



International
Energy Agency

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Energy Policies of IEA Countries Turkey 2016 In-depth Review Gas markets

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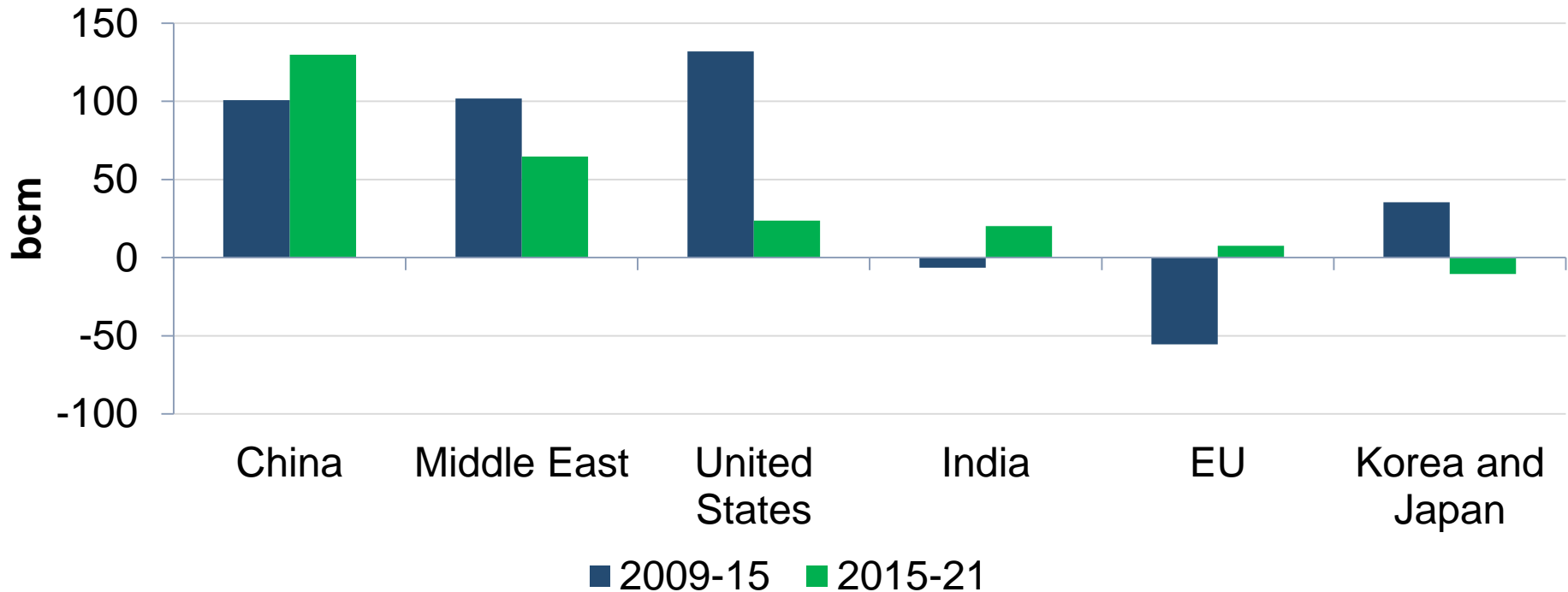
Desk officer, International Energy Agency

Istanbul, 10 October 2016

- **China & developing Asia drive global demand:** China's transition to a more diversified & less energy-intensive growth model impacts energy markets
- **The natural gas landscape is changing:** Ample low cost LNG supplies available for gas consumer markets – opportunity for competition and diversification
- **Low oil prices** bring gains to consumers, but can also sow the seeds of future risks to energy security and energy transition
- **Paris Agreement:** the energy transition is underway, but not on track and governments need to ring-fence policies against market swings

China drives increase in global gas demand, as the United States takes a back seat

