



STICHTING **ARK**



A policy field guide to

The Gelderse Poort

A NEW, SUSTAINABLE ECONOMY UNDER CONSTRUCTION

One Europe More Nature

European Challenges, Natural Solutions:

A new perspective for nature and people in rural areas in Europe

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The Gelderse Poort

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Stichting Ark and Stroming BV commissioned by WWF

August 2005

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STICHTING **ARK**

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Introduction

THE EUROPEAN LANDSCAPE AT A CROSSROADS

The appearance of the European landscape is largely determined by agriculture – simply because this economic activity covers more than 50% of Europe's land surface. Forestry comes a good second, covering 35%. Changes in agriculture and forestry therefore impact immediately on our landscapes and the animal and plant communities associated with them. And big changes in land use do lie ahead of us – especially in agriculture.

It has been estimated that as a result of the EU's Common Agricultural Policy several million hectares of land will no longer be needed for agriculture. In areas where conditions are good (soil quality and in particular access to resources and markets) farmers will intensify and upscale their activities, thus out competing colleagues in areas where conditions are less favourable. Without support, the latter will have no choice but to give up their farms, often leaving the land unmanaged. Both sides of the coin, intensification and land-abandonment, will induce drastic social changes in rural areas throughout Europe and will lead to enormous changes in landscapes, natural values and ecological processes.

The change has already started and will be accelerated by the extension of the EU. This demands reflection and action by all those who care about the quality of the European landscape and the wellbeing of the people whose lives are intertwined with them. Where agriculture disappears, new economies need to be developed. These should

- support people (socially, economically)
- support the conservation and/or restoration of landscapes and ecological processes.

Only initiatives, in which these two qualities are combined, will have a chance for *implementation in the short term* and at the same time will be *sustainable in the long term*.

ONE EUROPE MORE NATURE

The fact that land-use is changing is no secret. Although the public at large may not yet be aware of it, policy makers and politicians know what's going on. It is no coincidence that the Common Agricultural Policy increasingly offers possibilities for 'rural development' in the broad sense, instead of being solely directed towards supporting agriculture. However, changing *policies* is one (important!) thing, changing *practices* is another. This is where One Europe More Nature comes in. One Europe More Nature aims to develop and/or highlight areas in which people are succeeding in making the transition from a (largely) *agricultural economy* to a (more diverse and

sustainable) *new economy*. In the latter, agriculture might still play a role, but will no longer be the critical factor on which social life, incomes, natural values and landscape quality depend. By highlighting these working examples, wwf wants to change the spirit of the debate and demonstrate that changes in land use need not be treated as a problem. They can also be seen as an opportunity to develop new landscape qualities and new forms of income. Sure, grabbing these opportunities is hard work – but it *can* be done and it *is* rewarding. One Europe More Nature shows this.

An example is illustrated in this policy field guide. It shows how people living in the Gelderse Poort area of the Netherlands are successfully building a new economy, which is not only helping to restore ecological processes and landscape quality, but is also creating new jobs. The whole process takes place on a voluntary basis, is market driven and is independent of long term subsidies.

The Gelderse Poort is *not* a blueprint for sustainable development in other areas in Europe - every situation needs its own tailor made solutions. However, wwf firmly believes that the projects described in this report *can* be a source of inspiration for all those working towards a new future for Europe’s landscapes and ecological processes – and the people, plants and animals associated with them.



ONE EUROPE MORE NATURE

The central goal of One Europe More Nature is: *to identify, create and communicate practical examples of alternatives for rural development in Europe, mechanisms which are good for nature and good for people and which can significantly influence the reform of the CAP and enhance wwf's nature conservation impact across Europe.* wwf does this by:

- setting up a network of pilot projects across Europe and acquiring experience with various regional partners of financing mechanisms for nature and landscape protection and restoration. These pilots also include non-wwf projects. In most cases pilots offer perspective on a European scale;
- using these results to influence public opinion and policy decision-making on European (agricultural) policy and its reform and implementation;
- creating awareness in European consumers that they contribute to the quality of nature and landscape by their (purchasing) behaviour in food, services, recreation, tourism and other sectors.

By combining policy and market mechanisms, and by focussing on partnership, on stakeholders, and on new economies rather than on species and habitats, wwf believes that the One Europe More Nature projects offer potential for self-sustaining rural development in a time of change. Projects included in One Europe More Nature:

- Vainameri (Estonia), executed by Arhipelaag and wwf-Sweden;
- Gelderse Poort (Netherlands), executed by Stichting Ark and wwf-Netherlands;
- Sinca Noua and Tagla Mountains (Romania), executed by the village of Sinca Noua and wwf International;
- Ardennes (Belgium), executed by wwf-Belgium;
- Prespa (Greece), executed by wwf-Greece and Society for the Protection of Prespa
- Coto Doñana (Spain), executed by wwf-Spain;
- Tisza lowland floodplains (Hungary), executed by wwf-Hungary;
- Tisza upland headwaters in Maramures (Romania), executed by wwf-Danube Carpathian Programme.

