Summary (NEW)
SAWA strived to strengthen the member states for their current implementation of the EU Flood Directive by developing a transnational implementation strategy. The aim was to adapt existing water management systems to the effects of extreme flood events due to climate change, focusing on sustainable development of society and regional economies. Despite of the initial intensive attempts to find one common strategy for all pilot regions, this approach has been reconsidered. Individual approached have been developed instead. The reason is seen in high diversity of the national contexts in terms of institutional responsibilities and structures, scale of the problem, available data and resources. Six Flood Risk Management Plans and one river basin management plan have been developed by the partners for the SAWA pilot regions. It has been assessed that the coordinated activities and contributions of responsible authority, research and consultancy has been crucial for successful design and conduction of the planning process. (Further Information: WP1-reports)

Having the idea in mind to support planning and decision-making process SAWA compiled a Catalogue of Measures organized in a Database. This database summarizes different adaptive measures like Flood Resilience Measures and Flood Probability Reduction Measures. It also considers synergetic measures which are referring to the demands of Flood directive as well as to the demands of Water Framework Directive. It further presents SAWA experiences gained from case studies and pilot implementations. (Further Information: WP2-reports)

SAWA also concentrated on education activities being Sustainability Education Centers, higher education and a Student Exchange Program. The project integrated local, regional and national stakeholders, university and vocational training students. (Further Information: WP3-reports).

Sawa is represented in the WaterCAP cluster.

Duration
01/06/2008 - 31/03/2012

Priority
2 - Promoting the Sustainable Management of our Environment

Area of Intervention
2.3 Adapting to and reducing risks posed to society and nature by a changing climate

ERDF Grant
3,524,000.00 €

ERDF Equivalent
556,000.00 €

Total Eligible Budget
8,160,000.00 €

Lead Beneficiary
Ministry of Economy, Traffic and Innovation (BWVI), Agency for Roads, Bridges and Waters Hamburg (LSBG), Germany
Jeff Marengwa
jeff.marengwa@sawa-project.eu
Tel:

Aim

The project aims to adapt existing water management systems to the effects of extreme flood events due to climate change, focusing on sustainable development of society and regional economies. SAWA builds onto the following aims:

- Improve, facilitate and accelerate the implementation of the new Flood Directive (FD) by developing a common planning and implementation strategy based on experience from a number of cases in the NSR,
- Work out a decision strategy on how to use and prioritise new adaptive measures in Flood Risk Management Plans (FRMPs) closely coordinated with the EU Water Framework Directive (WFD) implementation process to show synergetic potentials,
- Develop and compile new adaptive structural and non-structural flood mitigation measures and schemes to improve water management systems in the NSR,
- Prepare institutional, expert and public structures for an optimal implementation and operational capability of the FD in coordination with WFD, focusing on education, communication, capacity building and adaptive measures.

Background

Looking at climate change as a driver for a very likely increase in regional risk of flooding, it will be one of the major challenges for future Flood Risk Management tasks in this century. It is widely believed, that adaptation will be one of the key strategies to cope with this threat. Large parts of the NSR are low lying areas. Hence in many of these areas the risk of fluvial flooding caused by more frequent heavy rainfall is putting pressure onto regional decision makers and stakeholders.

On EU level water policy has been strengthened by the recently adopted FD. It demands an integrated Flood Risk Management (FRM) on a river basin level with a close link to the EU WFD. The implementation bares great challenges for all, especially knowing the differences in legal, institutional and societal conditions in the member states. Both directives demand an integrated water management approach on a river basin level.

How such a management system can be implemented cost-effectively and what kinds of changes to institutional structures, stake holder involvement, education and communication, etc. are needed, is not clear. Three key areas have been identified where water management can be improved supporting sustainable regional development.

- How can local decision making be an integral part of catchment based planning applying the concept of Flood Risk Management Plans?
- How can measures be more locally adaptive without loosing effectiveness on a catchment scale?
- How must education and communication be improved to optimally integrate stake holders on all levels?

These challenges require a transnational, interdisciplinary team with partners from all administrative levels (national to local) to assure a practical implementation together with scientific research institutions that are working toward the goals adapting education, management systems and mitigation measures to a changing environment.

