



# Workshops introduction

Gašper Zupančič  
DRSV

Oliver Rathschüler  
Freiland (A14)

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019



# Agenda for today

## THE FUTURE OF BORDER MURA

### BILATERAL CONFERENCE

Radenci, Slovenia  
8. - 9. May 2019

#### UVOD

##### Uvod

09:00 – 09:15

**GAŠPER ZUPANČIČ**

Direkcija Republike Slovenije za vode

**OLIVER RATHSCHÜLER**

Freiland Ziviltechniker GmbH

#### DELAVNICE

09:15 – 12:00

DS 1

DS 2

DS 3

DS 4

#### ODMOR ZA KOSILO

12:00 – 13:45

Odmor za kosilo

#### PLENARNO

13:45 – 15:00

**Plenarno (Predstavitve poročil delovnih skupin, zaključna razprava, zaključki)**

15:00 – 15:15

##### Zaključni nagovor

**SUZANA STRAŽAR**

Direktorica urada za upravljanje z vodami, Direkcija Republike Slovenije za vode

**RUDOLF HORNICH**

Koordinator obvladovanja poplavne ogroženosti, Urad štajerske deželne vlade

#### INTRO

##### Intro

09:00 – 09:15

**GAŠPER ZUPANČIČ**

Wasserdirektion Republik Slowenien

**OLIVER RATHSCHÜLER**

Freiland Ziviltechniker GmbH

#### WORKSHOPS

09:15 – 12:00

AG 1

AG 2

AG 3

AG 4

#### MITTAGSPAUSE

12:00 – 13:45

Mittagspause

#### PLENUM

13:45 – 15:00

**Plenum (Präsentation der Gruppenberichte, Diskussion und finale Schlussfolgerungen)**

15:00 – 15:15

##### Schlussreden

**SUZANA STRAŽAR**

Direktorin der Wasserdirektion Republik Slowenien

**RUDOLF HORNICH**

Koordinator für Hochwasserrisikomanagement, Land Steiermark





# Workshop – plan „border Mura 2030“ – goMURra

- Plan „border Mura 2030“ is a crucial strategic output of the goMURra project
- Today's workshops are a crucial starting point of the preparation of the „border Mura 2030“ plan
  - Recieve expert and stakeholder insight
  - Form conclusions for development of the plan

