

# Policy Recommendations

## Adaptation to the Spatial Impacts of Climate Change

Flexibility • Understanding • Galvanise • Integrate • Tools



2100

2050

2030

2012

Investing in Opportunities



This project has received  
European Regional  
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INTERREG IVB

# Policy Recommendations

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# 1. About the Cluster

*SIC adapt!* is the Strategic Initiative Cluster (SIC) of the INTERREG IV B North-West Europe (NWE) Programme dealing with adaptation to the impacts of climate change in seven Member States. Eight current transnational projects with around 100 partner organisations are involved including representatives from all levels of public authorities, academic institutions, non-profit and private sector organisations. The Cluster is managed by the German Water Board Lippeverband, Essen.

In addition to the aims of each project, the Cluster will:

- illustrate how existing management instruments can be tailored to facilitate adaptation across a range of sectors and locations,
- foster implementation of adaptation measures by showcasing widely tested, effective good practice examples throughout NWE and beyond,

- encourage the development of policy frameworks that will support local, regional and national adaptation initiatives across NWE,
- strengthen the impact of each project, especially at higher policy levels.

The Cluster looks for sustainable, cost-efficient, adaptation strategies and solutions in four action fields:

- Built environment (urban and regional)
- Water environment (rivers, urban water management, coastal/marine)
- Natural environment (forest/nature/agriculture)
- Social environment (society/behaviour change).

## RegioStars 2012 finalist

The Cluster participated in DG Regio's annual competition of the RegioStars 2012 and was nominated as one of the 24 finalists among more than 100 applications handed in. The aim of this additional initiative was to show the commitment of nearly 100 partner organisations towards sustainable, cost-efficient, good practice solutions in the field of adaptation to the impacts of climate change.

'This project exemplifies effective cooperation and information sharing in the area of climate change adaptation. There are many examples of best practices, tools, and measures employed in order to achieve efficient adaptation in different locations and sectors.' RegioStars July 2012

# 2. Policy recommendations – the FUGIT approach

Based on the experiences made while implementing their local and regional projects the participating organisations formulated lessons learned and developed policy recommendations. This paper

presents FUGIT, the policy recommendations across five broader themes:

## The FUGIT recommendations at a glance:

- F** Flexibility in planning and design of infrastructure
- U** Understanding through improved communication
- G** Galvanise actions across all sectors
- I** Integrated monitoring and management plans
- T** Tools better support decision making

## What is FUGIT?

FUGIT in Latin means to "flee" or "fly away" as in the phrase "tempus fugit" – so it has the sense of action in terms of threat. FUGIT is also used as a term in financial investing and applies to the length of time left that it is worth keeping hold of a certain financial asset in order to profit from it – in a wider sense this could also be related to the maintenance of certain assets in light of increasing climate change until ultimately adaptation is required.



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## From practical experience to generalised recommendations

The explicit goal was to develop recommendations which are based on the practical experiences of the eight participating Cluster projects. Thus, the recommendations make concrete reference to the deficits and problems that were encountered as well as to good practice solutions. The eight participating projects were focused on activities in the following fields: urban and regional environment, rivers, urban water management, coastal areas and the maritime environment, forests, nature and agriculture as well as society and behaviour change. The Cluster projects have selected important aspects that were addressed while implementing their activities. As a result the examples are from application in these areas but the lessons learned and recommendations are universally applicable.

The recommendations are targeted towards the European and national levels as well as at regional policy. It is impossible to link a single recommendation with exactly defined target groups. Usually,

a range of actions is required to improve policy in order to help to overcome obstacles which were observed. Nevertheless, the listed recommendations shall help to improve climate adaptation wherever “windows of opportunity” appear, may it be on European, national or regional levels.

An ‘Executive Summary’ will be provided and handed over at the Cluster’s Final Conference in Lille on 29th January 2013.

Additionally, with a separate document the Cluster addresses DG Regio and especially the relevant stakeholders of the INTERREG North-West Europe Programme, listing specific recommendations that the Cluster partners suggest to take into consideration especially in the drafting process for the next funding programmes.

## The Cluster’s approach in developing policy recommendations

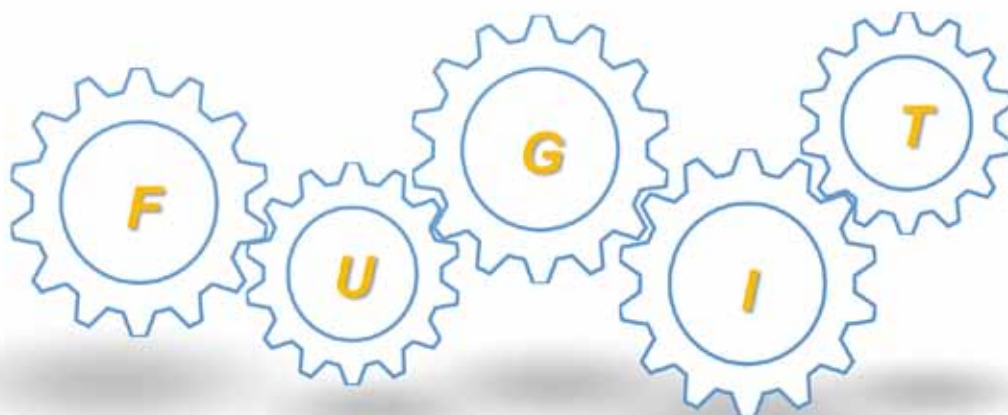
The development of the recommendations was based on:

- Conclusions of the analysis of the Cluster projects’ manifold tools and measures (2010/2011)
- Outcomes of cross-project exchange activities between the Cluster projects and other allied projects (2011/2012)
- Main messages formulated in workshops with the Cluster projects (2011/2012)
- Results of the Cluster Expert Board meeting in Brussels, 25 June 2012
- Consideration of the policy frameworks on EU and national levels.

Flexibility in planning  
and design

Galvanise action  
across sectors

Tools better support  
decision making



Understanding through  
improved communication

Integrated monitoring  
and management plans

Source: Lippeverband, DE



Panel discussion at the Cluster Expert Board meeting (left to right: Dr. Jochen Stemplewski, CEO Lippeverband; Rosário Bento Pais, DG Climate Action; Katrin Brand, moderator; Johannes Rimmel, Minister for Climate Protection North Rhine-Westphalia)



Plenary discussion at the Cluster Expert Board meeting in Brussels



Source: Lippeverband, DE

The Cluster Expert Board meeting was an important step in the Cluster's consultation process and shaped the final version of the recommendations. Cluster partners presented and explained the recommendations and then selected participants, involving representatives of European Directorates-General and national representatives, contributed comments and advice. All delegates were subsequently invited to share their experiences and their

viewpoints for the final version of messages and recommendations. Specific focus was given to the shaping of emerging policy to take into account climate change adaptation requirements while delivering the mitigation goals set out in the EU 2020 strategy. This was augmented by lobbying of the European Directorates-General by the Cluster Coordination Office to get across the messages.

## Quotes from selected external experts

"It is impressive the work that has been done by the Cluster and its eight constituting projects and it is very important in the preparation of the European Adaptation Strategy to be adopted in spring 2013."

Rosário Bento Pais, Head of Unit Adaptation to Climate Change, DG Climate Action

"Policy recommendations might really help the Member States and us being their advisers to steer in a certain direction. So, please also address your recommendations to the transnational programme level."

"The Cluster is expected to find the right niche and some nice hints for the next programme period in order to generally introduce adaptation in it and to identify the right type of measures. The critical mass with the eight participating projects is there, make the difference!"