One Europe More Nature is a collaborative – integrated – project of the wwf European teams on agriculture, forestry, and freshwater and is funded by wwf Netherlands. For more information on One Europe More Nature, contact the Project Leader:

Charlie Avis

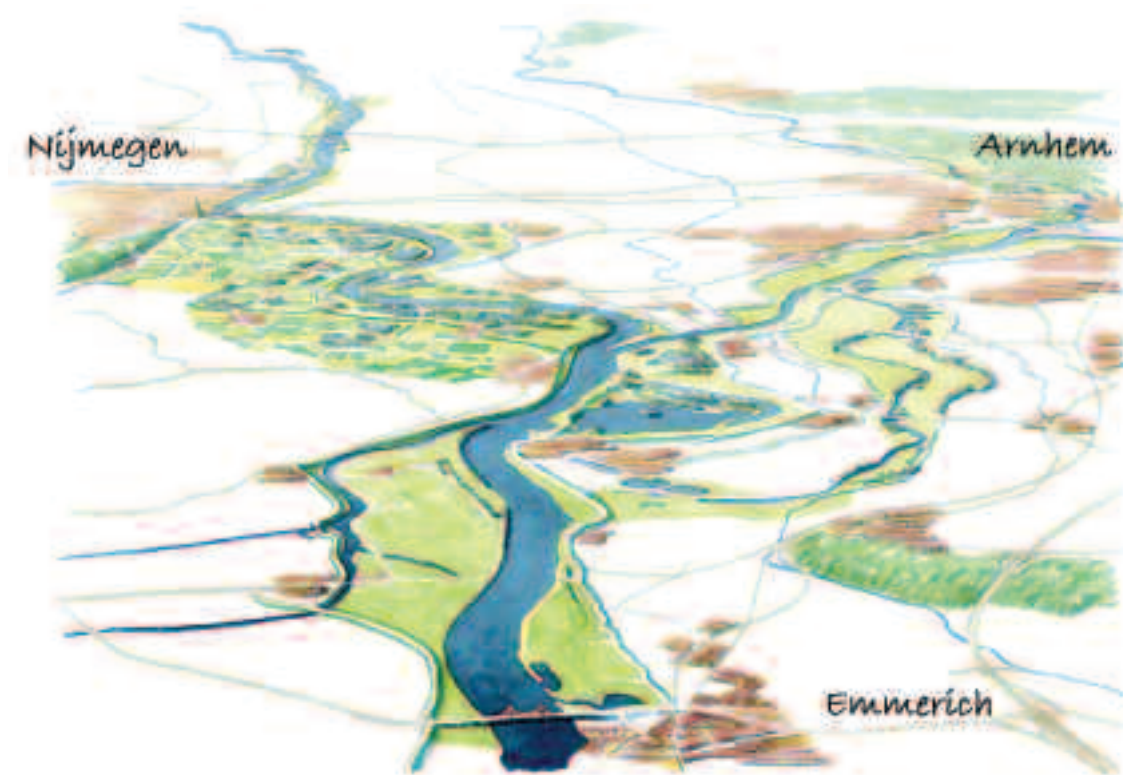
c/o wwf Hungary, H-1124 Budapest, Nemetvolgyi ut 78/b, Hungary.

Tel: +36-1-2145554 x126; mobile: +36-30-4144454; email: Charlie.avis@wwf.hu

1 Gelderse Poort

THE PROJECT AREA

The Gelderse Poort is the area where the Rhine branches out into the Rivers Waal, Lower Rhine and IJssel. It is situated on the German/Dutch border, near the cities of Arnhem, Nijmegen and Emmerich. The project area covers some 10 000 hectares and is increasingly considered as the green lung of an expanding urbanised and economically important region.



The Gelderse Poort is 'cornered' by the cities of Arnhem, Nijmegen and Emmerich.

DEVELOPMENTS IN LAND-USE

Agriculture has a long history in the Gelderse Poort. Initially, farming was concentrated on higher land, but in the Middle ages, when alluvial forests were removed and dikes (13th century) constructed, the river forelands were also occupied.

Although the soil quality in the forelands was good, regular flooding prevented agricultural hyper-intensification of the type which at present seems to be required to compete on European or global markets. *Plan Ooievaar*, published in 1987 by the



Experiences in the Gelderse Poort were rapidly followed by similar projects in other areas. The map shows the coverage reached in the past 10 years. Recent social studies from Alterra Institute reveal that 90 % of the people in the neighbouring villages are enthusiastic about the ecologically restored forelands and their accessibility for leisure and adventure. (More than 50% of them responded negatively when these projects were still in the planning stage!)

Gelderse Milieu Federatie, was the first study clearly signalling that agriculture was becoming less economically viable in the ‘handicapped’ river forelands. It advocated an active approach in which the retreat of agriculture would be combined with the ecological restoration of the river system (see also chapter 2).

Living Rivers, launched by wwf-Netherlands in 1992, elaborated on this. It introduced clay mining as a new economic driver, which could

- (partly) substitute the declining role of agriculture
- contribute to the ecological restoration of the riverine landscape
- contribute to improved and sustainable flood prevention.

The Millingerwaard, a 600 hectare area on the river foreland, was the pilot area where these ideas were put into practice and where new partnerships were tested. Stichting Ark and wwf-Netherlands played an instrumental catalytic role in this process. Numerous communication activities, including campaigns targeting the general public and a successful field education programme for primary schools, helped spread the results of the project and a sense of excitement and adventure became attached to it. The area was ‘discovered’ by a growing number of nature lovers and tourism soon became an additional source of income for people living in the area.

A NEW ECONOMY

With the introduction and small-scale implementation of the large-scale Living Rivers concept, new enthusiasm arose and new partnerships developed. Exceptional floods on the rivers Rhine and Meuse in 1993 and 1995 acted as an additional stimulus. The authorities demanded river safety *fast*, so clay-mining and the related ecological restoration were geared up - not only in the Gelderse Poort but also elsewhere along the rivers. Since 1992 some 50 new projects have started along the lines of the first pilot - with or without the involvement of WWF. Authorities and private entrepreneurs soon discovered the economic and social opportunities resulting from the new approach. Gradually a new economy took shape. The most important pillars of this new economy are highlighted in the following chapters, including information on where to find them in the field and how to contact the people and businesses involved in shaping them.

