

Jun 24th, 3:00 PM - 3:15 PM

Session E8: Fish Migration Possibilities in the Netherlands; State of the Art (Barriers, Solutions, Monitoring)

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Fish migration possibilities in the Netherlands

State of the art (barriers, solutions, monitoring)



Fish passage 2015, Groningen 24 June 2015

Martin Kroes, Herman Wanningen, Peter van Puijenbroek & Niels Breve
(Assigned by: Ministry of Infrastructure, IMARES & Dutch Angling Association)



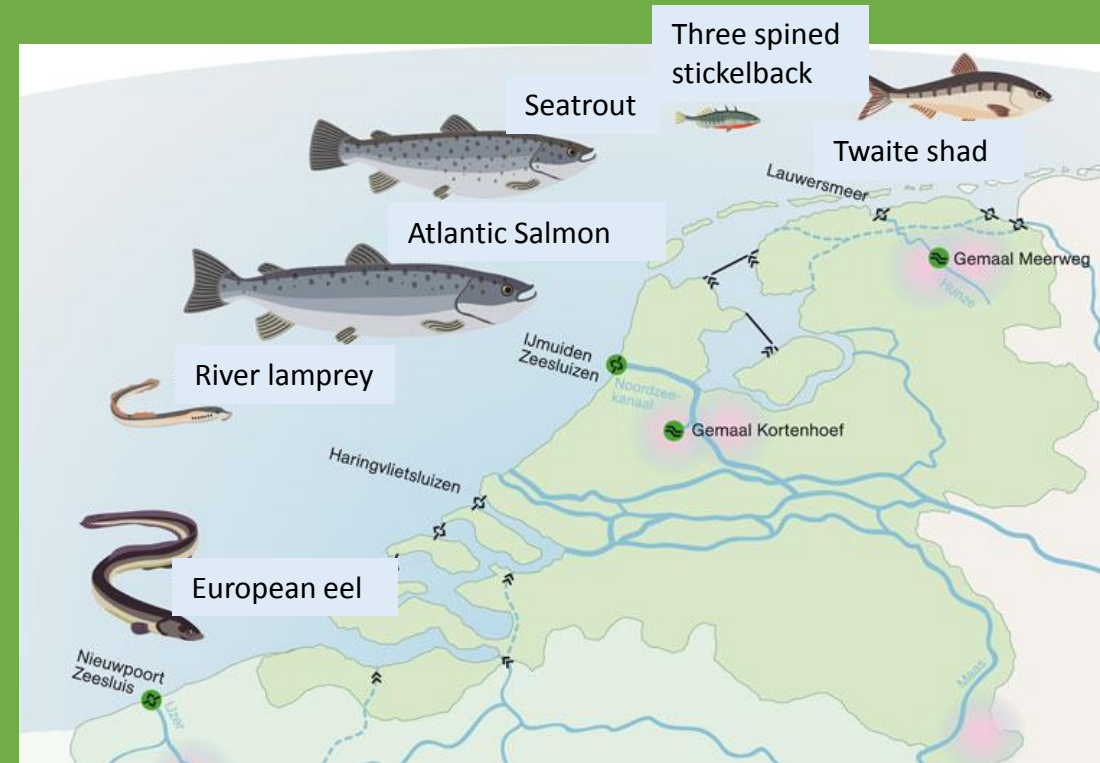
KroesConsultancy
WATER - MILIEU - ECOLOGIE

Introduction



Dutch water authorities are working hard to improve migration routes

- Water Framework Directive
 - > good ecological status of water bodies before 2027
 - > fish as indicator
- Eel directive
- Benelux treaty free fish migration in water bodies