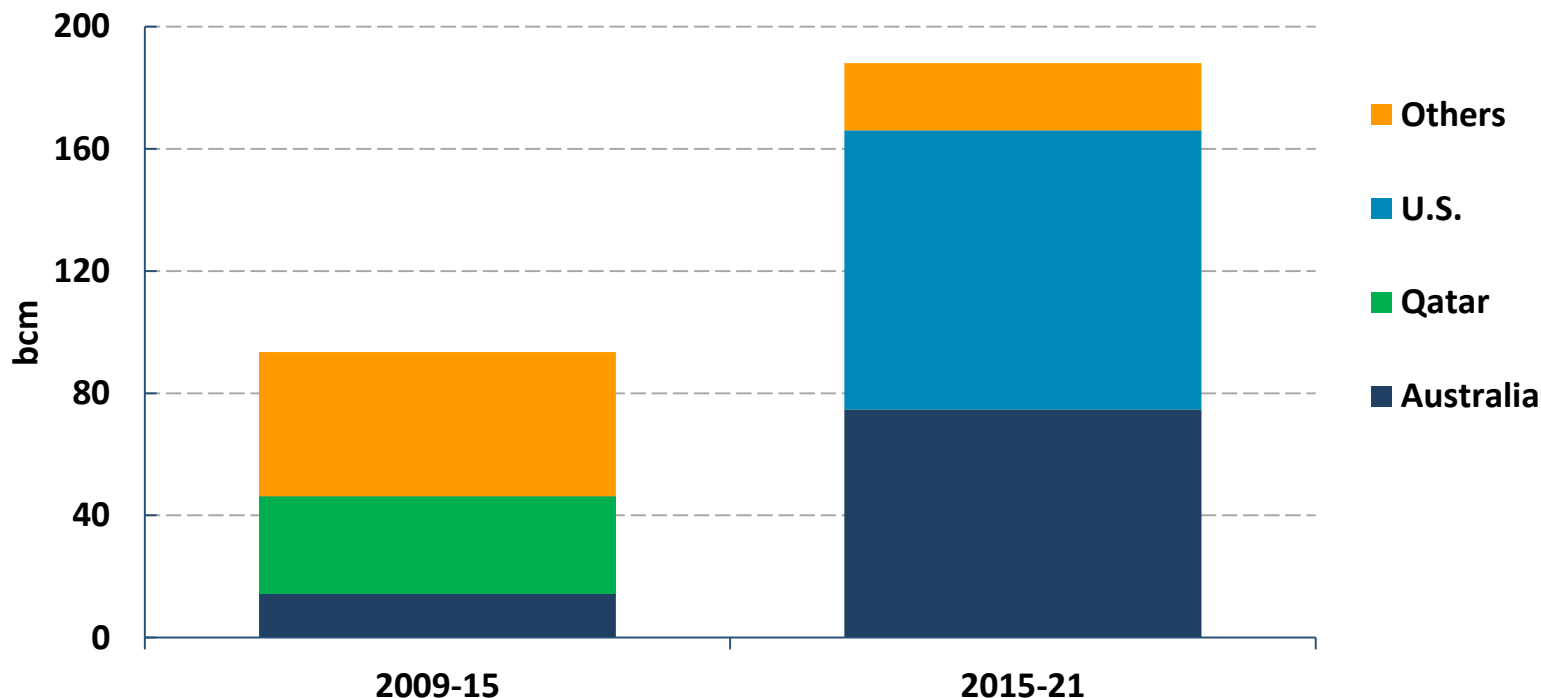
Change in natural gas demand by region (bcm)



***US gas demand growth slows sharply, driven by stagnation in the power sector;
EU gas demand gradually recovers on coal & nuclear power plant retirements***

Global LNG export capacity increases

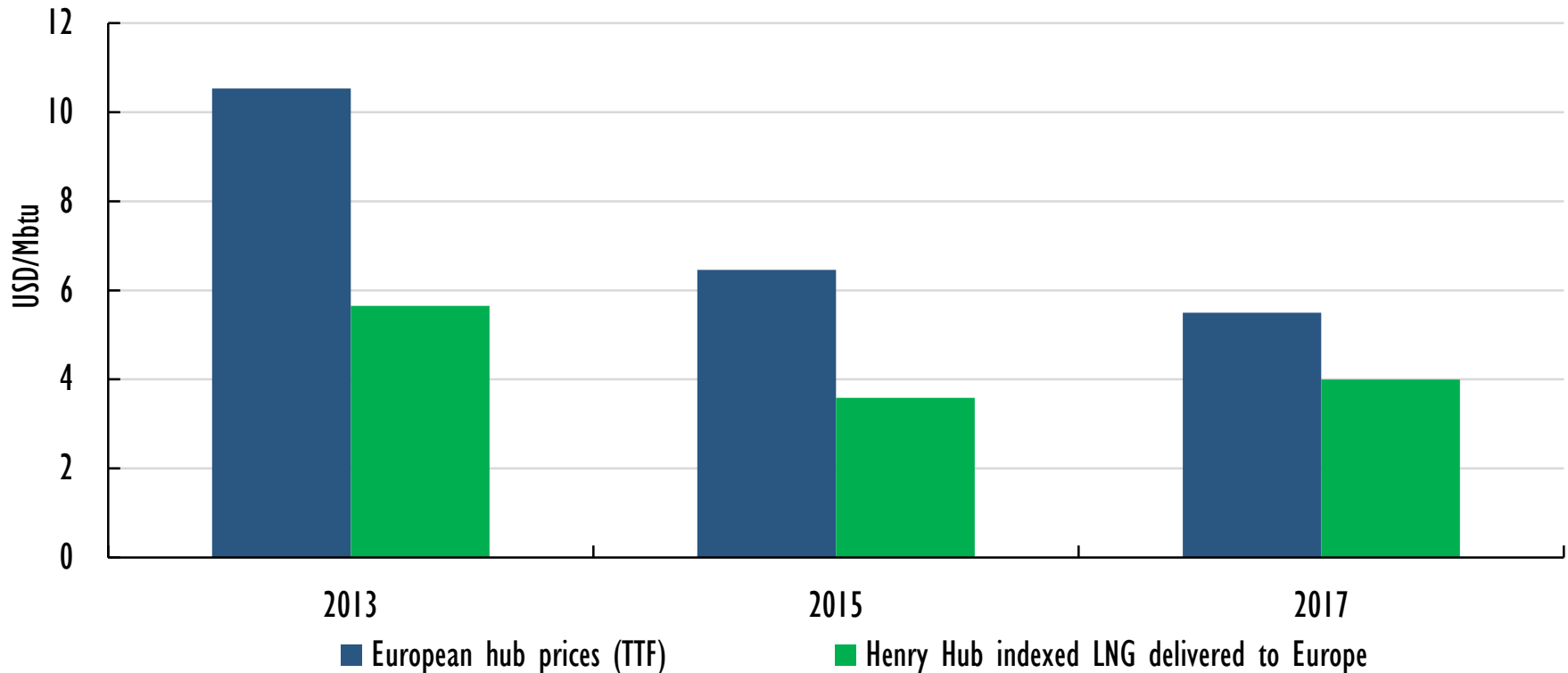
Liquefaction capacity additions



LNG capacity additions will be led by the US & Australia over the next five years. Growing opportunities for Europe, including Turkey to benefit from competitive prices.

