

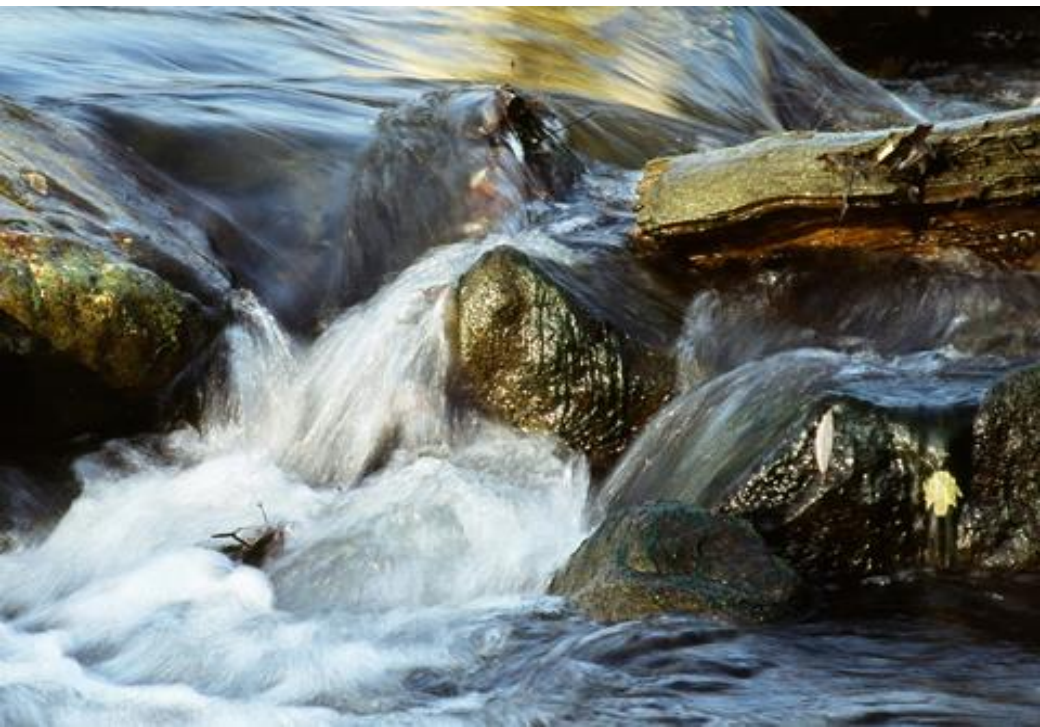
# Water Management in Austria



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# Austria – Basic Facts & Figures



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Member State of the **European Union** since 1995

**Size:** 32,000 m<sup>2</sup> (which is two and half times the size of Minnesota)

**Population:** 8.4 million

**GDP per capita:** \$48,000 (10th wealthiest country of the world)

**Mountainous regions:** 67% of country

**Forest cover:** 48% of country



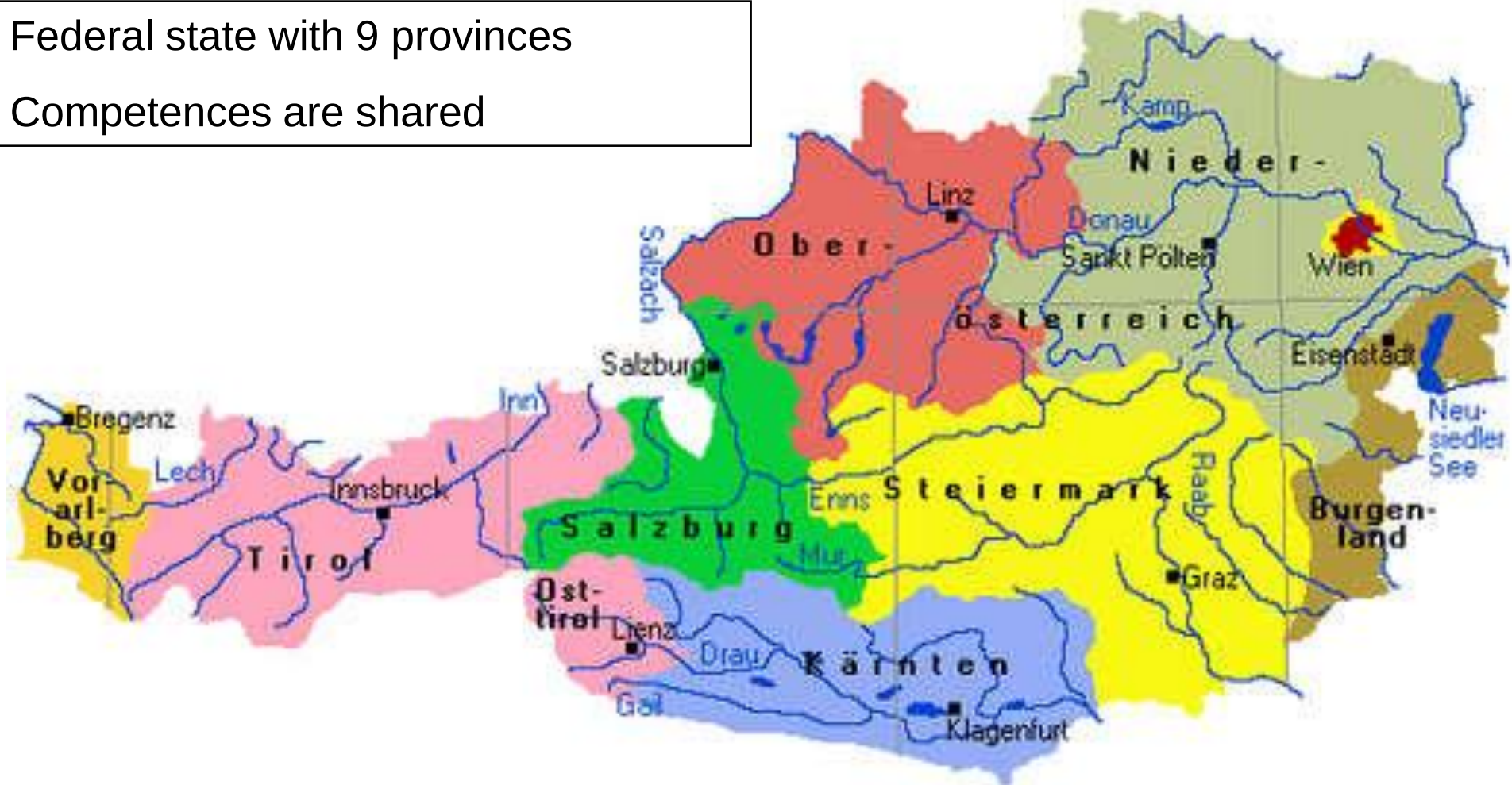
# Facts on Austrian Jurisdiction



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Federal state with 9 provinces

