Interreg North Sea Region Building with Nature
European Regional Development Fund
EUROPEAN UNION

**Policy Brief**
Flanders Environment Agency

# How to avoid damage caused by flooding?

**Policy Brief from the Interreg North Sea Region Building with Nature project by the Flanders Environment Agency, Belgium.**

## Key messages

Many areas in Flanders have been subject to flooding for centuries. Climate change is expected to significantly increase the frequency of extreme flooding, with precipitation becoming increasingly clustered. No drainage system has been designed to cope with this.

The 'Building with Nature' concept from the European Interreg project aims to place maximum focus on, and raise awareness for, resilient and sustainable water systems based on natural processes. If understood properly and applied correctly, such systems will eventually be more robust and offer significant added value in terms of ecosystem services, recreation and perception.

## Scope of the problem

Water management in Flanders is based on European regulations, in particular the Water Framework Directive and the Floods Directive, transposed into the Decree on Integrated Water Policy.

The Water Framework Directive is aimed primarily at preserving, restoring and improving the 'good status' of water bodies, particularly in the areas of (water) quality, natural environment, natural processes and biodiversity. The Floods Directive subsequently also drew attention to reducing

**Building with Nature project**

- Partners from the Netherlands, Belgium, Germany, Denmark, Sweden, Scotland and Norway work together.
- The project demonstrates BwN solutions at 7 coastal sites and at 6 catchment scale sites.
- The project is part of the Interreg VB North Sea Region programme.
- Project period: 2015 – 2020.

damage caused by water excess and flooding. Member States were ordered to develop focused flood risk management plans specifying the extent of flooding and the related damage as well as the way in which they would go about reducing or remedying such damage.

Already with the introduction of the Decree on Integrated Water Management, the traditional engineer's vision of water drainage – recalibration of watercourses and maximum water flow, supplemented with dike-enclosed reservoirs where appropriate – was adjusted.

Retaining water where it falls is obviously the best at-source measure. While this approach will reduce water run-off, it will not eliminate it completely: even in unspoilt nature areas, rivers burst their banks during heavy rainfall. During heavy rains, permeable surfaces suddenly behave like impenetrable surfaces, resulting in significantly increased run-off. Models have shown that retaining water behind small dikes on the sloping sides of the catchment is by no means enough: the buffer capacity is highly inadequate, not to mention the fact that such buffering is uncontrolled (the buffers fill up long before the downstream run-off has reached a critical level).

## A solution : Building with nature

In Flanders, the concept of (semi-)natural flood plains has been developed already since 2 decades ago. This concept aims to allow the entire valley to carry water again. At the very least, the traditional flood fields of the watercourse, where still intact, are to be reintegrated into flood management, supplemented with similar areas qualifying for this purpose.

Such a chain of flood plains is achieved by constructing transverse dams with adjustable culvert structures in suitable locations over the watercourse and its valley. The valley edges on either side act as a natural boundary for the overflowing water. An advantage – albeit a partially unnatural one – is that it allows water to be buffered in the valley under higher altitude. In general, however, provided all preconditions are met, a semi-natural and robust water system will be obtained that keeps the flood water away from vulnerable built-up areas.

