



YMPÄRISTÖMINISTERIÖ  
MILJÖMINISTERIET  
MINISTRY OF THE ENVIRONMENT

# Adaptation to climate change in Finland

Antti Irjala

Ministry of the Environment

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- Finland's National Adaptation Strategy and its implementation in the environmental administration

Finnish National Adaptation strategy, 2005

An Action plan to Implement the National Strategy in the environmental sector, 2008

Evaluation of Implementation of the National Strategy, 2009



Photo: Jouko Lehmuskallio

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- # Process towards the National Strategy for Adaptation

- A proposal concerning the preparation of a climate change adaptation programme was given by the Parliament in the context of the processing of the National Climate Strategy of 2001
- Parliamentary response to the National Climate Strategy 2001: national climate policy needs to focus on both mitigation and adaptation
- The preparation of the National Adaptation strategy was started in 2003

## ● Adaptation strategy – process

- The work was carried out in cooperation between representatives of the Ministries and scientific institutions in 2003-2005
- Process was coordinated by the Ministry of Agriculture and Forestry
- Climate change data and information: Finnish Meteorological Institute (FMI)
- Changes in natural conditions (soil, water, air, plants and animals): Finnish Environment Institute (FEI)
- Socio-economic scenarios: Government Institute for Economic Research

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- Adaptation strategy includes key sectors

- Natural resources: agriculture and food production, forestry, fisheries, game husbandry, reindeer husbandry, water resources
- Biodiversity
- Industry, energy
- Transport
- Land use, buildings
- Health
- Tourism, recreation
- Insurance

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- **Adaptation strategy - priorities identified for better adaptation capacities include**

- Mainstreaming the impacts and adaptation into sectoral policies
- Include climate aspects into long-term investments
- Improve capacities to address extreme weather events
- Develop further observation and warning systems
- Strengthen and focus research and development
- Address international linkages and development cooperation

# Implementation of the National Strategy

- Sectoral impacts: risks, opportunities and adaptation measures
- Integrate climate change impacts and adaptation into sectoral planning, implementation and evaluation (mainstreaming)
- Starting point for the implementation...
  - detailed evaluation of the impacts
  - definition of adaptation measures
- Sectoral strategies and programmes

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- National Adaptation Strategy – Evaluation

- Evaluation of Implementation of the National Strategy in 2009
- National Strategy for Adaptation to Climate Change will be reviewed in 2011-2013



[www.mmm.fi/sopeutumisstrategia](http://www.mmm.fi/sopeutumisstrategia)

Also in Swedish and in English



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- Adaptation in the Environmental Administration:  
An Action Plan for the Implementation of the National Strategy (2008)

- The plan includes following sectors:
  - biodiversity
  - land use and communities
  - building and construction
  - environmental protection
  - use and management of water resources

Cooperation with the Ministry of Agriculture and Forestry  
( water resources)

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- # An Action Plan for the Implementation of the National Strategy - content

- The plan includes over 40 concrete adaptation measures
- For each measure:
  - responsible organisations
  - schedules
  - need for resources



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- The most essential impacts in the sphere of the environmental administration include

- Increase in the occurrence and intensification of **extreme weather events** such as floods, storms and heavy rainfall
- Changes in the quantity and seasonal variation of **water resources**
- Changes in **biodiversity**



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- Measures



- Biodiversity

## ● Biodiversity: measures

- Necessary decisions on the possible need to amend legislation as required will be adopted on the basis of the overall assessment of the environmental legislation.
- Relevant and urgent research needs related to biodiversity will be defined to promote adaptation to climate change and they will be integrated, e.g. into the
- contents and objectives of sectoral research.

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- ## Biodiversity: measures

- Species and their natural habitats and biotopes threatened by climate change will be identified.
- Measures needed for promoting their conservation and adaptation will be defined.
- A national strategy and action plan for non-indigenous species will be prepared and aspects related to adaptation to climate change will be considered in it.



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- # Measures

- Land use and community



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- ## The National Land Use Guidelines (revision 2009)

- On November 2009 the Government took a decision to revise the national land use guidelines
- “ The guidelines were revised to meet new challenges of land use as well as possible, especially climate change”
- The national land use guidelines must be taken into account and promoted in regional planning, municipal planning and in the work of the state authorities



## • The National Land Use Guidelines

- Land use should **take into account flood risk areas**, as reported by the authorities, and the aim should be to prevent the risk of flooding
- In land use planning, **new construction should not be located in areas that are prone to flooding.**
- Land use planning must **indicate**, if necessary, **alternative land use solutions** for what are especially **important activities** in terms of viability of the community, **but which pose considerable risks** to the environment or people.