Ruut Louwers, Director, Joint Technical Secretariat, NWE Programme

"I want to congratulate the Cluster for the work done so far and the fact being a finalist of the RegioStars Awards 2012. We have been waiting for a long time for the network of networks... It really makes sense and we are looking forward to your recommendations."

Mathieu Fichter, Team Leader Sustainable Growth, DG Regio

"Adaptation is a door opener!"

Almut Nagel, German Federal Ministry of Environment

"Congratulations to SIC adapt!, the impressive number of organisations involved and the results obtained so far. I do hope that your recommendations will be taken into account while drawing adaptation strategies and actions on regional, national as well as European levels."

Johannes Rimmel, Minister for Climate Protection, Environment, Agriculture, Nature Conservation and Consumer Protection North Rhine-Westphalia, DE

## 3. The FUGIT recommendations in detail

### Flexibility in planning and design of infrastructure

Climate modelling is complex and has to date not been able to eliminate the uncertainty of projections. More impact studies often don't create more detailed knowledge. The future is uncertain and will remain so, but investment decisions and planning have to be made under these uncertain conditions.

- Support decisions under uncertain conditions
- Review design standards

### Understanding through improved communication

Climate change – so what? Climate change has to be made more tangible for the general public as well as planners and decision-makers.

- Improve communication tools through visualisation

- Increase attention in education and lifelong learning
- Improve cooperation in international river basins

### Galvanise actions across all sectors

The impacts of climate change are complex and inter-connected approaches that concern all sectors; however, to date sector-specific responses to adaptation prevail.

- Use adaptation to trigger coordination across sectors
- Strengthen the coordination between the water sector and spatial planning

- Improve coordination between EU Directives to facilitate adaptation
- Check public procurement rules and help the user with integrating sustainability

### Integrated monitoring and management plans

Besides enforcing cross-sector actions European and national monitoring and management systems are needed to deliver essential information for adequate adaptation strategies within topics such as forests and agriculture:

- Install long-term monitoring system and management plans for adapted forests

- Strengthen agriculture aspects in River Basin Management and Flood Risk Management
- Foster importance of non-structural measures in Flood Risk Management

### Tools better support decision making

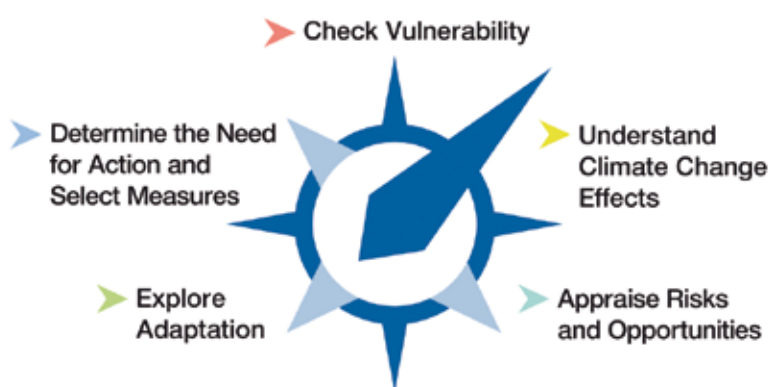
To date, a wealth of experience exists on EU, member state and regional levels; the challenge is to [facilitate the knowledge transfer](#).

## 3.1 Flexibility in planning and design of infrastructure

Climate modelling is complex and has to date not been able to eliminate the uncertainty of projections. More impact studies often don't create more detailed knowledge. The future is uncertain and will remain so, but investment decisions and planning have to be made under these uncertain conditions.

For political and public decision making we need better tools to deal with the uncertain developments: [Support decisions under uncertain conditions](#).

When planning and designing infrastructure (e.g. water management infrastructure, urban developments, housing, transport) that remains fit for purpose for 30 – 50 years, the designs have to be flexible to enable adaptation to the impacts of climate change as well as other, as yet unknown developments: [Review design standards](#).



Source: Future Cities

### Support decisions under uncertain conditions

For the public discussion and political decision making it is important to increase acceptance and awareness for dealing with uncertainties regarding projections and decisions. Too often decision maker wait with implementing measures until a seemingly reliable forecast is at hand. Often decision maker ask for final statements on forecasts and predictions. But climate change scenarios are always subject of uncertainty. Thus better impact studies may give hints of possible future circumstances and its possible impacts on the living conditions. But transparency has to be given to uncertainties with its communication and how to deal with them.

In practice of local or regional politics the acceptance for taking measures without definitive prediction is still very low. Funding programmes and projects, e.g. INTERREG or Research Framework Programme on EU level, focus too much on research on input data and quantification. E.g. climate modelling and reducing the uncertainties of climate modelling are key issues of these programs

although sufficient improvements are not very reasonable due to the complex systems and unpredictable global decisions and impacts. Modelling and improvement of quantitative descriptions of climate change impacts are very important, but an equivalent focus should be “living and making political decisions with uncertainties”.

There should be a stronger emphasis on, combined with appropriate levels of resources for, demonstrating potential consequences, including uncertainty. Such tools should make transparent, which measures and decisions should be taken without or with low risk of wrong decisions, even if the predictions will not come true. The tools should tell the public what is likely to happen, what is not certain, and for which decisions some more detailed forecasts are needed. They should also help to visualise projections, certainty and uncertainty. Furthermore, actors working with and in uncertainty need to be enabled by investing in their skills and capacity building.



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## Examples from Cluster projects: Towards closing the gaps

The Cluster partners created several tools which aim at developing adequate measures and setting priorities in relation to the uncertainty of impacts. The tools should be used

to support the discussions of experts and the public and to foster a willingness to act by demonstrating expected impacts in the language of different users.

### Scenarios as a tool for climate change adaptation planning in the conditions of uncertainty (IMCORE)

What drivers will affect planning response to climate change in the Severn Estuary (UK) in 2040? Cardiff University and the Severn Estuary Partnership brought together a wide range of stakeholders to develop scenarios for local coastal climate adaptation planning. In a series of workshops, local authority planners, government agency staff and user groups generated scenarios to explore potential futures

surrounding the statutory planning system and climate change adaptation. The issues arising from the scenario development for local adaptation policies and approaches were explored and debated in subsequent workshops with key representatives of selected, representative local authorities.



Scenarios provide several plausible futures.

Source: IMCORE

### Rainfall data to inform the public on flood forecasts (WAVE)

The Flemish Environment Agency (VMM) is currently working on a method to use rainfall data in flood forecasting. VMM produces flood forecasts which are available online for the public to see: [www.overstromingsvoorspeller.be](http://www.overstromingsvoorspeller.be). The forecasts are produced with real-time measurements and rainfall forecasts. With hydrologic and hydraulic models water discharges and water

levels are produced and turned into flood maps. On the public website the public will find the current situation on waterways, the forecast for the next two days and the thresholds for floods. The goal is to work on a long range forecast combined with other data, e.g. characteristics of buildings, to support decision making and emergency prevention and emergency response.



Flood map to inform the public via the internet about the current status

Source: VMM



## Review design standards

Many design standards are not yet climate-proof. A number of standards exist, which are indirectly influenced by impacts of climate change, e.g. road design standards, construction standards for housing, urban master planning standards etc. Further examples like water infrastructure, e.g. pumping stations, show deficits that make it difficult to use forward looking parameters, especially if this increases the costs. There is no regular procedure to evaluate or revise these in the light of climate change. Therefore, these rules often remain unchanged for decades. Even if the standard design is not the best solution in the light of expected impacts of climate change, it is still often not possible for the engineers to justify alternative solutions.