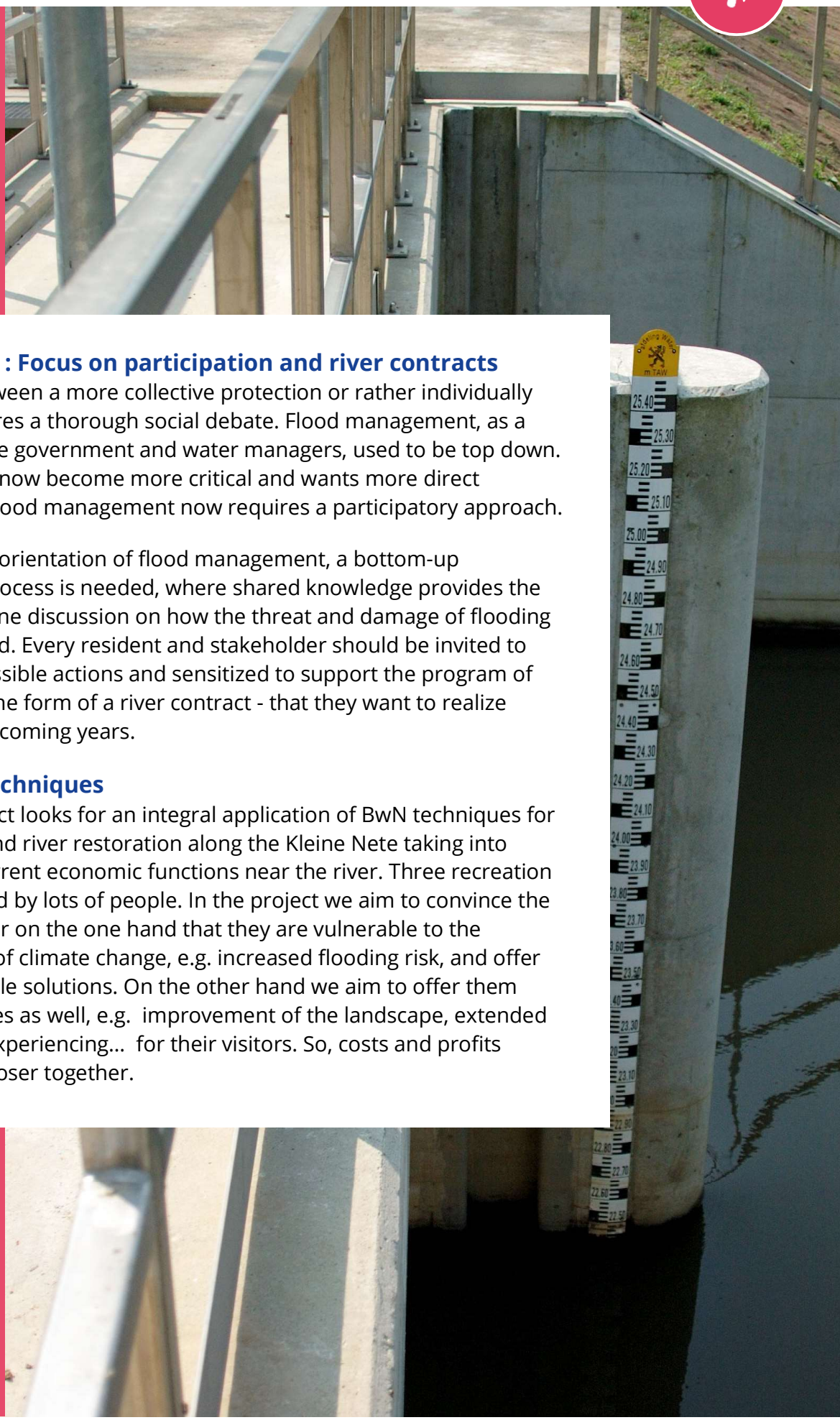
In essence, this could solve the flood problem in built-up areas were it not for the fact that, on the one hand, in terms of spatial planning, the urban sprawl in Flanders is such that large flood plains can be realized only in a limited number of places. On the other hand, there is also great reluctance to integrate existing unbuilt areas, which are usually nature reserves or agricultural areas, into the natural flooding character of our watercourses.

## Policy alternatives : Multilayer water safety

The struggle between the (im)possibility of constructing the necessary water buffers along rivers and watercourses and the necessity to avoid flood damage wherever possible was the motivation behind the Interreg FRC (Flood Resilient Cities) project. The answer was found in what is currently known as Multilayer Water Safety (MLWS).

The basic idea behind these insights is that civil works, including the construction of flood plains, do not allow water excess to be kept adequately under control as a result of the increasing flooding risks due to climate change. This, plus the fact that the government cannot solve everything, meaning that the sectors of society and citizens also have a role to play in defending themselves against damage.

This implies that, in addition to the provision of a basic protection infrastructure by the authorities, legislation was enacted for new building projects (the water assessment) that calls a halt to inappropriate or inadmissible construction in flood-prone areas. For existing built-up areas, the federal fire insurance legislation was expanded and the Government of Flanders is striving for more individual protection of residential homes and buildings.



## Call to action : Focus on participation and river contracts

The choice between a more collective protection or rather individually oriented, requires a thorough social debate. Flood management, as a mere task of the government and water managers, used to be top down. The citizen has now become more critical and wants more direct participation. Flood management now requires a participatory approach.

For the further orientation of flood management, a bottom-up participation process is needed, where shared knowledge provides the basis for a serene discussion on how the threat and damage of flooding can be managed. Every resident and stakeholder should be invited to think about possible actions and sensitized to support the program of measures - in the form of a river contract - that they want to realize together in the coming years.

## Innovative techniques

The VMM project looks for an integral application of BwN techniques for flood control and river restoration along the Kleine Nete taking into account the current economic functions near the river. Three recreation areas are visited by lots of people. In the project we aim to convince the economic sector on the one hand that they are vulnerable to the consequences of climate change, e.g. increased flooding risk, and offer them sustainable solutions. On the other hand we aim to offer them additional values as well, e.g.  improvement of the landscape, extended water/nature experiencing…  for their visitors. So, costs and profits should come closer together.

## Lessons learned from the project

Field visits to many projects of partners in several Interreg projects and thorough discussions with these partners and their stakeholders revealed that individual protection of properties as outcome of the FRC Interreg project is not widespread accepted by people.

People prone to flooding seem to accept flooding risk as long as the water authorities can proof to have done their maximum to take reasonable measures to keep the water away.

This implicates that looking for natural solutions in particular the enlarging and protection of flood plains and storage capacity for water along our rivers, still requires our full attention and energy.

## Policy recommendations

Flood management now requires a participatory approach. Residents and stakeholders should be invited to think about possible actions and sensitized to support the program of measures - in the form of a river contract - that they want to realize together in the coming years.

People prone to flooding seem to accept flooding risk as long as the water authorities can proof to have done their maximum to take reasonable measures to keep the water away. This implicates that looking for natural solutions in particular the enlarging and protection of flood plains and storage capacity for water along our rivers, still requires our full attention and energy.

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**CONTACT** Vlaamse Milieumaatschappij

- info@vmm.be
- www.vmm.be
- www.northsearegion.eu/building-with-nature

VLAAMSE MILIEUMAATSCHAPPIJ