

SEE RIVER PROJECT

**HAND IN HAND
FOR RIVERS**

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**The Upper Drava in Carinthia – an example of a
successfully implemented
“River development scheme”**

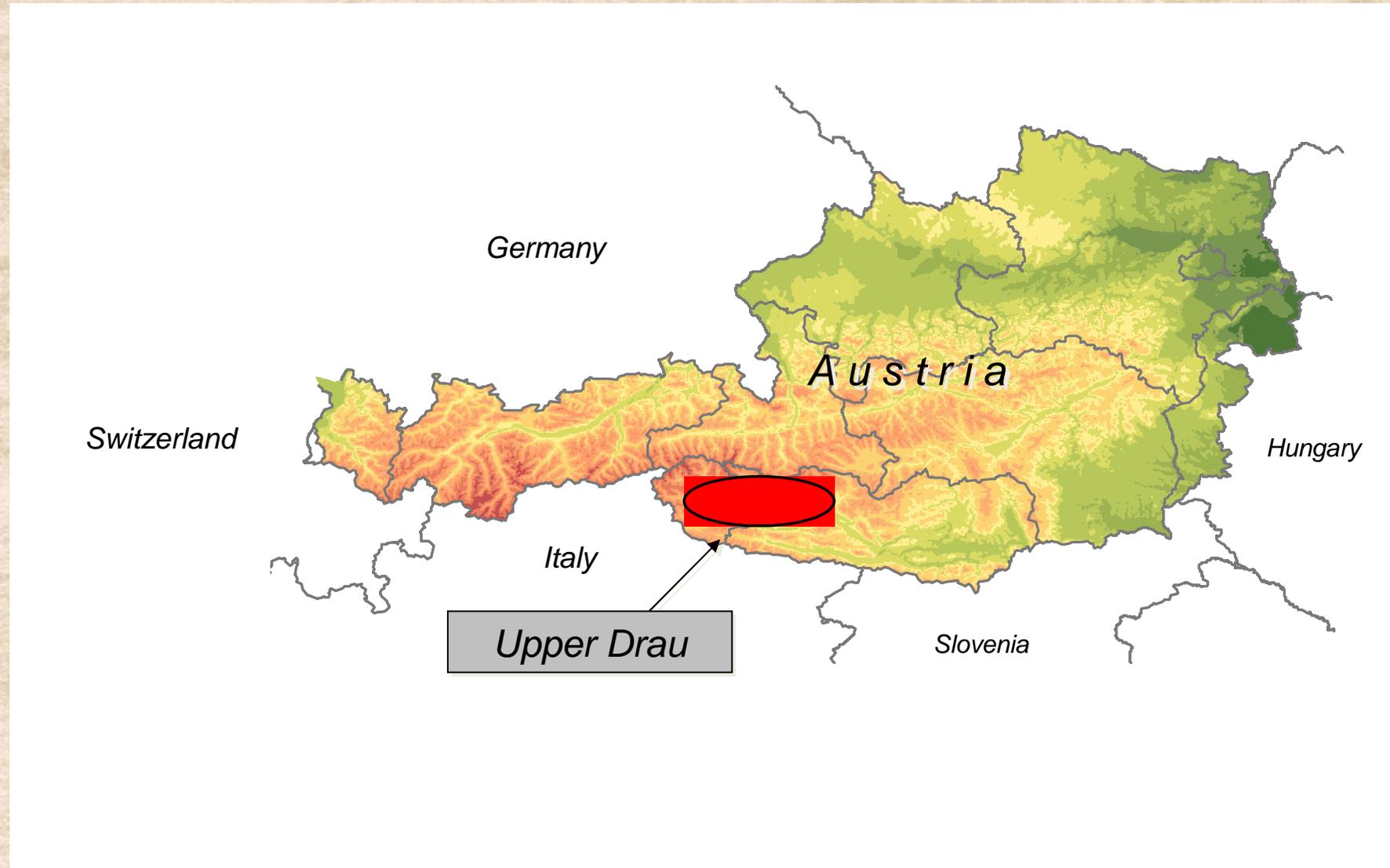
**European River Restoration Conference
6th Edition 27-29 October 2014 Vienna**

Stephan Schober

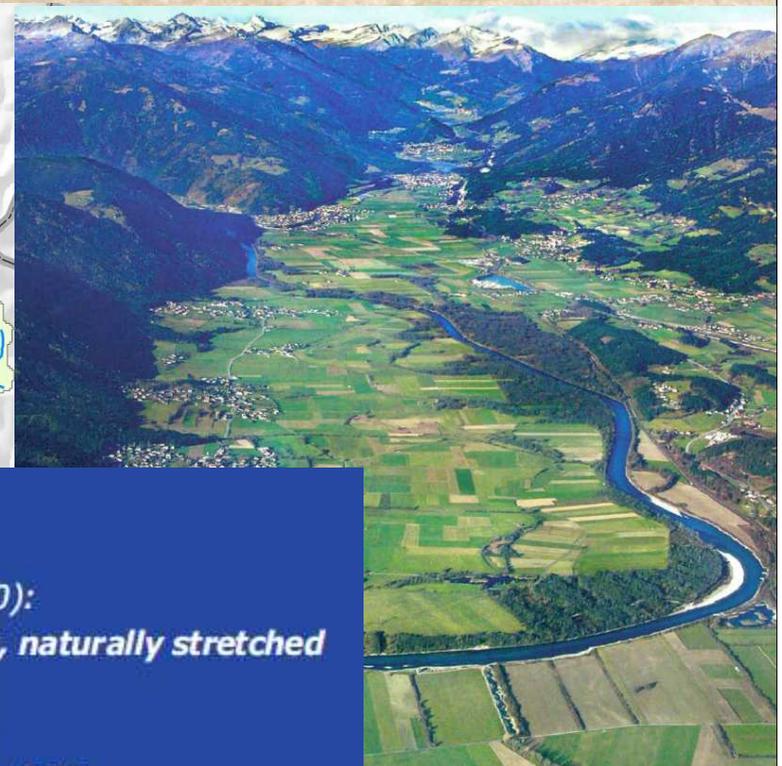
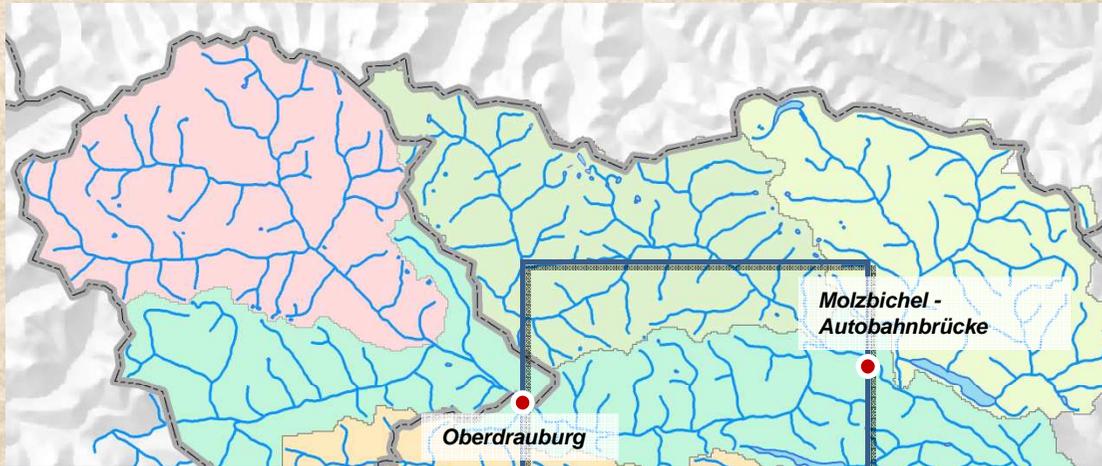
Susanne Korber



AUSTRIAN pilot area...



