

Climate Change Vulnerability Mapping for the Nordic Region

CARAVAN/MEDIATION Joint Workshop, Stockholm, 9 November 2010

Summary Report¹

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Introduction

CARAVAN (Climate change: a regional assessment of vulnerability and adaptive capacity for the Nordic countries) is a two-year collaborative project (2008-2010)⁵ funded from national sources⁶ in the Nordic-Call of the EU CIRCLE ERA-Net⁷. CARAVAN aims to explore alternative approaches for estimating and mapping vulnerability to climate change at the municipal scale across the Nordic region.

Measures of vulnerability (**V**) typically include three components: exposure to climate change (**E**), sensitivity to its effects (**S**) and adaptive capacity for coping with the effects (**AC**), such that:

$$V = f(E, S, AC) \quad (1)$$

The project has developed a web-based tool for visualising vulnerability to climate change as a function of exposure and sensitivity on the one hand (labelled **ES**, see below) and adaptive capacity (**AC**) on the other, by incorporating approaches used in Norway, Sweden and Finland for assessing climate vulnerability in social and environmental contexts.

This report summarises a half-day stakeholder workshop organised by the CARAVAN project on 9 November 2010 at Stockholm University to explore aspects of vulnerability to climate change among the elderly. It brought together researchers on climate change vulnerability and adaptation with Nordic representatives of national and regional organisations who have responsibility for the care of the elderly.

Objectives of the workshop

The workshop programme and list of participants can be found in Appendices 1 and 2. The purpose of the workshop was to:

¹ MEDIATION Milestone Report 5a: Report on the 1st Nordic case study stakeholder workshops

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⁵ A partnership of the institutions listed in footnotes 2-4

⁶ The Academy of Finland, Research Council of Norway and Swedish Environmental Protection Agency

⁷ CIRCLE (Climate Impact Research Coordination for a Larger Europe) is an ERA-Net project under the European Commission Sixth Framework Programme which seeks to implement a European Research Area (ERA) for the field of climate change, through networking and by aligning national research, see:

<http://www.circle-era.eu/np4/home.html>

1. stimulate a discussion of climate change vulnerability of the elderly in the Nordic region between researchers, care providers and local decision makers;
2. explore risks to the elderly posed by anticipated changes in climate;
3. debate the adaptive capacity available for coping with these risks, and indicators that might be used to represent this;
4. present a prototype web tool for selecting, combining and mapping candidate indicators of vulnerability to climate change in the Nordic region;
5. solicit feedback on how such a web tool might be refined or extended to enhance its usefulness for different potential users;
6. mark the handover of the project from CIRCLE to MEDIATION. Funding from the CIRCLE Nordic-Call ends in 2010, but the project will continue as a case study within the FP7-funded MEDIATION project⁸.

What follows is a short resumé of the main messages emerging from the presentations and discussion.

Presentations

Timothy Carter (SYKE) welcomed the participants, gave a short overview of the CARAVAN project and outlined the objectives of the Workshop (see above).

Marianne Lilliesköld (Swedish Environmental Protection Agency) gave an introduction to CIRCLE ERA-Net as a funding mechanism and its Nordic-Call through which CARAVAN and two other projects, CAREPOL⁹ and COMMUNITY RESPONSE¹⁰, were funded. She reported on the second phase of CIRCLE (2010-2014) which also covers mitigation topics in addition to adaptation.

Karen O'Brien (University of Oslo) presented "Climate change in the Nordic region: Who is vulnerable?" Some of the key questions related to the concept of vulnerability include what is meant by vulnerability, who defines the criteria for it and how can vulnerability be measured? O'Brien concluded that vulnerability includes both objective and subjective aspects, which emphasises the importance of individual perception and experience of vulnerability. As such, she argued that a fuller understanding of vulnerability requires a modification of expression (1) to read:

$$V = f(E, S, AC) + \text{perceptions} \quad (2)$$

where the components taken from expression (1) can be derived and mapped using objective and measurable indicators, but where overall vulnerability also requires consideration of individuals' perceptions of their vulnerability to climate change, which are highly subjective and difficult to measure.

