PROJECT END REPORT
Clim-ATIC Work Package 4:
Emergency Population Warning System

"Developing and testing a people-centred system of early warnings for extreme weather events, by the use of modern technology"

Contacts:
Mr. Haavard Stensvand, Project Manager
Head of Civil Protection and Emergency Planning
County Governor of Sogn og Fjordane
(0047) 57 65 51 11 / (0047) 915 77 432
hst@fmsf.no

Mr. Svein Helge Steinsåker
Advisor, Civil Protection and Emergency Planning
County Governor of Sogn og Fjordane
shs@fmsf.no
(0047) 57 65 51 16 / (0047) 908 95 078

Abstract:
The main objective of the Clim-ATIC WP4 "Emergency Population Warning System Project" has been to demonstrate an effective, reliable and cost-efficient early warning system with a multi-hazard approach. This report argues that the technical aspects of such systems are at large readily available, whereas issues concerning confidentiality legislation and system regulations are challenges that must be addressed before successfully implementing a location-based early warning system.

Table of contents:

Introduction		p. 3
Chapter 1	**Project context**	
	1.1 Project background	p. 4
	1.2 Adaptation outcome	p. 5
Chapter 2	**The warning system**	
	2.1 Project reference group	p. 6
	2.2 System specification	p. 8
Chapter 3	**Warning system suppliers**	
	3.1 Mapping the landscape	p. 9
	3.2 Unified Messaging Systems	p. 9
	3.3 Fram Web	p. 10
	3.4 Choosing the system supplier	p. 10
Chapter 4	**Population warning exercise, June 2nd 2010**	
	4.1 Exercise context	p. 11
	4.2 Planning	p. 12
	4.3 Dissemination	p. 13
	4.4 The demonstration exercise	p. 14
Chapter 5	**Exercise evaluation**	
	5.1 Fram Web's logging system	p. 18
	5.2 The online evaluation form	p. 20
	5.3 The door-to-door survey	p. 22
Chapter 6	**Project summary and concluding remarks**	
	6.1 The warning system	p. 24
	6.2 The system operator	p. 24
	6.3 Project relevance and follow-ups	p. 25
Appendix		p. 26

Total number of pages: 34

Introduction

Societies have a long record of adapting to the impacts of weather and climate change, and wide arrays of adaptation measures are currently available (*see e.g. appendix 1*).

However, due to the reach and scope of expected climate change, more extensive adaptation strategies are needed, and these strategies must be embedded within broader initiatives and trends in society. Hence, climate adaptation initiatives such as risk reduction strategies must mirror the dynamics of modern technologies in order to convey intelligent and reliable information.

The very success of a people-centred system of early warning is thus linked to the use of modern technologies to convey timely and understandable instructions to those at risk

The overall aim of the project is to demonstrate a phone-based system of early warnings *, by disseminating warning messages to all fixed phone lines and mobile phones in a specified geographic area. This phone-based early warning system will also be supplemented by other sources of information, such as Twitter and Facebook.

This report finalizes the *Emergency Population Warning System* project, and consists of six main chapters:

- Chapter one provides the project context and specifies the project background and desirable adaptation outcomes.

- In the second chapter, the project reference group members are presented, and the chapter illustrates the process of defining the technical specification and framework for the multi-hazard warning system.

- Chapter three outlines the process of identifying warning system providers which complied with the technical specification that was defined by the project reference group.

- The fourth chapter gives an account of the project's demonstration exercise: a population warning exercise in the municipality of Aurland in Sogn og Fjordane.

- Chapter five presents the evaluation of the demonstration exercise, whereas chapter six summarizes the report.

** In some contexts, population warning systems are defined as robust systems (e.g. sirens horns) that operate irrespective of commercial infrastructure, whereas this report extends the definition to incorporate commercial phone networks.*

Chapter 1 Project context

1.1 Project background

Clim-ATIC is an EU-project (2008-2011) which deals with communities' ability to develop adaptation capacities to face a future climate, where the frequency and scale of extreme weather is believed to increase.

Work package 4 (WP4) in Clim-ATIC relates to the implementation of adaptation demonstration projects, and one of these WP4-projects is located in the County of Sogn og Fjordane.

The main purpose of this particular project has been to develop and demonstrate a reliable and cost-effective people-centred system of early warnings for extreme weather events. A detailed project plan was formally approved by the steering group in October 2008 (*appendix 2*).

Critically, a modern population warning system must reach everyone in the specific geographic area of concern, i.e. both residents and temporary visitors.

Two of the main challenges of the project were thus interlinked:

- Defining a technical specification and a system framework which enabled cost-efficient and reliable issuing of multi-hazard warnings
- Identifying system providers which complied with the technical specifications of the above mentioned criteria

The *Emergency Population Warning System* project has been mentioned in a proposition report by the National Defence Committee (*appendix 3)*, which discussed the need for a modern system for population warning. Furthermore, the majority of the committee stated that efficient population warning by the use of modern technology constitutes an important lifesaving- and damage preventive tool, which Norway must aim to implement.

In the National Vulnerability and Emergency Planning Report for 2010 (*appendix 4*), the Directorate for Civil Protection and Emergency Planning also addresses the need for establishing a more modern population warning system.

Further to the above mentioned reports and the Clim-ATIC mandate, we therefore decided to use Twitter and Facebook to convey the warning message in parallel with issuing the population warning to all fixed phones and mobile phones in the exercise area.

To our knowledge, no public offices in Norway have previously incorporated social media as a means of communicating with the general public in connection with population warning exercises

1.2 Adaptation outcome

By demonstrating a people-centred early warning system, our aim was to establish how modern technology can help reduce the negative consequences of climate change, and also help prevent the loss of lives.

A key aspect of the project has thus been to assess how a multi-hazard warning system can be established within a framework that considers the warning needs of different types of undesirable events and hazards.

In this respect, our project has aimed to demonstrate how an existing inter-municipal emergency operations centre can be a key actor in issuing population warning messages in Sogn og Fjordane county. This operations centre, *Alarmsentralen*, is a county-encompassing***** monitoring and warning service that operates round the clock in order to register fire incidents and launch adequate fire fighting operations.

Alarmsentralen also helps facilitate and coordinate inter-municipal fire fighting operations, and its operations and procedures are therefore closely coordinated with relevant police and health authorities. This operational pattern ensures that Alarmsentralen responds to emergency incidents in a quick and reliable manner.

Moreover, as *Alarmsentralen* is already manned around the clock by highly qualified staff, embedding a population warning system in this organization will incur little cost, training or resources.

This fact suggests that that modern warning system technology can be combined with existing infrastructure and organizational patterns to enable local authorities to issue population warnings in a cost-effective and sustainable way.

Moreover, as climate change is generally expected to lead to more frequent natural disasters and extreme weather incidents in years to come, an early warning system will therefore constitute an important part of local communities' climate change adaptation strategies.

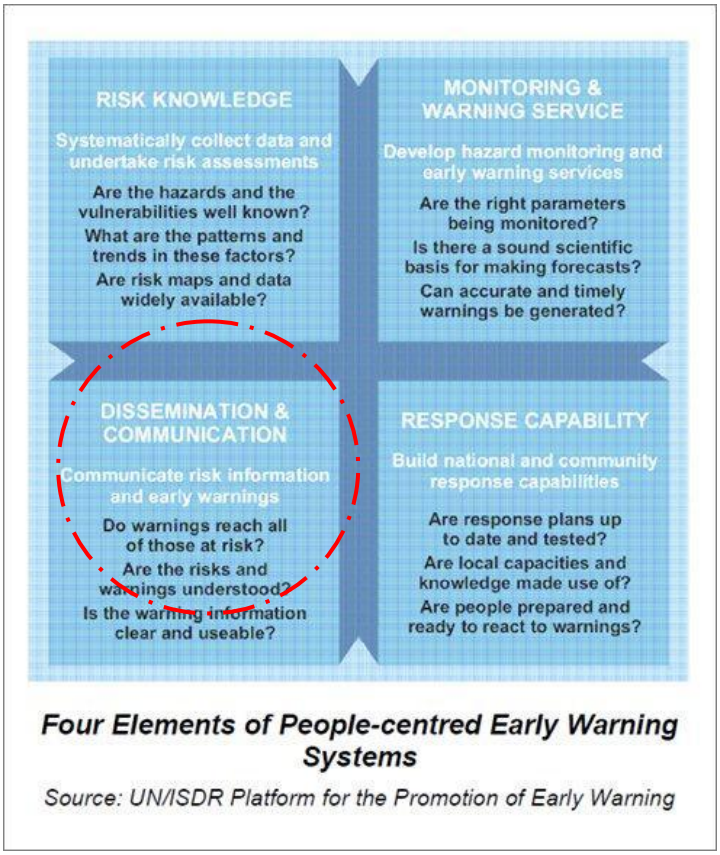
However, before successfully implementing a location based population warning system, confidentiality legislation and system regulations must be addressed, as discussed in more detail below.

** 24 out of 26 municipalities in the county of Sogn og Fjordane are members of Alarmsentralen. The remaining two municipalities are connected to an equivalent centre in the neighboring county of Hordaland.*

Chapter 2 The warning system

In January 2005, the World Conference on Disaster Reduction adopted the "Hyogo Framework for Action 2005-2015", and emphasized the importance of developing "*early warning systems that are people centered, in particular systems whose warnings are timely and understandable to those at risk*".

An important outcome of the 2005 World Conference was the document "*Developing Early Warning Systems: A Checklist*", which identifies four key elements of effective early warning systems:



Four Elements of People-centred Early Warning Systems

Source: UN/ISDR Platform for the Promotion of Early Warning

Further to the above mentioned documents and criteria, our project aim was to demonstrate an efficient people-centred warning system with a multi-hazard approach.

In this respect the project reference group consisted of representatives from various sectors and levels of society. As regards the "*dissemination and communication*" element above, this reference group played a key role in identifying a technical system specification aimed at enabling accurate and reliable dissemination of multi-hazard warning messages.

2.1 Project reference group

The project reference group was established in August 2008, and consisted of members from the following organizations:

- The County Governor of Sogn og Fjordane – **PROJECT MANAGER**
  (The state's representative on regional level, being responsible for coordinating emergency planning within the county)

- The Western Norway Research Institute - Clim-ATIC regional lead partner
  (Assignment-based research institute with competence within the field of climate research)

- The Norwegian Energy Resources and Water Directorate
  (The Directorate's mandate includes contingency planning for floods; its Sogn og Fjordane office also being the national authority on avalanches)

- The National Public Roads Administration
  (Responsible for state roads; having a special interest in population warnings related to closed tunnels and mountain crossings due to bad weather/accidents)

- Telenor
  (Norwegian Telecommunications Company, currently the sixth largest mobile phone operator in the world)

- The Norwegian Post and Telecommunications Authority
  (Autonomous administrative agency under the Norwegian Ministry of Transport and Communications, with monitoring and regulatory responsibilities for telecommunications markets in Norway)

- The Norwegian Broadcasting (in Sogn og Fjordane)
  (The Norwegian government-owned radio and television public broadcasting company, being the largest media organization in Norway)

- E-CO Hydro Power
  (Norwegian power company and the second largest producer of electricity in Norway. Special interest in population warnings related to dam-breaks causing floods, tsunamis)

- The Norwegian Police, Sogn og Fjordane District
  (The police is part of the Norwegian rescue service and is responsible for leading rescue work during accidents and disasters; including extreme weather events)

- Alarmsentralen ("*The Alarm Central in Sogn og Fjordane*")
  (Inter-municipal operations centre which facilitates and coordinates inter-municipal fire fighting operations in the county)

- The Directorate for Civil Protection and Emergency Planning
  (Maintains an overview of risk and vulnerability in Norway, and promotes measures to prevent accidents, crises and other undesirable incidents)

- The Norwegian Civil Defence
  (The State's reinforcement for emergency and rescue departments in the event of major accidents and special incidents)

- Aurland Municipality
  (Municipality in Sogn og Fjordane; having previously experienced extreme weather events and avalanches, rockslides etc. Aurland is also where the project warning exercise was held)

- Unified Messaging Systems (UMS)
  (The leading supplier of advanced message handling in Northern Europe, offering services for alerting the population in case of critical incidents)

- Sogn og Fjordane University College
  (Joined the reference group in 2009 to assist in evaluating the early warning exercise, but unfortunately had to withdraw its membership due to a lack of internal resources)

- Førde Health Trust
  (Health enterprise responsible for performing geographic and specialist activities on behalf of Western Norway Regional Health Authority)

As our angle of approach has been to demonstrate a system with a multi-hazard approach, the project reference group has played a key role in defining a system specification that enabled efficient and reliable issuing of multi-hazard warnings.

2.2 System specification

An emergency population warning is generally understood as the method by which relevant authorities can contact members of the public to warn them of an impending emergency. Hence, implementing effective and reliable early warning systems should be of high priority in areas where the frequency and scale of extreme weather is believed to increase

The overall aim of this project has been to demonstrate a modern emergency population warning by disseminating phone-based warning messages in a specified geographic area. Following discussions in the reference group, the following system criteria were considered necessary:

- The warning system must be enable the system operator to easily define the geographic reach of the warning, by the use of electronic mapping systems

- The system must be location-based so that the warning message is sent to *all* fixed phone lines and mobile phones in the chosen geographic area (i.e. just not to predefined groups / subscribers to the warning service)

- The warning must be issued both as spoken message and as a text message

- Visitors as well as permanent residents in the specific area must be alerted, and the text message must therefore be automatically translated into different languages, depending on the "nationality" of a mobile phone's SIM-card

- The warning must be given queue-priority if phone networks are busy

- The warning must be sent repeatedly until the receiver of the warning has verified that the warning is both received and understood

- There must be some communication between the receiver of the warning and the issuer, e.g. response by using the keypad:

- The receiver must easily be able to listen to warning several times ("Press 1"?)