Introduction

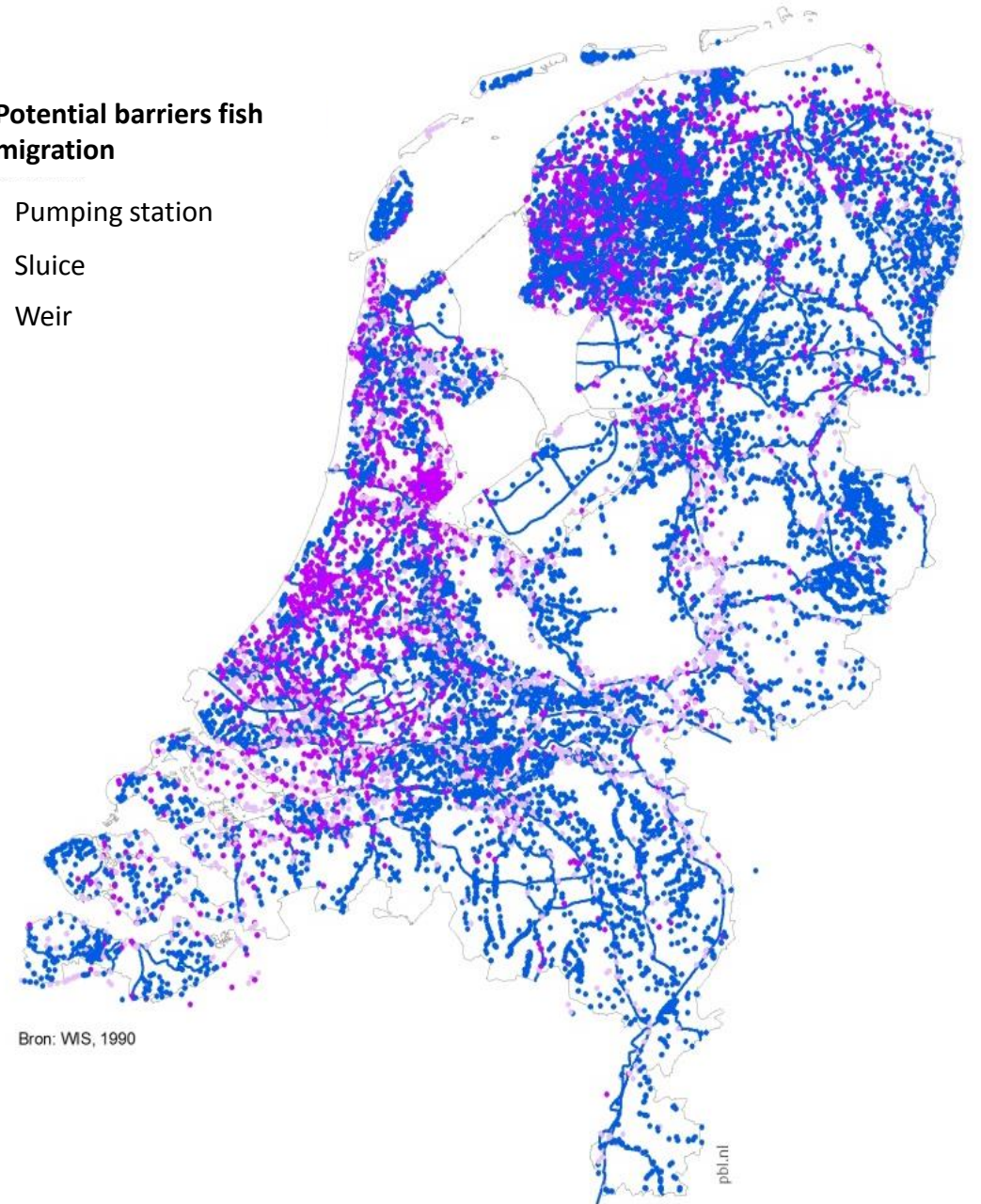
Barriers in the Netherlands

(Source: Meetkundige Dienst, 1990.

Waterstaatkundig Informatie Systeem (WIS), Delft)

Potential barriers fish migration

- Pumping station
- Sluice
- Weir



Bron: WIS, 1990

pbl.nl



Introduction

Project: Netherlands living with fish migration

- 2007/2008: set up a national database on barriers for fish migration

Targets:

- Create an overview of all barriers for which a solution is planned
- Create an overview of all solutions in WFD water bodies



Introduction

Publication

- Data and report (Kroes *et al.*, 2008) available via website (www.vismigratie.nl)

Updates, via contact persons water authority:

- 2008-2011 (Wanningen *et al.*, 2012)
- 2012-2015 (Kroes *et al.*, 2015)

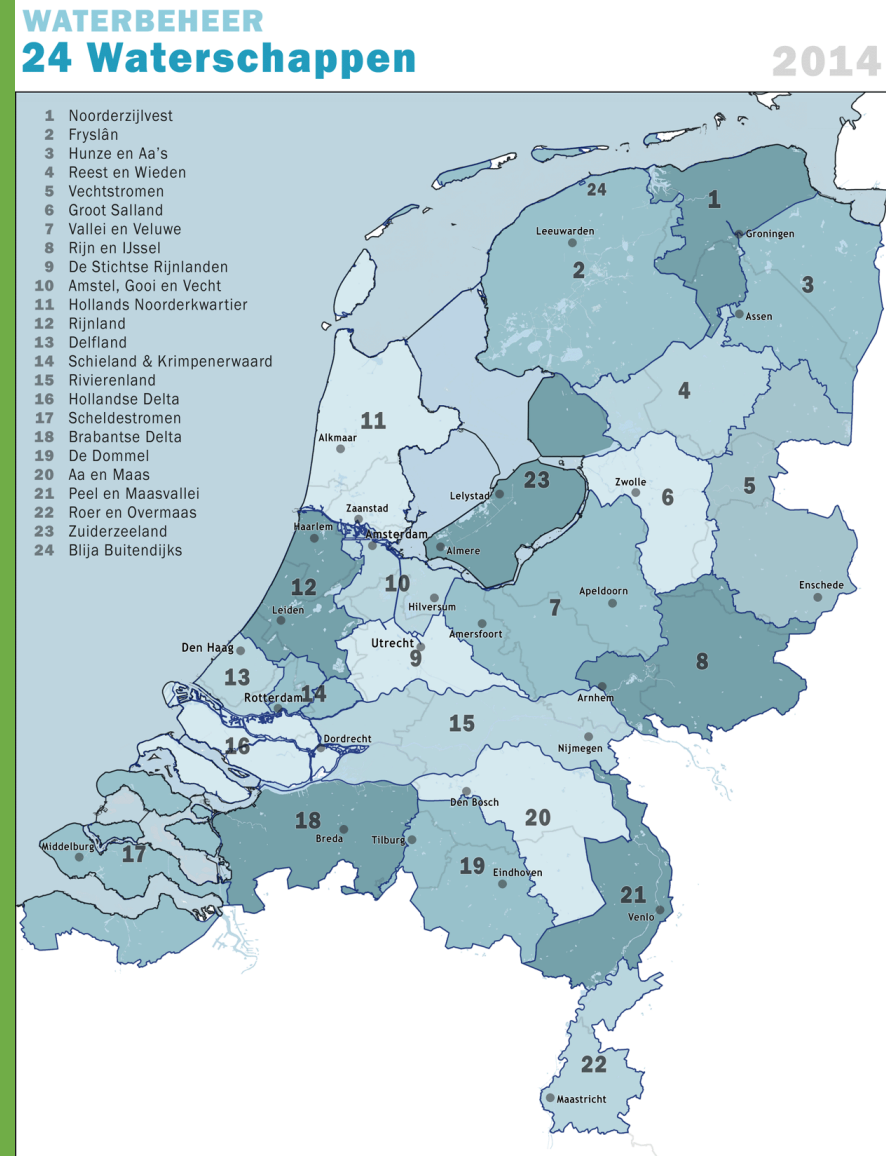


Method

Information in database

- Number of barriers per water authority
- GPS coordinates
- Type of barrier/solution (and functioning)
- Time-schedule for realization solutions
- Progress of measures

