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The role of Hydropower in Austria

8th Energy Charta Task Force Meeting
Regional Energy Cooperation between Central and South Asian Countries
Dushanbe, Tajikistan
20 July 2012

- **Portrait of E-Control Austria**
- **Hydropower in Austria: Significance and Potential**
- **Support Schemes for Hydropower in Austria**
- **Regional Flows and Cooperation**

E-Control Austria Portrait



- The regulator has the job of strengthening competition in a liberalized energy market
- The regulator acts even-handedly in the interests of all market participants - regulators must be politically and financially independent
- This was the thinking behind the establishment of Energie-Control Austria in 2001
- On 3 March 2011, E-Control was transformed into a public authority

E-Control's Duties



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- Setting the framework:
 - establishing market rules for competition
 - regulating network tariffs
- Exercising market oversight:
 - identifying and remedying competition violations
 - tracking and analyzing market development

E-Control is an active member of

GOAL

facilitating the creation of a single, competitive, efficient and sustainable internal market for gas and electricity in Europe

CEER

- Council of European Energy Regulators
- Voluntary, not-for-profit association of regulators

ACER

- Agency for the Cooperation of Energy Regulators
- ACER is operational in Slovenia since March 2011

ICER

- International Confederation of Energy Regulators
- Voluntary framework for cooperation between energy regulators from around the globe

E-Control and EU Twinning Projects



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EU Member State(s)

Non-Member States

- **Projects between EU MS and non-MS**
- **Aimed at institution building and knowledge transfer**
- **E-Control has carried out/is carrying out a project in Ukraine, Macedonia, Croatia and Georgia with the local regulatory authorities**



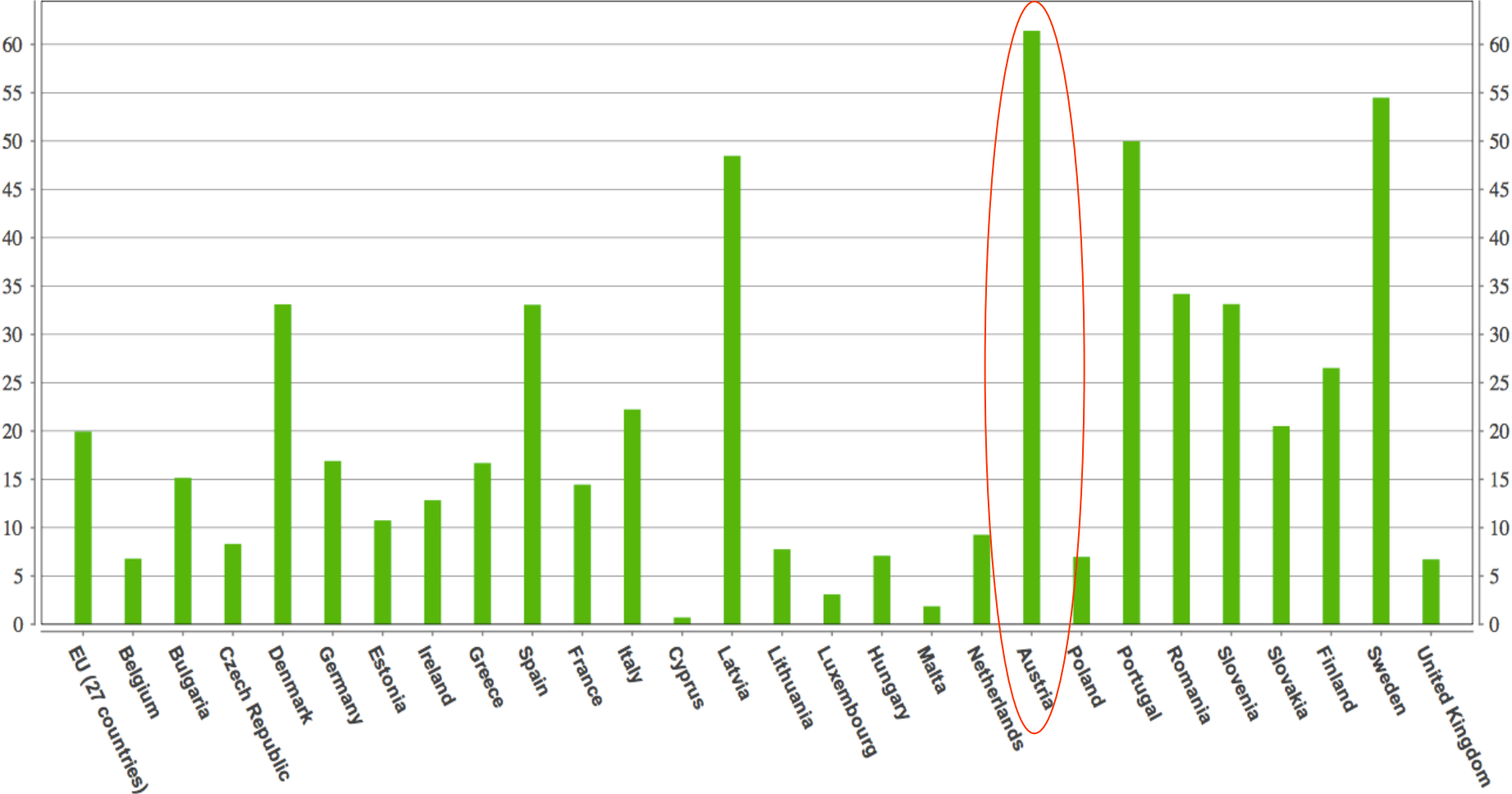
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Hydropower in Austria: Significance and Potential

A map of Europe showing national borders. Austria is highlighted in a solid blue color, indicating its location in Central Europe. The rest of the map is in grayscale.

