PEER REVIEW REPORT

Finland

2014

Building resilience to disasters:
Assessing the implementation of the Hyogo Framework for Action (2005-2015)

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The United Nations Office for Disaster Risk Reduction

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Introduction

Having established the objective to be the safest country in Europe, Finland volunteered for an evaluation of her risk management policy through a peer review process. After a first pilot peer review in the United Kingdom, jointly conducted under the auspices of the European Commission, the Organisation for Economic Cooperation and Development (OECD) and the United Nations Office for Disaster Risk Reduction (UNISDR), this report presents the second peer review aiming to assess progress in the implementation at national level of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA)[1]. This review is undertaken within EU cooperation in disaster risk management, which provides a framework for cooperation and mutual learning between Member States in the field of disaster risk management and civil protection. It benefited from OECD High-Level Risk Forum guidance and experience in conducting peer reviews in disaster risk management policies.

The peer review process, a governance tool, takes advantage of a policy exchange among peers to facilitate the exchange of best practices, examining the performance of the 'reviewed country' in disaster risk management policy. It helps to strengthen mutual understanding and trust in the results, based on exchange of experiences and non-binding recommendations aimed at policy improvement.

Finland volunteered to be the second country to undertake such a peer review, with the overall objectives to:

- enhance the effective implementation of and reporting on the HFA, contributing to improved policy-making on disaster risk reduction through external assessment and mutual learning;
- increase the consistency between the national disaster risk reduction policies and stimulate transferability of good and innovative practices;
- contribute to developing and implementing EU policy initiatives in disaster risk management in EU Member States as well as in neighbouring countries;
- encourage awareness-raising through broad involvement of stakeholders in the review process and wide dissemination of the results;
- foster policy dialogue in Europe and enhance regional cooperation between countries exposed to common hazards and risks.

Review process

This report contains findings from the Peer Review mission, which was carried out from 7-11 October 2013 and aimed to: 1) establish state-of-the-art approaches to each of the HFA Priorities for Action; 2) identify good practices and shortcomings/areas needing improvement; and 3) develop recommendations to achieve further progress. The five HFA Priorities for Action and the EU disaster risk management policy priorities are strongly linked and their deeper review allows closer integration between these instruments and an assessment of the impacts of relevant EU policies and actions at national level that contribute to the implementation of the HFA.

To gather the necessary information, more than 37 stakeholders were interviewed from 20 stakeholder organisations, including central governmental authorities and agencies, non-governmental organisations (NGOs), volunteer organisations, academia and businesses (see Annex for the complete list). The interview panels took place in Helsinki at the Ministry of Interior, at the Finnish Meteorological Institute (FMI) and in Kerava at the Finnish Emergency Response Centre.

From report to action: Follow-up to the Finland peer review report

This report identifies good practices and areas for improvement and proposes a series of recommendations across the five HFA priorities. It is up to the Finnish Government and risk management stakeholders to consider how these could best contribute to achieving their objective of a resilient society and sustain a national policy dialogue.

This review could also be of broader relevance, helping countries in the EU and beyond to reflect and strengthen the implementation of risk management policies. It will contribute to stronger resilience of nations and communities by enriching the European and international disaster risk reduction knowledge-base of risk management practices.

It will also contribute to fostering the use of peer review processes as an effective tool for exchanging experience and steering progress between countries in disaster risk management, and monitoring the implementation of agreed commitments.

[1]A first disaster risk reduction peer review process was conducted in the United Kingdom in 2012-2013. The report is available here: http://ec.europa.eu/echo/civil_protection/civil/pdfdocs/prevention/UKPeer_Web.

Key findings, assessment and recommendations

Finland has set the objective to become the safest country in Europe with the most effective rescue services. If the country's exposure to disaster risks appears lower than other EU or OECD countries, its specific vulnerabilities to major shocks justify such ambitious public policy goals. The high dependence on critical infrastructures and global supply chains for the security of Finnish society and economy, its sparse population in remote areas, and its Nordic climate conditions are all factors shaping the risk portfolio Finland has to manage and prepare for.

In this context, Finland has developed advanced policies and capacities in risk management, with well-established cutting-edge national strategies. These are based on whole-of-society approaches to secure the vital functions of society, and to develop self-awareness. These policies benefited also from a high level of trust among citizens, a cooperative attitude in society and a sense of solidarity, and high-quality public services from national to local levels. Furthermore, considerable use of research and information and communications technology (ICT), and the highly developed education system and social policies in Finland, contribute to an effective national risk management system which takes advantage of state-of-the-art innovations.

The Finnish disaster risk management system boasts:

- An ambitious whole-of-government and whole-society approach to address all-hazards and threats.
- A strong sense of autonomy and self-preparedness among the population.
- Well-developed interactions with the private sector to ensure business continuity.
- A significant use of research and technological innovation to support policies and capacities.
- An open-data policy allowing appreciable availability of risk-related information.
- Government agility, with a willingness to reform and learn from past experience.
- Strong regional cooperation mechanisms supporting risk management.

These are strong assets and Finland is generally well prepared. Its low risk profile limits real-life experience with large-scale or more frequent disasters. Still, the country is facing a number of structural and societal challenges, including an ageing society, urbanisation, interconnectedness, globalisation and the changing hazard patterns caused by climate change. These represent a threat to maintaining a high level of resilience. The constrained fiscal situation in the follow up to the economic crisis requires the adaptation of the risk management system in Finland toward more cost-effectiveness from national to local levels, while maintaining its existing capacities. Addressing these challenges requires the strengthening of linkages for policy implementation and monitoring and the tackling of the risk perception gap across levels of government. Preparing for large-scale risks and increasing prevention and risk reduction efforts should also be further embedded in national policy.

Main Recommendations

HFA Priority 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation

The ongoing reform of local authorities should address the risk-perception gap between national and local governments and the related division of responsibilities. It should also ensure that capacities to address all-hazards and threats remain available locally according to commonly agreed safety and protection levels. Increased partnerships between disaster risk reduction stakeholders at the local and regional levels could aim to more effectively co-ordinate prevention policies with emergency preparedness and planning. The National Disaster Risk Reduction Platform could also enlarge its participation to parliamentarians, local authorities, business sectors and NGOs to facilitate further policy development. Finally, a comprehensive monitoring system for disaster risk reduction from the national to the local level with clear outcomes, policy targets and corresponding resources could be an effective instrument to govern reforms on the basis of cost-benefit analyses and performance assessment. It would position Finland as a model in disaster risk reduction at the international level, corresponding to the ambition of its strategy.

HFA Priority 2: Identify, assess and monitor disaster risks and enhance early warning

The risk assessment process in Finland would benefit from a more comprehensive approach and better coordination from the national to the local level. This should include improving the methodology for assessing large-scale risks nationally and the harmonisation of regional risk assessments. Flood risk assessment efforts should continue to map and characterise potential impacts of fluvial and urban floods, including water levels at the housing scale, so that prevention and emergency preparedness can be precisely tailored. The Finnish multi-hazard early warning system could further increase its efficiency when the flood warning centre is established, and through two-way interactions with risk management stakeholders and the public at risk. Finland should also continue its active cooperation within the EU and with neighbouring countries in monitoring and

warning systems to enhance its preparedness for large-scale or cross-border disasters, ensure economies of scale, and exchange innovative practices.

HFA Priority 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels

Finland needs to strengthen efforts to raise the awareness and self-preparedness of its population, especially for 'new' risk scenarios like pandemics, power outages or cyber threats. The efficiency of policies in this domain should be evaluated through regular surveys and polls. The recognised quality of the Finnish educational system provides an opportunity to strengthen efforts in building a culture of resilience, by inviting the Ministry of Education to the National Disaster Risk Reduction Platform and further developing disaster risk reduction-related education materials. It is also through maintaining appropriate funding in research and innovation that Finland will keep capitalizing on science and knowledge to continue improving its disaster risk management policies and practices.

HFA Priority 4: Reducing underlying risk factors

The climate change adaption strategy of Finland could refer more strongly to the mitigation of natural hazards and disaster risk reduction. At the local level, the flood working groups could increase their scope and outreach by including NGOs and representatives from the private sector to build a strong culture of flood resilience at local level. Planned investments in structural flood protection infrastructure should also be accompanied by a greater focus on non-structural measures and green infrastructures. The revision of the land-use and building code legislation should clarify responsibilities from the local to the national levels and better link risk assessment processes to development planning, particularly in urban areas.

HFA Priority 5: Strengthen disaster preparedness for effective response at all levels

Harmonising disaster risk management capabilities from the national to the local level with the risk analysis conducted in a national risk assessment should be a key objective of the ongoing reform of rescue services. Dedicated nationwide and inter-agency emergency plans should also be developed to address large-scale emergencies and be regularly tested through emergency drills. It is through further development of trans-boundary cooperation between the rescue regions and with the national government, as well as between agencies and sectors, that the capacity to respond to large-scale emergencies will be reinforced. Regarding financial recovery, citizens could be more widely informed on the new flood insurance scheme, and the benefits of the reform should be evaluated regularly over future years.

