



**Clim-ATIC:** Climate Change - Adapting to The Impacts, by Communities in Northern Peripheral Regions

## **PROJECT PLAN WP 4 – N1**

### **1. Project Description**

#### **1.1. Project name**

Early Warning – developing and testing a people-centred system of early warnings, i.e. for extreme weather events, by the use of modern technology.

#### **1.2. Description of the project**

The main objective of the project is to develop, demonstrate and test an effective, reliable and cost-effective early warning system with a multi-hazard approach.

The system will, as far as possible and appropriate, be based on already available modern technology and infrastructure, and within existing legislative and institutional frameworks. The project will focus on how the technology can enable local authorities and people to adapt to climate change related events.

In order to establish a cost-effective and sustainable early warning system, multi-hazard approaches are prerequisite. The system and operational activities must therefore be established within a framework that considers the warning needs of all undesirable events and hazards (natural and man-made), and the requirements of end-users.

The dissemination system must ensure warning to both permanent residents of an area as well as temporary visitors, and also to key information points, such as tourist offices, hotels, campsites, buses and boats.

The telephone will be the most important medium for distributing warnings (a combination of fixed phone lines and mobile phone lines). Text messages

(SMS) and spoken messages alerting the public to a natural hazard or disaster will be distributed to all phones within a certain distance from the natural hazard or disaster in question.

It will, however, remain an important objective to identify and map other available systems/technologies that can be used to network and disseminate information, and/or be developed, upgraded or adapted to be used.

By distributing these warnings, the public will receive an early warning and guidance as to the required precautions. In the event of a disaster, early warnings can contribute to reducing the possibility of personal injury, loss of life and damage to property and the environment. Early warnings will also enable local/regional authorities to initiate evacuations more efficiently.

### **1.3. Project location**

The project will be located in the County of Sogn og Fjordane, in Western Norway.

Sogn og Fjordane is a county of great natural beauty, but also of numerous potential hazards. Throughout the years, natural disasters have taken a heavy toll. Rock slides, snow avalanches and tsunamis have always constituted a major hazard by virtue of the fact that most towns and roads are situated in the limited and narrow space between a mountain side and the fjord or ocean.

Climate change may in many ways aggravate the hazards of today, i.e.:

- Intense or sudden rain storms, especially in relatively dry areas, with serious flash floods, debris flows, or avalanches as a possible consequence
- Warm winters or unstable temperatures can cause rock slides and avalanches in unexpected locations (built-up areas, roads etc.)

Sogn og Fjordane is also a county which attracts thousands of tourists every year, with a peak in July and August. This adds to the importance of implementing a public warning system, as tourists are seldom fully aware and informed of the potential hazards of the natural landscapes surrounding them, do not always speak or read Norwegian, and often venture out into far-off, scenic locations.

### **1.4. Run Time**

The project will run from the autumn of 2008 (August) to the autumn of 2010 (October/November)

## 1.5. Adaption Outcomes

Climate change is generally expected to result in more severe and more frequent natural disasters in years to come. An early warning system will therefore constitute an important part of local communities' efforts to adapt to climate change. Developing and implementing effective and reliable early warning systems should be of high priority, in order to protect lives and property in areas exposed to nature hazards and disasters.

## 1.6. Budgets

### 1.6.1. Annual and total budgets

The resources needed for this demonstration project are in the form of staff time costs (95,191 Euro) and office overhead costs (up to 9,943 Euro) for the County Governor of Sogn og Fjordane.

Hours2008	2009	2010	2011	h.rate	Cost 08	Cost 09	Cost10	Cost 11	Total €
453	543	543		61,85	27 997	33 597	33 597	0	95 191

The total project cost will be 105,145.00 Euro.

55,377.00 Euro has been provided as a match funding commitment by the County Governor of Sogn og Fjordane and the remaining 49,768.00 Euro will be NPP.

All staff time inputs will be carried out by local project manager, Haavard Stensvand, Head of the County Governor's Emergency Management Office.

### 1.6.2. Estimated monthly budgets

	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008					8000	1500	2100	3000	2300	5000	3000	3097
2009	3100	4200	2000	4500	7400	1500	500	500	2800	2200	2900	1997
2010	3000	3500	8000	2000	1500	500	500	1000	4000	6500	2000	1097

## 2. Relationship to Main Project

The ability to better tackle and respond to the increasing risk of undesirable events and disasters by mitigating risk and thus reducing consequences, is about to become an important part of national, regional, and local authorities' adaptation to climate change. Early warning constitutes a major element in disaster risk mitigation, as it prevents loss of life and personal injuries, and helps reduce the material impact of disasters.