- The receiver must easily be able to verify that the warning is understood ("Press 2"?)

- The receiver must easily be able to notify the issuer if any assistance is needed ("Press 3"?)

- The system must register whether or not the receiver listened to the entire message

- The system must record how many people need assistance and where they are located

- The system must register whether or not the receiver of the warning has listened to the message in person, or if the warning has been received by voicemail / answering machine

As well as issuing a phone-based population warning in accordance with the system criteria, we also aimed at using Facebook and Twitter to issue the warning message during the project exercise. This concept was promoted through an article in the October 2009 issue of the Directorate for Civil Protection and Emergency Planning's quarterly magazine "*Samfunnssikkerhet*" (*Appendix 5*).

Chapter 3 Warning system suppliers

3.1 Mapping the landscape

Having defined the criteria for the phone-based population warning system, the next step was identifying potential system suppliers and forwarding the system criteria to the for feedback as regards their interest and ability to comply with the criteria and take part in the project.

Initially, three warning system suppliers responded positively to our request, whereas only two of these were still considered potential system suppliers following closer dialogue and discussions. One of these two companies was UMS – which was already a consultative member of the reference group. The second company was Fram Web, which delivers technological solutions for integrated population warning services.

Both companies were invited to attend the next reference group meeting to present their services, and they were subsequently asked to stipulate their costs for using their warning systems for the planned warning exercise in June 2010.

3.2 UMS

Being the leading supplier of advanced message handling in Northern Europe, UMS is an established actor within the field of population warning, and its systems have previously been tested at various full-scale exercises (using NetCom's infrastructure*).

UMS offers a centralized system with a GIS based user interface enabling the emergency authorities to select or draw the area on the digital map. The system will immediately identify all fix phones, cell phones and visitors within the affected area and alert them.

Furthermore, the system provides detailed logistic information, such as the number of people within the affected area, identifies types of nationality and translates the emergency messages accordingly. The system will also monitor and localize citizens responding that they are in need of help**.

** Approximately 54 % of mobile phone subscribers in Norway use Telenor's network, whereas approx. 23 % use NetCom's network. Fram Web operates on Telenor's infrastructure, as Netcom's infrastructure has been made unavailable to Fram Web due to a network availability contract which is currently being assessed by the Norwegian Competition Authority.*

*** As regards location-based technology, confidentiality legislation and system regulations restrict the system operator's ability to log and access this type of data.*

3.3 Fram Web

Fram Web offers web-based solutions for population warning services, its Varsling 24 module ("*Warning 24*") being a set system for automatic issuing of alerts to fixed- and mobile phones.

The company's services are in part developed in response to municipalities' warning needs (e.g. in connection with contaminated drinking water), and its system has previously been used by the Norwegian Food Safety Authority to alert farmers during outbreaks of the bluetongue virus.

Telenor's integration of location-based technology into its network enabled Fram Web to offer location-based warning services using Telenor's infrastructure. The geographic reach of the warning message is defined by the system operator through the use of electronic mapping systems, and both fixed phones and mobile phones using Telenor's network *(*as above)* are alerted.

Like UMS, Fram Web's system offers detailed information regarding the number of people alerted etc. through the system's log module *(**as above).*

3.4 Choosing the warning system supplier

Both UMS and Fram Web seemed to comply with the warning system criteria, and following UMS and Fram Web's presentations to the project reference group, both suppliers were considered potential candidates for delivering phone-based warning system services for the project exercise in June 2010.

Thus, the reference group concluded that technological aspects did not seem to represent a major challenge in respect to the population warning exercise, whereas budgetary restrictions were identified as a key challenges to be overcome.

Consequently we submitted an application for project funding from the Directorate for Civil Protection and Emergency Planning (DSB), as we believed our project would be highly relevant for DSB, which has been given the assignment of mapping and testing population alert systems on a national basis. Unfortunately, our application was turned down as DSB prioritized other projects at that moment.

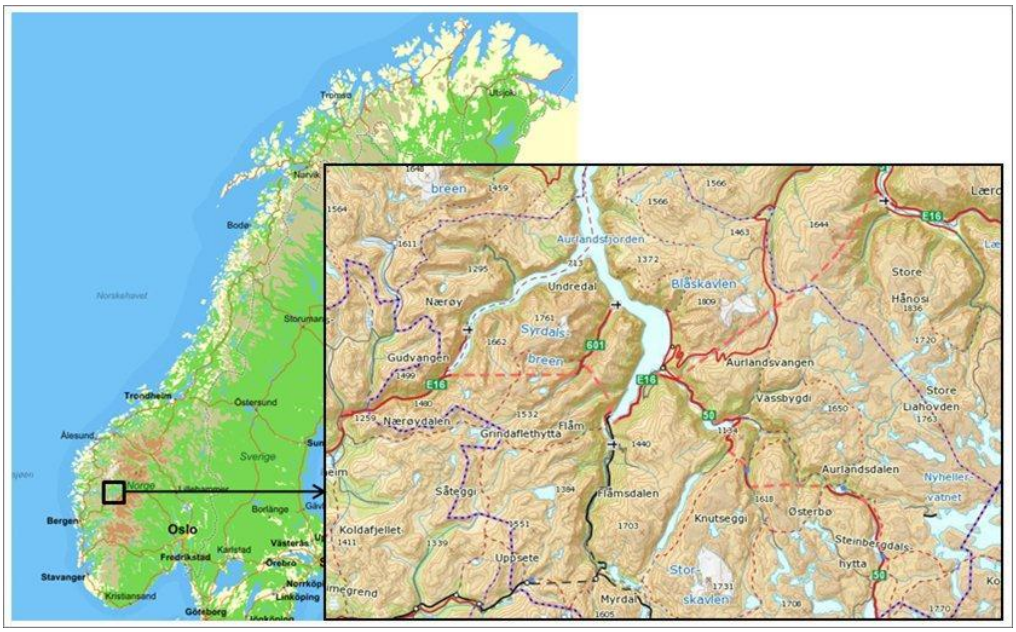
Having obtained price estimates from UMS and Fram Web, UMS was no longer considered a potential candidate for delivering warning system services due to its high projected costs. Fram Web's price estimate was approximately 15 % of UMS's quote, and was thus within the project's budgetary framework.

From an emergency planning perspective, it was also highly interesting to be able demonstrate an alternative to UMS, whose warning systems have previously been tested at various exercises. Subsequently, both UMS and Fram Web were informed that Fram Web was chosen as system supplier for the June 2010 population warning exercise.

Chapter 4 Warning exercise, June 2nd 2010

4.1 Exercise context

The setting for the warning exercise was Aurland municipality, which was also a member of the project reference group. Aurland is an area of great natural beauty, but also of numerous potential hazards such as avalanches and rock slides. Aurland's somewhat challenging geography and topography makes the municipality vulnerable to extreme weather events, and thus provides an interesting setting in which to demonstrate a modern system for people-centered early warnings.



Source: www.gulesider.no, www.fylkesatlas.no

Aurland has roughly 1.700 inhabitants. The main road (E16) between Oslo and Bergen passes through Aurland, and there are several long tunnels in the area (e.g. the Lærdalstunnelen; 25 km of length, and the Gudvangtunnelen; 11 km of length).

The Flåm Railway and parts of the Oslo-Bergen railway passes through Aurland Municipality, and being a well-known cruise destination, Aurland annually attracts hundreds of thousands of tourists.

Source: www.alr.no

4.2 Planning

The planning of the exercise was carried out by the County Governor of Sogn og Fjordane (CG), in cooperation with the Sogn og Fjordane exercise committee. This committee supervises and coordinates large emergency and rescue exercises in the region, and consists of representatives of (the CG's Office,) the police, the Norwegian Civil Defence and volunteer organizations.

On the day of the warning exercise, the Sogn og Fjordane Police District and the CG were to carry out an "extreme weather table-top exercise" for Aurland municipality and volunteer organizations in Aurland.

So whereas the Clim-ATIC "warning message" would not relate specifically to extreme weather events, the table-top exercise would enable us to demonstrate the population warning system in a setting where local authorities and other key actors were subject to various climate-related challenges.

The purpose of the warning exercise was to demonstrate how modern technology can constitute an important part of local and regional authorities' efforts to adapt to climate change. In particular, our intention was to send out a phone-based warning message in Aurland municipality to determine the reliability and efficiency of such systems.

We also decided to use Twitter and Facebook to convey the warning message in parallel with issuing the population warning to all fixed phones and mobile phones in the exercise area.

The population warning message would thus be sent to both fixed phones and mobile phones in Aurland, as well as being posted on Facebook and Twitter

Facebook is a social networking website, with approx. 2.57 million users in Norway. On June 1st 2010, the CG's Facebook-profile had 260 followers, who automatically received news published on the CG's website. These 260 followers could then share the news with their friends and contacts on Facebook, and large numbers of people could thus be reached in a short space of time.

Twitter is a social networking and micro-blogging service that enables the users to send out and read other user messages called tweets. Twitter has approximately 130.000 users in Norway, and during the warning exercise, the warning message was also published on Twitter.

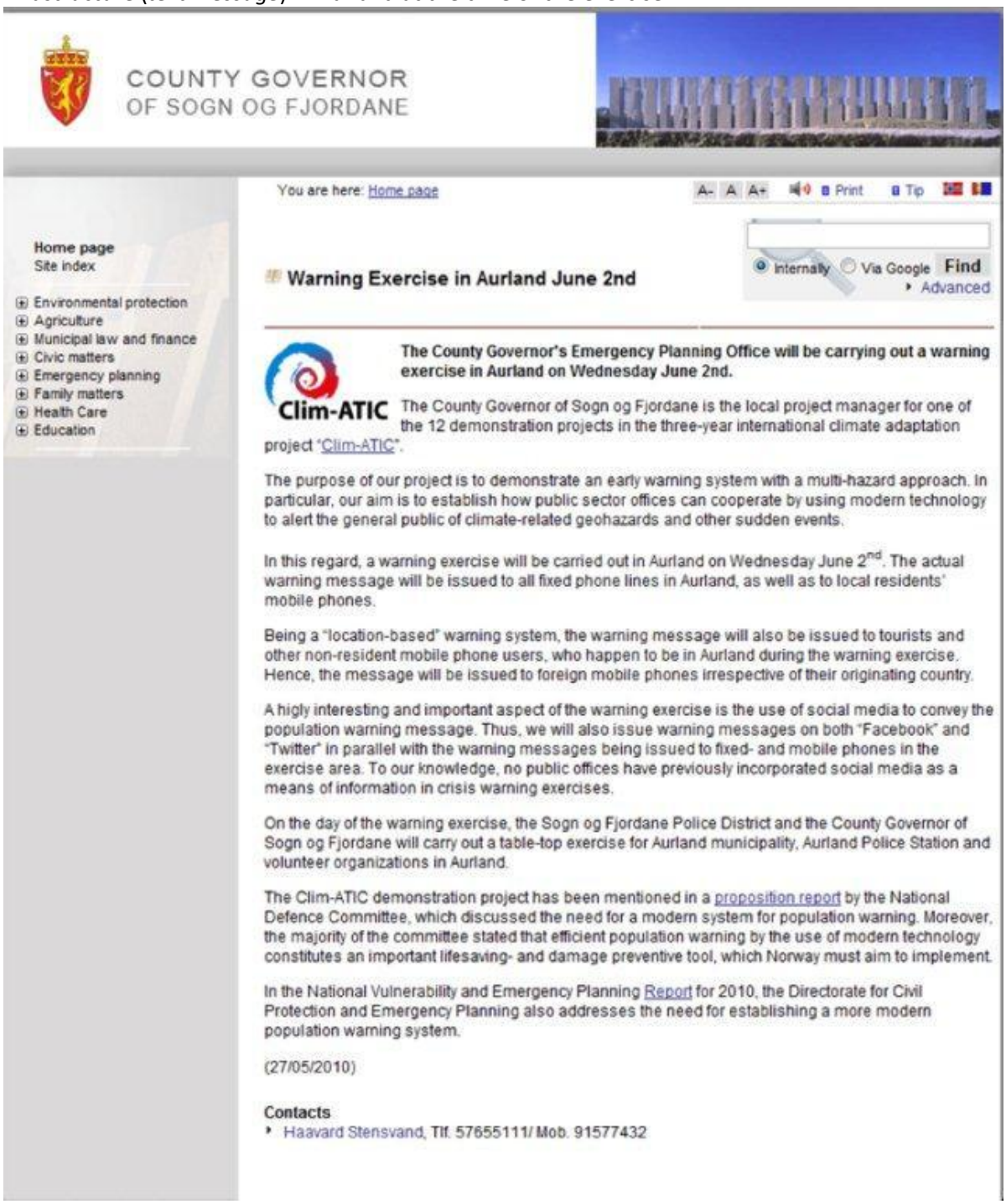
In addition to obtaining first-hand knowledge on how local authorities would respond to a phone-based population warning system, we also aimed to assess whether the use of such systems could improve the interaction between rescue organizations, local authorities and volunteer organizations.

As regards the evaluation of the warning exercise, Sogn og Fjordane University College originally intended to assist in evaluation process, but had to withdraw from the project due to a lack of internal resources. We therefore decided to combine the warning system's log with the use online evaluation forms and a limited door-to-door survey in parts of Aurland (Høydalen) to evaluate the Clim-ATIC warning exercise.

4.3 Dissemination

Before carrying out the population warning exercise, several dissemination activities were undertaken by the CG's Office. Information about the exercise was published on the CG's website, Twitter profile and Facebook account, as well as being promoted through the local newspaper (*Sogn Avis)* and the county-wide district radio station (*NRK Sogn og Fjordane*).