HFA Priority 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation

A highly performing national policy and legal framework for disaster risk reduction

HFA Core Indicator 1.1: National policy and legal framework for disaster risk reduction exists with decentralised responsibilities and capacities at all levels

The objective of the Finnish Government is to make Finland the safest country with the most effective rescue services in Europe, as highlighted in the Security Strategy for Society adopted in 2010. This ambition is reflected in a comprehensive legal and policy framework for disaster risk reduction, which has been significantly renewed over the last five years. The Rescue Act, covering prevention, preparedness and response, was amended in 2011 and lays down, among other things, the tasks of rescue services and the administration and the powers of rescue authorities from national to local levels. The Emergency Powers/Readiness Act aims to guarantee the nation's livelihood and the national economy, maintain law and order, protect the basic rights of citizens and safeguard the territorial integrity and independence of the nation in extraordinary situations. A real specificity of Finland is the Security of Supply Act, which aims to safeguard all economic activities that are necessary for maintaining the population's livelihood, the country's economy and national defence during a crisis.

The Government has furthermore set up a comprehensive strategic framework for safety and security by adopting a number of strategies related to risk management. The Security Strategy for Society establishes a whole-of-government approach to security with the aim of securing all the vital functions of society[2] in all situations. It is complemented by the Internal Security Programme, which focuses on measures to prevent and resolve problems that undermine everyday security through a whole-of-society approach.

Other important legislative acts referring to disaster risk reduction include the Land Use and Building Act and the Environmental Protection Act, which aim to reduce the underlying risk factors and are currently under revision (see HFA Priority 4). Finland is also a pioneer in the implementation of climate policies, being the first country in Europe to adopt in 2005 a National Strategy for Adaptation to Climate Change, as an independent part of the wider National Energy and Climate Strategy, and updating it on a regular basis − with the latest one in 2013. As part of Finland's disaster risk reduction policy, its development and cooperation policy should also be highlighted: Finland has one of the most comprehensive approaches to disaster risk reduction in its external cooperation policy, being one of its main priorities[3]. Finland supports developing countries to build disaster resilience through the Finnish Humanitarian Assistance Policy and the Development Policy Programme.

The implementation of this comprehensive set of policies and wide-ranging legislation is adapted to the Finnish institutional setting; it combines the assignment of strategic tasks and responsibilities at the national level to responsible line ministries under the responsibility of the Prime Minister's Office, together with operational implementation from both national technical agencies and independent local governments. At national level, while many ministries are involved in the Security Strategy tasks related to disaster risk reduction are under the responsibilities of the Ministry of the Interior, for emergency preparedness and response, Ministry of Agriculture and Forestry together with Ministry of the Environment, for prevention of floods and droughts, and Ministry of Finance and other sectoral ministries, for business continuity. The Prime Minister's Office also maintains capacities for crisis management. National technical agencies, such as the Finnish Meteorological Institute, Finnish Environment Institute (SYKE), Emergency Response Centre Administration and National Emergency Supply Agency, have specialised mandates for hazard monitoring and mapping, and early warning − or to ensure supplies availability, respectively.

At the local level, the 320 municipalities have a mandatory responsibility to provide welfare as well as rescue services for their citizens. In this strongly decentralized political system, municipalities can regroup themselves at the regional level to manage these services with varying administrative borderlines depending on the policy domain. There are now 22 rescue regions in Finland, where rescue services organise their operations. While they are under the responsibility of local authorities, the rescue services have to follow guidelines and regulations from the Ministry of the Interior, which oversees their coverage and the quality of services in the rescue regions. Since a 2010 reform, Finland has a more streamlined regional state administration to control and regulate policy implementation at the local level in areas related to disaster risk reduction, such as environment, land use or safety. Several administrations have now been regrouped in six Regional State Administrative Agencies (AVI) and 15 Centres for Economic Development, Transport and the Environment (ELY Centres). This reorganisation of the administrations may continue in the future with on-going reforms to reduce the number

[2] The vital functions include: management of government affairs; international activity; Finland's defence capability; internal security; functioning of the economy and infrastructure; the population's income security and capability to function, and psychological resilience to crisis.

[3] 2012, OECD's Review of the Development Co-operation Policies and Programmes of Finland (http://www.oecd.org/dac/peer-reviews/PRFINLAND2012.pdf)

of municipalities. Finally, the specificity of the Åland Islands autonomous region makes its risk management policy rather independent from that of the central government.

Disaster risk reduction resources

HFA Core Indicator 1.2: Dedicated and adequate resources are available to implement disaster risk reduction activities at all administrative levels

Funding for risk management comes from different sources such as Government budget, municipalities budget and specific financial mechanisms. As in most other European and OECD countries, Finland has not made a comprehensive estimation of the resources spent on disaster risk reduction from the national to the local level. At the national level, resources for risk management are in fact embedded in the general budget of each responsible ministerial department, as well as for technical agencies. The specific funding mechanism of the National Emergency Supply Agency, financed by consumption through VAT, secures its large budget. It is aimed at guaranteeing the availability of all forms of supplies to ensure business continuity in all sectors (see HFA Priority 4). Citizens also contribute through the fire tax, which adds to the fire prevention fund (€9 million per year). Developers contribute by financing shelters in all new buildings (€39 million per year).

Overall, resources from the national budget appear to have covered well the funding needs to ensure the proper implementation of national strategies in risk management, as in other areas of public policy. As further fiscal consolidation may be needed in the medium term to tackle new economic challenges, Finland may face competing demands for public funding in the future, requiring risk management activities to demonstrate further their cost-effectiveness.

This contraction in resources is particularly important at the local level. Municipalities are the principal contributors to the budgets of regional rescue services, estimated at a total of €385 million. They have a strong independence from central government to decide their budget allocations, with 50 per cent of their budgets coming from local taxation. In the current context, where many municipalities are facing budgetary difficulties, ensuring that rescue services have the same level of preparedness at the local level could become more challenging, especially when it comes to persuading politicians to make it a priority given the country's low risk profile. The on-going reforms of local government, which propose incentives to merge municipalities, as well as those of the social and healthcare system and of the rescue services, are forward looking initiatives aimed at addressing this budgetary challenge for risk management. Plans to reduce the number of rescue regions were considered as part of this process, but were not agreed upon because of the political, social and economic costs involved in such reform.

Community participation and decentralisation

HFA Core Indicator 1.3: Community participation and decentralization are ensured through the delegation of authority and resources to local levels

As previously described, Finland is a decentralized country which delegates a wide range of responsibilities to the local level, along with the capacity to levy taxes. As the providers of two thirds of the public services, Finland's municipalities are self-governing entities with many rights to decide on their own matters, including rescue services, and other domains related to disaster risk reduction. The organisation of the municipalities in regional rescue services guarantees a better coordination and efficiency, while their cooperation in other policy areas related to disaster risk reduction is ensured through the Regional Councils which regroup them, or other proper arrangements (such as at basin level for flood management). The delineation of responsibilities between local government and the State and its administration at the local level has been clarified in the recent administrative reform of 2010. Still, there is an on-going debate on furthering the administrative reform to gain more efficiency in public service delivery and ensure better linkages for policy implementation from national to local levels. Suggested reforms, including a reduction of the number of municipalities, the harmonisation of the regional boundaries across policy areas, and centralisation of some responsibilities, such as the rescue services, are part of the current policy options.

The tradition of local autonomy in Finland is combined with a sense of community, which is particularly developed at the local level. This is reflected in the engagement of a wide range of associations and local volunteers in disaster risk reduction and encouraged by legislation and policies. Section 52 of the Rescue Act specifically requires the promotion of voluntary activities. The Internal Security Programme aims to strengthen community participation in disaster risk reduction and many NGOs are active in supporting social policies at the local level and developing resilience planning. For example, the Finnish National Rescue Association works with a number of voluntary local organisations with the aim of improving local resilience. Such policies are nowadays increasingly necessary, as the traditionally strong sense of community solidarity and self-help is challenged by the ageing population and urbanisation.

