

# Regulatory frameworks for SmartGrid implementation in Europe and the next steps

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# THE INSTITUTIONAL FRAMEWORK

## Role of the **Government**

- incentives at generation level
- addresses to the Autorità (\*)

## Role of the **Research**

## Role of the **Autorità**. Regulation for:

- (\*) access to grid services
- (\*) power transferred to the grid
- investments addressed to the automation of active networks

*Smart grids*



# DEFINITION OF DISTRIBUTED GENERATION

Despite the definition given by the 2003/54/CE directive, currently in Europe it doesn't exist an effective and common definition that identifies unambiguously the Distributed Generation

In Italy the following definition has been adopted:

all generation plant with nominal power  
< 10 MVA



# INCENTIVES AT GENERATION LEVELS

- Green certificates for the electricity generated by renewable sources (as from 1999: on average 100 €/MWh)
- Incentives for the electricity generated by photovoltaic plants (as from 2005: around 0.45 €/KWh, excluded supply income)
- Incentives for the electricity injected into the grid by non photovoltaic plants with power up to 1 MW (as from 2007: 0.18 – 0.34 €/kWh, included supply income)
- Simplified conditions for high efficiency cogeneration plants and renewable sources

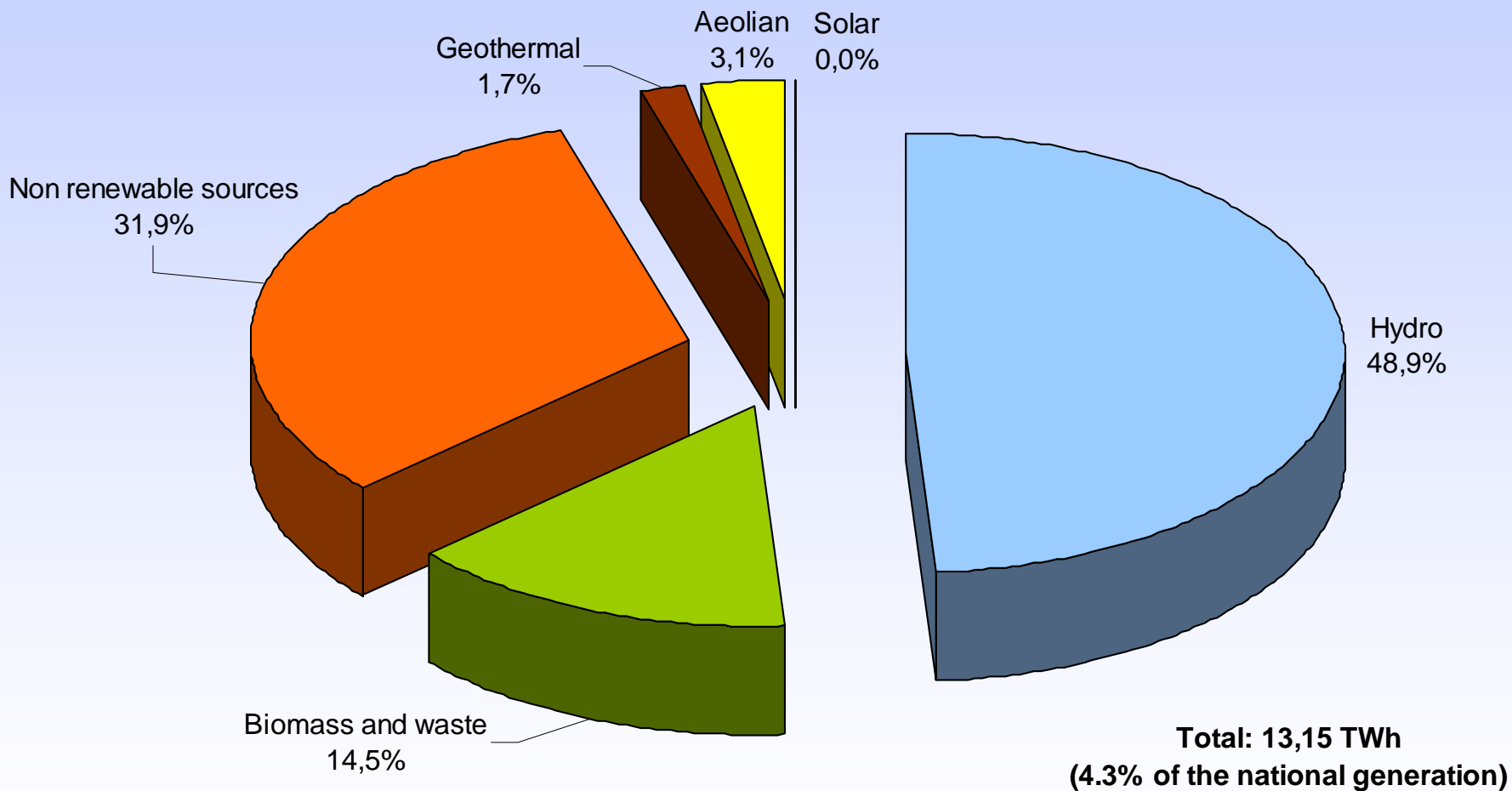
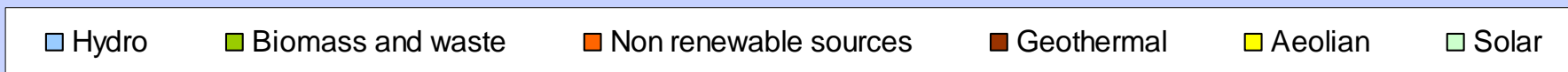


