



# Small hydropower in the new European electricity market

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17 February 2019

Athens

# EREF

European Renewable Energies Federation

## EREF



- Federation of national renewable energy associations from EU Member States, representing all sectors



- Characteristics:

- Promotes a holistic view on energy policy and energy system transformation



- Speaks out against continuous support for conventional energy

- Regarded by EC and EP as highly credible, competent and most ambitious advocate



- Represents SME's interest

- Assists in access to legal advice (including law suits)

## EREF SHP Chapter



- Small hydropower associations from AT, BE, CZ, DE, EE, EL, ES, FR, IE, IT, PL, PT, SE, SK



- Policy activities:

- CIS process (Common Implementation Strategy for the WFD) of the DG Environment of the European Commission



- Better Regulation Campaign that aims at reducing contradictions in EU legislation

- EU Energy Union

- EU's long-term climate strategy

- State Aid Guidelines



## The EU small hydropower sector



- More than 35,000 direct jobs
- Around 4,200 enterprises
- Ca. € 3 billion of annual turn-over
- Produced electricity for more than 13 millions households
- Corresponds to around 8% of electricity produced by renewables
- Avoidance of ca. 29 millions tons of CO<sub>2</sub>
- Development potential



## The EU regulatory framework for SHP

- Water Framework Directive
  - Renewables Directive and EU Energy Union
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- Contradicting and uncoordinated policies within European Commission
  - Differences in national implementation of EU goals and principles
  - Different law and administration systems throughout and within EU Member States





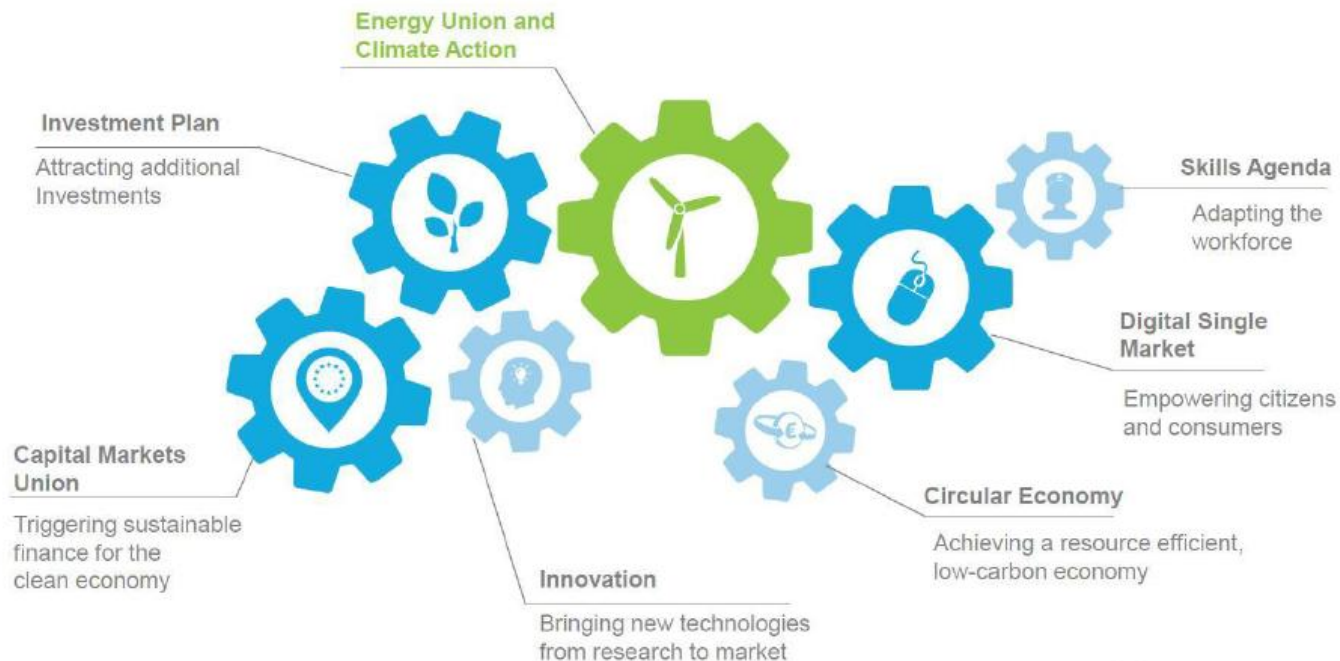
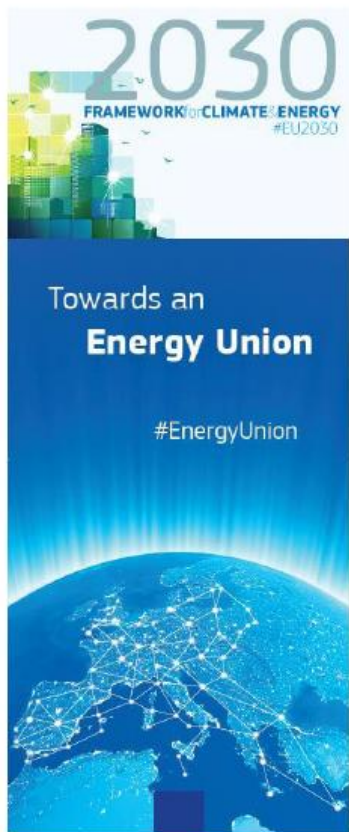
## Key topics of Water Framework Directive for SHP

