



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

The process of Finland's National Adaptation Strategy and its Evaluation & Monitoring

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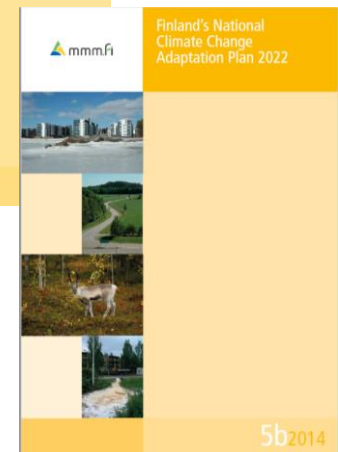
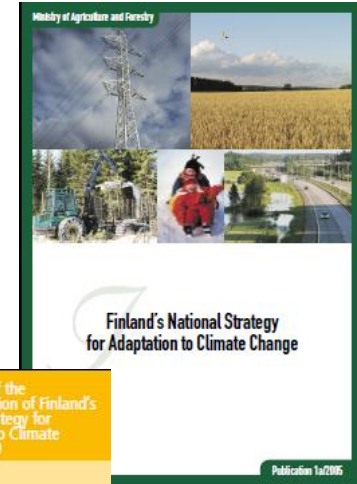
Expert Seminar "Development of monitoring system for adaptation"
23.5.2016 Riga, Latvia





Finland's National Adaptation Strategy - continuing saga Past:

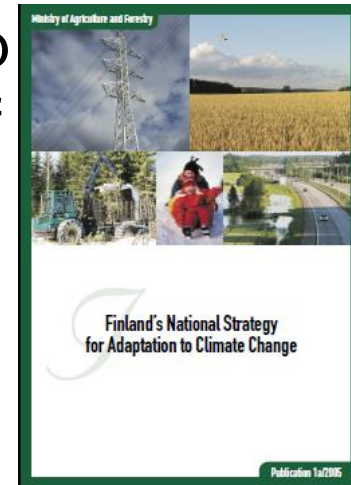
- **2005:** First NAS published - first in Europe
 - Based on then existing research information.
- **2009:** (Midterm) Evaluation of the implementation of NAS
- **2012/2013:** Final evaluation of the implementation
- **(2012-)2013** Revision of the NAS
- **2014** Second NAP Published
- **2015-2016** Development of monitoring indicators





Goals set out by the Finnish Government in the first NAS

- The main objective of the 1st NAS was to build up Finland's adaptive capacity & reduce the costs of climate change to society where possible.
- Goals to be achieved by 2015:
 - Integrate impacts and adaptation into routine planning, implementation and follow-up (mainstreaming)
 - Strengthen and focus research and development
 - Include climate aspects into long-term investments
 - Improve capacities to address extreme weather events
 - Develop further observation and warning systems
 - Address international linkages and development cooperation.



LUOVA situation picture and EWS

Supports correctly-timed decision-making, communication and risk management of safety and rescue authorities

- Situation picture is developed and visualized by taking into account end-users needs (text, maps etc.).
 - Summary of hazard
 - Present situation, forecasts and warnings
 - Location and time
 - Impacts
 - Potential impacts on people
 - Potential damages
 - Critical infrastructure

LUOVA
LUONNONONNETTOMUUKSIEN VAROITUSJÄRJESTELMÄ

Riskitasot: Kohonnut riski ■ Suuri riski ■ Toteutunut riski ■

Maanjäristys Italia ■ **ness**

21.08.09 09:02 UTC
Seismografiasemat havaitsivat 06.04.2009 klo 04:32:39 Suomen aikaan voimakkaan maanjäristyksen, jonka keskus sijaitsi...

