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Development of Latvia's National Climate Change Adaptation Strategy

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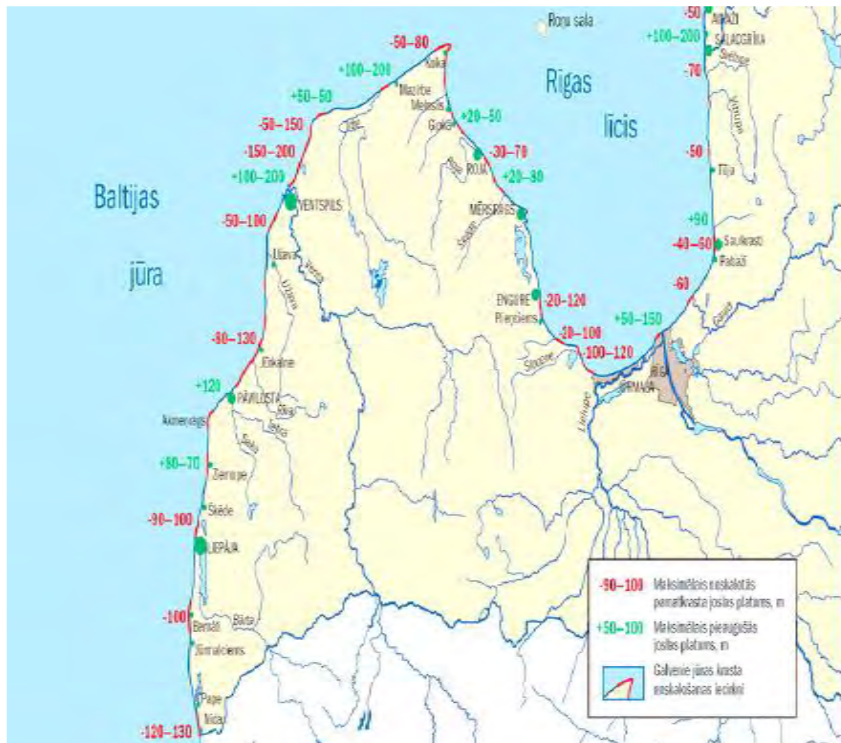
In short



1. From geophysical features to climate change (CC) risks and advantages in scientific aspects
2. Starting evident based policy
3. Opportunities for development of Latvian CC adaptation system
4. On-going work – finishing EEA projects and political commitments