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019



# Plan framework

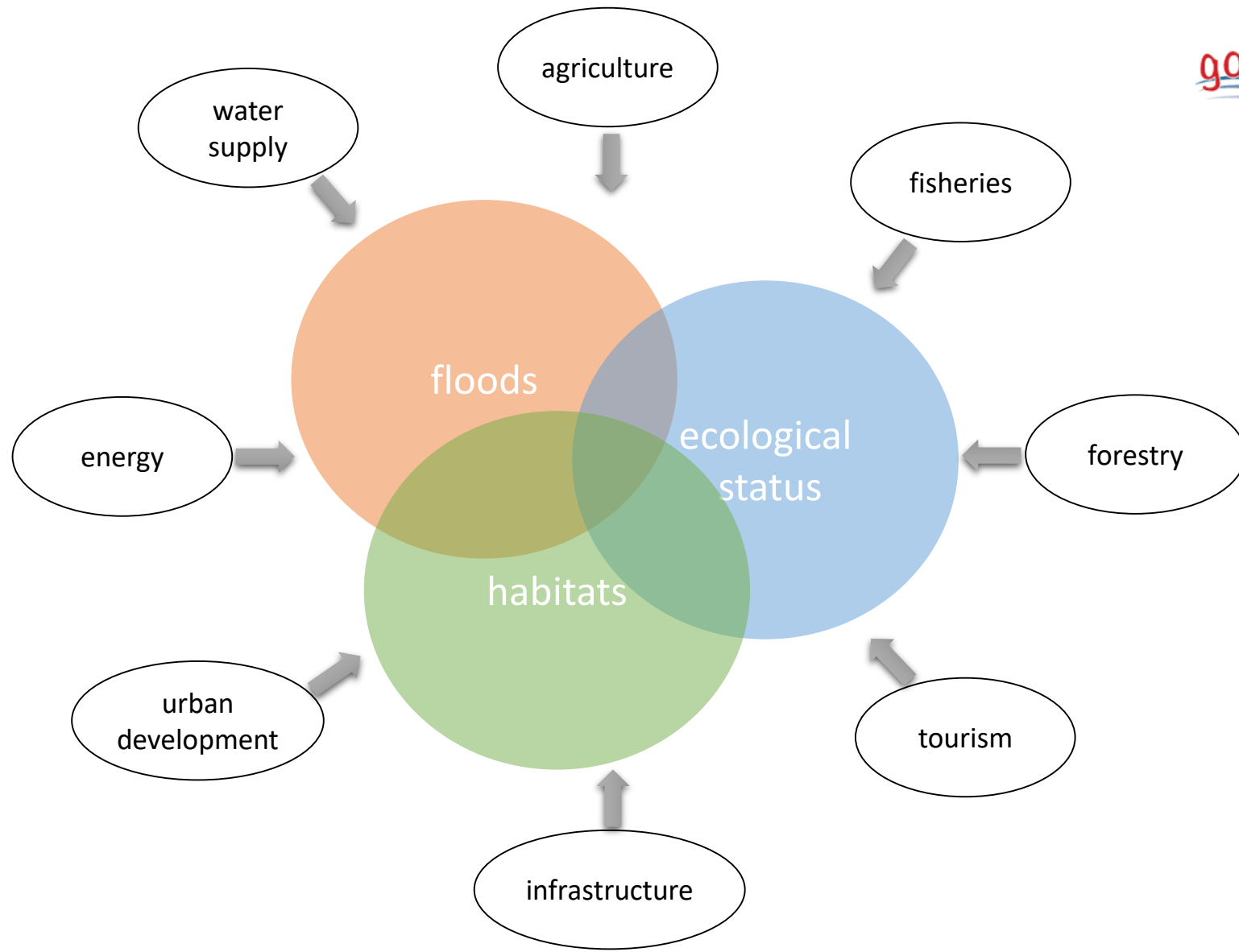
- As defined in the goMURra project application:
  - will enable reaching water management goals by 2030
  - will reduce flood risk (FD), improve status of surface and ground water bodies (WFD), improve habitats (HD) and improve living conditions
  - Core problem: unstable river bed

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019





# THE FUTURE OF BORDER MURA

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019







# Day one conclusions

## THE FUTURE OF BORDER MURA

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019




# PWMC

- Three fields of work and numerous thematic areas (t.a.):
- Water management:
  - t.a. 1.1 – floods
  - t.a. 1.2 – changes in riverbed
  - t.a. 1.3 – sediment transport basis
  - t.a. 1.4 – river morphology
  - t.a. 1.5 – water engineering structures
  - t.a. 1.6 – sediment transport model
  - t.a. 1.7 – low water analysis
- River ecology:
  - t.a. 2.1 – ichthyological assessment
  - t.a. 2.2 – HM Structures
  - t.a. 2.3 – macrozoobenthos
- Vision:
  - t.a. 1.18 – vision: water management aspect
  - t.a. 2.18 – vision: ecological aspect
  - t.a. 0.18 – vision discussion