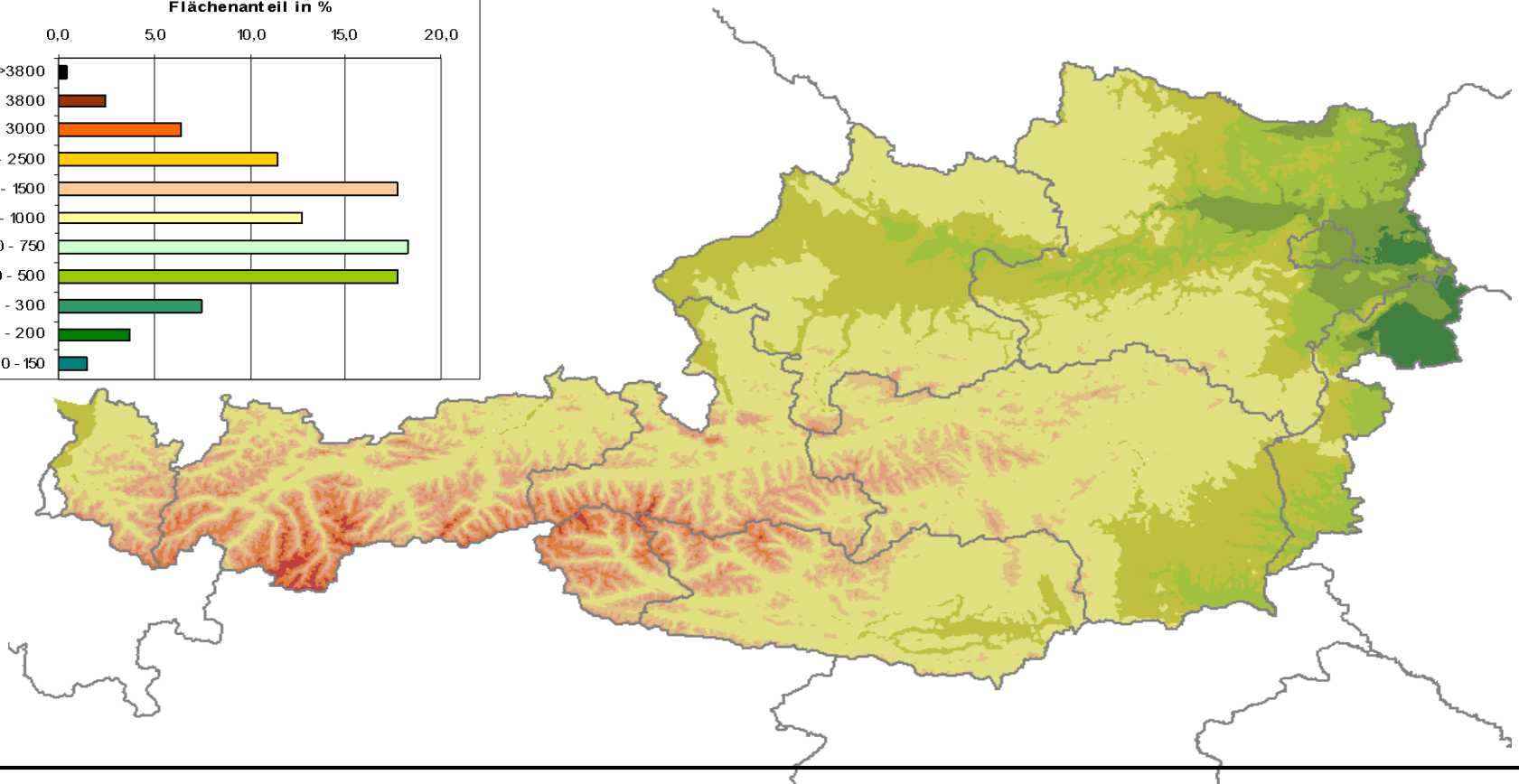
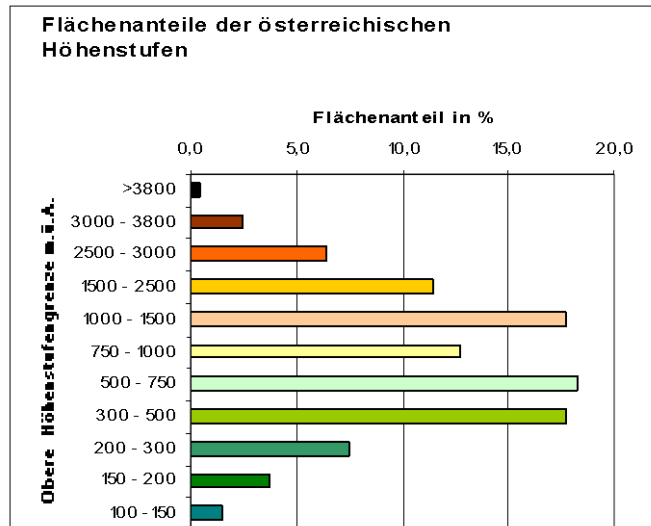
Competences are shared