AUSTRIAN pilot area...



UPPER DRAU PROFILE

Protection status: **Natura 2000, European protected area**

Size: **1,060 hectare**

Length: **68.5 km**

Altitude: **540 - 620 meters above sea level**

Run-off (water level Sachsenburg):

- Mean-flow conditions: **73.8 m³/s**

- Mean annual high waters: **391.2 m³/s**

- 100-year flood waters: **1,029 m³/s**

River bed width: **20 - 60 m**

Gradient: **1.5 - 2.9 ‰**

Regime type: **nivo-glacial** i.e. fed from snow and glaciers, maximum run-off in June

River course (until 1870):

branched, oscillating, naturally stretched

River course to-date:

stretched to arched

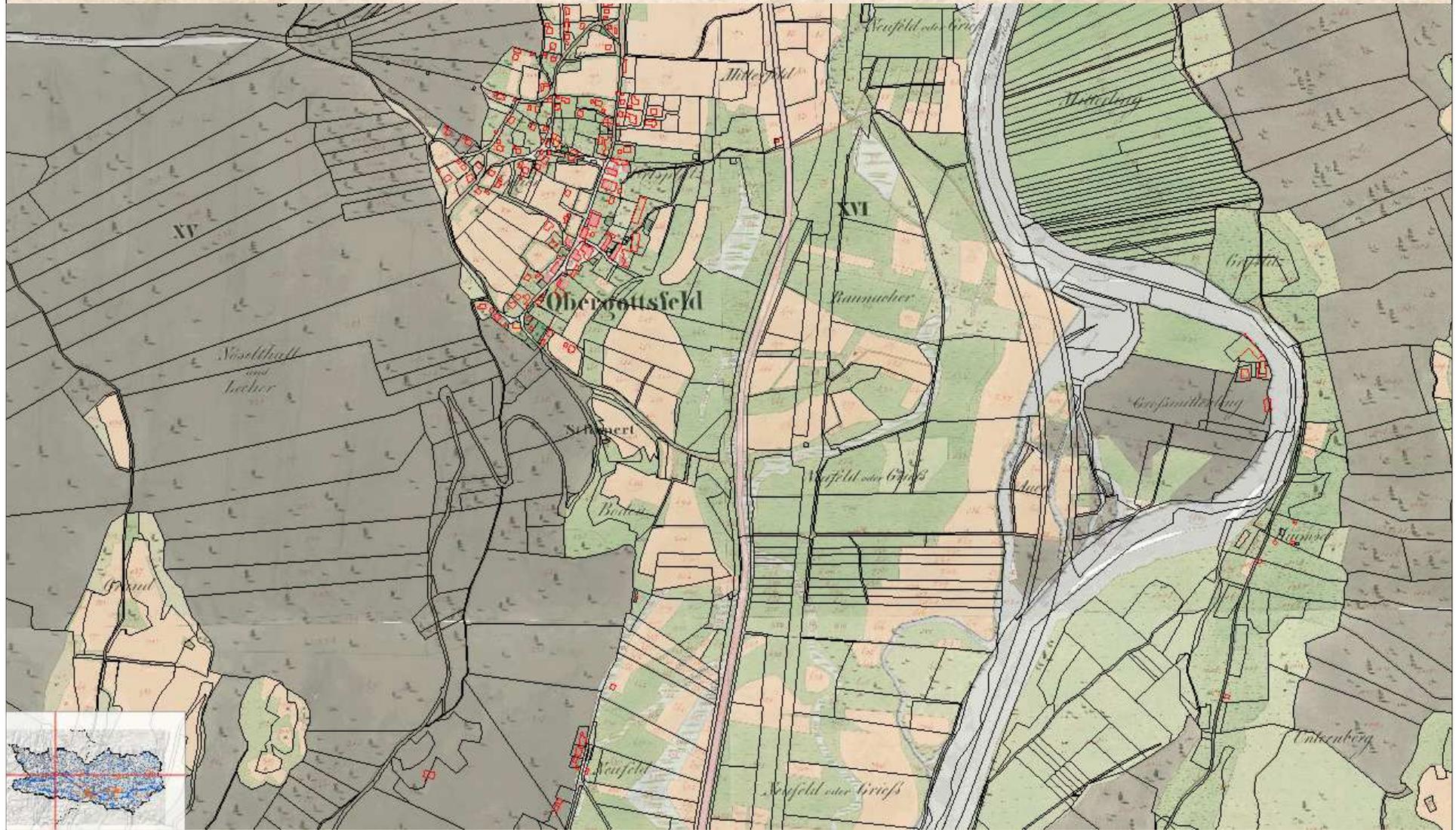
Biological water quality: **I-II**

Fish region: **grayling region**

Municipalities: **Oberdrauburg, Irschen, Dellach, Berg, Greifenburg, Steinfeld, Kleblach-Lind, Sachsenburg, Lurnfeld, Lendorf, Baldramsdorf, Spittal /Dr.**



AUSTRIAN pilot area...



Problems and Challenges – Flood Management



flood protection



flood retention maintenance



river bed erosion

Problems and Challenges – Nature protection



loss of rare species



conflicts with different land use



loss of habitats

Problems and Challenges – Ecological Status



monotonous river course



missing aquatic habitats



barriers for fish species



AUSTRIAN pilot area...



1991

“River development
Scheme Upper Drau”
▲ Concept of
measures

A lot of measures were
Implemented ...

European Union LIFE
“Auenverbund Obere Drau”

European Union LIFE
“Lebensader Obere Drau, ...



EUR 6.462.000,00



EUR 3.828.262,00

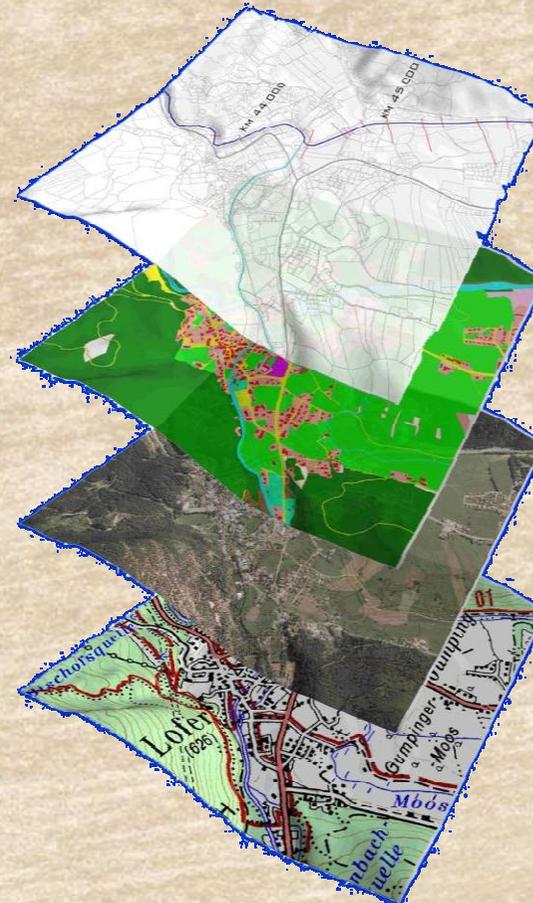
2013

SEE River project
“New River development
Scheme Upper Drau”