- Permits for new power plants
- No-go areas vs. site specific approach
- Investments for environmental impact assessment and mitigation measures
- Residual flow obligations

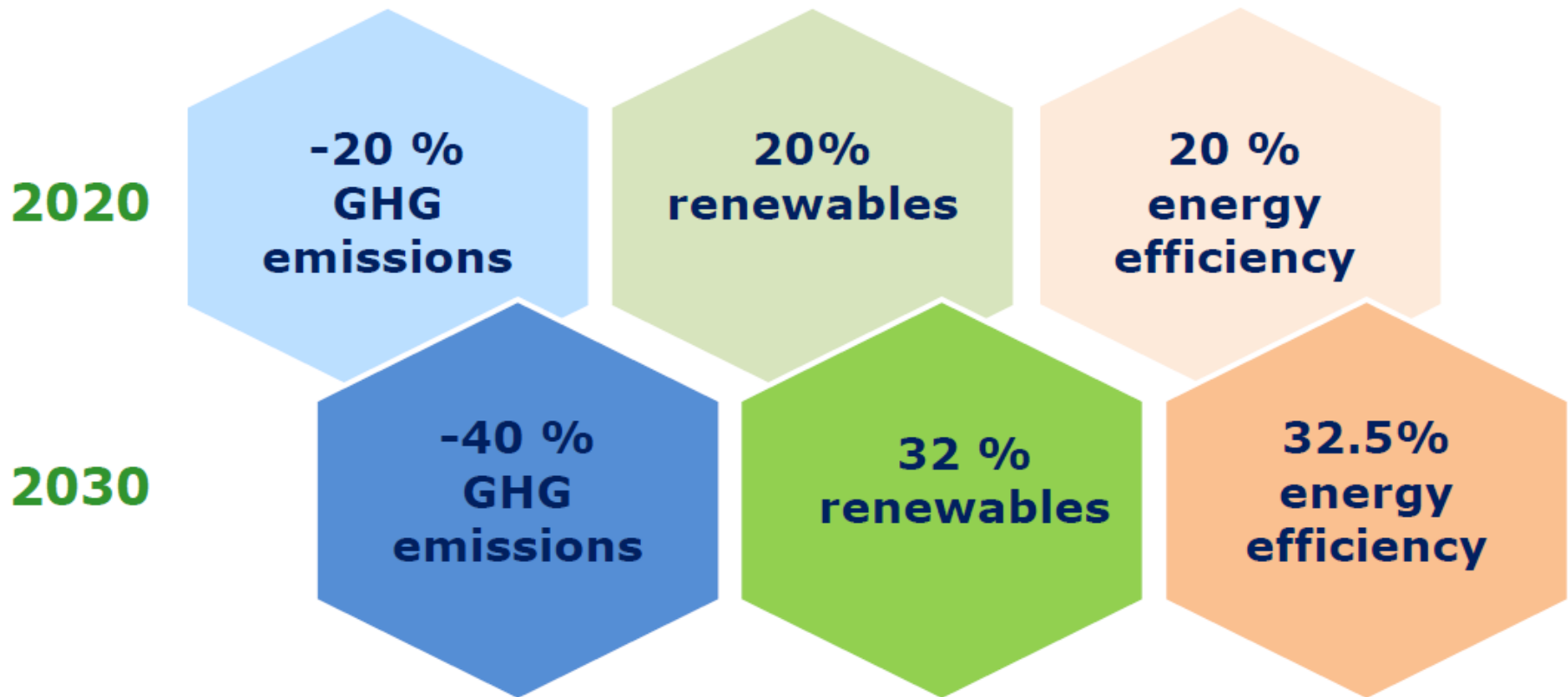




## Policy context: EU Energy Union and climate action

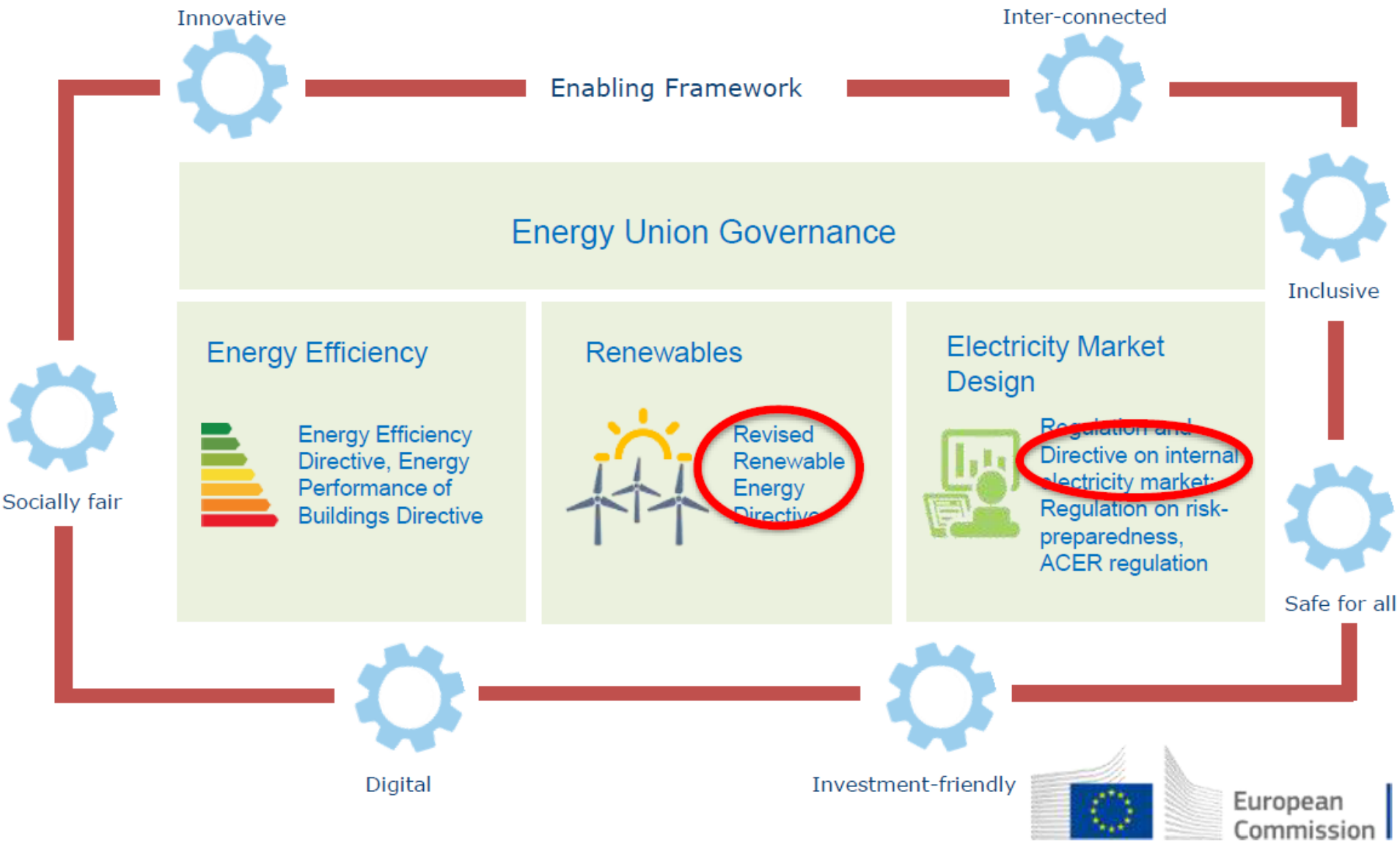


## European climate and energy targets





# The Clean Energy Package



## The EU Energy Union: transformation of Europe's energy system



- Renewable energy (all technologies) and energy efficiency as centre piece for a new stable, secure, affordable and democratic EU energy system
- EU-wide but decentralised energy system with multitude of independent power producers, paired with large scale RES provider
- Demand-side management
- Storage
- Sector coupling
- Interconnectivity between national grids
- Regional cooperation (e.g. off-shore and cross-border)