⁸ MEDIATION (Methodology for Effective Decision-making on Impacts and AdapTaTION) project, January 2010 – July 2013 (European Commission, Seventh Framework Programme). In addition to CARAVAN team members, three other partner participants from MEDIATION were also present at the workshop.

⁹ CAREPol (Climate Change adaptation in Norway, Sweden and Finland - Do research, policy and practice meet?), see: http://ilmatieteenlaitos.fi/organisaatio/yhteys_118.html

¹⁰ COMMUNITY RESPONSE (Climate change, community response and multilevel governance), see: http://www.naturvardsverket.se/upload/10_Forskning/Final_report_for_CIRCLE_ERA.pdf

As an example, a study on Norwegian elderly living in Spain (Ruud 2010) suggests that they do not necessarily perceive themselves either as vulnerable to heat waves or as being elderly, even if according to objective measures they might be regarded as both. Though they are objectively more at risk of adverse effects in the warmer Spanish climate than in Norway, unless they had actually experienced the ill-effects of heat stress many were unaware or sceptical of such impacts. Furthermore, many individuals whose social network is limited to the Norwegian diaspora, may find themselves cut off from important local information and announcements (e.g. heatwave warnings).

The presentation pointed out that elderly people are a growing population in the Nordic countries and elsewhere. They often are more sensitive to extreme weather events than younger adults, and this sensitivity increases with age. The social networks elderly people are engaged with can also be an important factor influencing their vulnerability.

Some of the challenges for the CARAVAN project include how to connect the maps and statistics-based indicators of vulnerability with subjective perceptions of vulnerability. Another challenge is how to communicate growing vulnerability of the elderly to the health sector and the authorities. It can also be asked, who has the main responsibility for reducing the vulnerability of the elderly.

Hanna Mela (SYKE) presented "Characterising vulnerability of the elderly for CARAVAN – Indicators of adaptive capacity." Vulnerability is defined as a function of exposure, sensitivity and adaptive capacity – cf. expression (1). The selection of indicators of adaptive capacity in the CARAVAN project was based on a literature review and the availability of comparable statistical information in the three countries: Finland, Norway and Sweden. Adaptive capacity has been defined as the ability of a system to change and to become better equipped to manage its exposure and/or sensitivity to climate impacts. It is often measured as resource availability, e.g. economic, human and technological capital. The indicators of adaptive capacity of the elderly in the CARAVAN project include demographic, socio-economic and health-related indicators.

At present, CARAVAN focuses on addressing future changes in the biophysical components of vulnerability and the current state of its socio-economic components (Figure 1). The biophysical determinants of vulnerability (indicators of exposure/sensitivity) include projected changes by 2021-2050 in climatic factors identified as posing a risk to the elderly, such as high summer temperatures, low winter temperatures and freeze-thaw conditions. The socio-economic determinants (indicators of adaptive capacity) include current statistical data on elderly population and its characteristics in each municipality. However, to be able to describe future vulnerabilities, it would also be necessary to look into how the socio-economic conditions will change in the future. Projections for 2030 are currently available only for one of the indicators, the proportion of the elderly in each municipality. Future work will investigate developing scenarios for other variables, for example by studying historical trends and hypothesising alternative extensions of these trends into the future.

The purpose of vulnerability mapping is to visualise data and identify patterns of vulnerability. It can serve as a point of dialogue with stakeholders and raise awareness on the issues of adaptation to climate change. Vulnerability mapping enables comparison between different municipalities and regions within one country or between different countries. It can also support planning of adaptation policies.