# • The National Land Use Guidelines

- **Local master and detailed planning** should take into account of the increasing possibility of **storms, heavy rainfall and flooding in built areas**
- The preservation of **ecological corridors** between protection areas is to be promoted, and, where necessary, these areas and other valuable natural areas are also to be promoted
- The development of areas and land use planning pertaining to **communications and energy networks** should take into account of **extreme weather conditions** and the risk of **flooding**

## • Some other measures regarding land use

- The need to amend the Land Use and Building Act as required by mitigation of, and adaptation to, climate change will be explored.
- It will be ensured that, e.g. ecological corridors that are extensive and sufficiently integrated with respect to the migration of species will be safeguarded in land use planning.
- Databases needed in adaptation will be integrated into the environmental administration's data systems. The compatibility of the data systems will be ensured.

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- Measures

- Buildings and construction



## ● Building and constructions: measures

- The need to amend regulations (including building regulations) with regard to adaptation will be investigated based on research related to climate change, extreme weather conditions and applied research on construction.
- The need for information dissemination regarding adaptation to climate change and the steering of construction will be investigated. Informative material lending support to the regulation of construction will be produced.
- The impacts of changes in central stress factors on buildings will be specified by means of research and investigation in the fields of construction engineering and construction physics.

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- # Measures

- Environmental protection



## ● Environmental protection: measures

- The need to amend the Environmental Protection Act and the Water Act to take into consideration the impacts of extreme weather events on to the environment by climate change will be investigated.
- Measures related to environmental risks (such as floods, drought) and their organisation will be defined both within the administrative sector and between other administrative sectors, including the rescue services.
- The impacts of climate change on the leaching of nutrients and discharges into inland and coastal waters and especially on the eutrophication of the Baltic Sea will be investigated.

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- Measures



Use and management of  
water resources



## ● ● ● Use and management of water resources: measures

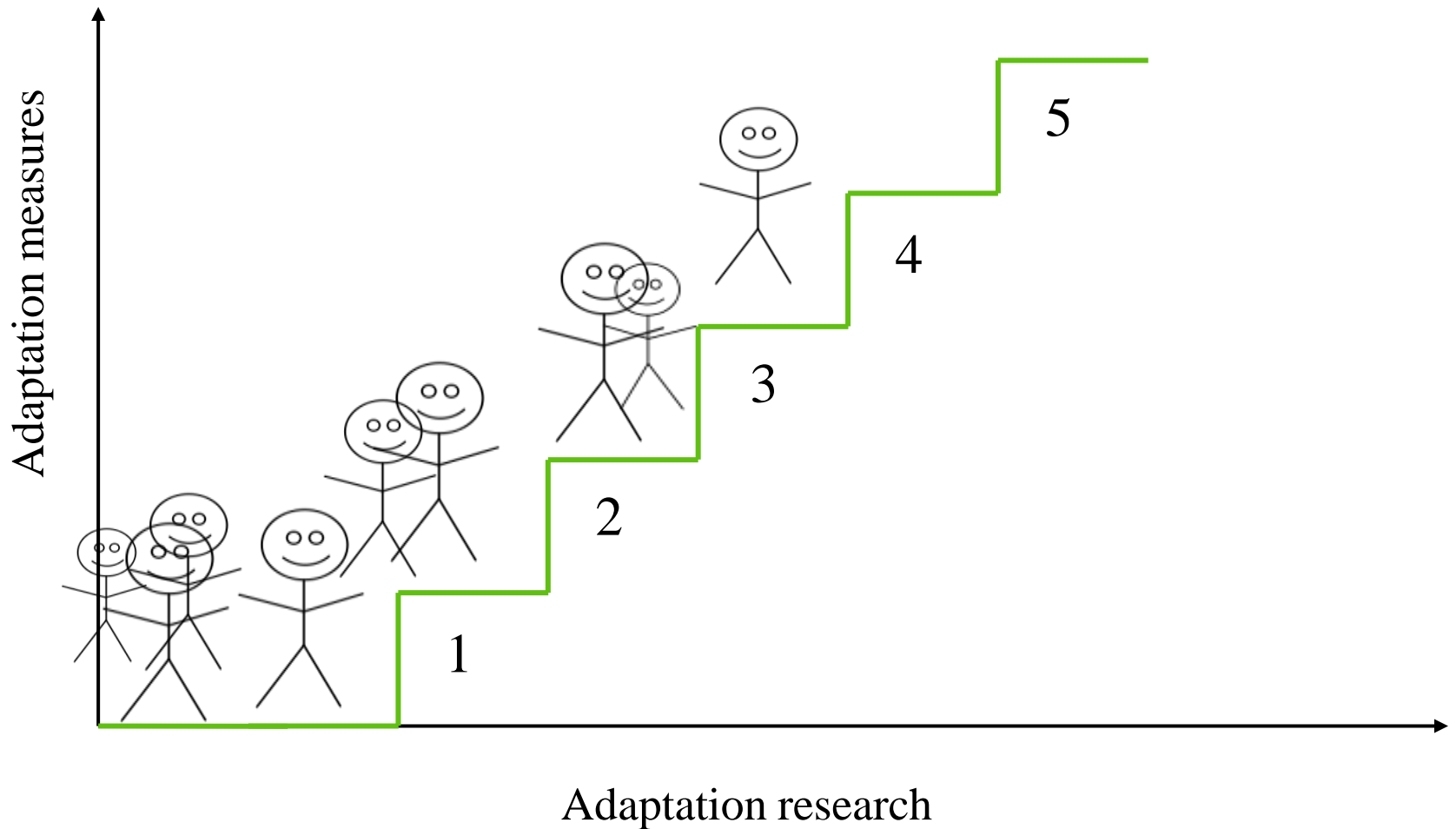
- The impacts of climate change and adaptation will be investigated in the national implementation of the EU's Floods Directive. Legislation and regulation measures relating to the retention of flood waters will be developed.
- Flood hazard and flood risk maps for significant flood risk areas will be prepared and these maps will be distributed to authorities and local residents. Guidelines on measures for preventing flood damage will be prepared for property owners.
- The impacts of climate change on the design floods of dams and the implementation of the designed outflow of dams will be investigated.