In order to reach as many people as possible in the exercise area, the phone warning would combine population-based technology and location-based technology. The population-based technology would reach all fixed phones (*voice message*) and mobile phones (*text message*) registered in Aurland municipality, whereas the latter would reach all mobile phones using Telenor's infrastructure (*text message*) in Aurland at the time of the exercise.



The County Governor's website; prior to the Clim-ATIC warning exercise

4.4 The demonstration exercise

The Clim-ATIC warning exercise was held in parallel with a table-top exercise focusing on local authorities' ability to respond to extreme weather events. Several of the reference group members attended the exercise as observers.

According to the table-top scenario, the Norwegian Geotechnical Institute (NGI) had recently issued a general avalanche warning for Sogn og Fjordane county, and the Norwegian Energy Resources and Water Directorate had also issued a flood warning for the same area. Several roads in the county had already been blocked by avalanches and landslides, and the National Public Roads Administration accordingly warned motorists to be on the alert due to the severe weather conditions.

As Aurland municipality's crisis management team was discussing relevant measures in response to the exercise scenario, Fram Web issued the Clim-ATIC warning message to demonstrate how local authorities can use modern technology to convey important information to the public under challenging circumstances. To supplement the phone-based warning message, Twitter and Facebook were used to send out information about the exercise.

Members of Aurland municipality's crisis management group

"EXERCISE – The County Governor and Aurland municipality are testing a population warning system. You receive this message because you are currently in the exercise area. More info on www.fmsf.no" (The County Governor's website)

In general, phone-based warning messages can be issued by the use of two different technological platforms; in this report labeled *population-based technology* and *location-based technology*.

Using *population-based technology*, Aurland residents would receive the phone-based warning message as voice message to fixed phones* and as text message to their (Telenor-based) mobile phones. Hence, residents listed with both fixed phones and mobile phones would receive both types of warnings. Accordingly, mobile phones "residing" in Aurland but not being in Aurland during the exercise, would also receive the warning message. Tourists and others travelling through Aurland would not receive this warning message.

Using *location-based technology*, all (Telenor-based) mobile phones within the geographic area defined by the system operator would receive the warning as a text message. Hence tourists "roaming" on Telenor's network would also receive the warning.

Both fixed phones and mobile phones in Aurland thus received the population message during the Clim-ATIC warning exercise. Some 2,500 mobile phones using Telenor's network received the population alert as text message, whereas 322* fixed phones in Aurland received the population alert as voice message.

** This number of fixed phone lines in Aurland municipality was generated by a search engine using two principles:*
- In densely populated / urban areas the system identifies the street addresses and its registered residents' home phone number accordingly.
- In rural areas with "informal" addresses (i.e. no street names), the system identifies the property address, and looks up the registered owner of the specific property. Public offices etc. are often not the registered owner of their respective office-buildings, and this latter method therefore leads to a somewhat lower result-percentage than the method based on street address.
To compensate for this gap, Fram Web has developed a system where public offices, schools, kindergardens etc. can register their "resident" address to be included in the "property-search".

Following the voice message, the receiver was given two alternatives for response: "*Press one to verify that you have understood this message*" or "*press nine to listen to the message again*". Consequently, Fram Web's logging system featured detailed status and statistics for this population-based voice message, and the system instantly registered who and how many who had listened to, or listened to and verified, the voice message*.

As regards the location-based warning message, this technology identifies where specific mobiles are positioned at specific times, and is thus subject to confidentiality legislation. As a result, Fram Web's current logging system does not provide data from the location-based warning. However, Telenor could inform us that some 2,500 messages had been sent out.

Ideally, we wanted to make our Facebook-advertisement visible only to Facebook users based in the county of Sogn og Fjordane, but the only "regional label" available was "Norway". Our exercise-advertisement could therefore be seen by all Norwegians above the age of 13 years, which is the lowest age limit to register on Facebook.

The advertisement was scheduled to be "active" (*i.e. visible to Facebook users in Norway)* between 10 a.m. – 1 p.m. on June 2nd 2010. However, as Facebook must manually approve all "advertisements" that are to be published; our warning exercise advertisement was not made visible until 11 am on June 2nd.

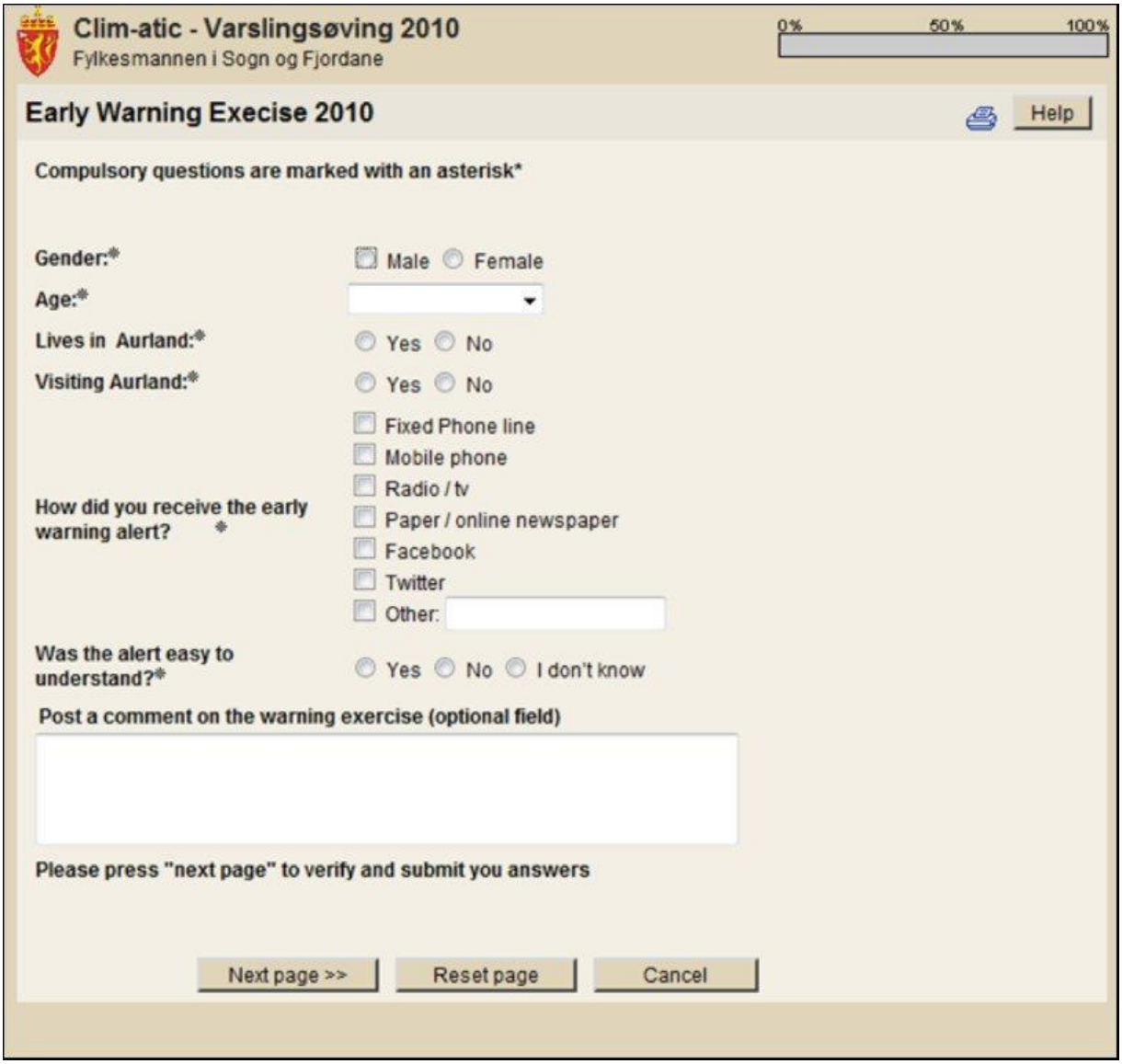
Thus, the warning exercise advertisement was only visible for two hours, during which it had 201 849 viewings, and was clicked on 90 times. Moreover, the CG's Facebook profile got 15 new followers this day, and the largest increase of followers was in the age-group 13-17 years. During the warning exercise, the warning message published on Twitter was re-tweeted ("*shared/forwarded*") by 6 or 7 persons.

Information published on Twitter (left), and Facebook (right)

** When issuing "group warnings" to predefined groups/phone lists, the system operator can easily add multiple-response alternatives, such as "press two if you need assistance". This feature is currently not available when issuing population-based warnings, but would be highly important in a real crisis situation, as the logging system would then provide the system operator with a complete overview of the situation, thus enabling him to e.g. direct emergency personnel to those in need.*

Both the voice message and the text message referred people to the CG's website to obtain more information on the warning exercise. Those who visited the website were encouraged to answer a few questions regarding how they received the warning message, by filling in an online evaluation form.

Additionally, information about the warning exercise and the electronic evaluation form was published using the County Governor's Facebook- and Twitter-profiles, and people were encouraged to share this information with others.



The online evaluation form, which was completed by 88 persons

Chapter 5 Exercise evaluation

By combining Fram Web's logging system, an electronic evaluation form and a door-to-door survey, we aimed to measure the efficiency of the warning system by determining the following:

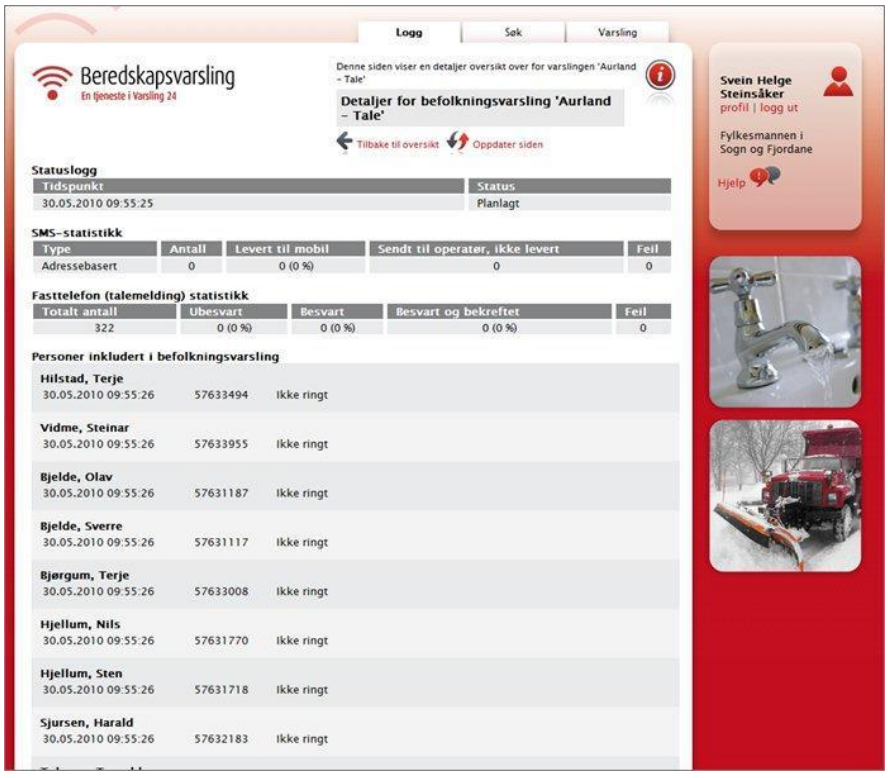
- Did the warning message reach everyone in the exercise area?
- How many were alerted?
- Were the community's most vulnerable reached?
- How were people alerted? Phone or other means of information?
- Did the recipients understand the message?

5.1 Fram Web's logging system

The voice message was sent out at 10.30 a.m., with a repetition call one hour later. Following the voice message, the recipient was given two alternatives for response: "*Press one to verify that you have understood this message*" or "*press nine to listen to the message again*".

Consequently, Fram Web's logging system featured detailed status and statistics for this population-based voice message, and the system instantly registered who and how many had listened to, or listened to and verified, the voice message. The logging system registered that 156 out of the 322 phone calls were answered, whereas 71 of the calls were both answered and verified.

This leaves 95 unaswered phone calls. Some of these 95 people might not have been at home during the exercise, and we also know that some of these 95 persons received the warning as text message to their mobile phones. However, the number of unanswered calls might have been reduced if the number of repetition calls had been increased.



Fram Web's population-warning logging system

No errors were registered in respect to issuing the voice message. Location-based technology identifies where specific mobiles are positioned at specific times, and is thus subject to strict confidentiality legislation. Subsequently, Telenor did not provide statistics regarding the location-based text message, and Fram Web's logging system did provide data from the location-based warning. However, Telenor informed us that some 2,500 text messages had been sent out.

Whereas the text message was sent out at 10.30 a.m., it took roughly 5-10 minutes before the majority present at the table-top exercise had received the text message. Moreover, it took up to an hour before everyone present at the table-top exercise had received the warning message.

Unfortunately, we do not hold any information regarding how this location-based warning affected the local phone network, or if local network limitations / restrictions were the cause of the delay.

Telenor stated that the warning message was being continuously processed and sent, and that all messages were ultimately successfully delivered (even though it took a bit longer than we had anticipated).

Fram Web's general manager, Mr. Jarle Heimtun, demonstrates the warning system to representatives from the Sogn og Fjordane Alarm Central and the police.