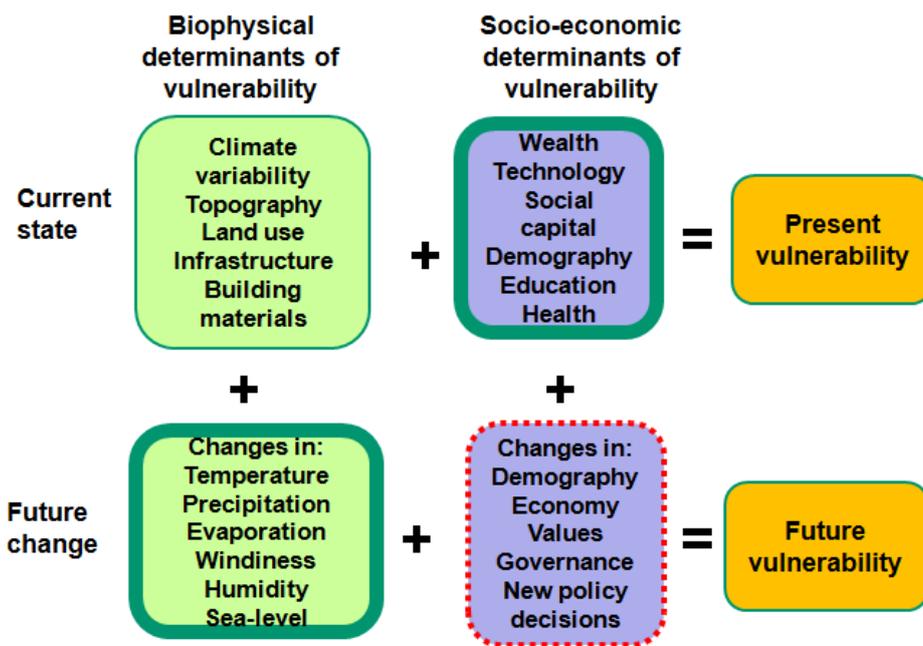


Figure 1. Characterisation of biophysical and socio-economic determinants of vulnerability and their contribution to current and future vulnerability. CARAVAN focuses mainly on addressing the boxes surrounded by thick green lines. Source: modified from Preston and Stafford-Smith (2009).

While maps are an interesting and thought-provoking way of presenting information, the fact that an observer might base decisions on the information provided also places a large onus of data reliability on the map provider. This stresses the importance of applying robust indicators and presenting them in a transparent way.

Moreover, the scale of detail at which mapping is undertaken will largely determine the value of information for the user. For instance, users working at municipality scale may be disappointed by the level of detail of the current version of the web tool, which shows only aggregate information for each municipality, thus potentially obscuring differences that are known to exist within municipalities and might guide climate change adaptation measures at that scale. On the other hand, for a policy maker working at regional or national scale, there may be useful insights to be gained in comparing municipality-level data both within and between the three Nordic countries represented.

Louise Simonsson (University of Linköping) presented the results of interviews made with elderly care experts and representatives of other stakeholder groups in Finland and Sweden. The purpose of the interviews was to obtain qualitative data to support the statistically-based indicators of adaptive capacity. In Norway, although numerous health care experts were approached, interviews could not be arranged as most stakeholders expressed scepticism that vulnerability of the elderly to climate change was an issue worthy of examination.

In the interviews conducted in Finland and Sweden, several factors were identified as increasing the vulnerability of the elderly. Those elderly suffering from such conditions as cardio-vascular and respiratory illnesses, weakening of cognitive abilities or depression as well as those experiencing a poor economic situation, living alone and with few social contacts were seen as especially vulnerable to the impacts of climate change.

Some of the key findings distilled from the sample interviews included:

- A general awareness of the threats that heat-waves pose for elderly people
- Recognition of increasing risks of storms, extreme snowfall and power cuts and their effects, especially in rural areas
- The injury risk of slippery streets was not as clearly connected with climate change and was seen more as a question of street maintenance by respondents in Finland, though accidents involving falling among the elderly was recognised in a climate change context by interviewees in Sweden
- Climate change impacts have not been taken into account systematically at a planning and strategic level in the interviewees' organisations.