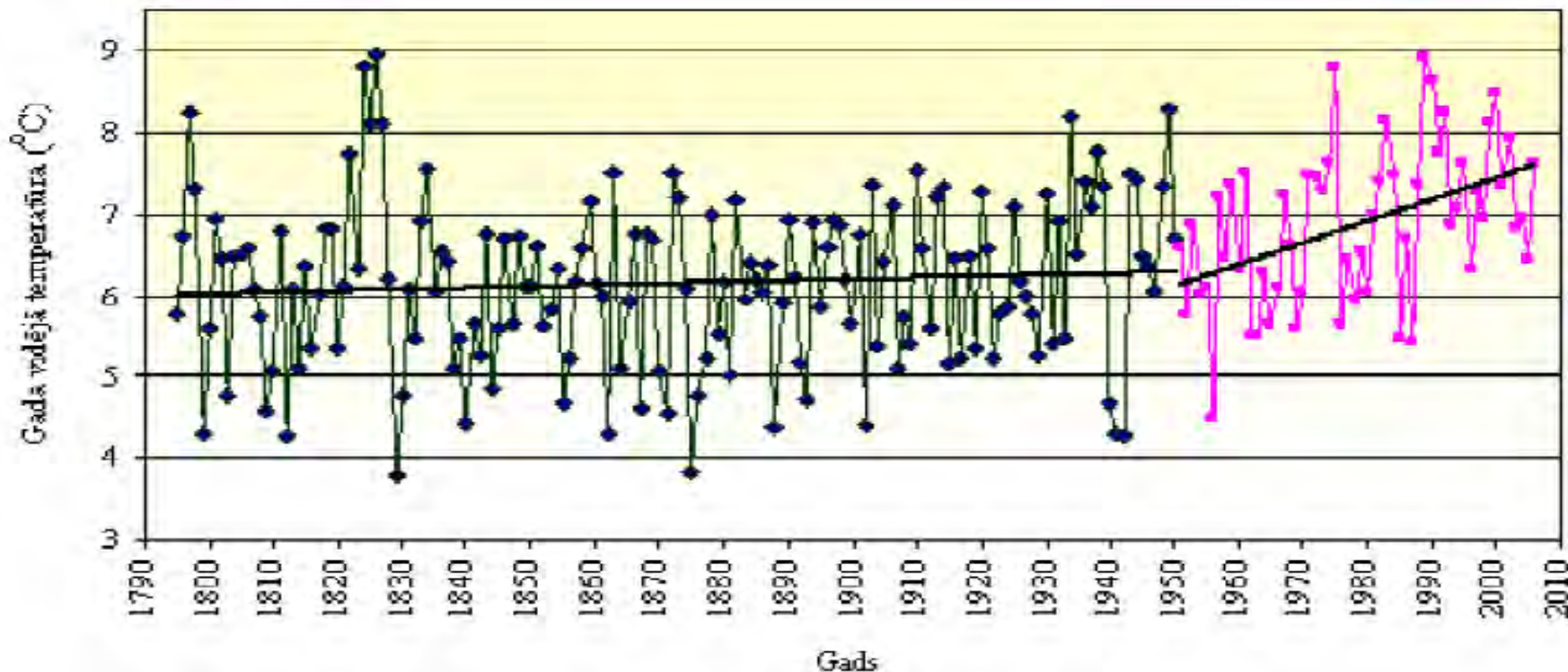
Latvia`s geophysical features

Overall change of basic coastline over period of last 70 years: territory of Latvia has lost 1000 ha taken by the Sea eroding basic coastline in range up to 50 – 200 m



- Latvia encompasses 64,589 square kilometers and is an extension of the East European Plain, 495km long sea coast
- Flat surface topography (98% of the country lies under 200m above sea level)
- The climate is humid (mean precipitation varies from 600 to 850 mm/year) and comparatively cold - mean annual air t° + 5.8°
- Latvia is rich in waters: the mean density of the river network is 600m/km2 water bodies occupy 1.7% from territory
- Rich in bogs - about 10% of territory consists of peat bogs, swamps, and marshes (>50% without human impacts)
- Rich in forests (main species: pine-tree, spruce, birch, alder, maple) – cover about 50% from territory; rich in biodiversity and biotopes
- 42 nature parks

Annual mean temperature in Riga over period of 1790 – 2010: urban «heat island»



