

Better flood protection

Throughout the centuries, space for the rivers has become only more limited. The rivers are wedged between high dikes, while the level of the land behind the dikes is dropping. If a flood would occur under these conditions, the economic and emotional damage would be huge. To give the rivers more space, the Dutch Cabinet has created a package of measures called the Spatial Planning Key Decision 'Room for the River'. The main objectives are flood protection by 2015 and improved overall environmental quality in the river basin region.



Breaking the trend

The land behind the river embankments is becoming more heavily used and populated. More homes are being built and affluence is on the rise. So a flood would have disastrous results. High river discharges can be expected as a result of climate changes, which makes these areas even more vulnerable. While new dike reinforcements are an option and will reduce the risk of flooding, if a flood occurs anyway, the effects will be even greater. So to make the Netherlands a safe, comfortable *and* pleasant place to live, a trend has to be broken. The answer lies in the plan to make more 'room for the river'.

Spatial Planning Key Decision 'Room for the River'

Residents of the river region had anxious times in 1993 and 1995. The water level

was extremely high and the dikes just managed to hold their own. Extremely high river discharges will occur more frequently in the future. The decision was therefore made to find a way for rivers to cope with greater volumes of water in a safe manner.

In 2006 the Cabinet drew up the Spatial Planning Key Decision Room for the River (SPKD) (*Planologische Kernbeslissing Ruimte voor de Rivier*), which has three objectives:

- ~ in 2015 the Rhine branches will safely cope with an outlet capacity of 16,000 cubic metres of water per second;
- ~ the measures implemented to achieve the above will also improve the quality of the environment of the river basin;
- ~ the extra space the rivers will need throughout the coming decades

subsequent to expected climate changes, will remain available. The SPKD sets out the measures the Cabinet plans to take to realise these goals. The basic package consists primarily of measures aimed at creating more space for the river and lowering high water levels, such as deepening the forelands of the rivers, displacing dikes further inland, lowering of groynes in the rivers and enlarging of summer beds. Reinforcing of dikes is included only if other measures are too expensive or inadequate.



International cooperation

The countries through which the Rhine and Meuse rivers flow collaborate closely on flood protection. One objective set by these countries in the Rhine High Water Action Plan (*Hoogwateractieplan voor de Rijn*) is to reduce the high water levels an average of 70 cm by 2020. All countries in the discharge basin are implementing appropriate measures, including those described in the SPKD Room for the River.

The German state of Nordrhein-Westfalen, the Dutch province of Gelderland and the Directorate-General for Public Works and Water Management (*Rijkswaterstaat*) for the Eastern Netherlands studied the effects of extremely high water in the border region. The volume of Rhine water that could eventually reach the Netherlands was also estimated. The three parties then investigated which measures could potentially provide flood protection for both the Netherlands and Germany. What emerged here was that both countries place a high value on coordinating efforts to this end. Measures implemented in Germany, however, cannot adequately maintain the required level of protection in the Netherlands, but this can be achieved by the package of measures in the SPKD Room for the River.



Measures in the Spatial Planning Key Decision 'Room for the River'

Reservations

Measures in the basic package – displacing dikes, depoldering and creating flood channels – require space that now lies inside the dikes. In many cases, the measures will not be implemented for several years. Until that time, to ward against developments that could interfere with the river expansion plan, these areas have been set aside in the SPKD Room for the River.

Further measures to preserve safety may again be necessary in the longer term. In that case, greater areas inside the dikes will be required in some places. These areas are also reserved in the SPKD. This relates to the following measures:

~ Waal

Rijnstrangen retention area and dike displacements at Oosterhout/ Slijk-Ewijk, Loenen, Heesselt and Brakelse Benedenwaarden

~ Benedenrivierengebied (Lower Reaches – lower part of the Rhine and Meuse) dike displacement at Drongelen

~ IJssel

flood channels at Zutphen, Deventer and Kampen and dike displacement at Noorddiep

Each stretch of the Rhine branches has its own distinctive character, which is why the basic package contains unique measures for every stretch. From now until 2015, the following measures will be executed:

Waal

Specially selected for the Waal is the lowering of groynes and the removing of obstacles. These measures are relatively cheap and easy to perform and have a significant impact on water levels. In the Millingerwaard, river forelands will be deepened. Dikes will be displaced at two locations: Lent and Munnikenland.