# REGULATORY FRAMEWORK

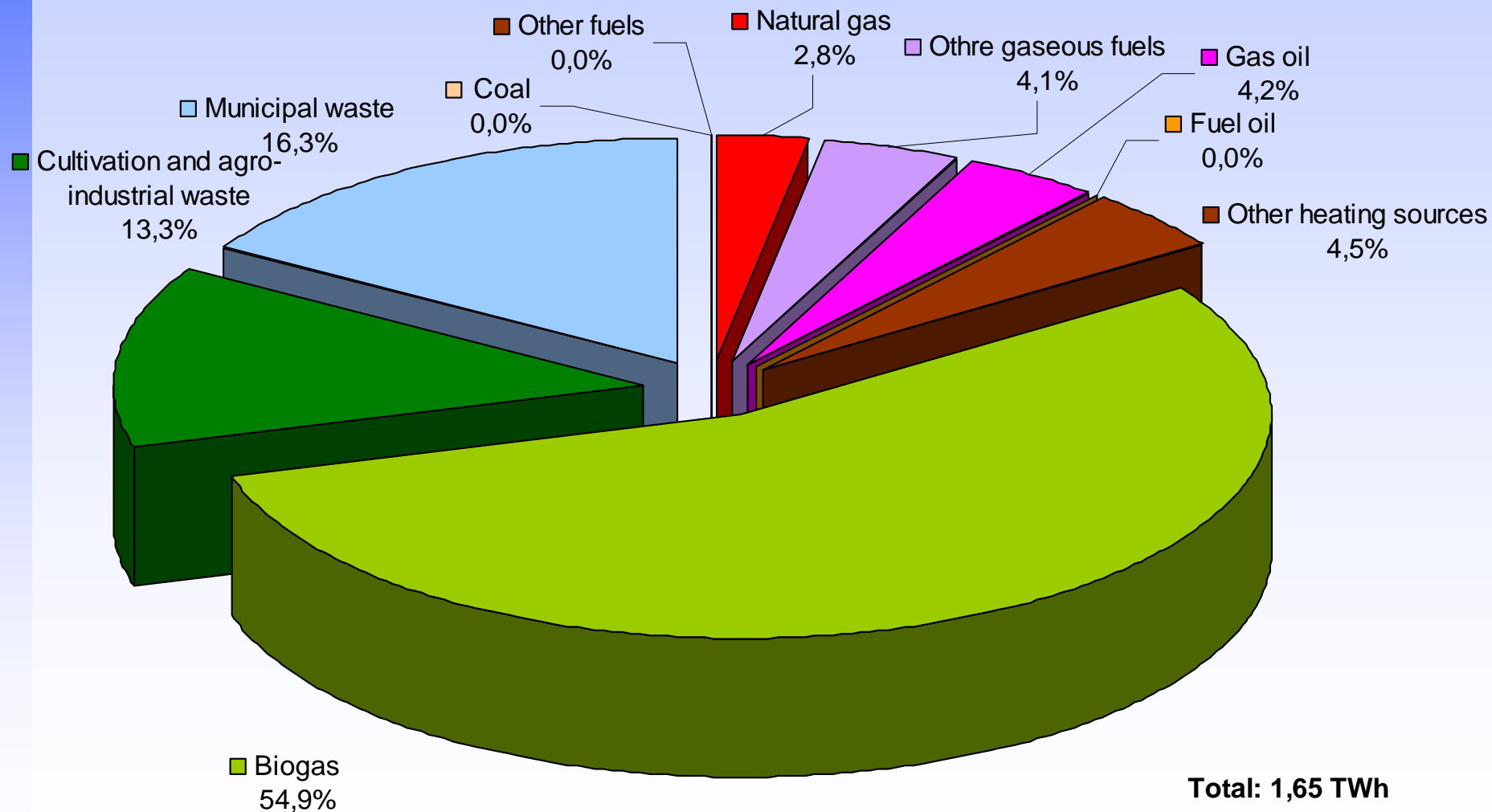
- Discounts and faster/simplified procedures for connections to HV, MV and LV networks
- Recognized costs for transportation and dispatching services (avoided losses)
- Simplified conditions/procedures for the electricity injected into the grid and generated by renewable sources of any nominal power and by each source of nominal power < 10 MVA
- Simplified conditions for the "*exchange on-site*" (for high efficiency cogeneration and renewable sources up to 200 kW)
- +2% WACC (2008-2019) for investments on automation, protection and control systems of MV active networks