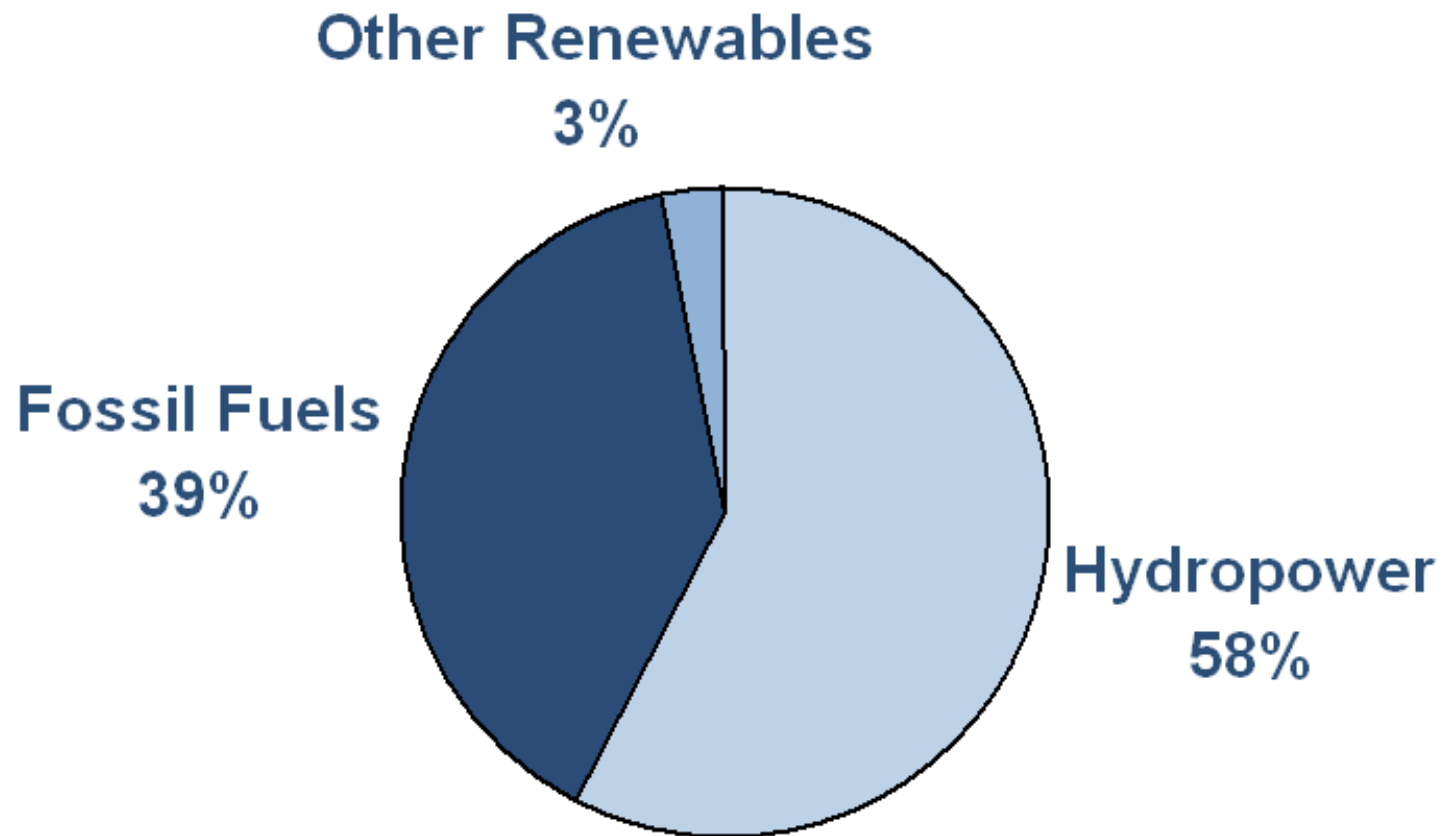
Austria is a small landlocked country in Central Europe with a great hydropower potential