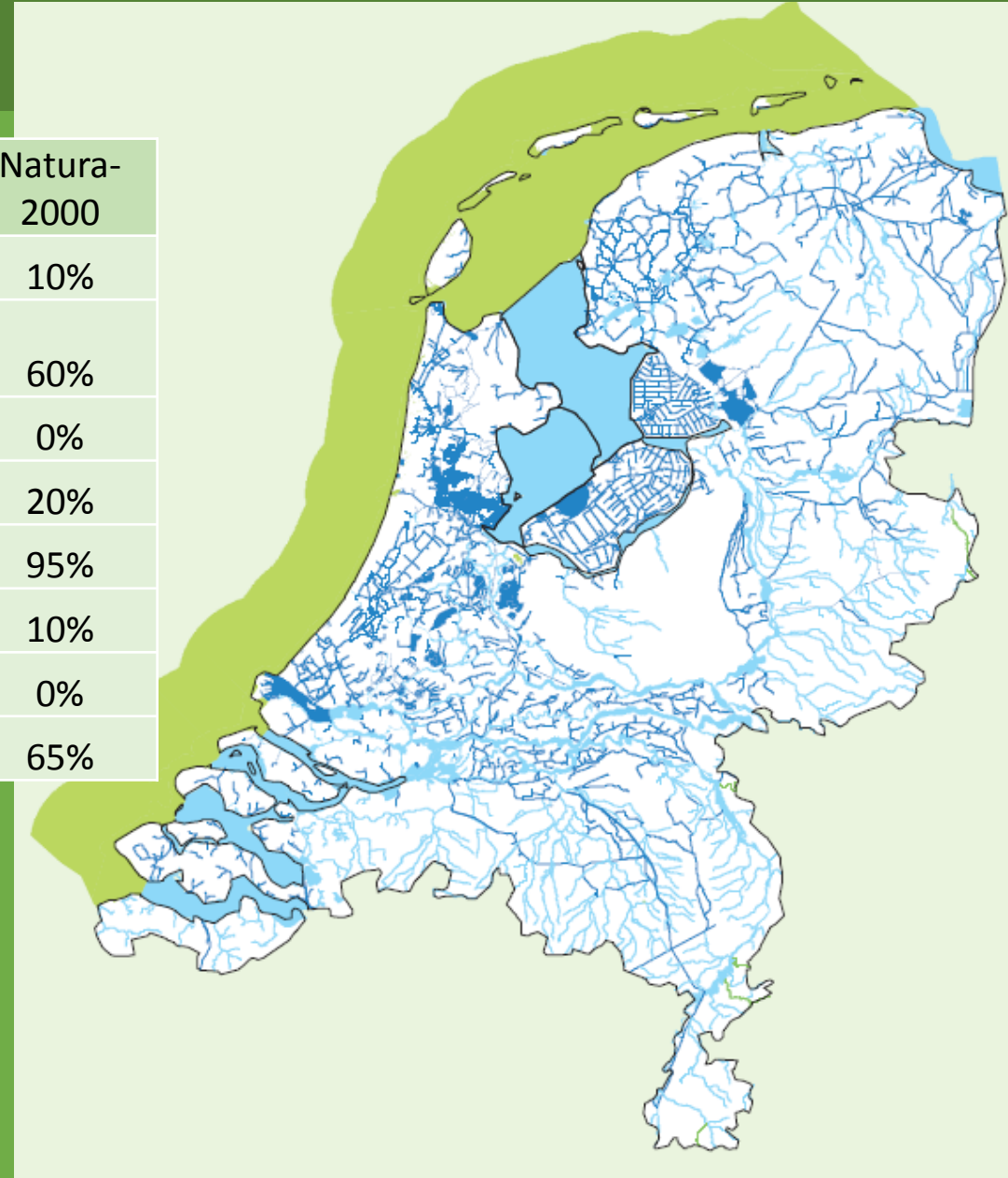
-> 26 of 30 water authorities responded



Method

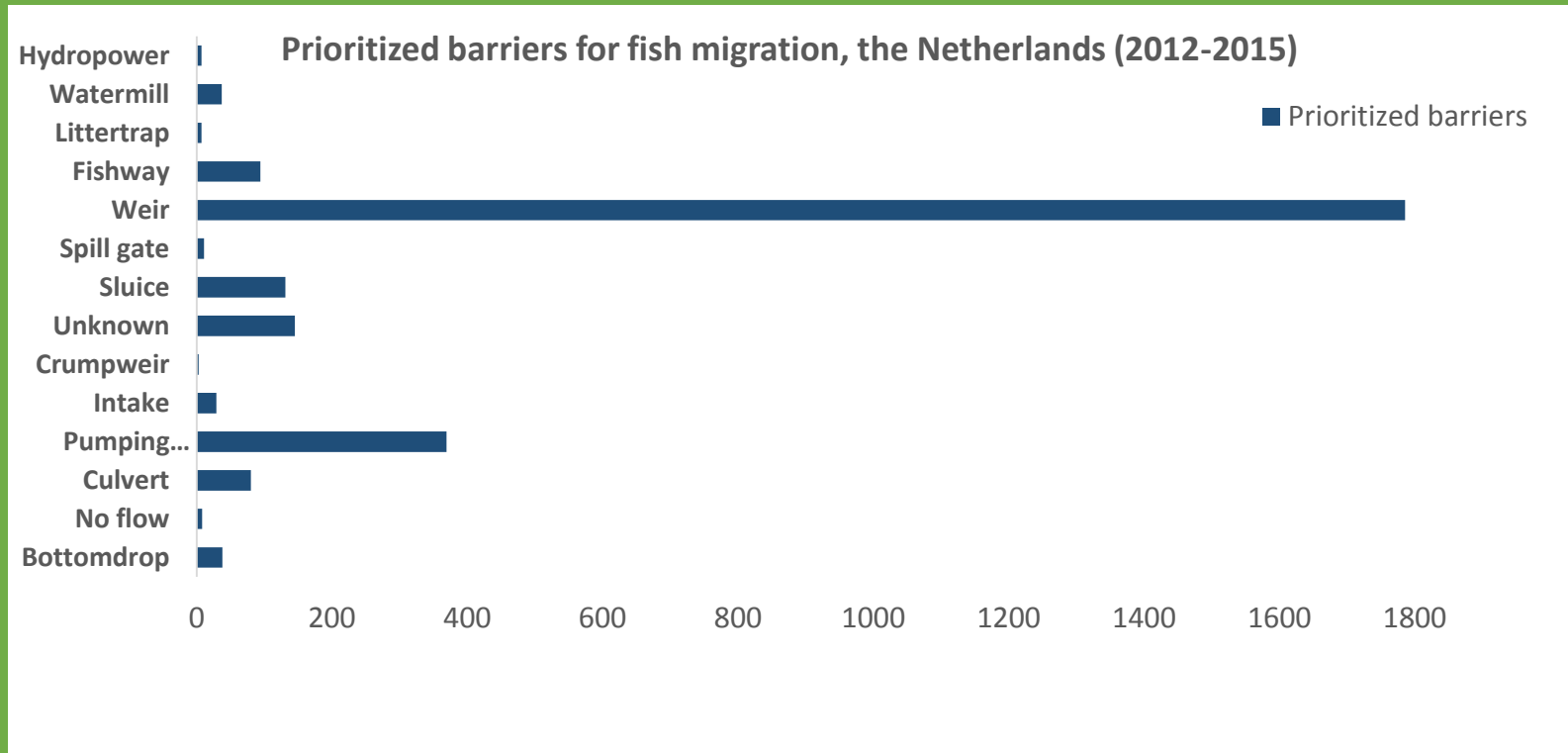
	Area (km ²)	Length (km)	WFD waterbodies	Natura-2000
Salt water	62.000		20%	10%
Brackish and transitional water	800		95%	60%
Large rivers	330	650	100%	0%
Canals		6.500	90%	20%
Lakes (>50ha)	2.500		100%	95%
Streams (e.g. brooks)		6.200	70%	10%
Ditches		330.000	0.5%	0%
Marsh	2.4		<1%	65%

