



Elinkeino-, liikenne- ja ympäristökeskus
Närings-, trafik- och miljöcentralen
Centre for Economic Development, Transport and the Environment

Integrating Flood Risk Management and River Basin Management Planning

Is it possible?

Vesien- ja merenhoidon yhteistyöryhmä
17.9.2015

Etelä-Pohjanmaan ELY-keskus

28.9.2015

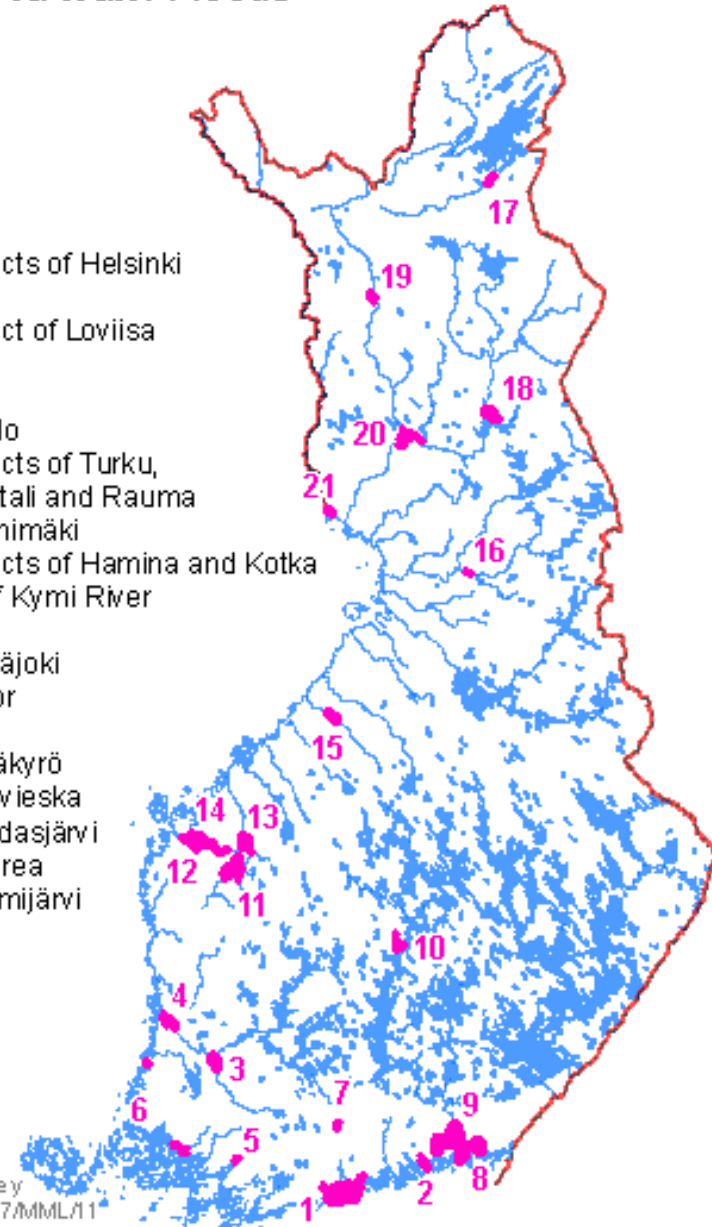


Areas of significant flood risk

- Four coastal, rest fluvial
- Covers around 70.000 inhabitants
- Majority in areas with waters in less than good ecological status
- Integration of measures necessary! (both ways)
- Synergy from measures?