Austria Top in Power Generation from Renewables



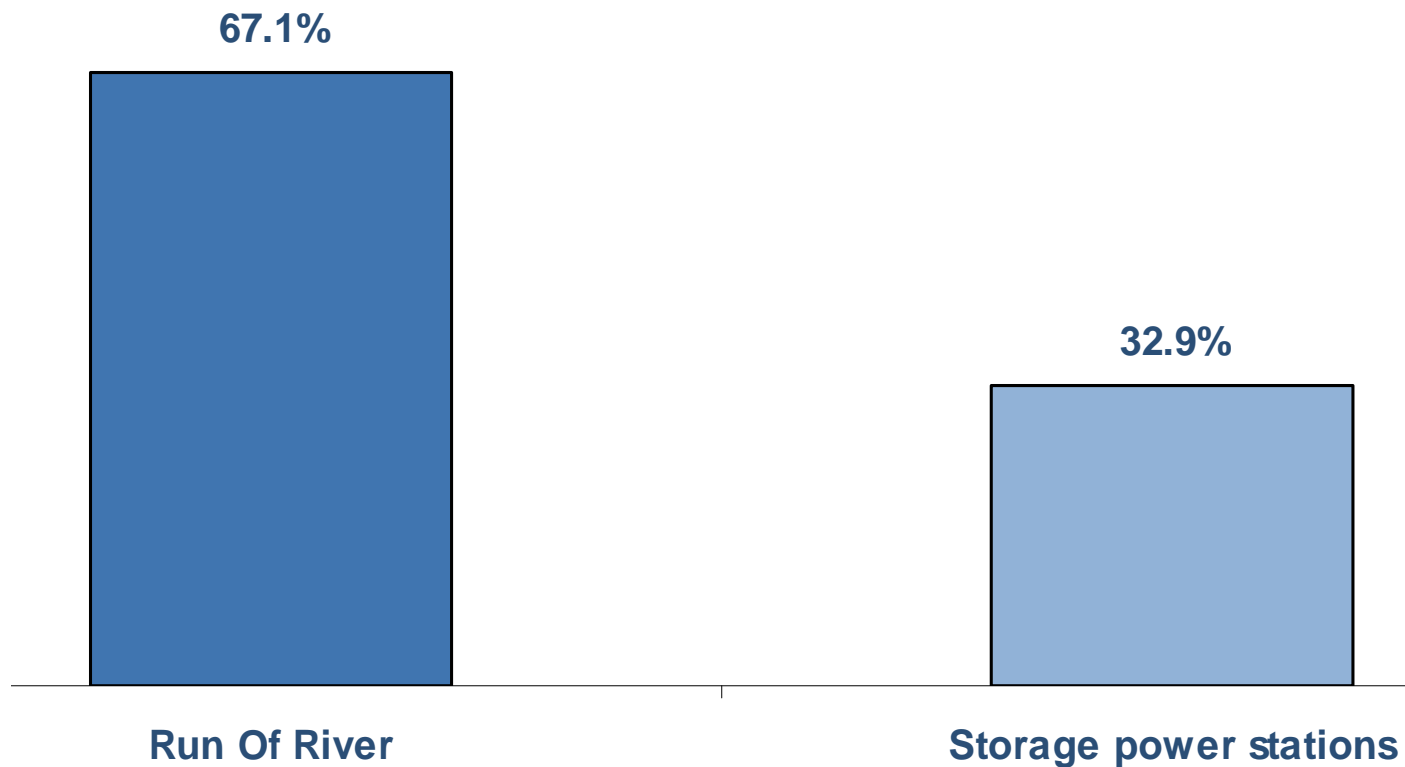
Source: Eurostat 2012

Electricity Generation in Austria



Types of Hydropower

Installed Capacity 2010: 12 919 MW



Hydropower Construction in Austria

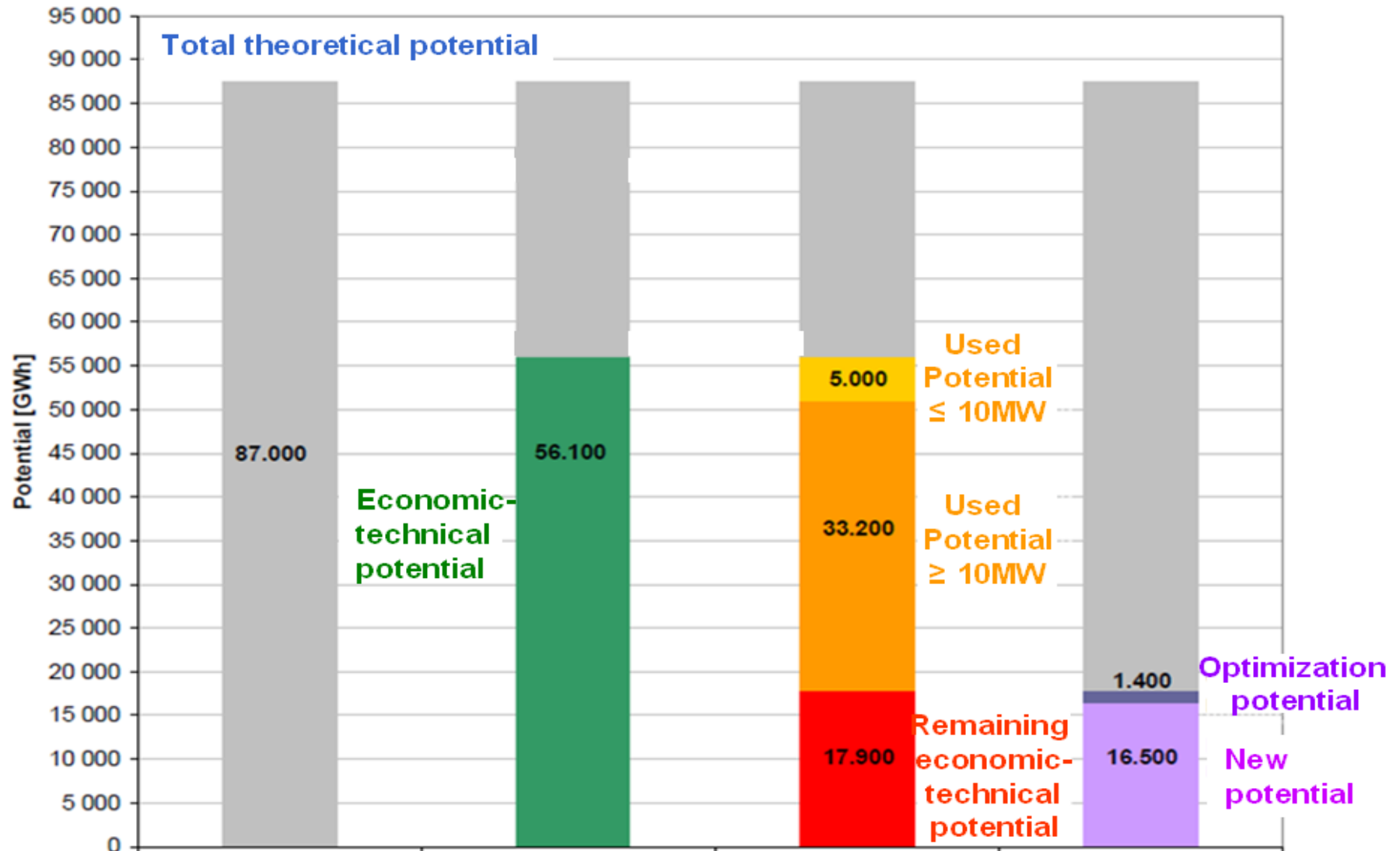
- **After 1945:** reconstruction period – major development of hydro power in Austria
- **60s and 70s:** peak of hydropower development
- **80s:** more sophisticated approval procedures
- **90s:** environment and ecological movement
- **End of 90s:** start of market liberalization