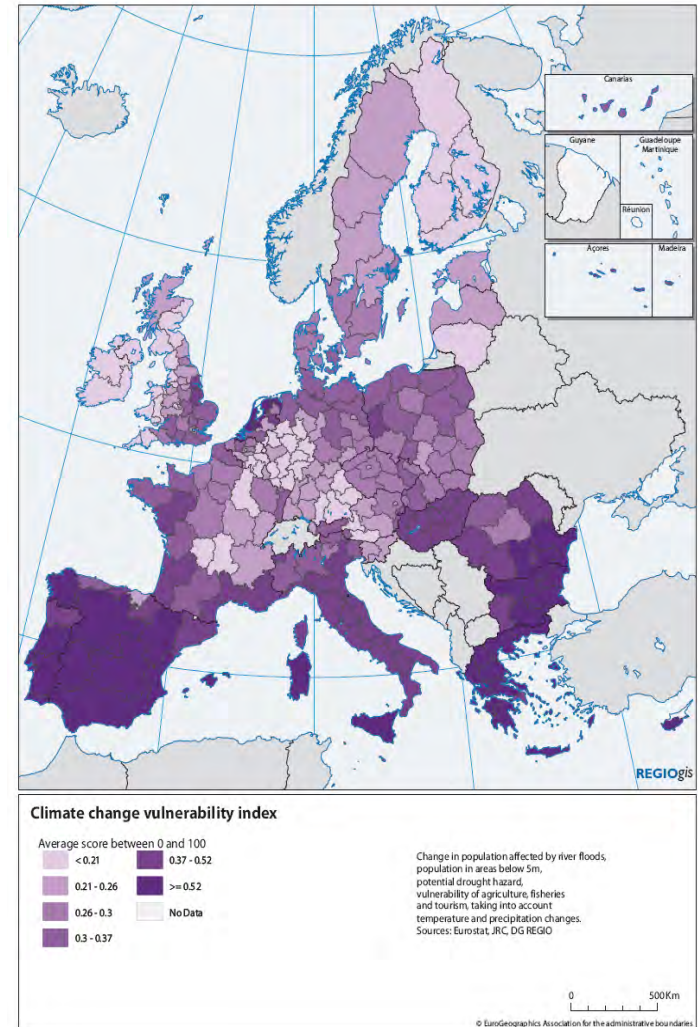
OECD: Cities - home to more than half of the world's population and much of the world's industry. By 2050, more than 70% of the population – 6.4 billion people – is projected to live in urban areas.

In Latvia such situation is already now: 68% of population live in cities or urban areas and only 32% - in rural areas. In Riga – 700 thsd. inhabitants, 28.0 % - green territory.

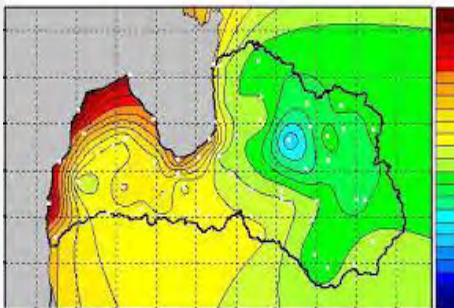
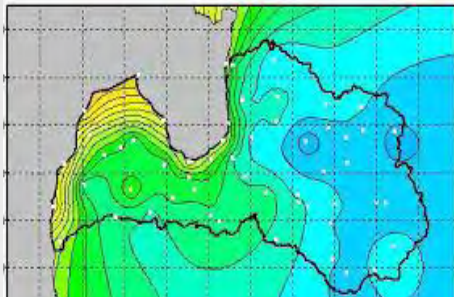
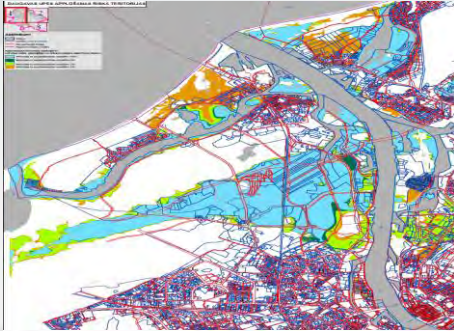
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CC impacts and trends

1. The average air t° increase much faster in winter than summer
2. Also spring has significant air temperature increase
3. The amount of precipitation has increased
4. Precipitation more often is heavy & very heavy (≥ 20 mm)
5. More summer days (with maximum air temperature $\geq +25$ °C), increase trend is more rapid than previously
6. Growing season period length has increased by 5.4 days, most rapid changes occurred near the Baltic sea coast and in north-east side of Latvia
7. River discharge are significant for winter season (especially for last 30 years)
8. Ice cover period decreasing (up to 5.1 days every 10 years)



Research and development regarding climate change impacts



Faculty of Geography and Earth Sciences of the University of Latvia - adaptation policy design, climate change impacts on aquaculture, surface and ground water, inland and Baltic Sea, coastal erosion)

Faculty of Biology of the University of Latvia (e.g. ecosystems` services, CC impacts on biotypes and species)

Center of Processes` Analysis and Research (Latvian University - PAIC, flood modelling, future climate modelling, CC scenarios, projection of impacts` values)

Latvian State Forest Research Institute "Silava" (e.g. forest ecology, entomology, regeneration and establishment, forest monitoring)

Institute of Food Safety, Animal Health and Environment "BIOR" (fishery inspection, data collection and research for fish resources, etc.)