Standards that are too rigid prevent this flexibility – they should be evaluated in the light of changing conditions and allow for

forward-looking solutions (“future-proofing”) taking into account the concept of a “failure friendly environment”.

Every revision of design standards and building regulations should be seen as an opportunity to ensure that the guidance includes consideration to the impacts of climate change. Moreover, reviews should also refer to standard checklists or similar to ensure that adaptation measures are included.

In addition, all planning and design processes (spatial planning, site-specific developments etc.) with uncertain conditions need to allow more time for planning and decision-making than ordinary plans and designs. This has to be reflected in the project organisation and the budget.

## Examples from Cluster projects: Towards closing the gaps

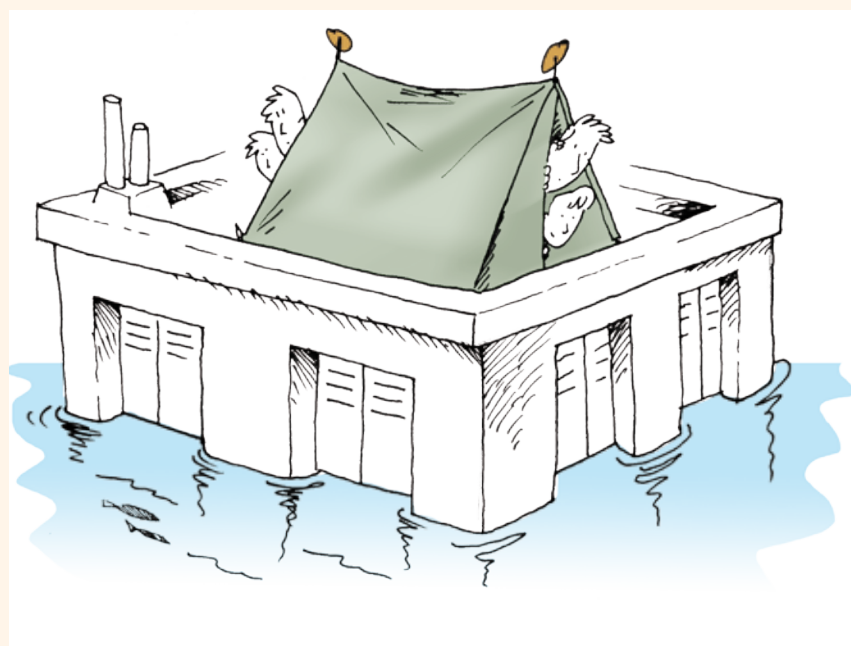
### Guideline for diagnosing and reducing the impact of flood hazards on buildings (FloodResilienCity)

Conseil Général du Loiret (FR) together with the European Centre for the Prevention of Flood Risk (CEPRI) in Orleans developed a guideline to determine and diagnose the elements that make a building vulnerable to floods and its consequences. The diagnosis focuses on three questions:

- Does the flood impact on the building directly affect human safety?

- How much time will be required to resume normal activity within the premises after a flood?
- Does the impact observed on the building also affect its immediate vicinity, e.g. polluting nearby buildings?

Following the diagnosis measures are identified to reduce the vulnerability. Considering this list of measures means improving the standard approach towards climate-proof designing.



Review design standards to cope with flooding  
Source: CEPRI, FR

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## Deviating from standard design to accommodate climate change impacts (AMICE)

The Albert Canal (BE) runs from the inland port of Liège to the Port of Antwerp and is fed entirely by the Meuse. The total fall is 55.5 meters. The canal serves as navigation route and as water resource for various purposes (irrigation, drinking water production, nature), as well as a migration bypass for many fish species. The design of a new pumping station needed the deviation from the standards to accommodate the expected change in conditions.

In the public and political discussion it was difficult to communicate the proposed alternative solution because the legal standards did not allow for any flexibility. Initially, the investment was planned without taking climate change into consideration in an appropriate way. Eventually – following an extensive awareness raising and communications campaign – a solution was found and the additional costs were approved.



Lock of Ham, BE  
Source: AMICE

## 3.2 Understanding through improved communication

Climate change – so what? Climate change has to be made more tangible for the general public as well as planners and decision-makers.

Scientific evidence and uncertainty need to be carefully explained to practitioners, politicians, stakeholders and the public using appropriate language and communication tools in order to support planning and decision making in adaptation strategy development: [Improve communication tools through visualisation.](#)

Climate change issues should be integrated in all aspects of formal and informal education, starting from primary schools and

following up on subsequent education steps and lifelong learning: [Increase attention in education and lifelong learning.](#)

International river basins are one important spatial area where improved communication and coordination between the adjacent countries involved could lead to more consistent adaptation. Many good examples of international river commissions exist, but improvements in actual upstream-downstream-communication and coordination as well as joint planning are possible: [Improve cooperation in international river basins.](#)

### Improve communication tools through visualisation

For planners and decision makers as well as the general public most climate change studies and scenarios do not provide an easily understandable and clear picture of those impacts that are most important for them in their fields of action; most messages are too abstract.

We need to present the information about climate change impacts in a non-technical way. We need more tangible visualisation of the impacts in addition to impact studies for experts to provide

understandable results for the general public and non-experts. An effective method is to emphasise the consequences of flooding, drought or sea level rise with visualisations of the impacts.

Visualisation tools are very helpful. A broad range of communication tools has been developed, e.g. within the INTERREG projects. Nevertheless, in routine planning procedures the application of these tools often is neglected and budgets are not provided.

### Examples from Cluster projects: Towards closing the gaps

#### Visualising water problems and the urban heat island (Future Cities)

A multi-player computer game features the eastern part of the Dutch City of Tiel with its specific water problems. The aim of the game is to make the players achieve a common goal, e.g. solving the water nuisance by means of a given variety of measures and financial resources. Each player represents one of the stakeholders, such as the project developer, the water board, housing corporations and the municipality. The influence of the inhabitants is considered in the game as well. Several circumstances are simulated, for example heavy rainfall, high river levels, effects of an extra hardened surface due to new developments, the effects of specific measures taken: When

the game was played in Tiel every participant had to play the role of another stakeholder. This was a striking way to gain more insight in each other's interests and to experience the benefits of cooperation.

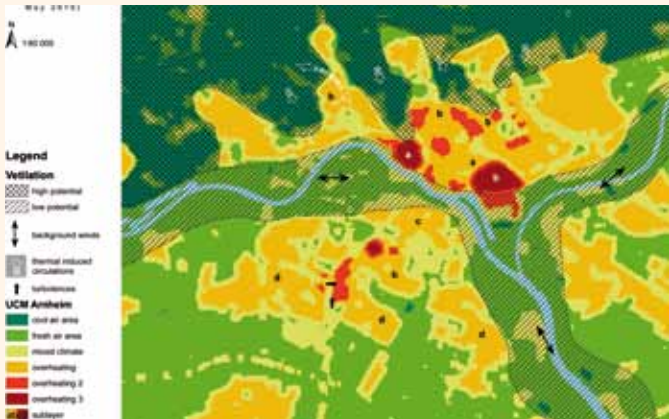
In the "Heat Map" the Dutch City of Arnhem visualises areas which are sensitive for heat accumulation and areas which produce fresh and cool air to inform the public and to manage projects.



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Scenery of the water game  
Source: Tygron



The Heat Map of Arnhem: red zones - sensitive for heat accumulation;  
green zones - areas producing fresh and cool air  
Source: City of Arnhem, NL

## Combining flood data with panoramic photos (WAVE)

In County of Somerset (UK) flood data from models is superimposed onto panoramic photos, to produce photo montages for easy understanding. The UK Environment Agency developed visualisation models of how Somerset might look with the effects of climate change. Panoramic photographs were taken from high level points across Somerset to provide a photographic base which then can then be built upon with predictive modelling and visualisation techniques. Predicting and analysing extreme

flooding and drought events in this way assists strategic planning decisions: about how we can work around the problems by changing land use practice, thinking about how we can plan for the water resource problems all year round, and how most importantly we can get people to make those cultural and behavioural changes which will be required to adapt to climate change.