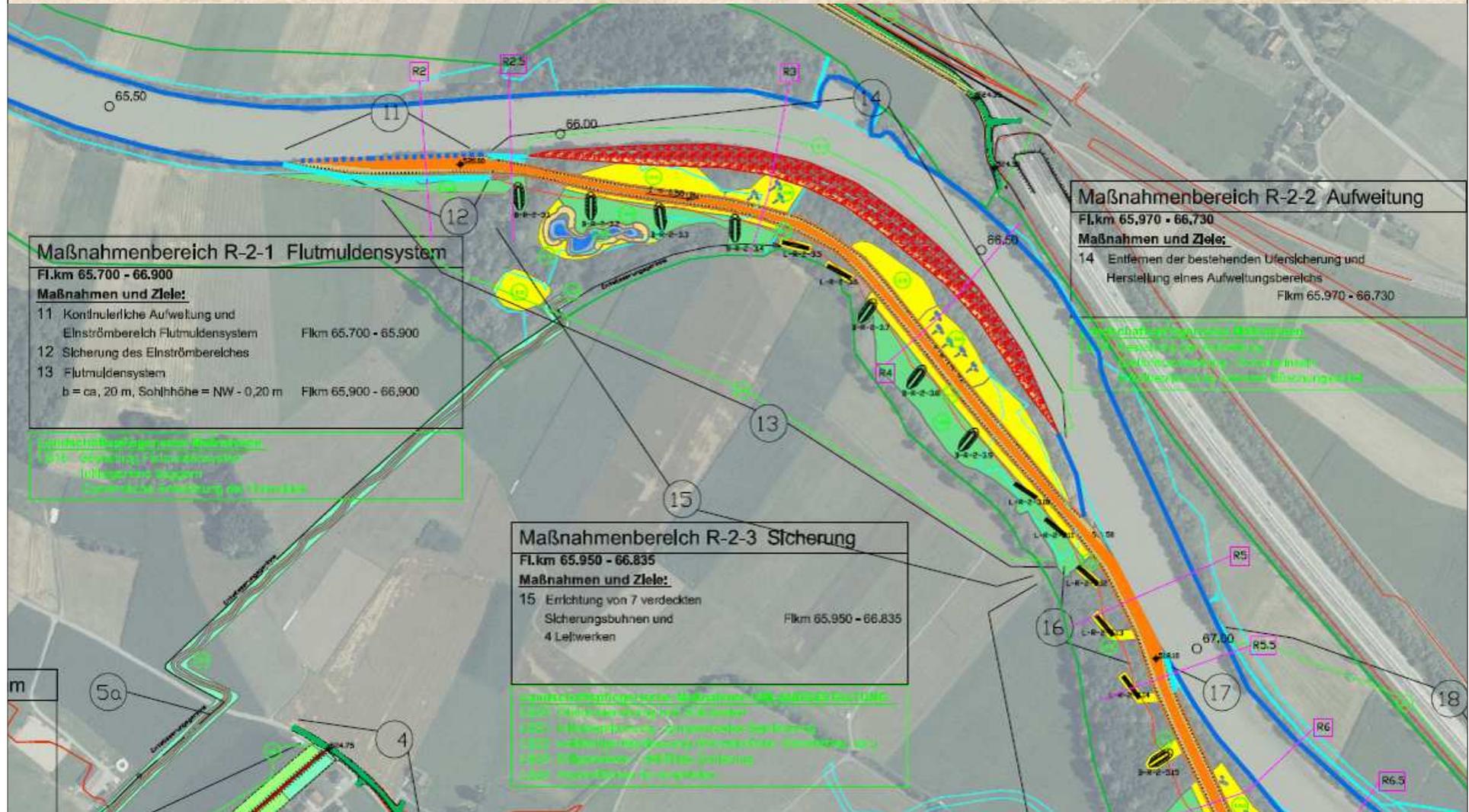
Evaluation of the
implemented measures
▲ are we on a good way?
▲ new integrative
concept of measures

Work flow – River development Scheme

- ▲ Analysis of the actual state
- ▲ Integrative analysis of the actual state
- ▲ Deficit analysis
- ▲ Development of the Leitbild
- ▲ Programme of measures



Examples River Widening St. Peter



Examples River Widening St. Peter

Increases in ...