Results (full text version)

In consideration of climate change aspects SAWA developed FRMPs for five pilot areas in four NSR states whereas synergies between flood risks and water quality aspects as well as an active involvement of interested parties became integral part of the planning cycle:

- FRMP Wandse, catchment of River Alster in Hamburg, GER, urban area
- RBMP catchment of River Illmenau in Lower-Saxony, GER; rural area
- FRMP water systems of Lake Värnen/Göta älv for the cities of Lindköpig and Karlstad, SWE; urban area
- FRMP catchment of River Gaula, NOR, rural area
- FRMP catchment of River Tana, NOR, rural area (Cross border)
- FRMP region Hunze en Aa's, NL, rural area

SAWAs experiences on the implementation strategy of FRMPs are summarized in WP1 report in the document section.

Additional features like decision support tools, assessment methods and databases on adaptive measures and expertise as well as a great variety of capacity building measures have been developed in order to support the planning process as well as a better understanding of the ideas behind the directive's purposes. This great variety of capacity building measures gives preference to interactive ways of communication and education instead of traditional teaching approaches. SAWA established:

- a M.Sc. course on Flood Risk Management
- educational games, events and study tours for pupils, student and professionals
- different Sustainable Education Centers,
- different raising awareness measures like workshops, exhibitions and art impressions

Please visit the document section and/or the SAWA pages of iwa waterwiki (http://www.iwawaterwiki.org/xwiki/bin/view/Organizations/SAWA) for much more detailed information on DS-tools, methods and measures.

Alternative:

SAWA results (in numbers)

- 5 Flood Risk Management Plans on national level (SWE, NOR, GER, NL)
- 1 River Basin Management Plan on national level (GER)
- 1 cross-border Flood Risk Management Plan (NOR/FIN)
- 10 different DSS Tools for planning and operational purposes
- 2 Contingency Plans (urban / rural area)
- 1 Database on Adaptive Measures (http://www.iwawaterwiki.org/xwiki/bin/view/Organizations/SAWA)
- 1 Expert Database (http://experts.sawa-project.eu/)
- 7 Sustainable Education Centers
- 1 Master Course on Flood Risk Management
- 2 computer supported educational games

Furthermore

- SAWA analysed & tested different approaches for stakeholder involvement
- SAWA produced educational material
- SAWA developed numerous analysis and studies
- SAWA created numerous reports, books and scientific articles
- SAWA hold numerous workshops and seminars on national & international level
- SAWA took part on numerous national and international conferences
- SAWA created a vivid network on international level
- SAWA launched a project website (http://www.sawa-project.eu/)

October 2011 – March 2012 (NEW entry)

The project has entered its final phase of reporting. The project has had its final conference, which was held in Hamburg, Germany on 17-18 November 2011.

April - September 2011

The project has entered its final phase of implementation. The project has successfully implemented five flood risk management plans, seven different Decision Support System (DSS) tools (access via WIKI), two contingency plans, developed a database on adaptive measures, a M.Sc. course on Flood Risk Management and five sustainable education centre's (SECs) (http://www.sawa-project.eu/index.php?page=projects).

October 2010 - March 2011

The transnational education activities have started with a workshop in March 2010. A joint Masters course was hosted by Karlstad University in Spring 2011.
A website for the Sustainable Education Centre (SEC) was launched and an external network for SEC has been established. The transnational network for a more effective flood risk management consists of 15 members, including municipalities, regions, national authorities, consultants and the insurance sector.
Extensive research has been carried out in order to develop a new decision support system outline for water bodies including sustainable flood retention basins (SFRB) and other structural adaptive measures. It shall replace the current decision system, which is based on a collection of various tools based on different methodologies.
The SAWA project UK3 is applying cutting edge geo-statistical techniques and neural network modelling tools for sustainable flood risk management. The dataset developed so far allows a detailed spatial analysis of conventional hard variables such as dam length, height, and holistic variables such as how engineered a structure appears.