Riga Technical University (e.g. climate change technologies)

Latvia University of Agriculture (bioeconomy, forestry, risks in agriculture, the impact of CC on water ecosystems, forestry and agriculture, adaptation)

Agrarian Economic Institute of Latvia (CC risk management in agriculture)

Several research institutes for new breed crop varieties suitable to changing climatic conditions in Latvia, etc.

State research programme – EVIDEnT (ongoing)

" The value and dynamic of Latvia`s ecosystems under changing climate - EVIDEnT“
(2014-2017)



EVIDEnT addresses all 10 tasks of and is structured in 5 projects:

1st Project - adapting/elaborating models for wind fields, wave and current dynamic, developed wave and current measurement sensor prototypes and performed field measurements, and performed food chain study in system lake-river-sea.

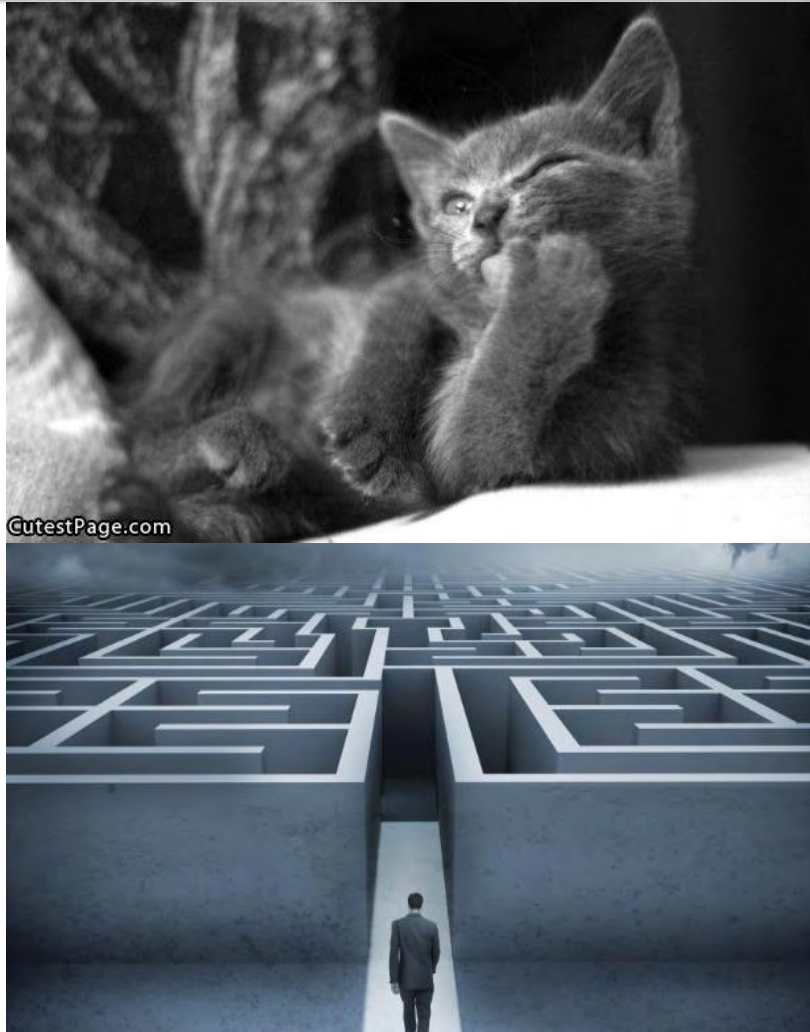
2nd Project - investigating introduced species in freshwater ecosystem (HEP reservoir), port and adjacent to them areas, and in the sea.