# Topographic Challenges



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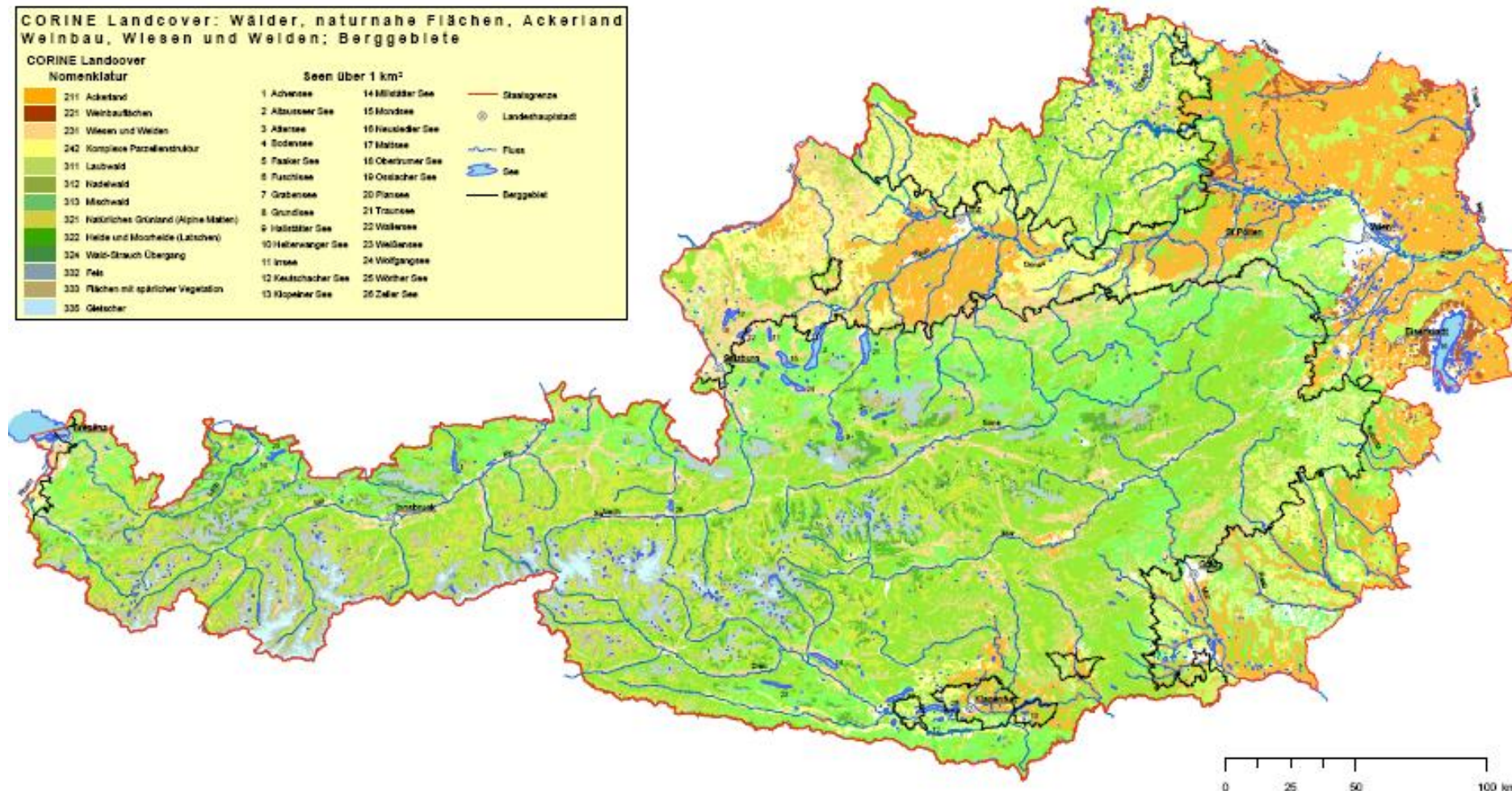
1. Austria is a mountainous country. Only 32% below 500 meters.
2. High precipitation and high slopes entail considerable natural hazards

# Challenge Agriculture



Landwirtschaftliches Ministerium

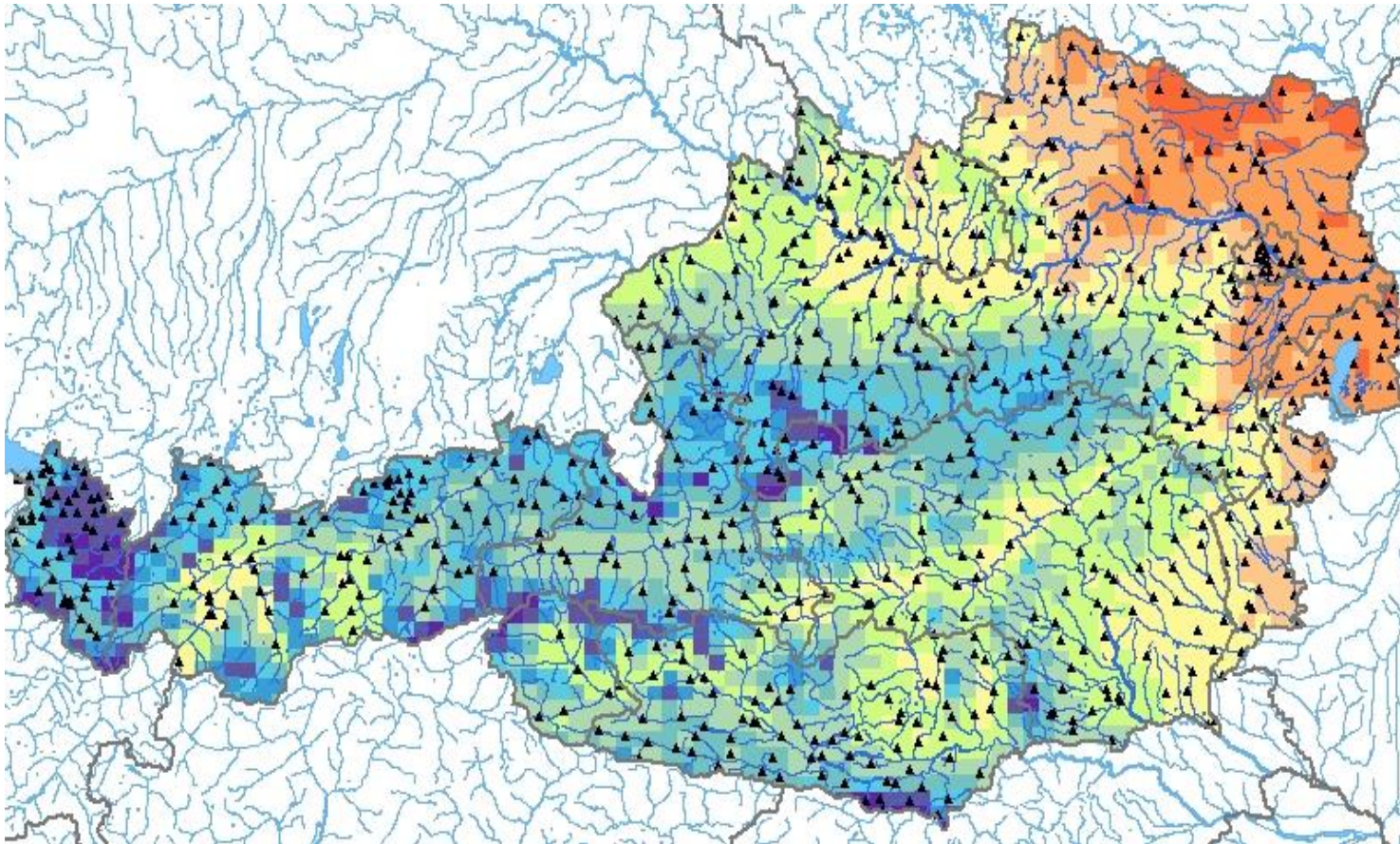
CORINE Landcover: Wälder, naturnahe Flächen, Ackerland  
Weinbau, Wiesen und Weiden; Berggebiete



