#### NWRM – 1st Danube Region Workshop, 28/29 Jan 2014, Szentendre/HU



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Fed. Ministry for Agriculture, Forestry, Environment & Water Management, Dep. VII/1 - National Water Management







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# **Main characteristics of AUSTRIA**

# alpine

- precipitation, incline, settlements & (land)uses

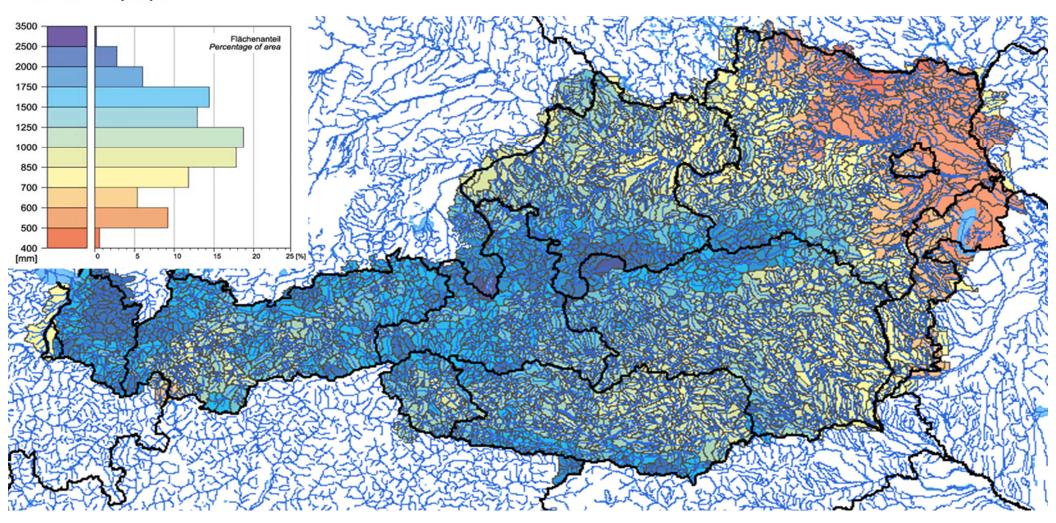
Pustertal / Lesachtal (Tyrol) (© by K-LR, S.Tichy)

## **Annual Precipitation in Austria**

### 400 – 3500 mm/a



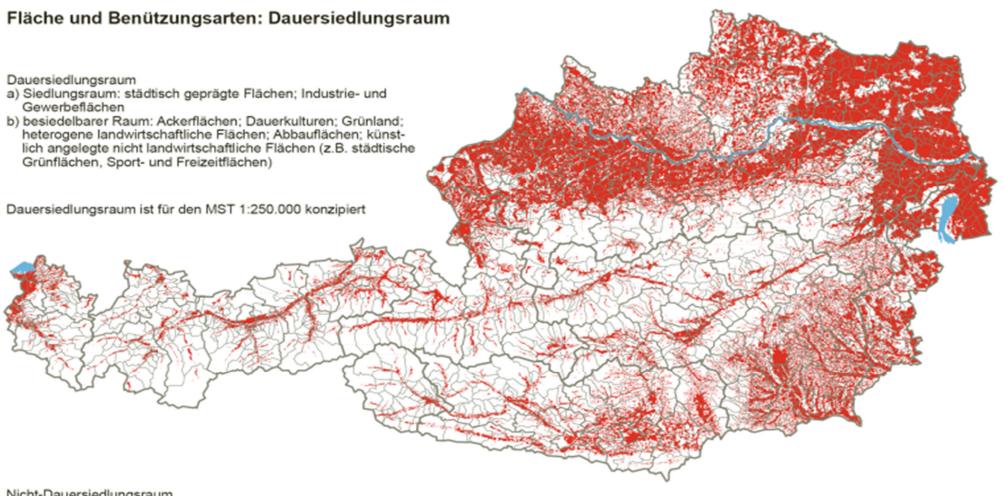
Mittlerer jährlicher Gebietsniederschlag 1961 - 1990 Mean annual areal precipitation 1961 - 1990