Some future developments within elderly care that can have interactions with climate change were recognised. The dependency ratio between numbers of elderly and people of working age is changing and there will be fewer people available to take care of a growing number of elderly in the future. A larger share of the elderly is also expected to be living at home (this is government policy in most Nordic countries), which can increase their vulnerability to heatwaves and other weather events. It was also mentioned that there is a risk of growing polarisation in care provision among the elderly population as well as a widening gulf between municipalities.

Examples of potential adaptation measures that were brought up by the interviewees include:

- Raising awareness of extreme weather events and their impacts on the elderly
- Promotion of a social, healthy and active lifestyle for all (public health)
- A more communal way of living
- Introducing "social janitors" in blocks of flats
- Planning of future urban environments to account for the needs of the elderly

Stefan Fronzek (SYKE) introduced the CARAVAN vulnerability mapping tool, explaining its design and main components. He described the indicators of exposure and sensitivity for the elderly, which are calculated using gridded daily temperature information for the Nordic region. Projected changes are based on climate model outputs for the period 2021-2050 relative to 1971-2000. Currently, only one climate scenario has been used.

Six indicators were included describing exposure to heat-stress, cold-stress and icy conditions. Alternative thresholds for heat- and cold-stress were defined with a fixed threshold for the whole region (heat stress only), a threshold defined by local conditions through selecting a percentile of the distribution of daily values, and a local threshold for persistent heat or cold defined by analyzing the frequency of exceeding a percentile threshold on at least six consecutive days. These alternative indicators describe different aspects of heat- or cold-related stress and result in different spatial patterns of exposure. No quantitative information on the sensitivity of elderly people to different temperature conditions have yet been incorporated into these indicators. Values for municipalities were obtained by averaging the grid cell values that cover a municipality's area.

The mapping tool allows users to select and combine several indicators into indices of exposure/sensitivity (*ES*) and adaptive capacity (*AC*). Indicators can be mapped individually in their original measurement units. However, in order to combine them into composite indices it is necessary to adjust them to standard units through a normalisation procedure. This

involves linearly scaling values for each municipality relative to the municipality range, where the minimum value is assigned a value of 0 and the maximum a value of 1. Composite indices are produced by averaging the normalised values.

Vulnerability indices can be depicted as a combination of normalised *ES* and *AC* indicators. High values of *ES* contribute to high relative vulnerability. In contrast, high values of *AC* reduce the level of relative vulnerability. A vulnerability index (*V*) can then be calculated as an exact formulation of the function in expression (1):

$$V = [ES + (1-AC)] / 2 \quad (3)$$

Possible extensions to the mapping tool include development of additional scenarios for a widened set of indicators of adaptive capacity (currently only population projection are provided for 2030), a better representation of uncertainty in exposure and sensitivity indicators (i.e. requiring a representative set of climate projections), and development of indicators of potential impact, which combine elements of exposure and sensitivity. An example of the latter would be estimates of future levels of excess mortality among the elderly due to heatwaves, using statistical relationships established from historical mortality and temperature data.

A further extension would be to map vulnerability to climate change for other sectors or target populations. Note that the web tool already presents indicators related to the vulnerability of agricultural livelihoods to future climate change in the Nordic region, in addition to indicators for the elderly which were the subject of the workshop.

Lynn Rosentrater (University of Oslo) demonstrated the CARAVAN mapping tool and its use. She presented various options for selecting indicators of exposure/sensitivity and adaptive capacity and how these produced vulnerability maps over the Nordic region (Figure 2). Various functions of the tool, such as weighing the indicators and zooming to a certain region or municipality were also presented.

Vulnerability was depicted as a multi-dimensional concept with no broadly agreed operational definition and no common metric to express it. Thus, normative inputs are always required in vulnerability assessments, and any agreed approach to assess vulnerability needs to be socially constructed in a negotiation process. Moreover, decisions about how to compare potential impacts of climate change also require subjective judgements. For these reasons, users are accorded the greatest possible flexibility in selecting and then combining indicators according to a personal judgement of their relative importance in determining vulnerability.