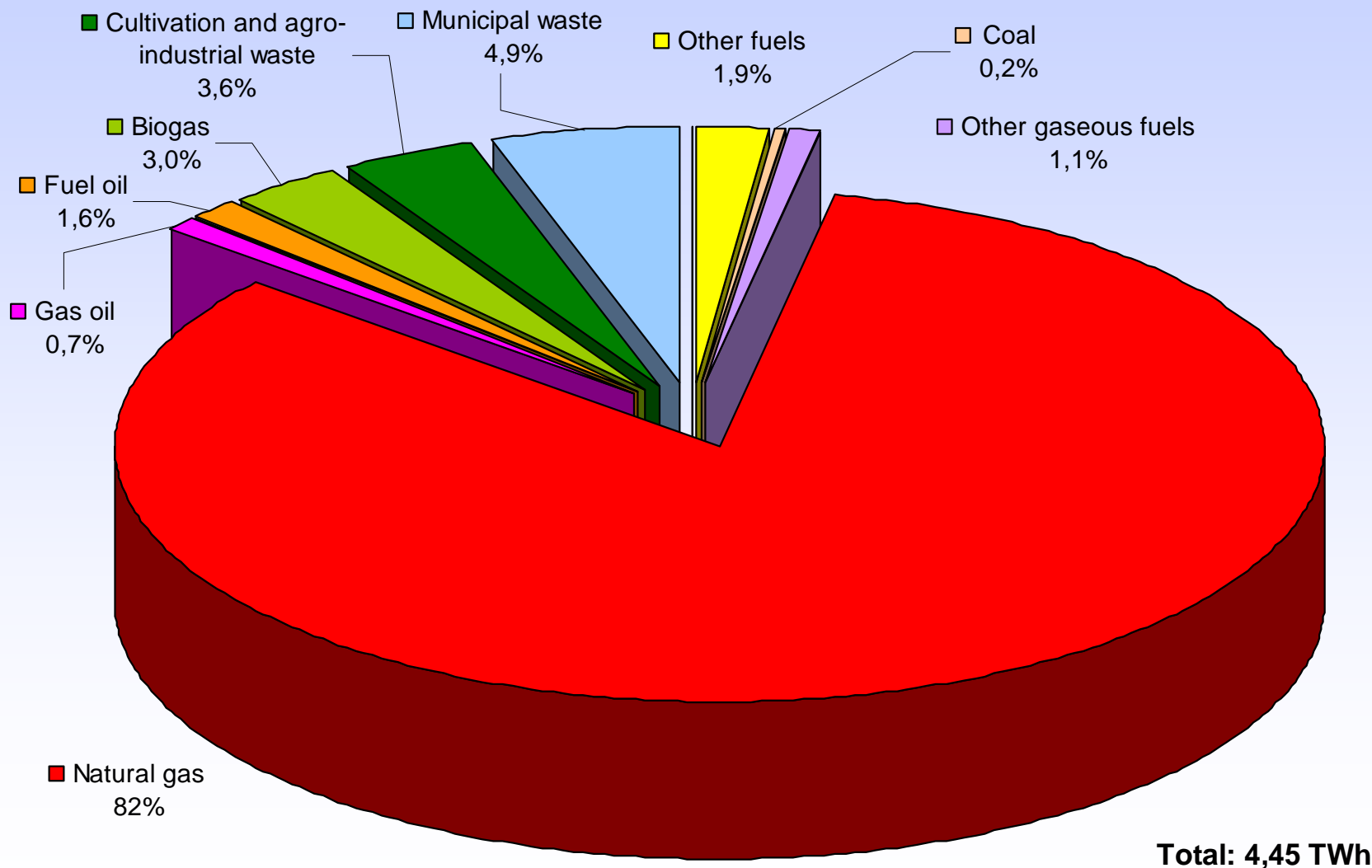
# Distributed Generation, year 2005



# Distributed thermoelectric generation from renewable sources, year 2005 (generation of only electricity)

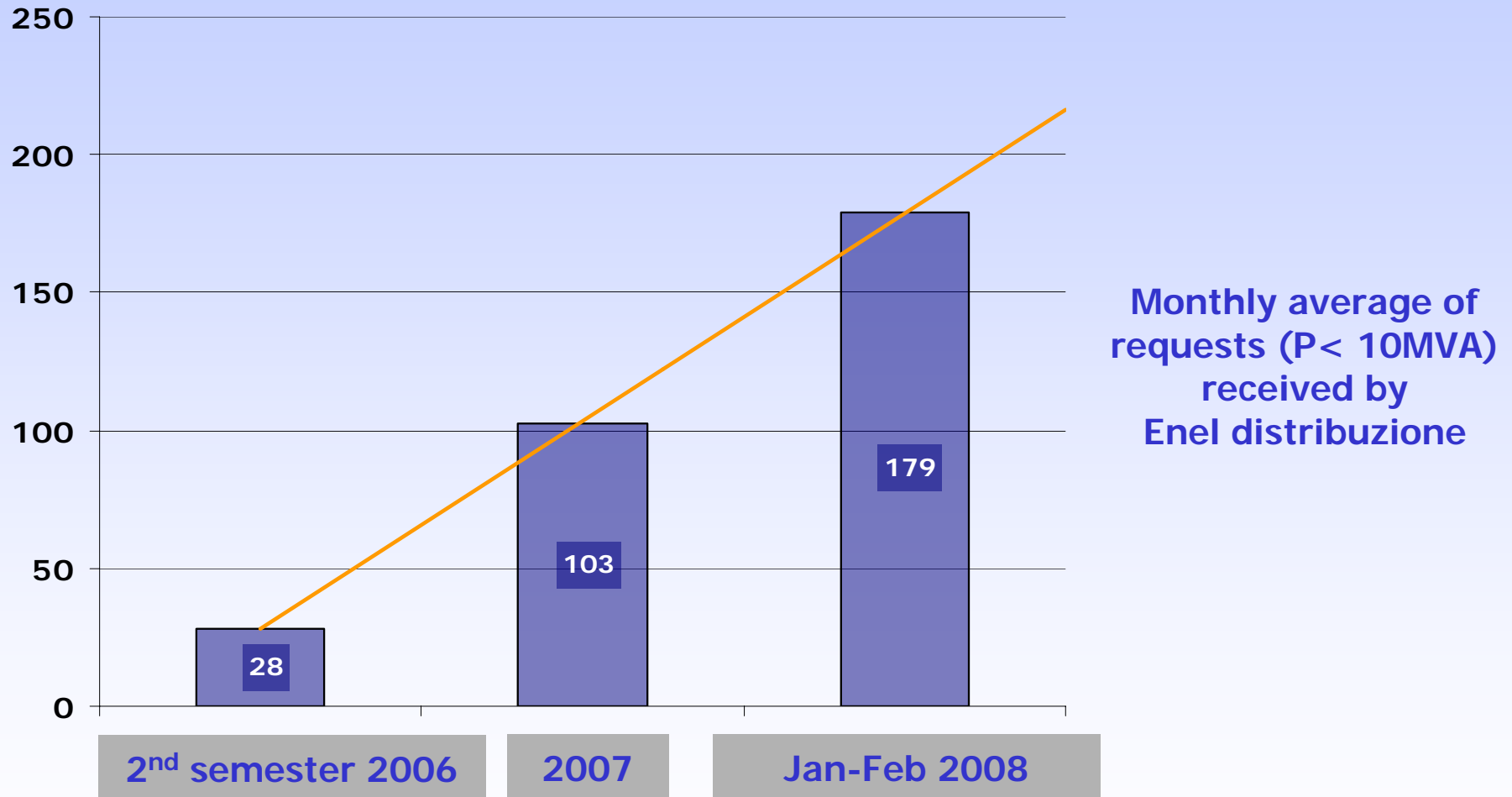


# Distributed thermoelectric generation from renewable sources, year 2005 (combined generation of electricity and heating)





# NUMBER OF REQUESTS OF CONNECTION TO ENEL DISTRIBUZIONE GRIDS



Source: Enel distribuzione



# EFFECTS OF THE DISTRIBUTED GENERATION ON GRIDS - Research

- Voltage quality: more voltage variations, different voltage profile, more harmonics
- Short circuit power: increasing
- Network operation (automation, selectivity of protection relays, communication systems): review
- Network planning: review
- Losses: reduction ?