Voimakkuus: 6.3 M
Syvyys: 8.8 km
Maantieteelliset koordinaatit: 42.33 N 13.33 E
Tapahtuma paikka: LAquila
Tapahtuma-aika (UTC): 01:32:39
Tapahtuma-aika (Suomen aika): 04:32:39
Säätilanne alueella ja ennuste:

Vaikutukset
Mahdolliset vaikutukset ihmisiin:
Vahingot:
Kriittinen infrastruktuuri:
• Ydinvoimala: lähellä ei ole
• Pato: lähellä ei ole

takaisin >

USGS ShakeMap CENTRAL ITALY
Mon Apr 6, 2009 01:32:42 GMT M 6.3 N42.42 E13.39 Depth: 10.0km ID:20090406

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(g)	<.17	.17-1.4	1.4-2.0	2.0-2.5	2.5-5.0	5.0-10	10-25	25-50	>50
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-6.1	6.1-16	16-37	37-60	60-110	>110
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X

Finnish Meteorological Institute: Storms, Heavy rains - Flash floods, Sea level, Forest fires, tsunamis

HU Institute of Seismology: Earthquakes, tsunamis

Finnish Environmental Institute: Floods



Institutional framework for NAS

- Starting point: integrating/mainstreaming adaptation to sectors.
- Ministries have overall responsibility for the implementation of NAS in their own fields of activity.
 - Some ministries have prepared sectoral assessments and action plans: Min. of the Environment, Min. of Agriculture and Forestry.
- Much of the practical implementation takes place in regions and municipalities
 - especially with regard to flood risk management and spatial planning at its different levels.



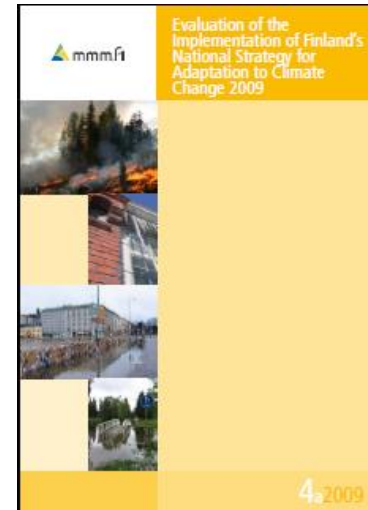
Institutional framework for NAS

- The implementation of NAS
 - is followed and promoted by the **Coordination Group for Adaptation to Climate Change**
 - steered by the **Ministry of Agriculture and Forestry**.
- Mitigation of climate change responsibility of the Min of Env.
- The Finnish Climate Panel
 - Established in 2012
 - Provides scientific advice for decision-making
 - Serves as an advisor to the Finnish ministerial working group on energy and climate policy



(Midterm) evaluation of the implementation of Finland's NAS 2009

- Main objective of evaluation: what kind of progress has been made in 15 different sectors since 2005
 - incl. two new sectors: administrative sectors of Min. of Defence & Min. of the Interior
- 2009 evaluation was conducted by a survey of whether and how the indicative measures presented in the strategy had been launched in different sectors.
- Also new information on adaptation research
- Identified new needs for adaptation policy
 - for revising the adaptation strategy in 2012-2013





Survey to ministries: measures launched by 2009

- NAS identified indicative adaptation measures (anticipatory/reactive) for 15 sectors, divided into
 - Public sector
 - Administration and planning
 - Research and information
 - Economic-technical measures
 - Normative framework
 - Private sector
 - 3 time periods: immediate (*), short-term (**), and long term (***)).
- Evaluation report added a new column: measures launched.



