

IMPLEMENTATION PERIOD: JANUARY 2003 - JUNE 2008

SUSTAINABLE DEVELOPMENT OF FLOODPLAINS



KIRSCHGARTSHAUSEN
POLDER INGELHEIM
EMSCHER
EMMERICHER WARD
BISLICH-VAHNUM
LOHRWARDT
RIJNWAARDEN
BEMMELSE WAARD
FORTMOND
HONDSBROEKSCH E PLEIJ
LEXKESVEER
HEESSELTSCHE UITERWAARDEN



This project has received
European Regional
Development Funding
through the INTERREG III B
Community Initiative



www.sdfproject.nl

ENGLISH

PARTNERS

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.



Ministerie van Verkeer en Waterstaat
Directoraat-Generaal Rijkswaterstaat
Oost Nederland

- **Ministerie van Verkeer en Waterstaat**
Rijkswaterstaat-Oost Nederland (RWS-ON)
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Ministerie van Landbouw,
Natuurbeheer en Voedselkwaliteit
Dienst Landelijk Gebied

- **Ministerie van Landbouw, Natuurbeheer en Voedselkwaliteit**
Dienst Landelijk Gebied-Regio Oost (DLG)
(Bemmelse Waard, Rijnwaarden, Fortmond)



Rheinland Pfalz

- **Rheinland Pfalz**
Struktur- und Genehmigungsdirektion-Süd (SGD-Süd)
(Polder Ingelheim)



- **Emscher Genossenschaft**
(Emscher)

Deichschau
Haffen-Mehr

- **Deichschau Haffen-Mehr**
(Lohrwardt)



Baden-Württemberg
REGIERUNGSPRÄSIDIUM KARLSRUHE

- **Regierungspräsidium Karlsruhe (RPK)**
(Kirschgartshausen)



NABU Naturschutzstation e.V.

- **Naturschutzstation Kranenburg-NABU**
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FLOOD RISK

The high water levels of the past decade at different locations along the Rhine in Germany and the Netherlands led to drastic measures being taken, such as the evacuation of residents and the construction of emergency dams and dikes. The damage caused by flooding ran to billions of euros.



Sustainable Development of Floodplains (SDF)

Implementation period: January 2003 - June 2008

SDF is an EU-funded, Dutch-German co-operation and interaction programme that focuses on flood prevention and development of new nature areas (nature development) along the Rhine. SDF encompasses twelve pilot projects that are practical in nature. The main objectives of the projects are to reduce flooding and encourage the development of sustainable floodplains for multifunctional use, e.g. water retention, agriculture, nature development and recreation.

The SDF project addresses the following important issues:

- River engineering and navigation;
- Nature and environmental development;
- Social action and communication;
- Sustainability;
- Recreation.

Transnational Cooperation

Sustainable flood management strategies require interregional and transnational cooperation throughout the Rhine basin.



The SDF approach is:

- To link the actions in the 12 pilot locations;
- To allow the partners to exchange/transfer know-how and experience on a concrete and practical level;
- To reach common solutions for the issues concerned;
- To engage national, regional and local authorities and organisations, representatives of the public, NGOs, environmentalists and the private sector at the pilot locations.

Innovative Approach

A radical break is being made with the "higher dikes" philosophy that pre-dominated in the past.

The SDF project creates room for the river along the Upper and Lower Rhine by:

- Redeveloping floodplain areas to increase the river's discharge capacity;
- Creating new floodplains to serve as water retention areas.

EU Funding

The SDF project is co-financed by the European INTERREG IIIB Programme for Flood Prevention and Water Management. The SDF project will invest EUR 32 million in relocating dikes, creating new polders, side channels and inlet works and developing new areas of nature. Thanks to EU co-financing, various flood prevention plans can be implemented sooner and more effectively than had been anticipated.



PROJECT MANAGEMENT

The SDF project management structure is based on close co-operation between seven key actors: the Steering Group (SG), the Transnational Partner Group (TPG), three Working Groups (WGs), the SDF Project Secretariat (SPS) and the Joint Technical Secretariat (JTS).

The **Steering Group (SG)** has an important role in securing commitment from each partner during the total SDF project period. Directors of the local partner organisations are members of the SG. It is easier for the project leaders of the partners in the TPG to address the SG members about their support for SDF. The SG has a role in helping to overcome possible delays in progress or budgetary problems. Co-operation in the SG will encourage the partners to think transnationally and make it easier for them to disseminate their transnational experiences in their own network.

The **Transnational Partner Group (TPG)** is responsible for taking decisions on coordinating the Working Groups and is therefore responsible for meeting the overall transnational aims and the objectives of SDF. Each partner organisation has delegated one representative at each pilot location as a member of the TPG. The SDF project manager of the lead partner functions as the chairman of the TPG. The TPG is authorised to instruct the Working Groups about the targeted common results and about sharing their experiences. The TPG will also coordinate training proposed by the Working Groups. The SDF project secretariat assists the TPG with its organisational and decision-making tasks.

The **SDF Project Secretariat (SPS)** plays a key role in the overall management of the project. All partners report twice a year to the SPS on financial aspects and on any planned and implemented activities. The SPS prepares the financial and progress reports on the activities carried out in the twelve pilot projects and on joint activities. These reports are sent to the Joint Technical Secretariat (JTS) of the INTERREG IIIB programme in Lille. SPS organises joint actions such as SG, TPG and WG meetings, supports activities at pilot locations, and keeps a close eye on the timely implementation of the SDF action plan. It also communicates the project activities to a broader public.