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  - Evaluation of Implementation of the National Strategy
- Where are we now – steps in adaptation to climate change
  - Updating the National Strategy in 2011-2013



Picture: Jouko Lehmuskallio  
(Ympäristöhallinnon kuvapankki)

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- Steps in adaptation...



# Steps in adaptation to climate change

## **Step 1**

- Need for adaptation recognised among a small group of pioneers in the sector
- Little research on the impacts of or adaptation to climate change
- Some adaptation measures identified but not yet implemented

## **Step 2**

- Need for adaptation measures recognised to some extent in the sector (minority of decision-makers)
- Indicative understanding of the impacts of climate change (qualitative information)
- Some adaptation measures identified and plans made for their implementation, some launched

## **Step 3**

- Need for adaptation measures quite well recognised (majority of decision-makers) in the sector
- Impacts of climate change quite well known (quantitative information)
- Adaptation measures identified and their implementation launched
- Cross-sectoral cooperation on adaptation measures started

## **Step 4**

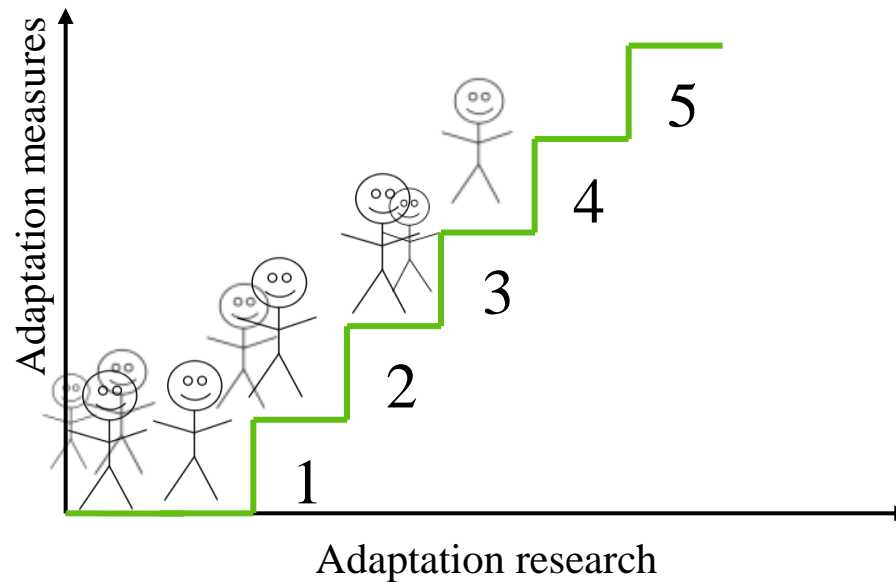
- Need for adaptation measures widely recognised and accepted in the sector
- Adaptation incorporated into regular decision-making processes
- Impacts of climate change well known, within the limits of the uncertainty in climate change scenarios
- Implementation of adaptation measures widely launched and their benefits assessed at least to some extent
- Cross-sectoral cooperation on adaptation measures an established practice

## **Step 5**

- Adaptation measures under the strategy or recognised otherwise implemented in the sector

# Adaptation level in Finland in 2009

- All the sectors considered - on average on step 2
- Water resources management the most advanced sector (step 4)
- Agriculture and forestry, traffic, parts of the environmental administration around step 3
- Other sectors on steps 1...2



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- **Identified new needs for updating the national adaptation strategy in Finland**

- 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 SRES-scenarios
- Cost-benefit analysis for adaptation measures
- More regional aspects of adaptation
- More user-oriented communication about adaptation
  
- Recommendations of PEER study
- White Paper on adaptation



Planned protected area "Ladoga Skerries" (Photo: Pertti Siilahti)

Network of protected areas along the Finnish-Russian-Norwegian border

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- Thank you for your interest!



Photo: Riku Lumiaro