Example: Measures launched in Agriculture

		Anticipatory (A)/Reactive (R)	Measures launched
Public	Administration and planning	<ul style="list-style-type: none"> • Attention to production methods adaptable to climate change, production structure and locations in support policy*** (A) 	<ul style="list-style-type: none"> • In the context of the mid-term review of the EU's common agricultural policy (CAP) a decision to increase measures under Rural Development Regulation, incl. those concerning climate change adaptation.
		<ul style="list-style-type: none"> • Development of animal disease monitoring systems** (A) 	<ul style="list-style-type: none"> • Finland has prepared a contingency plan for bluetongue disease, a catarrhal fever in ruminants spread by midges.
		<ul style="list-style-type: none"> • Development of plant disease and pest monitoring systems* (A) 	
	Research and information	<ul style="list-style-type: none"> • Development of new technologies and cultivation methods and providing information on them** (A) 	<ul style="list-style-type: none"> • Research project¹ on impacts of climate warming on the health of reindeer.
		<ul style="list-style-type: none"> • Conceptualisation of climate change and its risks* (A) 	<ul style="list-style-type: none"> • One of the ISTO research projects² investigates the risks of changing climate.
Economic-technical measures	<ul style="list-style-type: none"> • Integration of changed climatic conditions and plant protection requirements into plant improvement programmes* (A) 	<ul style="list-style-type: none"> • A joint Nordic plant breeding project has been launched. 	
	<ul style="list-style-type: none"> • Minimising the disadvantages of the potentially increasing use of pesticides** (R) 	<ul style="list-style-type: none"> • National action programme required under the framework directive on sustainable use of pesticides is being prepared. 	
Normative framework	<ul style="list-style-type: none"> • Assessment of the revisions to water protection guidelines** (A) 		
Private		<ul style="list-style-type: none"> • Introduction of new cultivation methods, cultivated crops and technology** (A) 	<ul style="list-style-type: none"> • Companies Raisio plc and Boreal Plant Breeding Ltd contribute to the funding of the ILMASOPU² research project. • Action on farmers' own initiative.
		<ul style="list-style-type: none"> • Extending the farm animal grazing period*** (R) 	<ul style="list-style-type: none"> • For the animal welfare payments, 550 farms have selected grazing during the growing period as the additional measure.
		<ul style="list-style-type: none"> • Increasing the control of pests and diseases** (R) 	<ul style="list-style-type: none"> • According to the ILMASOPU² research project, prevention has increased.



Indicator of the level of adaptation

- The Coordination Group for Adaptation to Climate Change assessed the level of adaptation by means of a preliminary indicator developed in the context of the evaluation process.
- The indicator (on a scale 1–5) consists of four criteria that develop from step to step:
 - need for adaptation
 - impacts known
 - adaptation measures
 - cross-sectoral cooperation.
- The levels of adaptation provide only indicative information
 - a great deal of variation between and within sectors.
- This type of qualitative evaluation works quite well in self-evaluation.
- Adaptation indicator can be applied in other decision-making environments.