National multi-sectoral platform for disaster risk reduction

HFA Core Indicator 1.4: A national multi-sectoral platform for disaster risk reduction is functioning

The implementation of the governmental Security Strategy for Society is under the responsibility of the Head of Preparedness in each ministry. The Meeting of Heads of Preparedness is a permanent cooperation body which ensures multi-sectoral coordination among governmental departments in this area. In addition, the Finnish Ministry of the Interior in 2010 appointed a National Disaster Risk Reduction Platform as a permanent network which gathers national agencies, local authorities, the research community, as well as civil society organisations[4], as per the standards of the Hyogo Framework for Action. This Platform has allowed Finland's disaster risk reduction multi-stakeholders to gain a good understanding of disaster risk reduction actions undertaken by each of them, to identify where further progress could be made to reduce risks, map out research projects and coordinate international cooperation in disaster risk reduction. Its Action Plan, as well as the self-assessment HFA reports it produces, highlight all these initiatives. If NGOs' representation to the Platform has increased since its beginning, the participation of local authorities and the business sector remains low, and there is no linkage with parliamentarians. The National Platform also represents Finland internationally at the European Forum for Disaster Risk Reduction and other UNISDR activities.

[4] Ministry of the Interior, Ministry for Foreign Affairs, Prime Minister's Office, Ministry of Agriculture and Forestry, Ministry of the Environment, Ministry of Social Affairs and Health, Ministry of Transport and Communications, National Emergency Supply Agency, Local and Regional Government Finland (NGO), Finnish Meteorological Institute, Finnish Environment Institute, Institute of Seismology (University of Helsinki), Finnish Red Cross (NGO), Finnish National Rescue Association (NGO), Federation of Finnish Financial Services (NGO), Association of Fire Chiefs (NGO).

Assessment and recommendations on HFA Priority 1

This general assessment on HFA Priority 1 builds on the specific findings for the relevant HFA core indicators. It highlights good practices that were identified in Finland and may be shared with other countries. It also discusses areas for improvement, leading to the formulation of four core recommendations, highlighted below.

Good practices

The combination of a whole-of-government approach to security and a whole-of-society approach to safety is a relevant way to reach the ambitious objective for Finland to be the safest country in Europe.

Finland's ability to prepare and implement structural reforms – for example, of state local administration and local authorities – and to identify and address forward-looking challenges – for example, an ageing society – provides a solid foundation for policy improvement in disaster risk reduction as in other policy areas.

The recognition of disaster risk reduction as a priority of Finland's development cooperation, along with its promotion in multilateral agencies funded by Finland and in the international policy debate, is in line with its dependency on international supply chains, and demonstrates the overall coherence of the Finnish disaster risk reduction approach.

Areas for improvement

While risk management is a priority at the national level, local authorities may not have the same vision, which challenges the implementation of the national strategy across levels of government.

The complex organisation of the different state local administrations, regional and local authorities, including the rescue services, does not facilitate policy implementation and monitoring at the local level. This is a particular concern in risk management, which requires a comprehensive approach across different policy areas, as well as effective coordination mechanisms in times of large-scale emergencies.

Recommendations

The implementation of the ongoing reform of local authorities and municipalities should address the risk-perception gap between national and local governments and the related division of responsibilities, while ensuring that capacities to address all-hazards and threats remain available locally according to commonly agreed safety and protection levels.

Increased partnerships between disaster risk reduction stakeholders at the local and regional levels could aim to more effectively co-ordinate prevention policies with emergency preparedness and planning, by further extending the model of the flood-management groups to an all-hazards platform.

Enlarging the participation of the National Disaster Risk Reduction Platform to parliamentarians, local authorities, business sectors and NGOs could allow for facilitating further policy development and would help to give the platform a key role in the ongoing reform of rescue services.

Developing a comprehensive monitoring system for disaster risk reduction from the national to the local level, connecting resources with outcomes and policy targets through performance assessments, could be an effective instrument to govern reforms on the basis of cost-benefit analyses. It would position Finland as a model in disaster risk reduction at the international level, corresponding to the ambition of its strategy.

HFA Priority 2: Identify, assess and monitor disaster risks and enhance early warning

National risk assessment

HFA Core Indicator 2.1: National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors

Finland has adopted several approaches to risk assessment which could benefit from better linkages from the national to the local level. At the national level, the Security Strategy for Society has adopted a risk assessment approach based firstly on the identification of the vital functions of Finnish society that have to be secured in all situations, and their vulnerabilities. This policy document lists 49 strategic tasks which contribute to securing vital functions and assigns responsibilities to Ministries for each of them. Thirty seven possible disturbances to these tasks and vital functions have been identified and are illustrated in 13 threats scenarios. It is regularly updated, with the latest version approved by the Government in 2010. This all-hazards and threats and whole-of-government approach provides a uniform basis for strategic preparedness to all Finnish institutions from the national level to municipalities, as well as to private sector organisations and NGOs. While it is effective to indicate what could be on the radar screen of all risk managers throughout the country, it is not sufficient to be used operationally for capabilities or emergency planning based on quantitative information, or for risk reduction purposes. As threat scenarios have not been assessed in terms of their likelihoods and impacts, they cannot be compared as per National Risk Assessment practices in other OECD countries, or the EU risk assessment guidelines.

Regarding capabilities and emergency planning, regional risk assessments are carried out and updated regularly by the rescue authorities. The 22 regional rescue services of Finland are requested by the Rescue Act to decide both on the standard of service and the related capabilities that they need to develop to reach this standard, on the basis of the level of risk or threat. The Ministry of the Interior has consequently developed tools and guidance for regional risk assessment for that purpose. Risk zones are defined for the whole country based on the national incident database as well as on vulnerability information derived from population density and the built environment. These data are aggregated through a high-technology GIS-based mapping of the country on a 1-km resolution grid. To each square kilometre is attached a risk probability and a level of service which requires emergency first responders to be present in a certain time period. There are four risk zones, corresponding to 6-minute, 10-minute, 20-minute, or no-limit time periods. This technology-based and practical approach provides rescue services with a tool to plan the capabilities required on a regional basis.

Between these two approaches, of threat scenarios to vital functions on one side and practical level of rescue service required for daily incidents on the other, methodologies for the quantitative assessment of significant national risks are in the process of being harmonized. A process for the evaluation of probabilities and potential impacts of major disasters has been established and criteria defined, under the leadership of the Ministry of the Interior. There are seven categories of consequences with pre-defined thresholds for casualties, economic impacts and environmental impacts from small to very severe. Based on the risk-matrix, a risk is considered as a significant national risk if its return period is below 200 years and its consequences are severe or very severe[5]. The rescue services have identified 89 significant national risks in 15 rescue regions with this methodology.

In addition to these national and regional all-hazards risk assessments, several sectoral processes have been conducted to assess specific risks. The first phase of the EU flood risk management directive has been implemented, under which 21 areas with potentially high flood risk have been identified and are currently being mapped, under the responsibility of the Ministry of Agriculture and Forestry. These include the city of Pori, where a 100-200 year ice jam flood could cause up to €200-300 million in damages. A risk map for urban flooding has been completed for Helsinki and started for a number of other cities. The impact of climate change on Finland's ecosystems and society are evaluated by the Finnish Environment Institute based on different climate change scenarios. Due to the low risk profile there is no national earthquake hazard map. Only nuclear power plants need an earthquake risk assessment, in addition to a thorough evaluation of the risk of coastal flooding regularly updated for their sites. Single-hazard risk assessments also exist for specific risks such as chemical incidents, and air and shipping accidents. Nuclear risks are a significant threat with the country having four nuclear reactors and a fifth under construction, as well as a number of significant cross-border nuclear risks from neighbouring countries.

Monitoring and early warning systems

Data on key hazards and vulnerabilities are monitored, archived and disseminated by various ministries and technical agencies in Finland depending on the hazard characteristics. Regarding hazard monitoring, Finland is equipped with efficient modern and high-tech monitoring networks, operated by its technical agencies. The Finnish Meteorological Institute is responsible for real-time 24/7 monitoring, achieving and disseminating data associated with weather and marine events. The

[5] The criteria are above 50 deaths or above €10 million in damages.

HFA Core Indicator 2.2: Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities

Finnish Environment Institute monitors water levels and discharges in rivers and lakes. There are also 288 stations continuously measuring radiation in the environment operated by the Radiation and Nuclear Safety Authority. When needed, specific monitoring and surveillance processes can be activated by Ministries. For instance, the Ministry of the Interior organises air patrolling on behalf of the 22 rescue services to detect forest fires from the air during periods of dry conditions, while the Ministry of Agriculture has agreed on an action plan with the National Land Survey, FMI and SYKE for taking and processing rapid aerial photos in case of natural events and disasters, such as storms and floods. Space technology is also used in Finland for forest-fire detection as well as for hazard mapping. Regarding loss data collection, in addition to the national incident database operated by the Ministry of the Interior mentioned earlier, the Finnish Environment Institute collects flood loss data from municipalities. Insurance companies have also developed their own database.