## THE FUTURE OF BORDER MURA

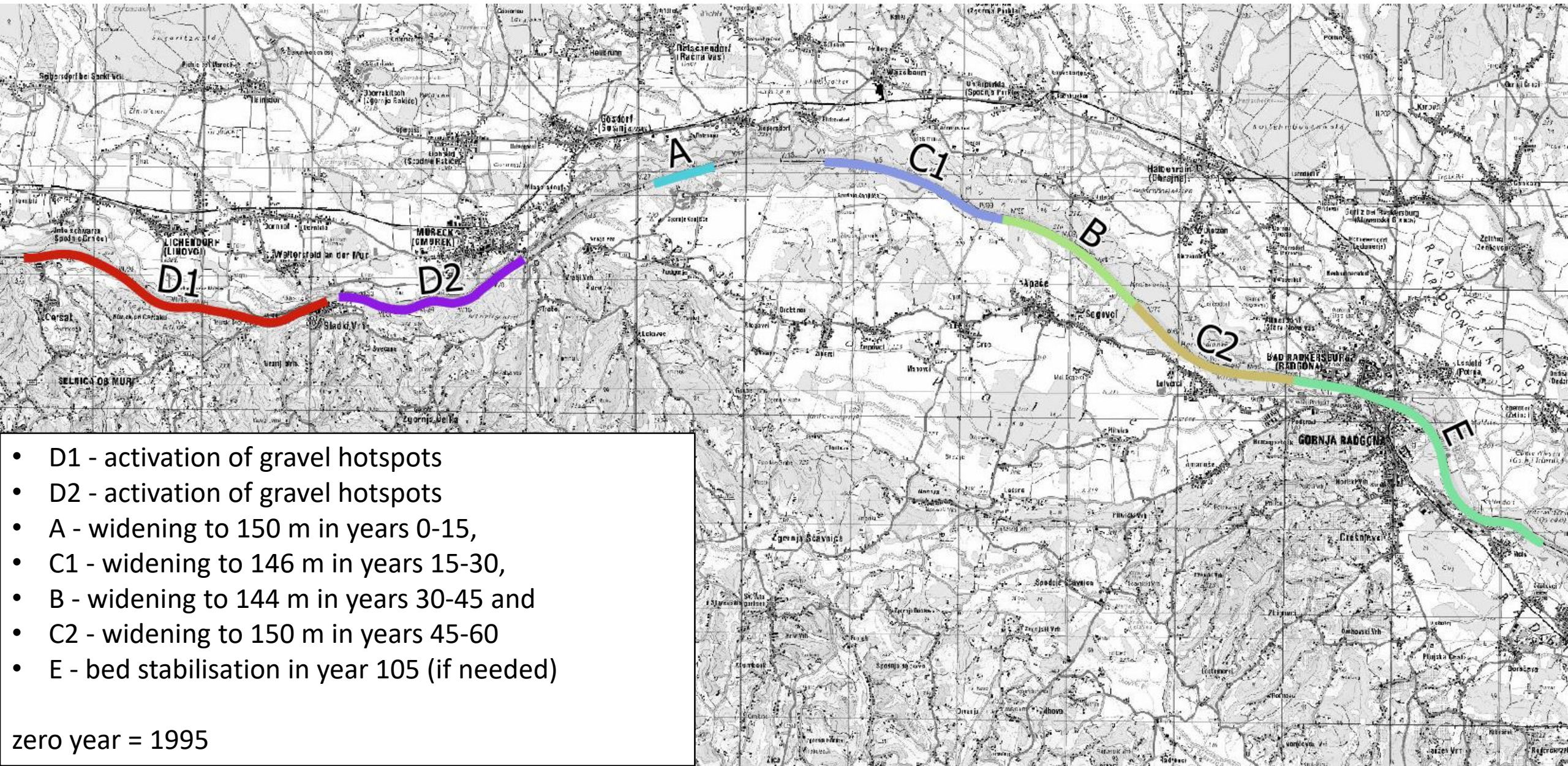
### BILATERAL CONFERENCE

Radenci, Slovenia  
8. - 9. May 2019

 PWMC quite accurate – room for refaming / upgrading







- D1 - activation of gravel hotspots
  - D2 - activation of gravel hotspots
  - A - widening to 150 m in years 0-15,
  - C1 - widening to 146 m in years 15-30,
  - B - widening to 144 m in years 30-45 and
  - C2 - widening to 150 m in years 45-60
  - E - bed stabilisation in year 105 (if needed)
- zero year = 1995



# Floods

- Be careful with changes in riverbed:
  - Riverbed deepening both reduces flood risk (locally) and increases flood risk (downstream)
  - Riverbed rising can lead to increased flood risk
- Floods are still an issue on the border Mura and are being tackled (Gornja Radgona)
- Flood surveys in several areas still missing (?)
- Wisdom of balancing (citizens, land use, investors..., stakeholders)