Greater competition is coming to the European gas market

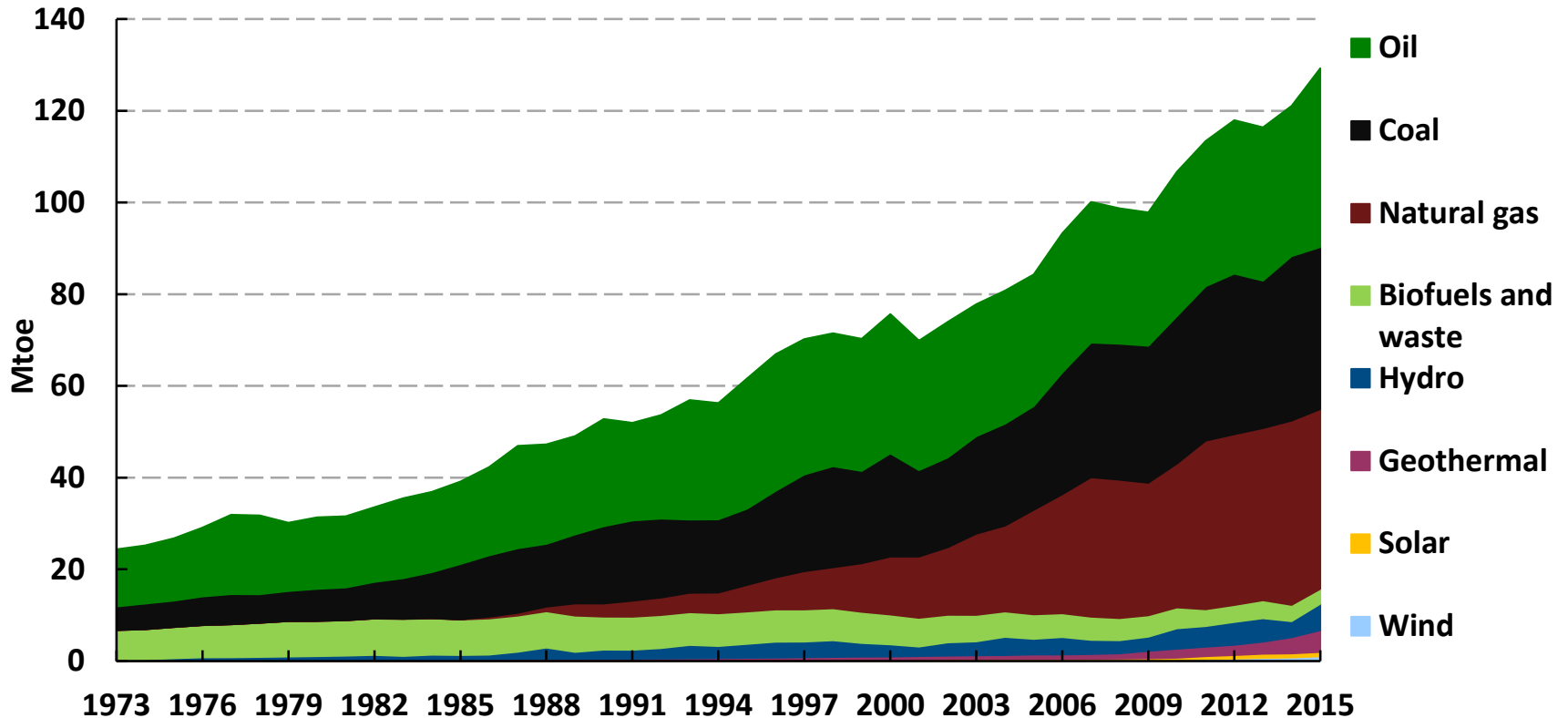
US LNG is competitive in Europe



Oversupply in global LNG markets will intensify competition; flexible US LNG volumes are well-placed to compete in Europe