## Benefits of hydropower for the new energy system



- Hydropower offers whole range of system services
- Hydropower is THE flexible tool in the system without CO<sub>2</sub> emissions in operation
  - Back-up and reserve capacity
  - Quick-start and „Black-start“ capability
  - Regulation and frequency response
  - Voltage support
  - Spinning reserve
- Energy storage
- Hydro Pump Storage is currently the most cost-efficient form of energy storage and cost-efficient way of providing flexibility



## 2018 study: Grid Contribution of SHP in Germany



- Bergische Universität Wuppertal, July 2018
- Main findings: German SHP plants
  - will become increasingly important in the future as more economical and more reliable power sources over lifetime
  - Reduce the need for grid expansion at the distribution grid level – particularly in rural medium-voltage and low-voltage grids
  - Reduce grid losses
- Without these SHP plants, additional costs of approximately € 1 billion for grid stability would incur



## Small hydropower as provider of system services



- Will become more and more a provider of whole range of system services



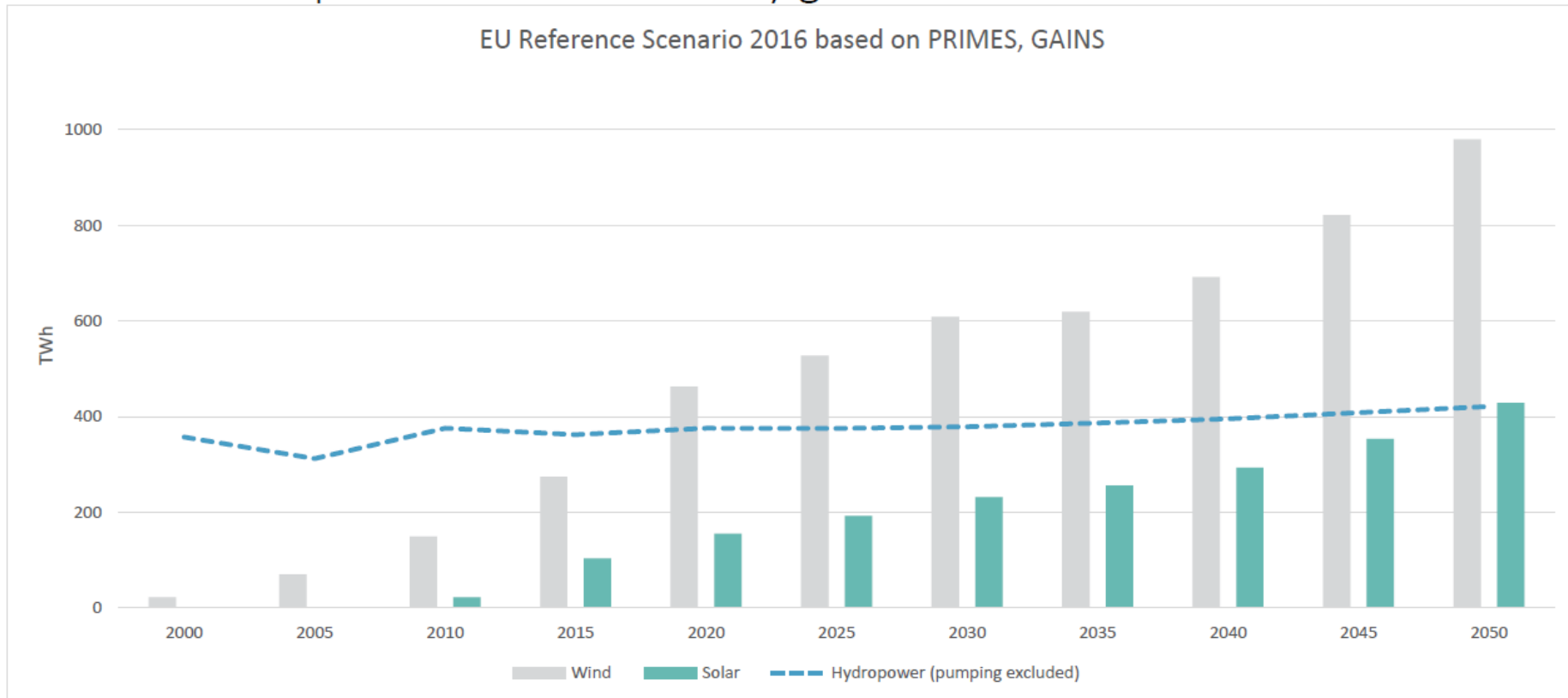
- Enables cost-effective integration of variable renewables