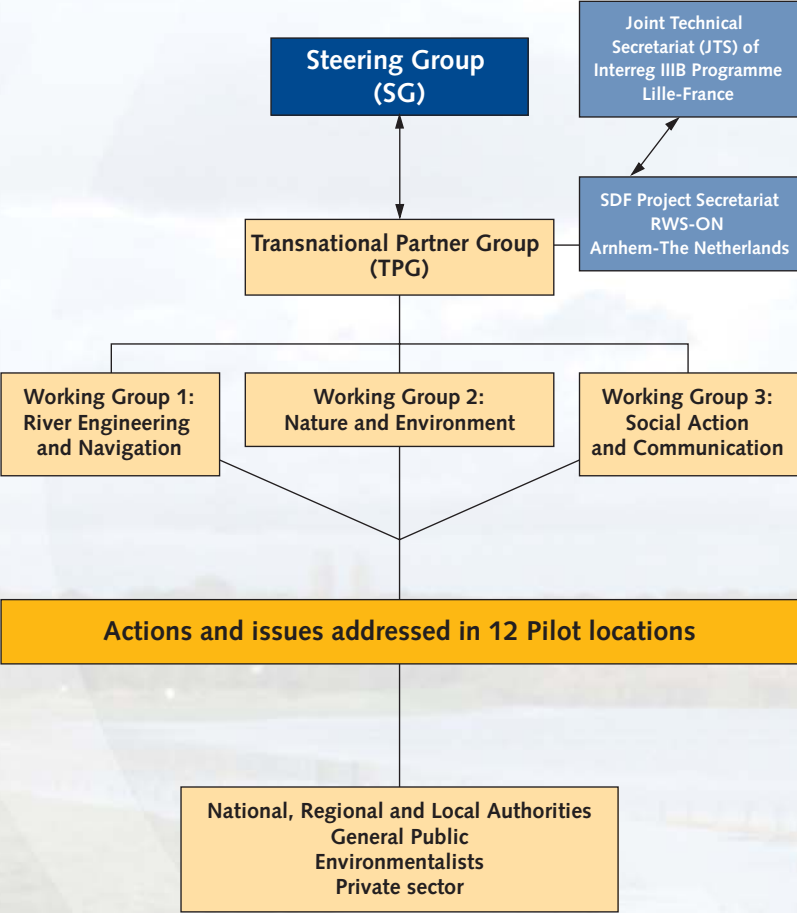
The **Joint Technical Secretariat (JTS)** in Lille (France) is the focal point for information and the practical day-to-day implementation of the INTERREG IIIB Programme for North West Europe (NWE). The SPS is in regular contact with the JTS.

The **Working Groups (WGs)** are responsible for the transnational aspects of the SDF, the common outputs and goals, and the exchange and transfer of knowledge and experience within the partnership as well as outside the project to other river basins.



PROJECT MANAGEMENT

Transnational Cooperation Network



River Engineering and Navigation (WG1)



Working Group 1 addresses the issue of river engineering and navigation. The experience and expertise gained by each partner in the course of its own pilot project will be made available to the other partners so that they too can improve their knowledge of river engineering and navigation. The topics discussed in the Working Group cover the common aspects of creating polders, side channels and of dike relocations. These measures will reduce high water levels and increase the area of the floodplain, leading to safer living conditions in flood-prone areas and reducing flood damage and the vulnerability of goods and property.

The Working Group may assist partners in finding transnational and innovative solutions for specific local problems.

Subjects addressed:

- Effective design and maintenance of inlet and outlet works;
- Common approach to the design of side channels;
- Dike relocation for high water retention and to restore natural features;
- Designing structures (i.e. small bridges), minimising their impact on water levels;
- Innovative approaches to the function, use and design of retention areas, including the adaptation of retention areas to allow for the needs of shipping and nature development;
- Expansion of the floodplain to prevent flood damage.

The Working Group consists of experts from the partner organisations. Experts from other organisation will be invited to present particular subjects. Experts from outside the partner organisations, for example from other INTERREG IIIB water projects, attend Working Group meetings, contributing to a further exchange of experience and cooperation between INTERREG IIIB projects.

The Working Group meets twice a year, each time at a different SDF pilot location. The Working Group leader is Dr. Thomas Bettmann from the SGD-Süd, "Ingelheim Polder" project leader.



Nature and Environment (WG2)



Working Group 2 deals with nature and the environment. The implementation of flood prevention measures along the main rivers should be combined with other spatial objectives, such as nature development, recreation, mineral extraction and agriculture. The floodplains offer numerous possibilities for the development of new natural features. Linking new nature areas along the Rhine will improve the transnational ecological infrastructure in Northwest Europe.

Subjects addressed:

- Sustainable multi-functional use of retention areas to improve the habitable space. Optimisation of benefits for retention and nature development in river restoration projects;
- Development of new nature areas and improvement of existing natural features (including river restoration);
- Integration of the multiple land use concept with natural development strategies and territorial planning policies;
- Development of more sustainable solutions for dealing with contaminated soil, within the economic and environmental boundaries;
- Integration of sand, gravel and clay extraction with retention measures (generating economic benefits) and nature development;
- Design and exchange of know-how on ecologically responsible flooding;
- Integration of other spatial claims when planning retention measures. Other than flood prevention measures and nature development, these claims involve the development of recreational areas, afforestation, and archaeology and cultural heritage in floodplains;
- Benefits of different national and regional eco-pool concepts and policies for sustainable land use (and policy check).

The Working Group consists of experts from the partner organisations. Experts from other organisation will be invited to present particular subjects. Experts from outside the partner organisations, for example from other INTERREG IIIB water projects, attend Working Group meetings, contributing to a further exchange of experience and cooperation between INTERREG IIIB projects.



