million m^3 were planned. The North Rhine-Westphalia government's precautionary ecologically-oriented flood protection concept of 1996 indicated retention areas at 11 locations.
The Government of the federal state of North Rhine-Westphalia adopted the Flood Protection Plan for North Rhine-Westphalia up to 2015 *(Hochwasserschutzkonzept des Landes bis 2015)* on 7 March 2006. The Environment, Conservation and Consumer Protection Board *(Ausschuss für Umwelt, Naturschutz und Verbraucherschutz)* approved the plan on 25 May 2006.
The plan constitutes the basis for water authorities for decisions on flood protection.
The reason for drawing up the plan was – and remains – the flood risk situation along the Rhine in North Rhine-Westphalia. Given the population density and the residential and industrial development, people living along the Rhine are particularly endangered.
The potential level of damage is put at EUR 130 billion, with failure of the technical protective measures alone causing damage amounting to EUR 3 billion. This means that pro-active flood protection is cheaper than dealing with damage once it has actually occurred.
Even though flooding cannot ever be prevented entirely, protection objectives and measures in combination with reducing the potential for damage along waterways can prevent the most damaging effects.

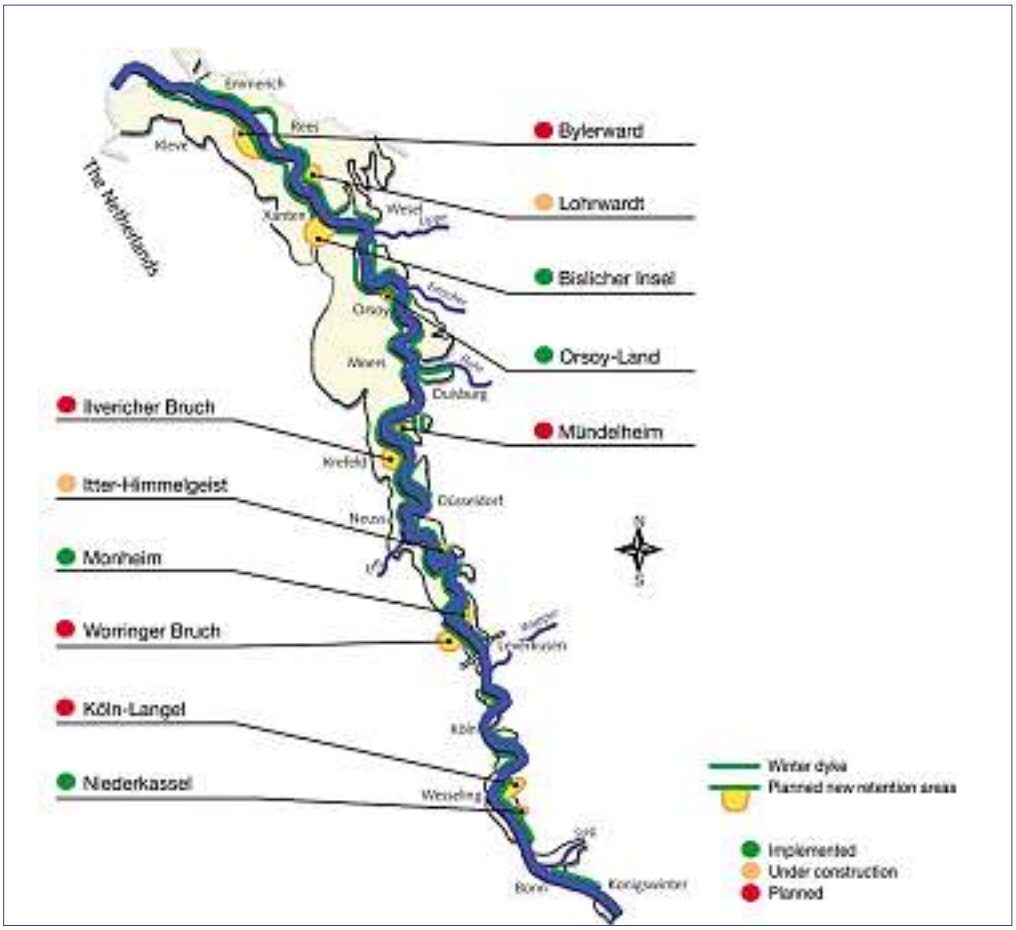

Figure A1.2: Locations of measures in North Rhine-Westphalia

Flood Protection Plan up to 2015
Objectives (in relation to water levels at Lobith).

- Reducing water level by 10 cm
- Delaying flood surge by 24 hours

Relocation of dikes and water retention areas

- Completion of a total of five measures by 2015
- Including two dike relocation projects
- and three retention areas
- with a water retention area of 2,415 hectares
- and a retention volume of 82 million m³

Additional: dikes to be improved: 114 km
Total budget: approx. EUR 1.2 billion

Besides the responsibility of the Government of North Rhine-Westphalia for flood protection along the Rhine, there are 10 water boards, based on special laws, which are responsible for sub-catchments of the Rhine tributaries, such as the *Emschergenossenschaft* for the River Emscher, the *Lippeverband* for the River Lippe (downstream Lippborg), the *Wupperverband* for the River Wupper, etc. These water boards are also responsible for the flood protection in their catchment, and projects, maintenance and all water management affairs are normally financed by water and waste water fees.

The principle underlying all the various measures is that of shared precautionary measures. The focus will be not so much on prohibition as on cooperation between those involved in planning.

At the Conference on flood protection in Arnhem on 8 February 2007, Eckhard Uhlenberg, Minister for the Environment and Conservation, Agriculture and Consumer Protection of the federal state of North Rhine-Westphalia, signed a joint declaration between North Rhine-Westphalia and the Netherlands with the following objectives.