3rd Project – developing tool to estimate air emissions and calculate future scenarios, survey farms and estimate GHG emissions from agricultural sector, and estimate integral impact from forestry.

4th Project – performing studies of biodiversity on all levels, model biotopes and estimate monetary value of selected ecosystem services.

5th Project - developing climatic scenarios, developing/improving hydrogeological model including infiltration from surface water measurements.

From problem to policy



Problems by the nature are not objective given, but are social constructs. (Dery 1984)

Problems are only a form how reality is perceived by the contemporary society.

Therefore social dimension of problem solving becomes the most important and the same time – the most problematic mostly because of unstructured nature of this problem.

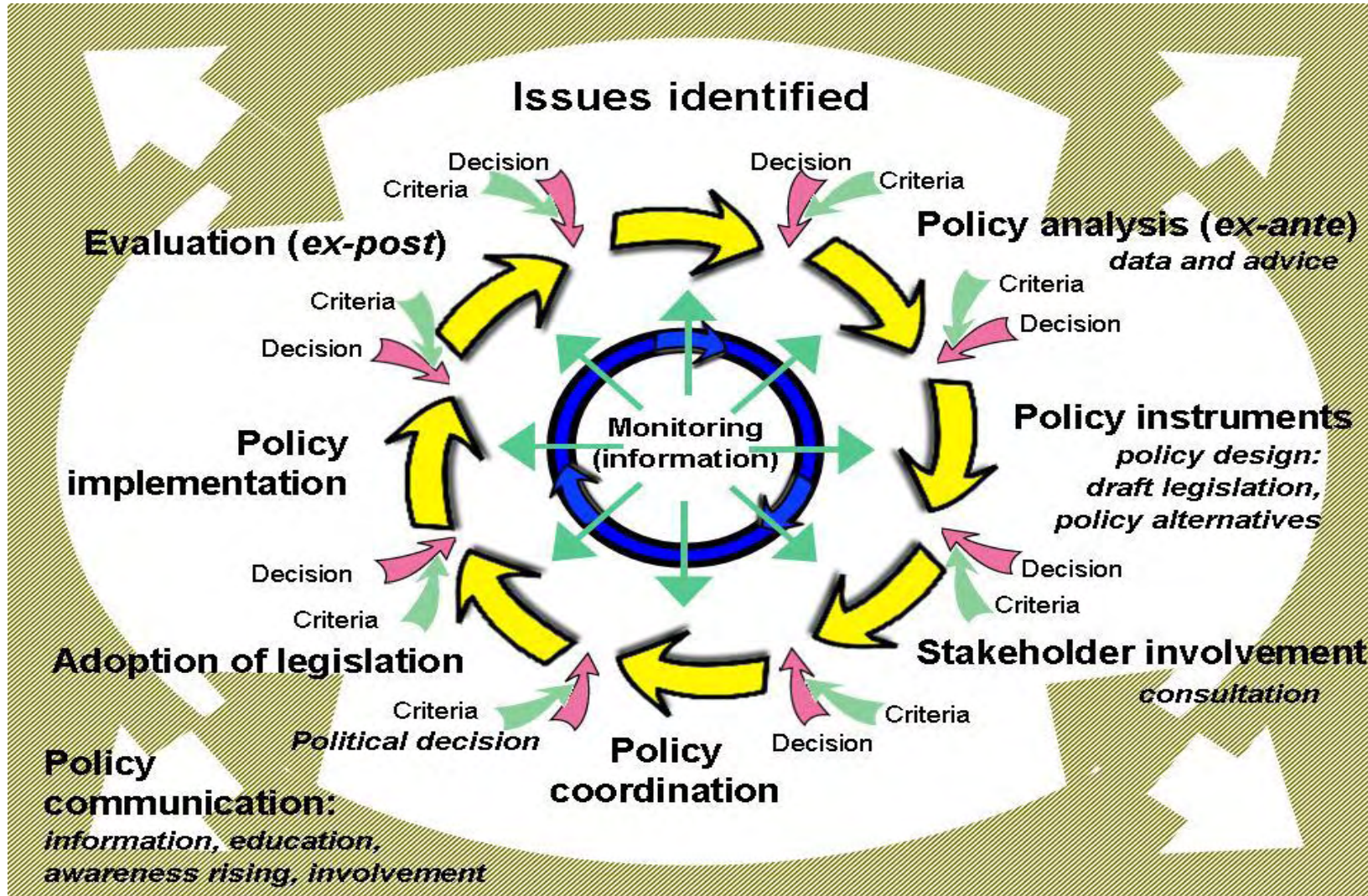
Climate change impacts – global challenge to society!!!