Ample opportunities for diversification

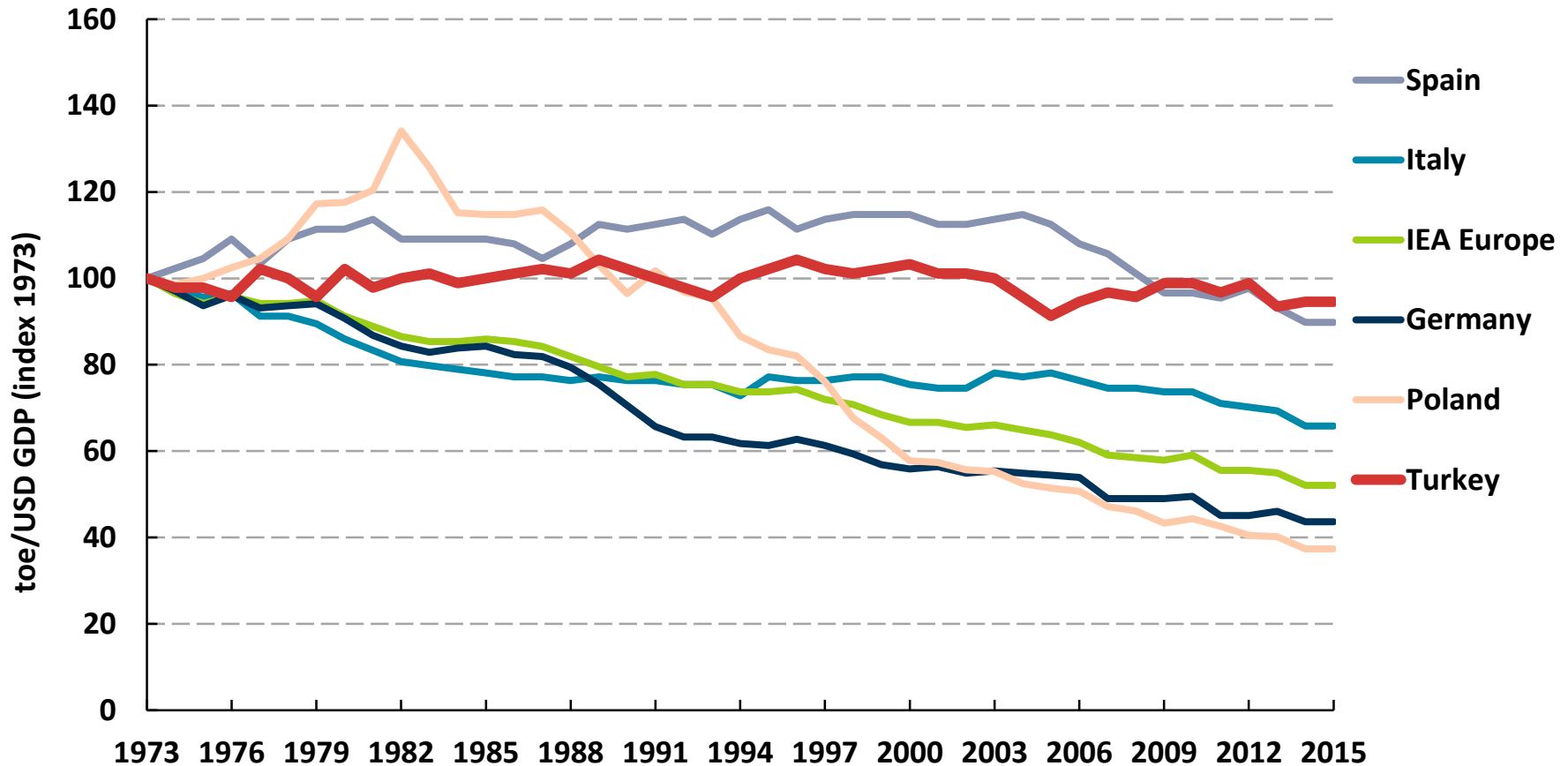
Total energy supply, 1973-2015



Energy demand is growing rapidly and is dominated by fossil fuels (88%), signaling significant scope to improve efficiency and boost renewables

Huge opportunities for energy efficiency

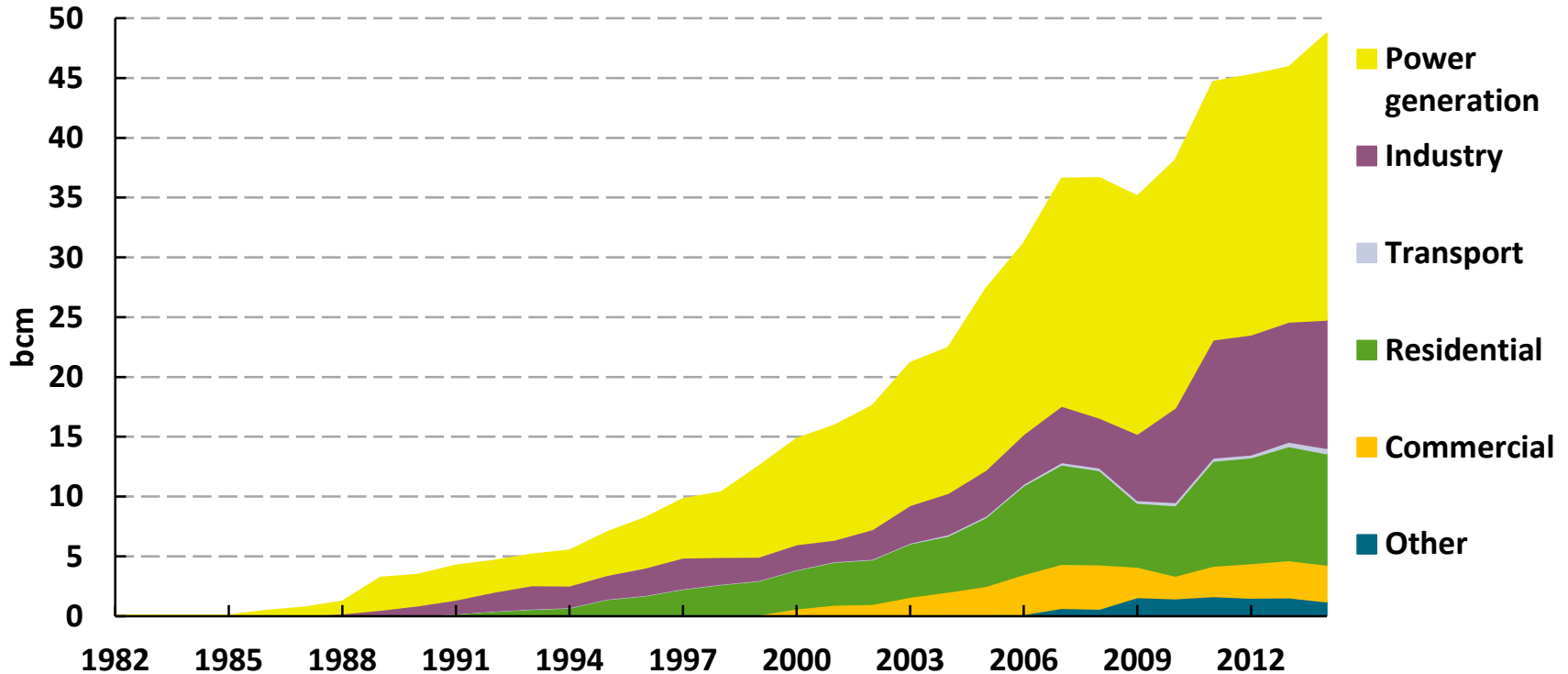
Total energy supply per GDP in selected IEA countries