- Drawing up a joint flood protection strategy.
- Implementing relevant research and determining the effects of flood control measures.
- Coordinating measures in the short, medium and long term for technical flood control, natural water retention, and far-reaching flood precautions.
- Applying for EU funding for the programme.
- Implementing joint public relations work so as to promote public awareness of the risk of flooding and to increase the level of acceptance of the required measures.
- Specifying perspectives relating to potential future changes in the discharge of the Rhine as a result of climate change.
- Adopting a plan of work for the period from 2007 to 2012 and monitoring its implementation.

http://www.lanuv.nrw.de/wasser/hwschutz.htm

National regulations and programmes in the Netherlands

Nature Policy in The Netherlands

At Dutch national level, an important milestone in river development was reached with the Nature Policy Plan in 1990. In this plan, targets were set on a national scale for the different regions in the Netherlands. For the river region it was stated that more nature areas are needed. In 2000, the "Nature for people, people for nature" policy document was published. The document describes the enlargement of the ecological main structure by the creation of linking zones. Large rivers are an important part of the ecological network.
An overview of how nature policy is organised in the Netherlands.

- National level: policy instruments & quantitative targets are set.
- Provincial level: the delineation of the EHS (ecological main structure) in the 12 Dutch provinces.

The new policy introduced a new possibility of nature management; work can be carried out by private persons.
The ecological main structure has given direction to the provincial nature plan.
The responsibilities at national and provincial level can be summarised as follows.

- Local authorities, water boards.
- Nature management is implemented by government (DLG & RWS), water boards, local communities, private persons/partners.
- List of site managers.
- EU directives: Water Framework Directive (WFD), Birds and Habitats Directive (BHD) and the Natura 2000 network.

Flood protection in the Netherlands: 'Room for the River' programme

In 2006, the Dutch cabinet proposed a Spatial Planning Key Decision in which the spatial planning for the entire Rhine delta area is laid out. In this plan, the measures for flood control of the major rivers are outlined; they include the creation of additional space for the rivers. For each location, the local plans are described: e.g. the construction of secondary channels in the river foreland, the relocation of a dike further inland or returning previously reclaimed land to the river.
Completion of a basic package of about 40 projects is expected in 2015, with a budget of EUR 2.2 billion.
The objectives of the programme are as follows.

1. Safety against extreme river floods
Due to anticipated climatic changes, the Rhine delta river branches have to accommodate increasing extreme discharges. Until recently, it was standard policy to raise the crest levels of the dikes to maintain the required level of flood protection. This centuries old policy was abandoned in 2000 in favour of Room for the River. In the new policy, river cross sections are widened by situating the dikes further away from the river, or by lowering the river forelands. This will result in lower flood levels. By 2015, the river should be able to safely discharge 16,000 m^3/s.

2. Improvement of overall environmental conditions
In Room for the River, care must be taken to avoid harming valuable features of landscape, nature and cultural history. More space can also be found by enlarging the river channel within the dikes. The process should involve maintaining a balance between present and foreseeable future spatial requirements, taking every opportunity to enhance safety, as well as the best possible landscaping and the improvement of overall environmental conditions.

Figure A1.3: Locations of measures and alternatives

Room for the River and the implementation of EU nature policy in the Netherlands
The Spatial Planning Key Decision or Room for the River contains a series of local measures as well as long-term allocation of space for flood alleviation measures. Local measures are, for example, the bottleneck at the Dutch village of Lent. Some long-term measures are included in Room for the River (e.g. Biesbosch dike relocation, IJssel Green River, etc.). The safety needs and the increase of spatial quality is difficult to equate with the conservation of the current situation.

About 70% of the floodplain areas in the Netherlands contain SPAs (Special Protected Areas) of Natura 2000. For the proposed measures in the Room for the River document, the responsible ministries (Ministry of Transport, Public Works and Water Management, Ministry of Agriculture, Nature and Food Quality, Ministry of Spatial Planning and Environment) received approx. 3,000 reactions from the public, companies, NGOs and private organisations.
Nevertheless, the strategic decision of Room for the River can also strengthen the Natura 2000 network. Ecological diversity, e.g. calcareous grasslands, hay floodplains, alluvial forests

and humid floodplains, is of great importance. According to the European Scale, the last two types will be a contribution to the environment. The most important birds species are swans and geese.
Recommendations regarding the Spatial Planning Key Decision of the Room for the River Programme are as follows.

1. No measures should be carried out at vulnerable locations.
2. An adjustment should be made in relation to the preventative measures of the Habitats Directive.
3. The negative effects on water birds should be mitigated in the area where the measure is taken.
4. The measures should contribute positively to the Natura 2000 network.

http://www.ruimtevoorderivier.nl/

Public participation in regulations

Public participation in international and European regulations

Rio Declaration on Environment and Development
Numerous international documents have expressed the importance of public participation and the need to institutionalise it to move towards sustainable development. It is important to mention Principle 10 of the Rio Declaration on Environment and Development signed by more than 100 heads of State worldwide in Rio de Janeiro in 1992, establishing that: "Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided".

http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163

Aarhus Convention
Further implementation of this principle took place in the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), which was adopted in 1998. It establishes that sustainable development can be achieved only through the involvement of all stakeholders and links government accountability and environmental protection.

"Although regional in scope, the significance of the Aarhus Convention is global. It is by far the most impressive elaboration of principle 10 of the Rio Declaration, which stresses the need for citizen's participation in environmental issues and for access to information on the environment held by public authorities. As such it is the most ambitious venture in the area of environmental democracy so far undertaken under the auspices of the United Nations."
Kofi A. Annan, former Secretary-General of the United Nations (1997-2006)
The convention consists of three main columns:

1. The right of everyone to receive environmental information that is held by public authorities (access to environmental information).
2. The right to participate in environmental decision making (public participation in environmental decision-making).
3. The right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general (access to justice).

http://www.unece.org/env/pp/

European Directives
In the European perspective, these columns are being implemented in the following European regulations:

- Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.
- Directive 2003/4/EC of the European Parliament and of the Council on public access to environmental information.
- Directive 2003/35/EC of the European Parliament and of the Council providing for public participation in respect of the drawing up of certain plans and programmes

relating to the environment and amending with regard to public participation and access to justice.

And further

- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. Article 14 of the directive requires early and comprehensive information as well as consultation of the public.

http://ec.europa.eu/environment/

Participation in project permit procedures in the Netherlands

Involvement of the public

In the Netherlands, the public is involved in a very early planning phase by using informal instruments. Due to the fact that a large part of the Netherlands would be flooded if there were no dikes, and historical development, there is great interest in spatial and water-related themes. Public involvement is mainly consensus oriented, sometimes long-term designed and based on open discussions.