# Challenges due to Precipitation



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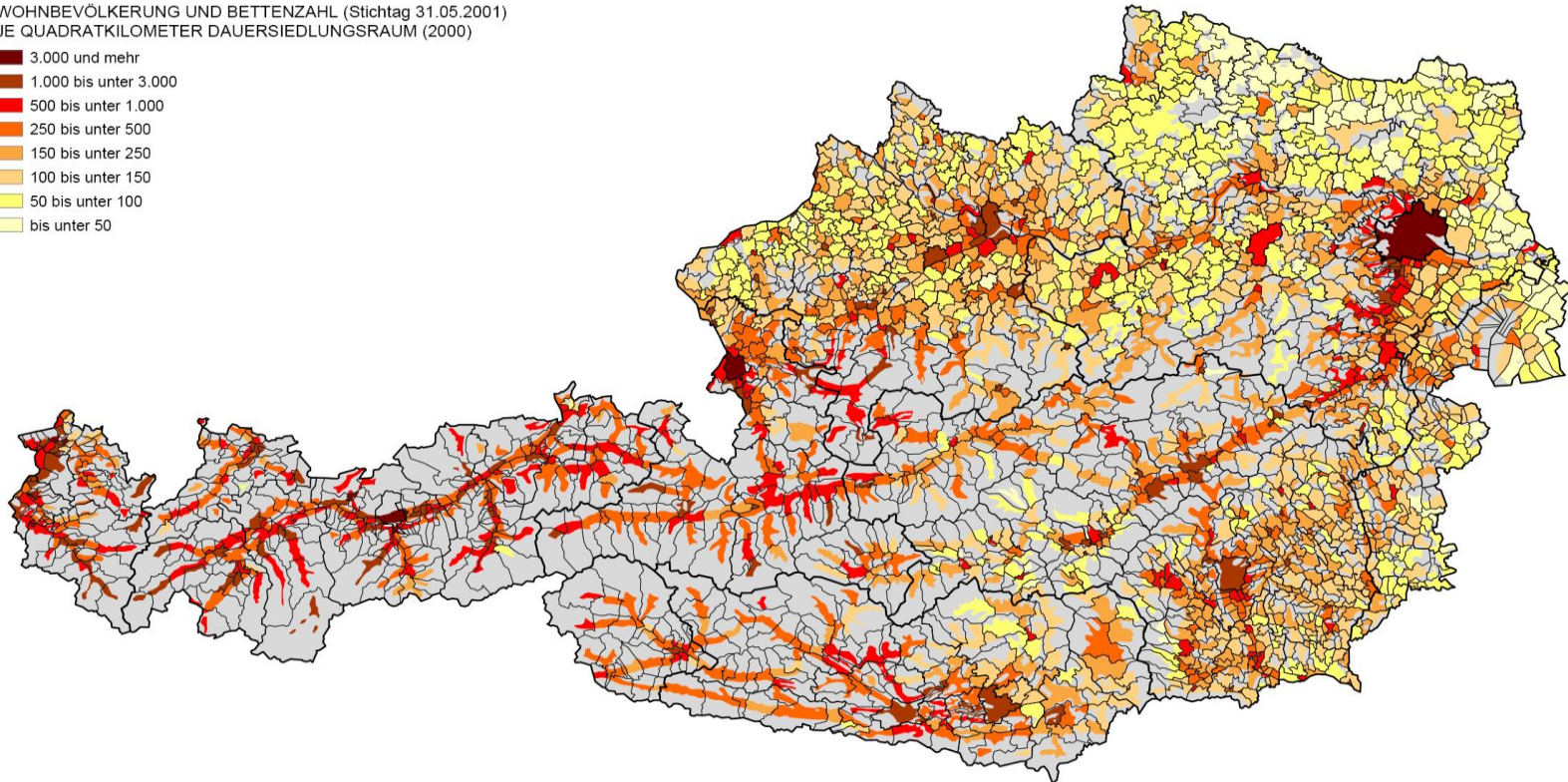
| Precipitation |       |       |       |       |        |        |        |        |        |        |       |
|---------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|
| mm/a          | < 500 | - 600 | - 700 | - 850 | - 1000 | - 1250 | - 1500 | - 1750 | - 2000 | - 2500 | -3500 |

# Challenges due to Population Density



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WOHNBEVÖLKERUNG UND BETTENZAHL (Stichtag 31.05.2001)  
JE QUADRATKILOMETER DAUERSIEDLUNGSRaum (2000)



**1) Population density in alpine valleys is similar to density in big cities!**

**2) Consequences: areas extremely vulnerable to natural hazards, impacts on river morphology, river continuity, loss of wetlands due to flood protection...**

# Diversity of Water Uses – Challenges and Impacts



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Tourism



Agriculture



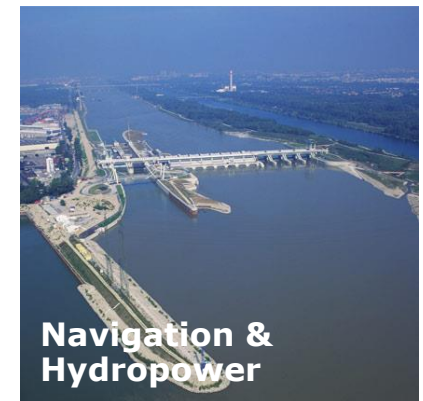
Flood Protection



Drinking Water



Waste Water



Navigation &  
Hydropower



# Three Pillars of Austrian Water Policy

## 1. Protection against natural hazards

- Investments of around €340 million in the last years;
- Flood risk management is priority until 2015 (EU-legislation)

## 2. Protection of waters against pollution

- all waste waters from settlements and industrial sites are treated with best available techniques,
- so far investments of more than €41 billion have been made