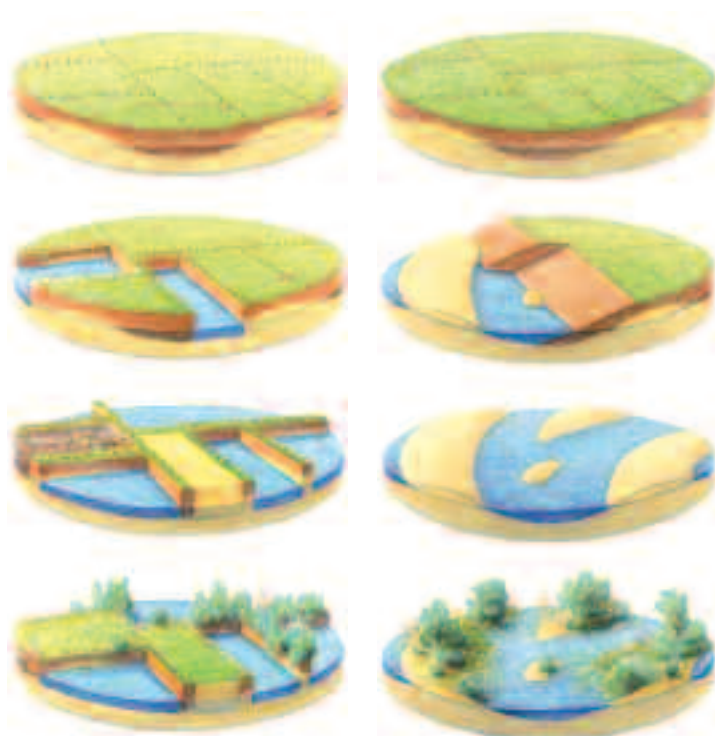
2 Clay mining

POINT OF DEPARTURE

Clay mining and brick making is one of the oldest industries in the region. Brick factories used to buy a parcel of land from farmers, excavate the top layer of alluvial clay (for brick making) and either leave behind a clay-pit or recultivate the area to return it to agricultural use. In the latter case the land was sold to farmers and the loop was closed.

Around 1980, the river forelands on which the clay mining industry depended (because this is where the clay is deposited by the rivers) became more and more renowned for their nature values. As a consequence, conservationists opposed new clay mining activities because these were considered to destroy the landscape. The very future of the brick industry was under threat.

NEW DEVELOPMENTS



Clay mining. In former days the shape of the individuals parcels determined the boundaries of clay-mining projects. After excavation a clay pit remained or the areas were recultivated (left). Nowadays clay mining takes place superficially, over larger areas. Old river courses are brought to the surface and in this way an excellent starting point is created for regeneration of nature. Extra space is also created for flood retention (right)

In 1987 *Plan Ooievaar* described how the riverine landscape had lost its characteristic features as a result of intensification of agriculture and river management. It also demonstrated that this was a 'lose-lose' situation because the river forelands, due to their regular flooding, were inappropriate for the industrialised farming necessary to compete on international markets. It was therefore advocated that farming should be offered better grounds behind the dikes, so that natural and landscape values could develop in the forelands. This strategy was also supported publicly by agricultural associations.

Plan Ooievaar gained wide support and resulted in pilot projects in two forelands: the Blauwe Kamer along the Lower Rhine and the Duursche Waarden along the IJssel. However, this provoked no 'revolution'. In 1992 *WWF* published *Living Rivers* as a follow-up to the *Ooievaar*-concept, but extended it with a water retention philosophy and an economic driver: clay mining. This was introduced as an instrument to restore historical river courses and improve biodiversity and water retention.



This approach has many advantages:

- the brick and clay-mining industry obtains new opportunities and a better image ('building with bricks is building for nature');
- farmers in river forelands may sell their land to the clay-mining industry and use these funds to move to better grounds (a market-driven restructuring of agriculture);
- the riverine landscape is restored and many plants and animals which abandoned the forelands may recolonise the area;
- the deposition of clay is an ongoing process, so in the future the minerals may be extracted again.
- the restored, old riverbeds create extra flow capacity for flood retention and therefore contribute to river safety;
- the new 'wilderness areas' attract many visitors, which in turn offer new economic opportunities (see below).



WHERE IS THE ACTION?

A number of firms are active in clay mining and brick making:

- **DELGROMIJ LTD.** Clay-mining company, active in the central area of the Millingerwaard. The concession may be visited without permission.
For details of the project contact: Fred Snel, PO Box 64, 6660 AB Elst (tel +31 24 3488844; email fred.snel@delgromij.nl)
- **BOOWEGRO LTD.** Clay-mining company, active in the central area of the Millingerwaard. The concession may be visited without permission.
For details of the project contact: Jan van Casteren, PO Box 23, 5384 VT Heesch (tel +31 651780541; email jan@wetering-heesch.nl; www.wetering-heesch.nl)
- **WIENERBERGER/TERCA ERLECOM.** Brick factory. Uses mainly clay from the Gelderse Poort area. The plant can be visited with special permission.
Group visits can be arranged through Joop IJsveld, Wienerberger Erlecom, Erlecomsedam 110, 6577 JE Erlecom (tel +31 24 6632036, www.wienerberger.nl)
- **WIENERBERGER BRICKS.** International holding and owner of the plant at Erlecom and around 18 other Dutch plants. Supplies bricks for e.g. renovation and building projects in Rotterdam, Arnhem and Nijmegen. Participates in WWF's project 'building with bricks is building for nature'. International partner of WWF Europe for sustainable brick production.
Contact CEO Bert Jan Koekoek, PO Box 144, 5300 AC Zaltbommel (tel +31 418 59152; email tanja.bongers@wienerberger.com)

HOW ABOUT THE NEW NATURE AREAS?