Data sharing and dissemination is very effective in Finland as it follows an open-data policy: all data paid for through public budget can be accessed by Finnish citizens. This means that the Ministry of the Interior, the Emergency Response Centre Administration, the Finnish Meteorological Institute and the Finnish Environment Institute − and also other actors − are relevant owners of data, and are open to data sharing. The Emergency Response Centre Administration, for instance, shares its data on accidents with a number of other organisations, such as FMI or SYKE, and receives data from them free-of-charge. FMI and the Finnish Environment Institute will further this policy of data exchange by establishing a joint flood centre. There seem to be no obstacles in the national data-sharing policy which could hamper disaster risk reduction. As the example shows of Caruna Oy, a major electricity distribution company, the energy sector also uses FMI databases on frequencies and impacts of storms. Similarly, cooperation with the insurance sector to share loss data has facilitated the development of flood risk assessment. At the regional level, weather radar data sharing among the Scandinavian countries brings benefits to each of them by improving monitoring at a lower cost.

HFA Core Indicator 2.3: Early warning systems are in place for all major hazards, with outreach to communities

Responsibilities for warning the population in times of crisis and emergencies are shared by a number of stakeholders and carried out on different levels and through multiple channels. The main early warning system in Finland is LUOVA, which is a multi-hazard early warning system operated by the Finnish Meteorological Institute in cooperation with other actors through a multi-agency process (FMI, SYKE and the Institute of Seismology at the University of Helsinki). The strength of this state-of-the-art warning system is that it provides the appropriate technical platform to integrate and disseminate warnings. The platform is composed of several tools to integrate risk information and disseminate easy-to-use warning messages and maps through multiple channels to the risk management stakeholders. Initially developed for natural hazard warnings, it is now used for weather, marine, flood, earthquake, tsunami and space weather warning in close cooperation with other technical agencies. It builds on the 24/7 forecasting operations of FMI, and its daily colour-coded weather warnings based on pre-defined thresholds. LUOVA can be used to deliver tailored warnings with different lead-times and risk information depending on the users' needs. Other technical systems are also available to provide dedicated warnings for forest fires through automatic satellite detection, or nuclear radiation detection.

On the basis of the information received from the LUOVA system, the authorities plan on their own actions and warn the public. For the moment the LUOVA system is closed for the general public. Nevertheless, parts of it might become open in the future. Currently, FMI and SYKE are working jointly to establish the Flood Warning Centre which is expected to become operational as of 2014. The aim of the Flood Centre is to provide Finnish society with information related to floods from one point of contact available 24/7. Regarding warning dissemination, specific partnerships with major broadcasting media have been set-up to allow programmes to be interrupted or to have a text message appearing on TV screens nationwide or at the regional level. Public warning sirens are also used as they cover more than 80 per cent of the population. Other instruments such as social media are used to a certain degree but not widely. Cell broadcast, for instance, is not in use in Finland for warning purposes.

Regional and international cooperation on risk assessment and early warning

HFA Core Indicator 2.4: National and local risk assessments take account of regional/trans-boundary risks, with a view to regional cooperation on risk reduction

There is a strong and historic cooperation among the Scandinavian countries as well as around the Baltic Sea with the Council of the Baltic Sea States. Joint monitoring and data sharing is effective through the common weather radar mosaic, produced together with Sweden and Norway. Trans-boundary rivers are also jointly monitored together with neighbouring countries. Issues of specific concern related to the Baltic Sea such as the risk of a major shipping accident or pollution control are

followed closely by the riverine countries and joint actions are conducted. To prevent pollution, for instance, there is a permanent airborne observation and regular contacts with the Russian authorities. The risk of nuclear accidents in neighbouring countries is also taken into consideration in the risk assessment.

At EU level, Finland is a participating country in the European Civil Protection Mechanism[6], which facilitates cooperation in civil protection between European countries in order to improve prevention, preparedness and response. The risk assessment being prepared by the Finnish authorities will contribute to the work being developed at EU level on risk assessment. In addition, within the EU Strategy for the Baltic Sea Region, finalised at the end of 2013, Finland contributed actively to a project aiming at the development of scenarios and the identification of gaps for all main hazards in the Baltic Sea region.

On a regional basis, Finland participates in the Baltic Marine Environment Protection Commission[7], which regularly develops joint risk assessments of the Baltic Sea environment and plans for measures to respond to major maritime incidents. Finland cooperates also with the other Nordic countries within the framework of the Council of the Baltic Sea States[8] (the civil protection network coordinates joint measures in the field of civil protection, critical infrastructure protection and emergency preparedness issues), the Barents Euro–Arctic Council (joint committee on rescue cooperation) and the Arctic Council[9] (emergency prevention, preparedness and response working group).

[6] http://ec.europa.eu/echo/policies/disaster_response/mechanism_en.htm
[7] http://helcom.fi/
[8] http://www.cbss.org/
[9] http://www.arctic-council.org/index.php/en/

Assessment and recommendations on HFA Priority 2

This general assessment on HFA Priority 2 builds on the specific findings for the relevant HFA core indicators. It highlights good practices that were identified in Finland and may be shared with other countries. It also discusses areas for improvement, leading to the formulation of four core recommendations, highlighted below.

Good practices

The identification of the vital functions of Finnish society and their vulnerabilities as the starting point of the risk assessment process is an effective way to provide a basis for the risk assessment at the national level in the national strategy for security.

The open-data approach among all the governmental agencies allows for easy access to hazard and vulnerability data and information, thus facilitating the development of risk assessment and early warning systems to support risk reduction and emergency preparedness at all levels.

The LUOVA system is an excellent example of an innovative early warning system based on the most advanced technology, as well as an effective collaboration between the different technical agencies.

The EU cooperation and the regional cooperation with Nordic and Baltic countries through data sharing and joint monitoring provide cost-effective solutions to address trans-boundary risks. The implementation of the EU Flood Directive has been exemplary and has helped to improve the risk assessment and management practices for this hazard.

Areas for improvement

While there are good systems in place for monitoring and assessing daily risks based on historical data, this is not necessarily the case for less likely larger-scale risks that would cause more severe impacts. The current risk assessment process is carried out mostly in the rescue regions and does not allow national and local administrations to sufficiently interpret what should be the priority risks they should prepare for.

In the ongoing national risk assessment process the criteria used to classify the consequences of major disasters lack coherence; a severe risk corresponds to 51-100 deaths as far as casualties are concerned, but for economic costs it corresponds to €10-20 million and for environmental damage to irreversible impacts.

While the implementation of the EU Flood Directive led to significant work in flood risk assessment, the risk of urban floods caused by heavy rainfall has not yet been sufficiently assessed in all major urban areas.

Recommendations

The risk assessment process in Finland would benefit from a more comprehensive approach and better coordination from the national to the local level. This should include improving the methodology for assessing large-scale risks nationally and the harmonisation and quality coherence of regional risk assessments.

The Finnish multi-hazard early warning systems could further increase their efficiency when the flood warning centre is established, and through two-way interactions with risk management stakeholders and the public at risk, as well as improved information for the public concerning the warning systems and the meaning of signals.

Flood risk assessment efforts should continue to map and characterise potential impacts of fluvial and urban floods, including water levels at the housing scale, so that prevention and emergency preparedness and planning can be tailored more precisely.

Finland should further continue its active cooperation within the EU and with neighbouring countries in monitoring and warning systems to enhance its preparedness for large-scale or cross-border disasters, ensure economies of scale, and exchange innovative practices and use of common standards.

HFA Priority 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels

Information sharing and dissemination

Finland has developed good mechanisms and practices for risk information sharing and communication. At central level, the National Platform for Disaster Risk Reduction aims to be the main nationwide network for sharing information and knowledge development on disaster risk reduction. At local level, safety plans require the development of information-sharing systems, contributing to the building of local community resilience and increased risk awareness.

HFA Core Indicator 3.1: Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information-sharing systems etc.)

A number of well-established information systems are managed by the main actors responsible for up-to-date, comprehensive and accurate information on disasters. For instance, the Finnish Meteorological Institute processes a wide range of current and historic meteorological data that are disseminated to the general public through its official website. Furthermore, the 24/7 early warning system LUOVA ensures that authorities receive accurate and scientifically sound information and available forecasts about risks from natural hazards taking place both in Finland and abroad (see HFA Priority 2). Finland has also developed a national transmission system for official notifications and emergency announcements via radio (permanent licence) and TV (free channels), as well as an accident database available online providing comprehensive information on the occurrence of accidents and harmful events in everyday life.

Finland's efforts to improve the existing systems and create new tools for information sharing and risk communication are further worth mentioning. A sufficient number or civil servants have been targeted and trained for crisis communications, and measures have been taken to improve the crisis communications capabilities of businesses and NGOs that support Government activities. There are also plans to establish a crisis internet portal for citizens, which will become operational once the administrative framework for its maintenance is completed. The portal will offer citizens basic information and instructions on how to behave during crises. In times of crisis, it will disseminate information available from authorities, citizens, NGOs and the media.