Flood visualisation in Somerset County: looking south from Brent Knoll, 200 year, undefended. Tidal (only) Flood – year 2110  
Source: Somerset County, UK



## Increase attention in education and lifelong learning

A change in culture is necessary; this can be achieved by starting with children and young people to be followed up on subsequent education steps and lifelong learning. Although the importance is highly acknowledged, financing is often very difficult, “with budget cuts it is often one of the first items to go” (ALFA workshop of education, RWS, NL).

Education on climate change at primary and secondary schools is very important. It targets the citizens of the future, reaches their parents and can thus help create public support for projects dealing with climate change. It helps to communicate awareness of risks to groups who don’t usually interact with authorities like young people.

The EU White Paper on Adaptation reflects education in the context of research and higher education. The topic is also acknowledged by international organisations, e.g. UNESCO requests climate change education integrated in education for sustainable development.

At EU level, several DGs address the issues of climate change in education though mainly on the topic of reducing greenhouse

gas emissions. Often, educational tools are developed as a “by-product”.

Concrete proposals to support the delivery are:

- Create an EU priority for the development of teaching methods and curriculums regarding climate change at schools within the European Union. Amend the focus on mitigation with adaptation to climate change.
- Identify existing learning tools and good, identify gaps and mobilise support for teacher training.
- Enhance the exchange of experiences and good practices among member states, ministries, practitioners and young people – use existing networks.
- Ease sharing information: e.g. Integrate education as a topic on the European Adaptation Platform ([climate-adapt.eu](http://climate-adapt.eu)) and use DG Education and Culture networks; e.g. create a “climate change knowledge hub”

## Examples from Cluster projects: Towards closing the gaps

### Toolkits for primary and secondary schools (ALFA and C-Change)

Île-de-France (C-Change) developed a community engagement approach targeting students in the region’s high schools. The “Ecolycées” programme raises awareness of climate change issues and promotes the implementation of practical responses and solutions in the schools, for example through reducing the school community’s collective energy, water and wider resource consumption. Central to this action was the development of five “Ecolycées” toolboxes, which provided the equipment and

guidance needed for students to measure and record current energy, water and other natural resource use in their schools and to then implement real energy saving measures while promoting behaviour change. In addition, the students communicated programme updates and behaviour change messages via a film and a school radio station. The programme also produced step-by-step guidance for other schools to develop similar behaviour change programmes.



Students take eco-action at their school.  
Source: Ile de France

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The schools project of Eden Rivers Trust (ALFA) aimed to raise awareness about flooding issues among young people and to encourage citizenship and solidarity. Students of age 11-16 visited the UK Environment Agency, learned about flooding, met a farmer who had been flooded and saw flood defences in operation. They were set a challenge to come up with their own projects to raise awareness amongst other young people about flooding, using media, art and IT to explore the issues. This helped to reach students who may not necessarily be interested

in science or geography. The students gave up their weekends, lunch times and after school to work on the project. As one result the students interviewed local residents, the Environment Agency, and a flood victim to make a filmed news report about flooding. They chose to include comedy in the film to make it more appealing to other students. By creating a tile mosaic the students from secondary school involved pupils from primary school and informed them in a playful way about flooding issues.



Students created a tiled mosaic illustrating a rural scene with and without flooding.

Source: Eden Rivers Trust, UK

## Learning by being a volunteer (ALFA)

At the Eden Rivers Trust (UK), volunteers have been involved in a whole range of activities. Examples are students that help with field experiments, local inhabitants that help with ecological and habitat monitoring, with tree planting and with maintenance at the Thacka Beck wildlife reserve. Farmers carry out investments

to increase water storage and slow down runoff and trustees engage in project governance. Key lessons to involve volunteers successfully are: the events and activities need to be safe and enjoyable, they should be led by enthusiastic and knowledgeable staff and volunteers should be encouraged to learn new skills.



Volunteers helping with tree planting

Source: Eden Rivers Trust, UK





## Combine lifelong learning and recreation

In the German state of Saarland (C-Change), the climate path invites visitors to experience various aspects of climate change from a very unusual perspective – to present a highly complex subject to the population in an exciting and event-filled manner. The tour is designed to be experienced on bicycles and illustrates

three main stages: a mountain, a forest and a sun section. At various stations visitors can either directly download information onto their mobile phones or look up the messages in the printed brochure.



Launch event Tour d'Énergie – at the opening of the climate path also electric bicycles were provided to enable visitors with limited mobility to take part.  
Source: Saarland Ministry for Interior and Sport, DE

## Improve cooperation in international river basins

The EU Floods Directive requests coordination of flood risk management (FRM) in international river basins. But the rules are very general in terms of the coordination of processes, and often the focus is on general information and less on promoting harmonised approaches. The EU Floods Directive is restricted to international coordination instead of cooperation or even harmonisation of FRM through a single, comprehensive approach. The principle in international river basins is that FRM is mainly implemented in administrative units. On the international level these individual plans are combined into one document but not closely linked to mirror the multiple mutual impacts of upstream and downstream activities.

In practice, the coordination is often too general to implement joint measures with international impacts. Here practical improvements and possibly better requirements for actual river basin management in international river basins should be found. Although this deficit is not exclusively highlighted by climate change, improvement would foster sustainable solutions and solidarity in adapting to risks along the rivers.

More “river-basin-management” in the closer sense of the word would improve the sustainability, e.g. to cope with droughts and floods, of the planning processes and the solutions. Emergency management also needs closer international cooperation. To

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support improvements in international coordination, International River Basin Commissions would need more supranational power and financial resources. International River Commissions aim for agreements on basic principles, cross-border datasets and how to combine the individual parts of the FRM plan into one comprehensive FRM plan.

This should be considered as part of the next period of Water Framework Directive (WFD) and Floods Directive implementation

(2016–2021). The EU acknowledges its task in assisting the cooperation of Member States. Additionally INTERREG funds should be made available for cooperation in international river basins in future, since it has shown that this supports river basin wide cooperation in addition to International River Commissions.

## Examples from Cluster projects: Towards closing the gaps

Good examples of close cooperation exist for many international rivers (Rhine, Mosel, Meuse etc.). But for FRM planning often, single parts of different administrative units are put together into one plan without actually having one common approach for the management of the river basin.

“International Commission and basin-wide organisation do exist in Europe, which is already a good step. But we experience that more could be achieved if these organisations were not only a place for sharing information, but also for joint implementation. In the climate change context, we believe that more ambitious and unified actions are needed if we want to anticipate impacts

and take early measures. In AMICE, we developed common methodologies for the whole Meuse basin. For example, we have built transnational climate change scenarios for 2050 and 2100; and we have connected the hydraulic modes that pre-existed on the Meuse river.” (Maité Fournier, Project manager of AMICE). The secretary-general of the International Meuse Commission, Mr. W. Schreurs, also acknowledges, that “Climate change surely is one of the biggest challenges for the Meuse basin’s future. It can only be tackled in the right way if there is a real collaboration on the scale of the whole river basin. Problems of individual countries are by definition transboundary problems for the other countries so they must be collectively settled.”



The transnational partnership of the AMICE project developed common methodologies for the Meuse river basin.