Source: www.compendiumvoordeleefomgeving.nl

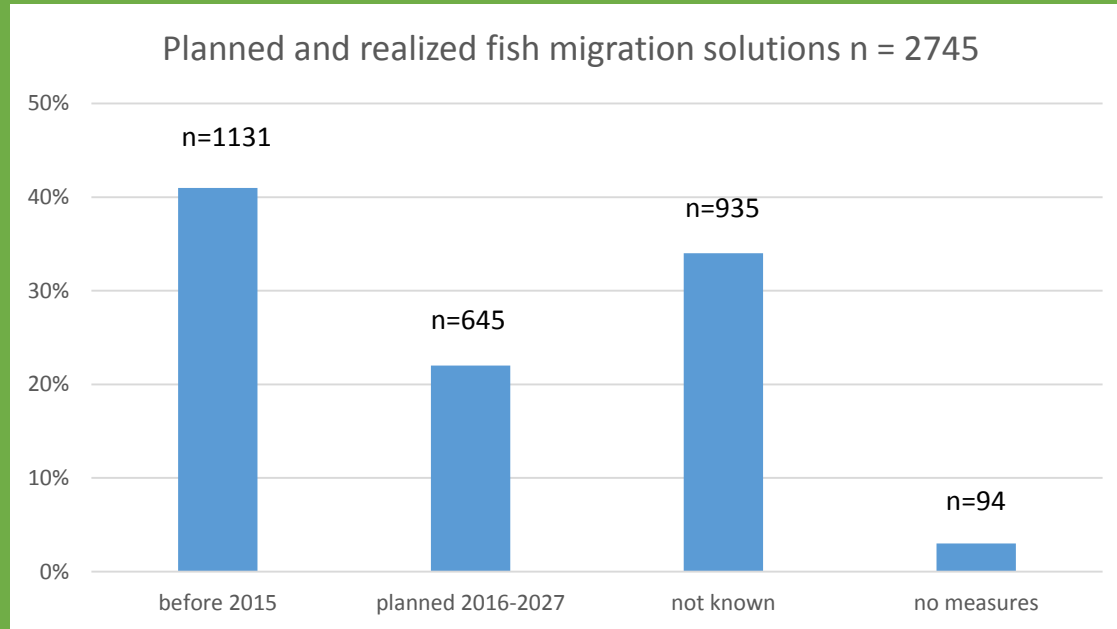


Results

2745 prioritized barriers in WFD water bodies



Results



Migratiemogelijkheden voor trekvis, 2015

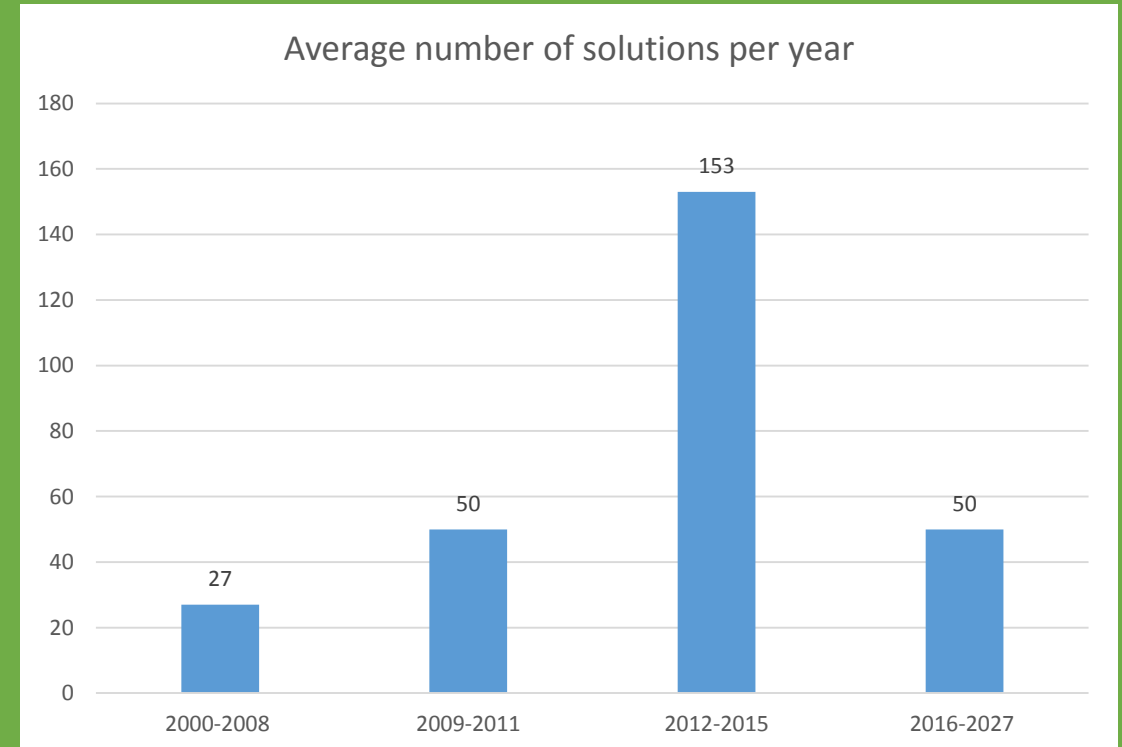
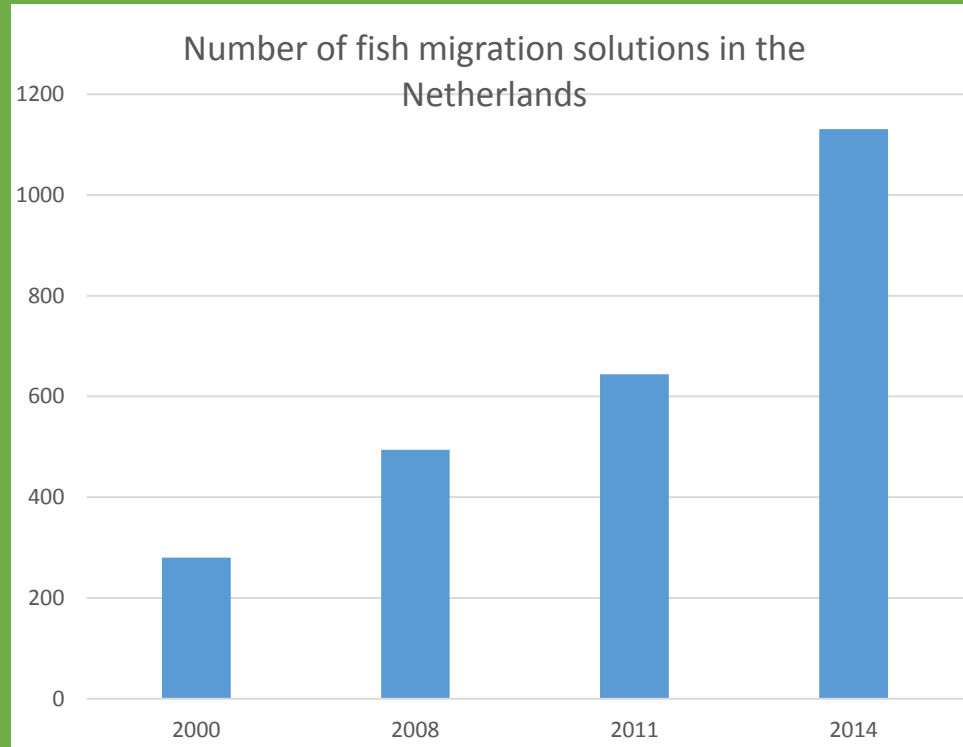
- Period
- before 2012
 - 2012-2015
 - 2016-2027
 - no measures
 - unknown