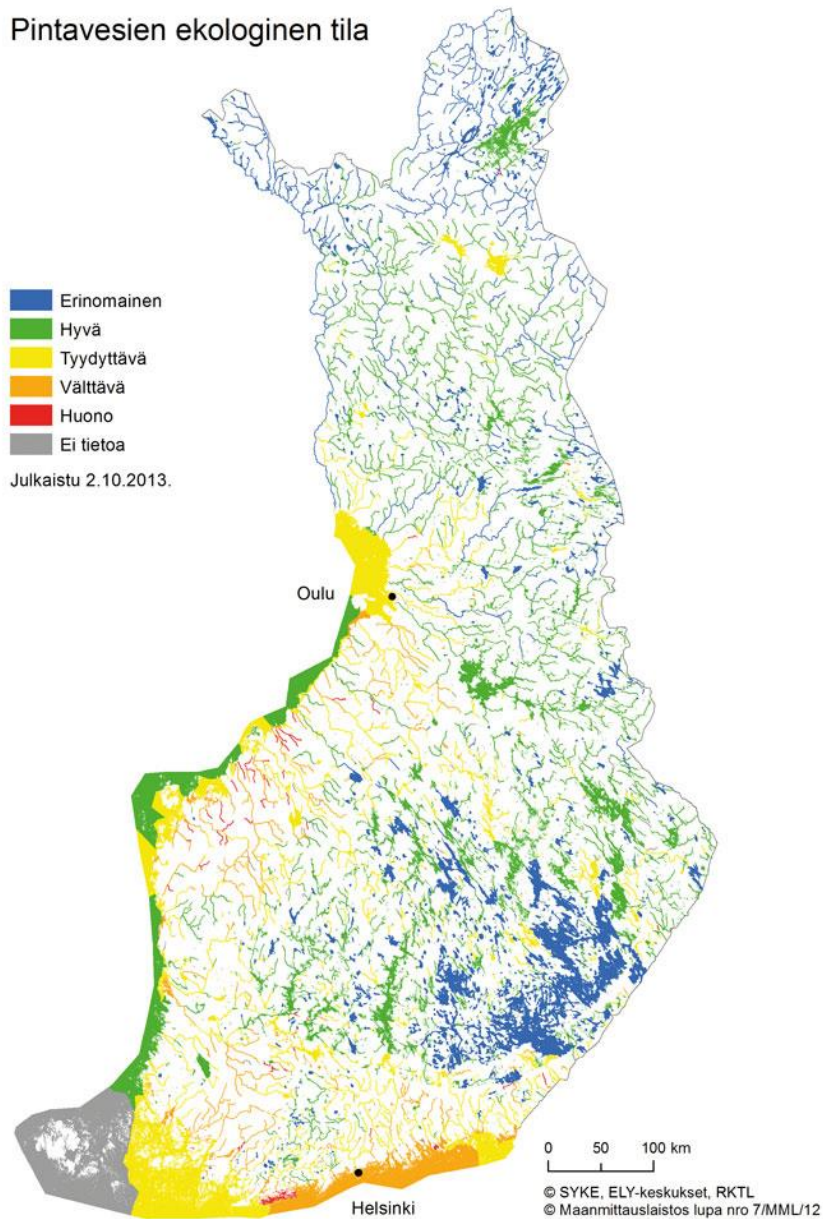
- Fluvial or Sea Water Floods

- 1 Coastal districts of Helsinki and Espoo
- 2 Coastal district of Loviisa
- 3 Huittinen
- 4 Pori
- 5 Centre of Salo
- 6 Coastal districts of Turku, Raisio, Naantali and Rauma
- 7 Centre of Riihimäki
- 8 Coastal districts of Hamina and Kotka
- 9 Lower part of Kymi River
- 10 Jyväskylä
- 11 Ilmajoki-Seinäjoki
- 12 Laihia-Runsor
- 13 Lapua
- 14 Ylistaro-Vähäkylä
- 15 Alavieska-Ylivieska
- 16 Centre of Pudasjärvi
- 17 Ivalo urban area
- 18 Centre of Kemijärvi
- 19 Kittilä village
- 20 Rovaniemi
- 21 Tornio





Pintavesien ekologinen tila



- Fluvial or Sea Water Floods

- 1 Coastal districts of Helsinki and Espoo
- 2 Coastal district of Loviisa
- 3 Huittinen
- 4 Pori
- 5 Centre of Salo
- 6 Coastal districts of Turku, Raisio, Naantali and Rauma
- 7 Centre of Riihimäki
- 8 Coastal districts of Hamina and Kotka
- 9 Lower part of Kymi River
- 10 Jyväskylä
- 11 Ilmajoki-Seinäjoki
- 12 Laihia-Runsor
- 13 Lapua
- 14 Ylistaro-Vähäkyrö
- 15 Alavieska-Ylivieska
- 16 Centre of Pudasjärvi
- 17 Ivalo urban area
- 18 Centre of Kemijärvi
- 19 Kittilä village
- 20 Rovaniemi
- 21 Tornio

Background map:
© National Land Survey of Finland, permit no. 7/MML/11

Integration process

INITIAL ASSESSMENT OF MEASURES (with stakeholders)

DETAILED ASSESSMENT OF MEASURES (experts)