The Working Group meets twice a year, each time at a different SDF pilot location.

The Working Group leader is Willie Tiggeloven of the Government Service for Land and Water Management (*Dienst Landelijk Gebied-Regio Oost*).



Communication and Social Interaction (WG3)

Working Group 3 addresses the issue of communication and social interaction. The overall objective is to raise the awareness of the general public and increase its commitment to the transnational interdependency of flood prevention and to improve cross-sector stakeholder involvement. This will be achieved by transferring knowledge and experience and by building up a transnational co-operation network of responsible authorities (to support other projects in the future), thus creating a cross-sector network for flood management.

The involvement of the public in early planning phases is one of the objectives of the SDF project. Public involvement can be achieved in two ways, i.e. through the use of:

- Formal instruments, such as Environmental Impact Assessments (EIAs), administrative allowances, etc. These instruments generally allow for the participation of stakeholder groups and are based on national or European law. The project partners therefore face several common aspects and processes when it comes to managing their projects.
- Informal instruments, such as information events, "project advertising", PR, etc. These instruments have different backgrounds and "cultures" in the different countries and regions.

The formal instruments are obligatory; the informal ones are "free" and often depend on the self-image of the responsible partners. Public involvement has advantages (measures are more readily accepted, fewer protests, etc.), but it may also make projects more difficult (because information and public participation can slow down the project). Another objective of SDF is not only to work on preventing of flood damage but also to develop a "transnational planning culture" covering common floodplain management tasks. The idea is that water is a resource that can only be managed in cooperation with all the responsible planning partners as well the people living in NWE. Our way of integrating and informing people may set an example for other projects or regions, provided we can demonstrate which "new paths" of communication and participation lead to better projects, greater acceptance, a better understanding of the connections in European (spatial) planning culture, and perhaps to a "social database" (if, for example, the participants bring in specific local information and help engineers to acquire a better understanding of people's needs).



Communication and Social Interaction (WG3)

Subjects addressed:

- Communication processes with local population (communication strategies in partner projects);
- National planning process in regard to regional communication and local participation;
- Best experience exchange/transfer on EIA/SEA. The results for the planning and implementation processes will lead to conclusions concerning the relevant EU policies on the EIA/SEA Directives, the Water Framework Directive, etc.;
- Lessons learned when implementing the EU Bird/Habitat directives by means of retention measures that also have nature development as their aim. Often the legal consequences of these directives make it impossible to develop new nature areas, which seems contradictory;
- Creating innovative contracts with contractors, land users, landowners and the relevant authorities. Public-private partnerships;
- Creating and comparing compensation strategies for local people and communities. Setting up agreements on land use change strategies.

The Working Group consists of experts from the partner organisations. Experts from other organisation will be invited to present particular subjects. Experts from outside the partner organisations, for example from other INTERREG IIIB water projects, attend Working Group meetings, leading to a further exchange of experience and cooperation between INTERREG IIIB projects.

The Working Group meets twice a year, each time at a different SDF pilot location. The Working Group leader is Ms. Kirsten Adamczak of the EmscherGenossenschaft, "Emscher" project leader .



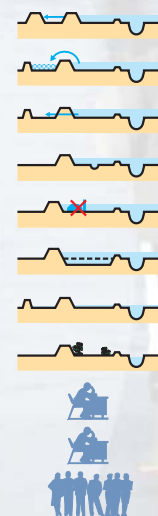
Planning and Implementation projects

Measures to prevent flood damage and to improve nature and the environment are being implemented at twelve pilot locations in the floodplains along the river Rhine in Germany and the Netherlands. Depending on the project phase, these pilot projects are divided into planning and implementation projects. The twelve pilot projects are presented below.



SDF Actions

- Dike relocation
- Creation of retention polders
- Construction of inlet works
- Creation of side channels
- Removal of hydraulic obstruction: ferry causeway
- Lowering of floodplain area
- Ecological flooding
- Nature development
- Environmental Impact Assessment (EIA) studies
- Feasibility studies
- Public communication



Emmericher Waard planning projects
Bommelse Waard implementation projects

KIRSCHGARTSHAUSEN *(implementation project)*

The floodplain of Kirschgartshausen is located close to the city of Mannheim. A dike will be reconstructed at a greater distance from the river to open up parts of the former floodplain to flooding. The retention area will be about 78 hectares. The project has its origin in the Integrated Rhine Programme of Baden-Württemberg, which focuses on flood protection and, equally, on the preservation and re-naturation of the Upper Rhine floodplains. The summer embankment will be relocated to enable natural inundations in low-lying areas, thus fostering the development of habitats and biocoenoses typical of floodplains. These measures will lead to rising groundwater levels that will affect the adjacent buildings and agricultural areas; protection measures will therefore be taken.

Aims

- Reduce high water levels and flood damage both upstream and downstream;
- Develop natural floodplain features and expand the network of environmentally valuable areas along the Rhine;
- Introduce measures to protect the surroundings against high groundwater levels;
- Improve the functioning of the drainage system.