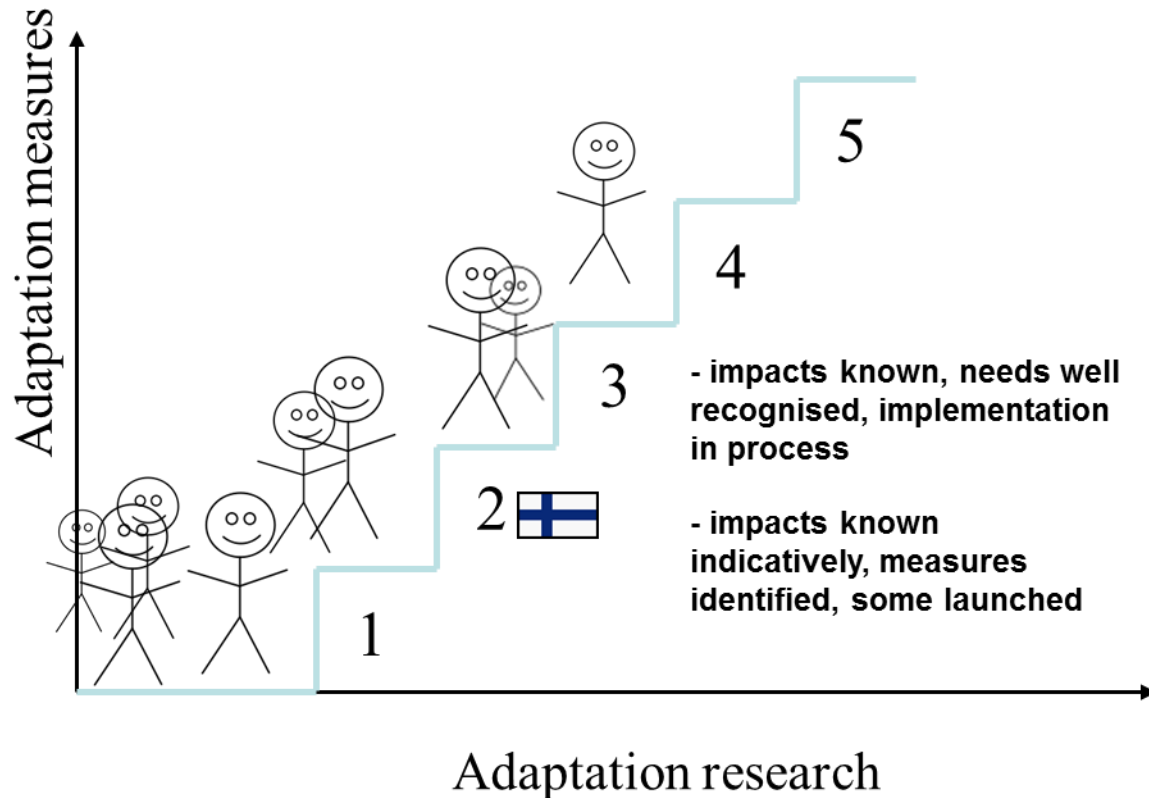
Levels of adaptation to climate change

Step 1 (lowest level)	<ul style="list-style-type: none">• Need for adaptation recognised among a group of pioneers in the sector.• Little research done on the impacts of or adaptation to climate change.• Some adaptation measures identified but not yet implemented.
Step 2	<ul style="list-style-type: none">• Need for adapt. measures recognised to some extent in the sector (some decision makers).• Impacts of climate change known indicatively (qualitative information), taking account of the uncertainty involved in climate change scenarios.• Adaptation measures identified and plans made for their implementation, some of them launched.
Step 3	<ul style="list-style-type: none">• Need for adaptation measures quite well recognised (majority of decision-makers).• Impacts of climate change quite well known (quantitative information), taking account of the uncertainty involved in climate change scenarios.• Adaptation measures identified and their implementation launched.• Cross-sectoral cooperation on adaptation started.
Step 4	<ul style="list-style-type: none">• Need for adaptation measures widely recognised and accepted in the sector.• Adaptation incorporated into regular decision-making processes.• Impacts of climate change well known, within the limits of the uncertainty involved in climate change scenarios.• Implementation of adaptation measures widely launched and their benefits assessed at least to some extent.• Cross-sectoral cooperation on adaptation measures an established practice.
Step 5 (highest)	<ul style="list-style-type: none">• Adaptation measures under the Adaptation Strategy or recognised otherwise implemented in the sector.



Evaluation of the strategy: Five steps of adaptation

- Finland:
 - On average on step 2
 - Agriculture, forestry, traffic, land use on step 3
 - Water resources on step 3-4
 - Measures launched in the private sector excluded





Mid-term evaluation identified new needs for revising the NAS

- Synergies and contradictions of mitigation and adaptation
- More cross-sectoral collaboration
- Wider understanding for need to adapt to socio-economical impacts of climate change
- Risk assessment and management for pessimistic scenarios
- Cost-benefit analysis for adaptation measures
- More local/regional aspects of adaptation
- More user-oriented communication about adaptation
- Recommendations of PEER study etc. into consideration
- Monitoring
- White Paper on adaptation / EU's Adaptation Strategy 2013



