Sharing information among stakeholders on the status of the trans-boundary transitional water management in Ireland – NI/IE

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE ECONOMIC GROWTH: Balancing economic, social, cultural development whilst enhancing environment

2. Key approaches

- Participation
- Knowledge based
- Ecosystems based approach

3. Experiences that can be exchanged

Vital Signs Ireland allowed students on opposite sides of the Northern Ireland–Republic of Ireland border to observe, collect, and share/disseminate information on the shared water resources bisected by their border. Children were developing links with the community and with local authorities. The program enabled students to collect environmental field data on handheld computers and download their findings onto a GIS-enabled website, where all parties and the interested public could view their watershed information. Creating a GIS-linked database that is catchment-focused and available to both jurisdictions was a novel approach, and provided a unique opportunity to develop the concept of 'catchment care'.

4. Overview of the case

This innovative aquatic mobile information-gathering programme was developed by the Gulf of Maine Aquarium and Research Institute in the US. Students use handheld computers (running customized *Vital Signs* data collection software) and a suite of field tools to understand local aquatic habitats. Tools include a GPS receiver, camera, and pH, dissolved oxygen, and temperature probes. Students also record river characteristics, streamside data, weather observations, and anecdotal notes. The data are uploaded to the program database and mapping interface. Here students see their data in context and compare it with that of other schools within their watershed and with other watersheds. This record is taken on a monthly basis and uploaded onto the Vital Signs website. On the website, students can observe their own records and those taken by students in other parts of their river catchment and within other river catchments.

5. Context and Objectives

a) Context

EU is specifically interested in fostering trans-boundary framework for community action in the field of water policy underlined by the WFD. Through personal interaction with their aquatic resources, community members might build a stronger connection to them and, ultimately, feel a sense of pride in keeping them healthy. Although there are no physical barriers apart from the rivers, there is very little commonality between the Republic of Ireland and Northern Ireland sides of the border. For example the educational system and curricula are different. The catchments are managed by different organisations within the two jurisdictions. By actively participating in the monitoring of the health of the trans-boundary

watersheds, cross-border communities in Northern Ireland and the Republic of Ireland can understand what they have in common and work together to ensure the future health of the resource.

In November 2003, the Gulf of Maine Research Institute signed an agreement with the Irish Central Border Area Network (ICBAN) to transfer technology and help implement the *Vital Signs* program. The Vital Signs pilot project was set up in 2004; a partnership made up of the Loughs Agency, ICBAN, Northern Regional Fisheries Board, Monaghan County Council and schools in the Blackwater, Foyle and Melvin Catchments along with the Gulf of Maine Research Institute in (GMRI), in Portland, Maine, USA. This partnership worked together to develop and test *Vital Signs* software to monitor water quality in streams close to schools within the aforementioned catchments.

Vital Signs is a computing and communications program created to enable students, field scientists, fishermen, and citizens to collect and share information about their local aquatic ecosystems. Over the year and half, GMRI has worked with its Irish partner, ICBAN, to deploy the program. *Vital Signs Ireland* was started as an ICBAN driven project funded under the INTERREG IIIA Programme for Ireland/Northern Ireland. Partners from both the Republic of Ireland and Northern Ireland jointly agreed the criteria for the Vital Signs Ireland software for the education and science programmes.

The Gulf of Maine Research Institute developed the technology to these specifications. As a result, a *Vital Signs* educational resource package was developed, based on suggestions from teachers and requirements for their respective curricula. Information supplied to the software developers included lists of river catchments and tributaries, weather systems, stream habitats, water quality (invertebrates), freshwater riparian habitats (native plants, animals and birds) as well as likely values for these records. Child-friendly explanations were included as a reference. ICBAN purchased 60 *Vital Signs* units to involve communities and classrooms on both sides of the Northern Ireland and Republic of Ireland border in monitoring the health of the three cross-border watersheds.

b) Objectives

1. A key objective of this project is to bring new technology to peripheral areas where traditionally there has been a very low uptake of technology.
2. Create cross-border partnerships to inform the development of the technologies for education and scientific purposes, subsequently test and implement them.
3. Foster an appreciation of the local environment and shared water resource, create and develop cross-border links and associations.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

The *Vital Signs* Ireland programme is managed by a steering group of partners from both the Republic of Ireland and Northern Ireland. The partners have cooperated in developing and testing the technology throughout the project. As well as the partners in the steering group, schoolteachers and pupils are involved in the project by collecting the data and adding to the website database. The wider school communities are all aware of the project and the resulting database. Consultations have also taken place with local angling organisations and heritage groups. The website is available to the public.

b) ICZM tool

The *Vital Signs* Ireland programme was developed to record information on various aspects of a river. It is used educationally by schoolchildren, while fisheries organisations use it to monitor water and fish quality in the various river catchments that straddle the Northern Ireland/Republic of Ireland border. As well as being an important science learning tool in schools, *Vital Signs* is also used by professionals responsible for water management, including fisheries, local authorities and industries such as farming, to measure the impact that their activities may have on local river systems. It also promotes the ethos of ‘cross-border catchment care’, and aims to nurture a sense of ownership and responsibility for the shared aquatic resource, thereby minimising the effects of the political border.