Education and trainings aimed at specific stakeholders

Finland's Internal Security Programme envisages the improvement of safety at educational institutions and the ensuring of a safe learning environment as one of its priorities. The Rescue Act obliges educational institutions to prepare emergency plans anticipating dangerous situations and their impacts, with detailed options for evacuation and provision of shelter. It requires personnel to be properly trained to handle such situations. Rescue departments provide schools with enhanced guidance on self-preparedness and ensure implementation of the recommendations of the Ministry of the Interior. Under the Internal Security Programme, rescue services report regularly on the holding and coverage of drills to municipalities in their region, to the Ministry of Education and Culture and to the Ministry of the Interior.

HFA Core Indicator 3.2: School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices

Prevention and reduction of the impact of natural hazards are, however, not systematically included in the national educational curriculum. Different types of hazards are covered in primary and secondary school curricula, but the focus is on the mechanism of how these hazards are created and not so much on prevention. At university level, specific courses have been developed for geologists, hydrologists, environmentalists, specialists of emergency health care, nurses and workers in other related professions.

As regards professional training, the Emergency Service College is the main actor. It provides vocational training for rescue services and the activities of emergency response centres, as well as preparedness training for emergency conditions and incidents under 'normal' conditions. Training is provided in international civil protection and civilian crisis management.

Training is also provided by individual associations and organisations, offering courses on an array of issues, including empowering people to take responsibility for their own security. For example, the Finnish National Rescue Association (SPEK) groups 37 NGOs dedicated to the advancement of rescue and safety to build an understanding of self-preparedness within Finland's communities. It cooperates closely with the Ministry of the Interior to develop and conduct courses in accident prevention, volunteer activities and preparedness, and civil protection. It also supports specific activities aimed at women and youth. The Finnish Red Cross, with its 500 branches and some 30,000 volunteers, also offers courses in first aid and organ-

ises campaigns aimed at resilience-building. Its work is particularly impressive in supporting local communities to build risk awareness in scenarios such as winter power cuts or storms, as well as in supporting women's roles in resilience-building. The Finnish Association of Fire Chiefs also provides fire, rescue and safety training, produces and publishes educational and training materials and makes proposals to improve safety.

Research, knowledge and innovation

HFA Core Indicator 3.3: Research methods and tools for multi-risk assessments and cost-benefit analysis are developed and strengthened

As a knowledge-based economy, Finland invests substantially in research and innovation[10], with total government funding in research and development (R&D) reaching €2 billion, or one per cent of national GDP[11], in 2013. These efforts also contribute to increasing knowledge on risks and innovation in risk management. This is demonstrated by the action plan of the National Disaster Risk Reduction Platform, which lists the numerous research projects that are addressing key topics of risk management, such as climate change adaptation; forecasting and warning; methodologies for flood risk assessment; cyber-security; crisis management; forest fires; nuclear safety; and the chemical weed project. A dedicated research strategy on security was also published in 2009 which highlighted research on vulnerability and disasters[12] as a key research topic for Finland. All these initiatives are also complemented by research activities carried out by the private sector or NGOs not included in these documents.

The strong relation between line ministries and research institutions provides further recognition that research is used to support policy development in risk management. The FMI, SPEK and SYKE are particularly active in undertaking research activities. Regional authorities are SYKE's main 'customers' for flood protection research, for which the Institute produces flood predictions and mapping to inform local and regional risk reduction activities. SPEK has systematically developed R&D associated with preparedness and civil defence, such as its study from the region of Southern Savo on how small and micro-enterprises coped with the consequences of storm Asta in the summer of 2010. The Institute of Seismology also performs a significant amount of seismological research, including − as part of EU and international research projects − monitoring global earthquakes.

A key topic of Finnish R&D concerns climate change adaptation, for which FMI is particularly active. Major public research projects were initiated by the Agriculture and Forestry Ministry, looking at 20- to 30-year plans for the future with particular concerns in forestry and biodiversity[13]. The Ministry of Foreign Affairs also conducted research programmes on climate change adaptation in developing countries and created vulnerability assessments for different countries, with guidelines and checklists provided to NGOs and overseas embassies. This evidence-based tool informs policy decisions for prioritisation of development cooperation funding across themes and regions.

As Finland is a leading country in innovation and the use of ICT, new technologies are also being extensively developed and used in many areas of risk management, from risk monitoring, analysis and early warning to emergency and crisis management operational systems (see HFA Priority 5).

Public awareness strategies stimulate a culture of resilience with outreach to communities

HFA Core Indicator 3.4: Countrywide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities

While a strong culture of resilience exists in Finland, the recent experience of the 2010 and 2011 storms, even though it contributed to raising awareness, highlighted key vulnerabilities. Public authorities realised how major societal trends such as urbanisation, interconnectedness and an ageing society are challenging this legacy: the resilience levels and the strong focus on self-reliance and preparedness in rural areas – demonstrated by research findings − are diminishing as the population becomes older and sparser; and cities' resilience levels are falling as urbanisation grows and the interconnectedness of critical networks increases.

The notion of self-preparedness holds an important place in the country's disaster risk reduction policy and is enshrined in legislation. The Rescue Act requires all occupants of buildings, businesses and industrial operators to prevent fires and other dangerous situations; prepare for the protection of persons, property and the environment in dangerous situations; prepare for extinguishing fires and taking other rescue action which they are capable of performing independently; take measures to ensure safe exits during fires and in other dangerous situations; and facilitate rescue operations. Citizens are also required to be prepared for a few days of loss of power.

[10] Finland ranked 4th in the EU's innovation performance for 2010/2011, see: European Commission, Innovation Union Scoreboard, 2013, http://ec.europa.eu/enterprise/policies/innovation/policy/innovation-scoreboard/

The existing culture of community resilience is stimulated with the involvement of a number of actors and well-established cooperation between rescue services, schools and NGOs. National education campaigns are organised yearly by schools and fire brigades to involve children in prevention and improve preparedness for emergency situations. For instance, every year over 400 schools and 40,000 pupils participate in the Nou Hätä campaign for 8th grade pupils[14] aimed at improving readiness in accident situations. Other national school campaigns focus on specific disasters or on themes such as home safety, and additional educational activities are carried out by rescue services. NGOs are also very active, with dedicated awareness raising and resilience-building activities at the local and community levels. Many of the 130,000 registered associations in Finland participate in improving the preparedness of Finnish society. The work of SPEK, the Finnish Red Cross, Finnish Association of Fire Chiefs and other active NGOs has clearly supported the implementation of the Internal Security Programme, with the overall aim of building a legacy of knowledge, understanding and ownership of disaster risk reduction activities at local level. These organisations also produce and distribute guidelines, publicity material, study books and provide opportunities for active involvement of volunteers. For example, in urban communities SPEK has the goal to create an organised network with referents in 100,000 residential buildings.

[11] Invest in Finland, "Finland Fact Book: A guide to doing cost-effective business in Finland", 2013, p.13, http://www.investinfinland.fi/uploaded/files/Finland_Fact_Book_2013-3.pdf
[12] Ministry of the Interior, Advisory Board for Sectorial Research, "National Security Research Strategy", 18/2009, http://www.intermin.fi/download/14209_national_security_research_strategy_.pdf
[13] http://www.mmm.fi/en/index/frontpage/climate_change_energy/adaption.html
[14] http://www.nouhata.fi/fi/nuoret/uutiset

Assessment and recommendations on HFA Priority 3

This general assessment on HFA Priority 3 builds on the specific findings for the relevant HFA core indicators. It highlights good practices that were identified in Finland and may be shared with other countries. It also discusses areas for improvement, leading to the formulation of three core recommendations, highlighted below.

Good practices

The numerous safety campaigns that have been undertaken in Finland including in schools have contributed to raising its resilience and level of preparedness.

Scientific research in the area of climate change has provided an important scientific basis to respond to the future need for adaptation of Finnish society and sectors. It has also been used for the revision of the National Strategy for Adaptation – in 2013.

Innovation and new technologies are used extensively for risk communication purposes and information collection and sharing. The online accident database is a good example of the provision of information about risk in everyday life. It also supports regional risk assessment. The Finnish Meteorological Institute has established an exemplary common platform for data and information sharing.

Cooperation between the governmental rescue organisations and NGOs (SPEK, Finnish Red Cross) has proven to be highly beneficial to raise public awareness, especially through the implementation of the Internal Security Strategy.

Areas for improvement

Despite many efforts, more emphasis is needed to integrate disaster risk reduction in public education in order to increase risk awareness among the general public, given the low frequency of disaster events in Finland.

While the Internal Security Strategy has been a key driver to develop a safety culture in communities, the level of risk awareness differs significantly from one municipality to another, revealing a rather disperse impact of public awareness campaigns.

Recommendations

Finland needs to strengthen efforts to raise the awareness and self-preparedness of its population, especially for 'new' risk scenarios like pandemics, power outages or cyber threats. The efficiency of policies in this domain should be evaluated through regular surveys and polls.