Hydropower Potential in Austria (1)

Total Theoretical Potential	90000 GWh
Economic-Technical Potential	56100 GWh
Already Used Potential	- 38200 GWh
Remaining Economic-Technical Potential	17900 GWh
Water in Natural Parks and other Sensitive Areas	- 5100 GWh
Remaining Potential	12800 GWh

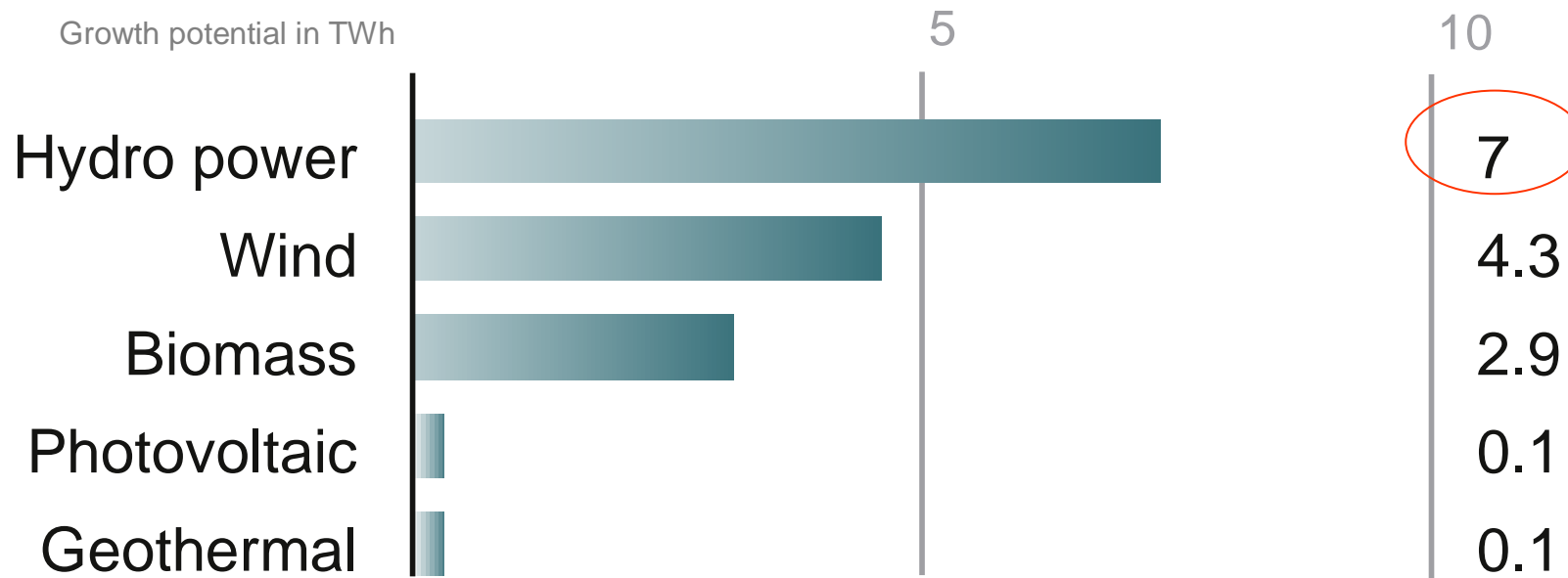
- ➔ Around 70% of the total economic-technical potential is already developed
- ➔ Existing power plants are up to date, upgrading will only generate little amounts of additional production (1 400 GWh out of 17 900 GWh)
- ➔ The remaining potential will, thus, mostly be used by developing new sources (16 500 GWh out of 17 900 GWh)

Hydropower Potential in Austria (2)



Source: Pöyry 2008

Expansion Potentials for Renewable Energies in Austria to 2020



7 TWh = 40% of the extractable potential in the long run



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Support Schemes for Hydropower in Austria

Support Mechanism for Hydropower

- Austria has a support scheme for electricity generated from renewable energy sources including from hydropower
- Austria's Green Electricity Act aims to promote particularly those renewable technologies which have a prospect of becoming competitive on the market
- The support scheme mainly consists of feed-in tariffs (= a tariff above market price paid out to producers of green electricity); additional investment grants (one time payments) can be obtained occasionally from regional governments ('Laender')
- Financial incentives are based economic calculations taking various indicators into account, for example the amortization period of a plant
- Support typically lasts for the whole amortization period (13-15 years in case of hydro power plants)