The responsibilities for flood prevention of main river streams (putting in place requirements/ standards) rest with the governmental authority. Meeting the requirements and dealing with calamities is a matter for the State, provinces and the water boards, depending on the case. Responsibilities for catchments are organised within the water boards. In the Netherlands, a process-oriented or development-oriented public discussion about the project is considered normal and may be in contradiction to umbrella plans.

The demands or statements of potentially affected people or interest groups may lead to considerable changes of plan. This is positive from the democracy point of view, but may result in greater risks or delays in the project schedule.

Spatial Planning Key Decision

Three administrative layers exist in the Netherlands: municipality, province and State. Land can be used or built on only in accordance with a zoning plan decided upon by the town council. Once the plan is accepted by all parties, any construction plan that is contrary to the zoning plan will be denied a building permit by the local authorities. A zoning plan, however, is not valid until it has been approved by the provincial administration. The province draws up a regional zoning plan against which to assess the local plans. This means that town and country planning is first and foremost determined by local authorities, and then assessed in relation to overall schemes.

Spatial planning is executed on a national scale. The results are referred to as Spatial Planning Key Decisions (SPKD). These are drawn up at ministerial level and have to be approved by parliament. A SPKD describes general or specific spatial planning policy. A general spatial planning policy may deal with the key functions of town and country planning in the Netherlands, or with agricultural and nature areas, or transportation, or the provision of electricity. However, a SPKD can also focus on a specific project at a specific location, such as building a railway line, a high speed train or the construction of a harbour facility. Prior to publication of a SPKD, its effects on nature and the environment have to be studied at a strategic level.

SNIP

SNIP *(Spelregelkader Natte Infrastructuur Projecten)* describes the procedure to be followed for infrastructural projects in the water sector. The steps to be taken are as follows.

- Reconnaissance survey: is the project really necessary and what are the possibilities?
- Planning study: preparing the development (alternatives to solve the problem and studies of the possible effects).
- Implementation.

http://www.verkeerenwaterstaat.nl/

Environmental Impact Assessment (EIA)

According to the Dutch Environmental Management Act (*Wet Milieubeheer*), many projects are obliged to perform an Environmental Impact Assessmen (*Milieu Effect Rapportage (MER)* in Dutch). An EIA follows a defined procedure, but is in any case combined with the planning phase of the SNIP procedure.

The EIA procedure consists of the following.

- Start-up document.
- Public participation (4 weeks).
- Advisory guidelines from the EIA Committee (an independent committee).
- Definitive guidelines from the competent authority.
- The actual development of the EIA.
- Public participation (8 weeks).

Because the EIA is combined with the planning study of SNIP, the actual product is often a project document/EIA, containing the description of the alternatives and all effects (not only environmental effects). Everyone can join the public participation through written and/or oral statements. The reactions of the first public participation phase to the start-up document are used by the EIA committee to develop the guidelines. The second participation phase is combined with a decision, such as a permit or a special plan.

Two participation phases in the EIA procedure are sufficient to fulfil legal obligations. However, many projects include extra participation and communication actions. As a result, the risk of many negative reactions in the formal procedure is diminished. Involving the public beyond the legal obligation is called an open planning process.

On 1 September 1987, the Netherlands introduced a statutory requirement for EIA in response to a European directive on EIA. In addition to this statutory procedure, a list of activities was drawn up for which an EIA must be prepared before the relevant decision – on a spatial plan or licence application – may be taken. From then on, the competent authority had to determine, on the basis of the new law and the EIA Decree, whether an EIA was required.

The Act did not include a provision for imposing penalties – a fine or other punishment – which suggested at the time that the regulation was optional. A scheme can be seen in Figure A2.1.

The Committee for EIA (Environmental Impact Assessment in the Netherlands, Views from the EIA, June 2002) described the conditions for an effective EIA regulation without direct sanctions.

For almost all projects in the Netherlands that meet the requirements for EIA, an EIA is carried out. Both developers and government authorities, but particularly alert citizens and pressure groups, ensure that EIAs are actually carried out for projects that require them. The Dutch press plays an active role as informant and many individuals and pressure groups find out about projects that require an EIA from the news. The risk that the courts will suspend or quash a decision on a project is reason enough for developers to take more or less immediate action to follow the EIA procedures. Individuals and pressure groups, in particular,

play a significant role in bringing projects for which no EIA has been prepared to the attention of the courts.

But judges have also played an important role. Many cases of salami slice tactics – breaking down large projects into smaller elements, each with much less significant impacts – have been dealt with severely by the Dutch courts, but unfortunately not always. Decisions have regularly been suspended or quashed, and many developers have had to go through the planning process from the beginning again as a result. A strict, independent judiciary is a necessary condition for an effective EIA regulation.

Besides deciding on whether an EIA is required in specific case, judges must also regularly decide on the quality of an EIA. Does a published EIA contain all the information needed to inform the decision-making? In performing this role, judges also check the work of the Committee for Environmental Impact Assessment. If the Committee has not done its job properly, the courts can pass judgement on this. In this task, the Dutch judiciary is supported by a foundation, which can call upon experts in the field of spatial planning and the environment (Stichting Advisering Bestuursrechtspraak). These experts make a judgment on the quality of the contents of an EIS. The courts can then use this information when coming to their decisions, which are based on both legal and material environmental considerations. When doing so, Dutch courts often choose to take a pragmatic approach. This Dutch approach works very well when applied to the practical world of EIA because little time is lost in formal procedures, allowing everyone to concentrate on the material issues involved. Apart from a number of particularly difficult decisions, which have made EIA less popular among some administrators, Dutch judges have contributed to the development of a practical EIA system that focuses on quality. As well as the active role played by citizens and pressure groups and an alert media, Dutch judges deserve special praise for their efforts and the way they have approached the whole issue of EIA.

The required conditions for effective enforcement of the EIA regulation in the Netherlands, where the legislation contains no provisions for imposing penalties, can be summarised as follows.

1. An active, free press.
2. Alert citizens and pressure groups.
3. A pragmatic, but rigorous judiciary.
4. Expert and pragmatic advisers on material information.