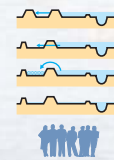
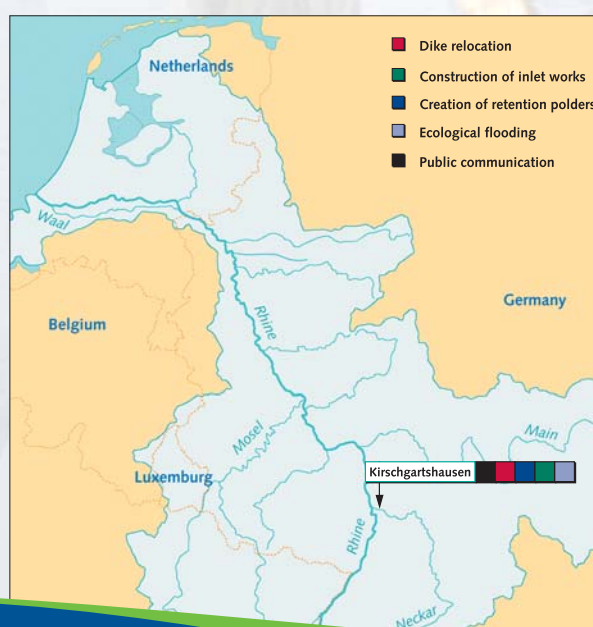
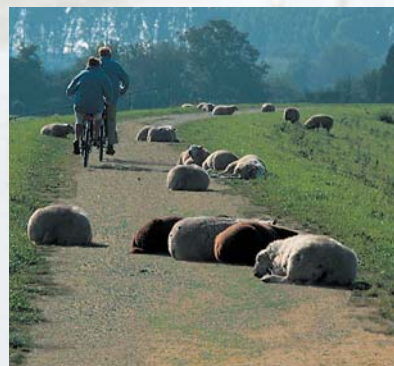
Activities

- Reconnection of floodplain to Rhine by dike relocation;
- Increase in natural inundations by relocating the summer embankment;
- Redevelopment of drainage system (including reconstruction of two pumping stations).



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POLDER INGELHEIM *(implementation project)*

The Ingelheim Polder is covered under the Franco-German treaty on restoring flood protection in the Upper Rhine and under the international ICPR Rhine Action Plan. Downstream of the city of Bingen, in the hilly Middle Rhine, there is no room for retention areas intended to lower flood levels. Two new dikes with a total length of 1300 m and an inlet structure with two large weirs must be built to create a retention area of about 160 hectares and a volume of 4,500,000 m³. The polder will be flooded in accordance with an international management plan and the data provided by the flood forecast centre. Construction began in August 2004 and will be completed in spring 2006.

Aims

- Reduce high water levels;
- Develop natural riverine features by means of ecological flooding;
- Improve opportunities for nature-oriented recreation;
- Restructure the area for multifunctional land use.

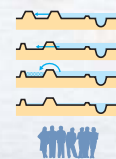
Activities

- Designing and building the inlet structure;
- Creating new retention areas in and around the Polder;
- Extending recreational possibilities (walking and nature observation, co-operation with local ecological centre);
- Creating new and better structures for agricultural use;
- Improving the communication processes with the local population and the land owners.



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EMSCHER *(planning project)*

The Emscher is tributary of the Rhine that drains the northern part of the *Ruhrgebiet* industrial area, which has about 2.4 million inhabitants. The catchment area is about 865 square kilometres and contains four sewage treatment plants and 350 kilometres of waste-water channels. The Emscher drainage system is being transformed into a natural open water system. The work started in 1990 and will be completed in 2020. Forty percent of the area has to be drained by about 100 pumping stations. Since the 19th Century the soil surface in this area gradually subsided due to the mining activities. This was the reason that the Emscher drainage system has been a waste-water discharge system for the area for more than 100 years. The ecological development of the Emscher, which runs through a regional park, is also part of another INTERREG IIIB project ('SAUL'). Sustainable rainwater management is also an objective that is part of the INTERREG IIIB project 'Urban Water'.

Aims

- Develop a concept for optimising the use of combined measures along the Emscher in order to significantly reduce peak discharges in the Emscher and Rhine;
- Optimise the planning measures by means of knowledge transfer concerning ecological development and public participation;
- New floodplains have an impact on the groundwater level near housing estates, so expertise is required about the streaming impacts and changes in the groundwater level;
- Public opinion will be crucial to the acceptance of the measures. The Emscher location partners and the SDF partners will complement one another. Lessons learned will be used in the model studies.



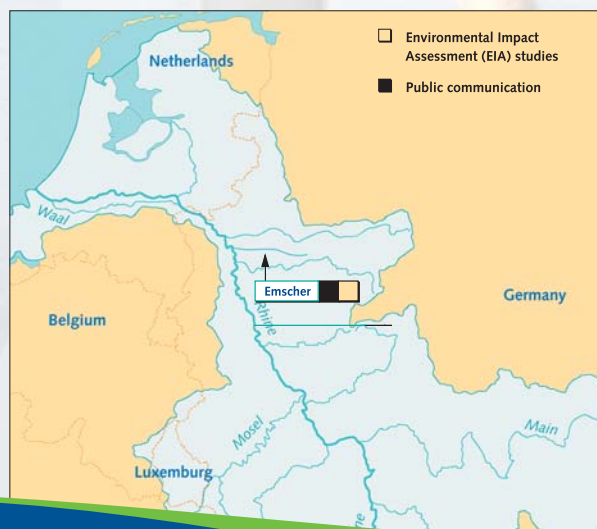
Activities

- Developing plans for new retention areas (63 hectares);
- Environmental Impact Assessment;
- Investigations on possible effects of the planned measures;
- Public participation process during the planning phase;



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EMMERICHER WARD (planning project)

The Emmericher Ward floodplain is situated on the Dutch-German border, west of the town of Emmerich, and comprises an area of 248 hectares. The floodplain is part of the RAMSAR site and of the *Unterer Niederrhein* bird sanctuary. The floodplain is characterised by floodplain forests, meadows and riverbanks. The area is quite natural, although there were excavation activities in the past. Bodies of water left after sand and gravel excavation and natural bodies of water are important for flora and fauna.