Motivation for Renewables Support

- **Various national and EU targets:**
 - **Until 2015 (Austria):**
 - 15% supported green electricity in Austria (Austrian Green Electricity Act)
 - **From 2010 to 2020 (Austria):**
 - + 1000MW (or ca. 4 TWh) hydropower
 - + 2000MW (or ca. 4TWh) wind power
 - + 200MW (ca. 1.3 TWh) biomass and biogas
 - + 1200MW (ca. 1TWh) photovoltaic
 - **Until 2020 (EU):**
 - 20% share of renewable energy until 2020 (total energy mix)
 - To contribute to and achieve this EU goal, Austria has to increase its renewables share from 25% to 34% (gross final energy consumption)
- **Demand for green electricity by customers (household customers)**

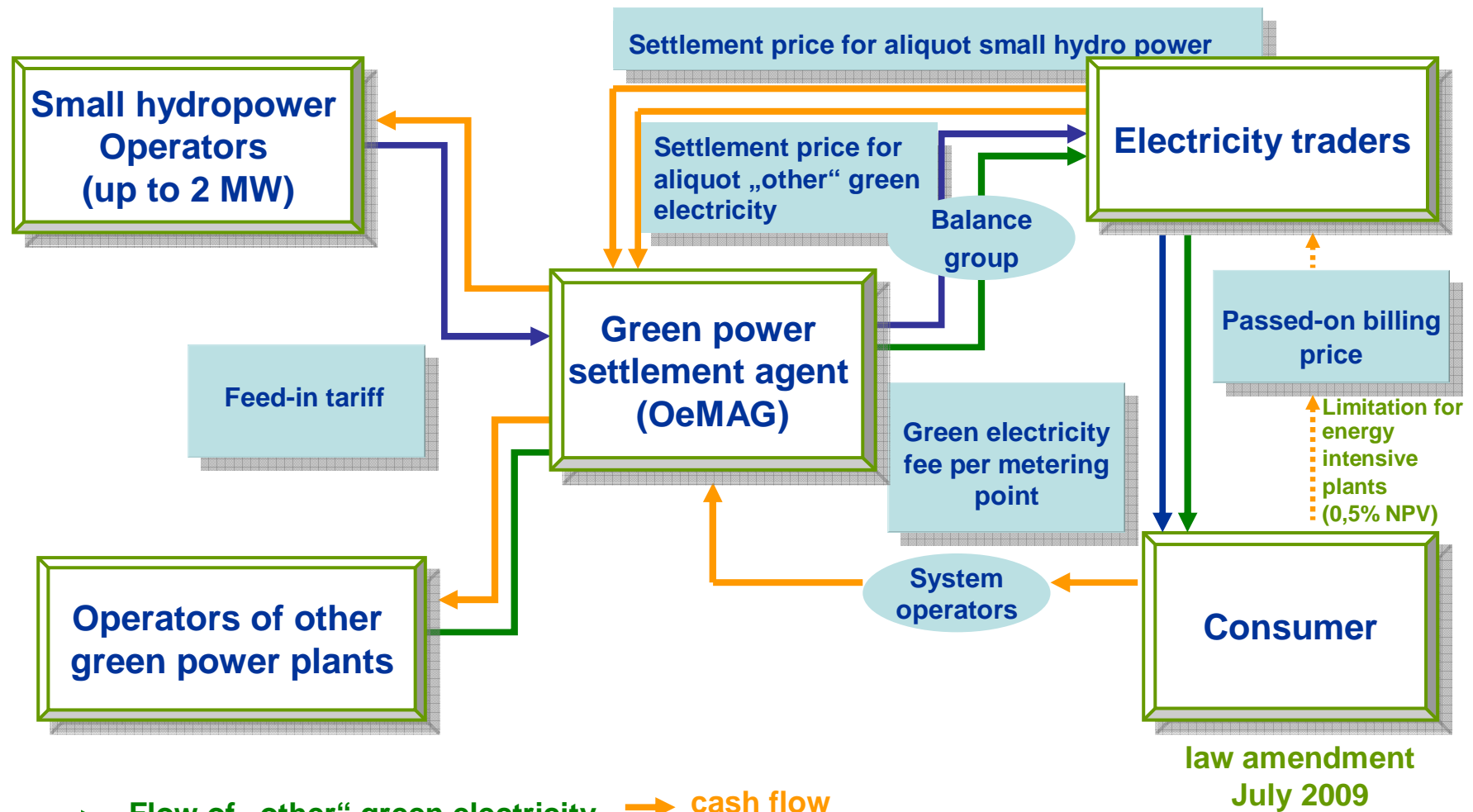
Eligibility and Financing

- Small hydropower producers (up to 2 MW) are eligible for receiving feed-in tariffs
- The feed-in tariff is paid out to green electricity producers by a the Green Power Settlement Agency
- The Green Power Settlement Agency receives its funds from
 - sales of green electricity to suppliers/traders (all Austrian electricity suppliers/traders are obliged to buy a specified amount of supported green electricity from the Green Power Settlement Agency)
 - customers (metering points) paying a fixed charge (= green electricity fee, 11€ a year) and a support contribution (new law from July 2012, amount tbd) and other charges (e.g. passed on green power certificates) -> household customers pay around 45€ a year to uphold the system