5.2 The online evaluation form

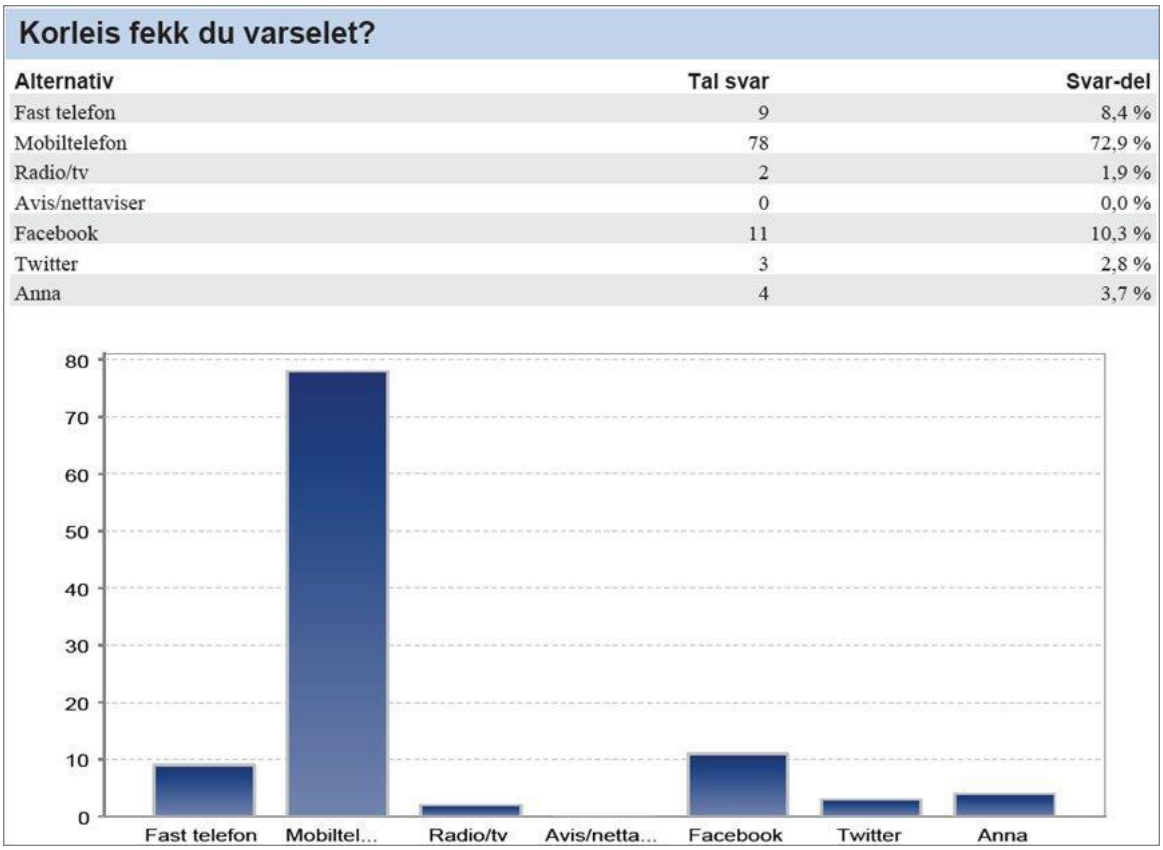
Whereas Fram Web's logging system provided us with important information about the phone warning, the online evaluation form and the door-to door survey also enabled us to determine how successful and efficient the use of Facebook and Twitter had been.

The warning exercise advertisement which was published on Facebook was visible for two hours, during which it had 201.849 viewings, and was clicked on 90 times. Data gathered from the CG's Facebook-profile tells us that CG got 15 new followers on Facebook during the warning exercise, six of whom were aged between 13-17 years. This latter fact suggests that social media is an important arena for reaching young people with important information. The warning message that was published on Twitter was re-tweeted ("*shared/forwarded*") by 6 or 7 persons, which is a somewhat lower figure than we had anticipated.

The online evaluation form was completed by 88 persons, several of whom had received the warning message in more than one way (*appendix 6*). Importantly, 70 per cent of those who filled in the online evaluation form had received the warning message as text message to their mobile phones.

This illustrates that the use of location-based warning system is by far the most efficient method of alerting the general public during crisis situations. Subsequently, this underlines the fact that issues concerning confidentiality legislation and system regulations must be addressed so that efficient and sustainable population warning system can be developed and implemented

Furthermore, 10 per cent of the respondents received the warning via Facebook, and this figure suggests that the use of social media in some cases can be as efficient as a "traditional" population-based phone-warning (voice message).

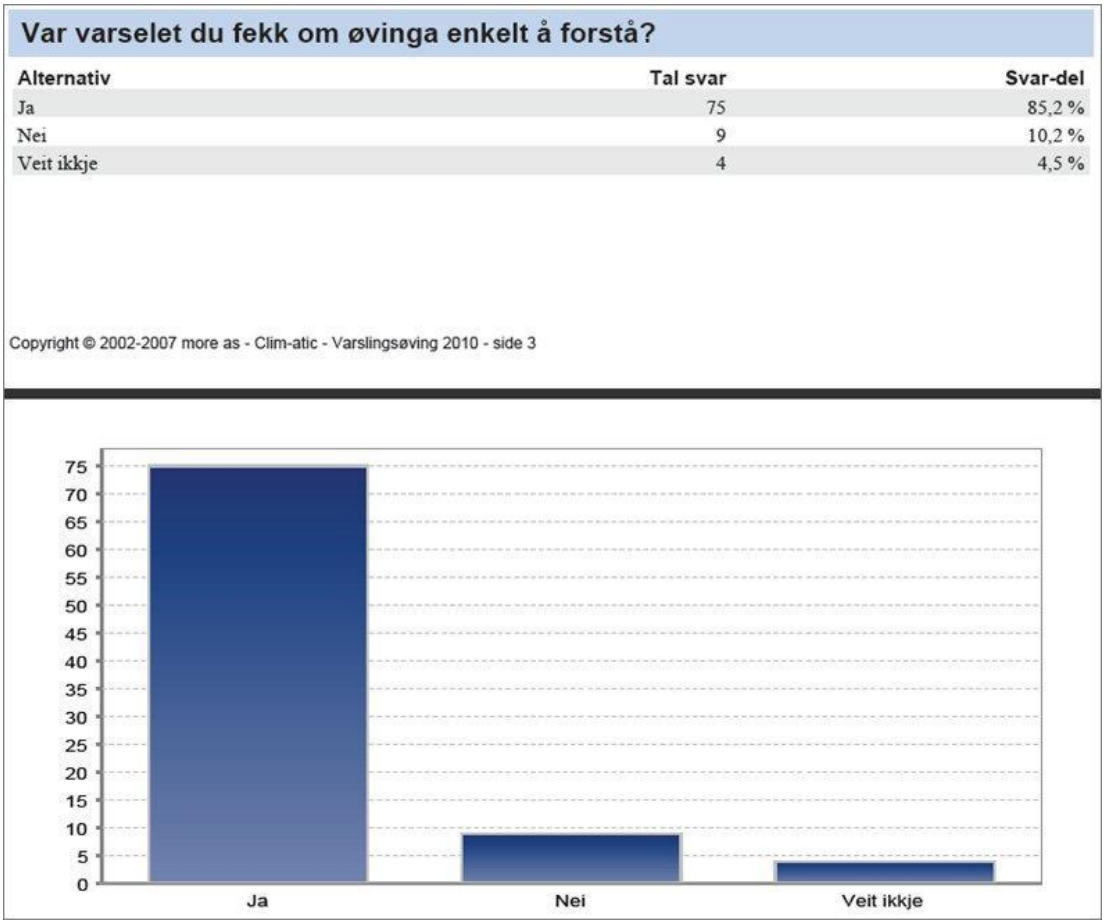


From the online evaluation form: "How did you receive the warning message"?

Some of the 88 respondents stated that they had seen the warning information online, whereas they had not received the warning message to their mobiles or through other channels. This emphasizes the importance of using supplementary warning systems.

The use of radio has previously proved to be an efficient method of conveying various types of messages to the general public, and in a real crisis-situation the regional radio station (NRK Sogn og Fjordane) would probably have been one of the most important ways of providing (supplementary) information to the general public.

Additionally, during a real crisis both local and regional media would doubtlessly have responded to any tweets being sent to them, thus leading to wide media coverage of the actual event.



From the online evaluation form: "Was the warning message easy to understand"?

The majority of the respondents stated that the warning message was easy to understand. Of the 15 per cent who answered "no" or "don't know", several people commented that the message was understandable, whereas they did not understand why it was being sent out.

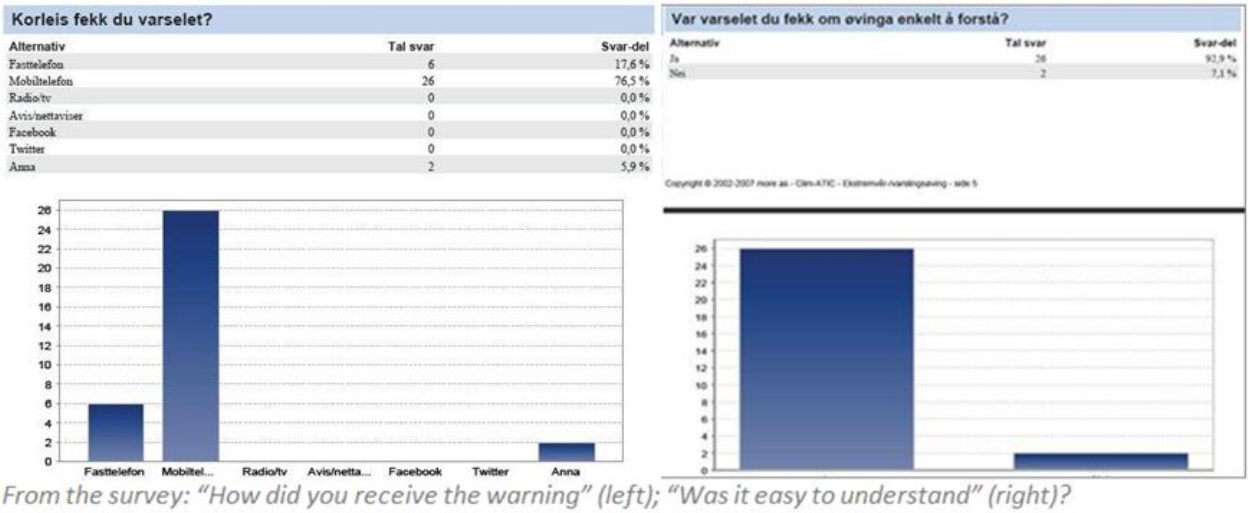
In a real crisis-situation, such warning messages would probably identify the type of hazard (e.g. "*high risk of avalanches in Aurland*") and instruct the public on further action (e.g. "*evacuate the area")* – thus clearly illustrating to the public *why* the message was being issued.

5.3 The door-to-door survey

In order to obtain a more detailed understanding of how the general public in Aurland reacted to the warning message, Aurland Red Cross carried out a door-to-door survey in the "Høydalen" area of Aurland municipality.

Left: Høydalen, Aurland; source: www.fylkesatlas.no
Right: Aurland Red Cross planning the door-to-door survey

In total, 31 people were interviewed, but not everyone answered all of the questions (appendix 7). Approximately 77 per cent received the warning message to their mobile phones, whereas 17 per cent received the warning to their fixed phone lines.
The vast majority said the message was easy to understand.



Korleis fekk du varselet?

Alternativ	Tal svar	Svar-del
Fasttelefon	6	17,6 %
Mobiltelefon	26	76,5 %
Radio/tv	0	0,0 %
Avis/nettaviser	0	0,0 %
Facebook	0	0,0 %
Twitter	0	0,0 %
Anna	2	5,9 %

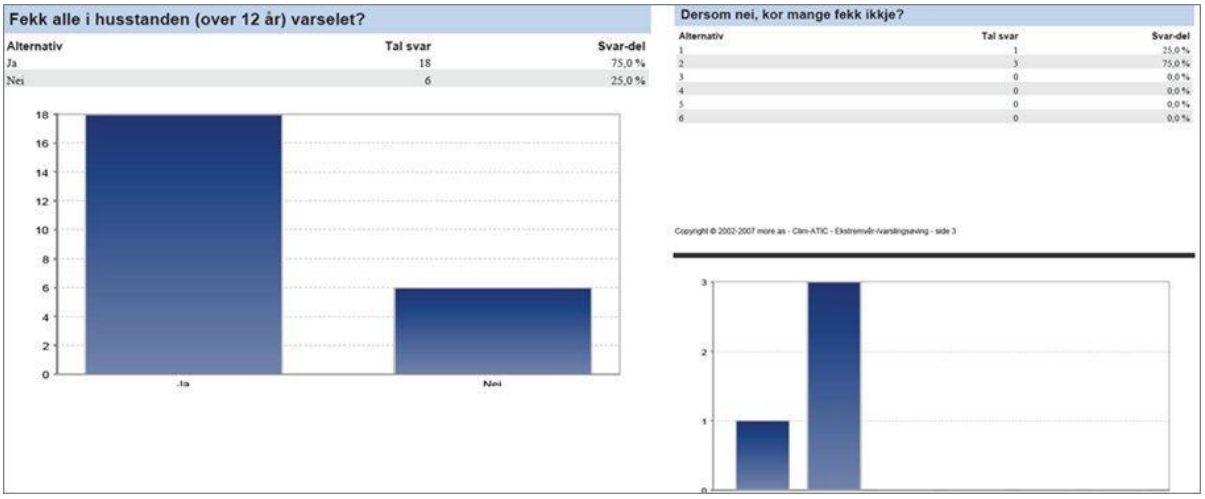
Var varselet du fekk om øvinga enkelt å forstå?

Alternativ	Tal svar	Svar-del
Ja	26	92,9 %
Nei	2	7,1 %

From the survey: "How did you receive the warning" (left); "Was it easy to understand" (right)?