These conditions should be combined with a statutory EIA procedure geared to a) openness, b) early public consultation procedures open to all, and c) independent and expert review.

http://ec.europa.eu/environment/eia/home.htm

Exemplary EIA in the riverine area of the Netherlands – Lexkesveer

The Lexkesveer project is part of the Dutch national Room for the River programme. Within the project, the hydraulic obstacles like the ferry dam will be changed into a bridge. The reshaping of the ferry dam can be combined with nature development in the floodplains. An excavation is part of the project, the surface is bigger than 100 hectare and therefore an EIA is required.

Steps in the EIA procedure in the Lexkesveer case are as follows.

1. Starting document (Startnotitie) with a description of the project published in May 1999.
2. Formal (public) involvement procedure (formele inspraakprocedure) June/July 1999.
3. Public hearings were held and reactions in paper were collected and evaluated.
4. The EIA Guidelines were issued by the Province of Gelderland.

5. Plan process was carried out, which came up with new views. This means a small deviation between the EIA and the guidelines and starting document. The scope is still appropriate.
6. Development of alternative scenarios/plans (May 1999 until spring 2001).
7. The preferred alternative was worked out in a detailed design plan for Lexkesveer. This plan is necessary to acquire the permits needed for implementation. The plan also contains the description of the measures to be implemented, including the management measures.
8. The Provincial Executive *(Gedupteerde Staten)* must judge whether the EIA is admissible.
9. The EIA, the design plan, as well as the required permits were published. This publication was available for public consultation at several public buildings for four weeks.
10. After 4 weeks (starting from the publication date), the period of public involvement *(inspraakperiode)* started. After this period of four weeks, two public hearings were organised to combine involvement and the information provision. Reactions and objections against the published EIA could be voiced during the hearing and sent to the competent authority.
11. The Provincial Executive (and the Minister of Transport, Public Works and Water Management) asked advice, while taking into account the objections and comments made from the EIA committee and the legal advisors.
12. Decision of the competent authority on the EIA and corresponding permits.
13. After the decision on the EIA was taken, the competent authority needed to evaluate environmental effects. The competent authority decided which environmental effects had to be evaluated and when.
14. The project implementation was prepared.

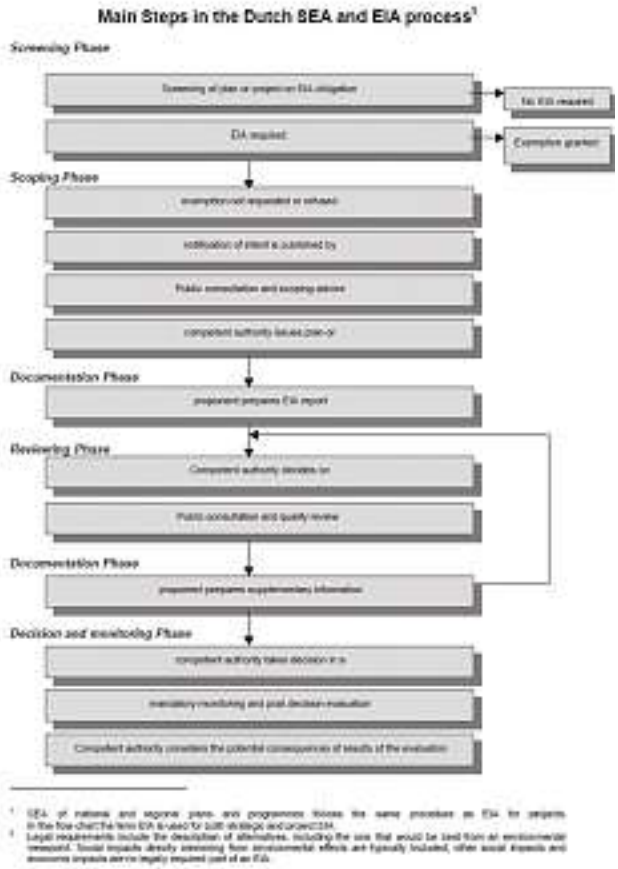

Figure A2.1: Environmental Impact Assessment in the Netherlands

In general there are two occasions for public participation/consultation within the EIA procedure.

- The first occasion for public participation/consultation is the publication of the starting document. There are usually four weeks for public participation. It is open to everyone.
- The public is consulted a second time after the draft EIA report is published. Anyone can comment on the report and raise objections to the application or draft decision, which will be taken into account by the environmental assessment committee.

The moments of public involvement in the EIA are maximised to inform, consult and commit the public. The involvement is detailed in public meetings, newsletters and articles in local papers. Moreover, there is the process of public involvement. Reactions from the participatory process are, where possible, given a clear position in the design or implementation. If public proposals cannot be implemented, a clear substantiation is given of the way in which the proposal was considered. All proposals, reactions and replies are combined in a separate document which is made public.

Integrating different aims (e.g. nature development and improvement of discharge capacity) often leads to an improved public commitment. Farmland will be lost in any case, so sometimes the public considers it better that an area can contribute to expanding nature areas. Setting clear goals and objectives is an important part of the communication process.

It appears that an EIA is highly appreciated by the public and by stakeholders. The instrument gives detailed information, especially when the EIA is provided with the preferred alternative and even more when – as in the Lexkesveer project – the preferred alternative is combined with a detailed design.

The EIA document has been requested a great deal by interested parties. During the process, it became clear that the expected large soil excavations had decreased so much that an EIA was no longer obligatory. Nevertheless, the EIA proved to contain so much information on the design process and about the assessed impacts of the alternatives that, although the EIA procedure stopped, the EIA document was admitted as background information during the participation.

Participation in project permit procedures in Germany

Legal foundations

In Germany, the public is involved by legislation, based on the administration law *(Verwaltungsverfahrensgesetz)*. The involvement of *Träger öffentlicher Belange* (= organised public, such as authorities or officially registered interest groups for nature, farming, forestry, etc.; public utility, residents, etc.) is not organised by the responsible body for planning or construction, but by competent authorities. Participation opportunities in planning processes in Germany are described below.

The planning procedure has to be finalised following the stipulations of the federal management procedure law, which is implemented in the federal states through the plan approval procedure *(Planfeststellungsverfahren)*.