Reliable systems of public early warning may therefore in different ways represent important and necessary parts of adaptation strategies for communities and regions. The lessons learned through this demonstration project may serve as an example of climate adaptation for regions and communities outside Norway that are keen to prepare themselves as they face an increased risk of natural disasters, caused or amplified by the changing climate.

Most of the regions represented in Clim-ATIC share a goal of regional development through increased tourism. For the tourist industry, public safety and security constitutes an important competitive advantage. An increasing numbers of natural disasters may represent a tough obstacle in the effort to bring more tourists into the most peripheral regions of the Nordic countries. Well-functioning early warning systems may contribute to preventing negative effects of climate change for regional development.

This project will hopefully be able to demonstrate how authorities and other stakeholders, through a joint effort, can develop a cost-effective early warning system which will be of use to local communities elsewhere.

### **3. Project Funding Partners**

The total project cost will be 105,145.00 Euro

55,377.00 Euro has been provided as a match funding commitment by the County Governor of Sogn og Fjordane and the remaining 49,768.00 Euro will be NPP.

### **4. Project Management Structure**

#### **4.1. Regional Steering group**

The regional steering group will be set up with three members:

- Carlo Aall (Mr.)/Idun A. Husabø (Ms.), Western Norway Research Institute (WNRI)
- Anne Karin Hamre (Ms.), County Governor of Sogn og Fjordane (SFCG)
- Helge Asperheim, (Mr.), The Directorate for Civil Protection and Emergency Planning (DSB)

Steering group meetings will take place at least every six months, or more often if required. The first meeting will be held before November 1st 2008.

#### **4.2. Project Manager**

The local project manager is Haavard Stensvand, Head of the County Governor's Emergency Management Office.

#### **4.3. Project management arrangements**

The local project manager will be responsible for establishing sufficient procedures for:

- Monitoring and controlling project progress and costs (and, if necessary, proposed recovery actions)
- Monitoring and controlling quality
- Assess validity of project objective statement (and, if necessary, propose changes)
- Controlling and resolving issues that arise during the process
- Reporting to regional steering group and WP4-leader

### **5. Project Activities and Deliverables**

#### **5.1. Activities to be undertaken**

See enclosed appendix.

#### **5.2. Deliverables**

A comprehensive report describing relevant experiences will be compiled within the end of the project period.

#### **5.3. Social and/or economic benefits**

The final report will shed light on benefits of various kinds, including:

- Adaptation of technology - The project entails a possibility for adaptation of existing technology to the needs of local communities in Norway.

- Improved disaster management – Lessons from this demonstration project may benefit the County Governors of Norway as well as other actors within civil protection and emergency planning, in the sense that new tools and forms of communication will hopefully be tested and improved on their behalf.
- Better coordination – The implementation of an early warning system would most likely serve to clarify responsibilities and improve cooperation across organisations and institutions in the context of disaster management.
- Identify need for training/knowledge – The demonstration project will identify training or knowledge-related gaps in disaster management, thus indirectly contributing to enhancing learning and raising awareness.

#### **5.4. Transnational aspects**

Reliable systems of public early warning may in different ways represent important and necessary parts of adaptation strategies for communities and regions exposed by increased threats of climate-related hazards.

- A common aim for most regions represented in the project, is economic development through increased tourism. For the tourism industry, public safety is an important competitive advantage. Increasing numbers of natural hazards may represent tough obstacles in the effort to bring more tourists into the relatively peripheral Nordic regions.
- The Clim-Atic project activities in Finland includes a GIS-based flood risk management system for the rivers Kemijoki and Ounasjoki in Rovaniemi (developing flood risk management plans, visualisations for local people, building codes and land use plans). An early warning system may represent an important integral part of the flood risk management plans.
- Use of mobile phone Bluetooth technology in the tourism demonstration project proposed for the Cairngorms National Park, Scotland will provide an important comparison for this project.

#### **5.5. Potential continuation of the project**

There may be a possibility that a demonstrated early warning system may be established on permanent basis after the completion of the Clim-ATIC project.

For example, if the Rock Slide Project (see “Links to other projects” for more details) identifies a mountain/ridge where there is active movement that may represent a threat of a large rock slide, an early warning system might be identified as a necessary precaution to meet the risk.

The results of the project (in particular the full scale test) may be a useful basis for the discussions around the potential establishment of a permanent system.

#### **5.6. Closing out the project**

After the project is completed, all project related material (project data) will be archived by the County Governor's office.

As a part of the completion process, the County Governor will conduct a session with the local project team members, with the objective of putting emphasis on the lessons-learned.