April - September 2010

The transnational education activities have started with a workshop in Gothenburg in March 2010. A joint master course will be hosted by Karlstad University in spring 2011.
A website for the sustainable education centre (SEC) was launched and an external network for SEC has been established. The network for a more effective flood risk management consists of 15 members, including municipalities, regions, national authorities, consultants and the insurance sector.

Extensive research has been carried out in order to develop a new decision support system outline for water bodies including sustainable flood retention basins (SFRB) and other structural adaptive measures. It shall replace the current decision support system, which is based on a collection of various tools based on different methodologies.

The SAWA project UK2 is applying cutting edge geo-statistical techniques and neural network modelling tools for sustainable flood risk management planning. The dataset developed so far allows a detailed spatial analysis of conventional hard variables such as dam length and height and holistic variables such as how engineered a structure appears.

October 2009 - March 2010

SAWA has now reached its mid-term. This working group has established a common understanding about stakeholder involvement and needed material to communicate and build the necessary capacity for the implementation process of the EC Flood Directive. This important building block also contributes to the strategy development in work package one. The preparation for the mid-term conference in Gothenburgh in May 2010 addresses how SAWA is working to implement EC water policy on a local level. The publicity activities have been intensified to promote the mid-term conference and to find the right link to the Working Group F within the CIS Process established by the European Commission. This includes the setting up of a conference website the building of fact sheets for all pilot projects.

The 3Di consists of two disciplines namely to integrate and have an interactive information management as well as the three dimensional visualisation of information to better understand decision. This new technique shall improve the manner in which water management information can be communicated to civilians and (government) officials and policymakers. Its focus is to accelerate the water simulation model for supporting Flood Risk Management Plans (FRMP), to increase the accuracy of the models using detailed terrain models and to communicate the derived (modelled) information the public and officials through using 3D visualisation via an internet portal. The first ideas of this approach was presented at the mid-term-conference in May 2010.

April - September 2009

The SAWA project has been accelerating after a moderate start due to organisational matters. The final adjustments to the individual work plans reflecting planned activities and deliverables have been made. The implementation process of the EC Flood Directive (FD) has started with stakeholder analysis conducted in different pilot catchments and the Decision Support System toolbox (DSS) has been improved across the partnership.

The operational computerised Decision Support System (DSS) which will use 3 hours radar rainfall data to improve prediction of flood risk is a new development handling these issues. In addition, the rain garden is a new way of handling surface water in urban areas. The SAWA project is presenting it for the first time in Norway. Finally, the publication of the water body and Sustainable Flood Retention Basins (SFRB) survey methodology is potentially significant in assisting the implementation of parts of the Flood Directive (FD). This is due to the fact that the water body and SFRB survey method allows this screening level assessment to be completed for water bodies and constructed impoundments and wetlands. The guidance manual is therefore a direct contribution to innovation in sustainable flood risk management planning.

Until April 2009

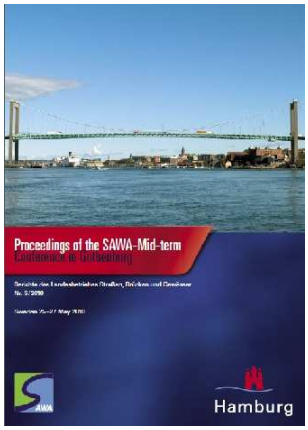
The Strategic Alliance for Integrated Water Management Actions (SAWA) will develop a strategy to adhere to the European Water Framework Directive (WFD) and which will also meet the requirements of the existing Flood Directive (FD). This will enable the North Sea Region to act flexibly on challenges arising from climate change issues.

The Flood Directive (FD) focuses on quantiative aspects of flood risks whereas in the case of the European Water Framework Directive (WFD) water quality and good water conditions are pivotal. Each directive deals with water management and it is necessary to consider both aspects even though this might precipitate a conflict of interests.