Reinhard Mechler (IIASA, Austria) provided a short introduction to the MEDIATION project, focusing on how vulnerability and risk are addressed in the project. MEDIATION seeks to enhance the provision of scientific and technical information about climate change impacts, vulnerability and adaptation options in Europe. It does so through the following activities:

- analysis of the decision-making context
- inventory, review and further development of methods and metrics for (a) impacts and vulnerability analysis and (b) costing of impacts and adaptation options
- development of an overarching integrated methodology
- development of a flexible, interactive common platform for knowledge sharing

- disseminating this knowledge through a dedicated outreach and training programme

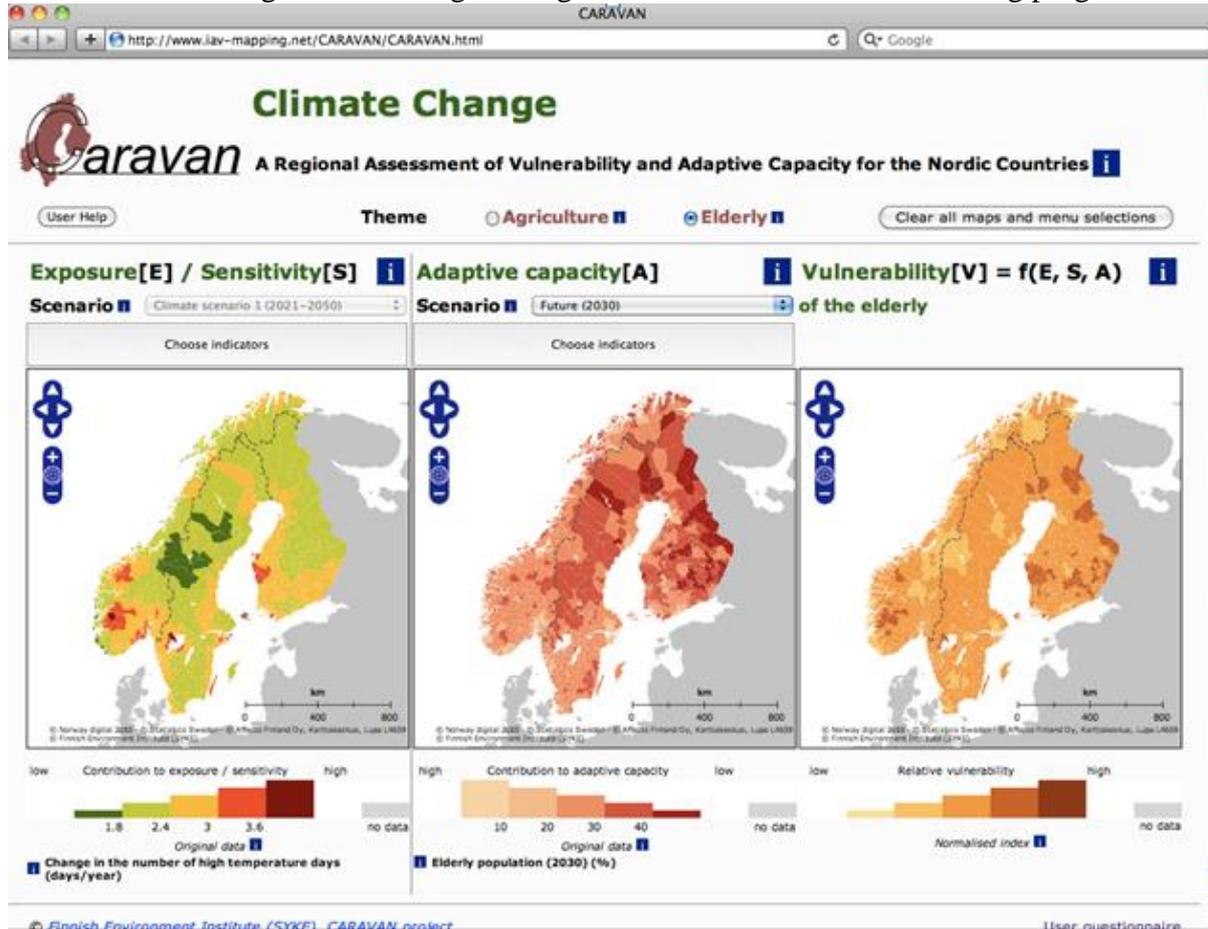


Figure 2. An example screen shot of the CARAVAN mapping tool showing how indicators of exposure/sensitivity (left panel) and adaptive capacity (central panel) have been combined into a vulnerability index (right panel).