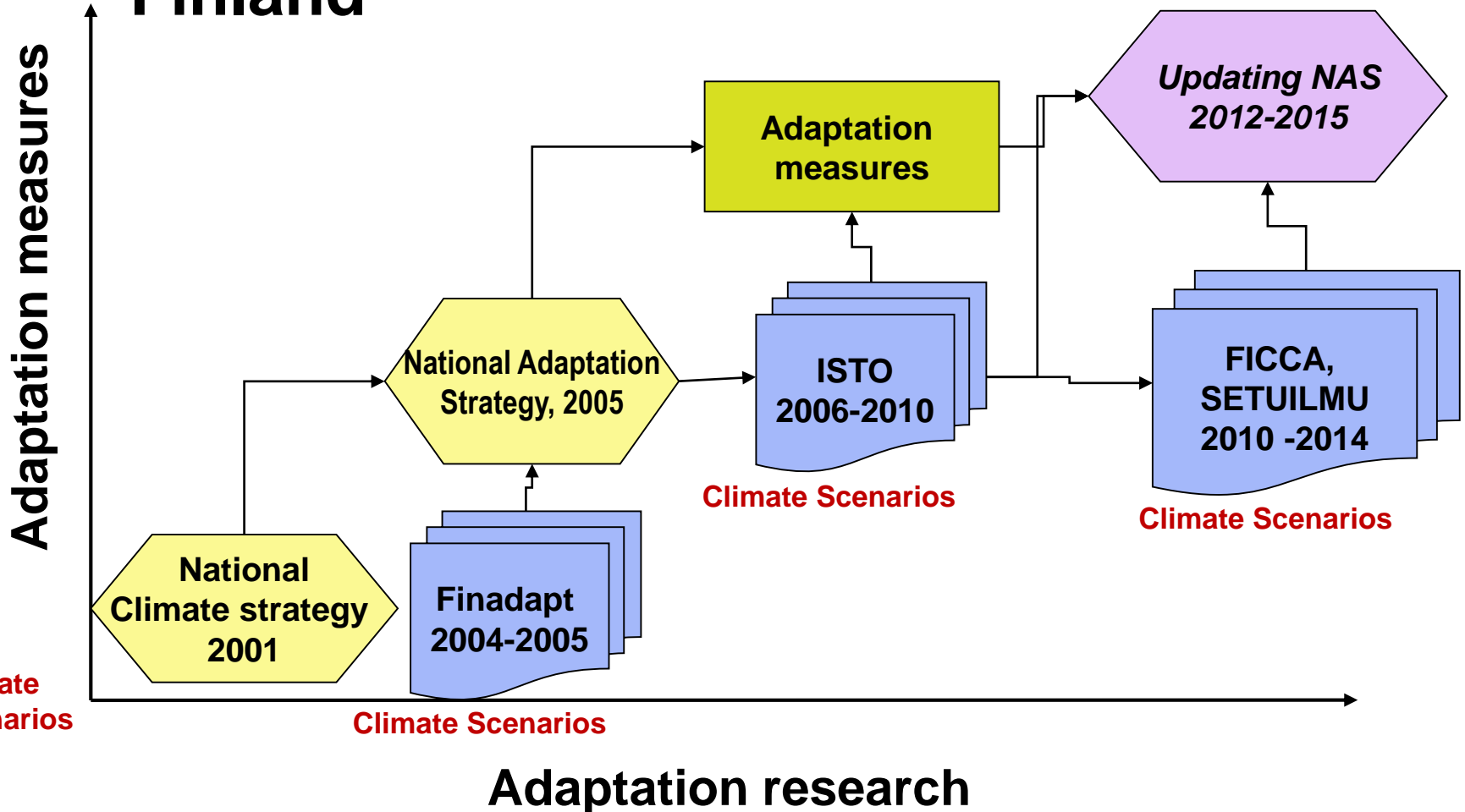
Past examples of adaptation work

- Research:
 - Climate change adaptation research programme, ISTO (2006-2010)
 - Vulnerability assessment of ecosystem services for climate change impacts and adaptation, VACCIA (2009-2011)
 - MIL-research programme – Forests in changing climate (2007-2012)
 - **How to adapt to inevitable climate change? – A synthesis of Finnish research on adaptation in different sectors**
 - The Finnish research programme on climate change, FICCA (2011-2014) of Academy of Finland
- Adaptation action plans:
 - for environmental administration 2008 & 2011
 - of the Ministry of Agriculture and Forestry 2011
- Adaptation surveys/pre-studies for road & rail management and maritime transport
- Provincial/regional and municipal climate strategies





Science–policy interaction in adaptation in Finland





Finland's National Adaptation Strategy, final evaluation 2012-2013

- How the objective "to strengthen and increase adaptive capacity" has been advanced since 2005?
- Evaluation of the implementation of the indicative measures => adaptation level
 - + gaps in the implementation and required additional measures
- Overview of existing regional and municipal level adaptation measures and requirements for national strategy
 - 150 of 336 municipalities has a climate strategy, in 70 % of them adaptation in some level
 - 12/13 regional climate and energy strategies include adaptation in some level
- Influence of the relevant EU policies
- Assessment of the level of knowledge (research)
- Cross-sectoral measures (?)
- Some information of the adaptation in private sector



Legislative framework

- **Laws, regulations and guidelines for implementation**
 - Climate Act 2015 – Adaptation included
 - Electricity market Act
 - Water Resources Management – Reassessment of existing permissions
 - Storm water guidelines
 - Flood risk management
 - Design values for building construction