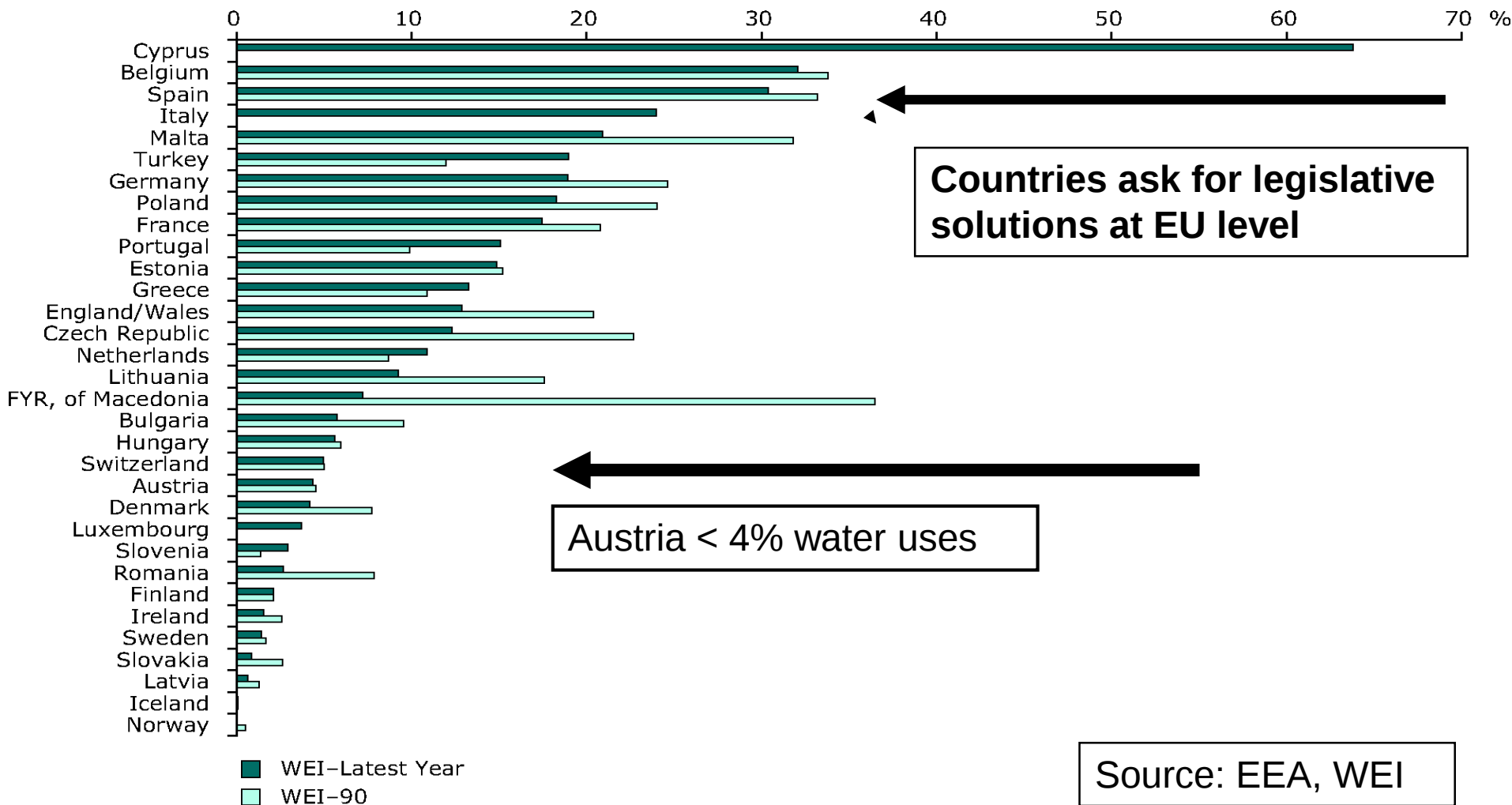
## 3. Preservation and restoration of good ecological status (e.g. river continuity, residual water...)

**In Austria less than 4% of the water resources are used!**

# Water Quantity & Quality is Austria's Asset



Total abstraction per Year/Long term renewable resource

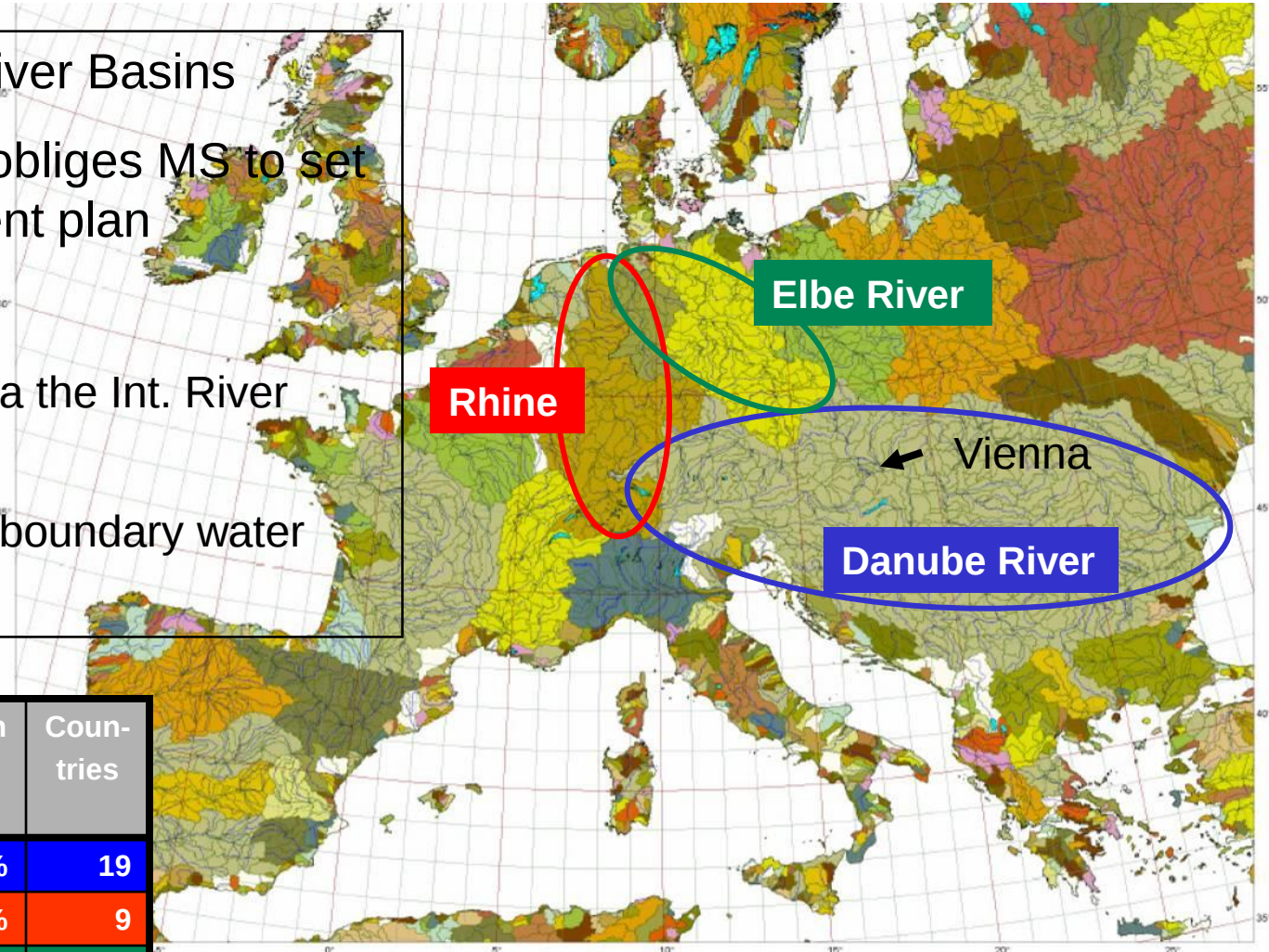


# International Cooperation



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- 1) Austria shares 3 int. River Basins
- 2) EU legislation (WFD) obliges MS to set up shared management plan
- 3) Austria cooperates
  - with riparian countries via the Int. River Commissions
  - With neighbors via transboundary water commissions



| River Basin | Basin area | Austrian share [km <sup>2</sup> ] | Austrian share [%] | Countries |
|-------------|------------|-----------------------------------|--------------------|-----------|
| Danube      | 801.463    | 80.574                            | 10.0 %             | 19        |
| Rhine       | 197.080    | 2.365                             | 1,3 %              | 9         |
| Elbe        | 148.269    | 921                               | 0,6 %              | 4         |