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019



# Sediment transport - 1

## THE FUTURE OF BORDER MURA

### BILATERAL CONFERENCE

Radenci, Slovenia  
8. - 9. May 2019

- Necessity to analyse and verify the indicated effects at all restored sites of the border Mura
- Identifying the role of individual components (supply, width, river course etc.)
- Development of a Concept for future measures, focusing on the central points:
  - Sediment budget
  - Bedload supply from the banks and from upstream (goal for longterm: restoration of sediment connectivity)
  - Increase channel width to promote the development of bars and other structures
- Considering optimisation of river course (curvature) to increase secondary currents and bank erosion, including instream structures
- Find optimised mix of measures in goMURra – quantity of sediment supply, size of riverbend radius and width (and related slope change)





# Sediment transport - 2

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019

- Methodology: Analysis of monitoring data (cross sections, low flow water levels, satellite images (width) etc.), Application of a 3D-hydrodynamic-numerical model coupled with a sediment transport and bank erosion model to determine the effects of scenarios of measure combination
- Implementation of pilot measure / adaptation of Gosdorf and monitoring
- Find sections with potential for corridor
- Importance of ecological evaluation of measures
- Coordination with public water supply – change of groundwater levels
- Effect for flood protection
- -> integrated river engineering approach needed



# River Morphology

- Hydrology (changes in discharge patterns) are a crucial part for understanding problems and proposing measures
- Spatially broader approach - The analysis should not stop at Petanjci
- Different sections of Mur require different solutions - smaller measures can also be effective

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019





# Fish ecology

- Border Mura is very important fish habitat (high potential for improvement) – 860 km downstream connectivity
- Individual fish ecological habitat requirements can most likely be fulfilled in braided river systems with intensive furcation processes.

Which ensures the highest possible heterogeneity according to:

- flow velocity
- substrate composition
- topography (above and beneath the water surface)
- structuring the river bed and the shoreline

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

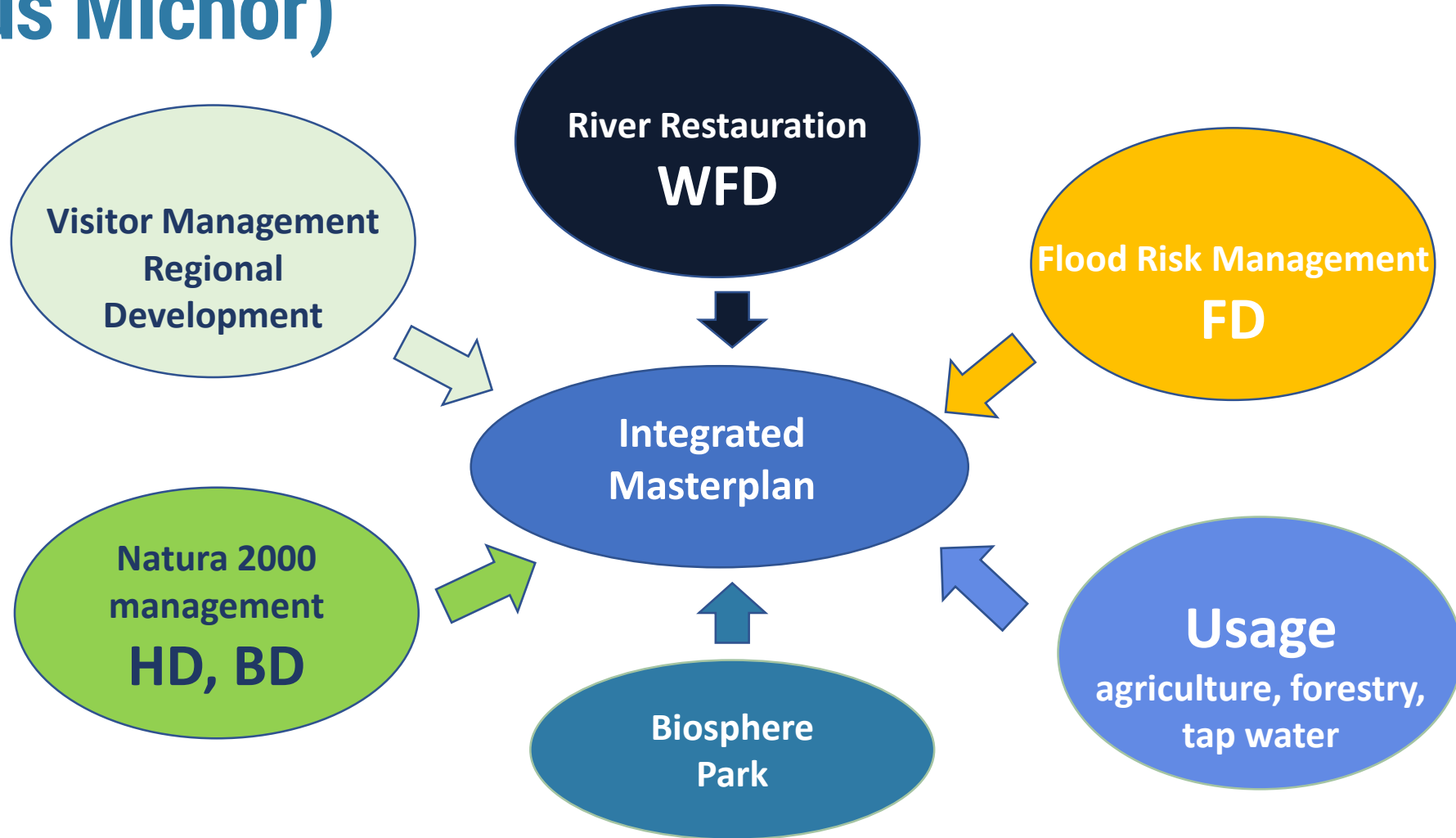
**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019