The objective of this procedure is to fix the specific plans in a legally binding form. The permission to begin the construction of a polder (and other infrastructure) can be given only when the plan approval procedure has been successful. This may also mean that different changes can still be made to the initial plan. The procedure is described in § 72 to § 78 of the federal management procedure law. The procedure involves the responsible authorities *(Verfahrensträger)*, other authorities, the general public and official representatives of stakeholders *(Träger öffentlicher Belange)*. The representatives may be from environmental NGOs, as well as from citizen movements. Legal complaints from different groups or concerned individuals may be submitted in this phase and may delay the finalisation of the

procedure. After the plan has been formally finalised by the federal state using this procedure, no more legal complaints can be submitted against the plans.

It is important to note that the spatial planning law and the plan approval procedure are the only procedures to be executed before construction can take place. Within these procedures, all interests and concerned parties have to be heard and their concerns have to be evaluated. An environmental impact assessment has to take place within the plan approval procedure to assure minimal impact on the environment.

Major planning phases
The planning procedure in Germany can be described by three major phases and three major groups of responsibility.

Pre-planning:	Pre-studies, studies about needs and demands, studies about locations, general alternatives, pre-feasibility and general impacts including the environmental impact studies at the first level (no procedure rules in law or conducted by approval authorities). No approval.
Spatial planning procedure:	Preparation and enforcement of the spatial planning procedure including the decision about alternatives, integration of different needs and demands of participating public bodies. This procedure is set out in the Regional Planning Act (Raumordnungsgesetz, ROG). The result is the decision concerning agreement or allowing deviation of the planned infrastructure from the spatial planning objectives.
Approval procedure:	Preparation and enforcement of the approval procedure, including specific technical planning, landscape conservation support plans, compensation studies, environmental impact studies and other studies or plans on special or detailed questions (e.g. geology, groundwater impact, etc.). The approval procedure is binding on everyone and also applies to all matters concerning private or public properties, compensation, etc. (concentration of decisions in one procedure, German: *Konzentrationswirkung*).

The planning authorities are responsible for all planning. This relates to the retention areas, the water management authorities of the federal states, their regional water management authorities and engineering companies working on their behalf. They are responsible for technical and all other planning in all phases and also for the preparation of all materials that are needed in the public procedures. The integration of public bodies – interest groups, federations like nature conservation groups or local public – into the planning process is not governed by law, even though it is quite common. Within this framework, the planning authorities are also responsible for mediation in the context of the location processes or cooperative planning measures, where applicable, in the case of retention pond planning. These processes are not governed by law.

Spatial planning authorities at federal state level are responsible for the preparation and enforcement of the spatial or regional planning procedure. They usually delegate this duty to the regional planning authorities. They include public bodies and federations in the procedure, but not private persons. The procedures are based on the planned structures, the impact studies and the studies of alternatives (worked out by engineers and experts before the procedure). The procedure itself also includes the environmental impact assessment and concludes with a declaration of agreement or the allowance of deviation from spatial planning objectives.

Within the procedure, all public bodies, local interest groups, municipalities, federations and other affected parties have the possibility to submit statements concerning the plans.

After the plans have been published by the implementing authority in a newspaper, every citizen and organisation is invited to submit written ideas and/or legal complaints. The submitted material is evaluated and solutions are sought. Remaining issues are then handled in hearings with all public bodies and affected private bodies. The objective of the hearing is to hear all statements and arguments which have not yet been solved. After the approval procedure has been finalised, only legal complaints about the procedure, not about the contents of the plan, can be filed. The procedure is completed by the approval decision and the final signing of the plans *(Planfeststellung)*. After this procedure, the technical planning will be detailed to prepare the construction (*Ausführungsplanung*), and the construction itself can be started.