Events (NEW)

- SAWA mid-term Conference Göteborg Dates: 25/05/2010 - 27/05/2010
- SAWA final Conference Hamburg Dates: 17/11/2011 – 18/11/2011

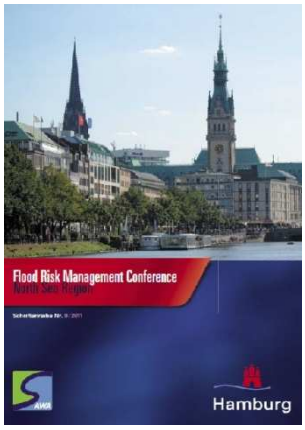
SAWA Conference Proceedings and



Conference proceedings (pdf available)

Mid-term Conference in Gothenburg

Sawa Mid-term Conference PPT, Sawa Fact Sheets, and Videos of SAWA mid-term Conference please find here: http://www.sawa-project.eu/index.php?page=documents



Conference proceedings (pdf available)

Flood Risk Management Conference – North Sea Region in Hamburg

SAWA Final Conference PPTs (ppts available)
SAWA Final Conference Posters (pdfs available)
Program (pdf available)

SAWA Newsletter (pdfs available)
Newsletter 6 Newsletter 5 Interactive Version Newsletter 5 Newsletter 4 Newsletter 3 Newsletter 2 Newsletter 1

Photos (New entry)

SAWA and public relations work

example 1: SAWA project is represented in the daily news (Hamburger Abendblatt)

Example 2: SAWA-member Bent Braskerud in an interview with www.nrk.no close to river Akerselva in Oslo.

Example 3: SAWA is represented at EU exhibition in Sweden in Oktober 2010

Example 4: LABEL project (Central Europe) and SAWA project (North Sea Region) organized a common conference for exchange of experiences and ideas in June 2011 pdf available

SAWA onsite

Representative of Waterboard Delfland visited the Green Roof and Raingarden experimental sites in Oslo.

"Runoff early winter" December 17th 2011 at Nils Baysvei 21 in Oslo.

SAWA / Heriot-Watt University Permeable Paving Test Facility

Flood animation studio Klimawoche Kiel

Stakeholder involvement

Flood walk (poster pdf available SAWA_Poster_KaU_Flood_Walk)

SAWA CB measures

Master Course Excursion May 2011, Sweden / Norway

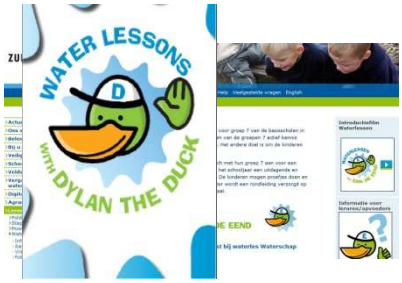
Master Course Excursion Germany / Netherlands

illustration SAWA Course field trip Germany / Netherlands pdf available

Decision making process: Social Game with colored balloons

Gymnasium pupils preparing for the Floodville game during Researchers night, Sept 2011

Interactive Game, developed by Heriot-Watt University



Computer based game for pupils

Pdf and link available

Student Exchange

Student group from Rotterdam visiting Leuphana University in Lüneburg.

Student exchange

Students from Leuphana University presenting student work in Arvika, Sweden.

Presentation Hogeschool Rotterdam

http://www.kau.se/en/ccs

Virtual SEC

http://wiki.leuphana.de/viwa/wiki/index.php?title=Main_Page

SEC Impressions

Find more information at http://www.iwawaterwiki.org/xwiki/bin/view/Articles/PublicEngagementtoIncreaseAwarenessofFloodRisks - under the title Case studies

SAWA participatory planning process



Impressions from stakeholder involvement

SAWA workshop activities

Vietnamese delegation in Delfland

WP1 workshop Delft

Pre- announcement final mile stone TA-project

25/03/2011 National Meeting Delft

"Climate change and the challenges ahead for Lake Vänern" seminar for upper secondary school students

Workshop "Climate change and agriculture in Flevoland"

Excursion along River Mölndalsån during workshop on Climate Proof Cities in Gothenburg in May 2011

SAWA workshop Synergies WFD / FD

SAWA Workshop

Documents (NEW)

SAWA Final reports (pdfs available)

Report - SAWA Final Report Summary

Report - WP1-1 - Adaptive Flood Risk Management Planning - Experience from the SAWA Pilot Regions
Report - WP1-2 - Climate Change Impacts and Uncertainties
Report - WP2-1 - SAWA Expert database
Report - WP2-2 - SAWA Adaptive measure database