Aims

- Improve flood protection along the Rhine;
- Reduce bed erosion;
- Create special riverine pioneer habitats on gravel banks by means of erosion and sedimentation processes along a newly excavated gully;
- Create dynamic gravel and sand banks;
- Optimise natural banks.

Activities

A feasibility study and a development plan for this area will be prepared. The planned measures are:

- Creation of a secondary gully;
- Restoration of inundation dynamics in the floodplain area;
- Protection and development of softwood floodplain forest.



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BISLICH-VAHNUM (planning project)

There is a large floodplain area near the village of Bislich owing to the fact that the winter dike is located 500 metres from the bed of the Rhine. The project covers an area of 150 hectares. Part of the area is designated as a nature reserve (the *Rheinaue Bislich-Vahnum*). Within the floodplain are bodies of water left behind after sand and gravel excavation.

Aims

- Improve flood protection along the Rhine;
- Create special riverine pioneer habitats, which have come under considerable pressure in the past few decades, by means of erosion and sedimentation processes along a newly excavated gully;
- Create a spawning habitat for species of fish that depend on flowing waters.



Activities

A feasibility study and a development plan for this area will be prepared. The planned measures are:

- Creation of a secondary gully that should be connected to the river almost year-round;
- A roadway and a driveway to a former military NATO river crossing point must be made permeable or partly removed.



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LOHRWARDT (implementation project)

The Lohrwardt Polder is situated in the eastern Rhine floodplains near the city of Rees, adjacent to the German-Dutch border, and is flood-free owing to dikes. The project covers an area of 270 hectares. The project involves reconstructing the dikes that used to be located in the Lohrwardt area at some distance from the river until the 1960s. The gravel, clay and sand pits, the bodies of water and the agricultural land situated in the area of the future Lohrwardt Polder will be purchased if necessary and leased to the farmers at reduced rates by the *Deichschau Haffen-Mehr*.

The *Deichschauen* in North Rhine-Westphalia (NRW) are public bodies founded under the federal Water Associations Act and are spatially delimited. All citizens protected by these public bodies are compulsory members. The membership fee depends on the measures implemented by the respective *Deichschau*. The *Deichschauen* along the Rhine fall under the responsibility of the respective *Bezirksregierungen* (sub-regional authorities). The water intake and outlet facilities planned within the framework of this investment will be constructed in accordance with a regulation concerning nature-oriented river development and maintenance in North Rhine-Westphalia, and will therefore include provisions for fish ladders.

Aims

- Improve the natural environment;
- Improve flood protection by effectively lowering high water levels on both sides of the Dutch-German border;
- Protect property and human life in the Polder;
- Create flood protection, landscape protection and tourism facilities while sustaining conditions for agricultural production.

*Deichschau
Haffen-Mehr*

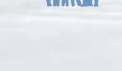
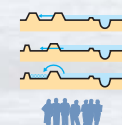
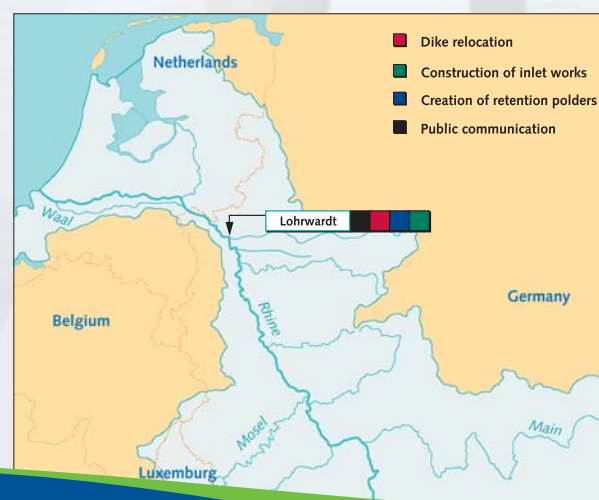
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Activities

- Creating large connected polder areas for water retention;
- Constructing an inlet work, outlet work and a pumping station;
- Reconstructing dikes;
- Re-naturating the Rhine river banks and increasing ecologically valuable areas;
- Concluding leasing contracts between the *Deichschau Haffen-Mehr* and the farmers concerning co-operation between water management and agriculture;
- Promoting supra-regional tourism (e.g. cycle tracks on the dikes along the *Rheinschiene*).



RIJNWAARDEN (planning project)

Rijnwaarden is a large floodplain of 1200 hectares along the Rhine, close to the Dutch-German border. Valuable ecological features are linked to the old *Oude Waal* Rhine channel, the clay pits in the northern part of the Lobberdensche Waard and the Bijlandse Dike. The area is home to a striking range of different facilities, for example brick factories, a port of refuge and marina, campsites, a recreational lake, clay pits, two ferries, farms and housing. An integral management plan for the area was published in 2000 under the guidance of the Ministry of Transport, Public Works and Water Management. Preparation of the execution phase commenced in 2003 under the guidance of DLG (the Government Service for Land and Water Management, part of the Ministry of Agriculture, Nature and Food Quality).

Aims

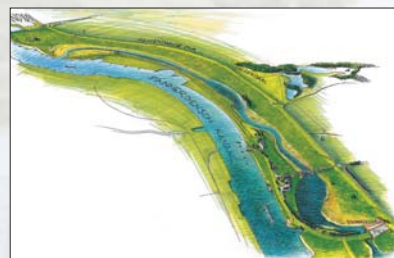
Develop the "Green River" area into a highly dynamic side channel in order to create:

- Natural riverine features;
- A larger discharge capacity (increased from 15,000 m³/s to 16,000 m³/s), creating more room for the river.