The recognised quality of the Finnish educational system provides an opportunity to strengthen efforts in building a culture of resilience, by inviting the Ministry of Education to the National Disaster Risk Reduction Platform and further developing disaster risk reduction-related education materials.

Appropriate funding in research and innovation should be maintained in order to keep capitalizing on knowledge and ensuring effective use of science for disaster risk management.

HFA Priority 4: Reducing underlying risk factors

Disaster risk reduction and environment-related policies and plans

Risk management in Finland focuses firstly on securing vital functions and managing daily accidents, as highlighted in the key strategic documents and laws mentioned in Priority 1. With its relatively low risk profile, the need to integrate disaster risk reduction in environmental policies is not always obvious in Finland, even though it has adopted advanced environmental policies in many areas. For instance, the Environment Protection Act, adopted in 2000 and revised in 2011, does not include regulation related to risk reduction. At the same time, risk reduction measures related to forest fires have always been part of the forestry policy managed by the Ministry of Agriculture and Forestry.

HFA Core Indicator 4.1: Disaster risk reduction is an integral objective of environment-related policies and plans, including for land use, natural resource management and adaptation to climate change

It is in fact through the medium of climate change that the linkage between disaster risk reduction and environmental policies was clearly established in Finland, which is a pioneering country on climate change adaptation efforts: the National Strategy for Adaptation to Climate Change was adopted in 2005 as an independent part of the wider National Energy and Climate Strategy and is updated regularly. The strategy recognises potential consequences of climate change on the natural hazards affecting Finland[15]. It proposes adaptation measures to be implemented over the immediate, short and long term up to 2080 with a view to enhancing Finland's adaptive capacity and reducing the costs to society. The evaluation conducted in 2009 concluded that the country was progressing on its adaptation path. The Strategy has been also very effective in ensuring that disaster risk reduction and climate change adaptation is integrated in the national governmental land-use guidelines that are supporting the Land Use and Building Act and Decree. The update of the guidelines in 2008 specifically mentioned the need to consider storms, heavy rains and urban flooding as well as the risks of major accidents during land-use planning processes. At the local level, the municipality of Helsinki adopted also a climate change adaptation plan with a specific emphasis on disaster risk reduction.

As in many other countries in Europe, the EU Flood Directive has also triggered a dedicated process to reduce flood risk. The Directive was transposed in national law through the Flood Management Act and the first phase of its implementation, involving a flood risk assessment, has already been finalised, as mentioned above in Priority 2.

Social development policies and plans

Disaster risk reduction in Finland benefits from a strong social- and health-care system: education and health services as well as security and safety services are free-of-charge for citizens. Social inclusion is also ensured through strong support systems in case of unemployment and long-term sickness. In addition to these social policies and safety nets, the culture of resilience among Finnish people highlighted previously limits social vulnerability.

HFA Core Indicator 4.2: Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk

Meanwhile, policies aimed at improving safety conditions for targeted vulnerable populations are implemented through the Internal Security Programme. This programme, which promotes a whole-of-society approach to safety and security, has identified social groups vulnerable to a series of risks and proposes dedicated mitigation measures. The groups include the young, the elderly and migrants. Social and health services, as well as NGOs such as the Red Cross, implement such vulnerability reduction measures at the local level and in rural areas.

Vulnerability reduction in the economic sector

If Finland is not as disaster-prone as other EU Members States, the specific vulnerabilities of its society and economy to the disruption of supply chains and critical infrastructures constitute a major challenge. Harsh winter conditions, high dependence on sea transportation and international markets, interdependencies and the complexity of critical networks are among the key challenges to security of supplies. Consequently, Finland has invested significant effort to secure supplies and

HFA Core Indicator 4.3: Economic and productive sectoral policies and plans have been implemented to reduce the vulnerability of economic activities

[15] The potential consequences of climate change on the natural hazards affecting Finland include : less snow melt related floods in the West and the North, but increase floods related to heavy rainfall; higher sea level should be compensated by the earth elevation in the West and the South, but the security of nuclear plants could be affected by higher sea rise; more frequent extreme weather events could damage forests and infrastructures; the risk of forest fires risk could increase, and a warmer climate could increase the use of pesticides and pollution.

maintain the continuity of services. This is a primary concern of its Security Strategy for Society, in which the functioning of the economy and the infrastructure is one of the seven vital functions of Finnish society.

The National Emergency Supply Agency (NESA), under the Ministry of Employment and the Economy, is the key stakeholder of this policy. While its historic role of maintaining reserve stockpiles to protect the livelihoods of the population as well as the functioning of the economy remains part of its strategic tasks, NESA is more and more active in mainstreaming business continuity and resilience in various sectors of the economy through public-private partnerships. To this aim, NESA has established a network of thematic clusters where key stakeholders of critical sectors, such as food supply, energy, transportation, health or industry, develop partnerships in order to assess vulnerability and performance and plan for resilience. Dedicated tools, such as information systems, storage and transport facilities, are proposed by NESA, which also finances many dedicated activities related to business continuity and critical infrastructure redundancies. NESA prepares annual reports that evaluate the performance of companies in the critical sectors. The reports include ranking and specific recommendations.

As a consequence of this strong focus on business continuity and the resilience of critical systems, public and private companies from many economic sectors are supporting these efforts. Important infrastructure providers like electricity distribution company Caruna or the Transport Management Agency have preparedness programmes to maintain continuity of energy supply or transportation systems in times of disaster. This provides a critical contribution to the resilience of enterprises from all the other economic and productive sectors as well as to the whole of society. Many companies, such as Nokia, have also developed their own business continuity planning independently.

The Finnish Meteorological Institute is also playing a key role in helping businesses take account of climate factors in the longer-term life span of infrastructure. The way Caruna ensures that newly built electricity networks are weather-proofed for the long term can be highlighted as particularly good practice.

Human settlements and disaster risk reduction

HFA Core Indicator 4.4: Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes

Regarding land-use planning and building codes, the main responsible stakeholders are the local authorities. The land-use planning system includes national land-use guidelines, regional land-use plans, local master plans, local detailed plans, regional schemes and programmes, regional and municipal strategies as well as municipalities' land policies and building ordinances. Regional and local land-use plans determine construction zones and municipalities provide construction permits. These plans are supposed to follow the national land-use guideline, which was updated in 2008 by the Government to include specific references to disaster risk reduction: planning should make provision for increasingly frequent storms, heavy rainfall and floods in urban areas and, in addition, an adequate distance must be left between activities causing adverse health effects or potential technological risks to human settlements or public buildings. However, the multiplicity of planning documents, the overlapping responsibilities between the various levels of government, and the limited enforcement of regulations at the local level have not been efficient in reducing building in risk-prone areas, particularly in relation to floods.

Taking into consideration flood risk is particularly crucial as opportunities offered by urban renewal operations along rivers and lakes are very attractive to citizens and local authorities. The on-going implementation of the EU Flood Directive has led to an effective process of risk identification and planning in areas at potentially high risk of floods. Participatory flood management groups have been established locally with the Finnish Environment Institute, to reflect on the protection levels for existing settlements as well as development planning. While the willingness to have high (250-year) protection standards exists, a reduction of these ambitions is expected as cost-benefit analysis revealed the high cost of such measures. Furthering incorporation of risk reduction in land-use planning may come from the foreseen renewal of the legislation over the coming years.

As far as building codes are concerned, while there are no specific provisions for earthquake safety, given the low probability of such events, there are regulations related to nuclear safety: in every new development project, property owners must include a civil defence shelter in buildings equal to or greater than 1,200 m². There are also regulations targeting specific vulnerabilities of the country: redundancies are required in heating systems for urban housing and fireplaces in rural areas. It should also be mentioned that, while not regulated, traditional buildings in rural areas are resilient to a series of potential disasters, from cold waves to heavy snow.

Post-disaster recovery and rehabilitation processes

HFA Core Indicator 4.5: Disaster risk reduction measures are integrated into post-disaster recovery and rehabilitation processes

As mentioned throughout the report, Finland has not experienced major disasters in its recent history, and thus no concrete examples of, or dedicated policies for, recovery and reconstruction have emerged that specifically include risk reduction measures. Nevertheless, the drive to strengthen the resilience of critical infrastructure is constant. For example, measures are taken to secure the power networks and reduce the risk of power failures in the repair and rebuilding of local electricity networks following damage caused by wind or snow storms.

Procedures are in place to integrate disaster risk reduction measures into development projects

HFA Core Indicator 4.6: Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure

Environmental impact assessment (EIA) procedure is a planning and steering tool for large projects with major effects on the environment. Finland, as a member of the European Union, is implementing the EU Directive on Environmental Impact Assessment and the EU Strategic Environmental Assessment Directive. It is also a member of the United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Trans-boundary Context (Espoo), and joined the Protocol on Strategic Environmental Assessment to the Convention. The national legislation of Finland was amended respectively: the Act on the Environmental Impact Assessment Procedure and the Decree on the Environmental Impact Assessment Procedure apply to all projects with potential for considerable negative environmental impacts. Under the legislation, special consideration should be given, among other things, to the risk of accidents, particularly in regard to substances or technologies used.