Austrian Support-System



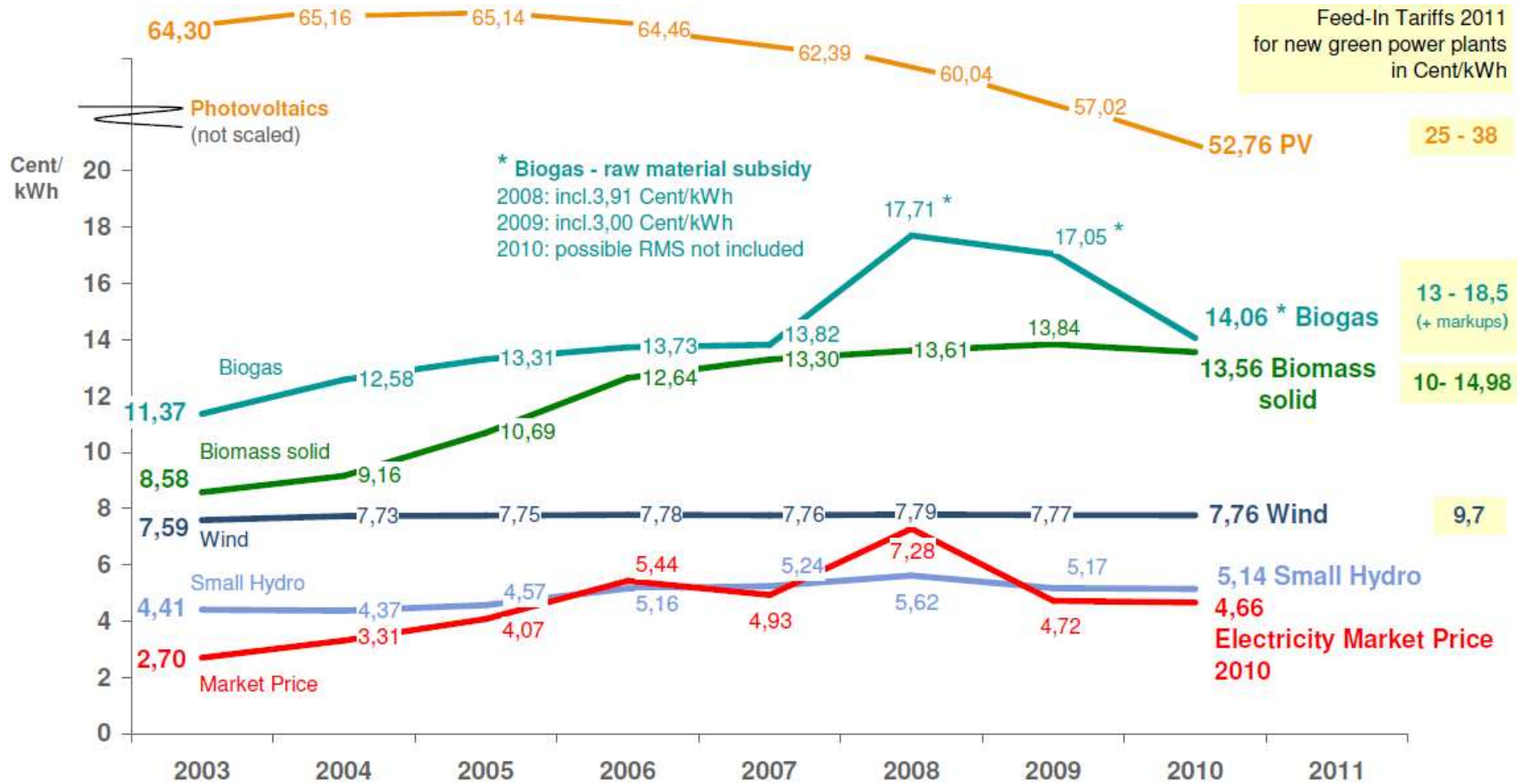
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Development of Average Feed-In Tariffs