- Contributes to security of supply and stable grid operations
- Plays important tool in water management, flood protection and prevention of water scarcity

## Hydropower in Europe today and in the future

Accelerated development of variable renewables (wind, PV):  
historical and predicted net electricity generation in the EU-28



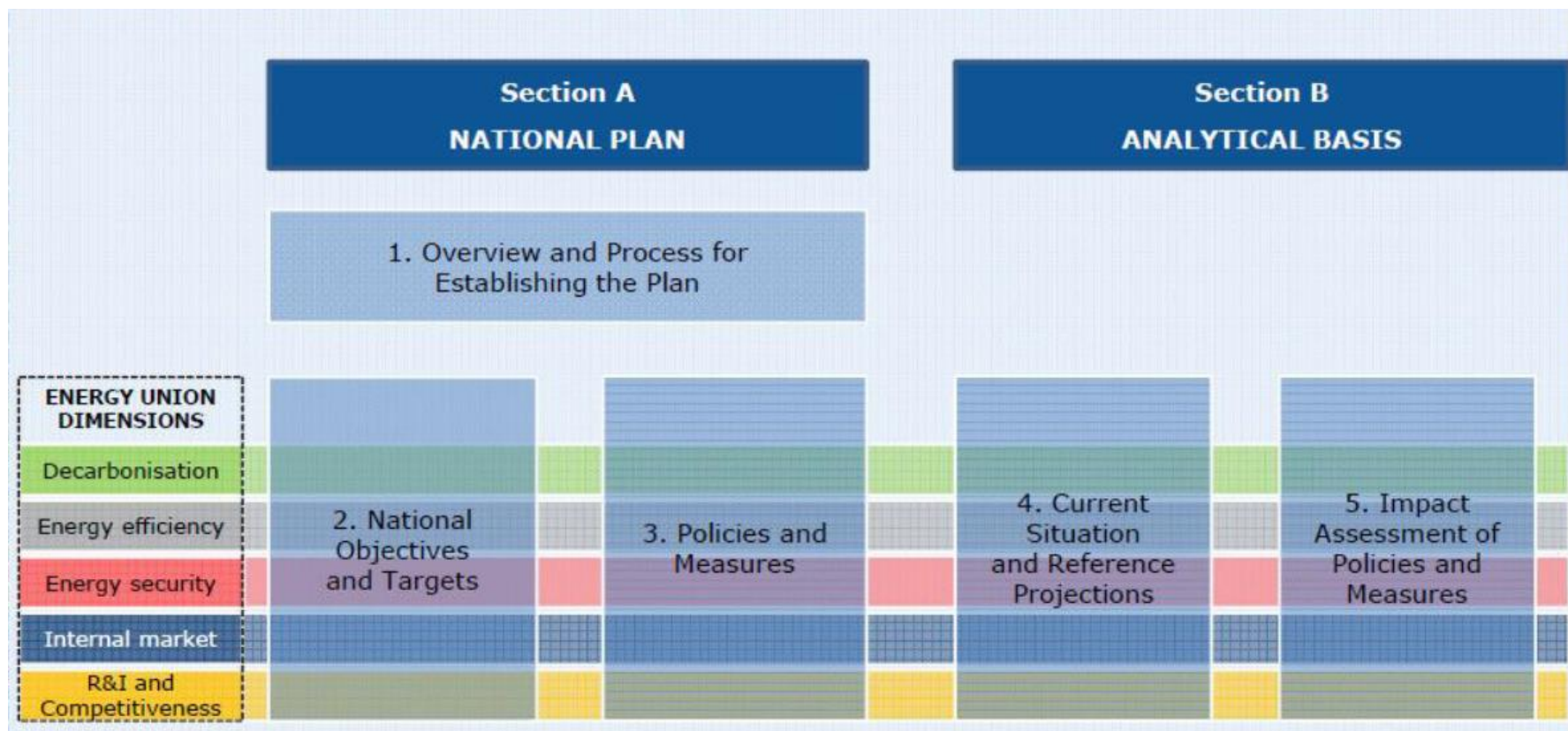
## Hydropower development needs stable framework conditions



- Hydropower is a long term investment
- Multipurpose function of hydropower must be recognized and compensated (macro economic investment)
- However: current framework conditions at EU and national levels hardly provide incentives and business cases to invest in new plants
- Existing plants:
  - Necessity for efficiency measures
  - Upgrading and refurbishment of existing plants with new technology and environmental mitigation measures



## Get SHP higher on the agenda: Development of National Climate and Energy Plans



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## Thank you for your attention!

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