Assessment and recommendations on HFA Priority 4

This general assessment on HFA Priority 4 builds on the specific findings for the relevant HFA core indicators. It highlights good practices that were identified in Finland and may be shared with other countries. It also discusses areas for improvement, leading to the formulation of four core recommendations, highlighted below.

Good practices

The ongoing implementation of the EU Flood Directive through a participatory approach with the Local Flood Management Groups is an effective way to ensure the ownership and understanding of land-use restrictions and protection measures that may be needed at the local level.

The specific attention to the vulnerabilities of critical infrastructures and global supply chains in the Finnish Strategy for Security in Society constitutes an advanced approach that contributes to the resilience of both its society and its economy.

The involvement of many private-sector stakeholders in business continuity efforts through the resilience public-private partnership network maintained by NESA constitutes an effective contribution to the resilience of Finland's economy.

The Finnish social inclusion policy demonstrates the engagement of the Finnish Government to ensure safety and security across the whole of society and therefore contributes to maintaining a high level of trust in government.

The Climate Change Adaptation Strategy of the municipality of Helsinki is an excellent example of efforts to improve resilience at the city level, which could be replicated in other cities.

Areas for improvement

While efforts to include risk reduction in land-use planning exist, the lack of coherence, overlapping of responsibilities and limitations to law enforcement at local level have not allowed for the significant curbing of construction in risk zones, thus further creating scope for increased vulnerability.

Given the current tight fiscal environment, the efficiency and cost-effectiveness of NESA in guaranteeing supplies could be further improved if its interventions on the markets were to be backed-up by strong economic analysis in the future.

While major corporations' strong culture of business continuity is particularly remarkable in Finland, more efforts may be needed to engage with smaller and medium enterprises (SMEs), and to further prepare for the negative impacts of climate change.

Recommendations

The climate change adaption strategy could refer more strongly to the mitigation of natural hazards and disaster risk reduction and its implementation could be supported by further research.

The local flood working groups could increase their scope and outreach by including NGOs and representatives from the private sector to build a strong culture of flood resilience at local level.

Planned investments in structural flood protection infrastructure should be accompanied by a greater focus on appropriate non-structural measures and green infrastructures.

The revision of the land-use and building code legislation should clarify responsibilities from the local to the national levels and better link risk assessment processes to development planning, particularly in urban areas.

HFA Priority 5: Strengthen disaster preparedness for effective response at all levels

Policy, technical and institutional capacities and mechanisms

HFA Core Indicator 5.1: Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective, are in place

Finland has established a strong and comprehensive disaster management system which at present remains highly decentralized. At national level, the Prime Minister's office is responsible for the coordination of crisis management. The Permanent Secretaries of the ministries are responsible for securing the functions of their respective administrative branches in a state of emergency as provided for in the Security Strategy for Society. A committee of the Heads of Preparedness of all ministries can be convened in case of a crisis.

At regional level, Finland is divided into 22 regional rescue services which manage operations in their respective regions. Municipalities (at present 320 in total) are jointly responsible for rescue services within designated regions. The rescue departments, supported by the Ministry of the Interior, represent the key actors to provide full coverage with rescue services at a defined level and to ensure that adequate tools and mechanisms for disaster risk management are in place. The rescue services cooperate closely with a number of non-profit associations working in the field of rescue and safety. Six regional State Administrative Agencies supervise and assess the coverage and quality of rescue services and preparedness. They guide and direct rescue services' planning and coordinate plans in their respective regions. Public opinion polls show that 99 per cent of all Finnish citizens trust the rescue services and evaluate their work positively. As mentioned earlier, the Government has furthermore set an ambition to make the Finnish rescue services the most effective in Europe and is currently planning a reform to improve their cost-effectiveness.

As already mentioned (see HFA Priority 1), the Finnish disaster risk management policy is clearly set out in a number of key documents, including the Security Strategy for Society, the Finnish Security and Defence Policy Report[16] and the Internal Security Programme[17]. The Finnish Rescue Act[18], which is the country's basic law for disaster management, requires not only the rescue services but also various other stakeholders, including other state agencies and the private sector, undertake specific disaster risk management actions. All responsible ministries have strong links and mechanisms for cooperation with local governments as well as key agencies and associations who support them in translating national policy into local and regional delivery. For example, the Red Cross[19], as a major non-governmental response organization, has an auxiliary response capacity and is well integrated in public preparedness planning. It coordinates 50 voluntary response organizations within the framework of a Voluntary Rescue Service network. Both the Finnish Transport Agency and Caruna are examples of exemplary organizations showing strong capabilities and commitment to the maintenance of their services in disaster situations. Furthermore, a specialised state agency is responsible for contingency supply and maintaining stocks of critical goods for times of crisis (see section 5.3, below, for more information). In the health sector, the Ministry of Social Affairs and Health is responsible for enforcing the Health Protection Act, while the municipalities are responsible for delivering health and social care and for preparing for health-related crisis situations. There is also a strong Nordic Health preparedness network.

Environment accident response is another example of cooperation between a wide range of authorities and actors. They include the Finnish Environment Institute[20]; Centres for Economic Development, Transport and the Environment[21]; municipalities; the Finnish Transport Safety Agency[22]; the Finnish Navy; the Rescue Departments and the Finnish Border Guard[23]. Businesses and organisations (e.g. WWF) also participate in oil-spill response at sea; the increase in marine traffic in the Baltic Sea is leading to an increased risk of oils spills. The Ministry of the Environment is responsible for general guidance and monitoring with regard to prevention of and response to oil spills and chemical spills at sea and land. SYKE is responsible for the prevention of and response to oil spills from ships whereas regional rescue services are responsible for the prevention of and response to land-based oil spills.

Disaster preparedness plans and contingency plans

Finland's Rescue Act regulates the preparation of emergency planning. Authorities, agencies and state and municipal enterprises are all required to provide their executive and expert assistance as need be to prepare emergency plans under the direction of the rescue services. There is also an obligation to ensure business continuity and cooperate during responses to disasters and emergencies. Furthermore, dedicated emergency plans have to be set up for public events as well as for spe-

[16] http://www.defmin.fi/en/publications/finnish_security_and_defence_policy
[17] http://www.intermin.fi/en/security/internal_security_programme
[18] http://www.finlex.fi/en/laki/kaannokset/2011/en20110379.pdf
[19] http://www.redcross.fi/about-red-cross/our-work-throughout-world/disaster
[20] http://www.syke.fi/en-US
[21] http://www.ely-keskus.fi/web/ely-en
[22] http://www.trafi.fi/en
[23] http://www.raja.fi/en

HFA Core Indicator 5.2: Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster-response programmes

cific risk-prone buildings or industrial sites, under the responsibility of the owner or the occupant. Plans, which should follow the minimum requirements defined in the Rescue Act and be submitted to the rescue services, are checked regularly by the regional state agencies. The Rescue Act also requires educational institutions and hospitals to prepare and update emergency plans anticipating dangerous situations and their impacts, with detailed instructions for evacuation. Under the Internal Security Programme, local security plans should also be prepared at the local level. Community participation in emergency planning is furthermore enabled by the Finnish National Rescue Association and also by programmes of the Red Cross.

In the health sector, regional contingency planning is foreseen in the Finnish Health Care Act. Joint municipal authorities for hospital districts, together with the local authorities of their area, must produce a regional contingency plan for dealing with major accidents and exceptional medical emergencies. The Ministry of Social Affairs and Health may also appoint and authorize national actors to coordinate contingency activities.

To test the preparedness and contingency plans, the Ministry of the Interior implements a comprehensive exercise policy with regular major national exercises as well as regional and local exercises. In particular, the nationwide exercise in 2013 focused on the emerging risk of cyber security, which is gaining high importance in many EU countries given the criticalities of the ICT networks. The Finnish Red Cross also carries out major disaster management exercises. After the 2011 Christmas storms exposed Finnish society's vulnerability, the Red Cross undertook in 2013 a national preparedness exercise. It focused on local preparedness planning in administrative branches, cooperation with public authorities and partners, as well as leadership and flow of information, with a view to improving the Red Cross's capacity to respond quickly to the needs of the affected population in on-set emergencies and disasters. Finland has also hosted and taken part in NATO and EU exercises and a number of Nordic and trans-border Finland-Russia exercises. The Finnish Government is also in the process of translating the EU host-nation support guidelines[24] into the existing national framework to improve the conditions for delivery of international assistance in case national capacities are overwhelmed. According to the new decision on a Union Civil Protection Mechanism, Member States shall take the appropriate preparedness actions to facilitate host-nation support.