Staatsbosbeheer (State Forestry Service) is responsible for the management of the new nature areas in the Millingerwaard and adjacent forelands. In the Gelderse Poort Staatsbosbeheer operates in a partnership with wwf-Netherlands and Stichting Ark. For more information about the nature management contact Staatsbosbeheer's regional headquarters in Deventer (Theo Meeuwissen, Binnensingel 3, 7411 PL Deventer, tel. +31 570 747100, www.staatsbosbeheer.nl) or Staatsbosbeheer's local office in Ooij (Arjan Snel, Ooijse Bandijk 36B, 6576 JE Ooij, tel. +31 651 207168). At wwf-Netherlands the contact person is Leen de Jong (wwf, PO Box 7, 3700 AA Zeist, tel +31 306937333, <http://wwf.nl>). At Stichting Ark the contact person is Johan Bekhuis, Wethouder Sandersstraat 10, 6579 AK Keekerdijk, tel. +31 651 790835, www.stichtingark.nl

BIG IDEAS, SMALL STEPS ... AND THE COURAGE TO FACE REALITY

Along many European rivers problems exist with regard to changing land-use and river management – problems similar to those found in the Gelderse Poort area. A lesson learned in the Gelderse Poort is that *one economic driver and/or one pilot is enough* to provoke a chain reaction resulting in more economic partners joining in and/or starting other projects. An important role for policy makers,

politicians and umbrella organisations is to *avoid denying or playing down the need for radical changes*. Soothing words, or subsidies for inefficient economic sectors or entrepreneurs, may seem to be attractive from a political point of view but in fact lure people deeper into the puddle of doom instead of stimulating them to think of new approaches while there is still time.

3 Sand extraction

POINT OF DEPARTURE

Thick layers of fluvial sands in the subsoil make the Gelderse Poort a suitable area for sand extraction. This sand is traditionally used as a basic material for building sites and infrastructure projects such as roads and railways.

In recent decades national and regional authorities have placed heavy restrictions on sand extraction because of its environmental and ecological impact and because of the lack of public support for large pits in the landscape. In fact, deep sand and gravel extraction in the river forelands has been illegal for 15 years. It has even been suggested that all national sand and gravel excavation be stopped and replaced with imports and offshore production in the North Sea.

DEVELOPMENTS



The sand and gravel industry confronted its problems of social isolation and poor economic prospects head on. In 2003 it launched a new vision on sand and gravel mining (*‘Over Winnen’*), which was supported by environmental organisations. The principle is similar to that of *‘Living Rivers’*: use sand and gravel extraction to build new landscapes in which ecological processes are restored and in which present and future social needs can be fulfilled (e.g. water retention, leisure areas, attractive building locations, etc). It is expected that, as a result of this, a new future for the industry may emerge. Currently the industry is shifting its policy towards co-operation with water, nature and environmental institutions.

Large-scale sand extraction can help to create new landscapes providing space for nature, leisure, building and water storage.

TOP existing situation.

MIDDLE AND BOTTOM the new landscape.

The lower illustration depicts the situation where the water retention capacity is used.



WHERE IS THE ACTION?

A number of initiatives are currently underway to put the new vision into practice:

- The IZGP is a union of sand and gravel mining companies which encourages the new approach to sand and gravel extraction, and facilitates the co-operation with NGO's and other institutions in areas like the Gelderse Poort. A number of pilots are being developed in order to set the new standard. Some of these pilots are situated in river forelands; some are in the areas behind the dikes.

For more information: Michiel Dankers, Chairman IZGP, p.a. Peter van der Veeken, P.O. Box 112, 6640 AC Beuningen (tel. +31 24 6790222, www.izgp.nl)

- **PILOT LOBBERDENSE WAARD.** A river foreland with old sandpits and agricultural fields will be transformed into a more natural landscape.