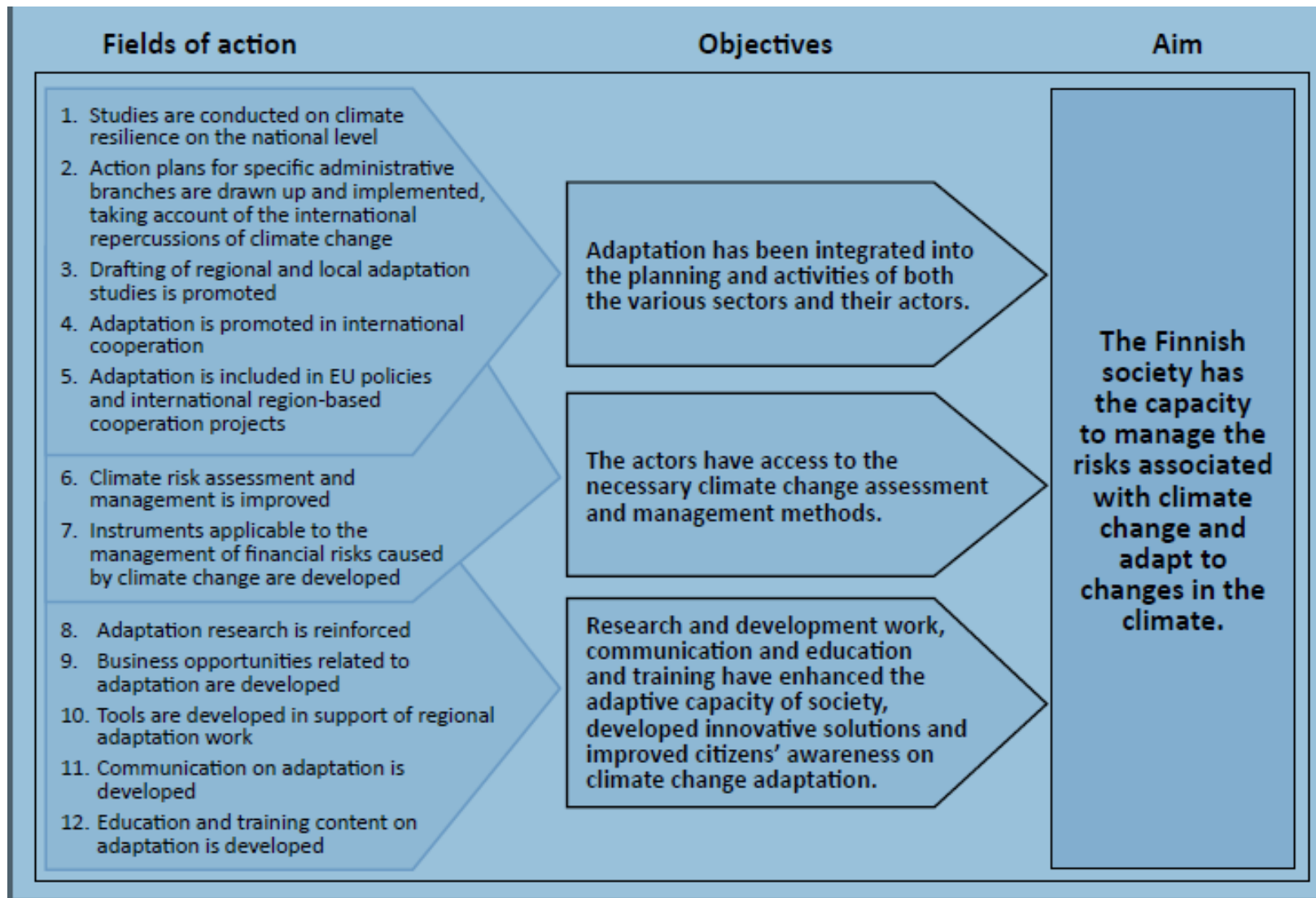


Revision of the NAS 2013: questions

- Form: *revision/update/only additional measures* -> "ACTION PLAN"
- Integrating new elements (cross-sectoral issues, regional/municipal level requirements) to strategy with "restricted" sectoral approach?
- Linking "the new" with "the old" (maintaining the ongoing work, not end up with two strategies...)?
- Balancing between strategic and practical approach
- Including more pessimistic scenario and possible additional/optional measures for that?
- Awareness raising and enhanced participation in the process - also private sector? -> **ELASTINEN-project**
- Getting/securing resources?