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EU political requirements for adaptation strategy elaboration

1. EU Adaptation Strategy Package (2013) – all EU member States (MS) have their adaptation strategies until 2017
2. EU Regulation 525/2013 on reporting (every 4 years), monitor progress and action in adapting to CC
3. The European Climate Adaptation Platform (Climate-ADAPT) – prescribe in Regulation 525/2013: MS country profiles, case studies, regional information
4. European Commission Report (in 2017) on EU member States` adaptation progress and official scoreboard

Policy cycle



(risks and gains) in sectors.

Example - agriculture

CC causal – chain effects

CC impacts -> decrease of yields from traditional crops -> economic losses

CC impacts -> decrease of yields from traditional gardening species --> economic losses

CC impacts -> increase in spread of specific insect species -> damage to livestock (cattle) -> economic losses

CC impacts -> flooding -> damage to agricultural lands -> economic losses

CC impacts -> increase in storms -> damage to agricultural lands & harvest -> economic losses

CC impacts -> soil erosion -> yield reduction -> economic losses

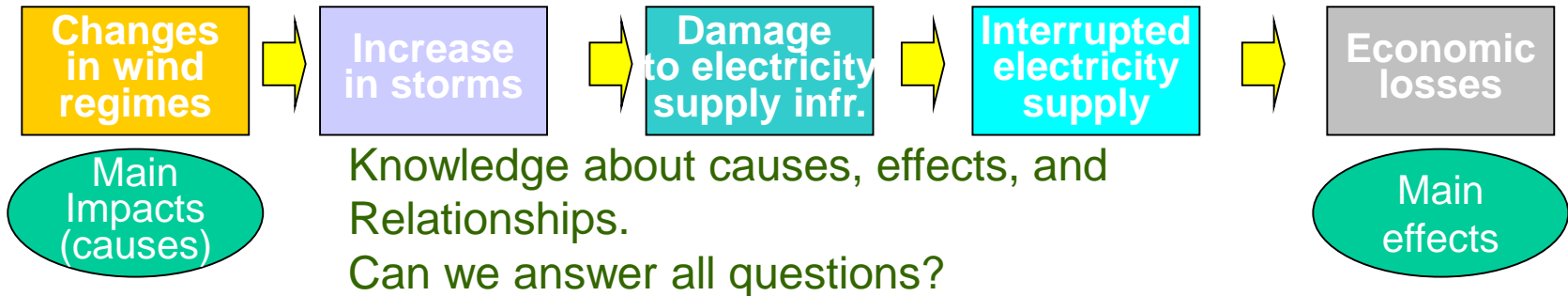
Risks

- Yield reduction of traditional crops, fruits and vegetables
- Insect and diseases damage to livestock
- Crop losses in floods
- Storm damages to crops
- Soil erosion impacts on agriculture
- Heat stress effects on agriculture and livestock
- Changes in distribution of cold-adapted crops and species

Benefits

- Longer phenological season
- Introduction of new crop varieties
- Southern varieties for fruit-growing (grapes, watermelons)
- Development of new agricultural sub-branches, e.g. vine production

Example of cause–effect relationship: Electricity supply infrastructure



- How wind regimes will change?
- How much will increase frequency and power of storms?
- How much will increase damage (frequency and severity) to electricity supply infrastructure?
- How much will increase interruptions in electricity supply (time and number of clients / households)?
- What economic losses will be caused by such increase?
- How to avoid increase in interruption in electricity supply? = How to adapt?