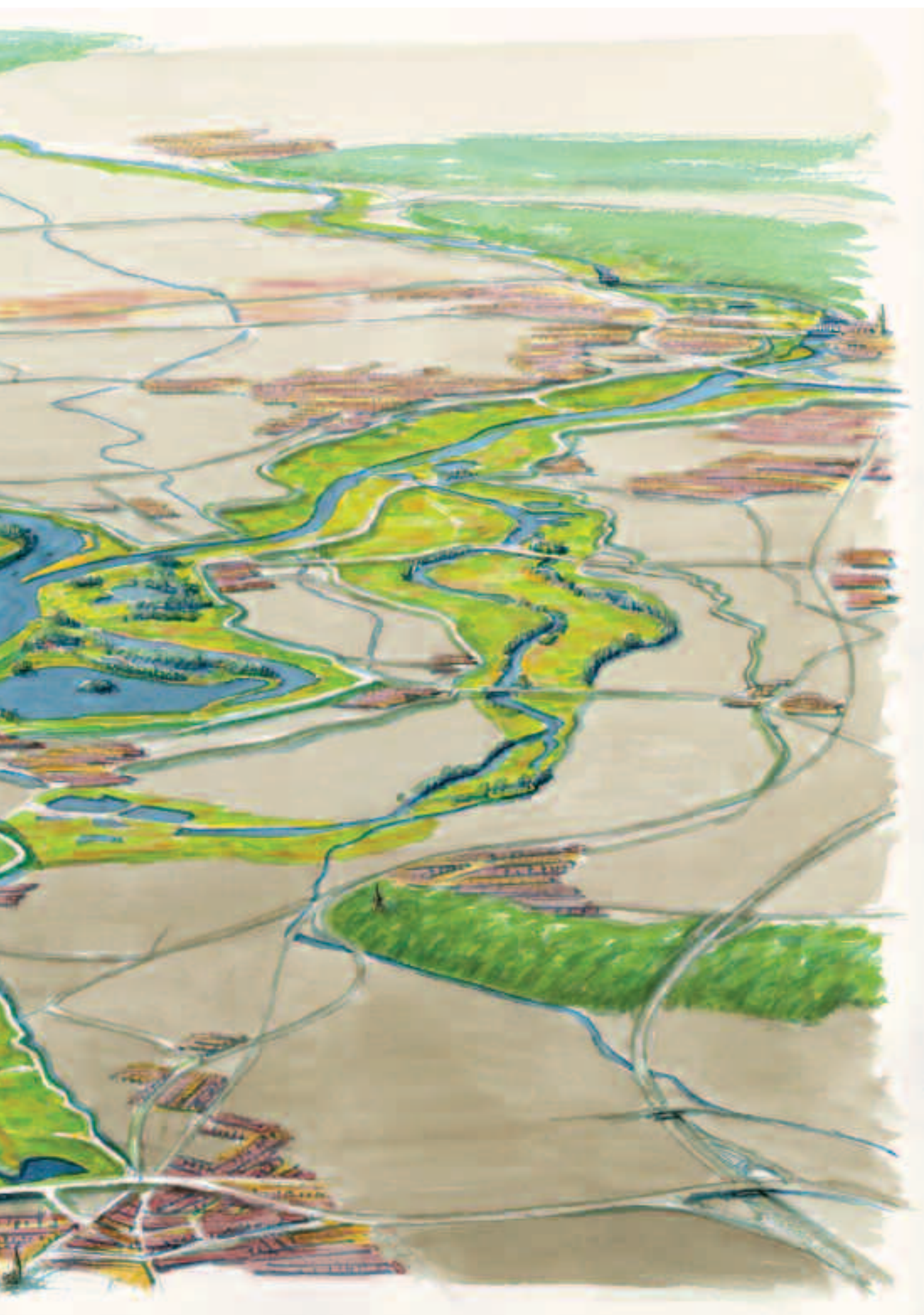
Contacts: CIV, Peter Thoenes, project leader, P.O. Box 112, 6640 AC Beuningen (tel. +31 24 6790222, www.izgp.nl). Or: State Forestry Service, Theo Meeuwissen, Binnensingel 3, 7411 PL Deventer. (tel. +31 570 747100).

- **KRAAIJENHOF.** A new sandpit behind the Ooijpolder dikes where production will stop in 2010. Natural fringes will be developed in the aftermath of the sand extraction. As a result the area may develop into a nature corridor between the Millingerwaard river foreland and the old oxbow Ooijsche Graaf (nature reserve).

For more information, contact: K3 Industriezand bv, Jan-Willem van de Kamp, director, P.O. Box 200, 6660 AE Elst (tel +31 24 3488800; www.k3.nl).



1900/25



4 Restaurants and catering business

POINT OF DEPARTURE

The cities surrounding the Gelderse Poort – Arnhem, Nijmegen and Emmerich – are inhabited by more than half a million people. However, this did not automatically provide the area with the status of ‘green lung’, leisure park or natural park – despite the presence of rivers, individual nature reserves and enormous flocks of geese during wintertime. Of course naturalists valued the area and its international importance (it is a Ramsar Site) but to the public at large the area was either unknown or even had a poor reputation: the rivers were polluted and nature reserves were fenced off to visitors. The few hotels and cafés in the area were barely able to break even.

DEVELOPMENTS

Since 1992 the booming natural qualities of the area and regional and national communications campaigns have triggered many visitors to discover the area. The fact that this area was ‘named’ (Gelderse Poort has been promoted as a brand - since 1992) contributed enormously to this. At present hundreds of thousands of people visit the area annually. As a consequence the restaurants, hotels and cafés have revived and new ones have sprung up. This has resulted in a substantial growth of jobs in tourism, recreation, and hospitality. The river and its landscape are big business!

Most if not all facilities use the landscape quality of the Gelderse Poort in their marketing strategy and hotels and restaurants offer maps and brochures of the area. Of special interest is the newly developed ‘struinkaart’, a map with foot, bicycle and skating trails, information about the area and discount vouchers for local hotels and cafés.

Roaming map
Gelderse Poort





Wilderniscafé



Oortjeshekken

As an experiment, Stichting Ark runs a 'Wilderness Café' at the entrance of the Millingerwaard reserve in the village of Kekerdom. Having purchased the premises, Stichting Ark upgraded them to turn them to a 'nature cafe' which under the name 'Waard van Kekerdom' began a new life ('waard' means both 'host' and 'river foreland'). The host is not only a bar tender, but also an ecologist who provides visitors with the latest nature information. Guided tours start here and the food and drinks are sourced to a large extent from the Gelderse Poort region. Part of the profits of the café will be ploughed back into conservation activities of the Gelderse Poort area - which after all brings in the clients! In addition to all this, the café is of course a place for local festivities.

WHERE IS THE ACTION?

The following facilities owe their existence and success largely to the recent developments in the Gelderse Poort:

- **HOTEL OORTJESHEKKEN**, Ooij. A cosy tavern and meeting point with a highly acclaimed reputation far beyond the region. Had a slumbering existence as a village pub, but since 1980 has been the pioneer of hospitality in the southern part of the Gelderse Poort.
For details see www.oortjeshekken.nl.
- **WAARD VAN KEKERDOM**. Started a new life as the 'Wilderness cafe' in 2001. Runs break-even, and is still developing.
For more information contact Twan Teunissen, Wilderniscafe, Weverstraat 94, 6579 AG Kekerdom (tel +31 481 431385; www.wilderniscafe.nl)
- **HOTEL MILLINGS CENTRUM**, Millingen aan de Rijn. Successful hotel restaurant with interesting entrepreneurial capacities (Boat excursions, visitors' centre Grenspost Gelderse Poort).
For more information contact Marijke and Evert Bosman, Heerbaan 186, 6566 EW Millingen (tel +31 481 431204; www.millingscentrum.nl)
- **MILLINGER THEETUIN**. Tea garden of national fame. Two residents of the Millingerwaard were among the first to see the possibilities of the growing numbers of visitors and welcomed the tourists into their beautiful private garden.
For more information contact Coen van de Boogaard, Klaverland 9, 6566 JD Millingen (tel +31 481 431885; www.millingertheetuyn.nl)



The Millinger tea garden attracts 40 000 visitors annually.