***IEA Europe average energy intensity has decreased since 2005 (-16%).
Turkey's energy intensity has increased over the period (+7%).***

Turkey's gas demand reaches record levels

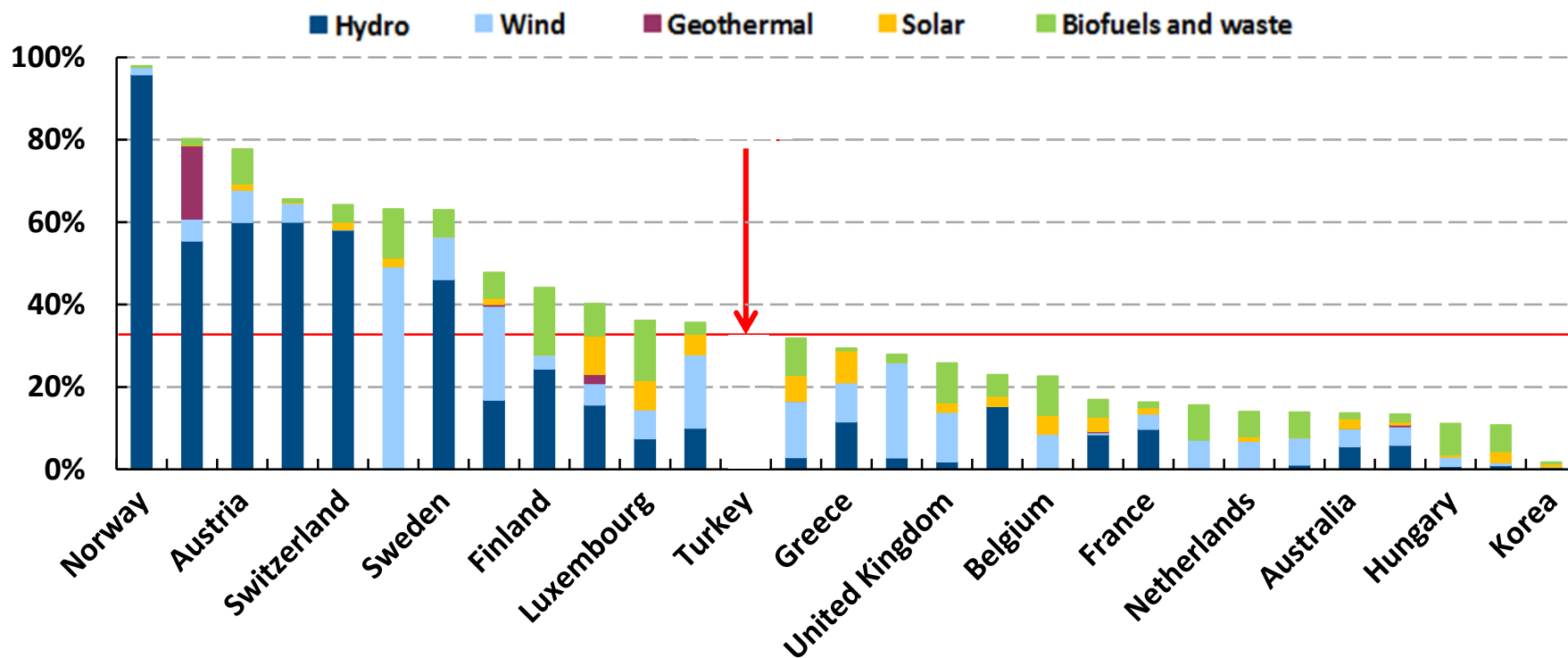
Gas demand (primary energy) per sector



Gas demand skyrocketed from 20 bcm in 2003 to 48 bcm in 2015. Import dependency has risen and network capacity lags behind peak demand.