# International Cooperation with Neighbors



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- Austria has with almost all the neighbors treaties (except Italy)
- Treaties date back to the time of the “Iron Curtain” - a time when the borders were impassable because of barbed wire and mines
- Treaties remained in force, even after the collapse of the communist countries (Yugoslavia, Czechoslovakia)
- No common "secretariats", but the water administrations of the countries negotiate at high level with the respective State, by their respective mandate, no involvement of the diplomatic service
- Over the decades most issues could be solved on expert level; in one case, the government and presidents of both countries were involved
- Common water legislations in the European Union help cooperation
- Water scarcity / water quantity is slowly getting a topic of interest, of course also Climate Change

# Water – Key Asset of Austria



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- Austria – abundant water resources, in best quality; < 4% used; => key asset in particular for future
- Austria in favorable position
- surrounded by countries in east and south, where Climate Change will bring increasingly water scarcity + droughts

=> **AT insists on unanimity** in all issues concerning quantitative management of waters within EU legislation

=> **AT hesitant to ratify UN Water Convention** for formal reasons, however in practice rather flexible to meet requests

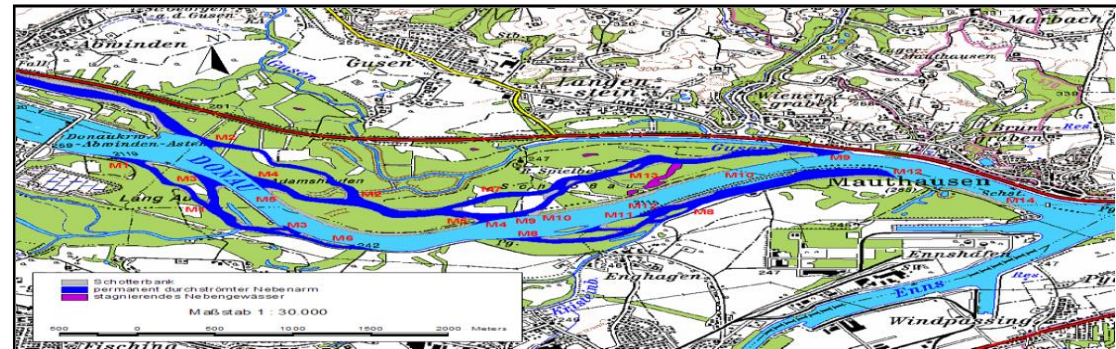
# Main Restoration Measures needed in Austria



## Restoring river continuity



## Increasing habitats diversity in regulated or dammed rivers -



## Restoring of ecological minimum flows



**Minimising flow variations/  
water level fluctuations**

**Hydropower is largely affected**

# Electricity Generation in Austria

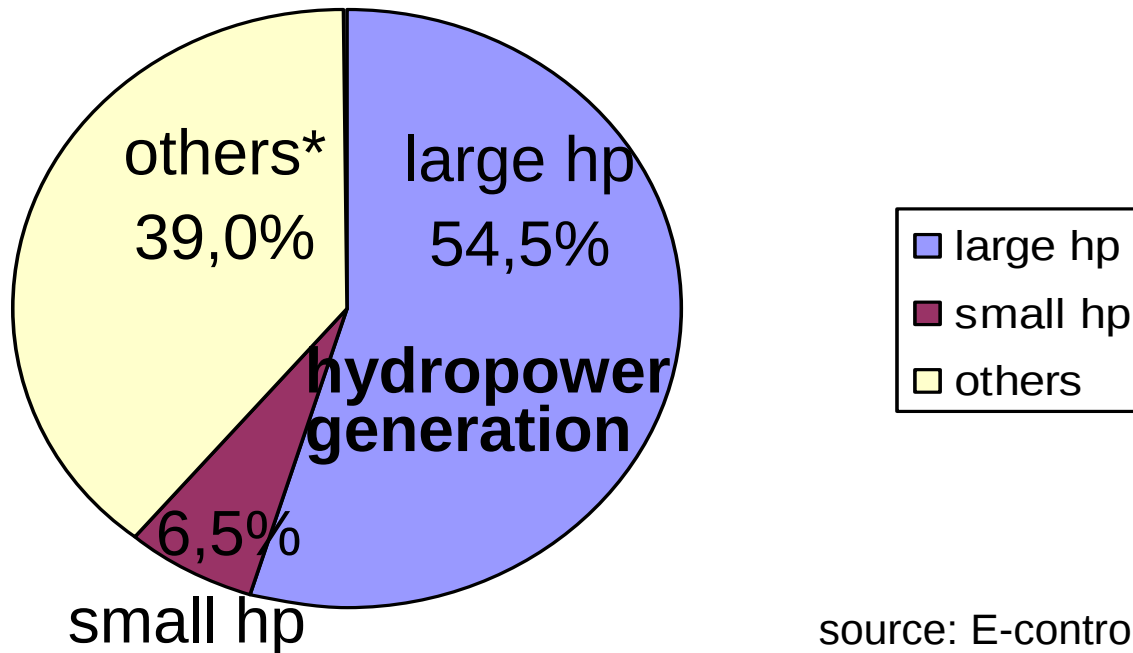


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More than 60% is generated by hydropower (hp)

In the last years the proportion of hp generation **decreased** due to higher consumption → higher use of other renewables generation

**total electricity generation: 64 TWh**



source: E-control

RES-Directive:

Increase from 31% to 34% in 2020

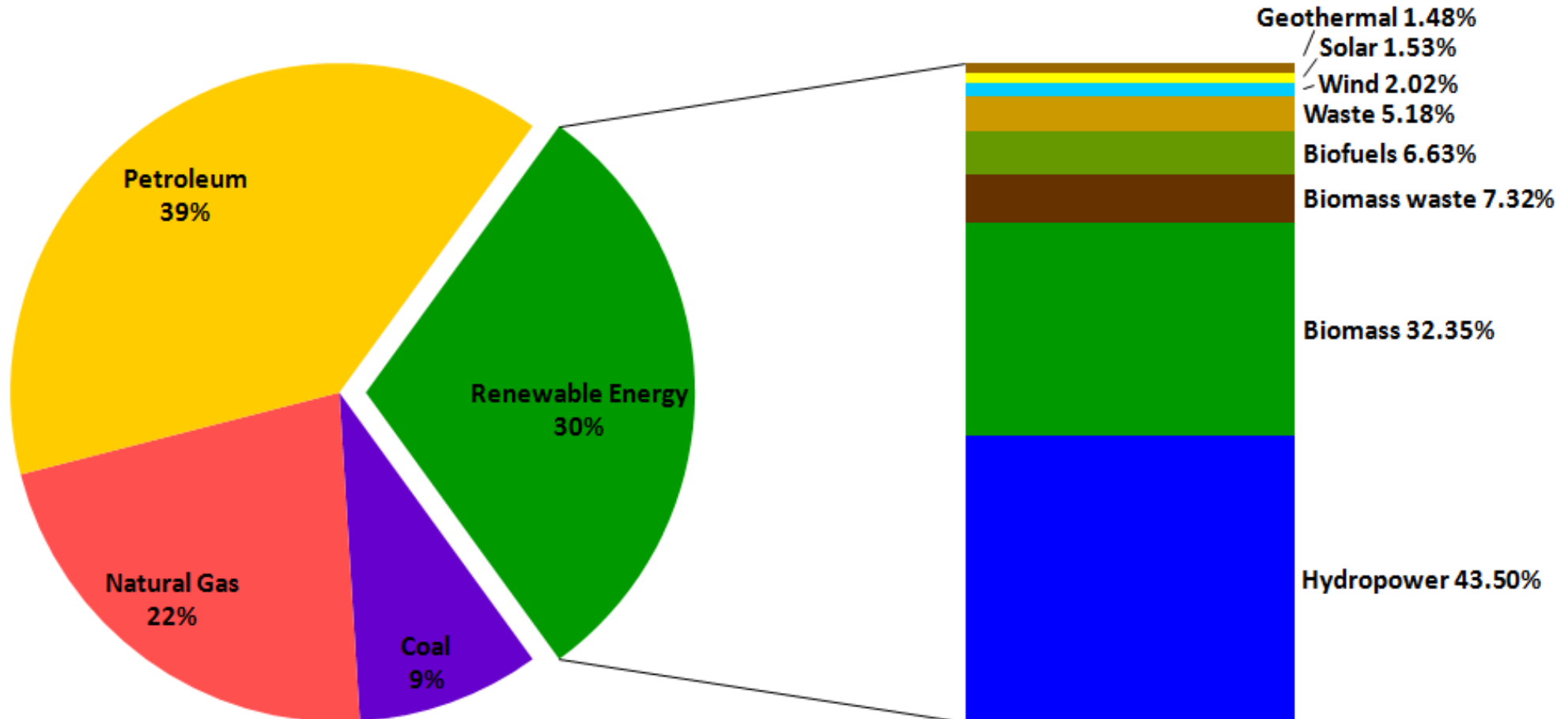
75% of hydropower potential is already exploited

\*biomass, wind, solar, etc.

# Share of Renewable Energy in Austria



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# Sustainable Waste management strategy



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## Precautionary Principle and Sustainability

### Objectives:

- **Minimizing** harmful, detrimental or other effects **hazardous to human being, the environment or basics of life**
- **Minimizing of emissions** of our pollution and GHG
- **Conservation of raw material and energy resources**
- **Lowest** possible exploitation of **landfill volume**
- **Recycling** material with the same quality as primary resources