Source: AMICE



### 3.3 Galvanise actions across all sectors

The impacts of climate change are complex, and inter-connected approaches are needed that concern all sectors; however, to date sector-specific responses to adaptation prevail.

Integrated approaches to problem-solving will rely on cooperation between multiple sectors and all levels of government and decision-making. Since effective adaptation requires extensive coordination the task should be seized as opportunity: [Use adaptation to trigger coordination across sectors](#).

Stand-alone solutions can often benefit from integration with other. Here, the coordination between the water sector and spatial planning adapting to flood risks still needs to be further

strengthened: [Strengthen the coordination between the water sector and spatial planning](#).

EU Directives usually focus on a specific topic related to a specific sector obliging to coordinate the implementation in the Member States and at the regions. However, a coordinated delivery is often difficult, e.g. due to different time scales: [Improve coordination between EU Directives to facilitate adaptation](#).

Public procurement regulations at all levels need to facilitate innovative and sustainable actions. Economic criteria shouldn't be the decisive criteria: [Check public procurement rules and help the user with integrating sustainability](#).

#### Use adaptation to trigger coordination across sectors

It has been acknowledged that adapting to climate change is a cross-sector issue and that coordination across sectors is needed. Our response to a changing climate will require action across all sections of society – at the macro level as well as at the more local level, for example by local government, businesses and civil society. However, effective solutions for this are still not sufficiently embedded into everyday practices. Therefore, the issue needs to be highlighted and kept on the public agenda.

The EU White Paper on Adaptation as well as national adaptation strategies highlight that the close cooperation with all stakeholders is needed but the concrete focus of actions is still on the requirements of each sector. Often, the responsibilities for climate change adaptation are strongly sector-based. E.g. an analysis of Dutch municipalities revealed that the environment department tends to focus on energy saving (mitigation of greenhouse gas emissions) whereas the water departments are responsible for adaptation measures with very little cross-over between them. Often, the sector managers, e.g. of water management or green

area management, are not part of the networks where the decisions are made and adaptation is just one of the many aspects that need to be taken into account;

Different stakeholders need to develop a common starting point in terms of their understanding of key issues; At all levels, effective mechanisms for facilitating joint strategic planning and practical action of the most relevant stakeholders should be created; e.g. a coordination group on municipal level.

The multitude of measures and types of intervention at all spatial and administrative levels which are required provide opportunities for cross-sector working. Therefore, it should be used as a catalyst for sharing knowledge and new forms of collaboration at all levels.

This should be considered in the forthcoming European Adaptation Strategy as well as when reviewing existing Directives and other policy documents.

#### Examples from Cluster projects: Towards closing the gaps

##### Integrating stakeholders of a coastal zone (IMCORE)

The Gulf of Morbihan in the Northwest of France is an area rich in biodiversity and diverse natural habitats, bordered by densely populated communes. Tourism is the main economic activity amended by oyster farming, fishing, agriculture, and tertiary activities. The syndicate of municipalities to govern the Gulf of Morbihan (SIAGM) acts towards integrated coastal

zone management and facilitates integrated spatial planning decisions. In the IMCORE project, the syndicate worked together with a multidisciplinary university team for a better efficiency of stakeholder engagement, data sharing, implementation of methodologies and process analysis across sectors. Although, climate change adaptation at first was not a priority in the coastal

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zone management agenda, nevertheless, the project managed to engage many stakeholders on the territory. The fact that the IMCORE project was a European one helped towards securing



Auray City, Port of Saint Goustan  
Source: David Ledan, FR

the involvement of local actors who since consider that climate change is a shared issue across Europe and that its related issues must be integrated into future coastal zone management plans.

## The Future Cities Adaptation Compass - a tool to interlink different stakes

The Future Cities partnership developed a transnational tool to provide guidance for cities to check the vulnerability and adaptation options across sectors interlinking the different interests within the urban environment. Besides supplying general information and automated answers the tool gives the user the opportunity

to submit local information. The tool requests information of all departments and sectors in questions. Collecting this information and discussing the conclusions has been experienced to be a marvellous catalyst for starting coordinated actions amongst different departments.



Spatial planners and specialists from different urban departments test the Adaptation Compass.  
Source: Lippeverband, DE

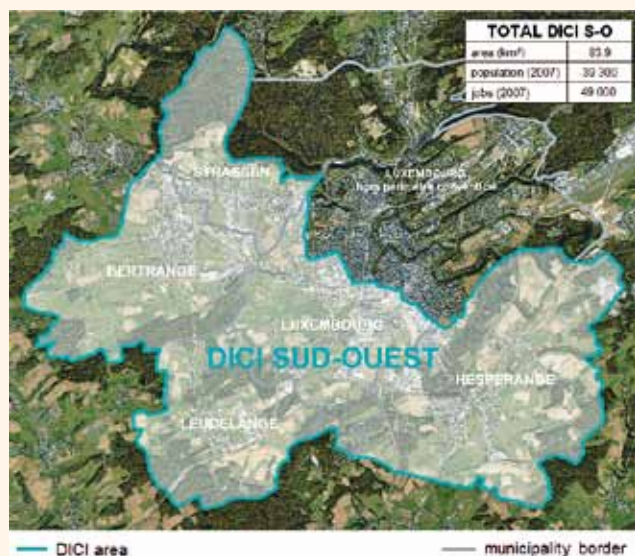


## “Climate-proofing” spatial planning instruments (C-Change)

The Luxembourg Ministry of Spatial Planning developed options for “climate-proofing” spatial planning instruments. Options were tested in the South-western part of the City of Luxembourg conurbation (DICl-area), an informal partnership led by the Ministry and five municipalities. In workshops and interviews stakeholders of different sectors, e.g. the Water Authority, were invited to

discuss, test and reflect on the climate change adaptation measures identified earlier. Based on this comprehensive consultation and cross-sector learning process, a document containing recommendations to climate-proof spatial instruments and a toolbox for planning options was published.





The DICI-area in Luxembourg

Source: C-Change

### Strategic agenda for the river Regge: opportunities increase with climate adaptation (WAVE)

By 2020, the Waterboard Regge en Dinkel (NL) would like the river Regge with its 52 km course, to be a dynamic and resilient water system. The waterboard works closely with various public authorities, nature conservation organisations, farmers and property owners to restore the river, to create retention area, an ecological corridor as well as seizing numerous opportunities for tourist attractions and recreational facilities. The challenge lies in getting the various parties and stakeholders to agree and

to develop a comprehensive, area-specific development plan that links climate-proofing to numerous subsidiary interests of public authorities, nature conservationists, farmers and the leisure industry. Vital factors in reaching the goals are widespread support and a maximum level of involvement across sectors. A key factor in creating a collaborative strategic agenda was to broker knowledge and skills among all parties involved.



The River Regge

Source: Waterschap Regge en Dinkel, NL

# Policy Recommendations

## Strengthen the coordination between the water sector and spatial planning

The coordination between the water sector and spatial planning is especially important for adaptation tasks such as effective flood risk management. The subject has been discussed in North-West Europe over a decade and substantial improvements can be stated. Nevertheless, awareness tends to lessen when no problems have occurred for a long period. Therefore it is still necessary to work on embedding the coordination strongly in the planning processes.

Water-related requirements in spatial planning start with an improved awareness of the possibilities, challenges and opportunities of taking water into account at an early stage of planning. Both at the level of the experts within organisations and at the political decision-making level public awareness is very important to establish water as a material consideration. Without this sensitivity or sense of urgency, the willingness to invest and to take action is

low. Experts, organisations and decision makers have to be aware about the opportunities and challenges of building water-related considerations into the early stages of spatial planning processes.