# Integrated River Management - 1

## (Klaus Michor)



**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019





# Integrated River Management – 2

## (Klaus Michor)

- Which integrated plan is best suited for the implementation of the 4 EU directives?
- Which specific further water management measures should be used to continue progress?
- Which specific conservation measures can improve the status of habitats and species?
- How can the locals of Mura region participate in the planning process of this generation-spanning project?
- How can a good cooperation of the relevant sectors be ensured (water management, conservation, agriculture, forestry and regional development)?
- Which sustainable regional economic developments can benefit from the integrated management plan?

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019



# Day 1 wrap up

- PwMC is still a very good basis for further development
  - Problems addressed are still valid
  - The way they are addressed can be upgraded
- Since 2001 A lot has been made and we can learn from experience (good practices and room for improvement)
- Now is a good time for rethinking / upgrade

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019





# Workshops

- Participants divided into 4 working groups
- All working groups addressing the same questions:
  - „How do you see border Mura in 2030 and beyond?“
  - “Considering the field of work / experience / local knowledge of specific needs of each working group member - What do you think is necessary to be dealt with in the 2030 management plan?“
  - „What are appropriate measures for improving existing problems“?

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019



# Working method

- Smaller groups to encourage participation
- Each group has a moderator, assistant and note keeper
- A combination of individual work (notes, stickers...) and discussion
- Working language is English  
[assistance for Slovene and German will be provided]
- Each group will prepare conclusions that will be presented on the plenary session

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019





# Operational info

- Find your name on the working group lists (on room doors)
- Go to the designated room (follow moderators)

WG no.	moderator	assisstant
WG 1	Cornelia Jöbstl	Bojan Jakopič
WG 2	Petra Repnik Mah	Rudolf Hornich
WG 3	Oliver Rathschüler	Jurij Krajčič
WG 4	Gašper Zupančič	Christine Konradi

- Working schedule free for each group needs [coffee and refreshments available]

**THE  
 FUTURE  
 OF  
 BORDER  
 MURA**

**BILATERAL  
 CONFERENCE**

Radenci, Slovenia  
 8. - 9. May 2019





# THANK YOU!

Gašper Zupančič  
DRSV

Oliver Rathschüler  
Freiland (A14)

**THE  
FUTURE  
OF  
BORDER  
MURA**

**BILATERAL  
CONFERENCE**

Radenci, Slovenia  
8. - 9. May 2019



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA OKOLJE IN PROSTOR  
DIREKCIJA REPUBLIKE SLOVENIJE ZA VODE



Das Land  
Steiermark  
→ Wasserwirtschaft