- impacts, risks, feasibility, costs and benefits, environmental impacts

STAKEHOLDER'S VIEW OF MEASURES

- Stakeholder's view of measures proposed by experts, impact and acceptance

RESULTS AND PRIORITATION OF MEASURES

- Overall evaluation of measures (benefits, harms, feasibility, acceptance)
 - Prioritisation of measures in flood risk management plans





Initial assessment of the measures

Evaluation of the impact of every single measure (initial expert judgement)

- Identification and development of the existing measures at hand

Identification of the top new measures to be assessed further:

- Analysis of the flood protection benefit
- **Analysis of the environmental impacts**
- Socioeconomic effects
- Feasibility and implementation risks





Value board

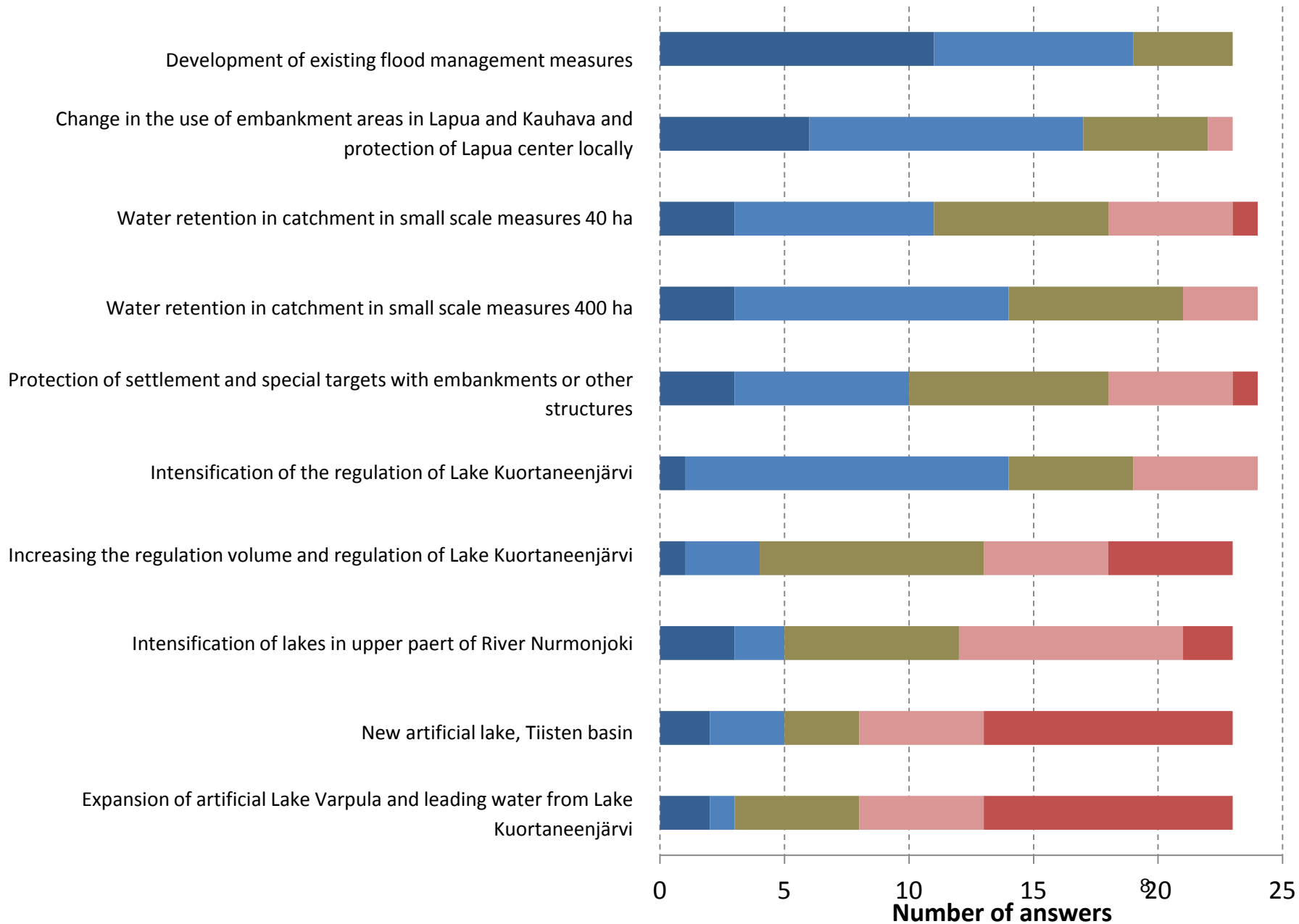
Great ---	The measure causes severe long term/non-reversible harms
Moderate --	The measure causes moderate long term harms on a limited area or moderate temporary harm on a larger area
Little -	The measure causes observable temporary and local harm
Neutral	The measure causes neither negative or positive effects
Little +	The measure has a slight positive impact
Moderate ++	The measure has a positive impact on local scale or a slight positive impact on a larger scale
Great +++	The measure has a large scale great positive impact