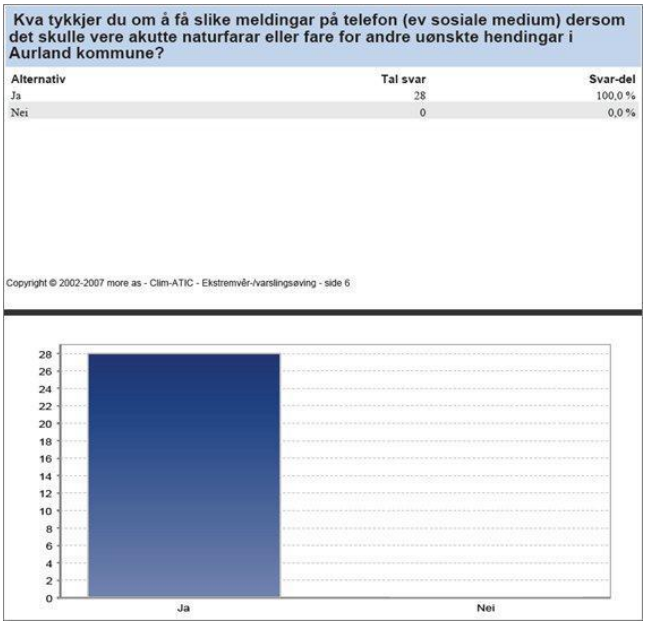
The survey also revealed that not all family members of the households in Høydalen had received the warning message. This could be a result of some people not owning a mobile phone, or not having had access to Facebook etc. However, 75 per cent of the people in Høydalen responded that everyone in the family had received the message, again emphasizing the efficiency of the warning system.

As discussed above, incorporating both population-technology and location-technology in logging systems would enable to operator to identify households without response, so that emergency personnel etc. could be directed to these addresses.



From the survey: "Did everyone above the age of 12 receive the warning message"?

Importantly, the survey conducted in Høydalen revealed that 100 per cent of the respondents wanted to receive population warning messages to their phones and through social media during extreme weather events and other challenging situations.



From the survey: "Do you wish to receive warning messages to your phone and through social media"?

Chapter 6 Project summary and concluding remarks

The objective of the *Emergency Population Warning System* project has been to demonstrate an effective, reliable and cost-efficient early warning system with a multi-hazard approach. This report has illustrated how a phone-based warning system can be combined with the use of social media in order to convey important information to the general public.

6.1 The warning system

- We have argued that the technical aspects of people-centered warning systems are at large readily available, whereas issues concerning confidentiality legislation and system regulations must be addressed before successfully implementing efficient location-based warning systems.

- As we have demonstrated, publishing advertisements using social media is also subject to regulations. In order to issue warnings which are *"timely and understandable to those at risk*", we believe more research needs to be carried out on the opportunities and restrictions connected with the use of social media during crisis situations.

6.2 The system operator

- In peacetime, the task of deciding *when* a population warning is to be issued in Norway lies with the police. The police also has the responsibility for carrying out adequate measures to evacuate the public when needed. However, the police has no formal responsibility for developing population warning systems.

- In order to establish a cost-effective early warning system, multi-hazard approaches are a prerequisite, as the costs of using and maintaining the system will be shared. A location-based warning system can also represent an integrated tool for disseminating purely informative messages, such as general public information or various messages from local authorities.

- Hence, this project demonstrated how an existing county-encompassing organization could be used to issue the population warning. As this organization is closely coordinated with the police whilst being an inter-municipal organization, it is thus suited for the issuing of both non-emergency and emergency warnings with a multi-hazard approach.

6.3 Project relevance and follow-ups

"Countries that develop… institutional frameworks for disaster risk reduction…have greater capacity to manage risks and to achieve widespread consensus for, engagement in, and compliance with disaster risk reduction measures across all sectors of society"

Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, Paragraph 16

Several communities in both Sogn og Fjordane and the wider NPP-area are facing numerous hazards such as flooding, avalanches, rock slides and other extreme weather events. Great distances between peripheral communities and at times challenging infrastructure can make accessibility poor, thus making communities more vulnerable to extreme weather events.

By implementing emergency population warning systems, local and regional authorities can effectively inform and communicate with the general public, and such systems can also improve rescue operations etc. by diverting and optimizing available resources.

Implementing effective and reliable early warning systems should therefore be of high priority in areas where the frequency and scale of extreme weather is believed to increase.

The *Emergency Population Warning System* project has been mentioned in a proposition report by the Norwegian National Defence Committee, which discussed the need for a modern system for population warning. The majority of the committee stated that efficient population warning by the use of modern technology constitutes an important lifesaving and damage preventive tool, which Norway must aim to implement.

Moreover, in the National Vulnerability and Emergency Planning Report for 2010, the Directorate for Civil Protection and Emergency Planning also addresses the need for establishing a more modern population warning system. The directorate subsequently recommended that a project group consisting of representatives from the directorate and the police is set up to assess the possibility of implementing a nation-wide phone-based warning system.

The EU is currently assessing and testing Cell Broadcast *, which is a phone-based technology for communicating with the general public in high-risk and crisis situations. Furthermore, The European Emergency Number Association (EENA) already advocates harmonized emergency telecommunications in accordance with European requirements.

Based on the experiences we have drawn from our project, we support the Directorate for Civil Protection and Emergency Planning's initiative to set up a national reference group to assess the development and implementation of a country-encompassing people-centered warning system.

As we have argued in this report, technological aspects seem to represent less of a challenge than issues concerning confidentiality legislation and system regulations. Hence, we recommend that the reference group's mandate incorporates the following:

- Confidentiality legislation and system regulations
- Opportunities and restrictions connected with the use of social media during crisis situations
- Transnational aspects of population warning, as illustrated by the EU's Cell Broadcast initiative

** https://service.projectplace.com/pub/english.cgi/0/283748154*

Appendix

Appendix 1	Examples of adaptation measures	p. 26
Appendix 2	Project plan	p. 27
Appendix 3	National Defence Committee Proposition Report Innst. S. nr. 85 (2008-2009)	p. 29
Appendix 4	National Vulnerability and Emergency Planning Report, 2010	p. 30
Appendix 5	Samfunnssikkerhet (3, 2009) - the Directorate for Civil Protection and Emergency Planning's quarterly magazine	p. 31
Appendix 6	Statistics from the online evaluation form	p. 32
Appendix 7	Statistics from the survey	p. 33

Appendix 1 Examples of adaptation measures

EUROPE		
The Netherlands, *Government of the Netherlands (1997 and 2005)*	Sea-level rise	Adoption of Flooding Defence Act and Coastal Defence Policy as precautionary approaches allowing for the incorporation of emerging trends in climate; building of a storm surge barrier taking a 50 cm sea-level rise into account; use of sand supplements added to coastal areas; improved management of water levels through dredging, widening of river banks, allowing rivers to expand into side channels and wetland areas; deployment of water storage and retention areas; conduct of regular (every 5 years) reviews of safety characteristics of all protecting infrastructure (dykes, etc.); preparation of risk assessments of flooding and coastal damage influencing spatial planning and engineering projects in the coastal zone, identifying areas for potential (land inward) reinforcement of dunes.
Austria, France, Switzerland *Austrian Federal Govt. (2006); Direction du Tourisme (2002); Swiss Confederation (2005)*	Upward shift of natural snow-reliability line; glacier melt	Artificial snow-making; grooming of ski slopes; moving ski areas to higher altitudes and glaciers; use of white plastic sheets as protection against glacier melt; diversification of tourism revenues (e.g., all-year tourism).
	Permafrost melt; debris flows	Erection of protection dams in Pontresina (Switzerland) against avalanches and increased magnitude of potential debris flows stemming from permafrost thawing.
United Kingdom *Defra (2006)*	Floods; sea-level rise	Coastal realignment under the Essex Wildlife Trust, converting over 84 ha of arable farmland into salt marsh and grassland to provide sustainable sea defences; maintenance and operation of the Thames Barrier through the Thames Estuary 2100 project that addresses flooding linked to the impacts of climate change; provision of guidance to policy makers, chief executives, and parliament on climate change and the insurance sector (developed by the Association of British Insurers).

Source: IPCC raport 4:
http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch17s17-2-2.html#table-17-1

Appendix 2 Project plan

Northern Periphery Programme 2007-2013

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 man 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		61.86	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 adaption 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 Aspetheim, (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 adaption 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.frnsf.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

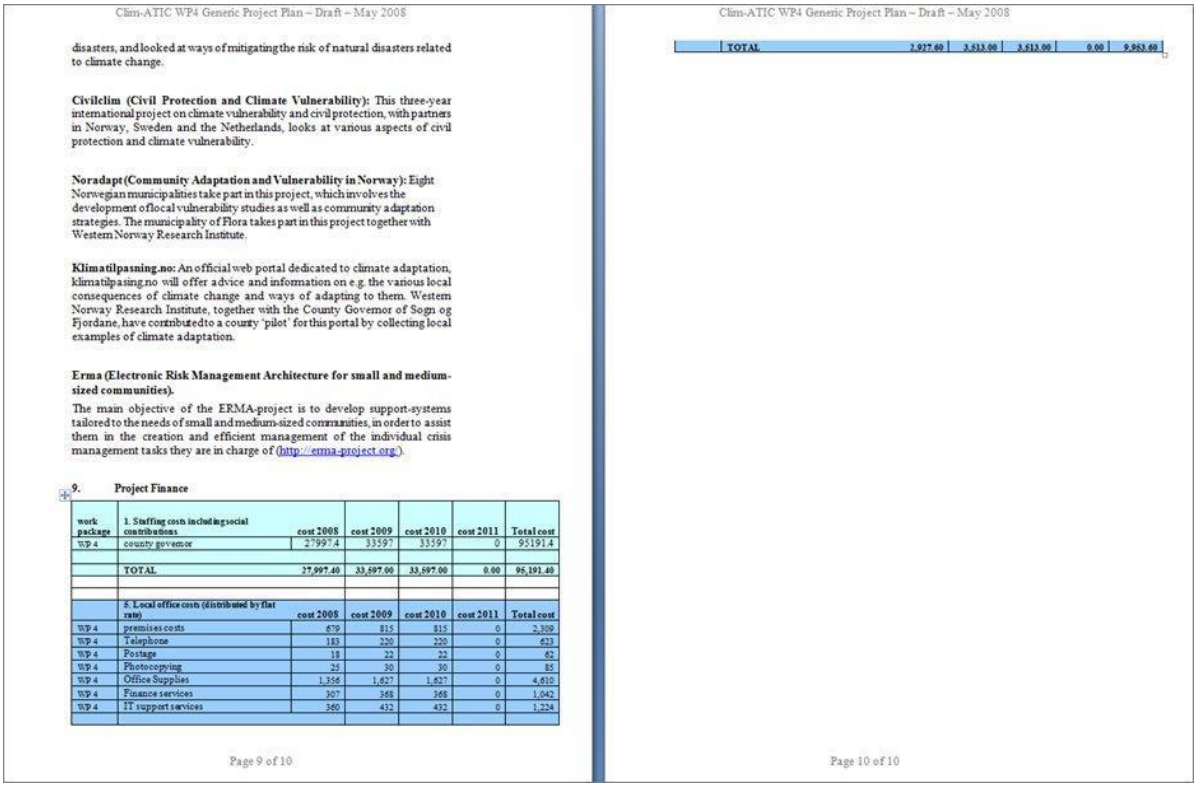
Other Clim-ATIC demonstration projects:

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



Clim-ATIC WP4 Generic Project Plan – Draft – May 2008

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
	TOTAL	27,997.40	33,597.00	33,597.00	0.00	95,191.40
	8. 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

Page 9 of 10

Clim-ATIC WP4 Generic Project Plan – Draft – May 2008

TOTAL	2,917.60	3,513.00	3,513.00	0.00	9,953.60

Page 10 of 10

Appendix 3 National Defence Committee Proposition Report; Innst. S. nr. 85 (2008-2009) (Available in Norwegian only)

Innst. S. nr. 85

(2008–2009)

Innstilling til Stortinget fra forsvarskomiteen

St.meld. nr. 22 (2007–2008)

Innstilling fra forsvarskomiteen om samfunnssikkerhet – samvirke og samordning

Til Stortinget

1. SAMMENDRAG

1.1 Innledning

De tiltak som blir presentert i denne meldingen er et ledd i Regjeringens oppfølging av målsetningen i Soria Moria-erklæringen om en helhetlig sikkerhetspolitikk og en styrket samfunnssikkerhet. Begrepet samfunnssikkerhet ble presentert i St.meld. nr. 17 (2001–2002) Samfunnssikkerhet – veien til et mindre sårbart samfunn, jf. Innst. S. nr. 9 (2002–2003). Denne meldingen var en oppfølging av Sårbarhetsutvalget (NOU 2000:24 Et sårbart samfunn), som ga en bred tilnærming til samfunnets sårbarhet.

Regjeringen følger i denne meldingen opp Stortingets Innst. S. nr. 9 (2002–2003), jf. St.meld. nr. 17 (2001–2002), og forsvarskomiteens og justiskomiteens merknad om å opprettholde en ordning med parallell behandling av langtidsplaner for militært forsvar og sivilt beredskap. Gjennom en slik parallell behandling kan det sikres en god balanse mellom militær og sivil beredskap.

I St.meld. nr. 39 (2003–2004) Samfunnssikkerhet og sivilt-militært samarbeid, jf. Innst. S. nr. 49 (2004–2005), ble Innst. S. nr. 9 (2002–2003) fulgt opp og det ble lagt særlig vekt på omtale av totalforsvaret og det sivil-militære samarbeid.