Mechler introduced risk as a concept and as a component of vulnerability, and gave examples of European scale risk mapping exercises on flood risk as well as drought and heatwave risk related to agriculture.

General discussion on vulnerability of the elderly

Discussions and a brief presentation (by Sari Jokinen, THL, Finland) centred on the present-day risks of climate events for the elderly, the adaptive mechanisms already in place to cope with extreme weather events, and ideas about possible improvements in future adaptive capacity in light of projected climate and socio-economic developments.

Present-day risks and sensitivities

As with all age groups, the elderly vary widely in their health and well being. That said, the average health condition of elderly persons is lower than younger people, and the elderly tend to be less readily adaptable to change. The main weather effects to which elderly are sensitive include:

- *Heat*: increased risk of dehydration and heat stroke; old people generally have less regulation of their body temperature
- *Snow and ice* conditions: risk of falling is higher for old people
- *Storms*: power outages can pose risks for persons dependent on electrical devices

An observation, made by several participants, was that first-hand experience of extreme weather was often an important prerequisite for raising awareness. For example, in 2010 Finland experienced weather extremes, including an exceptionally snowy winter and record high summer temperatures in many parts of the country. Newspaper reports during and after these events provide a clear indication of some of the challenges faced by the elderly. In July 2010 heat stress caused approximately 500 excess deaths¹¹, and cases of dehydrated elderly people were common. Moreover, for some periods of the summer the air quality in many parts of Finland deteriorated to hazardous levels, due to widespread forest fires in Russia, causing problems especially for people with respiratory illnesses. These severe effects brought into stark relief the need to develop safety plans in communities and organisations that pay special attention to taking care of vulnerable groups such as the elderly in such extreme situations.

Current capacities for coping with extreme weather conditions

When discussing different factors contributing to the vulnerability of the elderly, living alone was mentioned by stakeholder participants as a key factor. This is in contrast to those elderly persons who live in institutions or sheltered homes, who generally have support personnel available to assist them during extreme weather conditions.

The discussion also raised the issue of recent policies in some Nordic countries to support elderly people living at home and postponing their move to institutions. Elderly people themselves often prefer to live at home, and independent living may also help to preserve physical and cognitive skills. However, if independent living is not sufficiently supported by different services and social networks, it can increase the vulnerability of a person in exceptional situations. On a more philosophical level, there was also discussion about what level of State intervention was appropriate, i.e. defining the responsibility that should be assumed by institutional authorities in support of vulnerable individuals.

Vulnerability maps often depict the elderly in rural areas as having relatively lower adaptive capacity than in urban centres. Rural areas typically have an above average elderly population, due to out-migration of working-age people. Many of the elderly live alone with longer distances to travel to obtain services, which are themselves often in decline. However, some participants pointed out that people living in rural areas may actually be better prepared and equipped for dealing with extreme weather conditions, are more familiar with their neighbours who in turn are more likely to provide assistance than in urban areas. In general, a culture of neighbourly help was seen as important in reducing vulnerability of the elderly, both in urban and rural areas.

Future challenges for improving adaptive capacity

The importance was stressed of ensuring a comfortable living environment in areas immediately accessible to the elderly. Access to green areas and parks that provide shade was

¹¹ National mortality among persons aged 65 and older in July 2010 exceeded the average July mortality during 2003-2009 by 489 (Data from National Institute for Health and Welfare, Kuopio, Finland)

seen as important from the point of view of building a good living environment and for promoting adaptive capacity to high temperatures. Living environments should be built without barriers to movement and include resting places and protection from extreme weather, such as "intermediate", semi-warm spaces.