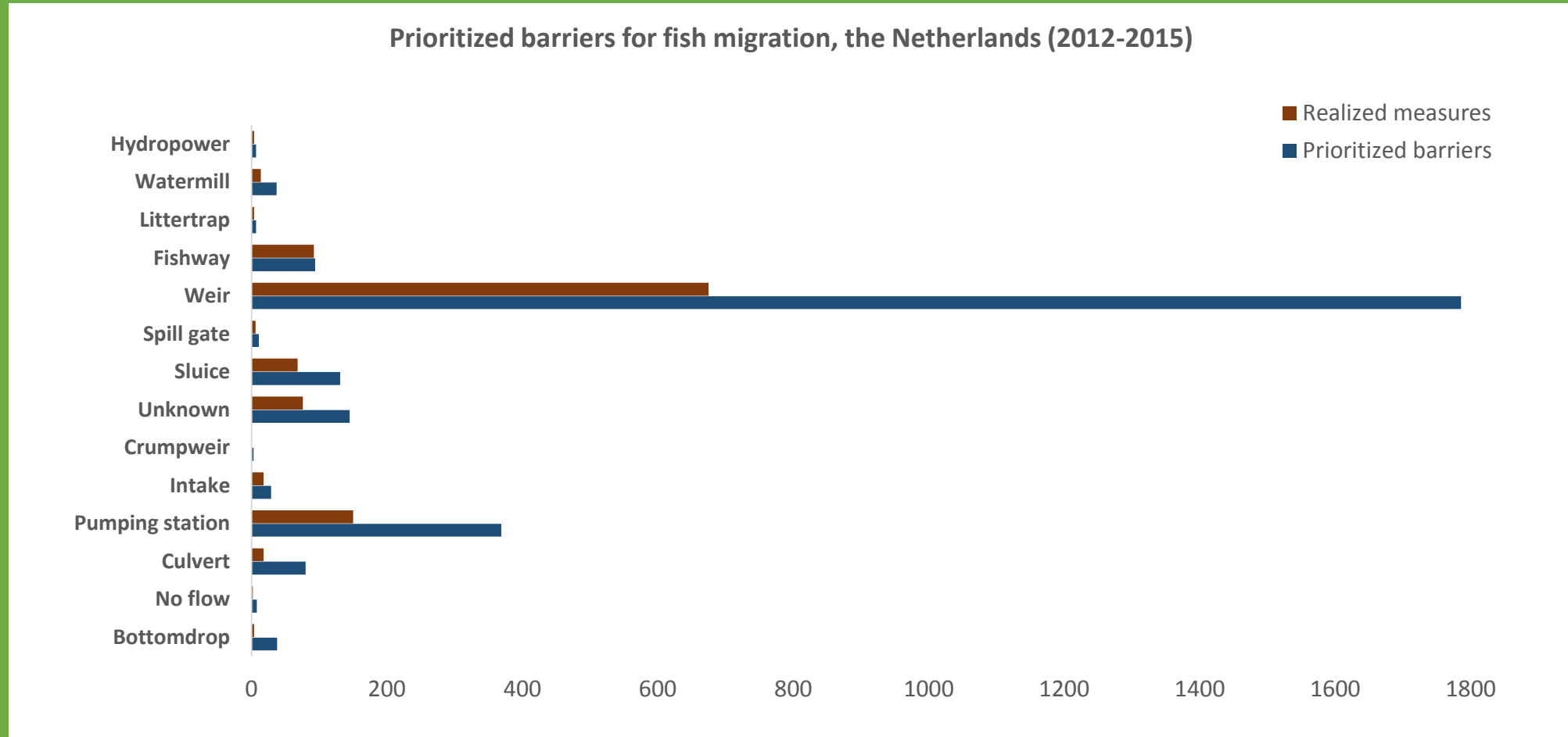
Bron: Wanningen Water Consult, Sportvisserij Nederland.