CONSERVATION WITH PEOPLE, NOT AGAINST PEOPLE

An important breakthrough, in particular within the conservation movement, has been the insight that nature should not be protected *against* people but *with* people. *And not in some places, but everywhere.* Natural areas in the Gelderse Poort are now fully open to the public and in many cases visitors are free to leave tracks and roads. Especially during sunny weekends visitor numbers can be high, but research shows that this does not impact negatively

on the biodiversity. In return this positive attitude towards visitors, a true paradigm shift, creates enormous public support for the area. Furthermore, this visitor-friendliness is the basis for a thriving, widespread but small-scale tourism economy. In particular local entrepreneurs, who were struggling in the past, are benefiting from this, which makes more local people feel sympathetic towards the project.

5 Recreation and infrastructure

POINT OF DEPARTURE

In the past four decades the economic and social structure of the Gelderse Poort region has changed dramatically. Although farming and the brick industry intensified, the number of workers decreased and machines took over in these traditional economies. Village people started looking for new employment in the cities. The villages were effectively transformed into dormitories and many people moved from the villages to the cities. Private cars took over from bus services; supermarkets in the city out-competed village shops. Bus services became marginalised, ferries stopped.

As a next step in social development, wealthy urban people (also the double income younger households) chose to buy houses and live in the countryside. Living in rural areas has become extremely popular in the Netherlands and the price of houses at scenic places like the Gelderse Poort has doubled or even tripled in a short period of time.

DEVELOPMENTS

Because of the influx of new money and new people (including many tourists), the infrastructure in the area has improved and so have possibilities for entrepreneurs. Bus services have been restored, new tourist ferries have started operating and there are several bicycle rental services.

WHERE IS THE ACTION?

- **THE REVIVED FERRIES** (for pedestrians and cyclists) are very popular among tourists. At the same time they are essential for the local inhabitants. For more information, contact ferryman Bruno Kievits (tel +31 6 22701825; www.kievitsveerdiensten.com).
- **THE MUNICIPALITY OF MILLINGEN** (6000 inhabitants) has labelled itself as 'The heart of the Gelderse Poort'. Facilitating tourism and recreation is one of the main priorities of the local authorities. For more information, contact the Mayor of Millingen: Annemieke de Beer, PO Box 3, 6566 ZG Millingen (tel +31 481 431988; www.millingen.nl; www.millingerwaard.info; www.geldersepoort.nl)





AGRICULTURAL OR URBAN ENVIRONMENT?

In areas like the Gelderse Poort land-use is largely determined by agriculture. The individual farmer decides to plant or remove hedges, keep cows in the stable year-round or only in winter etc. And generally agricultural fields are off-limits for visitors. In fact this is logical – agricultural production comes first and the resulting landscape is a by-product. This is also reflected in regional planning: building of houses in an agricultural region is prohibited because this is believed to conflict with agricultural production.

In the ‘Ooijpolder’, the number of farmers declined from 950 some 50 years ago to 60 now (*see Chapter 5*), and the decline has not stopped. At the same time the number of inhabitants of Nijmegen, Arnhem and Emmerich has increased to some 500,000. Is the Ooijpolder still an agricultural environment, or part of the urban environment? Are the hundreds of thousands of visitors just passing by, or are they the economic core for the area? Is the landscape a by-product or in fact the unique selling point for the cities surrounding it? Interesting questions. One thing is certain: the balance is shifting.

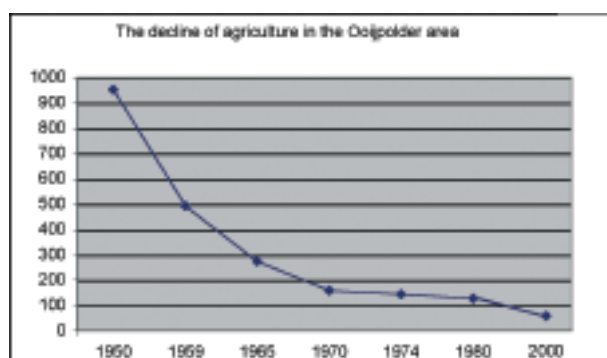
6 Agriculture

STARTING POINT

Agriculture in the area traditionally focused on cattle breeding (milk and meat production) and the cultivation of sugar beet, potatoes, maize, wheat and fruit (apples and pears). For a more detailed impression we concentrate on the Ooijpolder, a 5,000 ha polder area in the Gelderse Poort's southern region. This former floodplain area has highly productive soil and good freshwater conditions. In the past, a reasonable balance existed between food production and natural values. Until 1926 the winter floods were even allowed to inundate large parts of the lower lying grasslands as a method of natural fertilisation. In those days the villages and farms were built on natural elevations and artificial mounds.

After World War II the rural area developed from a small-scale agricultural mosaic into an industrialised farmland, with the average annual milk production per cow increasing from 5,000 kg (1980) to 10-12,000 kg (2004). In the apple and pear orchards yields also doubled, going from 40 tons/hectare/yr (ca 1970) to 100 tons/ha/yr (2004). Modern agriculture is characterised by large-scale fields, high amounts of fertilisers, low groundwater levels and high yields. The modernisation of agricultural practices is reflected by the number of farmers. In the 1950s almost a thousand small farmers earned a living in an area where nowadays just sixty farms remain, and this trend is still ongoing.