Activities

- The Initial Document for the Environmental Impact Assessment (EIA) was published in December 2004;
- Public involvement;
- EIA guidelines issued by the competent authority in April 2005;
- Preparation and completion of the EIA report;
- Preparation of a detailed design and applications for the necessary permits.



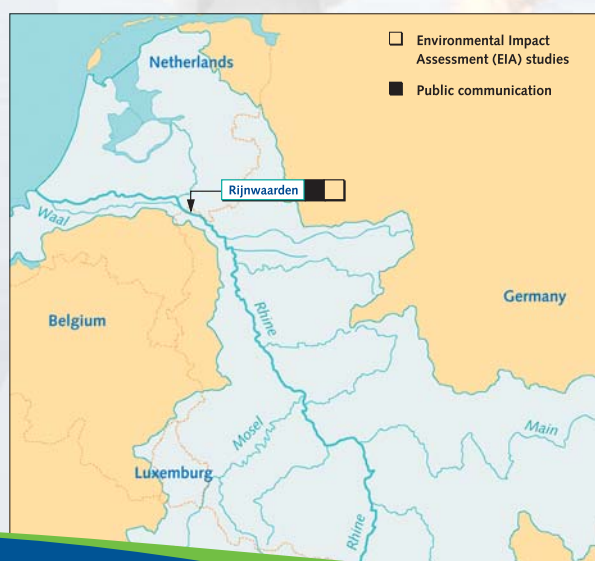
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Present



Futere



BEMMELSE WAARD *(implementation project)*

The Bemmelse Waard is a floodplain on the northern bank of the river Waal, just east of the city of Nijmegen. The project is part of the Ooijpolder Land Consolidation Project and the Gelderse Poort Strategic Landscaping Project (*Strategisch Groen Project*).

The Bemmelse Waard covers an area of 400 hectares. The area is characterised by a large brickyard and big lakes created by excavating sand. An old channel runs along the dike. The development plans for the area have been completed.

Preparations are being made to implement part of the development plan for the Bemmelse Waard.

Aims

- Nature development;
- Increase discharge capacity of the Rhine and create room for the river to improve flood protection;
- Improve opportunities for nature-oriented recreation;
- Preserve and re-develop the landscape.

Activities

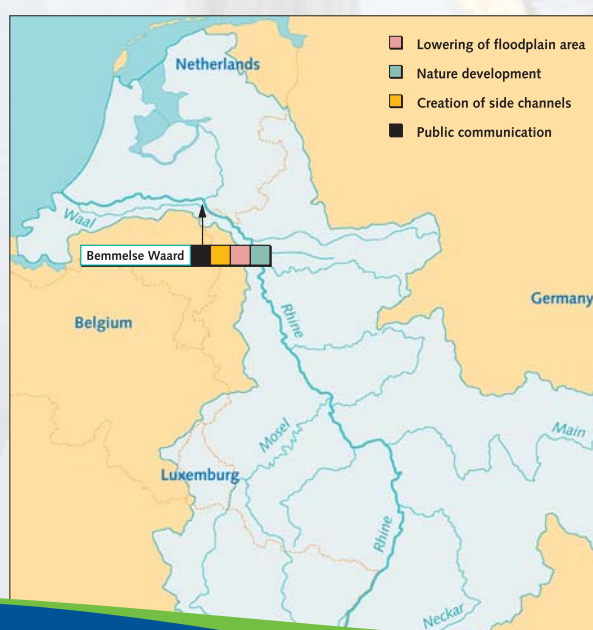
- Lowering the level of the floodplain by means of excavation;
- The old course of the river Waal will be made visible by linking together and reducing existing clay and sand pits;
- Creating a large-scale riverine nature area of approximately 270 hectares to be managed by the National Forest Service (*Staatsbosbeheer*);
- Developing a public-private-partnership concept;
- Creating recreational facilities (walking and nature observation, co-operation with local centre);
- Constructing channels in the floodplain;
- Considerably expanding the marshy areas along the channels to be excavated;
- Providing a high water refuge for livestock;
- Streamlining the brickwork site.

These measures will provide for a more free-flowing river and allow ecological features to develop.



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FORTMOND *(implementation project)*

The Fortmond floodplain is an area along the river IJssel between the cities of Zwolle and Deventer. The first nature development project in the area, *Duursche Waarden*, was implemented in 1989. A redevelopment plan has been prepared for the rest of the area, which can be divided into three subareas: *Enk* (45 hectares), *De Zaaij* and *Roetwaard* (150 hectares). In *Enk*, two deep secondary channels will be excavated that will both flow into the existing secondary channel in the *Duursche Waarden*. In *De Zaaij/ Roetwaard*, a deep, isolated body of open water is being created. In *Roetwaard*, the existing open body of water will be connected to the river IJssel by excavating a secondary channel. New ecological features, i.e. a floodplain forest, are an important objective of the project. Recreation will be enhanced by the creation of fishing spots and walking trails.

The activities in the Fortmond area are being implemented in two phases. Phase I involves starting up activities, including implementation, in *De Enk-Noord* and *Roetwaard-Noord*. Phase II involves implementing the remaining part of the total plan. Implementation will start approximately a year after phase I to allow for land acquisition in parts of the subareas.

Aims

- Develop riverine nature;
- Create room for the river for better flood protection;
- Encourage public involvement and awareness;
- Improve opportunities for nature-oriented recreation.