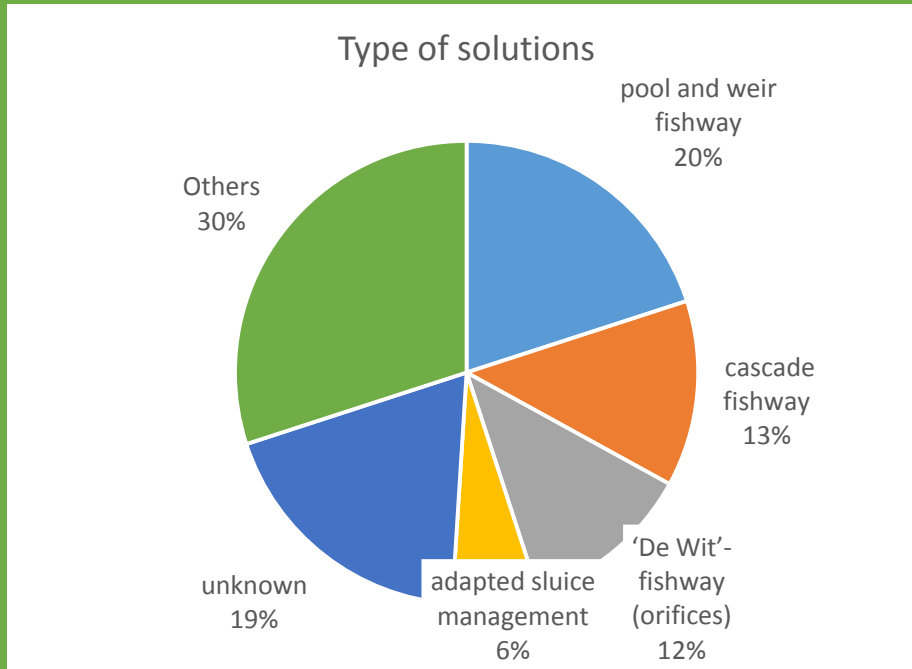
Results



Results



Results

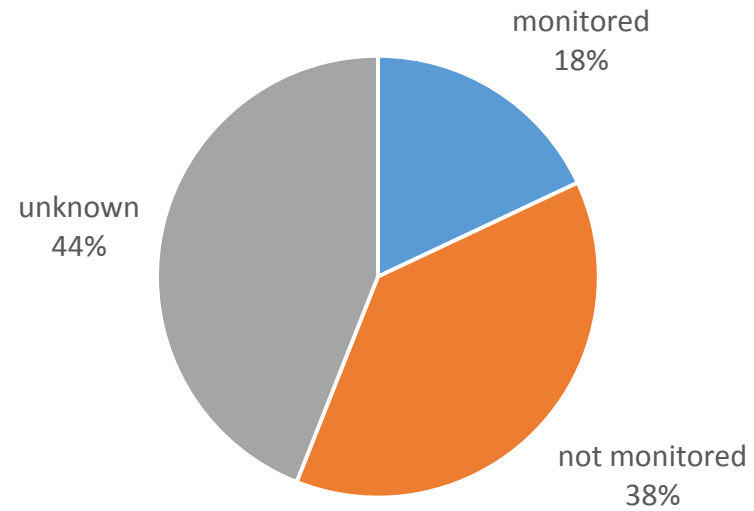


- Increase of fish friendly pumps since 2008, mostly combined with upstream solutions
- Rare are dam removal, remeandering, natural bypass channel and weir adaptation

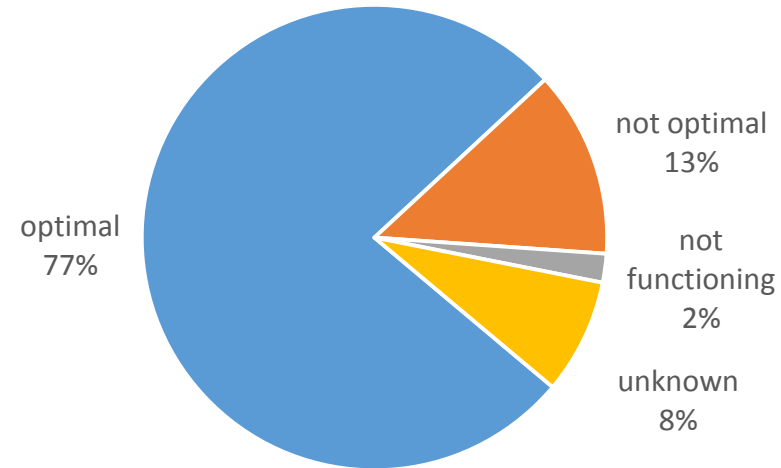


Results

Monitoring of solutions