### **6. Project Reporting**

#### **6.1. Reports to WP4 leader**

Progress reports will be compiled and sent to WP4 leader every three months – the first mid December 2008.

The reports will comprise information about status (schedule and budget), accomplishments, next steps, predicted slippages etc.

#### **6.2. Meetings with WP4 leader**

Meetings (by telephone or personal) with WP4 leader will be held at least every six months. The first meeting was held in Bergen in the beginning of October 2008.

Needs of further meetings will be continuously considered and discussed with WP4 leader through the whole process.

#### **6.3. Key project milestone**

A brief stage end report will be compiled and sent WP4 leader before the final preparations for the full scale exercise start up.

The report will create a basis for the undertaking of a comprehensive mid project review, and will comprise information about

- Summary of work carried out so far

- Tasks necessary to carry out in the next stages of the project
- Assessments about needs of prospective revisions of approach, schedule or budget

## 7. Dissemination

- Send out press release to regional and local media describing the demonstration project (after kick-off meeting)
- Informative article at [www.fmsf.no](http://www.fmsf.no) and other relevant websites (after the kick-off meeting)
- Organise press conference and media observation at testing session (during testing stage)
- Recommend further action or testing (after evaluation/reporting stage)
- Submit article in thematic magazine, e.g. “Samfunnssikkerhet”, “Plan”, “Cicerone” (after reporting stage)

## 8. Links to other projects

### *Other Clim-ATIC demonstration projects:*

The project is linked to other demonstration projects in Clim-ATIC: A GIS flood risk management system to be tried out in Kittilä and in Rovaniemi (the rivers Kemijoki and Ounasjoki), Finland. In addition to the Cairngorm project, mentioned above, a river basin planning project is to be carried out in Glen Urquhart, Scotland, with one objective being to adapt to an increasing risk of flooding. An early warning system may, in the near future, become an integrated part of flood risk management plans, and early warning systems may be tested in Finland and Scotland.

### *Local related projects:*

**The Rock Slide Project:** An ongoing project in the county of Sogn og Fjordane is currently attempting to identify mountains/ridges where there is active movement that may represent a threat of a large rock slide and related tsunamis. The County Governor of Sogn og Fjordane is a project partner.

**The Natural Hazards Project (KS Naturskade):** A project carried out by Western Norway Research Institute in 2007-8 for the Norwegian Association of Local and Regional Authorities. The objective of the project is to examine the ways in which a set of Norwegian communities have responded to natural

disasters, and looked at ways of mitigating the risk of natural disasters related to climate change.

**Civilclim (Civil Protection and Climate Vulnerability):** This three-year international project on climate vulnerability and civil protection, with partners in Norway, Sweden and the Netherlands, looks at various aspects of civil protection and climate vulnerability.

**Noradapt (Community Adaptation and Vulnerability in Norway):** Eight Norwegian municipalities take part in this project, which involves the development of local vulnerability studies as well as community adaptation strategies. The municipality of Flora takes part in this project together with Western Norway Research Institute.

**Klimatilpasning.no:** An official web portal dedicated to climate adaptation, klimatilpasning.no will offer advice and information on e.g. the various local consequences of climate change and ways of adapting to them. Western Norway Research Institute, together with the County Governor of Sogn og Fjordane, have contributed to a county ‘pilot’ for this portal by collecting local examples of climate adaptation.

**Erma (Electronic Risk Management Architecture for small and medium-sized communities).**

The main objective of the ERMA-project is to develop support-systems tailored to the needs of small and medium-sized communities, in order to assist them in the creation and efficient management of the individual crisis management tasks they are in charge of (<http://erma-project.org/>).

## 9. Project Finance

work package	1. Staffing costs including social contributions	cost 2008	cost 2009	cost 2010	cost 2011	Total cost
WP 4	county governor	27997.4	33597	33597	0	95191.4
	<b>TOTAL</b>	<b>27,997.40</b>	<b>33,597.00</b>	<b>33,597.00</b>	<b>0.00</b>	<b>95,191.40</b>
	5. Local office costs (distributed by flat rate)	cost 2008	cost 2009	cost 2010	cost 2011	Total cost
WP 4	premises costs	679	815	815	0	2,309
WP 4	Telephone	183	220	220	0	623
WP 4	Postage	18	22	22	0	62
WP 4	Photocopying	25	30	30	0	85
WP 4	Office Supplies	1,356	1,627	1,627	0	4,610
WP 4	Finance services	307	368	368	0	1,042
WP 4	IT support services	360	432	432	0	1,224

	<b>TOTAL</b>	<b>2,927.60</b>	<b>3,513.00</b>	<b>3,513.00</b>	<b>0.00</b>	<b>9,953.60</b>
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