It was recognised that even if the vulnerability maps generated often indicate higher vulnerability in rural areas, future populations (including the elderly), are likely to be increasingly concentrated in urban areas, actually increasing their vulnerability even if the share of elderly people of the whole population is higher in rural areas. In this connection, it was thought useful to account for migration patterns between municipalities as an additional indicator of potential vulnerability. Many rural municipalities, at least in Finland, have seen a strong out-migration in the past and are expected to continue seeing it. This puts a burden on sustaining public services including health care services. There are also potential seasonal factors that can exacerbate crisis situations. For example, severe heatwaves tend to coincide with the summer holiday period, during which many regions often experience reduced coverage by health care personnel.

Feedback on the mapping tool

All workshop participants from outside the CARAVAN project were invited to provide feedback on the usefulness and usability of the mapping tool, with presentations offered by Maria Khovanskaia (REC, Hungary) and Emilie Malmström (SKL, Sweden). The tool was regarded as a valuable device for raising awareness of climate change vulnerability. In general, it was perceived to be visually attractive and colourful. However, some functions were not presented clearly enough: for example, the buttons for selecting and then mapping indicators were not easily identifiable. Search functions to easily zoom to a municipality were seen as a useful possible extension of the web tool, especially if sub-municipality-scale detail can be provided.

In general, maps were seen as a good way of communicating aspects of climate change vulnerability to planners, who are accustomed to reading maps and use them in their everyday work. Most of the selected indicators were regarded as useful for describing some issues of vulnerability.

It was observed that one of the indicators of adaptive capacity (proportion of elderly receiving home health care) is more likely to increase adaptive capacity the higher the value, rather than decrease it. This is based on the assumption that municipalities with a better economic situation can more easily offer home health care services to their citizens while poorer municipalities have stricter requirements for deciding who is entitled to home health care. Thus, receipt of home health care is not necessarily directly related to the condition of an elderly person. This ambiguity in the direction of effect of certain indicators on vulnerability is already addressed through an option to reverse the direction of effect from a default case.

The intended target group of the mapping tool was unclear to some participants, and it was suggested that this should be clarified. The municipality-scale information that is provided on the mapping tool was thought to be useful on national to regional scales. Planners of cities or municipalities, however, would require more spatial detail for their decisions. Some ideas were exchanged on how pockets of high vulnerability might be recorded on maps that currently show only municipality-level indicators. It was suggested that options for selecting

information for individual cities might be an interesting addition to CARAVAN. Other suggestions for enhancing the tool included:

- providing examples of how the maps could be used in planning adaptation measures and what kind of adaptation issues might be addressed with the data provided by the tool
- including information on adaptation options relevant to the vulnerabilities being mapped
- indicating the locations and distributions of various key stakeholder organisation that could be contacted for possible follow-up actions in each sector
- mentioning the limitations of the data presented, in order to avoid too strict interpretation of the results. Given that all maps are selected on the basis of user choices, it was thought prudent to add a disclaimer on the front page to explain that while the selection and documentation of the data included in the web tool are the responsibility of the research team, the actual use (mapping) and possible interpretation of these data are wholly the responsibility of the user
- putting in place a means for updating indicator data in the future

Conclusions

Even if there is general awareness of extreme weather events such as heatwaves and their implications for the elderly, the issue of elderly people and climate change is not easily defined as a responsibility of a certain administrative level or sector. There is a need for awareness-raising and strategic level planning regarding how to take the elderly into account when preparing for the impacts of climate change in various organisations.

Representation of different stakeholders in the workshop was limited, which indicates that the issue is relatively new and not yet considered in many organisations. It also seems that there is more interest in the issue among Finnish and Swedish stakeholders, while in Norway the topic is not currently considered as a high priority.

The CARAVAN mapping tool is seen as a useful way of presenting information on the various aspects of vulnerability to climate change. The maps are regarded as more useful for regional and national level planning, while at municipality scale their utility appears limited, as municipality-level planners usually require data at a higher spatial resolution.