Activities

- Preparing construction plans;
- Applying and implementing the Birds and Habitat directives;
- Constructing side channels and lowering the floodplain to increase the discharge capacity of the river IJssel;
- Creating a large-scale riverine nature area of approximately 15 hectares (phase I, *De Enk-N* and *Roetwaard-N*) and 40 hectares (phase II, *De Zaaij*) to be managed by the National Forest Service (*Staatsbosbeheer*);
- Creating recreational facilities (walking and nature observation, fishing);
- Developing an innovative contracting concept (e.g. public-private partnership).



Future



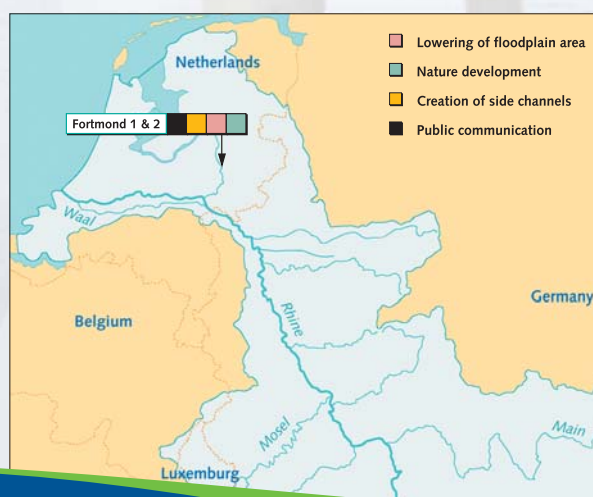
Present



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HONDSBROEKSCH E PLEIJ *(implementation project)*

The Hondsbroeksche Pleij is a former floodplain on the right bank of the rivers Lower Rhine and IJssel that covers an area of 120 hectares. The area is mainly used for agricultural purposes. It is situated at the bifurcation of the rivers Lower Rhine and IJssel and is completely surrounded by dikes: Veerdam Dike lies to the north, the former Westervoortse main river dike to the east, and the present Pleij Dike (along the river) to the west.

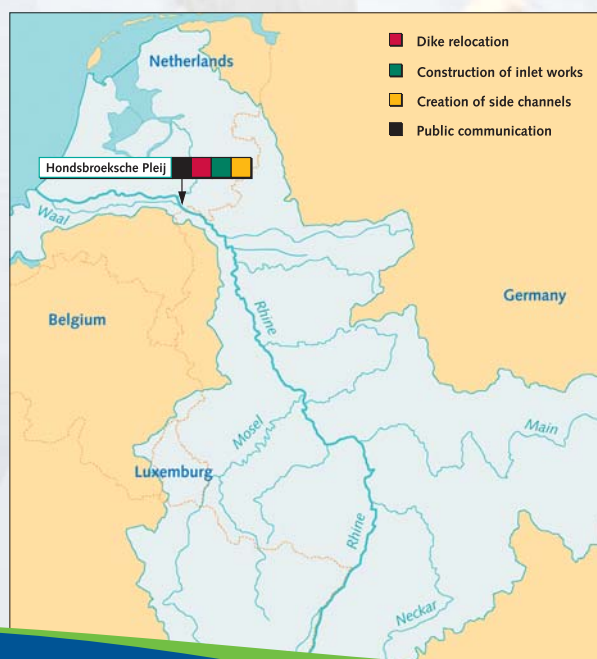
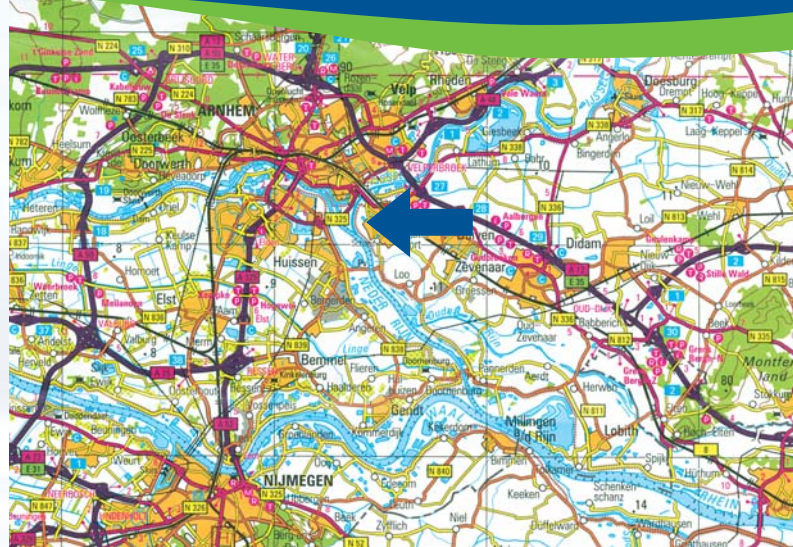
Aims

- Protect against flooding. Part of the Pleij Dike and Veerdam Dike constitute a barrier during periods of high water levels. The floodplains are very narrow. Moving the dike inland creates more room for the river;
- Regulate discharge at high water levels. To maintain an equal distribution of water over the various branches of the Rhine, an adjustable spillway will be constructed between the old dike and the new dike;
- Nature development. The Hondsbroekse Pleij is the link between nature areas along the Lower Rhine and the IJssel;
- Recreational use of the area.

Activities

The project planning and design process has been completed, including an Environmental Impact Assessment. The development plan for the area includes:

- Relocation of the dike along the IJssel approximately 250 metres farther inland and along the river Lower Rhine about 150 metres inland;
- The newly created floodplain will be lowered to allow natural features to develop;
- Construction of a channel in the floodplain;
- Construction of an adjustable spillway at the inlet to the channel;
- Removal of a large composting plant from the floodplain.