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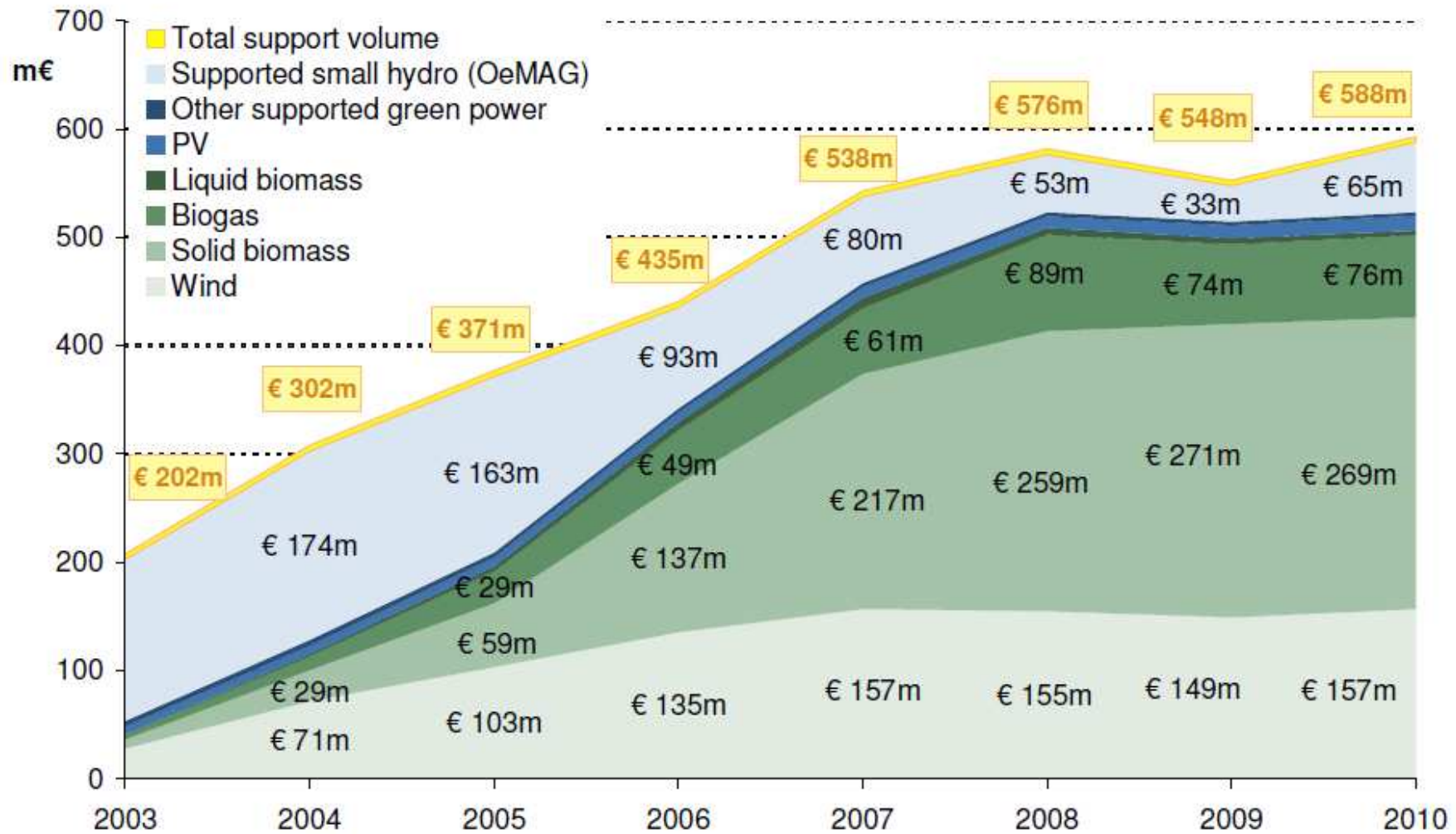


[22/03/2011 | Source: Energie-Control Austria, Öko-BGV, OeMAG]

Total support payments per technology 2003-2010



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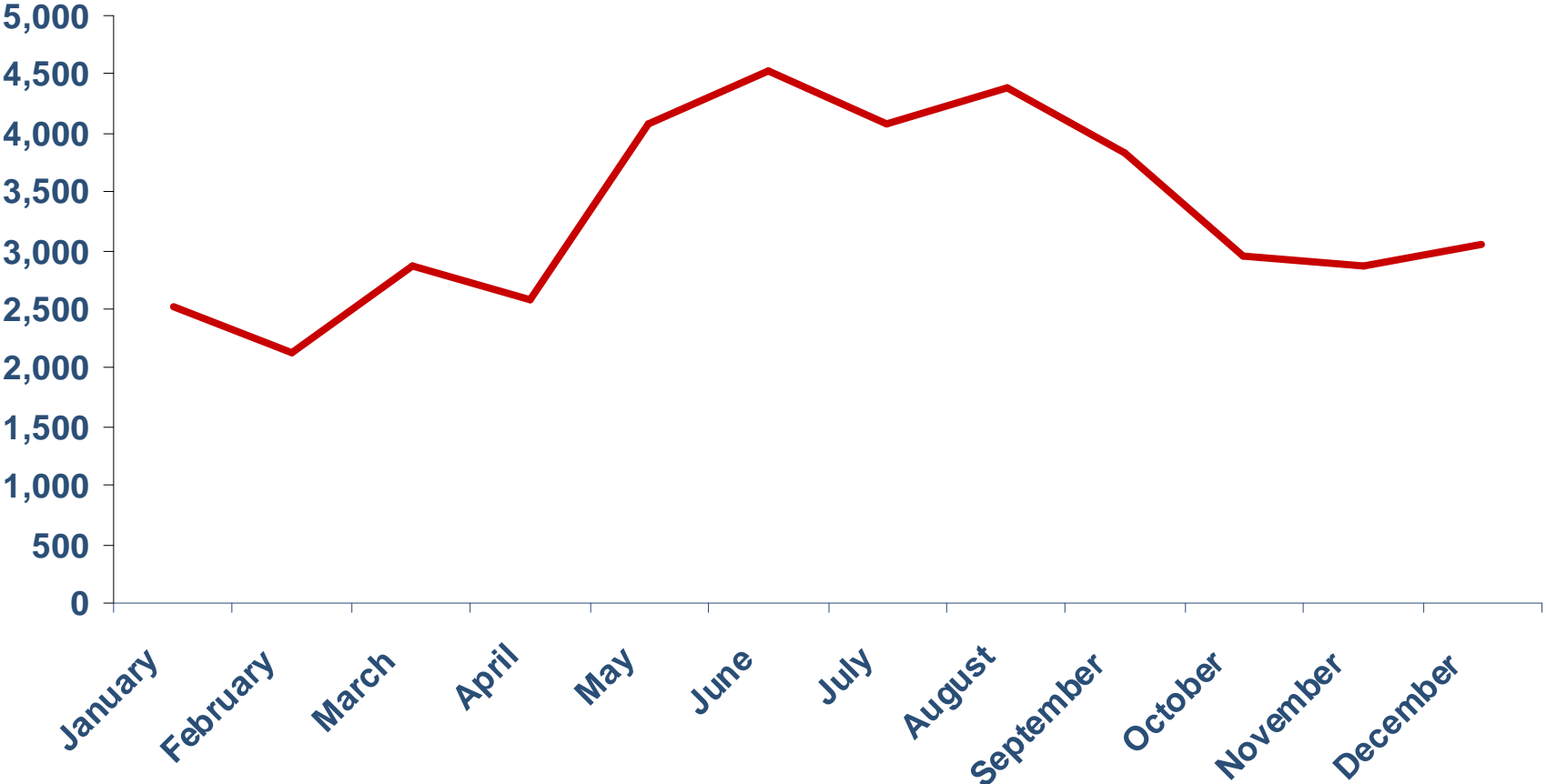
[Sources: E-Control Austria, OeMAG]