Flood Protection

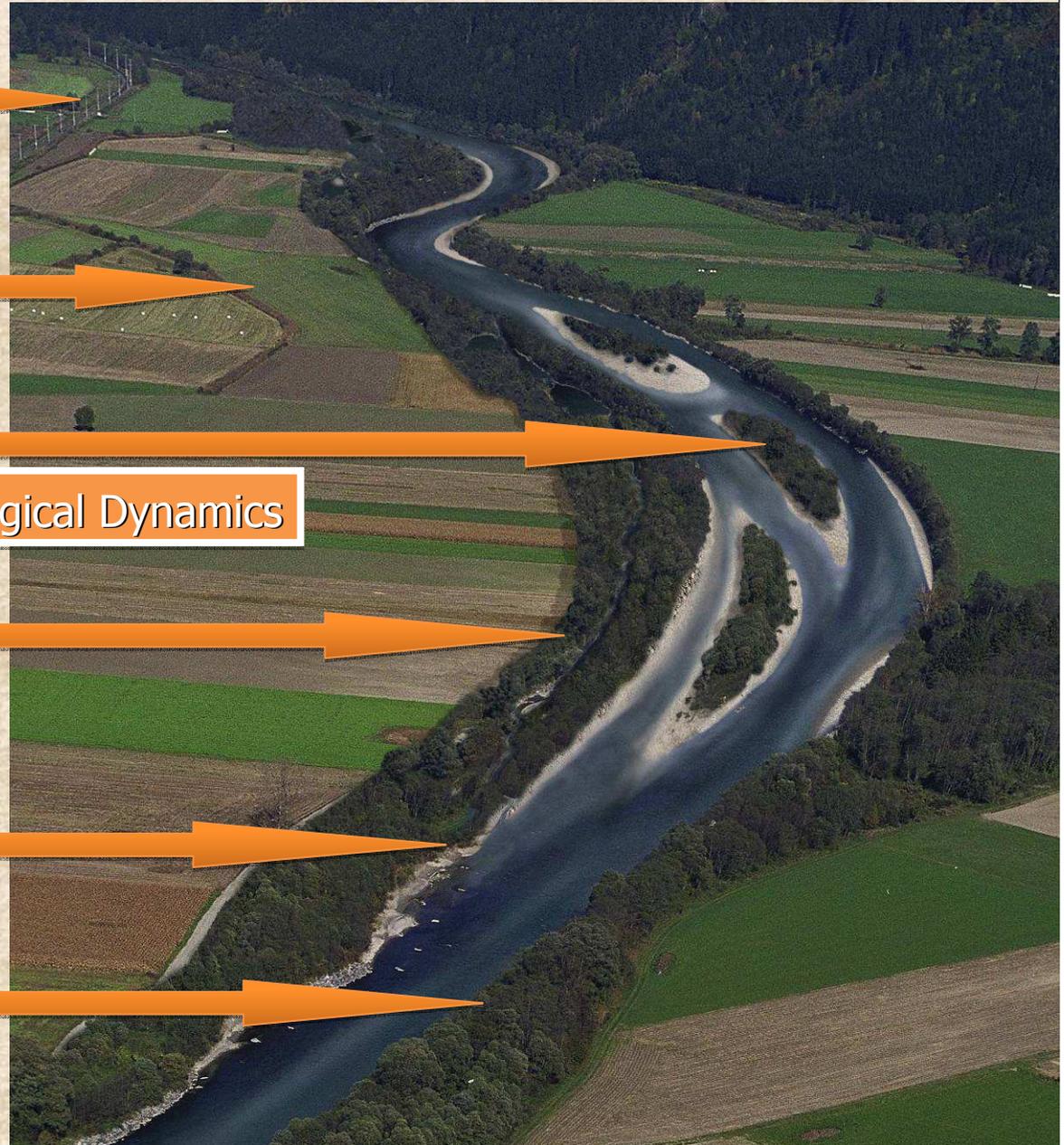
Retention Areas

Morphological Dynamics

Aquatic Habitats

Recreation Areas

Non Aquatic Habitats

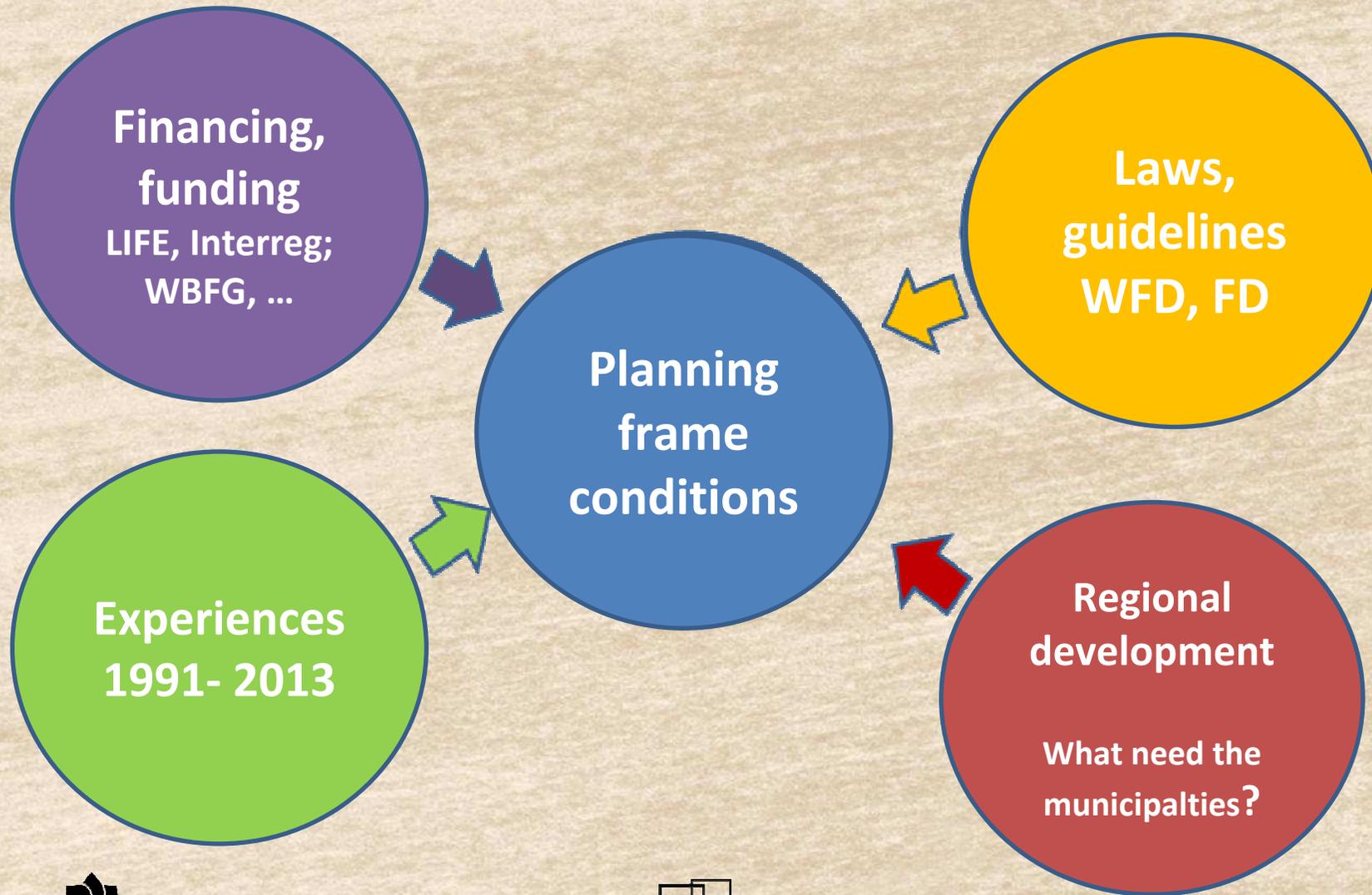


St. Peter
Jointly for our

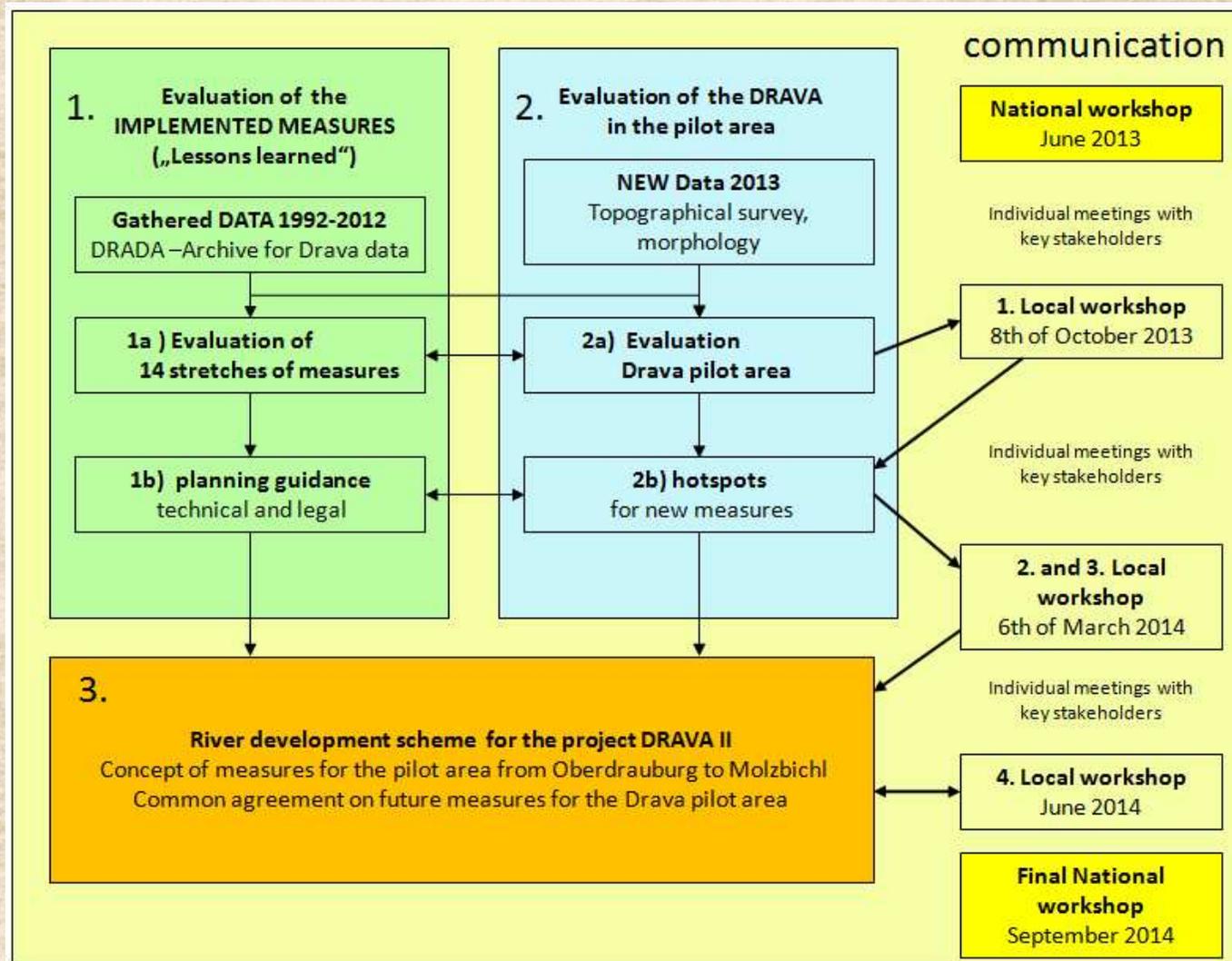
Examples



Planning frame conditions...