Finland's 2nd National Adaptation Strategy



ELASTINEN PROJECT (2015-2016)

(Proactive management of weather and climate related risks in Finland)

Funding: Government's analysis, assessment and research activities

- **support coherent/consistent adaptation to climate change**
- **develop solutions for different sectors for risk assessment and management related to extreme weather and climate events**
- **economic assessment methods**
- **find out what kind of information and tools (*including climate scenarios*) different actors need and study the possibilities to develop climate services and application tools for adaptation**
- **study how the international impacts of climate change (such as raw material availability, food security, water security, climate refugees) will be reflected to Finland and how they should be taken into account in risk management but also what kind of economic possibilities they provide**



Monitoring & Evaluation in the 2nd NAS

Measures:

13. A NATIONAL MONITORING GROUP ON ADAPTATION

- a) A national monitoring group is appointed to follow and evaluate the implementation of the adaptation plan, with representatives from the relevant ministries, research institutions, regional and local bodies and actors. The group is responsible for the implementation, follow-up and communication relating to the adaptation plan and promotes the cooperation between sectors in adaptation actions and the overall awareness raising on adaptation.

14. CONTINUOUS MONITORING OF THE PLAN IS ENSURED AND THE SCALE AND EFFECTIVENESS OF THE IMPLEMENTATION IS EVALUATED

- a) The available systems, follow-up procedures and indicators are utilised to compile information suitable in view of the adaptation plan from the follow-up of the adaptation plans and action programmes of sectors, municipalities and other parties. Procedures are developed for evaluation of effectiveness, including assessment of the suitability of the indicators for evaluating adaptation actions and any development needs in these. The information compiled is utilised already in the planning and programmes stage to steer the work towards the set objectives and for communication purposes.
- b) Action is taken to influence the development of the follow-up of the EU Adaptation Strategy with due account for the Regulation on reporting information relevant to climate change.



Monitoring system

- **Information, not indicators**
 - Are the indicators telling what you want to know?
 - Is there a data collection system already in place to collect the indicator data
- What is adaptation to climate change? *Increased dikes? New crops? Poverty reduction?*
- How to measure **effectiveness** of adaptation?
 - Votsis & Perrels: Flood risk maps and impact on property value
- How to measure **efficiency** of adaptation?
 - Electricity Market Act



Suggested indicator system in Finland



- Altogether 31 indicators suggested for
 - Energy, transport and communications
 - Water bodies, Water resources and management
 - Agriculture and forestry
 - Natural habitat and biodiversity
 - Health and welfare
 - Safety/Security and citizen preparedness 6/6
 - Regional adaptation
 - Adaptation opportunities



Indicators - Keep in mind

- What is the purpose of the indicators? What are they used for?
- Who is using the indicators?
- How are they used?
- How are the indicators updated?
- Who will update?
- How are results published and disseminated?
- Categorisation of the indicators:
 - Statistics/indicators describing climate change
 - Statistics/indicators describing vulnerability
 - Indicators for policies/measures
 - Indicators for policy/measure effectiveness
- Keep it simple – use existing data
- Needs to be a participatory process
- Make sure data exists and the format is usable



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Haaganpuro brook in Helsinki was restored to prevent flooding

Climate change will increase heavy precipitation events which will, in turn, increase storm water runoff as well as urban floods. To prepare for the increasing floods, the bottom of the Haaganpuro brook in Helsinki was restored by placing submerged weirs and boulders to slow down the flow velocity and to decrease the flood risk downstream.



Basic information

Institution in Charge: Stara (Construction Services of the City of Helsinki)
Location: Helsinki, Haaganpuro brook

Regulating the flow rate reduces flood risk

Kruunusillat (Bridges) in Helsinki

Major transport network planning project
 If approved, it will be finalised in 2024
 Estimated budget 210 million euros