#### **Areas available for permanent settlement**

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Nicht-Dauersiedlungsraum



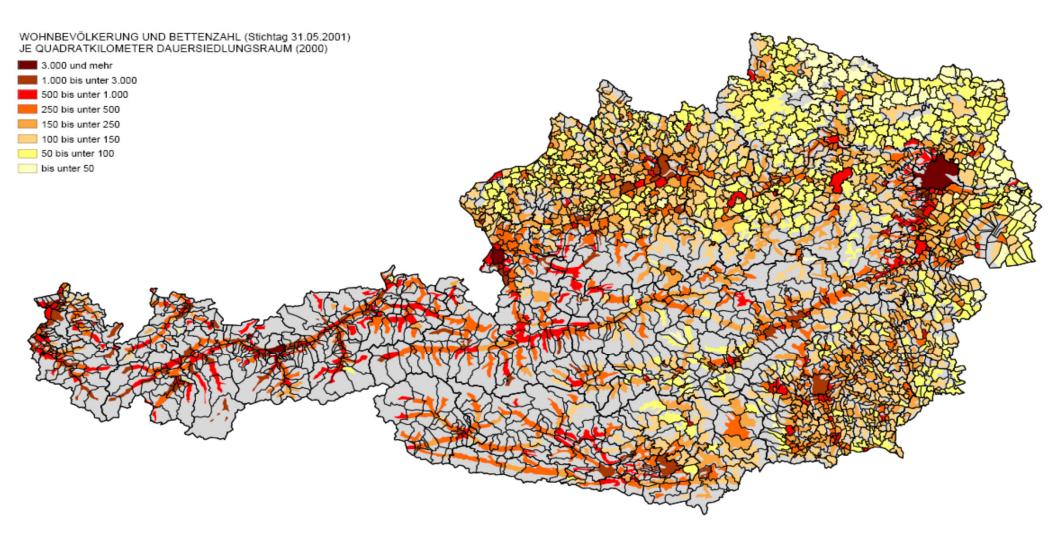
Wälder; Kraut/Strauchvegetation; Wasserflächen; Feuchtflächen (z.B. Schilf, Moor); offene Flächen ohne oder mit geringer Vegetation (z.B. Ödland, Gletscher)

60 km 30

Dauersiedlungsraumabgrenzung erfolgte auf der Grundlage der CORINE-Landnutzungsdaten 2000 und der Einwohner- und Beschäftigungszahlen 2001. Erstellt am: 21.04.2008.