This should happen both at

- the national level as part of “strategic plans”; and
- the regional and local levels in more detailed spatial plans.

Responsibility for flood risk is often still seen as the sole responsibility of the water authorities. The preconditions for future land use options – as laid down in spatial plans – need to refer to the possible water levels – as provided by the flood risk management (FRM) plans.

## Examples from Cluster projects: Towards closing the gaps

### Integrating urban design, water management and green infrastructure (Future Cities)

During the development of the residential quarter De Vloei in the City of Leper (BE) the regional planning association West-Vlaamse Intercommunale took into account the different needs of the water sector in terms of creating a climate-proof, sustainable environment from the outset. Thus, it was possible to comply

with requirements of urban design. “Making water visible” within the urban setting, e.g. providing green-blue spaces with small channels for rain water, enables effective communication on the issues (“We have to live with water!”) while often being also a good technical and financially sustainable solution.



Integrated urban design De Vloei in leper, BE  
Source: J. Maenhout

### Water Sensitive Urban Design (WSUD) guidance (FloodResilienCity)

WSUD is a multi-disciplined approach to urban water management that aims to holistically consider the environmental, social and economic consequences of water management strategies. The guidance document of the FRC-project is particularly concerned how land use planning, productive landscapes and urban design come together with water management and other key utilities and services. Traditionally, such services have been seen and

managed in isolation and are delivered by separate expert and utility groups. Here the vision for WSUD is to manage water to deal with both water scarcity and water excess in an integrated way, manage and utilise the water cycle as locally as possible including potential opportunities and synergies within urban environments, ecosystems, and across urban services, design and planning processes.





River flood risk management scheme in Sheffield (UK). This retrofit bank raising has been landscaped to promote recreational use and improve visual appearance and can be classed as WSUD.

## Improve coordination between EU Directives to facilitate adaptation

EU Directives usually focus on a specific topic related to a specific sector. They include an obligation to coordinate the implementation at Member State level and at the regional implementation level with other policy and legislation. The coordination at Member State level and during the local/regional implementation is often impossible or difficult to realize, e.g. due to different time scales. The coordination during the planning processes needs a lot of resources and is difficult to communicate to the public. For the public it is difficult to understand why the same river needs different plans for the quality of water, for the quantity of water, for the ecology of the water and in future perhaps for the adaptation to climate change.

Examples are the Water Framework Directive, the Directives on Natura2000/Birds and the Floods Directive, each aiming at the protection of natural river environments. The goals and measures to reach the objectives of the directives are often contradictory or lead to duplication. Coordination at the EU level across themes is necessary to improve the results, to reach the goals and to limit the resources necessary to implement the Directives.

They should be aligned to contain consistent requirements, e.g. regarding

- the statutory plans that need to be developed
- implementation measures
- participation processes and monitoring and
- reporting mechanisms.

This message is important for the discussion on the development of an EU Adaptation Strategy: The focus should be on integrating climate change-aspects into existing directives rather than on developing a new Directive. Otherwise there is a risk of duplication on planning and reporting etc., e.g. in the fields covered by the Directives listed above.

## Examples from Cluster projects: Towards closing the gaps

There are examples for the coordination of WFD river management plans and FRM plans as well as the coordination of Natura 2000

and WFD. However, all these solutions are developed regionally to comply with the requirements of the different EU Directives.

## Check public procurement rules and help the user with integrating sustainability

Public tendering regulations were encountered to be too rigid to allow innovative and sustainable measures.

All contract award decisions should be tested against appropriate standard criteria, e.g. the cheapest contractor should not necessarily be awarded the contract unless they can also demonstrate the most appropriate maintenance regime. Support should be provided to contracting authorities developing more sustainable procurement standards.

The proposal on public procurement COM(2011) 896final includes external environmental costs if they can be monetised and verified. Where a common European Union methodology for the calculation of life-cycle costs has been developed, contracting authorities have to make use of it. This approach should be strengthened.

## 3.4 Integrated monitoring and management plans

Besides enforcing the actions across all sectors European and national monitoring and management systems are needed to deliver essential information for adequate adaptation strategies and to lay the basis for sustainable management within topics such as forests and agriculture:

Our forests have to be enabled to cope with climate change and the manifold requirements which they should fulfil for society and for the environment: [Install long-term monitoring systems and management plans for adapted forests.](#)

Policies, regulations and plans for water management and for agriculture have to be linked more closely: [Strengthen agriculture aspects in River Basin Management and Flood Risk Management.](#)

The EU Floods Directive as well as national policies make clear that non-structural measures are an important building block of flood risk management and should have a high ranking in the processes. This principle lacks implementation: [Foster importance of non-structural measures in Flood Risk Management.](#)

### Install long-term monitoring systems and management plans for adapted forests

We need an effective long-term European forest monitoring system, based on a consistent European standard and we need adapted forest management plans. The European forest monitoring system has been co-financed within a now expired project by the programmes Forest Focus and Life+.

The message is in line with the result of the consultation on the EU Green Paper on Forest Protection and Information which revealed the need to work on an EU level forest information system and monitoring after the expiration of the Forest Focus-programme.

Nevertheless, sufficient climate change datasets and measures to mitigate climate change effects are available to begin considering

management adaptation. The challenge is to combine all that information in such a way that appropriate decisions can be made. To guide development of these management plans, an outlook needs to be prepared, updated and improved over time through usage and considering new scientific, e.g. monitoring, simulation, and management, e.g. ecology, market mechanisms, insights.

There is a need to adapt forest management plans that are incorporated in ten-year plans of public sector agencies and in forest management plans by private sector actors. Regional forest planning systems with a mid-term temporal horizon are necessary in response to climate and demographic changes.

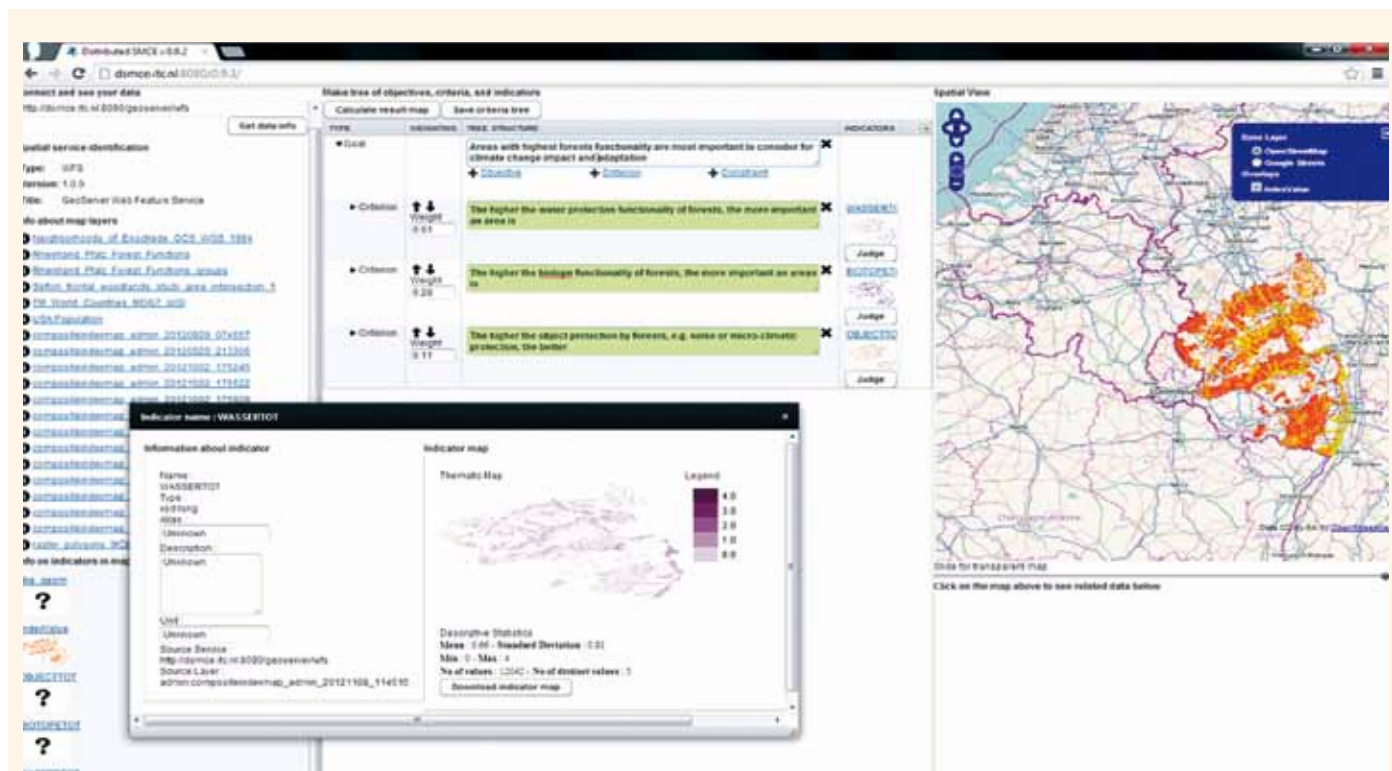
### Examples from Cluster projects: Towards closing the gaps