AUSTRIAN pilot area...



How we worked out the evaluation of the implemented measures?

General description of the measure



Analysis of the actual state



Evaluation concerning the defined aims

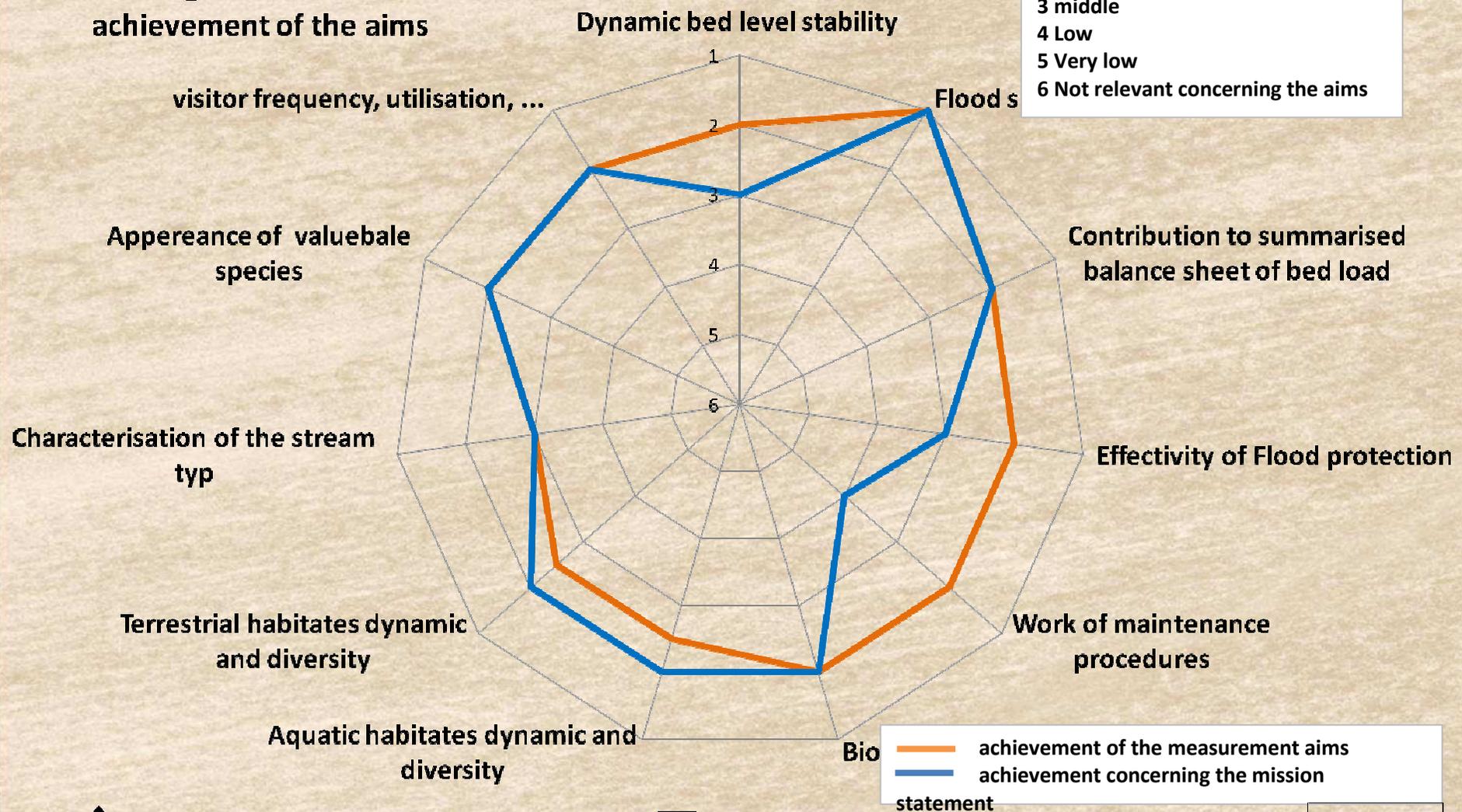


Resume and recommendations

Evaluation profile

Range 7 - Radlach
achievement of the aims

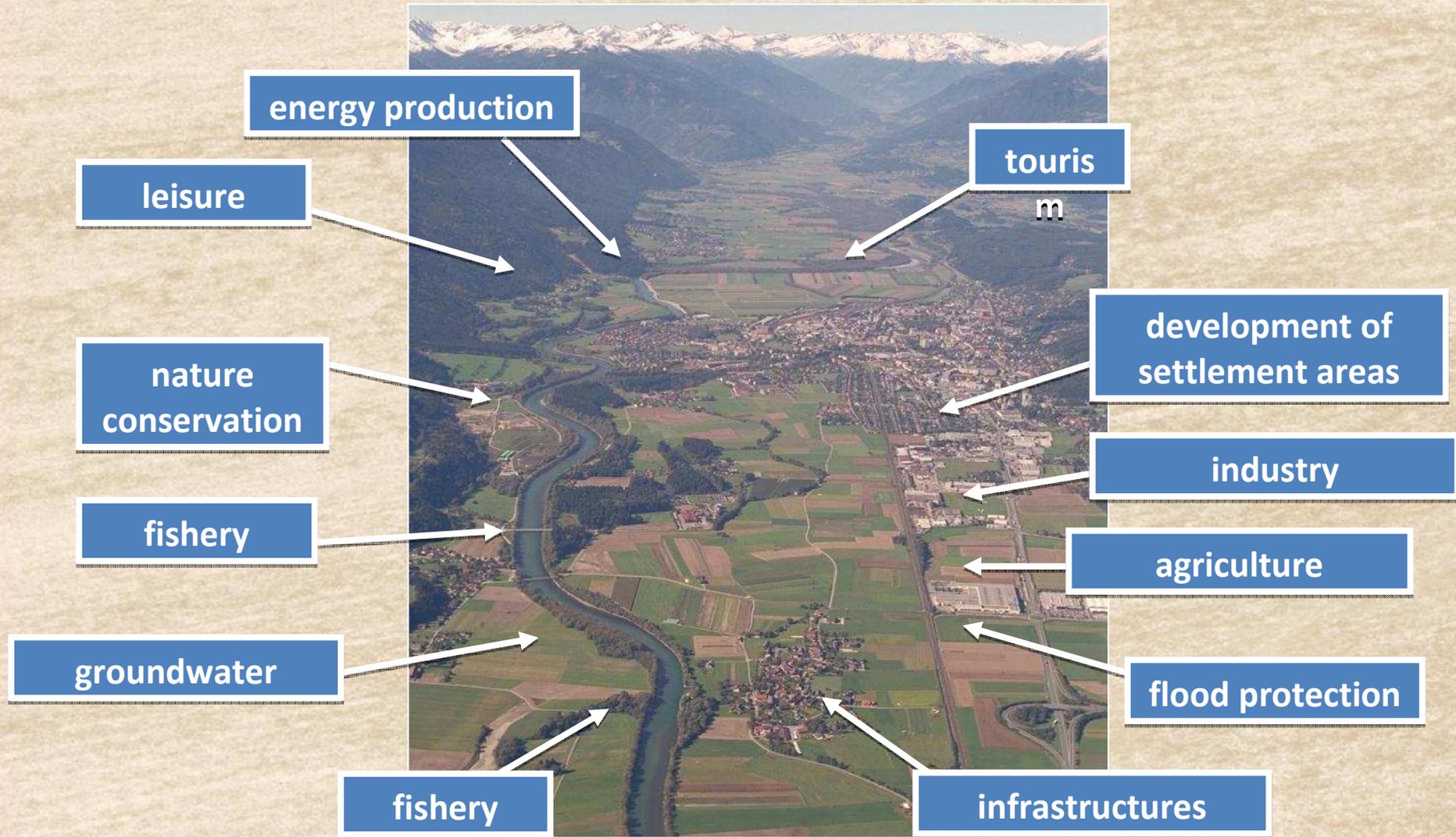
1 very high
2 high
3 middle
4 Low
5 Very low
6 Not relevant concerning the aims