Policy options:

Local generation to avoid long transmission lines;

Replacement air lines by underground cables.

- How much it will cost (cost – benefit analysis), is it worth to do this?

Political opportunities for development of CC adaptation system



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- CC adaptation policy and measures practically are incorporated into all sectorial policies (coast zone management, health care, civil protection, etc.) as well as at all levels (development plans) in spite of lack of adaptation system
- Insurance system regarding weather extremes is developing rapidly. Two insurance schemes exist: 1) “Natural Disasters” exists in the private sector and applies to humans as persons, 2) the second insurance scheme is developed especially in agriculture - insurance of agricultural risks (special fund)
- Civil protection system includes management of all natural extremes (storms, rainfall, floods, etc.) in all sectors and governmental levels (under supervision of State Fire and Rescue Service)

Climate change related risk management policies

Global level: UN Sendai Framework for Disaster Risk Reduction 2015-2030 Aim: *the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.*

EU level: - European Commission document on Risks Assessment and Mapping Guidelines for Disaster Management (2010) – based on ISO standard 31010
- EU Adaption Strategy Package (2013)

LV level:

- “Report on Adaptation to Climate Change” approved in Cabinet of ministers (2008) – CC risk identification in general
- Intergovernmental working group for preparing national risk assessment (2012)
- Overall analysis of CC risk assessment in sectors and proposals for development of adaptation system (2012)
- Ministry of Interior and State Fire and Rescue Service mapped 14 risk scenarios (causes, consequences and threats), e.g. storms, floods, forest fires, interruptions in electric power transmission and distribution systems (2015)
- Law on Civil Protection and Catastrophe Management (approved by Parliament – Saeima - in 5/05/2016)



Norwegian adaptation project outcomes



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1. CC scenarios for LV (t°, wind, precipitation):

- Past climate data analysis for periods 1961-2010, 1971-1990 and 1981-2010
- Future climate scenarios till year 2100 for periods 2010-2040, 2040-2070, 2070-2100