Since the early nineties a challenging land re-allocation plan, 'Landinrichtingsproject Ooijpolder' (1995), has focused on a strict separation of intensive farming and ecological restoration. 1500 hectares of meadows in the river forelands of the River Waal were designated to be withdrawn from farming, while at the same time the conditions for cultivation in the area behind the dikes would be improved. In fact the land re-allocation plan adopted nature restoration in the river forelands as a reconstruction model for the local agricultural situation. This programme gained the farmers' support and local acceptance in a very short period of time and is now almost completed.



The number of farmers in the Ooijpolder, part of the Gelderse Poort. The number of businesses decreased from over 950 in 1950 to 60 now. The decline still continues.



map land development plan

DEVELOPMENTS

The step by step withdrawal of farming from the forelands and the agricultural reconstruction process associated with it proved to be insufficient to keep this economy firmly on its feet in the Gelderse Poort area. Like everywhere in Europe, areas with high property prices (up to more than 5 euro per m²) and high labour costs, have a hard time competing on the world market for bulk produce. At the same time the CAP is changing the system of subsidies which support production. The sale of local produce may offer an alternative income for a handful of farmers, but certainly will not keep the agricultural economy running. (Two farmers in the Gelderse Poort alone could provide the total supply of apple juice for the cities of Arnhem and Nijmegen!) So, other roads need to be explored.

WHERE IS THE ACTION?

- **VIA NATURA.** An initiative started by the regional authorities (Province of Gelderland and municipalities of Millingen, Ubbergen, and Groesbeek) to promote and restore valuable landscape elements (hedges, natural verges along ditches and fields) and to improve recreation facilities (footpaths and small bridges in the countryside). Landowners are invited to participate and are offered payment for such 'green services'. The funding involved comes partly from governmental sources and partly from private investors. Special rules-of-the-game control the quality of the green services and determine the level of financial support. For more information contact Tiny Wigman at Via Natura, PO Box 7, 6573 ZG Beek-Ubbergen (tel +31 24 3430400; www.vianatura.nl)
- **MIXED FARMING.** In 2004 WWF-Netherlands, Stichting Ark and the Ploegdriever (an association of enthusiastic farmers and citizens involved in landscape restoration) started a new pilot with some local farmers. It is an experiment with 'mixed farming' in which food production, nature restoration and tourism will be inte-



Efforts are under way to establish a corridor between the higher sandy soils (yellow) and the lower parts (blue) of the Gelderse Poort area. Depending on ground water levels the current landscape (photo above, right) will be transformed into dry or wet parts of the corri-



dor. The dry part of the corridor is the area hatched green on the map, artist impression below, left. The wet part is light blue and hatched on the map; artist impression below, right.

grated. The project is located in the narrow agricultural zone in between the wooded glacial moraines and the forelands of the Rhine. An important aspect of the initiative is the development of a corridor for flora and fauna between the agricultural fields (a web of natural verges) and the provision of alternative incomes for the landowners.

The landowners do not sell their lands; however, they include the management of nature and landscape elements within their enterprises. The landscape restoration will consist of broad line-elements of hedgerows, shrubs and wild flora. Extensive grazing will be practised in such corridor elements. New public foot-paths will be combined with some of the corridors.

For more information contact landowner Zeger Stappershoef, Kerkdijk 50, 6577 JL Erlecom (tel +31 24 6631885, email: zstapper@tref.nl) and the co-ordinator of the Ploegdriever, Arno van der Kruis (tel +31 6 12619049; www.ploegdriever.nl).

- **NATURAL GRAZING.** A very successful initiative is the large-scale experiment with natural grazing in the restored natural areas in the river forelands. The grazing programme started in the Millingerwaard in the early 1990s as a tiny experiment on 5 hectares of river dunes with a few Konik horses and Galloway cattle. The experiment was initiated and is carried out by Stichting Ark, supported by wwf and Staatsbosbeheer. Many hundreds of hectares along the 15 km long river-bank between Millingen and Nijmegen are now involved in this natural grazing





Natural herds in the Millingerwaard



Regional products, including wilderness meat (in the fridge) on the counter of Ark's wilderness cafe.

scheme, which in 2005 even reached the city limits. As a consequence the famous Waal Boulevard area (the 'urban jungle') will have easy access to the river wilderness soon.

Hundreds of Galloway cattle and Konik horses roam the foreland wilderness. The herds have a natural sex ratio and social structure. The management of this natural grazing project is supervised by Stichting Ark, in co-operation with Staatsbosbeheer. Surveillance work is delegated to local experts (e.g. enthusiastic farmers or village people). The grazing project is almost self-supporting economically, in spite of the high labour costs, the intensive genetic surveillance of the herds (DNA-research) and the usual veterinary and administrative costs. The income is generated by the natural growth of the herds. Part of the surplus is destined for the production and sale of 'wilderness meat'. Stichting Ark developed its own marketing strategy through the internet, local contacts, the Wilderniscafé, a special newsletter etc. Another part of the surplus is sold as live stock to natural grazing projects elsewhere in the Netherlands and abroad.

For more information about the economic aspects of natural grazing contact Stichting Ark, Frank Maasland (tel. +31 650 407006; www.stichtingark.nl).

For more information about the ecological aspects of natural grazing contact Staatsbosbeheer, Douwe Joustra, Binnensingel 3, 7411 PL Deventer (tel. +31 570 747100, www.staatsbosbeheer.nl). Many ecologists are involved in monitoring studies of biodiversity in the nature restoration area.