I forbindelse med behandlingen av St.meld. nr. 39 (2003–2004), jf. Innst. S. nr. 49 (2004–2005), fattet Stortinget 30. november 2004 anmodningsvedtak om at spørsmålet om en sentral krisehåndteringsenhet skulle utredes. I Innst. S. nr. 265 (2004–2005), jf. St.meld. nr. 37 (2004–2005) Flodbølgekatastrofen i Sør-Asia og sentral krisehåndtering, sluttet Stortinget seg til tiltak for å styrke apparatet for krisehåndtering i utlandet og den generelle krisehåndtering i departementene, herunder etablering av en krisestøtteenhet.

I denne meldingen følger Regjeringen opp Innst. S. nr. 49 (2004–2005), jf. St.meld. nr. 39 (2003–2004), og behandler forslag fra Infrastrukturutvalget (NOU 2006:6 Når sikkerheten er viktigst). Meldingen omhandler samfunnssikkerhet med spesielt vekt på de større og sammensatte hendelsene med store samfunnsmessige konsekvenser, sikkerhet i kritisk infrastruktur og hvilke virkemidler og ressurser som kan settes inn for å forebygge og håndtere hendelser.

Justisdepartementets samlede samordningsrolle for samfunnets sivile sikkerhet er omtalt i St.meld. nr. 17 (2000–2002), jf. Innst. S. nr. 9 (2002–2003), tydeliggjort og styrket. Justisdepartementet har i arbeidet med denne stortingsmeldingen koordinert innspill fra de ulike departementer, og det enkelte departement har rapportert på oppfølging av Infrastrukturutvalgets anbefalinger (NOU 2006:6, jf. kapittel 1.1.2 og 5).

Regjeringen vil også fremme en egen melding om brannsikkerhet. Omtalen av brann i denne meldingen er derfor i hovedsak avgrenset til den operative delen av brannvesenet.

1.2 Meldingens innhold og prioriteringer

I meldingens kapittel 2 vises det til regjeringens forståelse av meldingen og hvilke prioriteringer den legger vekt på i perioden 2009–2012.

Kapittel 3 gir en fremstilling av tiltak for å styrke arbeidet med samfunnssikkerhet på nasjonalt, regionalt og lokalt nivå. Regjeringen vil revidere og styrke retningslinjene for justisdepartementets samordningsrolle for å tydeliggjøre og avgrense samord-

Trondheim og kompetansesenteret Starum på Starum. Disse medlemmer ønsker også å opprettholde Vagle leir i Sandnes, og fremmer følgende forslag:

"Stortinget ber Regjeringen opprettholde dagens kompetansesentra på Grønåsen i Trondheim og Starum, og opprettholde Vagle leir i Sandnes."

Komiteens medlem fra Høyre forutsetter derfor at det gjennomføres en ny helhetlig konsekvens- og kostnadsanalyse basert på disse og andre relevante faktorer, som næringslivets og nød- og redningsetatenes behov for kompetanseutvikling, opplæring og øvelser innen samhandling og samvirke, og at Regjeringen melder tilbake til Stortinget om dette på egnet vis.

Komiteen merker seg Regjeringens arbeid med å utrede behovet for tilfluktsrom, og avventer de vurderinger og konklusjoner som Regjeringen vil komme med.

Komiteen er opptatt av at varsling av sivilbefolkningen er et av de sentrale, tradisjonelle sivilforsvarstiltakene. Sivilforsvarets landsdekkende offentlige varslingssystem bestående av tyfoner, samt NRK sin påfølgende rolle som formidler av viktige meldinger til befolkningen via radio.

Komiteens flertall, alle unntatt medlemmene fra Arbeiderpartiet og Sosialistisk Venstreparti, viser til meldingens omtale av befolkningsvarsling, hvor det heter at Justisdepartementet også vurderer løpende om tyfonvarsling bør erstattes med annen kommunikasjonsteknologi. Flertallet vil understreke at Samarbeidsregjeringen i St.meld. nr. 39 (2003–2004) "Samfunnssikkerhet og sivilt-militært samarbeid" viste en langt mer aktiv holdning til befolkningsvarsling med moderne teknologi, hvor det blant annet i forhold til teknologisk utvikling og nye fremtidige metoder for varsling skulle legges opp til å videreføre utprøving og klargjøre kravspesifikasjon for anskaffelse av telefonbasert varsling.

Flertallet konstaterer at det nå finnes moderne og effektive varslingsmetoder med fast- og mobiltelefon, men er ikke kjent med at utprøving og klargjøring av spesifikasjonskrav er iverksatt i Norge. Direktoratet for Samfunnssikkerhet og Beredskap (DSB) driver, så vidt kjent for flertallet, ikke noe aktivt arbeid med moderne befolkningsvarsling. Flertallet har notert at flere land, bl.a. Sverige og USA, har besluttet å innføre varsling av befolkningen via telefon ved ulykker og kriser, og at det i en rekke andre land nå pågår utredning og arbeid med kravspesifikasjoner for valg av moderne befolkningsvarslingssystem. Flertallet mener effektiv varsling av befolkningen ved bruk av moderne teknologi er et livreddende og skadebegrensende virkemiddel som også Norge må ta i bruk. Flertallet ber om at Justisdepartementet snarest igangsetter utprøving og klargjøring av kravspesifikasjoner for valg av system for moderne befolkningsvarsling og melder tilbake til Stortinget på egnet vis.

Komiteens medlemmer fra Arbeiderpartiet og Sosialistisk Venstreparti er kjent med at det i dag finnes teknologiske løsninger som kunne være et godt supplement eller sågar en erstatning for tyfonvarsling. Disse medlemmer er tilfreds med at Regjeringen vil vurdere om tyfonvarslingen bør erstattes med annen kommunikasjonsteknologi.

Disse medlemmer vil påpeke at det arbeides både internasjonalt og nasjonalt ift. befolkningsvarslingsløsninger. Disse medlemmer vil videre påpeke at departementet arbeider med flere prosjekter, blant annet et prosjekt kalt "Clim Atic" sammen med Fylkesmannen i Sogn og Fjordane.

Disse medlemmer vil at arbeidet med befolkningsvarsling ved ulykker, kriser og katastrofer fortsetter og ber Regjeringen om å komme tilbake til Stortinget når det er hensiktsmessig.

Komiteen bør Regjeringen ta med seg erfaringene fra årets øvelse Tyr i arbeidet med vurdering av annen teknologi for varsling av sivilbefolkningen.

Komiteen er enig med Regjeringen i at dagens lov om Sivilforsvaret ikke gir en korrekt eller tilstrekkelig hjemmel for Sivilforsvarets virksomhet og organisasjon.

Komiteen er positiv til at Regjeringen nå er i ferd med å bygge ut et nødnett som blir felles for alle nødetatene, og mener dette vil styrke nødetatenes mulighet for kommunisere direkte med hverandre. Komiteen deler synet om at det nye nødnettet med tiden vil kunne knytte til seg flere brukere og derved gi nye muligheter for informasjonsdeling og samhandling. Komiteen mener at et nytt nødnett vil være en svært stor samfunnsmessig styrke for å nå målet om økt sikkerhet og beredskap i Norge.

Komiteen peker på at de frivillige organisasjonene i redningstjenesten er avhengig av et godt samband for å kunne være en effektive og god samarbeidspartnere for de offentlige nød- og beredskapsetatene. Det er derfor viktig at organisasjonene involveres i arbeidet med etablering av nødnettet og sikres adgang til å nyttiggjøre seg det.

Komiteen er enig i at dersom det skulle oppstå en stor krise eller en katastrofe, vil det kunne medføre at mobilnettet brytar sammen som en følge av overbelastning. Komiteen deler derfor Regjeringens

Appendix 4 National Vulnerability and Emergency Planning Report for 2010 (Available in Norwegian only)

dsb
Direktoratet for samfunnssikkerhet og beredskap

10

RAPPORT

Nasjonal sårbarhets- og beredskapsrapport (NSBR) 2010

- Et nasjonalt risikobilde – eksempelet farlige stoffer
- Myndighetenes kommunikasjon med befolkningen før, under og etter en krise

Én av Sivilforsvarets tyfoner. Foto: Odd Skuterud, DSB

Det anbefales derfor at det nasjonale varslingssystemet foreløpig opprettholdes som system, men at en vurderer å endre innholdet i varslingen. Det bør vurderes å redusere antall signaler til ett signal, som betyr *økt informasjon*, uavhengig av geografisk tilknytning og scenario. Dette forslaget kan bidra til et mer helhetlig varslingsbudskap[44]. Det bør videre vurderes om andre medier kan være aktuelle i tillegg til etterfølgende informasjon på radio, for eksempel en direkte link til en nasjonal kriseportal.

Ved en videreføring av tyfonvarslingssystemet med et nytt innhold, er det avgjørende at varslingssystemet gjøres mer kjent enn dagens varslingssystem er. Dette kan gjøres på ulike måter, for eksempel gjennom informasjonskampanjer og hyppigere prøver av varslingssystemet i en innledende fase. En kampanje bør sees i sammenheng med etablering av en nasjonal kriseportal.

Det vil også være nødvendig med en gjennomgang av dagens utplassering og dekningsgrad opp mot oppdaterte ROS-analyser. Dette inkluderer en vurdering av behov for varsling i forbindelse med sikkerhetspolitiske kriser.

Ved bruk av tyfonvarsling i fredstidskriser er en avhengig av at ansvarlige myndigheter (i første rekke Politiet og DSB ved Sivilforsvaret) kjenner muligheten for å benytte systemet, samt at terskelen for å benytte det er bedre definert og behovsprøvd enn i dag. Det er grunn til å anta at ikke alle i tilstrekkelig grad har en bevisst og samordnet oppfatning av *hvor* og *når* befolkningsvarsling via tyfoner kan benyttes.

Etableringen av særordninger med lokale varslingsanlegg for fredstidskriser kan synes noe tilfeldig. Det finnes flere slike ordninger i dag, både med tyfonvarsling og andre typer varsling. Hvem som står som ansvarlig etablerer og eier av systemene, varierer fra ordning til ordning, og det er ikke definert når Sivilforsvaret anlegg kan benyttes. Utgangspunktet for etableringene har i hovedsak vært en vurdering av at det er stor risiko i områdene. Det er imidlertid i dag definert flere andre risikoområder hvor tyfonvarsling eller andre varslingsordninger ikke er etablert, men som også har høy risiko[45]. Bruk av tyfonanlegg og etablering av spesialordninger synes altså ikke i tilstrekkelig grad å være basert på identifiserte behov for varsling.

ELEKTRONISKE SIRENER

Elektroniske sirener skiller seg fra tyfoner (trykkluftbaserte sirener) ved at de i tillegg til å gi varslingssignaler også kan fungere som høyttalere. Det gjør det mulig å formidle utfyllende informasjon etter et innledende varslingssignal. Informasjonen kan formidles på ulike språk, slik det for eksempel er lagt opp til i Geiranger. De elektroniske sirenene har ikke like lang rekkevidde som de trykkluftbaserte sirenene, og systemer er mer sårbart for strømbrudd. For å oppnå tilsvarende dekning som de trykkluftbaserte tyfonene, kreves det et vesentlig høyere antall varslingsanlegg. Elektroniske sirener er nye brukt i Danmark og Sverige.

SMS-VARSLING

SMS-varsling benyttes blant annet til innkalling av personell. SMS-varsling kan gi høy dekningsgrad fordi den benytter, eller fordi den kan benytte flere overføringskanaler og oppdatering fra mange datoregistere.

Det er begrensninger i kapasiteten i de kommersielle telenettene som benyttes. Med dagens systemer kan det lett oppstå en sperresituasjon når antallet meldinger øker, og det finnes i

44 Radiokjon av antall signaler støttes også av en arbeidsgruppe som har gjennomgått varslingssystemene for Grenlandsområdet. Slutrapport fra varslingsgruppa, 21. juni 2005. Kommuneberedskapsrådet i Grenland.

45 *Store fellesbok i Norge. Utredning for Landbruks- og matdepartementet på vegne av 6 departementer*, utarbeidet av: Norges geologiske undersøkelse, Direktoratet for samfunnssikkerhet og beredskap, Statens landbruksforvaltning, Statens vegvesen, Jernbaneverket og Statens kartverk, 16.10.2006.

43

Fremtidens befolkningsvarsling? Foto: Colourbox

dag ingen prioriteringsmekanismer for befolkningsvarslingsmeldinger. Dette vil gi begrensinger ved større kriser. SMS-varsling vil også være sårbart for svikt i overføringsnettet og strømforsyning. For at SMS-varsling også skal nå benekende mobiltelefoner, må en type lokasjonstjeneste tas i bruk. Slik bruk er enná ikke tilstrekkelig avklart med Datatilsynet.

SMS-varsling ble brukt under Øvelse Tyr i 2008. SMS ble også benyttet for å sende ovingstekniske informasjonsmeldinger til personer med mobiltelefon som oppholdt seg i Grenlandsområdet under øvelse Tyr 09. Under øvelse Tyr 08 ble SMS benyttet som en varslingsmelding i forbindelse med behov for evakuering. Alle mobiltelefonene i området ble varslet, og erfaringen var at det er mulig å varsle befolkningen med SMS også i et tett befolket område. Systemet har også mulighet til å varsle innbyggere på fasttelefoner knyttet til adresser innenfor et definert område.

CELL BROADCAST

Cell broadcast (CB)[46] er et varslingssystem basert på mobiltelefon der operatørlogoen på telefonen byttes ut med en tekstmelding (inntil ca. 95 tegn) samtidig som det kommer en varslingslyd. Et slikt varsel kan nå et stort antall mottakere på kort tid, sammenlignet med en vanlig SMS-varsling som vil bruke vesentlig lenger tid på å nå like mange mottakere. Meldingen kan også vise til et annet medium, for eksempel en nettside, for å utdype informasjonen. CB er ikke utsatt for sperre slik SMS-baserte løsninger er. Utvalgene av varslingssystemet er finansiert av EU.