References

Preston, B.L. and Stafford-Smith, M. 2009. Framing vulnerability and adaptive capacity assessment: discussion paper. *CSIRO Climate Adaptation Flagship Working Paper Series 2*, 62 pp. <http://www.csiro.au/resources/CAF-working-paper-2.html>

Ruud, C. 2010. "Vi har det fint her nede". Klimasårbarhet blant norske eldre - oppfatninger av klimaendringer og implikasjonene for tilpasning ("We're doing well down here." Climate vulnerability among ageing Norwegians -- perceptions of climate change and the implications for adaptation.). Master Thesis in Human Geography (SGO4090), Department of Sociology and Human Geography, University of Oslo, 123 pp.

Climate change vulnerability mapping for the Nordic region

CARAVAN/MEDIATION Joint Workshop, Tuesday 9 November 2010

Organised in association with the **NORDCLAD-Net International Conference:
Climate Adaptation in the Nordic Countries: Science, Practice, Policy (8-10 Nov 2010)**

Location: Kungstenen (7th Floor), Aula Magna, Stockholm University, Sweden

Final Programme

13:00 – 13:30	Registration
13:30 – 13:45	Welcome, introduction to Workshop and round table introductions (Name, Position, Institution, Interest in Workshop) <i>Timothy Carter, Climate Change Programme, Finnish Environment Institute (SYKE)</i>
13:45 – 14:00	Reflections on the CIRCLE Nordic Call <i>Marianne Lilliesköld, Swedish Environmental Protection Agency, Stockholm</i>
14:00 – 15:30	Session I: Vulnerability of the elderly to climate change in the Nordic region Chair: Timothy Carter
14:00 – 14:15	Climate change in the Nordic region: who is vulnerable? <i>Karen O'Brien, Dept of Sociology & Human Geography, University of Oslo</i>
14:15 – 14:30	Characterising vulnerability of the elderly for CARAVAN <i>Hanna Mela, Climate Change Programme, Finnish Environment Institute (SYKE)</i>
14:30 – 15:00	Perspectives on climate change risks for the elderly: <i>Pia Westford, Swedish Civil Contingency Agency, Karlstad</i> <i>Sari Jokinen, National Institute for Health and Welfare (THL), Helsinki</i>
15:00 – 15:15	Results of a mini-survey on perceptions of climate change risk for the elderly <i>Louise Simonsson, Centre for Climate Science & Policy, University of Linköping</i>
15:15 – 15:30	General discussion: Vulnerability of the elderly to climate change
15:30 – 16:00	Refreshments
16:00 – 17:30	Session II: Web-based vulnerability mapping tool Chair: Karen O'Brien
16:00 – 16:15	Design and elements of the CARAVAN mapping tool <i>Stefan Fronzek, Climate Change Programme, Finnish Environment Institute (SYKE)</i>
16:15 – 16:30	Online demonstration of the CARAVAN mapping tool <i>Lynn Rosentrater, Dept of Sociology & Human Geography, University of Oslo</i>
16:30 – 17:00	Observations and feedback on the mapping tool and general discussion <i>Susanna Kankaanpää, Helsinki Region Environmental Services Authority (HSY)</i> <i>Emilie Mahlström, Swedish Association for Local Authorities & Regions, Stockholm</i> <i>Maria Khovanskaia, Environmental Policy Directorate, REC, Szentendre, Hungary</i>
17:00 – 17:15	Vulnerability assessment in the context of the MEDIATION project <i>Reinhard Mechler, Vulnerability and Risk Program, IIASA, Laxenburg, Austria</i>
17:15 – 17:25	Discussion
17:25 – 17:30	Closing remarks and next steps: from CARAVAN to MEDIATION <i>Timothy Carter, Climate Change Programme, Finnish Environment Institute (SYKE)</i>
17:30	Close and depart to NORDCLAD-Net Conference Reception at City Hall

CARAVAN/MEDIATION Workshop: Climate change vulnerability mapping for the Nordic region, Tue 9 Nov 2010

List of participants

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