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LEXKESVEER *(implementation project)*

The Lexkesveer floodplain lies on either side of the Rhine within the municipalities of Renkum, Heteren and Wageningen. The area covers 380 hectares. At the heart of the area lies the Lexkesveer ferry link, which carries commuter traffic and schoolchildren across the river between the cities of Wageningen and Heteren.

The southern floodplains of the Lexkesveer are part of a cross-border strategic nature development project. On the southern bank, the emphasis is on combining safety and nature development. The ferry causeway located here will be partially replaced by a bridge, combined with the excavation of three summer embankments (levees, nearest to the river). Furthermore, a secondary channel will be excavated and extended under the bridge. Part of the floodplain will be lowered.

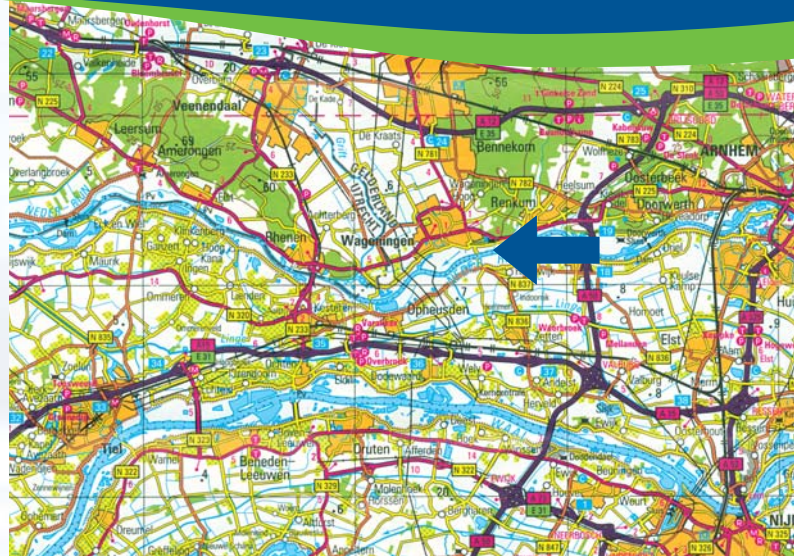
The northern floodplain of the Lexkesveer is part of the *Noordoever Nederrijn* development plan. On the northern bank, the emphasis is on nature development; a "seepage marsh" will be created, while the Renkumse Beek, a stream that emerges in the Veluwe hills, will feed a new brook marsh before it runs to the river.

Aims

- Develop riverine nature;
- Increase the discharge capacity of the Rhine and create room for the river;
- Preserve and re-develop the landscape.

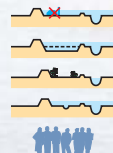


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Activities

- The planning and design process for the project, including an Environmental Impact Assessment, has been completed;
- Submitting applications for permits for the construction activities;
- Construction of the bridge, which will replace a major part of the ferry causeway, is scheduled to begin in 2006;
- Excavation of a side channel;
- Marsh development.



HEESSELSCHES UITERWAARDEN *(planning project)*

The Heesseltsche Uiterwaarden floodplain is situated along the river Waal, west of the town of Tiel. The area measures about 350 hectares and is characterised by a half-open to open landscape. The grazed meadows alternate with some trees and brushwood. Near Opijnen, there is a secondary gully that is very important for fish. Sand and gravel extraction have created some stagnant bodies of water that also play an important role as spawning areas. After the floods of the early Nineties, the winter dikes in the area were improved. It is not desirable to raise the dikes further, however, and other measures are therefore being discussed, for example within the government's "Room for the River" programme. The Heesselt floodplain is one area along the Waal where measures can be taken to reduce high water levels.

The area belongs to *Fort Sint Andries*, a Strategic Landscaping Project (*Strategisch Groen Project*) that was designated part of the Main Ecological Network (*Ecologische Hoofdstructuur*) in 1997. Some nature-friendly banks have already been created.

Aims

- Create more riverine nature;
- Improve flood protection along the Rhine.

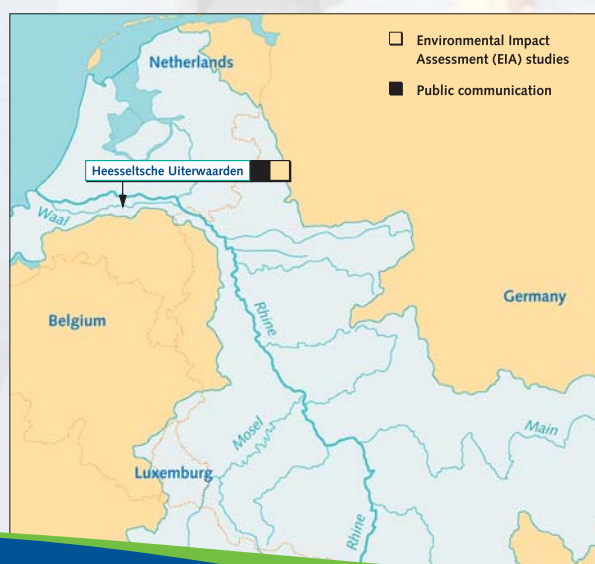


Activities

- An Environmental Impact Assessment (EIA) for this area will be conducted. An initial memorandum (*Startnotitie*) was published in 2002; it presented a number of alternatives for redeveloping the area;
- The preferred measures will be assessed within the EIA study and included in the most suitable redevelopment plan of the area.

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