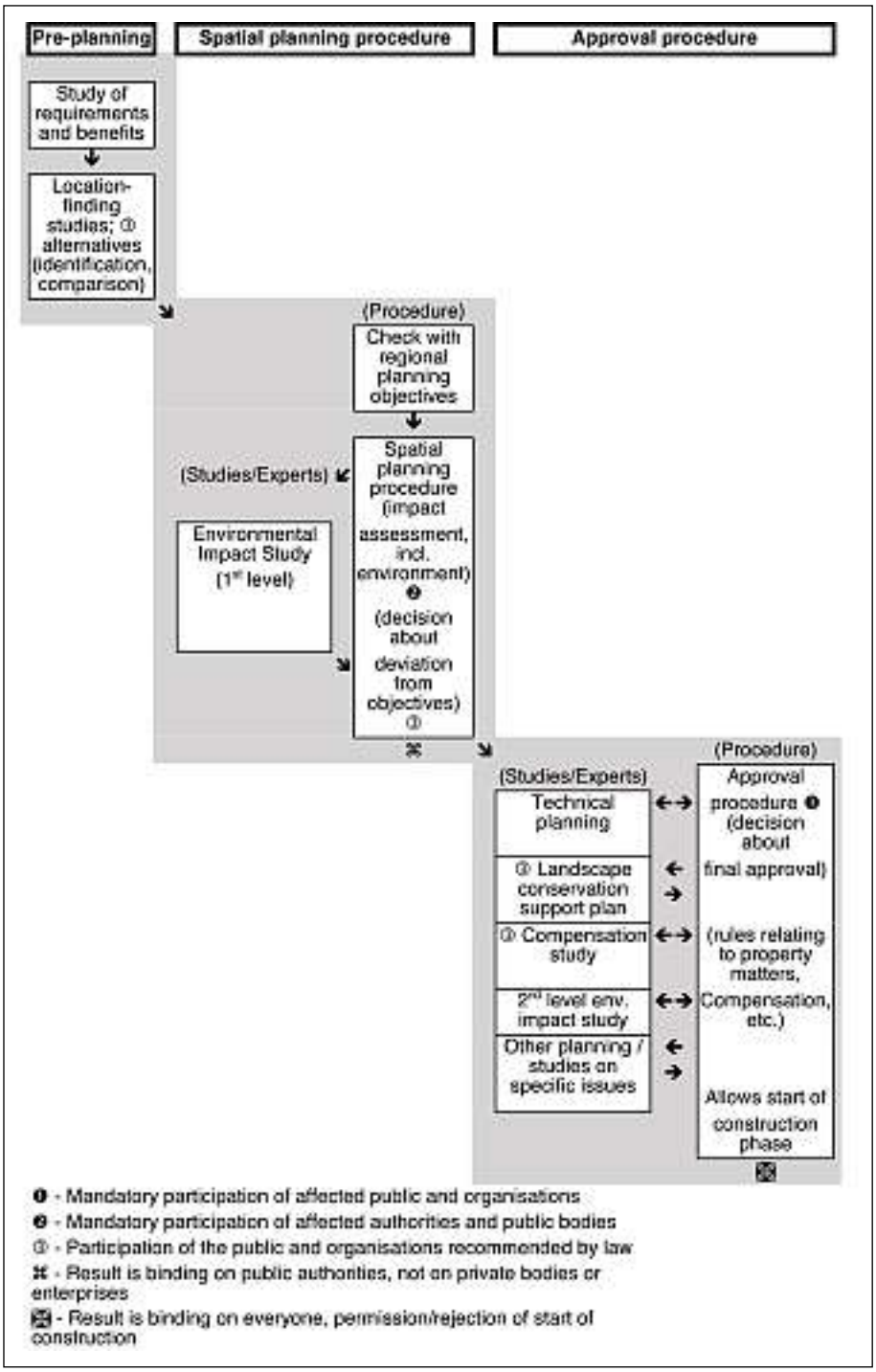

Figure A2.2: Procedures for planning infrastructure and participation of target groups in Germany

Example of a Planfeststellungsverfahren – Emscher floodplain
In advance of the *Planfeststellungsverfahren*, a planning process lasting several years was implemented. The *Emschergenossenschaft* worked on the flood prevention concept for the entire River Emscher. The floodplain locations Ellinghausen and Mengede were identified at a very early stage. Due to their regional importance, both areas have been integrated in regional and local spatial development plans since 2003.
The floodplain Dortmund-Mengede is partly located in the municipal area of Castrop-Rauxel and therefore the regional authority of Arnsberg (responsible for the city of Dortmund), as well as Münster (responsible for the town of Castrop-Rauxel) are also involved. The authorities and the Environment Ministry of North Rhine-Westphalia have agreed upon a formal leadership for the competent authority of Arnsberg responsible for the *Planfeststellungsverfahren.*

Figure A2.3: Water boards

For both floodplains, the *Planfeststellungsverfahren* under the *Wasserhaushaltsgesetz* (Federal Water Act) and *Verwaltungsverfahrensgesetz* (Administrative Procedures Act) were implemented in several steps.

1. The project planning is detailed by the applicant (here: *Emschergenossenschaft*), normally after initial contacts with the competent authority.
2. One component of the planning is the environmental impact assessment (in accordance with § 5 of the Federal Environmental Impact Assessment Act), being detailed before or parallel to the project planning. The scoping date was 2 April 2004, with the Arnsberg (Dortmund) competent authority being responsible. Based on agreements, the environment-related survey and examinations were detailed by the *Emschergenossenschaft.*
3. After the distribution of the *Planfeststellung* documents to the competent authority (by the *Emschergenossenschaft*)
   - The competent authority checks all application documents.
   - The competent authority starts the formal participation of the *Träger öffentlicher Belange*, such as
     - organised or official public interest representatives like energy suppliers, public utility, municipalities, etc;

- nature conservation organisations (in accordance with Sections §§ 12, 12a of the Federal Landscape Act).

- The competent authority publishes the planning documents in the municipalities concerned by informing the press and making the documents available in a public building for one month.
  In this phase, private third parties may participate as interested parties or submit objections in the public building in writing.
- Objections must be submitted by interested parties within two weeks of the end of the one-month publishing phase.
- Statements of the *Träger öffentlicher Belange* must be made within three months.
- Discussions about all incoming statements/objections/suggestions will be held in a public building and invitations will be sent by the competent authority to the interested parties.

4. After all suggestions and objections have been checked by the competent authority and the arguments have been weighed, the Planfeststellungsbeschluss (decision) follows. If changes are needed due to the objections, the competent authority will request the applicant for follow-up documents.

5. The content of the Planfeststellungsbeschlusses will include the permission, the conditions – if required, the handover to the applicant, the distribution to the Träger öffentlicher Belange and concerned persons and the public announcement.

This marks the completion of the Planfeststellungsverfahren.