Results from initial evaluation: Case River Lapuanjoki	Decrease of flood harm in different situations				Environmental impacts				Socioeconomic impacts		
	1/50	1/100	1/250	Other areas	Water quality	Biodiversity	Fish	Other	Agriculture	Hydropower	Social
Development of existing flood management measures	5	3	1	+	0	-	-	0	0	0	0
Change in the use of embankment areas in Lapua and Kauhava and protection of Lapua center locally (protection of settlement 1/50)	10	9	7	+	++	0	+	0	++	0	-
Water retention in catchment in small scale measures 40 ha	1	0	0	+	+	++	0	+	-	0	+
Water retention in catchment in small scale measures 400 ha	3	1	0	+	++	+++	+	++	-	+	+++
Protection of settlement and special targets with embankments or other structures	10	10	1	0	++/0	-	0	0	0	0	---
Intensification of the regulation of Lake Kuortaneenjärvi (dredging of channel, bottom dam, regulation change etc)	5	3	1	+	-	-	-	0	0	+	0
Increasing the regulation volume and regulation of Lake Kuortaneenjärvi (dredging of channel, bottom dam, significant regulation change)	7	4	1	++	---	---	----	-	0	+	----
Intensification of lakes in upper part of River Nurmonjoki	3	1	0	+	---	-	---	0	0	+	----
New artificial lake, Tiisten basin	10	10	7	++	----	---	--/+	0	---	+++	++
Expansion of artificial Lake Varpula and leading water from Lake Kuortaneenjärvi	10	7	5	++	----	----	---/0	----	0	+++	-