#### Multi-benefit forestry sustains ecosystem-based adaptation (ForeStClim)

The Cluster-project ForeStClim develops medium- and long-term strategies to support decision processes in multi benefit forestry taking into account aspects like carbon sequestration, and protective functions of forests, e.g. Regional Forest Planning in Rhineland Palatinate (DE). This is responding to the gaps which were noticed regarding the requirements imposed on forests: to fulfil changing societal and technological demands and how to integrate nature conservation, protection and enhancement of biodiversity into the increasing demands of biomass needs, recreation demands in urban and peri-urban areas and the depopulating of rural areas.

Examples for concrete actions that should be implemented in adapted forest management plan:

- Develop regional methods for 30–50 years forest development outlook, considering effect of climate change and other changes on current and planned forests
- Exchange methodological approaches between regions to achieve efficiency in development and quality improvement
- Use these methods to develop scenarios that guide the 10 year forest planning cycles in regions of Europe
- Apply a dynamically reacting forest site survey system as developed in ForeStClim.



Spatial Multicriteria Evaluation of forest functions on regional scale in Rhineland-Palatinate, DE  
Source: Boerboom/Alan (2012)

## Strengthen agriculture aspects in River Basin Management and Flood Risk Management

Agriculture has a significant impact on the quality and on quantity aspects of water management. Therefore, the agricultural sector has to become a more important actor in adaptation strategies. Adaptation to climate change in River Basin Management activities should be based on the contribution of all minor and major actors in the river basins. Acceptance or cooperation of agriculture is often decisive for quality oriented and flood risk oriented measures along rivers.

Deficits are observed in various situations: water quality improvement both in groundwater and surface water, realisation of flood retention areas, contributions of farmers to improve the retention of surface water on agricultural land. Agriculture in many places has no sufficient role in adaptation strategies, although it is one of the most important land users, and although farmers are experienced in landscape-adaptation.

Policies, regulations and plans for water management and for agriculture have to be linked more closely, e.g. funding of reduction in intensive farming practices. The prevailing focus of the EU White Paper on Adaptation as well as the proposal for the agricultural

policy seems to be on increasing the resilience of agricultural production. The possibilities, e.g. to contribute to the mitigation of flood risk along rivers is less in the focus. A first assessment of current River Basin Management Plans has revealed that the link between these plans and rural development programming seems to be low. The coordination between policies needs to be more evident at EU level. Funding should be linked more consistently to special practices of agriculture regarding adaption to climate change and water management efforts.

We need a multi-sectoral approach and analysis at territorial scale overcoming the traditional opposition of the “water” and “agriculture” world. Farmers need to be involved from the early stages of planning. Here, the corresponding processes need to be adapted. Rural development – funding gives support for a wide range of water-related and adaptation actions, e.g., afforestation, conversion of arable land to grassland. Since 2009 the Common

# Policy Recommendations

Agriculture Policy increased the conditionality of support e.g. regarding the protection of watercourses.

The proposal for the next years includes a direct payment for farmers following agricultural practices beneficial for the climate

and the environment. This could be helpful if applied in the context of a catchment strategy.

## Examples from Cluster projects: Towards closing the gaps

### Compensation and cooperation for “win-win”

In North Rhine-Westphalia (DE) local cooperation between water authorities and farmers were established to reach the goals of the Water Framework Directive, especially regarding ground water. Funds are made available if the cooperation is effective. The AMICE investigated the possibilities of compensating farmers in case of inundation if they accept to have their land used as retention area. This would increase storage capacities.



Restored wetlands in the upper catchment of the Amblève  
Source: AMICE

These experiences could be used to implement a broader level of cooperation of water management and agriculture in River Basin Management, flooding issues and adaptation to climate change.



Soil Aerator from the Eden River Trust which farmers can borrow to trial soil aeration to reduce rapid run off from farmland during rainfall  
Source: Eden Rivers Trust, UK

### Help farmers with water friendly farming and to facilitate multi-functional land-use (ALFA)

As a new approach in 2011 ALFA partner Eden Rivers Trust (UK) ran a series of workshops for farmers focused on the links between sustainable farming and river management. As a result 11 farmers joined the ALFA project and developed their own ideas for investments on their land which will help slow the flow of rapid runoff and store more water. Their ideas include rainwater harvesting, creating ponds with high flow storage capacity, re-meandering drainage channels, improving cow tracks and diverting run-off through buffer areas of grass or woodland. Over 10,000 trees will be planted along the river and as shelter belts, and three kilometres of new hedgerow will be created. All these

measures will help to store water and slow its movement whilst also trapping manure and sediment.

In addition, the Water Friendly Farming Good Practice Guide, a short, colourful leaflet provides easy to read guidelines and suggests simple steps that can help farmers reduce soil and nutrient losses from their land, help manage river banks in an environmentally friendly way and help slow the flow of water from farmland during heavy rainfall. It can be downloaded from the web-site: <http://trust.edenrivertrust.org.uk/>



## Foster importance of non-structural measures in Flood Risk Management

Practical implementation of flood risk management planning needs to focus on non-structural measures, such as spatial planning to avoid risk, building restrictions and precautionary measures at houses, before planning structural measures like defence works. Structural measures should be taken only in cases where non-structural ones are not adequate to reduce risk. This would be in line with the EU Floods Directive and with all principles of modern sustainable flood risk management approaches, and would also be more cost-effective.

The current framework is not sufficiently focussed on these aspects: In local plans structural measures are often more in the focus than non-structural measures.

In the public discussion of flood risk management plans structural measures are requested intensively to reduce the risk locally. Often, local actors in flood risk areas call for protective measures to allow

local developments, rather than relying on non-structural measures implying living with risk, adaptation of uses and to be prepared. To date local flood action plans show many more structural measures, e.g. walls, dams and technical measures, than non-structural ones.

Implementation has to improve in this respect, also resulting in stricter frameworks, e.g. regarding the evaluation of non-structural measures in the evaluation process of flood risk management plans. In the next two years many of these plans will be set up. It will be decisive which incentives there are for non-structural measures. The goal of the EU Floods Directive is set out clearly; but is still has to be implemented consistently.