# **Population densities**



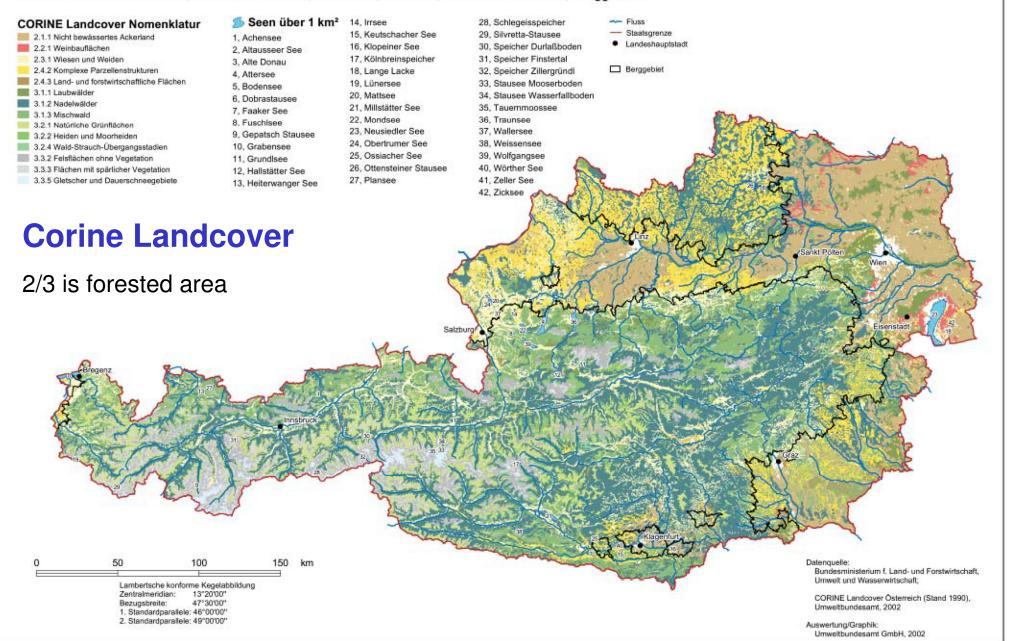


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#### CORINE Landcover: Wälder, naturnahe Flächen, Ackerland, Weinbau, Wiesen und Weiden; Berggebiete



# **Main relevant characteristics**

 alpine (precipitation, incline, 2/3 forest areas)
 Limited areas for settlements – high population density: in valleys and basins
 flood protection has long tradition!

25% of river net > 10 km<sup>2</sup> is significantly altered in morphology

Pustertal / Lesachtal (Tyrol) (© by K-LR, S.Tichy)

### Austrian commitment for "sustainable flood protection"



clear legal linkages:

#### **National Water Act**

Any intervention which might have a significant effect on water quality/ecology (hydropower, flood protection, water abstraction, waste water discharges, ...) needs authorisation

 1990: negative ecological effects have to be minimised, ecological functioning has to be ensured

2003: adaption to WFD objectives/requirements

2011: adaption to FD requirements

"Protection against water and protection of waters"

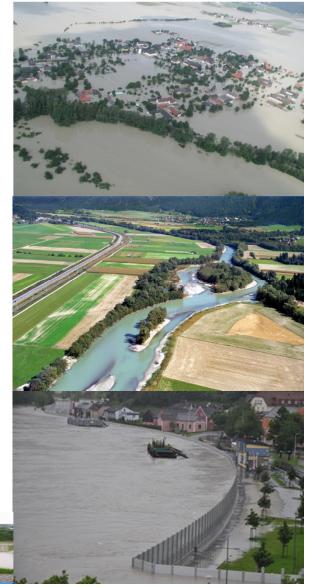


#### Technical Guidlines for Flood protection (RIWA-T) - strategies for sustainable flood management

#### General principles

- <u>Avoidance</u> of those measures that would <u>increase erosion</u> and the <u>discharge</u> of draining water.
- Adaptation of the landuse in zones near water bodies to the effects of excessive run-off and high water levels.
- Support of the <u>natural possibilities of water retention</u> and the improvement of the bed load balance.
- Conservation and reactivation of <u>natural run-off and reten-</u> tion areas.
- Having regard to the ecological functions of water bodies, also for measures that are applied in settled areas.
- Preferential use of near-natural methods of building that correspond to the latest developments in technology.
- Taking into consideration the whole river basin or catchment area when choosing measures.





# **Sustainable flood protection**



#### **Hierarchy of measures**

- Passive (non-structural) flood protection (i.e. adaptation of use to the particular hazard) has priority over active flood protection (structural protection measures)
- Measures in the catchment area have priority over measures at the main channel.
- Retention measures have priority over linear structural measures.
- Natural and near-natural methods of building have priority over methods that are less so.



### First choice "passive" measures



any avoidance of acticvities which may increase flood intensity

- adapting uses to events of high floods (restricted uses)
- acquisition of lots of land by the government to keep free from use
- acquisition of lots in outlying areas to be exchanged later on
- transposition of land use to areas with low flood risk
- use and maintainance of existing retention areas

Prevention - reduction of floodpeaks:

Danger of flooding can be reduced mosts effectively through natural retention in riparian forests and meadow lands, floodplains and undeveloped areas in valleys.

Availability of retention area in Austria ~ 110 Mio. m<sup>3</sup> in 2012: creation of more than 3 Mio. m<sup>3</sup>



### Technical Guidelines for flood protection (RIWA-T)

...directly linked to national funding scheme – requirements for being fincanced

sets different level of flood protection planning

- River development schemes (supraregional, flood risk, WFD objective, uses, social aspects, ....)
- Regional planning
- General project planning
- Detailed project planning

states scope, required data/info (hydraulic, hydrological, (hydro-)geological, sediment, soil mechanics, ecological, ...), data quality, maps, (....), requirements for cost calculation, recommendations for public involvement, ... includes forms, checking lists, ....