Renewables deployment is taking off

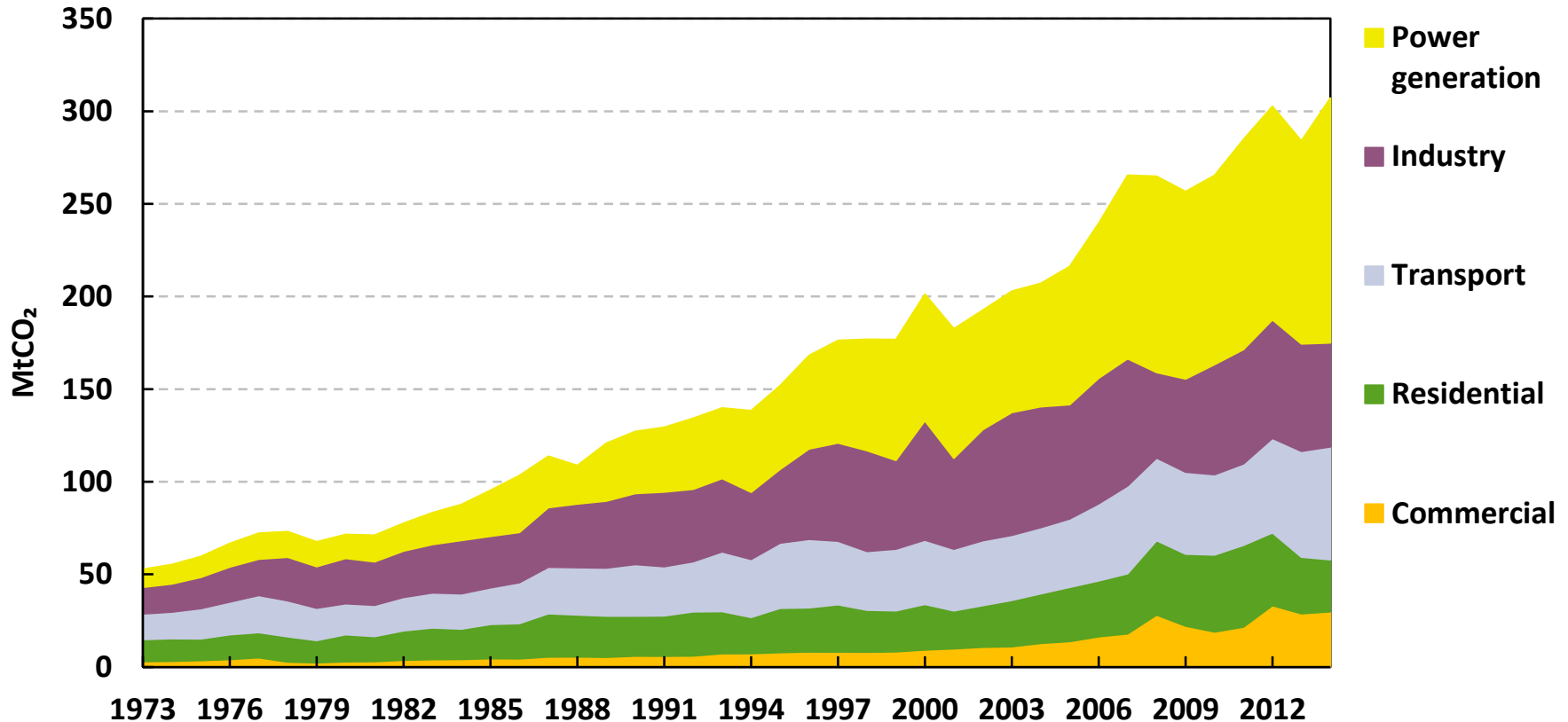
Share of renewables in electricity generation, 2015



Renewables make up 32% of the power mix, with wind & solar growing fast. Focus now needed on long-term targets, one-stop-shop permits & system & grid integration.

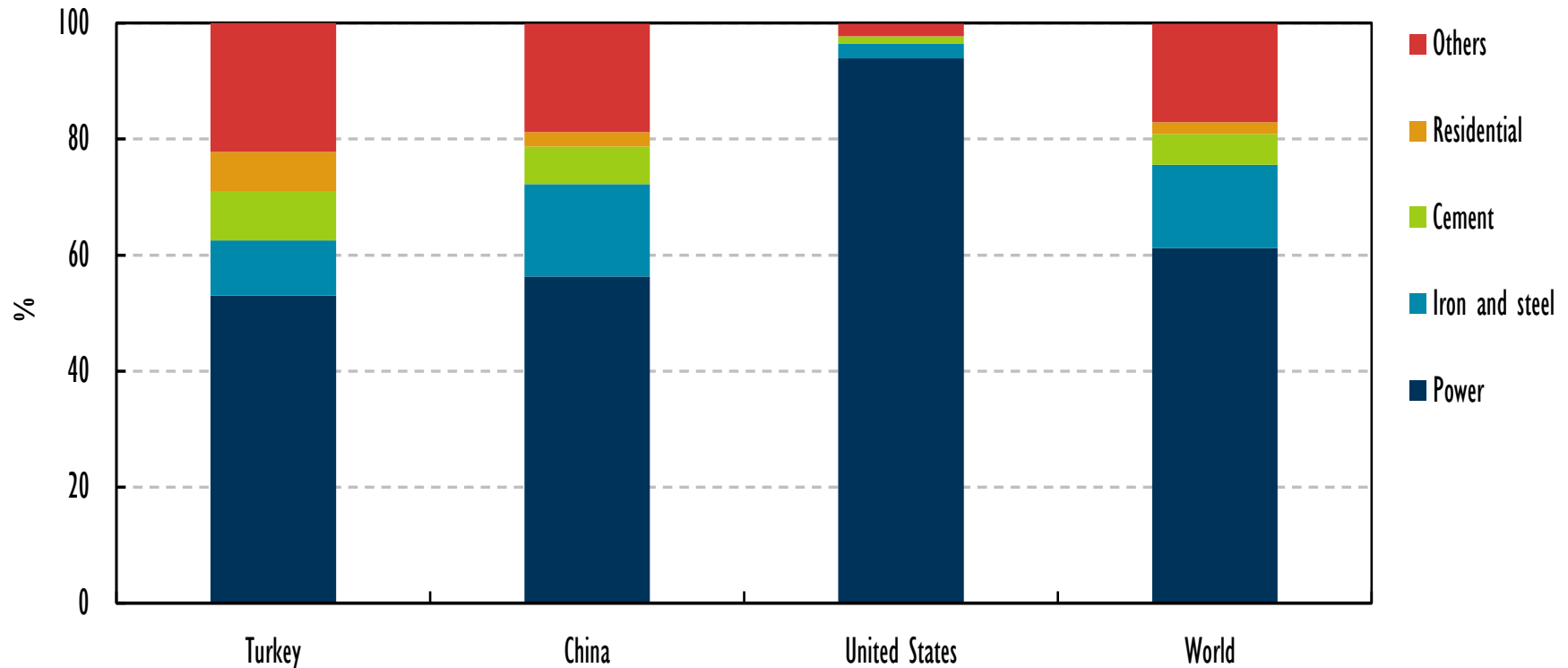
Turkey's power sector can play a key role on the road from Paris COP21

CO₂ emissions from fuel combustion by sector



Turkey has an ambitious coal development plan; Cleaner coal technologies and refurbishments will be critical. Gas growth will not be in power generation.