Intensive discussion with stakeholders



Stakeholder within the river corridor...



Stakeholder networking within the river corridor...



Outputs concerning the evaluation ...

- ▲ Work done so far (projects and measures within the last 20 years) was very successful, restoration of about 43 km of 70 km along pilot area

14 river stretches

Nr.	Maßnahmenstrecke	Von Flkm	Bis Flkm	Länge (km)
1	Oberdrauburg Eisenbahnbrücke	611,35	610,45	0,90
2	Gröfelhof - Stein	607,55	604,45	3,10
3	Dellach	602,81	601,11	1,70
4	Feistritzbach - Berg	600,10	597,60	2,50
5	Greifenburg - Amlach	596,00	595,10	0,90
6	Greifenburg - Bruggen	593,85	592,70	1,15
7	Radlach	591,30	590,40	0,90
8	Kleblach	583,27	580,80	2,47
9	Kleblach-Lind	579,29	578,84	0,45
10	Obergottesfeld	577,19	575,04	2,15
11	Sachsenburg	573,15	571,35	1,80
12	Möllmündung - Rosenheim	569,80	566,05	3,75
13	Spittal	563,35	559,10	4,25
14	Amlach - St.Peter	555,45	551,80	3,65

Revitalisierte Strecke gesamt 29,66 km

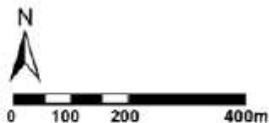
Gesamtstrecke 68,50 km

Anteil revitalisiert 43 %

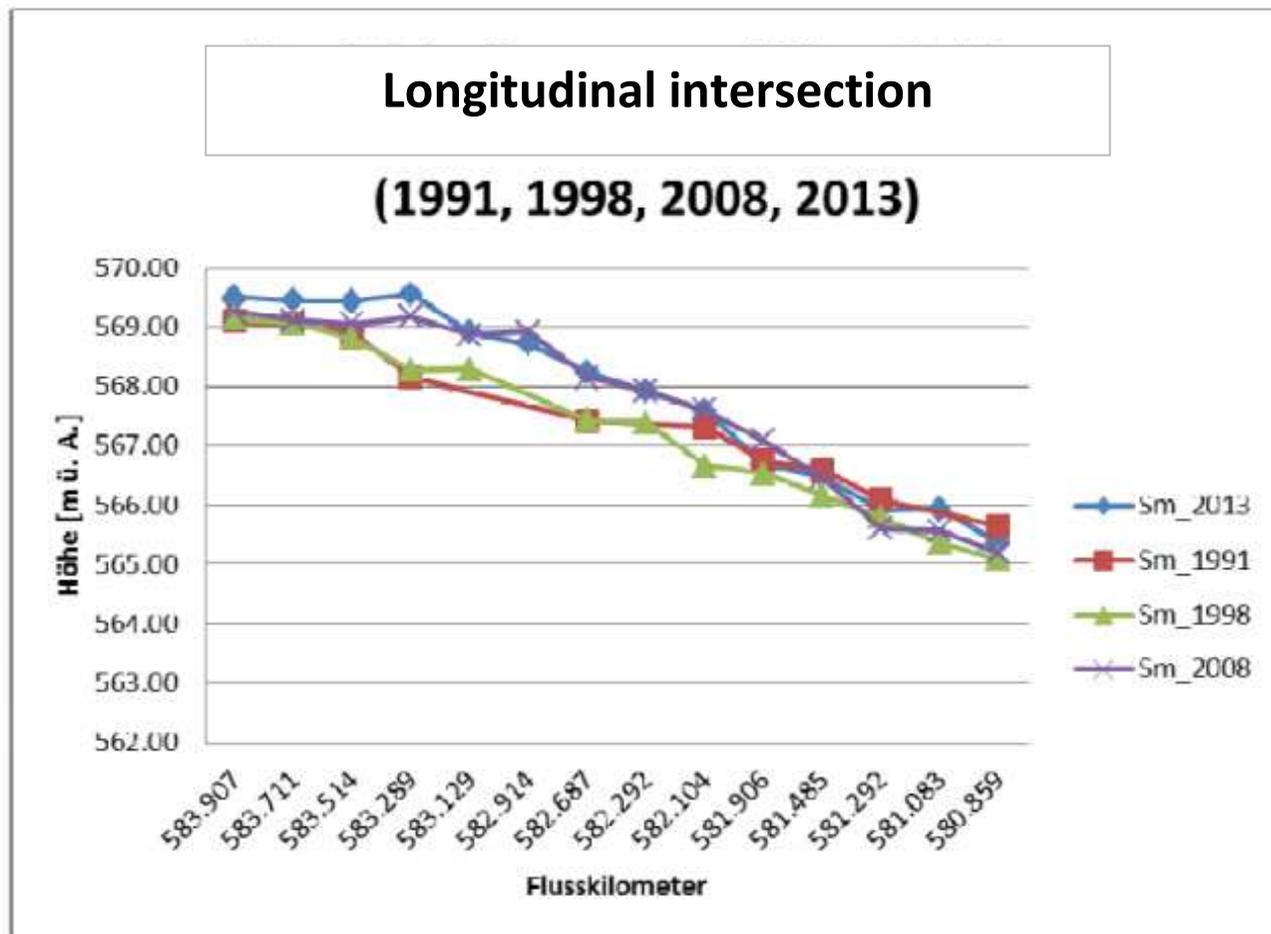
Outputs concerning the evaluation ...

▲ The problem of river bed erosion has improved a lot

Digital elevation model (m a.s.l.)