2. Establishment of CC adaptation monitoring system

3. Risk and vulnerability assessment, adaptation measures, cost-benefit analysis – thematic reports for 6 sectors:

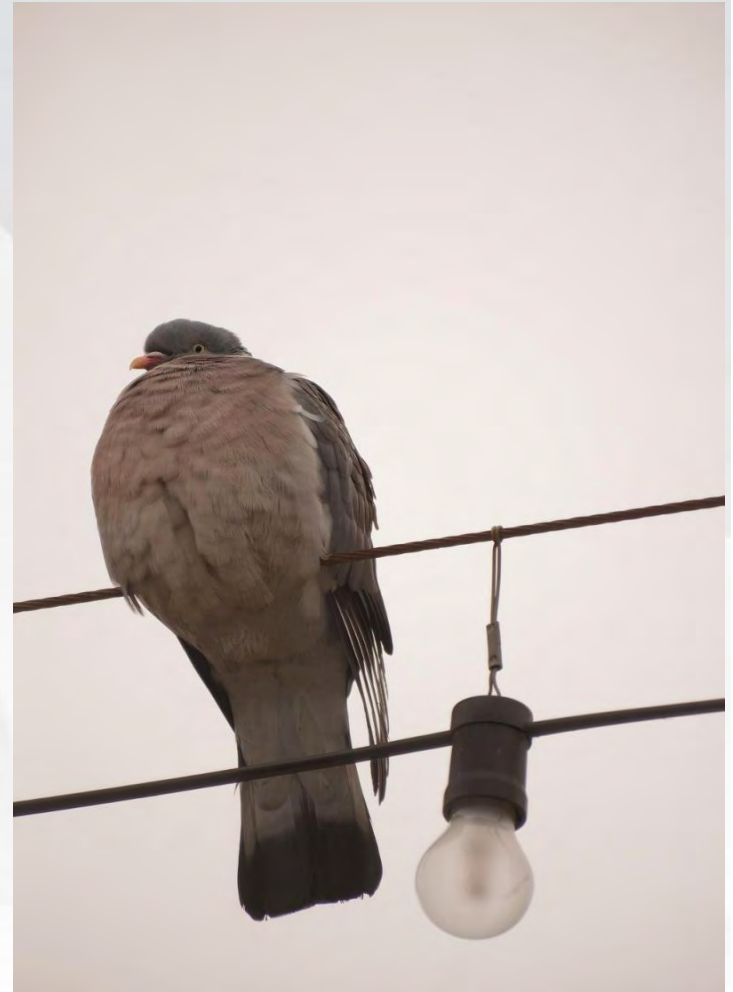
- Building and infrastructure planning;
- Agriculture and forestry
- Civil protection and emergency planning
- Landscape planning and tourism
- Biodiversity and ecosystem services
- Health and wellbeing

3. Development of National climate change and adaptation web-platform

4. Already ended activities: flood risk maps for 3 river basins, Maritime Spatial Plan (long-term planning document)

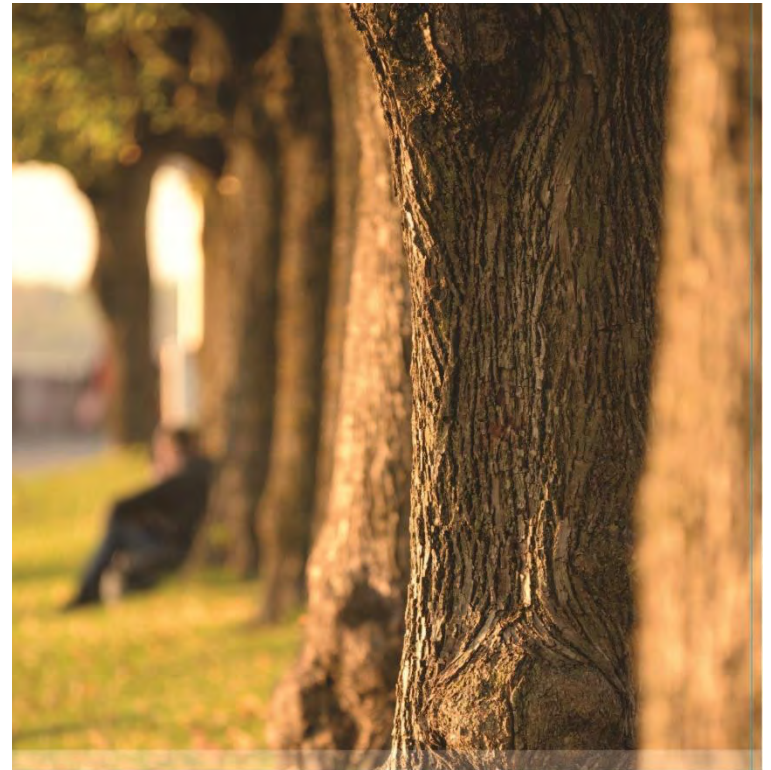
Timetable for LV adaptation strategy political steps

1. In Government Declaration due date: 31/06/2017
2. In MEPRD work plan – submission in Cabinet of Ministers - December 2016
3. Resumption of 2 working groups (intergovernmental and expert) – established by government already in 2008: aim is to involve all main decision-maker groups in adaptation system design
4. Public consultations – November / December 2016



THANK YOU!

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Programmas
„Nacionālā klimata politika” projekti