Functioning (expert judgement)



Discussion

Not all water authorities responded, so results are even better

Results applicable

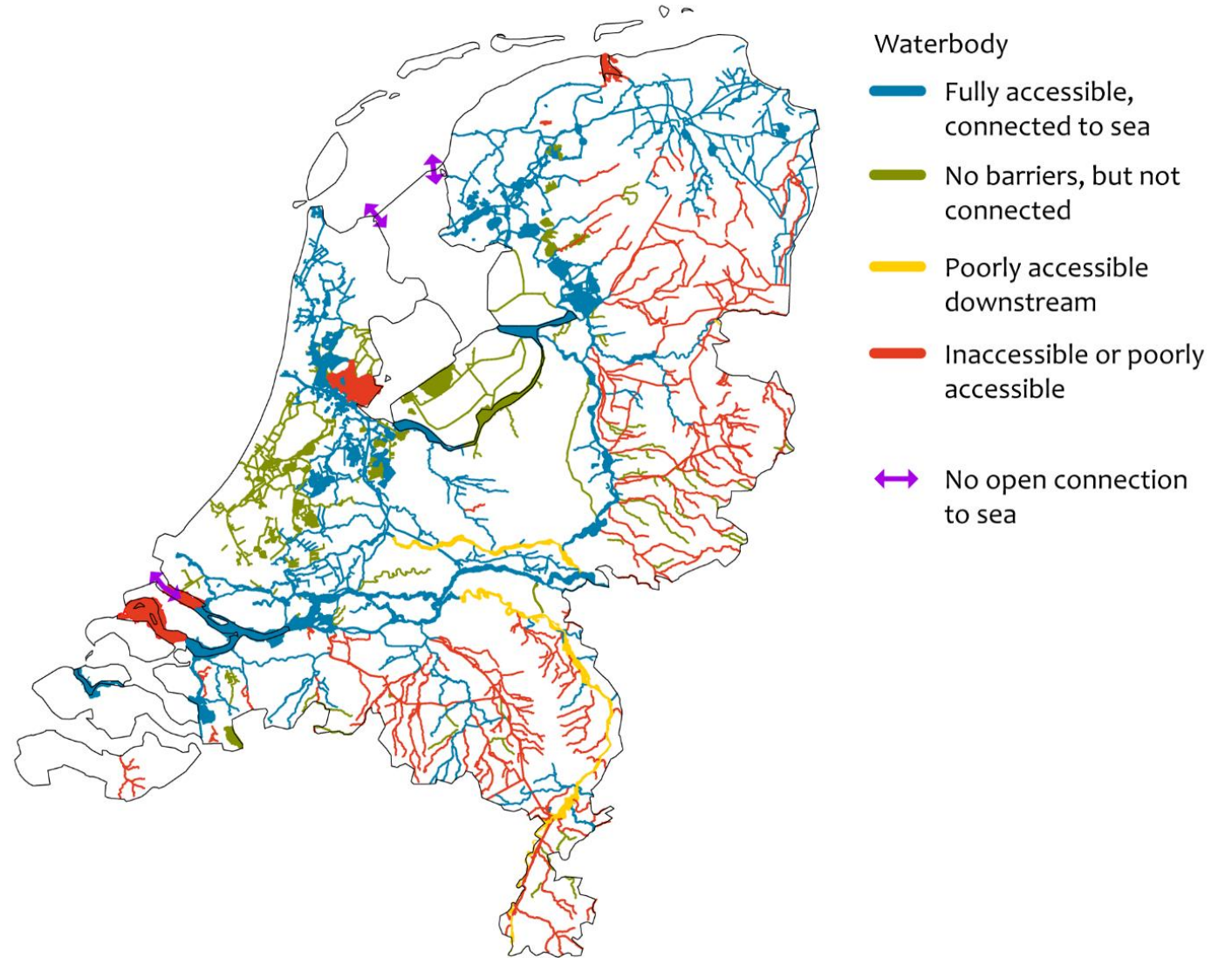
- For national studies and evaluations (e.g. WFD, Eeldirective, Nature outlooks etc.)
- For water authorities national information on solutions and migration routes