Utfordringer med Cell broadcast er at systemet er like sårbart for svikt i overføringsnettet og strømforsyningen som SMS-varsling. For at CB skal fungere på den enkelte mobiltelefon, må en funksjon aktiveres av den enkelte mobileier. Dessuten må nettleverandøren ha reservert en kanal for formålet. Det må også være definert hvem som har tillatelse til å sende ut slike varsler. Operatørene kan være tilbakeholdene med å tilby et slikt system fordi inntjeningen på bruken er begrenset.

I Nederland er det planlagt å sette i gang en prøveordning med befolkningsvarsling via Cell broadcast i første del av 2010. Det er lagt opp til å kunne sende ut både nasjonale, regionale og lokale varslinger. De første tre årene vil CB gå parallelt med sirenevarsling, og de to varslingssystemene vil fortløpende bli evaluert opp mot hverandre. Erfaringene fra Nederland vil være relevante for å vurdere om et slikt varslingssystem skal innføres i Norge. Hvis EU velger å satse på CB, kan det være aktuelt for Norge å knytte seg til et slikt felles europeisk varslingssystem.

VURDERING AV ROLLER OG ANSVAR

DSB har et ansvar for nasjonale systemer og ordninger relatert til befolkningsvarsling i Norge. Utøvelsen av ansvaret og myndighet skjer primært gjennom Sivilforsvaret som drifter den nasjonale tyfonvarslingen. Videre har DSB et ansvar som fagmyndighet og en koordineringsrolle innenfor samfunnssikkerhets- og beredskapsområdet og kan gi retningslinjer om hvordan en kan organisere og etablere systemer for befolkningsvarsling.

Der er til enhver tid politiet i Norge som er ansvarlig for å "trykke på knappen", dvs. bestemme når det skal varsles. Politiet har også ansvar for å gjøre nødvendige tiltak for å evakuere befolkningen når det er påkrevd. Politiet har imidlertid ikke noe formelt ansvar for etablering av systemer for varsling.

DSB ved sivilforsvaret er eier av en nasjonal infrastruktur for varsling til bruk ved hendelser i fredstid. DSB kan som ansvarlig koordinerende myndighet også gi føringer for varsling av befolkningen. Politiet har blant annet ansvar for å iverksette varsling, redde liv og helse og for evakuering. Tatt i betraktning denne rolledelingen kan en stille spørsmål om de to aktørene i tilstrekkelig grad er samordnet med hensyn til bruk av det nasjonale varslingssystemet. Sannsynligvis er det flere scenarioer hvor varsling via tyfoner ville vært hensiktsmessig enn dagens praksis tilsier. En hyppigere bruk av systemet kan også bidra til en økt forståelse og bevissthet om varslingen, og systemet ville kunne bli et mer relevant virkemiddel enn det er i dag.

7.5 OPPSUMMERING

Det eksisterer flere ulike ordninger for varsling, med ulike rolle- og ansvarsforhold og med ulike budskap. Det kan bli en utfordring at ulike virksomheteiere, vassdragseiere og kommuner etablerer ulike systemer for varsling med ulike budskap. Det bør derfor tilstrebes en helhetlig form for varsling som forstås av alle uavhengig av kjennskap til lokale ordninger.

Det nasjonale tyfonvarslingssystem er i prinsippet landdekkende, men systemet er ikke i tilstrekkelig grad plassert og dimensjonert i samsvar med et oppdatert risikobilde og behovet for varsling. I tillegg er det begrenset kjennskap til betydningen av signalene i befolkningen. Systemet er imidlertid robust og velestablert. Inntil nye løsninger for nasjonale varslingsordninger avklares, anbefales det derfor at det nasjonale tyfonvarslingssystemet opprettholdes. Det anbefales videre følgende:

- Det nasjonale tyfonvarslingssystemet bør i større grad ses i sammenheng med et oppdatert risikobilde og definerte varslingsbehov. I denne sammenheng bør en også ha en dialog med Forsvaret for å vurdere ordningen om varsling av flyangrep.
- Innholdet og antall signaler bør vurderes, og det foreslås å redusere antall signaler til ett som betyr *økt informasjon*. Dette kan bidra til bedre kjennskap til varslingens budskap.
- Det bør tilstrebes bedre kjennskap og større bevissthet til *hvor* og *når* tyfonvarsling kan benyttes i krisesituasjoner.

Ulikre ansvars- og rolleforhold knyttet til varslingsordninger bør gjennomgås for å kunne avklare hvem som til enhver tid har ansvar for å ese og etablere nye systemer for varsling der behov for dette blir avdekket.

Særordningene som Sivilforsvaret i dag forvalter, særlig knyttet til prøveordningene i Sirdal og Hallingdal, bør revurderes opp mot oppdaterte risikovurderinger, og tas i sammenheng med ny damsikkerhetsforskrift der ansvaret til eier tydeliggjøres. Også her er det behov for avklaring av ansvar og roller.

Det foreligger i dag flere mulige systemløsninger for varsling, hvor bruk av (mobil)telefonløsninger er den mest aktuelle som supplerende løsning. Bruk av SMS-varsling benyttes i dag i noen lokale ordninger, og en har også erfaring fra test av SMS-varsling gjennom øvelser. I tillegg foregår det et stort arbeid med vurderinger knyttet til telefonvarsling i EU (Cell-Broadcast).

For en kan ta stilling til hvilke tekniske løsninger som er aktuelle, bør det imidlertid gjøres en vurdering av roller og ansvarsforhold knyttet til eierskap og etablering av varslingsordninger. Derfor anbefales det å etablere en arbeidsgruppe som består av politiet, som ansvarlig evakueringsmyndighet og DSB, med koordineringsrolle på samfunnssikkerhets- og beredskapsområdet og som eier av nasjonale varslingsanlegg. Det bør videre vurderes om NVE og Post- og teletilsynet også bør inngå en slik gruppe, på bakgrunn av sine ansvar knyttet til vassdrag og skred og infrastruktur på teleområdet.

Arbeidsgruppen bør i første rekke vurdere varsling på et systemnivå og hvilke rolle- og ansvarsforhold som skal være gjeldende. Utvalget bør videre vurdere hvilke tekniske løsninger som det skal satses på i fremtiden. I denne prosessen bør både politiets erfaringer med SMS-varsling og DSBs deltakelse i Cell Broadcast-arbeidet benyttes som grunnlag.

46 https://service.projectplace.com/pub/english.cgi/0/283748154

44

45

Appendix 5 Samfunnssikkerhet, issue 3 2009
(Available in Norwegian only)

KRONIKK Av Haavard Stensvaag, fylkesberedskapssjef i Sogn og Fjordane.

Nye måtar for befolkningsvarsling

Korleis skal publikum varslast om farar og ulykkeshendingar på ein mest mogleg rask og sikker måte? Dette er ein av tinga det skal sjåast nærmare på i det treårige internasjonale prosjektet "Clim-ATIC", som vi frå Fylkesmannen i Sogn og Fjordane deltek i.

"Systemet vil og kunne nyttast til å formidle informasjon som ikkje er direkte relatert til faresituasjonar"

Prosjektet er delfinansiert gjennom EU sitt "Northern Periphery Programme" (NPP), og har og med deltakarar frå Sverige, Finland, Skottland og Grønland. I tillegg til Fylkesmannen, er og Førde kommune og Sogn og Fjordane fylkeskommune med i prosjektet.

Hovudføremålet med prosjektet er å vise korleis lokale og regionale styresmakter kan gjennomføre analysar av klimasårbarheit og utvikle strategiar for klimatilpasning. Prosjektet tek spesielt fatt i delta beredskap, energi, transport og reiseliv. Ulike demonstrasjonsprosjekt skal vise korleis lokal klimatilpassing kan gå føre seg i praksis.

EFFEKTIV BEFOLKNINGSVARSLING

Det er god grunn til å tru at framtidsklimaet vil gi auka fare for uønskte naturhendingar, som til dømes skred og flaum. Ei effektiv befolkningsvarsling vil difor vere eit viktig verktøy for å hindre at liv, helse og materielle verdiar går tapt når slike situasjonar oppstår. Dette set store krav

"Eit viktig moment ved varslinga er å sikre at den når fram til flest mogleg, og syte for at også dei aller mest sårbare vert nådd"

til varslingssystemet, då ein må vere trygg på at varselet innan svært kort tid når fram til alle som oppheld seg i det aktuelle området.

Som ein del av dømonstrasjonsprosjektet er det teokt gjennomført ei fullskala varslingsøving i byrjinga av 2010. Det kan vere aktuelt å varsle alle som bur eller oppheld seg i ein av kommunane i fylket. Varselet skal sendast som tekst- og talemeldingar til både fast- og mobiltelefonar, ved hjelp av teknologi for lokasjonsbasert befolkningsvarsling. Eit slikt varslingssystem vil sikre at varselet ikkje berre fangar opp personar med registrert adresse i området, men at det og når fram til andre som er der meir tilfeldig.

TELEFONBASERT VARSLING

Det har i dei seinare år vore gjennomført, og er under planlegging, fleire øvingar der telefonbasert befolkningsvarsling er eit av øvingsmomenta. Under desse øvingane har varslinga likevel bore vore eit avgrensa del av den totale øvinga. I vårt prosjekt er be folkningsvarslinga i seg sjølv det heilt sentrale øvingsmomentet. Det vil difor vere svært viktig å gjennomføre ei god evaluering.

Evalueringa må kunne seie om varselet faktisk nådde fram til, og vart forstått av målgruppene. Evalueringsarbeidet kan vidare vere med på å identifisere eventuelle tekniske forbetringspotensiale og viktige andre oppfølgingspunkt. Høgskulen i Sogn og Fjordane har sagt ja til å hjelpe til med å gjennomføre ei grundig evaluering av varslingsøvinga.

Eit poeng for prosjektet er å sjå om det kan etablerast varslingssystem med ei "multistakar"-tilnærming, slik at fleire ulike etater/styresmakter samarbeider om etableringa av eitt felles system til å sende varsel om ulike typar risiko og hendingar.

Systemet vil og kunne nyttast til å formidle informasjon som ikkje er direkte relatert til faresituasjonar. Det kan til dømes vere informasjon til trafikantane ved kolonnekøyring i høgfjellet, eller stenging av kommunal drikkevassforsyning når det mistenkte om forureining. Dersom varslingssystemet får eit breitt bruksområde, vil bruksostnadane bli redusert. Samstundes vil operatørane av systemet få verdifull trening i rask og effektiv utsending av varsel.

SOSIALE MEDIER

Eit viktig moment ved varslinga er å sikre at den når fram til flest mogleg, og syte for at også dei aller mest sårbare vert nådd. Svært mange ekstra bruker enno ikkje mobiltelefon, og svaksynte vil ha problem med å lese tekstmeldinger. I øvinga vil det difor vere viktig å sjå på behovet for supplerande varsling gjennom andre varslingskanalar, som til dømes lokalradio.

"Ei effektiv befolkningsvarsling vil difor vere eit viktig verktøy for å hindre at liv, helse og materielle verdiar går tapt"

Det vil og vere interessant å sjå på om "sosiale medier", som til dømes Facebook, blogger og Twitter, kan nyttast som kanalar for formidling av varsel og supplerande informasjon.

Eit moment i prosjektet er å vurdere kva etat som skal gjere jobben med å sende ut varselet. Både alarmsentralen (110), politiet, (112) og beredskapsetaten (113) er med i referansegruppa for prosjektet. Det vil vere naturleg at ein av desse sentralane får oppgåva med den praktiske varslinga, på vegne av seg sjølv eller andre. I referansegruppa til og representantar for ei rekkje andre offentlege og private aktørar som til dømes DSB, NVE, Statens Vegvesen, Nestlandsforsking, Høgskulen i Sogn og Fjordane og Austland kommune.

Vi ynar at prosjektet vårt bør ha interesse for dei nasjonale arbeidet med vurdering av befolkningsvarsling. Prosjektet vart omtala i innstillinga frå Forsvarskomiteen i saka "Samfunnssikkerhet – samvirke og samordning". Komitéfleirtalet uttalte mellom anna at "...effektiv varsling av befolkningen ved bruk av moderne teknologi er et hvetvendende og skadebegrensende virkemiddel som også Norge må ta i bruk...".

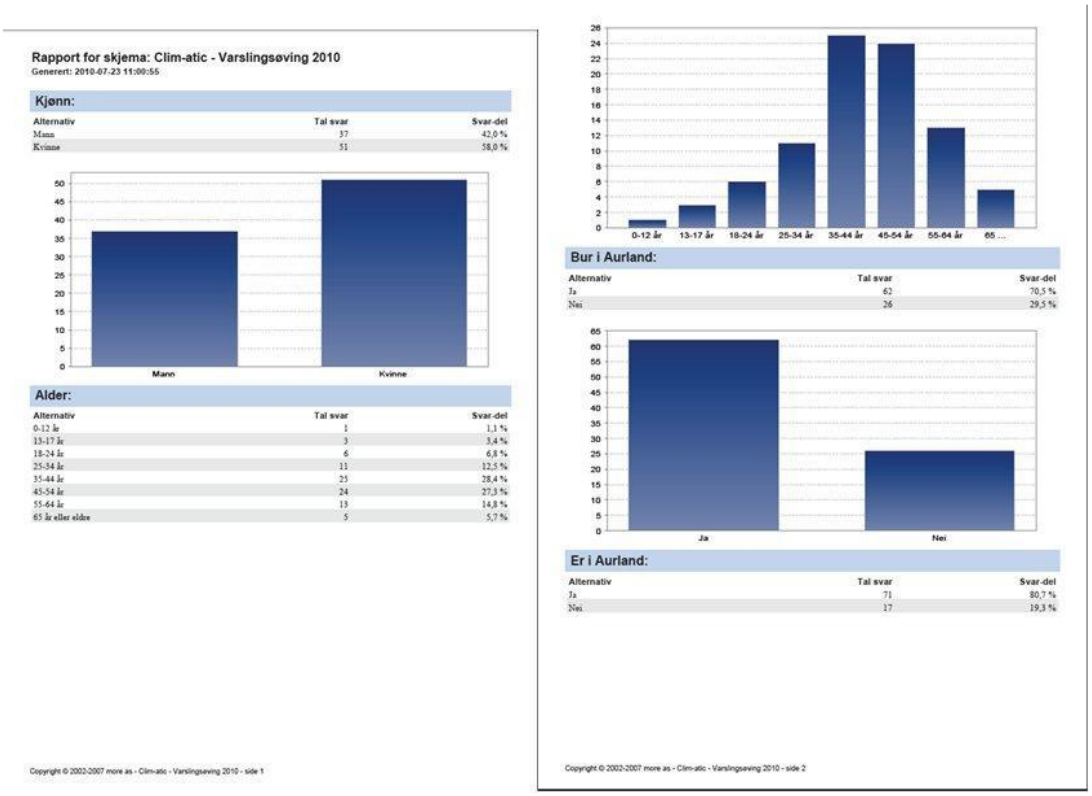
Såkan prosjektet inngår i eit større, internasjonalt prosjekt, vil det og vere viktig å bidra til internasjonal erfaringsutveksling og spreiing av kunnskap ved prosjektslutt.