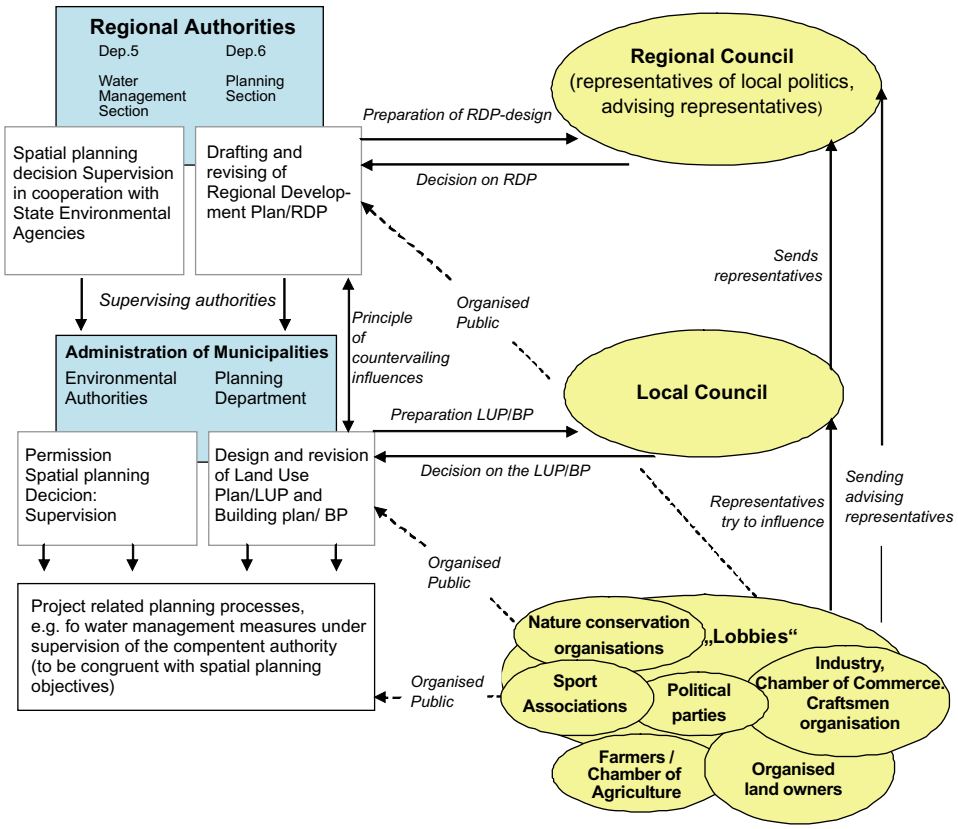

Figure A2.4: Involvement of administrations, politicians and interest groups in planning systems in North Rhine-Westphalia (omitted are district administrations acting as environmental agencies in the case of affiliated towns and whose administrative organisation and political bodies are comparable to those of municipal councils)

Construction in floodplains

Integrated Rhine Programme (IRP) with Polder Söllingen/Greffern as an example
The IRP plans to create flood retention areas with a retention volume of 167 million m³ in the former floodplains at 13 locations. The Söllingen/Greffern Polder, which was completed at the end of 2005, is considered to be one of the most important retention areas. With an area of approximately 540 ha and a retention volume of approximately 12 million m³, it is the northernmost retention area in the area of the developed stretch of the Rhine. It can be used specifically for the flood protection along the free stretch of the Rhine with a substantial effect, so that the flood protection for the parties adjoining the Rhine will be increased from today's 100-year flood to a 120-year flood event. The construction costs alone are estimated at approximately 66 million euros. The construction of the Söllingen/ Greffern Polder was another important component of the Integrated Rhine Programme for environment-friendly flood protection on the Upper Rhine.
This project, together with retention measures in France and Rhineland-Palatinate, aims at the restoration of the 200-year flood protection downstream of Iffezheim, which used to exist prior to the development of the Upper Rhine.

Söllingen/Greffern Polder

General
The retention area comprises the floodplain on the right bank of the Rhine between Rhine km 317.4 at Grauelsbaum and Rhine km 329.5 at the border of Söllingen/Hügelsheim, which had been cut off as a result of the construction of the Iffezheim barrage. The outlet area of the polder, which borders on the above area up to Rhine km 335.6 at Iffezheim, is flooded by the backwater from Iffezheim barrage during flood events on the Rhine.

Figure A3.1: Aerial photo of Söllingen/ Greffern Polder

The retention areas, with the volume of 12 million m³ and an area of 580 m², are divided into four partial polders. At present, a considerable part of the former floodplain areas is occupied by flooded quarries. The remaining polder area is mainly forest. Two flooded quarries with gravel pits are located in the area in question. In Greffern, the federal government is already performing groundwater management in order to prevent damage due to Iffezheim barrage.

Environmental compatibility
Extensive investigations were carried out to review the environmental compatibility for the plan approval procedure. Current conditions for humans, animals, plants, soil, water, air, climate, landscape, cultural and other assets were evaluated and forecasts were made for the future development with and without the polder.

Figure A3.2: Söllingen/Greffern Polder

The EIA established that the operation of the retention area, including retention and ecological flooding, is typical for floodplains and environmentally compatible.
Ecological flooding reflects a wide range of drainage situations in a natural floodplain. These range from temporary flooding of lower areas up to flooding of extensive areas. Such extensive flooding operations are usually limited to a few days a year. The water required for such a measure is taken from the Rhine. The time, the level and the duration of such measures depend on the current drainage rates of the Rhine. As a result of this measure, flood events are achieved that are in line with nature and are typical for the floodplains prior to the construction of the barrages.

Construction measures
- Redevelopment of the flood dams and of the side dam of the Rhine.
- New dam construction.
- Construction of 4 intake and 12 passage works.
- Construction of three pumping stations.
- Groundwater management systems.
- Adjustment of the existing infrastructure.
- Various water developments.
- Accompanying measures for conservation of the landscape.
- Structures in Söllingen/Greffern Polder.

The Polder is constructed as Fließpolder extending over an area of 580 ha and with a length of 12 km. This means that a certain amount of water can flow into the polder, but it can be discharged again.
The Polder is flooded via the outlet structures in the area of the side dam of the Rhine. Here,

the water flows through the reinforced concrete structures which pass under the landside waters (flooded quarries, old arms of the Rhine). Guide walls reduce the formation of turbulence in the area of the discharge structure. Large-scale floating beam structures protect aquatic sports enthusiasts from the considerable suction effect of the structures. The discharge of water is performed linearly with the water flowing off from the Rhine. This adjusts the efficiency of the structures. At the start of the flooding, approximately 140 m³/s flows into the polder on average. During operation, the water flowing through is reduced to an average of 80 m³/s.
The discharge structures are described below as an example.

Reconstruction of discharge structures
For the future operation of the existing discharge structures, the guide walls on the Rhine, on the polder sides, as well as the still basin protection must be adapted. New floating beams are being fitted at all discharge structures. The steel bar screens and the hydro-engineering shut-off components (roller and sliding gates) are being reconstructed depending on the requirements. Alternatively, the corrosion protection is being renewed. All shut-off members are equipped with electric motors.
It should be noted that during construction measures along the Rhine, the barrage water level cannot be lowered. Furthermore, the water level in the Rhine will deviate as a result of the operation of the Iffezheim barrage several times a day by up to 30 cm.
The discharge structure fills partial polder 3 by means of three channels. The guide walls on the Rhine side consists of sheet piles of about 13 m in length, section L25S. A steel structure of HEA 600, which is fastened to piles of LP25S bridges the inlet. The floating beams of wood and steel were attached to steel pipe dolphins of 16 m length.

Figure A3.3: Construction of pit structure 64 (land side)

A stilling basin was created on the landside, protected by a water-tight construction pit of sheet piling. The bed was constructed by means of an anchored concrete underwater base and the construction bed was connected to the concrete underwater base. Hydraulic building blocks were fitted over the concrete base. Once the stilling basin was complete, the sheet piling was burnt off under water.