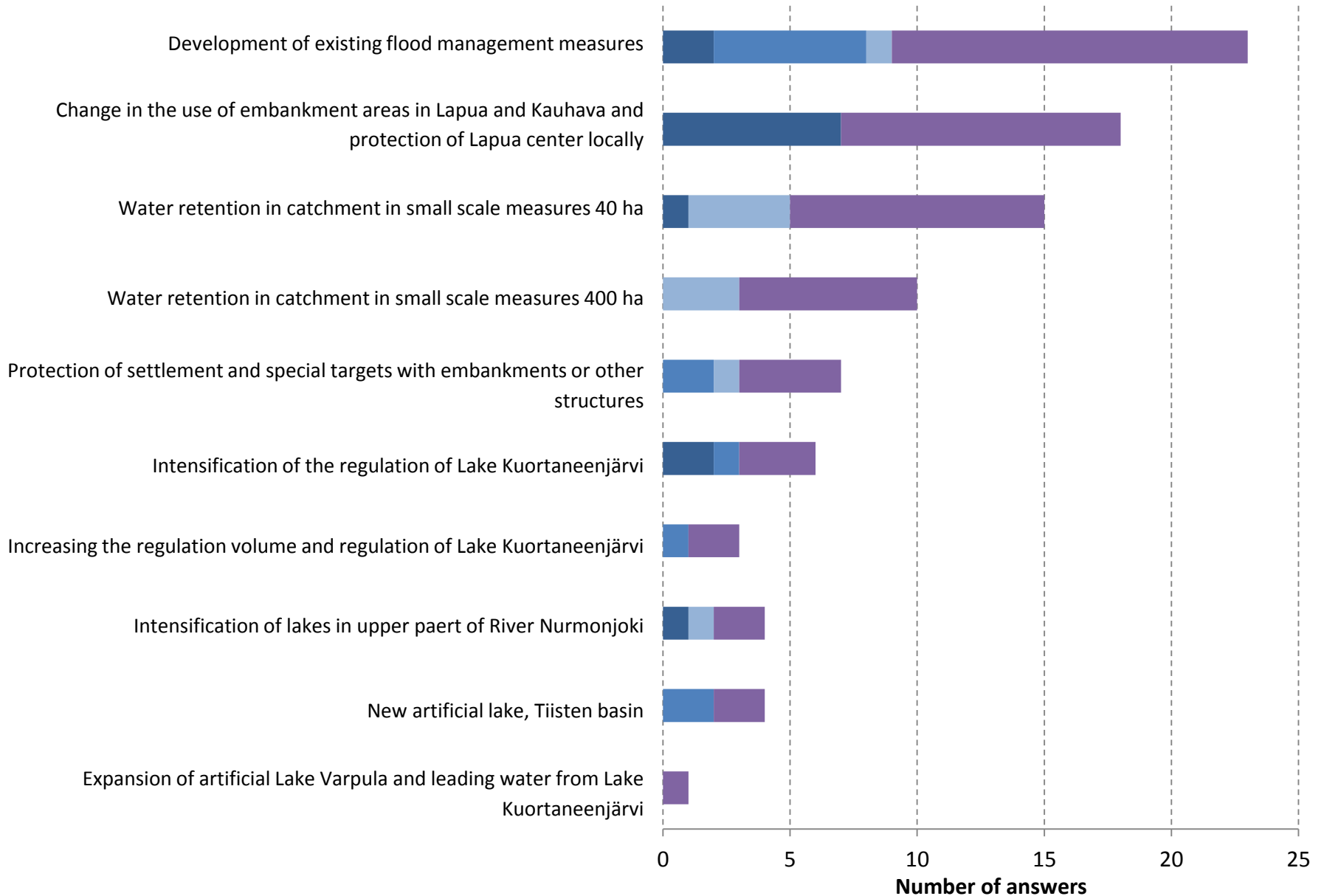
Stakeholder's views on measures

■ Excellent
■ Good
■ Fairly good
■ Fairly poor
■ Poor



Prioritisation of measures

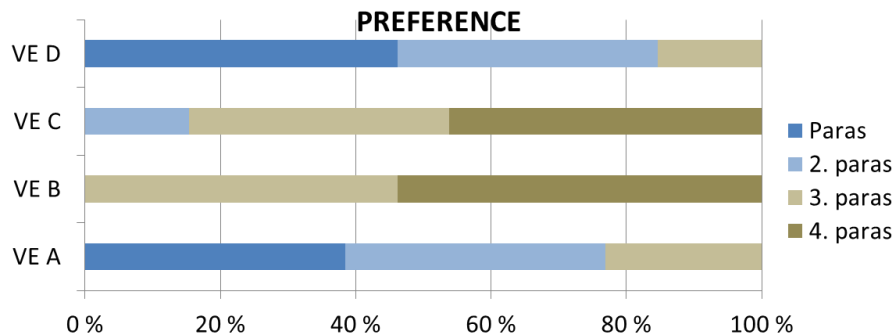
■ 1st ■ 2nd ■ 3rd ■ Chosen among three best





>> Alternative measure groups

- The measures included in all alternatives (1) were stated and their environmental impact assessed
- The measures in four optional groups (2-5) were assessed on
 - Overall flood protection effectiveness
 - Cost effectiveness
 - Feasibility
 - Environmental impact



MEASURE	ALT1 "change of embankment area"	ALT2 "Protection of Lapua center with embankments"	ALT3 "Intensificatin of the regulation of Lake Kuortaneenjärvi"	ALT4 "Embankment + Lake Kuortaneenjärvi"
Development of existing flood management measures	X	X	X	X
Water retention in catchment in small scale measures	X	X	X	X
Change in the use of embankment areas in Lapua and Kauhava and protection of Lapua center locally	X			X
Protection of settlement and special targets with embankments or other structures		X		
Increasing the regulation volume and regulation of Lake Kuortaneenjärvi			X	X

Integration with RBD-planning

- Measures and measure group alternatives were further discussed in the cooperation group for water management and marine strategy management (no real assessment)
- Water management measures were not analysed for flood risk management in detail, i.e. the effects of:
 - Agricultural measures (wetlands, filter strips)
 - Forestry measures (water retention effects of lowered drainage depth)
 - Restoration measures (river- and brook restorations)





Challenges: Case Kemijoki / Vuotos basin

- Higher protection level set for settlements (1/250) which leads to a need for more extreme measures
- Measures that were in line with objectives in water management were not included in the final version of the flood risk management plan. The alternative with Lake Kemijärvi was excluded after the public hearing and is not even proposed as an option in the final draft
- Different interests up- and downstreams of River Kemijoki: City of Rovaniemi prefers the Vuotos basin upstreams, municipalities upstreams suffer from this option with no benefit
- A critical assessment of the protection level is needed to reach a acceptable solution for water management.

Be sure to have your motive right from the start!



Thank's for the attention!