Det har i dei seinare år vore gjennomført, og er under planlegging, fleire øvingar med telefonbasert befolkningsvarsling.

FAKTA

Informasjonsstraumen mellom myndigheter, medium og befolkninga har ei sentral betyding i krisesituasjonar. DSB har fått i oppdrag av Justisdepartementet å utarbeide eit heilskapleg konsept for kommunikasjon med befolkninga før, under og etter kriser. Det inneberer både ei vurdering av ulike alternativ for eit landsdekkande system for befolkningsvarsling, samt system og organisering som skal sikre heilskapleg kommunikasjon mellom myndigheter og befolkninga. Det overordna målet er å kunne handtere ekstraordinære situasjonar på ein måte som reduserer tap av liv, helse, miljø og materielle verdiar.

Appendix 6 Statistics from the online evaluation form (Available in Norwegian only)



Rapport for skjema: Clim-atic - Varslingsøving 2010

Generert: 2010-07-23 11:00:55

Kjønn:

Alternativ	Tal svar	Svar-del
Mann	37	42,0 %
Kvinne	51	58,0 %

Alder:

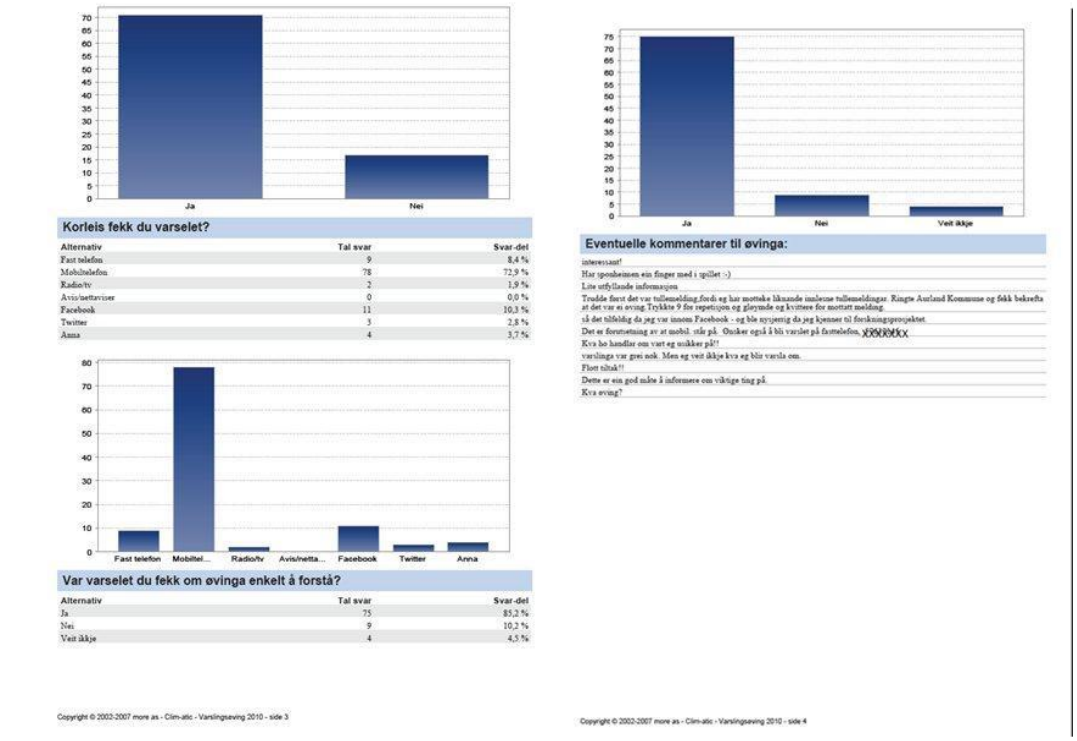
Alternativ	Tal svar	Svar-del
0-12 år	1	1,1 %
13-17 år	3	3,4 %
18-24 år	6	6,8 %
25-34 år	11	12,5 %
35-44 år	25	28,4 %
45-54 år	24	27,3 %
55-64 år	13	14,8 %
65 år eller eldre	5	5,7 %

Bur i Aurland:

Alternativ	Tal svar	Svar-del
Ja	62	70,5 %
Nei	26	29,5 %

Er i Aurland:

Alternativ	Tal svar	Svar-del
Ja	71	80,7 %
Nei	17	19,3 %



Korleis fekk du varselet?

Alternativ	Tal svar	Svar-del
Fast telefon	9	8,4 %
Mobiltelefon	78	72,9 %
Radio/tv	2	1,9 %
Avis/nettaviser	0	0,0 %
Facebook	11	10,3 %
Twitter	3	2,8 %
Anna	4	3,7 %

Var varselet du fekk om øvinga enkelt å forstå?

Alternativ	Tal svar	Svar-del
Ja	75	85,2 %
Nei	9	10,2 %
Veit ikkje	4	4,5 %

Eventuelle kommentarer til øvinga:

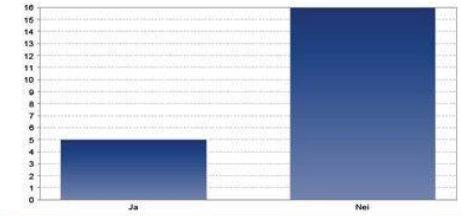
interessant!
Har spesialeinsen ein finger med i spillet :-)
Lite utfyllande informasjon
Trudde først det var tullemelding fordi eg har motteke liknande innleone tullemeldingar. Ringte Aurland Kommune og fekk bekrefta at det var ei øving. Trykkte 9 for repetisjon og gløymde og kvittere for mottatt melding.
så det tilfeldig da jeg var innom Facebook - og ble nysgjerrig da jeg kjenner til forskningsprosjektet.
Det er forumsetning av at mobil. står på. Ønsker også å bli varslet på fastnetefon. xxxxxxxx
Kva ho handlar om vart eg usikker på!?
varslinga var grei nok. Men eg veit ikkje kva eg blir varsla om.
Flott tiltak!!
Dette er ein god måte å informere om viktige ting på.
Kva øving?

Appendix 7 Statistics from the survey (Available in Norwegian only)

Rapport for spørreundersøkelse: Clim-ATIC - Ekstremvêr-/varslingsøving
Generert: 2010-07-26 13:05:15

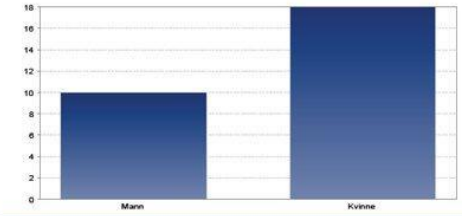
Har du svara på det elektroniske skjemaet?

Alternativ	Tal svar	Svar-del
Ja	5	23,8 %
Nei	16	76,2 %



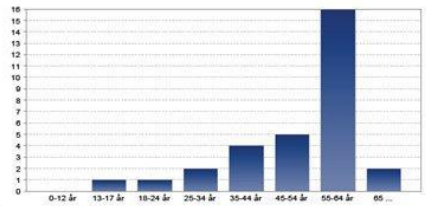
Kjønn:

Alternativ	Tal svar	Svar-del
Mann	10	35,7 %
Kvinne	18	64,3 %



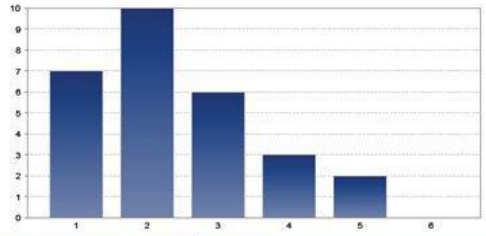
Alder:

Alternativ	Tal svar	Svar-del
0-12 år	0	0,0 %
13-17 år	1	3,2 %
18-24 år	1	3,2 %
25-34 år	2	6,5 %
35-44 år	4	12,9 %
45-54 år	5	16,1 %
55-64 år	16	51,6 %
65 år eller eldre	2	6,5 %



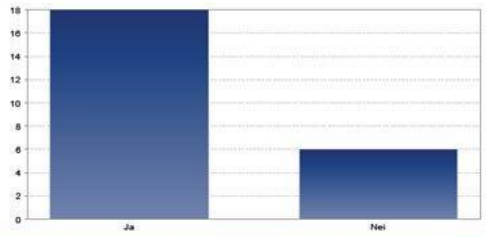
Kor mange bur i husstanden?

Alternativ	Tal svar	Svar-del
1	7	25,0 %
2	10	35,7 %
3	6	21,4 %
4	3	10,7 %
5	2	7,1 %
6	0	0,0 %



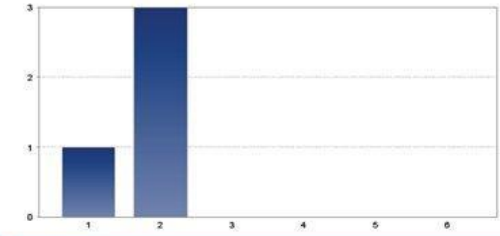
Fekk alle i husstanden (over 12 år) varselet?

Alternativ	Tal svar	Svar-del
Ja	18	75,0 %
Nei	6	25,0 %



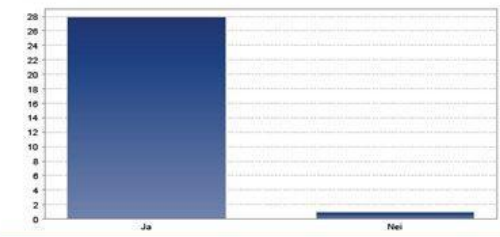
Dersom nei, kor mange fekk ikkje?

Alternativ	Tal svar	Svar-del
1	1	25,0 %
2	3	75,0 %
3	0	0,0 %
4	0	0,0 %
5	0	0,0 %
6	0	0,0 %



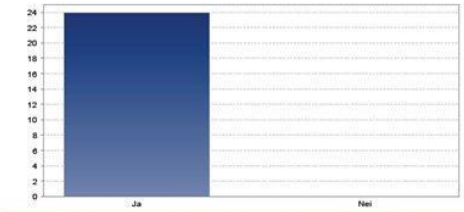
Bur i Aurland?

Alternativ	Tal svar	Svar-del
Ja	28	96,6 %
Nei	1	3,4 %



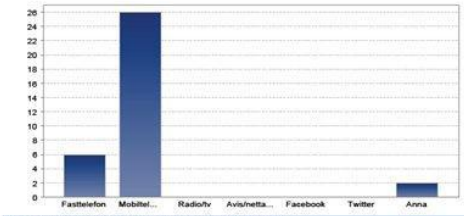
Er du i Aurland?

Alternativ	Tal svar	Svar-del
Ja	24	100,0 %
Nei	0	0,0 %



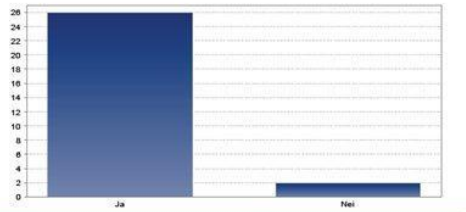
Korleis fekk du varselet?

Alternativ	Tal svar	Svar-del
Fasttelefon	6	17,6 %
Mobiltelefon	26	76,5 %
Radio/tv	0	0,0 %
Avis/nettavisar	0	0,0 %
Facebook	0	0,0 %
Twitter	0	0,0 %
Anna	2	5,9 %



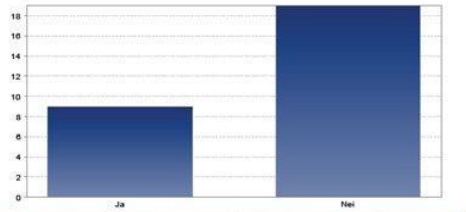
Var varselet du fekk om øvinga enkelt å forstå?

Alternativ	Tal svar	Svar-del
Ja	26	92,9 %
Nei	2	7,1 %



Hadde du høyrt om øvinga før du fekk meldinga?

Alternativ	Tal svar	Svar-del
Ja	9	32,1 %
Nei	19	67,9 %



Kva tykkjer du om å få slike meldingar på telefon (ev sosiale medium) dersom det skulle vere akutte naturfarar eller fare for andre uønskte hendingar i Aurland kommune?

Alternativ	Tal svar	Svar-del
Ja	28	100,0 %
Nei	0	0,0 %