Figure A3.4: Inlet structure 64

New construction discharge structure N
The structure N has been built into the side arm of the Rhine. It consists of two parts: the 2-channel discharge structure for filling of partial polder 1, which is similar to the others, and the rough channel passage. Water flows constantly through this channel passage and close to the surface into the side channel of the Rhine. This allows fish and micro-organisms to migrate at any time from the Rhine into the landside waters.

Figure A3.5: Discharge structure N

In order to avoid flooding of the hinterland, two cut-off plains between the Rhine and the construction pit must always be available during construction. This requires two sheet piling pits and several construction sections.

- First, the sheet piling box, which protects all parts required for the installation of the gate shut-off components, is constructed on the Rhine side. Only after the complete flood protection has been created with the gates fully functioning will the second sheet piling box be excavated. This also requires the relocation of the site access road.
- In the second sheet piling box, the concrete for the landside components of the discharge structure and the channel passage will then be poured. Subsequently, the side channel of the Rhine will then be relocated over the two channels of the discharge structure.

In the course of the third section of construction work, the components on the Rhine and on the landside are connected. For this purpose, a window in the middle sheet piling is opened. The sheet piling wall located above it will remain in the dam. The seam between the components will be concreted.

After completion of the structure, the base securing work on the Rhine and landsides will be effected.
The Söllingen/Greffern Polder became operational at the end of 2005.

List of Figures

List of Tables

List of Boxes

List of abbreviations

BauGB	*Baugesetzbuch* (Building Code)
BHD	Birds and Habitats Directive
BHW	*Bemessungshochwasser* (Design discharge)
CFR	Cyclic Floodplain Rejuvenation
D&C	Design and Construct
DD	Design discharge
DLG	*Dienst Landelijk Gebied* (Government Service for Land and Water Management)
DLG	*Deutsche Landwirtschafts-Gesellschaft* (German Agricultural Association)
DN	Diameter Nominal
DVWK	*Deutscher Verband für Wasserwirtschaft und Kultur* (German Association for Watermanagement and Culture)
DWDG	*Gesetz über den Deutschen Wetterdienst* (Weather Services Act)
EAU	*Empfehlungen des Arbeitsausschusses – Ufereinfassungen*
EC	European Community
EHS	*Ecologische Hoofdstructuur (*National Ecologic Network)
EIA	Environmental Impact Assessment
EU	European Union
EVU	*Energieversorgungsunternehmen* (Responsible electric supply company)
FFH	Flora Fauna Habitat
GIS	Geographical information systems
HBPL	Hondsbroeksche Pleij
HQ100	Flood recurrency 1/100 years
HQ200	Flood recurrency 1/200 years
HQ5	Flood recurrency 1/5 years
IC	Inegrated Contract
ICPR	International Commission for the Protection of the Rhine
IRP	Integrated Rhine Programme Baden-Württemberg
kf	Water permeability coefficient
LABO	*Bund-Länder Arbeitsgemeinschaft Bodenschutz*
LANA	*Bund-Länder Arbeitsgemeinschaft Naturschutz, Landschaftspflege und Erholung*
LAWA	*Bund-Länder Arbeitsgemeinschaft Wasser* (Working Group of the Federal States on Water Issues)
LfU	*Landesanstalt für Umweltschutz* (Environmental Protection Office)
LÖBF	*Landesanstalt für Ökologie, Bodenordnung und Forsten NRW* (Regional Office for Ecology, Land Division and Forestry NRW)
LUBW	*Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg* (Regional office for Environment, Measurements and Nature Conservation Baden-Württemberg)
MHW	*mittelerem Hochwasser* (average high water level)
MIP	mixed in place
MKRO	*Ministerkonferenz für Raumordnung* (Standing Converence of Federal and State Ministers Responsible for Spatial Planning)
MRIJ	*Maas Rijn IJssel* (Meuse Rhine IJssel)
MUNLV	*Ministerium für Umwelt, Naturschutz, Landwirtschaft und Verbraucherschutz des Landes Nordrhein-Westfalen* (Ministry for Environment, Agriculture and Consumer protection of the Land North Rhine-Westphalia)
NABU	*Naturschutzbund Deutschland e.V.* (Nature Conservation Organisataion Germany)
NAP	*Nieuw Amsterdams Pijl* (mean sea level)

NATO	North Atlantic Treaty Organisation
NGO	Non Governmental Organisation
NIMBY	Not in my backyard
NOFDP	Nature-Oriented Flood Damage Prevention
NRW	North Rhine-Westphalia
NSG	*Naturschutzgebiet* (Nature protected area)
NURG	*Nadere Uitwerking Rivierengebied* Plans to use the predominantly agricultural floodplains along the river for wetland nature development
NW Europe	North-West Europe
PIMBY	Please in my backyard
PPP	Public-private partnership
PR	Public relations
qu	1-axial compressive strength
RAMSAR	The Ramsar Convention on Wetlands
RAP	Rhine Action Programme
ROG	*Raumordnungsgesetz* (Spatial Planning Act)
RPK	*Regierungspräsidium Karlsruhe*
RvdR	Room for the River Programme
RWS	*Rijkswaterstaat*
RWS-ON	*Rijkswaterstaat Oost-Nederland*
SDF	Sustainable Floodplain Development
SGD Süd	*Struktur- und Genehmigungsdirektion Süd*
SLW 60	Design load
SPA	Special Protected Areas
TAW	*Technische Adviescommissie voor de Waterkeringen* (Advisory Committee for dikes)
TÖB	*Träger öffentlicher Belange* ("organised public")
WaStrG	*Wasserstraßengesetz* (Federal Act on Waterways)
WFD	Water Framework Directive
WG	Working group
WHG	*Wasserhaushaltsgesetz* (German Water Act)
WSP	Water level
WSV	*Wasser- und Schifffahrtsverwaltung des Bundes* (German Federal Water and Navigation Administration)
WWF	World Wildlife Foundation

Project Partners and Contact

In the SDF project, two Dutch and five German partners work together along the river Rhine. The organisations involved are public authorities at local, regional and national level and two non-profit organisations. The lead partner is Rijkswaterstaat-Oost Nederland in Arnhem, the Netherlands.

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