Financial reserves and contingency mechanisms

Several public financial instruments and contingency mechanisms are available in Finland in case of disasters. They are currently facing significant evolutions with the on-going structural reforms in the country. The national Recovery Fund, managed by the Ministry of Finance, can support municipalities in case damages to public infrastructure exceed their own budgets. The Ministry of the Environment also manages the Finnish Oil Pollution Compensation Fund, which is available to compensate damages caused by oil spills and associated emergency and de-pollution costs when the cause of the incident is unknown or the culpable party is unable to pay the compensation in question. The compensation granted from the fund must be repaid by the party that caused the oil spill, or by another responsible party. The State may also contribute to maintaining preparedness for emergency health care and major accidents by providing state funding towards contingency activities where special reasons make this expedient. The Red Cross also manages a Disaster Relief Fund with non-earmarked funding.

HFA Core Indicator 5.3: Financial reserves and contingency mechanisms are in place to support effective response and recovery when required

The major evolution in the public compensation approach relates to flood disasters: due to budget restraints, the system for flood damages compensation through governmental funds was replaced in 2014 by a new private-insurance-based system. Under the new scheme, private insurance companies will provide damage compensation for all types of floods, including urban pluvial floods. However, this will apply only to floods above a pre-defined threshold, defined with the regulating authorities. Flood insurance is now included in a package with home insurance, with no increase to insurance premiums (at the start of policies, at least). After a few years, it is expected that premiums will be recalculated to eventually reflect the risk level. Ministry of Finance statistics show that domestic premiums amount so far to a total of €4.1 billion. However, according to SYKE's analysis the scale of the economic impact of flooding is rather limited, with maximum damages in even high-risk areas estimated at only around €10 million – compared with the €100 million damages caused by the 2011 winter storms. Insurance companies will use the flood-risk maps prepared during implementation of the EU Floods Directive. In the future, time and experience from incidents will provide the best indication of how this policy change will impact and be perceived by Finnish citizens and businesses.

[24] SWD (2012) 169, available at http://ec.europa.eu/echo/files/about/COMM_PDF_SWD%2020120169_F_EN_.pdf

Finland has furthermore developed a robust and unique-to-its-needs contingency mechanism for security of supply, with the specialised National Emergency Supply Agency and its large budget. NESA maintains reserve stockpiles, secures the production of indispensable goods and services, and secures the functioning of technical systems that are vital for security of supply. NESA also promotes cooperation between the public and private sector to maintain business continuity in critical sectors and has developed appropriate technical tools to do so, such as the information portal HUOVI which supports the contingency planning of companies during disruptions, continuity management, and exchange of information within the organisation.

Information exchanges relevant during hazard events and disasters, and to undertake post-event reviews

HFA Core Indicator 5.4: Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews

Communication is vital to ensure a co-ordinated response, involving all concerned actors. A prognostic and real-time situation picture is compiled under the Prime Minister's Office to support government decision-making and communications and to improve situational awareness in issues relating to the security of the State and society. This is also the most important contact point for international assistance, including with the European Emergency Response Coordination Centre. Emergency situation picture generation and the Government's situation centre have been reinforced following the adoption of the Security Strategy for Society, building on the authorities' other pre-existing or future IT environments.

Ten state-of-the-art emergency response centres handle yearly − without major disturbances − about 4 million emergency calls to police, rescue, social and health services through the single EU call number 112, which is the only emergency number in Finland. The system is run by the Emergency Response Centre Administration, a special state agency which provides the service throughout the country for all municipalities and responders[25]. The calls are answered in English in addition to the official Finnish and Swedish languages. Calls can also be answered in German, French and Russian with the help of interpreters. There is an ongoing reform to increase effectiveness and reduce the number of Emergency Response Centres, which is expected to be completed by 2015. In addition, dedicated and redundant communication systems ensure communication and information exchange during crises: the TETRA radio system has covered the whole country since 2002 and guarantees strong communication links for the safety authorities at national and municipal levels, even in remote areas; the Public Authority Radio Network (VIRVE) is a key part of the rescue and security authorities' management system[26]. It offers a channel for secure inter-authority communications in order to exchange relevant information during hazard events. The network has about 33,000 terminals and 100,000 users. However, the development of the network for the exchange of mobile broadband data is proving more challenging.

Finland is, furthermore, currently developing two new operational systems making use of high technologies and introducing innovative working processes to improve cooperation and exchange of information during emergencies. The ERICA common operational platform will integrate information flows from all emergency response authorities nationwide (police, fire & rescue, medical, border guard), with GIS mapping, risk assessment information as well as operational models for emergency response for overall accident management in the Emergency Response Centres. To complement this coordination platform of crisis centres, the operational KEJO system will support emergency operations of the Finnish authorities in the field. These systems aim to ensure that Finland has a coherent, reliable and networked nationwide emergency response administration by 2015. There is also a situation awareness system for environmental emergency response (Baltic Oil Response Information System, BORIS 2[27]) for oil spills.

The Finnish accident data-base provides a good basis for post-event reviews as it records all interventions and actions which are taken in responding to an emergency or disaster. The Safety Investigation Authority of Finland, previously known as the Accident Investigation Board, investigates all major accidents, regardless of their nature. Investigation reports are prepared for each case and include recommendations for improving systems and processes. 'Lessons learnt' exercises were conducted following the 2010 storms, which led to improving pre-warning processes − especially of citizens − and emergency preparedness. In the past, lessons have also been drawn from international disasters such as the 2004 tsunami. This has helped improve inter-agency coordination and joint operation capacity for response outside Finnish borders.

[25] http://www.112.fi/
[26] http://www.virve.com/index.php?L=2
[27] http://www.syke.fi/download/noname/%7BF8671BA2-46BA-4941-BCBB-5186597A3011%7D/52513

Assessment and recommendations on HFA Priority 5

This general assessment on HFA Priority 5 builds on the specific findings for the relevant HFA core indicators. It highlights good practices that were identified in Finland and may be shared with other countries. It also discusses areas for improvement, leading to the formulation of four core recommendations, highlighted below.

Good Practices

The security of supply and business continuity model of the National Emergency Supply Agency represents a worthy pillar of Finland's risk management approach, which appears to be strongly supported by Finnish citizens.

The development of the new flood insurance scheme benefited from the high level of cooperation and risk information sharing through a public-private partnership between the Environment Agency and the private insurers, which helped to define appropriate regulation and tailor the product.

Finland's extensive use of innovative information and communication technologies for disaster risk management is effective in strengthening information sharing and cooperation across the emergency response network, as well as in ensuring the appropriate coverage of its large and sparsely populated territory.

The emergency mechanism established to respond to oil spills in the Baltic Sea provides a good example of the benefits of inter-agency emergency preparedness and planning, which could be replicated for the management of other hazards or threats.

Areas for improvement

While rescue services' capabilities are aimed to correspond to the service level defined locally, planning for nationwide risk management capabilities is not presently based on a comprehensive national risk assessment.

Emergency preparedness and response planning focuses essentially on the level of the service required from the rescue services in different risk zones, without including Standard Operating Procedures and scaling-up mechanisms in case available response capacities at the local level are overwhelmed.

Even though scenarios of large-scale emergencies have been developed as part of the Security Strategy for Society, these do not translate into multi-agencies and cross-regional emergency response plans.

Recommendations

Harmonising disaster risk management capabilities from the national to the local level with the risk analysis conducted in a national risk assessment should be a key objective of the ongoing reform of rescue services.

Further developing trans-boundary procedures to facilitate interactions between the rescue regions and with the national government, as well as between agencies and sectors, could reinforce the capacity to respond to large-scale emergencies where effective coordination and cooperation is crucial.

Dedicated nationwide and inter-agency emergency plans should be developed to address large-scale emergencies and be regularly tested through emergency drills.

Citizens could be more widely informed on the new flood insurance scheme. The benefits of this scheme should be evaluated regularly over future years.

ANNEX: List of Interviewees from 07-11 October 2013

In the course of the Peer Review visits and interviews, the Review Team met with representatives of:

- Emergency Response Centre Administration
- Federation of Finnish Financial Services
- Finnish Environment Institute (SYKE)
- Finnish Red Cross
- Finnish Transport Agency
- Finnish Meteorological Institute (FMI)
- Caruna Oy (previously part of the Fortum Corporation)
- Institute of Seismology
- Internal Security Programme (MoI)
- Local and Regional Government Finland
- Ministry for Foreign Affairs of Finland
- Ministry of Agriculture and Forestry
- Ministry of Finance
- Ministry of Social Affairs and Health
- Ministry of the Interior
- National Emergency Supply Agency (NESA)
- Prime Minister's Office
- Security Committee
- The Finnish Association of Fire Chiefs (SPPL)
- The Finnish National Rescue Association (SPEK)

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