Lower Rhine-Lek

Deepening of forelands along the Pannerden Canal and the Lower Rhine will create more room for the river. The forelands become increasingly narrow in a westerly direction, so this measure will not be as effective in reducing water levels. So strengthening of dikes is the preferred method for the Lek, particularly along the south side.

Around Elst, the removal of an obstacle will create more space.

IJssel

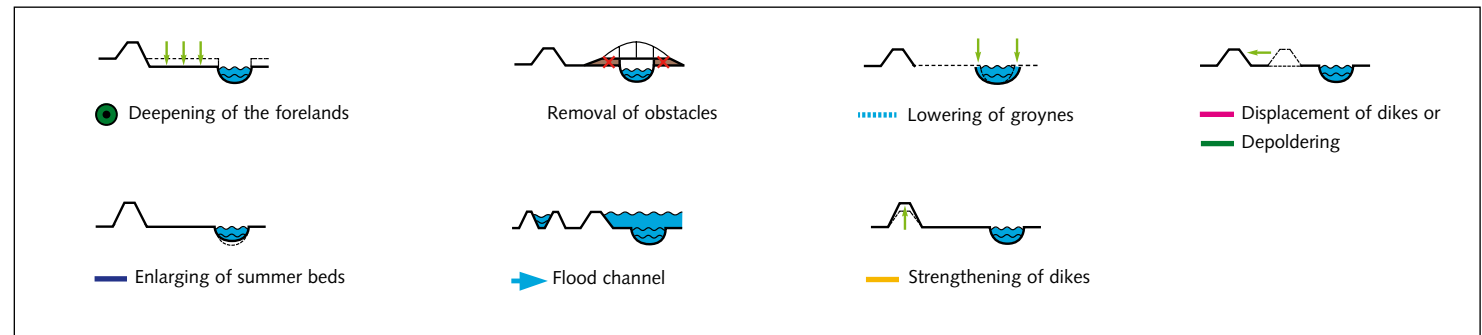
Wide expanses of foreland border the IJssel. Yet only three areas will be deepened. In the other areas, digging activities would damage the natural habitat. At three locations, more space will be created by displacing of dikes: at Cortenoever, Voorst and Westenholte. A flood channel at Veessen-Wapenveld will give the river an extra course in flood conditions. Enlarging of the summer bed in the lower course of the IJssel will allow the water to flow faster into the IJsselmeer.

Lower Reaches

In the Lower Reaches of the Rhine and Meuse rivers, the most significant measures will be the depoldering of the Noordwaard and Overdiep Polders. More space will be created in the Biesbosch by lowering an embankment. At Avelingen a foreland near the industrial estate will be deepened. The possibility of containing some of the river

water in the Volkerak at extremely high discharge levels is under investigation. A great deal of soil will have to be transported as a result of the measures. Some of this soil can be reused, such as for other work along the river, and some can be sold. Soil that cannot be reused will be stored in depots. Most of the soil is clean or only slightly contaminated and can be stored in depots specified in the SPKD Room for the River. A small portion of the soil is contaminated and will be transported to existing depots adapted for the purpose, such as the IJsselooj depot.

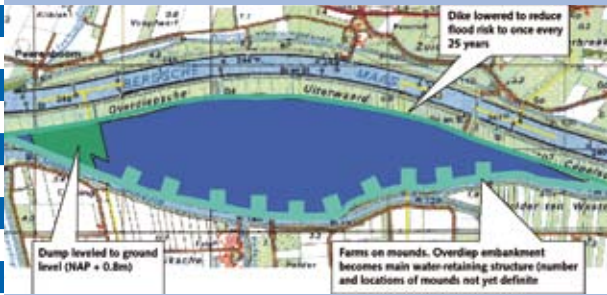
The Cabinet has earmarked more than 2.1 billion euros for implementing the basic package of measures. Alternative or supplementary measures could possibly be carried out at certain locations; ideas for such measures will be worked out by other authorities and market parties. This is under the condition that the objectives of the SPKD Room for the River are realised on time and that the parties concerned can guarantee sufficient financing for the project.