Discussion

Migration routes

Fishmigration, 2014

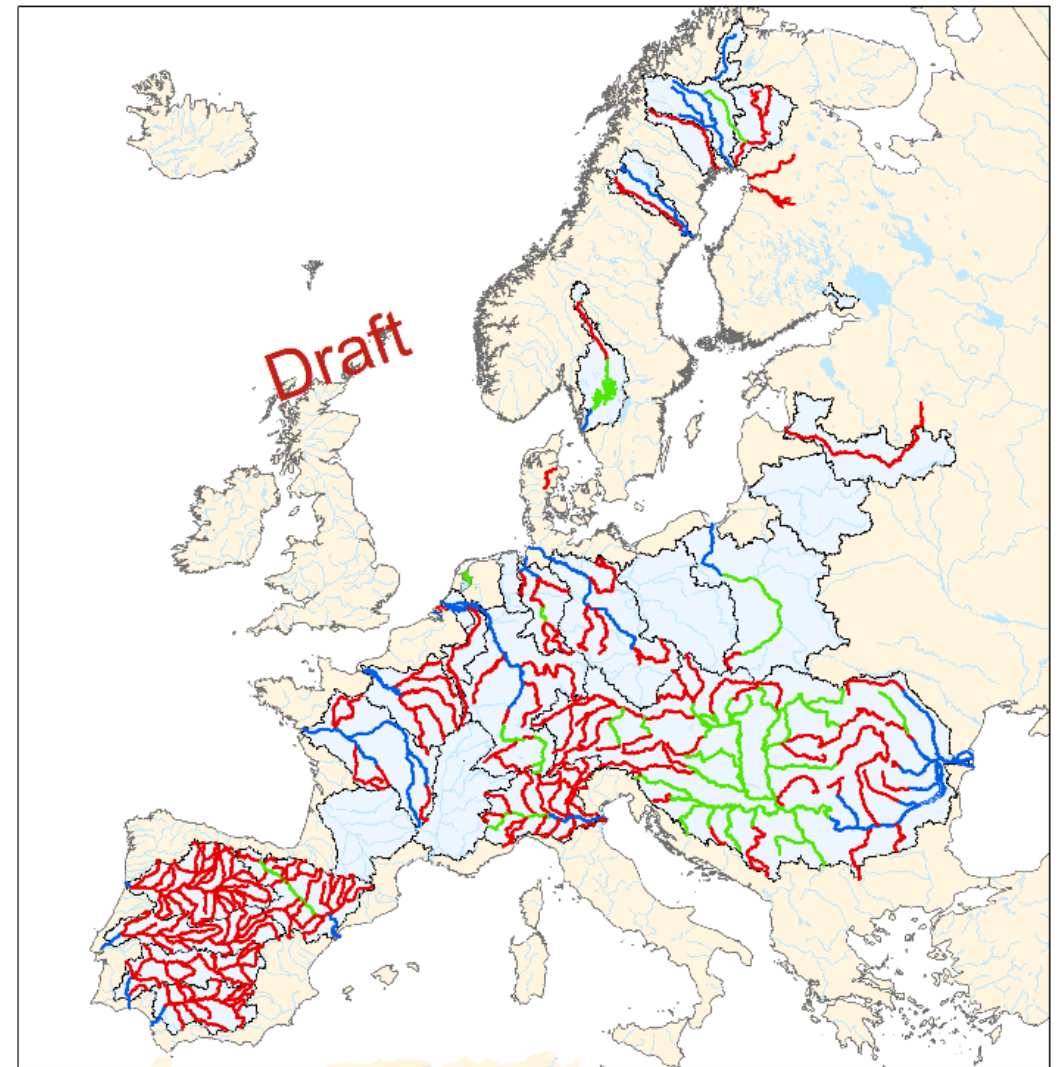


Source: www.compendiumvoordeleefomgeving.nl



Discussion

Migration routes



- rivers**
- Accessibility**
- Accessible
 - No barriers, but not connected
 - Inaccessible or poorly accessible
 - Stagnant water
 - Not yet evaluated



Conclusions

- Much progress in realization of solutions (41% <2015)
- Monitoring is most often not part of the realization (<20%)
- Developments and practical knowlegde increase fast:
exchange more knowledge on new techniques



Thank you