RIWA-T gemäß§3 Abs. 2 WBFG FASSUNG 2006



TECHNISCHE RICHTLINIEN für die Bundeswasserbauverwaltung

### Linkage to WFD objectives

Supporting tool for GES restoration: "catalogue of technical measures"

Collection of hydromorphological restoration/mitigation measures

- effects on biology
- effects on hymo
- effects on water quality
- cumulative effects/interactions
- effects on other uses
- reaction time for ecol improvement
- costs



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#### Beitrag zum Maßnahmenkatalog

gemäß §55e Abs. 3, WRG,

Bereich Hydromorphologie

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#### Costs

Are to be taken into account:

several options are evaluated; not the "cheapest" will be implemented automatically as also ecological objectives have to be met.

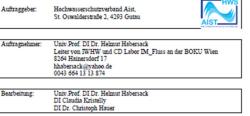
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elle 14: Matrix zur Lösungsfindung (sind nur Beispiele, müsste vor Umsetzung noch im Detail geprüft werden)

Kriterien:		Wirksamkeit				Kosten						Ökologie			soziale Verträglichkeit					
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Natural retention is usually much more expensive than technical measures





Hainersdorf, Dezember 2012

isterium.at

GUTACHTEN Analyse von geplanten

### **Lessons learnt**



Use of existing natural retention areas is the most cost-effective measure

Improving hydromorphology of altered rivers (incl. floodplain reconnection) - "giving more room" – is a win-win-solution

- indispensible for the achievement of WFD objectives
- a valuable measure for FD
- increases biodiversity
- increases natural retention
- ....

Retention areas are in most cases much more expensive than straight technical measures for flood protection

Political commitment for sustainable management / use of NWRM is crucial

Need of a definite financing instrument; financing /financial support has to be linked to ecological objectives



### "Critical" lessons learnt



Hydropower reservoirs can have a positive retention effect, but in special cases can even increase flood peak

Flood plains are never the most cost effective measure with regard to nutrient/ contaminants removal/ improving water quality as they can never can replace the efficiency of a waste water treatment plants (UWWD has to be fulfilled anyway!) Is a valuable supportive measure

In general:

NWRM are not automatically more ecologically sound; they can also can have a negative effect on ecological status (deterioration!)

i.e. modification of a river to retention pond, building meanders where this is not typespecific,



### **Lessons learnt**



In most cases we can ensure that

- new flood protection measures can be performed in a way that good ecological status is still maintained (no deterioration!)
- in HMWBs designated due to flood protection good ecological status can be achieved for all biological elements except fish; good ecological potential comprises self sustaining fish populations

To be unable to achieve good ecological status (solution: HMWB, exemption) is often a lame excuse for not being willing to do anything.

Costs might often be a limiting factor – but ... Is the ecological damage also calculated correctly? Are the solutions sustainable or just producing new problems elsewhere?







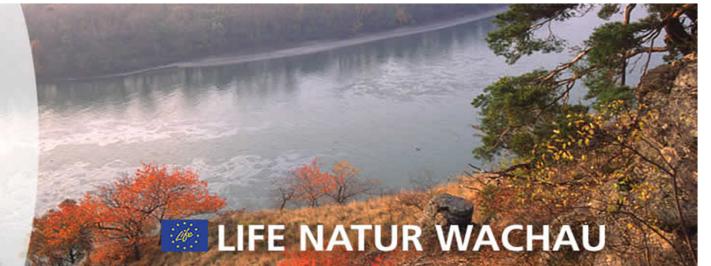
Foto: Salzach Burghausen (Christian Weinberger)

# for your attention

http://lebensministerium.at/

Thank you

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### **Restrukturierung Ybbsmündung**







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#### **Danube, south of Vienna**





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#### Upper Drava





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