Coal consumption by sector in selected economies (in %)



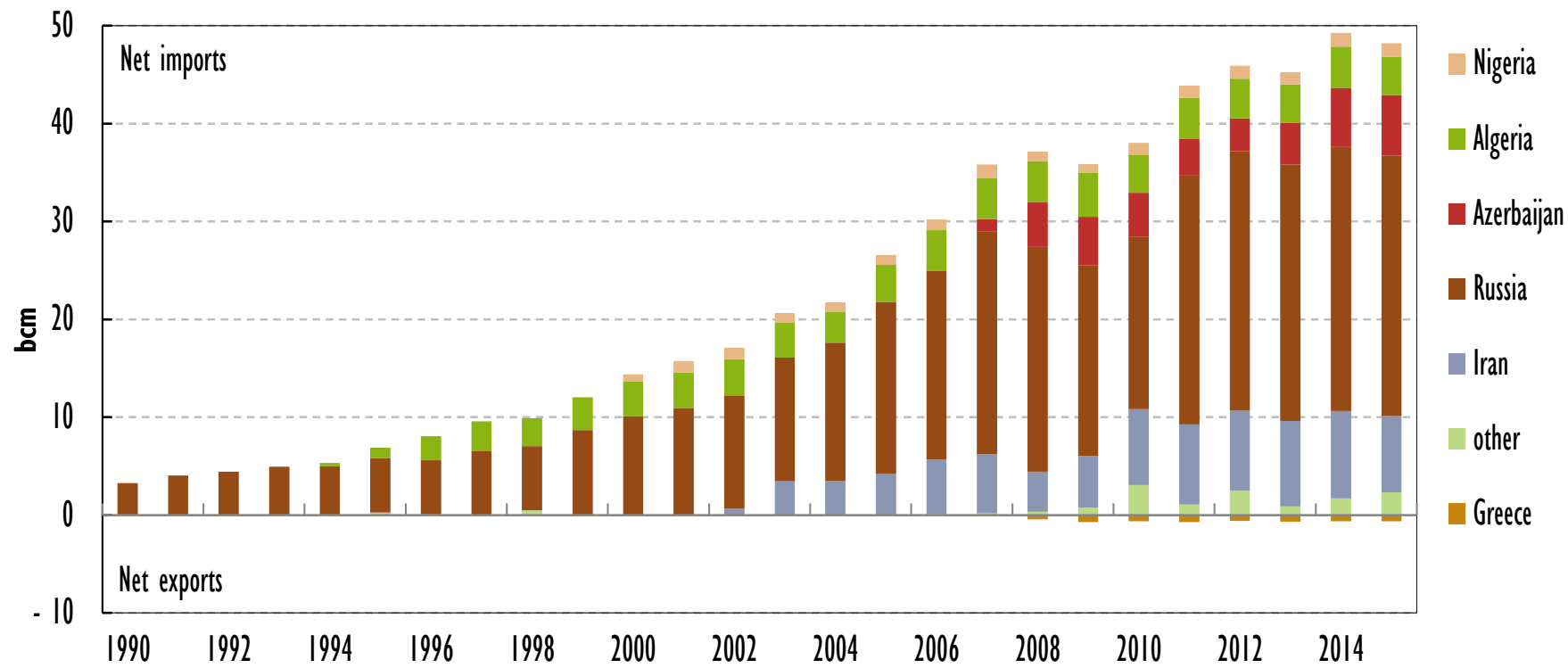
Turkey consumes large shares of coal in the residential and industry sectors, a rare case by international comparison (power generation).

- **Increasing regional integration:** electricity system is synchronised with ENTSO-E Continental Europe, and TANAP will open the Southern Gas Corridor by 2018/20
- **Natural gas:** High import dependency (58% Russia, and 87% gas pipeline imports) and interruptions as well as low N-1 resilience
- **Electricity:** Good capacity margins, but actual power availability differs from installed capacity during demand peaks, low hydro basins and gas interruptions.
- **Historic blackout March 2015:** east-west transmission corridor and power system management need to cope with large imbalances of load (west) and hydro production (east)

IEA's key recommendations to Turkey

- **Energy market reform:** *Promote competitive wholesale markets for gas and electricity with independent system operators and regulators*
- **Energy security:** *Ensure investment in resilient gas and electricity infrastructure and nuclear safety/security. Diversification is key!*
- **Energy efficiency:** *Implement a government-led EE plan focusing on buildings, industry, transport, cleaner coal, and air quality*
- **Renewables:** *Adopt longer term targets, one-stop-shop permitting, promote network investment & grid integration rules*
- **Long-term energy agenda:** *Building on Vision 2023, set out an energy strategy for 2030, consistent with climate and energy security goals*