Vital Signs is a software programme developed for handheld computers equipped with Bluetooth technology and digital camera to record information including location, river measurements, water temperature and quality, anecdotal observations and digital imagery about aquatic environments. This environmental data is then transmitted to the *Vital Signs* Ireland website. Education resources are provided to support the use of this programme by school pupils whereas fisheries organizations use it to monitor water and fish quality in various river catchments that straddle the Northern Ireland/Republic of Ireland border.

Vital Signs is therefore an important science learning tool in schools and can be used by professionals responsible for water management including fisheries, Local Authorities and industries such as farming to measure the impact their activities may have on local river systems. It also promotes the ethos of 'cross-border catchment care' and aims to nurture a sense of ownership and responsibility for the shared aquatic resource thereby minimizing the effects of the political border.

The *Vital Signs* programme is currently being implemented in three river catchments that straddle the border between the Republic of Ireland and Northern Ireland: the Foyle, Melvin and Blackwater. A website has been created to host the *Vital Signs* database. As well as the database the website provides information on partners, participating schools, fieldwork protocols, field safety, educational resources and examples of pupils' work (for the media gallery). The format and functionality of the website were defined jointly by the cross-border partners. Administration systems were developed to enable the efficient roll-out of the *Vital Signs* Programme. Support administration for the project, as well as training support such as educational resources, have been developed by the Project Officer.

7. Cost and resources

Complete costing is not available

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

Over the two year period the cross-border project over-achieved on all its targets by working in 20 schools with more than 500 children participating in the Vital Signs pilot programme. The activities were closely related to the school curriculum and teaching resources were made available to teachers to support the learning in the classroom. A website was developed to host the data recorded during these activities and also provide education resources and information on the partners and schools involved. The website also had enhanced map functionality that enables zooming, distance calculations and database queries and manipulations and provides and excellent resource for school teaching and the wider public.

As the cost of purchasing and maintaining equipment was high for schools with limited budgets, a consortium arrangement was made for schools to share the equipment, thereby facilitating sharing skills and knowledge and enhancing cross-border communication. To enhance the sustainability of the programme, more time is required to train teachers to implement the programme themselves. Field Studies Centres have shown considerable interest in acquiring the technology. This would provide further sustainability for the programme as they would be in a position to buy and maintain the Vital Signs system, and they also have access to a large numbers of schoolchildren in both the Republic of Ireland and Northern Ireland.

9. Success and Fail factors

a) Success factors

1. Development of the *Vital Signs* program was the result of collaboration between IT development institutions, the trans-boundary cooperation agencies, educators, local communities, and scientists.
2. *Vital Signs* used the latest technology, and software developed by an advanced ICT institute.
3. An education booklet that integrates the Vital Signs programme with the curricula of Northern Ireland and the Republic of Ireland was developed for use by the teachers to support the pupils learning.
4. All trans-boundary catchment areas and transitional waters were covered by the project activities.
5. The Ordnance Survey maps used for the website were costly, but subsequent lobbying considering that the data was primarily being used for educational purposes resulted in a significant cost reduction.

b) Fail factors

1. Cooperation activities and the maintenance of the website ceased to exist after the INTERREG IIIA project funding finished.
2. Neither GIS system proved to be sustainable due to difficulties in amateur data management and updating without a dedicated system administration agency.
3. There was no integration of the *Vital Signs* with the governmental trans-boundary cooperation between Republic of Ireland and Northern Ireland.

10. Unforeseen outcomes

None as yet

11. Prepared by

R. Povilanskas, EUCC Baltic States Office, Lithuania

12. Verified by

H. Nilsson, World Maritime University, Sweden

13. Sources

No published sources available

14. Relevance for cross-border management of transitional waters

Vital Signs Ireland, a hi-tech environment-watch project, was designed to build a sense of community among residents of shared trans-boundary river watersheds in the Republic of Ireland and Northern Ireland. Schools in both countries were involved in the cross-border project actively. As both trans-boundary transitional waters (Lough Foyle and Carlingford Lough) were covered by the project activities, the experience from this case study is very relevant for raising public awareness on issues related to the environmental integrity and cross-border management of transitional waters.