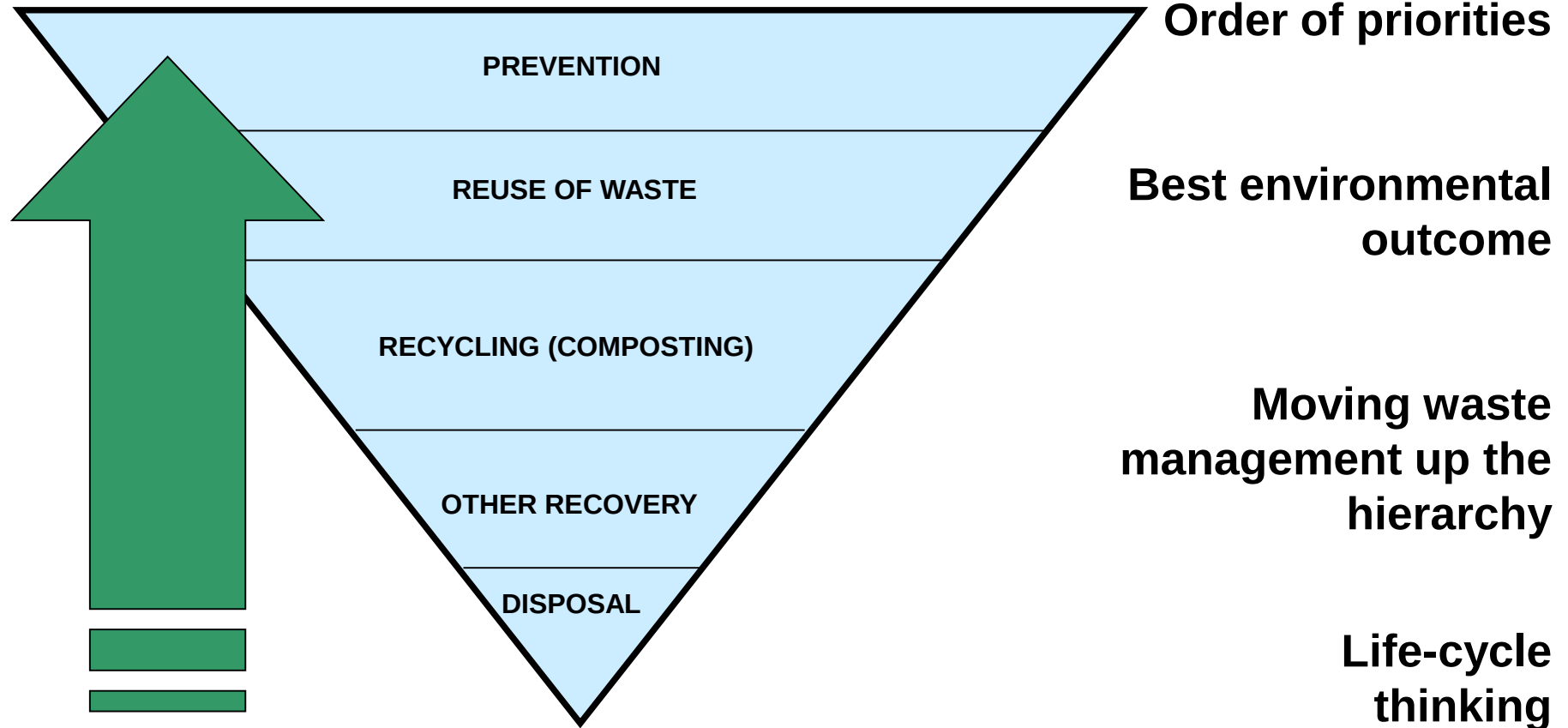


Federal Waste Management Act 2002

# Waste [Management] Hierarchy



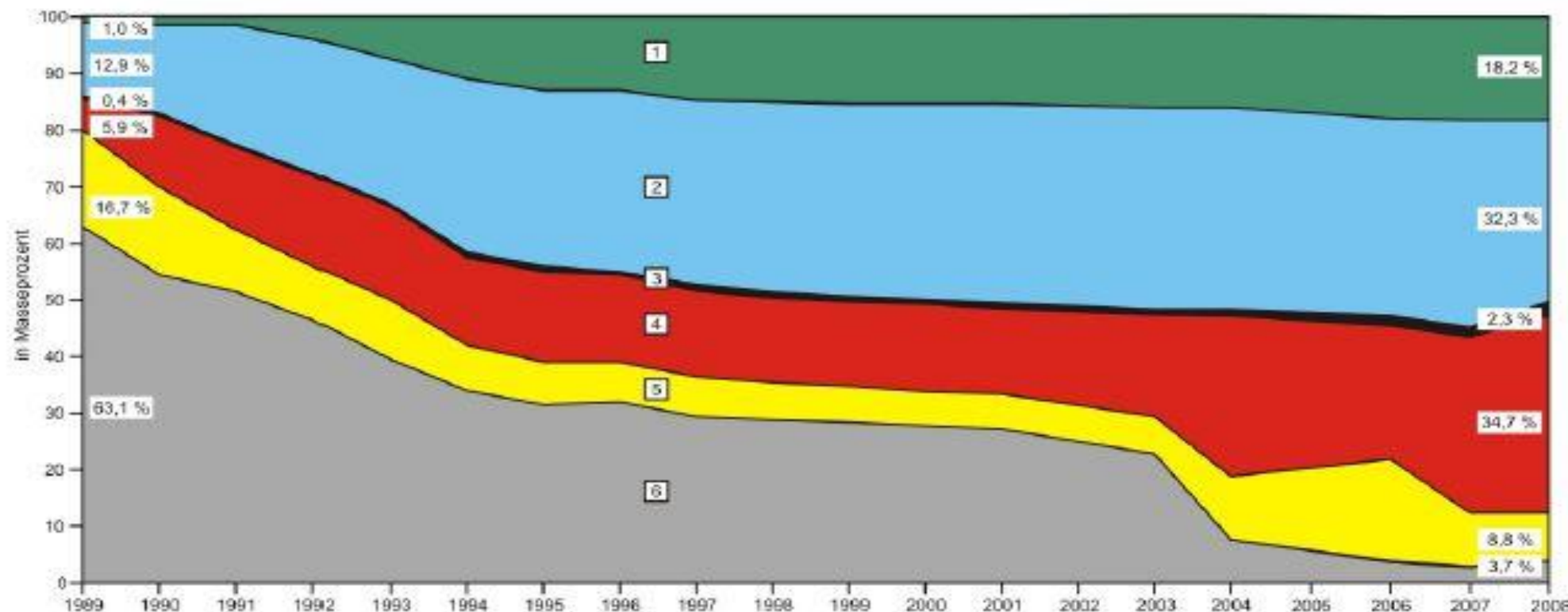
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# Waste Management in Austria



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## Erster Behandlungsschritt:

- 1 Verwertung von biogenen Abfällen aus der getrennten Sammlung
- 2 Verwertung von Altstoffen aus der getrennten Sammlung sowie von Altstoffen aus dem Splitting
- 3 Behandlung von Problemstoffen und Elektronik - Altgeräten aus der getrennten Sammlung
- 4 MVA und Mitverbrennung / Thermische Behandlung  
Direkte Anlieferung von Restmüll und Sperrmüll an MVA sowie der heizwertreichen Fraktion aus dem Splitting
- 5 MBA / Biotechnische Behandlung  
Direkte Anlieferung von Restmüll und Sperrmüll an MBA sowie der biotechnisch behandelbaren Fraktion aus dem Splitting
- 6 Direkt auf Deponien  
Direkte Anlieferung von Restmüll und Sperrmüll sowie von Rückständen aus der Sortierung von Altstoffen aus der getrennten Sammlung auf Deponien

# Vienna's Wastewater Treatment Plant

## Best Practice Example of Austrian Technologies



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Does not only purify the waste-water of Vienna households....

.... it uses several renewable energy technologies to minimize the required resource input

- Combination of solar thermal, photovoltaic, and wind produces necessary electricity
- An integrated CHP uses the energy of the sewage gas to produce electricity and heat

**By 2020, this plant will be 100% energy self-sufficient**

# Implementation Nitrates directive in Austria



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- **Codes of good agricultural practice** – 1995 (year of accession to EU)
- **Decision to apply the action program throughout the national territory** - 1996
- **Action Programs** 1996, 1999, 2003, 2008
- **Derogation according to Annex III** - 2006

# Action Program – Periods in which Fertilizer Application is Forbidden



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| Period                                                                                                                                                                                                | Fertilizer                                   | Areas                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------|
| <b>15 October -<br/>15 February</b>                                                                                                                                                                   | Mineral fertilizer, slurry,<br>sewage sludge | Agricultural area without<br>green cover |
| <b>15 November -<br/>15 February</b>                                                                                                                                                                  |                                              | Agricultural area with green<br>cover    |
| <b>30 November -<br/>15 February</b>                                                                                                                                                                  | Solid manure, compost                        | Agricultural area                        |
| For cultures cultivated early in the year (e.g. spring barley, vegetables) and green covers with early nitrogen demand (e.g. rapeseed, winter barley) application is allowed from <b>1 February</b> . |                                              |                                          |

Application is not allowed on **frozen** soils, **snow covered** soils and **water saturated** soils

# Control System



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- **National Water Quality Monitoring system:**
  - ~ 2.000 groundwater monitoring sites
  - ~ 250 surface water monitoring sites
- **Controls by water inspectorate:**
  - check of sites, installation and water quality
- **Controls by Farm Service Agency:**
  - ÖPUL (11,500 farms in 2004; ~ 7 %)
  - cross compliance
  - mainly on-site controls
- **Information / Advisory services** are very important

# Austrian Water Technologies are Going International



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Product Portfolio includes:

- Construction, operation, and maintenance of water and wastewater infrastructure
- System design of waste water disposal and sludge treatment
- Process water systems (e.g. cooling/heating systems, desalination, decalcification)
- Hydropower plants
- Construction of rainwater collectors
- Irrigation equipment in agriculture
- Seawater desalination

**Austrian water technologies can be found on all continents**



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Thank you for your attention!