Especially in the light of climate change, incentives for non-structural measures should be created. Structural measures are important, but usually planned and realised also without flood risk management plans.

## Examples from Cluster projects: Towards closing the gaps

Good practice examples were demonstrated in several Cluster projects, like awareness raising for non-structural measures,

spatial planning strategies, construction guides in flood risk areas, improving preparedness and precautions.

### Flood resilient redevelopment of an harbour area (FloodresilienCity)

The harbour area ("Zollhafen") of the City of Mainz (DE) is one of the largest container ports on the Upper Rhine. The harbour logistics are being moved and a new city quarter with 4,000 future jobs and 2,500 future inhabitants is planned. The project site is situated outside of the city's existing flood defence line and in the flood plain of the river Rhine where no active flood defence measures are allowed. The flood risk is adopted as opportunity for urban layout and design making available an attractive city

area along the river. The Zollhafen area will be flooded if the Rhine levels rise above the 1/100 flood level; accordingly the redevelopment of the harbour area must be flood resilient and the construction has to be flood-adapted: e.g. in the design of footpaths, in the signs of the emergency routes, in the contracts with real estate owners. A "project developer's guide" clearly outlines the construction possibilities and restrictions.



Zollhafen Mainz: harbour area

## 3.5 Tools better support decision making

To date, a wealth of experience exists on EU, member state and regional levels; the challenge is to [facilitate the knowledge transfer](#).

A great variety of tools and measures exist or are being developed to prepare or to support the decision making and implementing adaptation actions. They comprise a wealth of experience on EU, member state and regional levels. The challenge is to facilitate the knowledge transfer:

- Providing and maintaining knowledge platforms
- Providing and strengthening the links between EU, national and regional information portals
- Transfer of knowledge, taking into account the local differences; e.g. when up-scaling pilot studies within Europe

- “Adaptation” to national and regional contexts as well as languages is necessary.

The EU Clearing House on climate change adaptation resulted in the CLIMATE-ADAPT web platform compiling European knowledge of climate change impacts, tools and projects ([www.climate-adapt.eu](http://www.climate-adapt.eu)). Here, one ongoing challenge is to develop the monitoring and evaluation of good practice of adaptation actions. The aim is to link the results of research projects (FRP) with the practical experiences of INTERREG projects.

### Examples from Cluster projects: Towards closing the gaps



#### Tools & Measures

The Cluster organisations have brought together their collective experiences of good practice tools and measures for climate change adaptation like no-regret measures.

The manifold experiences were analysed, and the results are presented on the web-based Cluster Knowledge Platform. The platform provides information in a number of different categories e.g. action fields, types of tools, spatial scope or target group, allowing to share the knowledge and to transfer the results to North-West Europe and other European regions. Cross-reference is provided with the European Environmental Agency's website [climate-adapt.eu](http://climate-adapt.eu), which was developed on behalf of DG Climate Action.

The analysis of tools and measures shows that climate change adaptation will only be successful and effective, if the development of technical adaptation tools and measures includes stakeholders as part of the process. The main challenges in this process lie in improving communication, facilitating organisational change and

increasing institutional capacity. Special attention needs to be paid to the local and neighbourhood dimension of climate change and to specific target groups such as small and medium enterprises.

Five themes were identified for in-depth discussions within cross-project exchanges: Heat and bio-climatic stress in urban areas; vulnerability assessment; flash floods; climate proofing; and multifunctional land-use. These topics reflect the specific challenges and opportunities encountered by the Cluster organisations.

#### Further reading:

- Knowledge Platform: [sic-adapt.eu/outputs/knowledge-platform.html](http://sic-adapt.eu/outputs/knowledge-platform.html).
- Full paper 'Findings and conclusions on tools and measures': [sic-adapt.eu/download.html](http://sic-adapt.eu/download.html)

## Use of spatial multi-criteria decision support tools in forest management planning (ForeStClim)

While reviewing the Sefton Coast Woodlands Forest Plan, the Mersey Forest management team tested spatial multi-criteria evaluation techniques to support consensus reaching on management responses. Given the variety of issues such as coastal squeeze, visitor pressure, and threats to rare species, consensus is very difficult to reach.

The spatial multi-criteria evaluation framework helps to add structure to discussions, aiding mutual understanding and promoting compromise. If handled sensitively it can be seen as a

more impartial evidence base for management decisions. It can help to answer spatial questions such as ‘Where should there be trees?’ and ‘To which parts of the area should visitors be directed?’. Answers are influenced by multiple spatially-differentiated factors and many of these factors relate to the benefits that the trees and other green infrastructure can provide for people if they are suitably located. The challenges are in determining which factors are the most important to stakeholders. Lessons learned point to the importance of stakeholder selection and engagement, and removing layers of abstraction wherever possible.



Stakeholders express their view by distributing small bricks amongst the factors on a “paper pie”.

Source: Mersey Forest, UK



## Acknowledgements and references

### Contributors to this document

All eight projects with their project partner organisations contributed actively to the results described in this paper:



Adaptive Land Use for Flood Alleviation (ALFA),  
Lead Partner (LP): Rijkswaterstaat, NL, [www.alfa-project.eu](http://www.alfa-project.eu)



Adaptation of the Meuse to the Impacts of Climate Evolutions (AMICE),  
LP: EPAMA, FR, [www.amice-project.eu](http://www.amice-project.eu)



Changing Climate - Changing Lives (C-CHANGE),  
LP: Groundwork London, UK, [www.cchangeproject.org](http://www.cchangeproject.org)



FloodResilienceCity (FRC),  
LP: Rijkswaterstaat, NL, [www.floodresiliency.eu](http://www.floodresiliency.eu)



Transnational Forestry Management Strategies in Response to  
Regional Climate Change Impacts (ForeStClim),  
LP: Landesforsten RP, DE, [www.forestclim.eu](http://www.forestclim.eu)



Future Cities - urban networks to face climate change,  
LP: Lippeverband, DE, [www.future-cities.eu](http://www.future-cities.eu)



Innovative Management for Europe's Changing Coastal Resource (IMCORE),  
LP: National University of Ireland, IE, [www.imcore.eu](http://www.imcore.eu) and [www.coastaladaptation.eu](http://www.coastaladaptation.eu)



Water Adaptation is Valuable for Everybody (WAVE),  
LP: Waterschap Regge en Dinkel, NL, [www.waveproject.eu](http://www.waveproject.eu)

More details of the examples presented and beyond can be found via the projects' websites.

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André Jol, European Environment Agency, DK

Johan Bogaert, Flemish Government, BE

## List of relevant EU Policies (non comprehensive)

Adapting to climate change: Towards a European framework for action: EU Commission White Paper COM(2009) 147 final, 1.4.2009

A Blueprint to Safeguard Europe's Water Resources: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2012) 773 final, 14.11.2012

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Common Agricultural Policy to be reformed by 2013: Commission proposal 12 October 2011, approval of the different regulations and implementing acts is expected by the end of 2013, with a view to having the CAP reform in place as from 1st January 2014

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Our life insurance, our natural capital: an EU biodiversity strategy to 2020: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2011) 244 final, 03.05.2011; European Parliament resolution adopted on 20 April 2012

Towards a stronger European disaster response: the role of civil protection and humanitarian assistance: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2010) 600

Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

# ***Policy Recommendations***

## **Notes**



## Notes

# ***Policy Recommendations***

**sic adapt!**  
Adaptation to the Spatial  
Impacts of Climate Change



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Investing in Opportunities



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INTERREG IVB