Report - WP3-1 - SAWA Capacity Building - Capacity building concept and methods for flood risk management
Report - WP3-2 - SAWA Education - Sustainable education centres, master education and student exchange

Reports (pdfs available)

Report - SGI - Collocation of experiences with SGI - MDST
Report - SGI - Åtgärdsförslag vid ett förändrat klimat i Sverige (in Swedish)
Report - NVE - Preliminary Flood Risk Assessment in Norway
Report - County Administrative Board of Västra Götaland/NVE - Exercise Large Land Slide
Report - NVE - Climate Change Impacts and Uncertainties
Report - Water Board Hunze en Aa´s - DSS Flooding
Report - TUHH/Water Board Noorderzijlvest - Feasibility Study
A Paper - Gooijer/van Heeringen - Operational Flood Forecasting and Flood Risk Management
Report - Water Board Noorderzijlvest - Waterstorage Game Theory
Report - Karlstad Municipality - Environmental Impact Statement
Report - Karlstad Municipality - Guidence CBA
Report - HafenCity University Hamburg - Retentionspotentiale im Siedlungsbestand (in German)
Report - Leuphana University Lüneburg - Integrative River Basin Management
Report - CAB Västra Götaland/Värmland - Lokala riskhanteringsplaner mot översvämning (in Swedish)
Report - CAB Västra Götaland/Värmland - Flood Risk Mapping According to the Flood Directive
Report - Heroit-Watt University - Urban Flood Risk Management
Report - LWK - Flooding and Agriculture
Report - Melhus kommune/NTNU - Flomrisikoplan for Gaula ved Melhus (in Norwegian)
Report - NVE - Hydrological Projections for Floods in Norway under a Future Climate
Report - LSBG - DykeDefenceClass
Report - LSBG - SAWA 3-Wehrsteuerung (in German)
Report - LSBG - SAWA 3-Wehrsteuerung Kurzbericht (in German)
Report - LSBG - SAWA 3-Weir-Control Summary
Report - LSBG - SAWA 3-Wehrsteuerung Erläuterungsbericht (in German)
Report - LSBG - Endbericht Wandse (in German)
Report - NVE - Challenges in Flood Risk Management Planning, River Tana
Report - TUHH - Flood Animation Studio

Presentations

Downloads (available pdfs)

- Short description: Flood Animation Studio (video available: http://floreto.wb.tu-harburg.de/index.php?id=139)
- Short description: SAWA_LABEL_Journal5_DE
- Short description: Illustration SAWA M.Sc. Course field trip Germany-Netherlands
- Short description: DOCUVITP-#1282456-v1-EN_text_SAWA_climate_and_water_table
- Short description: Water lessons
- SAWA – SECs: 4 posters (Short descriptions)
- Short description: Virtual SEC Viwa: http://wiki.leuphana.de/viwa/wiki/index.php?title=Main_Page
- SAWA posters (26)?

Video clips

The SAWA Film (1:10 minutes available)

Links

- SAWA Homepage: http://www.sawa-project.eu/
- SAWA Expert Database: http://experts.sawa-project.eu/
- SAWA at IWA Wiki: http://www.iwawaterwiki.org/xwiki/bin/view/Organizations/SAWA
- SAWA Master Course: http://www.kau.se/en/ccs/education
- SAWA education: Flood Manager http://daad.wb.tu-harburg.de/homepage/
- SAWA – SECs: http://www.iwawaterwiki.org/xwiki/bin/view/Articles/PublicEngagementtoIncreaseAwarenessofFloodRisks
- Virtual SEC Viwa: http://wiki.leuphana.de/viwa/wiki/index.php?title=Main_Page
- SAWA Decision Support Tools: http://www.iwawaterwiki.org/xwiki/bin/view/Articles/DecisionSupportTools
- Climate Water Table: http://webtools.deltares.nl/klimaatwatertafel/index or http://www.iwawaterwiki.org/xwiki/bin/view/Articles/ClimateWaterTable
- Youth panel: http://www.zuiderzeeland.nl/leren_over_water/jongerenpanel