-  Removal of obstacles
-  Deepening of forelands
-  Flood channel
-  Dike displacement
-  Summer bed enlargement
-  Dike improvement
-  Lowering of groynes
-  Depoldering
-  Area outside dikes
-  Alternative

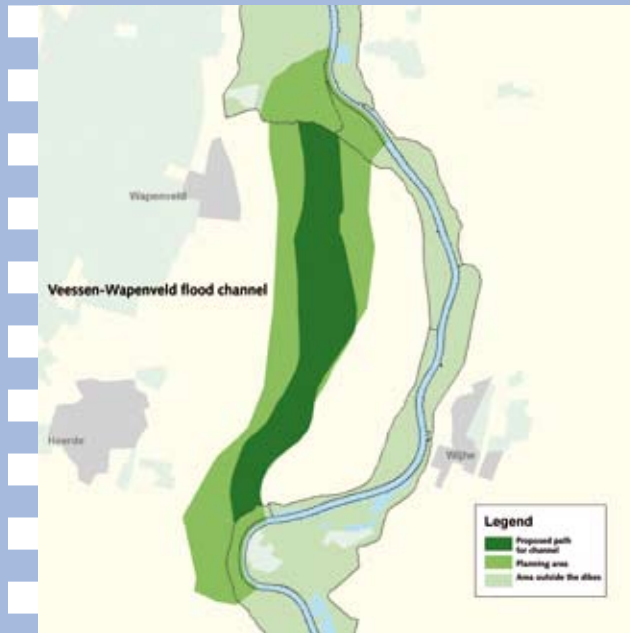


Map showing location of measures and alternatives



Flood channel at Veessen-Wapenveld

The aim is to preserve and protect the landscape, nature and cultural inheritance that now exist along the IJssel. The area outside the dikes does not offer enough options for providing the river with more space. The package therefore includes a very effective measure for inside the dikes that is both feasible and affordable. This consists of constructing a flood channel through the Wapenveldsche Broek between Veessen and the Hoenwaard. New dikes steer the water from south to north and protect the areas inland. Several houses and about ten agricultural businesses are located in the path of the future channel. This is a drastic measure that must fit in well with the reconstruction plan, but one that will have a very positive effect on the area.



Depoldering of Overdiep Polder

The Overdiep Polder is located along the Bergse Meuse between Geertruidenberg and Waalwijk. The area consists of a 550-hectare polder situated inside the dikes and a 180-hectare foreland. There are sixteen dairy/crop farms, a large pig farm, a marina and a military exercise ground. The measure for this area is to move the main water-retaining structure such that the entire Overdiep Polder will be situated outside the dikes. The dwellings and buildings will be relocated onto mounds against the new dike. The criterion is that the usual agricultural activities on the polder can continue. As a result of the measures, the water levels in the area will drop up to 30 cm; this effect will be felt even far upstream.

Implementation

Once Parliament has approved the SPKD Room for the River, implementation of the measures can begin. Several steps must still be taken, however, before ground can be broken.

Planning studies and participation

The SPKD Room for the River contains a general description of the types of measures, the locations for most of the measures and the expected effects. Before a measure can actually be implemented, it has to be worked out further in a planning study in which the exact location and details are determined. An environmental impact assessment is required for many of the measures, giving local residents, authorities and other stakeholders the chance to have their say. Then, depending on the type of measure, permits must be obtained for the excavation and construction work. One of the public authorities involved will take charge of each measure; this could be a municipal, water or provincial authority or *Rijkswaterstaat*. The Ministry of Transport, Public Works and Water Management will also create a project organisation to oversee the work. This organisation will ensure that the objectives of safety and environmental quality are achieved and that deadlines and budgets are met.





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