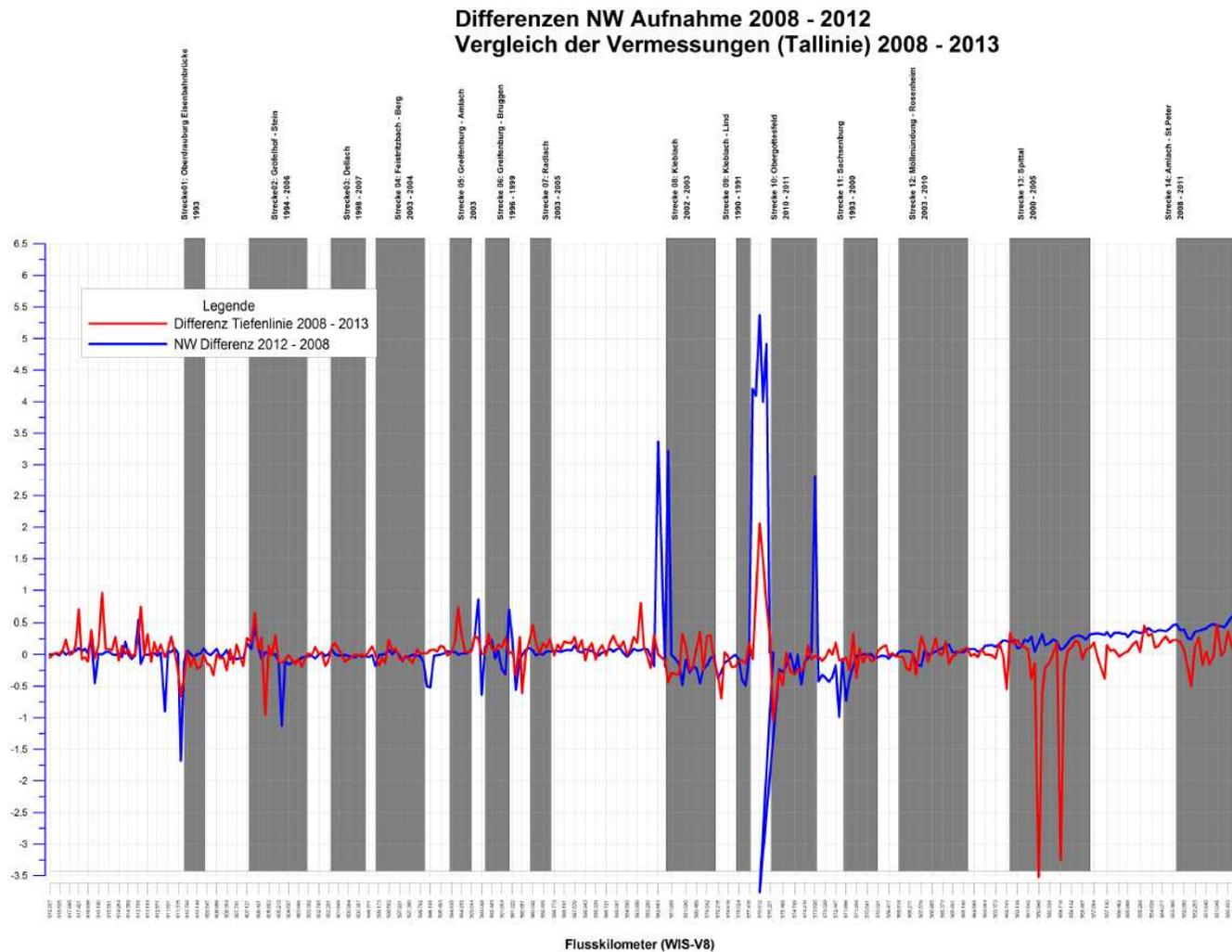


SpittalBa3 km 57,2
 x = 10432,2 m
 y = 194768,9 m
 x = 10432,2 m
 y = 194768,9 m
 544.0



Outputs concerning the evaluation ...

▲ The problem of river bed erosion has improved a lot

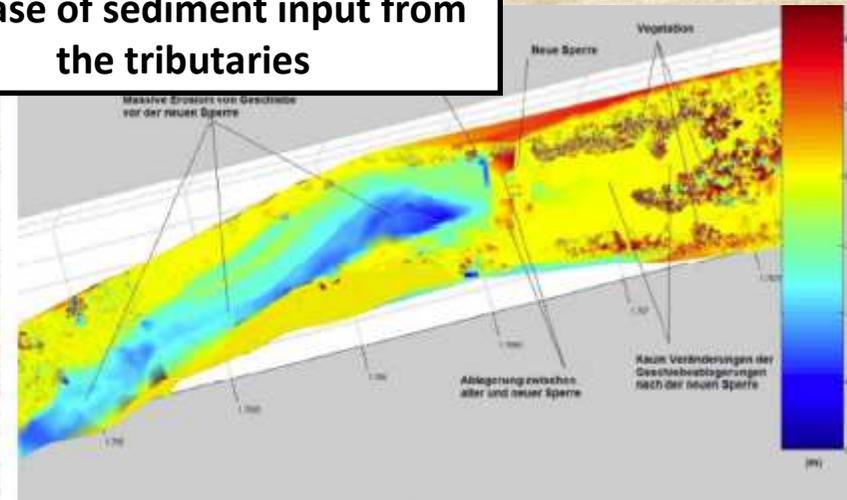


Outputs concerning the evaluation ...

- ▲ The input from sediment and gravel from upstream and tributaries are very important for the further development of the measures and the Drava.



Increase of sediment input from the tributaries



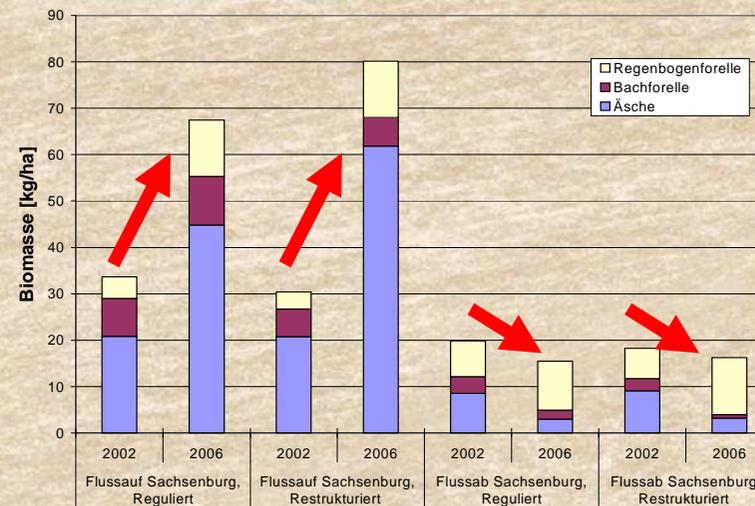
Outputs concerning the evaluation ...

- ▲ The riparian forest along the implemented measures, the dead waters, the side arms have developed well, also for the semiterrestrial and terrestrial fauna various habitats are available, but still not enough!



Outputs concerning the evaluation ...

- ▲ The situation for fish species has improved as there are now a lot of various habitats along the Drava
- ▲ But as long as the problem of the flush flow (Strassen-Amlach and Malta Unterstufe) has not been solved the main fish species at the Drava (Äsche, Huchen) are endangered!



Outputs concerning the evaluation ...

- ▲ The group of Stakeholder is known since more than 20 years, some of them were always active, some of them only a few times. The main stakeholders always take part in the discussions.
- ▲ It is not easy to motivate all the stakeholders to take part at the discussion again.
- ▲ Who are the key players and best representatives for a specific involvement process
- ▲ **Stakeholder involvement is essential for the success of the measures**



Final results ...

▲ Common signing of the agreement

Stakeholderagreement:

▲ Flood protection

▲ Nature conservation

▲ Aquatic ecology

▲ Agriculture

▲ Tourism, leisure



Final results ...