Contact persons in these study groups are Gijs Kurstjens, Rijksstraatweg 213, 6573 CS Beek-Ubbergen (tel. +31 24 3223180, email: g.kurstjens@planet.nl) and Bart Peters, Nassaulaan 38, 6571 AD Berg en Dal (tel. +31 645 018861, email: bart-peters@planet.nl).

7 River and water management

POINT OF DEPARTURE

The Gelderse Poort is located at the top of the delta of the river Rhine. Flood protection has always been an important issue in this region, especially since the exceptionally high floods of 1993 and 1995. These heightened the public's awareness that man cannot diminish the floodplain capacity any further without risking severe floods and the accompanying losses of life and goods. Moreover, climate change and sea level rises in the near future will also have a great impact on floods.

The EU decided to change the traditional approach of river and flood management, according to the Treaty of Arles (1995). Measures resulting in higher flood peak levels, such as reinforcement of dikes and the further canalisation of river systems, should be avoided. The High Water Action Plan of the ICR (International Commission for the Protection of the Rhine/ or IPCR Commission Internationale pour la Protection du Rhin) states that the peak levels of the Rhine should be reduced by 30 cm in 2005 and by 70 cm in 2020. Creating a better flood capacity for the river and better opportunities for its physical and ecological processes is the new perspective, parallel to the economic and social functions such as transport and water supply.

Apart from flood defence in the main river course, the regional Water Boards also face the challenge of increasing the storage capacity of the regional water systems to cope with periods of heavy rain. It is estimated that 20 % of the agricultural land will have to be used for water storage, at least temporarily.

The third challenge is the new Water Framework Directive, which at the moment still has to be integrated into existing water management practices.

Address: International Commission for the Protection of the Rhine, postfach 309, D56003 Koblenz, tel 0049-26112495, iksr@rz-online.de

Extra flood capacity for the river

Since 2000 the Dutch government has been working on a new flood management programme, 'Ruimte voor de Rivier' (*Space for the river*). Its main objective is to create a safe and sustainable flood protection programme which respects and enlarges natural and landscape values. The short-term objective of the government is to obtain a safe situation at a theoretical peak discharge of 16,000 m³/s for the year 2015, without reinforcement of the dikes. On the longer term (year 2100), the river should be able to cope with an estimated discharge of 16,500 m³/s at the German/Dutch border. This is the discharge forecasted by the middle scenario for climate change according to the Intergovernmental Panel on Climate Change (10 % more rainfall, 2 degrees higher temperature, sea level rise of 60 cm).



Within the framework of the Governmental Policy Plan 'Space for the River' measures are developed to provide extra capacity for the discharge of water. Implementation will be finalized before 2015

At the same time the 'Beleidslijn Ruimte voor de Rivier', (the governmental *Policy Space for the River*, 1996), stopped all developments which might cause a decrease of the discharge or storage capacity. It prohibits all building activities in the floodplain. A negative aspect of this policy was its bureaucracy, which paralysed a lot of positive actions as well, like clay mining activities and nature development projects in the forelands that could enlarge the discharge capacity.

Clay mining contributes to sustainable river management

The new method of clay excavation suggested by Living Rivers already produced millions of m³ of extra flood retention capacity in the river forelands. In the past decade several summer dikes were removed, sediment layers were peeled off and new side channels were constructed. It is estimated that this also created 2,000 hectares of natural riverine habitat.

Recently new strategies for shallow sand extraction from the river forelands have been studied as well. This approach of sand mining has to be developed further.

Urban development and flood capacity

The city of Nijmegen immediately responded to the new policy of enlarging the flood capacity for the river by partially redesigning its urban development programme 'Waalsprong'. In this ambitious plan 30,000 houses are to be built on the northern bank of the river Waal, just opposite the historical town centre. The urban development programme is planned near a bottleneck in the river.

In the redesigned plan *Veur-Lent* building activities and flood defence are combined. The winter dike will be moved in order to supply the river with a larger winter bed near Nijmegen.



New design for city plan Veur-Lent

WHERE IS THE ACTION?

Millingerwaard and Klompenwaard:

- In the forelands of Millingerwaard and Klompenwaard one can find the finest examples of integrated water management and nature restoration. Reconstruction of the river forelands to increase the discharge capacity by clay mining and sand mining started around 1990 and will continue for the next decade. Natural grazing (including beavers) as an ecological approach to vegetation management started in 1991. Reconstruction of the summer dike was carried out in 2003.

For more details contact Johan Bekhuis, Stichting Ark (www.stichtingark.nl; email: johan.bekhuis@stichtingark.nl) and Arjan Snel, Staatsbosbeheer, Ooijse Bandijk 36B, 6576 JE Ooij (tel +31 6 51207168, email: a.snel@staatsbosbeheer.nl; www.staatsbosbeheer.nl)



Development plan Millingerwaard. This is a draft version.

Nijmegen-Lent

- A planning process to widen the winter bed of the river in combination with urban development and restoration of the river foreland Lentse Waard (ca 1996). For more information: KAN, Mr. J. Modder, Chairman, Keizer Karelplein 32b, 6511 NH Nijmegen. (tel +31 24 329 79 79, www.kan.nl)

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PUBLICATION

Stroming ltd
Postbus 31070
6503 CB Nijmegen
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DESIGN Brigitte Slangen

LAY-OUT Franka van Loon

PRINT XXL-Press Nijmegen

ILLUSTRATIONS

Jeroen Helmer (Stichting Ark)

PHOTO'S Alphons van Winden,
Wim Braakhekke, Twan Teunissen,
Gerard Litjens, www.wildernisfoto.nl

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bureau voor natuur- en landschapsontwikkeling b.v.