Outline



Regional Flows and Cooperation

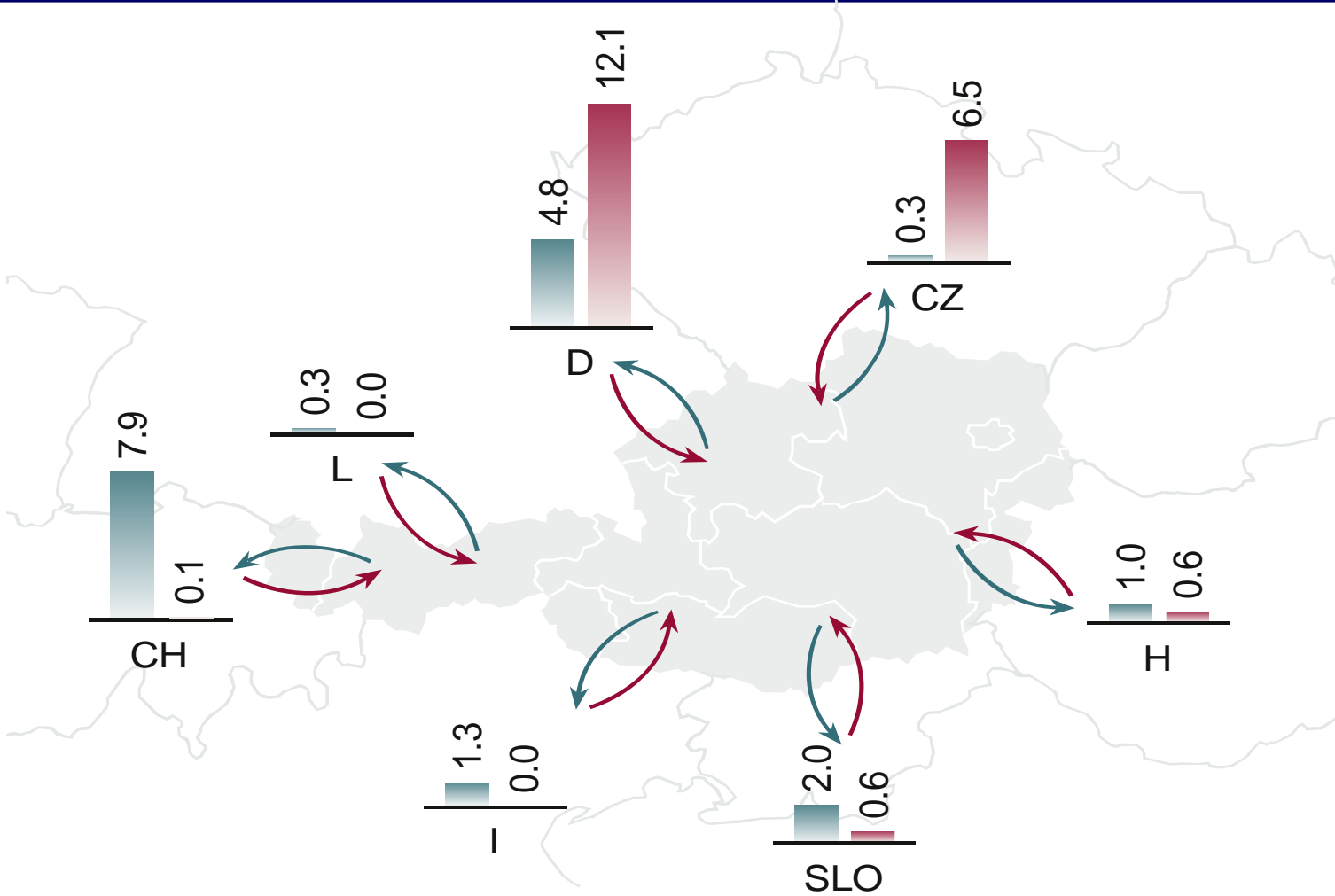
Seasonal Pattern of Electricity Production



Consequences of Seasonal Production Differences

- Production is low in winter months and high in summer months due to the high share of hydropower in Austria
- Austria exports most of its electricity in summer months and imports most electricity in winter months
- Most exports go to Germany and Switzerland mainly to cover peak demand
- Most imports come from Germany and the Czech Republic

Physical Exchange of Electricity with Neighboring States in 20120 (TWh)



Export out of A: 17.6 TWh Import into A: 19.9 TWh

Conclusion



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- Hydropower plays a crucial role in Austria given that almost two thirds of Austria's electricity is generated from hydro power
- Austria's top position with respect to renewables in its energy mix largely stems from hydropower
- Through the renewables support scheme (and the forced sales of green electricity to every supplier/trader), electricity sold in Austria always contains a share of green electricity
- Cooperation with neighbors ensures that electricity flows to where it is needed most



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