DRADA Datenarchiv Drau

Ordner	Untereordner	Inhalt	Format	Format	Jahr	Kilometer	Hyperlink		
A Allgemein									
1	A_Allgemein	01_Drau_Erhaltung_1989-1993	Plan		1989 - 1993		A_Allgemein01_Drau_Erhaltung_1989-1993		
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			AP2_Raumnutzung	Bericht	Bericht_AP2_Raumnutzung	pdf	doc	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP2_R
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			AP3_Flussmorphologie	Plan	Raumnutzungspläne 1-15, div. CHT-Dateien	pdf	cht	1992	
			AP4_Vegetationsstrukturen	Bericht	Bericht_Vegetationsstrukturen	pdf	doc	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP4_V
			AP5_Gewässersysteme	Bericht	Bericht_Gewässersystem, Anhang	pdf	pdf	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP5_G
			AP6_Hochwasserschutz_Hydrologie	Bericht	Bericht_Hochwasserschutz und Hydrologie	pdf	pdf	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP6_H
			AP7_Geschiebehaushalt	Bericht	Bericht_Geschiebehaushalt	pdf	pdf	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP7_G
			AP8_ARC-Info_Bearbeitung	Bericht	ARC_Info_Bearbeitung	pdf	pdf	1992	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP8_A
			AP9_Zusammenfassender_Bericht_1u2	Bericht	Zusammenfassender_Bericht_1u2	pdf	doc	2001	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP9_Z
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			AP10_Vegetation	Bericht	Bericht_Vegetationsstrukturen	pdf		1993	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP10_V
			AP11_Ausgewählte_Wirbeltiere	Bericht	Bericht_ausgewählte_Wirbeltiere, Vogeltypen, Amphibientypen, Endbericht	pdf	doc	1994 - 2001	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP11_A
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			AP13_Fischökologische_Untersuchung	Bericht	Bericht_Fischökologische_Untersuchung	pdf		1993	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP13_F
			AP14_Makrozoobenthos	Bericht	Bericht_Makrozoobenthos	pdf		1994	A_Allgemein02_GBK_Obere_Drau_1992-1996/AP14_M
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4	A_Allgemein	04_Drau_Fresina_1997-1999			Liste der verordneten Maßnahmen (Prax_Folie 7)	doc	1999	A_Allgemein04_Drau_Fresina_1997-1999	
			Bericht		EU_Projekt_Drau_Bericht_Projektstrukturplan	doc	1998 - 1999	A_Allgemein04_Drau_Fresina_1997-2000	
			GIS-CAD		EU_HW6_EU_MAGN_TVP1_KARTE15A	dwg	1999	A_Allgemein04_Drau_Fresina_1997-1999/GIS-CAD	
				fresina_99	div. Shp-Files	shp	1999 - 2001		
			Kurzbericht		Drau_Fresina_Broschüre	doc	1999	A_Allgemein04_Drau_Fresina_1997-1999/Kurzbericht	
			Profile		KARTE15a	plt	1999	A_Allgemein04_Drau_Fresina_1997-1999/Profile	
5	A_Allgemein	05_LIFE_I_Auwaldnutzungskonzept_2000	Bericht		Auwaldnutzungskonzept_Bericht, Präsentation	doc	pdf	2001 - 2002	A_Allgemein05_LIFE_I_Auwaldnutzungskonzept_2000
			Fotos		Aufforstung	jpg	2001	A_Allgemein05_LIFE_I_Auwaldnutzungskonzept_2000	
			GIS CAD		div. Shp-Files (Wald, Aufforst...)	shp	2001	A_Allgemein05_LIFE_I_Auwaldnutzungskonzept_2000	
			Profile		div. rs-Files	rt	2001 - 2002	A_Allgemein05_LIFE_I_Auwaldnutzungskonzept_2000	

02_DRADA_Datenarchiv_Ubersicht_20140509.xlsx, 09.05.2014

the SEE River Toolkit on the Drava River Corridor

Entwicklungskonzept Obere Drau II
 - Autobahnbrücke Molzbichl

02 EVALUIERUNG

Bericht



NTEN

Ministry of Agriculture, Forestry, Environment and Water Management, info.enviro.gv.at



Final results ...

- ▲ Detailed catalogue of measures
- ▲ Map of the measures scale 1:50.000
- ▲ Map of the measures scale 1:25.000

Legende

Maßnahmen Hochwasserschutz

- HWS, Hochwasserschutz

Maßnahmen zur Sohlstabilisierung

- STO, Maßnahme zur ökomorphologischen
- STU, Maßnahmen zur ökomorphologischen
- STS, Maßnahmen zur ökomorphologischen

Maßnahmen Ökologie

- ⋯ OKZ, Ökologische Kernzone / eingeschränkte Erholungsnutzung
- OSG, Stillgewässer-Verbund
- OEM, Maßnahme an Zubringer

Maßnahmen Erholungsfunktion

- EBO, Boot-Ein- und Ausstiegsstelle
- ENZ, Naherholungszone / Besucherinforma

— Gewässer

▭ Gemeindegrenze

Flood protection

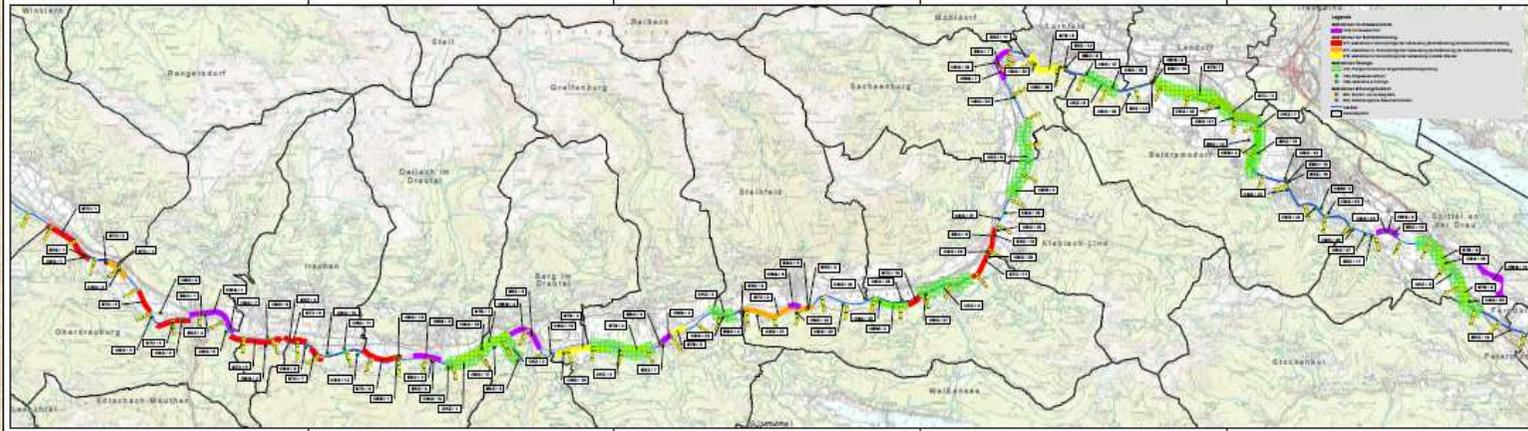
High river bed erosion

Low river bed erosion

Stable river bed

Ecology

Recreation



SOUTH EAST EUROPE SEE River

**Gewässerentwicklungskonzept
OBERE DRAU II**

Oberdrauzug - Ausbathörliche Moosbichl

ENTWURF

Maßnahmenkonzept

Übersichtsplan 1: 50.000

1: 50.000	Projektname	Stand	Anhang 2



All for One -
One for All:
The Upper
Drau



THANK YOU!

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