Diversified gas supplies

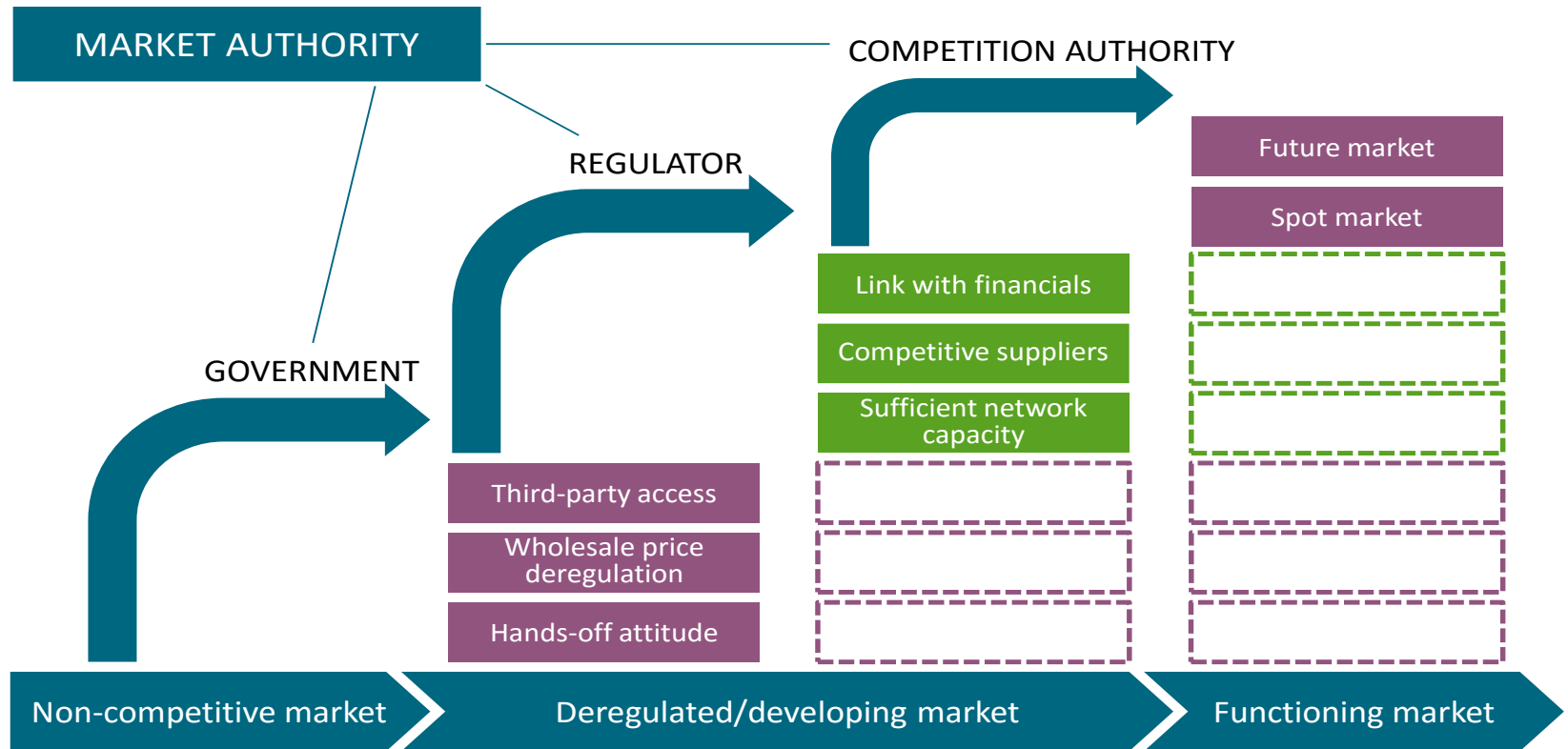


Rising import dependency, as domestic gas production falls, increases single supplier dependency (Russia makes up 55% of imports). Diversification is key.

Robust gas infrastructure

- **Insufficient network capacity margin** (195 mcm/d over 230 mcm/d demand), but new gas storages are coming online but not enough (10%)
- **Investment in gas storage and LNG:** The regulatory framework also plays a key role - LNG activities are not regulated but treated as gas storage
- **Low gas demand scenario:** gasification and tender for gas regions have increased residential demand but coal to dominate the power sector in absence of carbon pricing

Gas market institutional governance



Building a market place requires independent system operators, regulators and strong role of the competition authority.

- **Independent system operator** as market facilitator with separate trade and transportation (full unbundling), transparent congestion management and capacity allocation, no transit
- **Gas and electricity sectors** are closely interlinked – market design needs to be liberalised in both to build wholesale markets
- **Trading platform in Turkey:** virtual hub with one entry exit zone, basis for regional collaboration, moving from long-term contracts to spot trading and new LNG trades
- **Transparent network planning**
- **An action plan to deepen and complete the gas market reforms is critical!**

- **Diversification of gas supplies:** Continue bringing diversified gas supplies to Turkey by stepping up negotiations with international partners.
- **Robust gas infrastructure:** Speed up the expansion of the gas transportation network, gas storage and LNG facilities, and develop a comprehensive gas network plan.
- **Complete the gas market reform:** Set out an action plan towards a fully competitive and transparent gas wholesale market with an independent transmission system operator, compliance with third-party access to transmission network and fully separate trade and transmission activities.
- **Domestic production:** Explore all opportunities for the development of Turkey's unconventional resources, using international experience and standards.
- **Consolidate security of gas supply:** Run risk assessments and preventive actions and emergency plans; evaluate policies with regard to critical infrastructure and related electricity security issues; and consider the benefits of increased energy efficiency and renewable energy use.