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The Economic Policy Research Foundation of Turkey

Turkey's 2023 vision: An evaluation from the energy perspective

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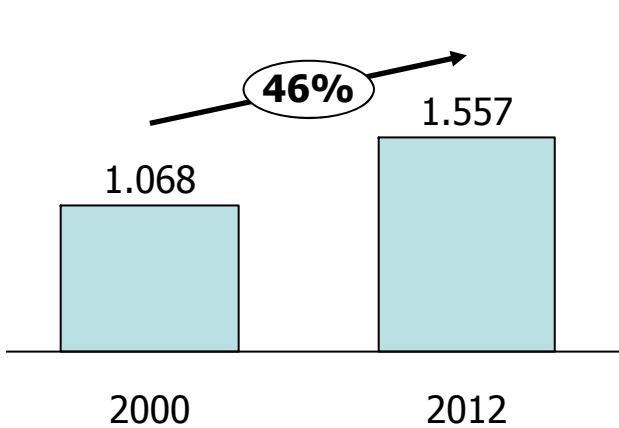
Paris, 2 July 2013

Agenda

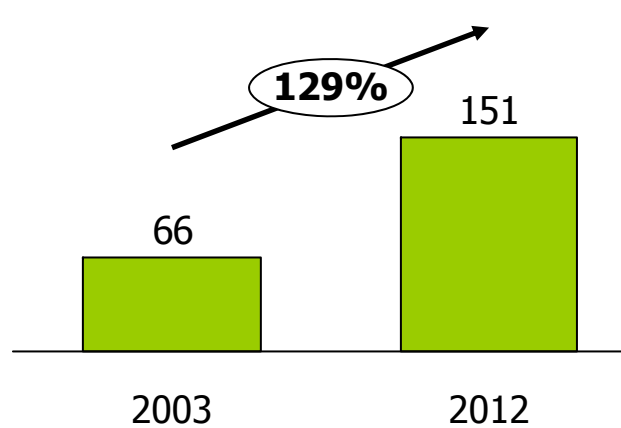
- Setting the context: Turkey's 2023 targets and the country's energy needs
- How to tackle rising energy demand?
 - Supply side issues
 - Demand side issues
- Conclusion

No way out w/o more and more energy

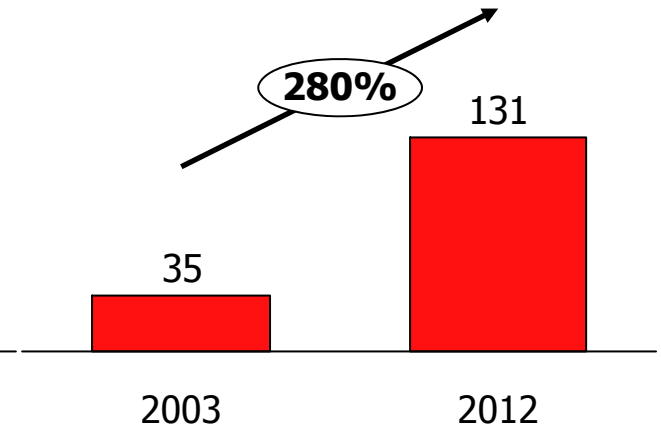
GDP per capita (TL, 1998 prices)



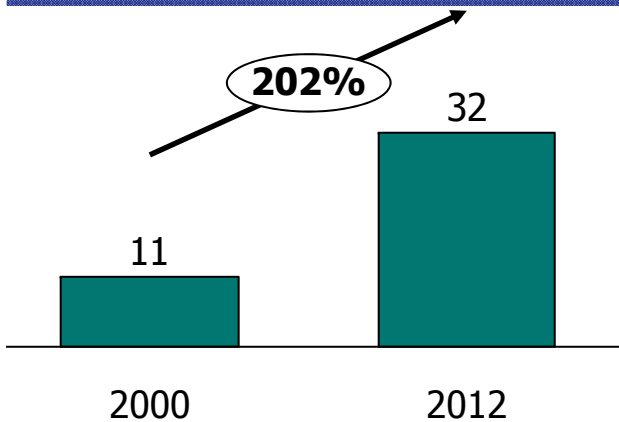
Passenger cars (per 1000 pop.)



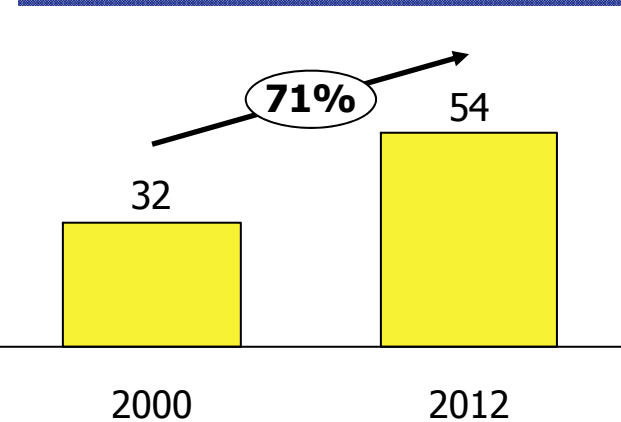
Air passengers (million)



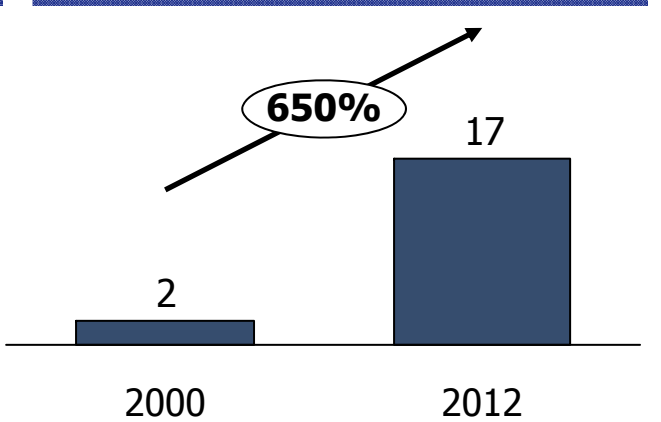
of foreign visitors (million)



Cement prod. (million tonnes)



Iron and steel exports (bln \$)



Turkey aspires to become the tenth largest economy in 2023

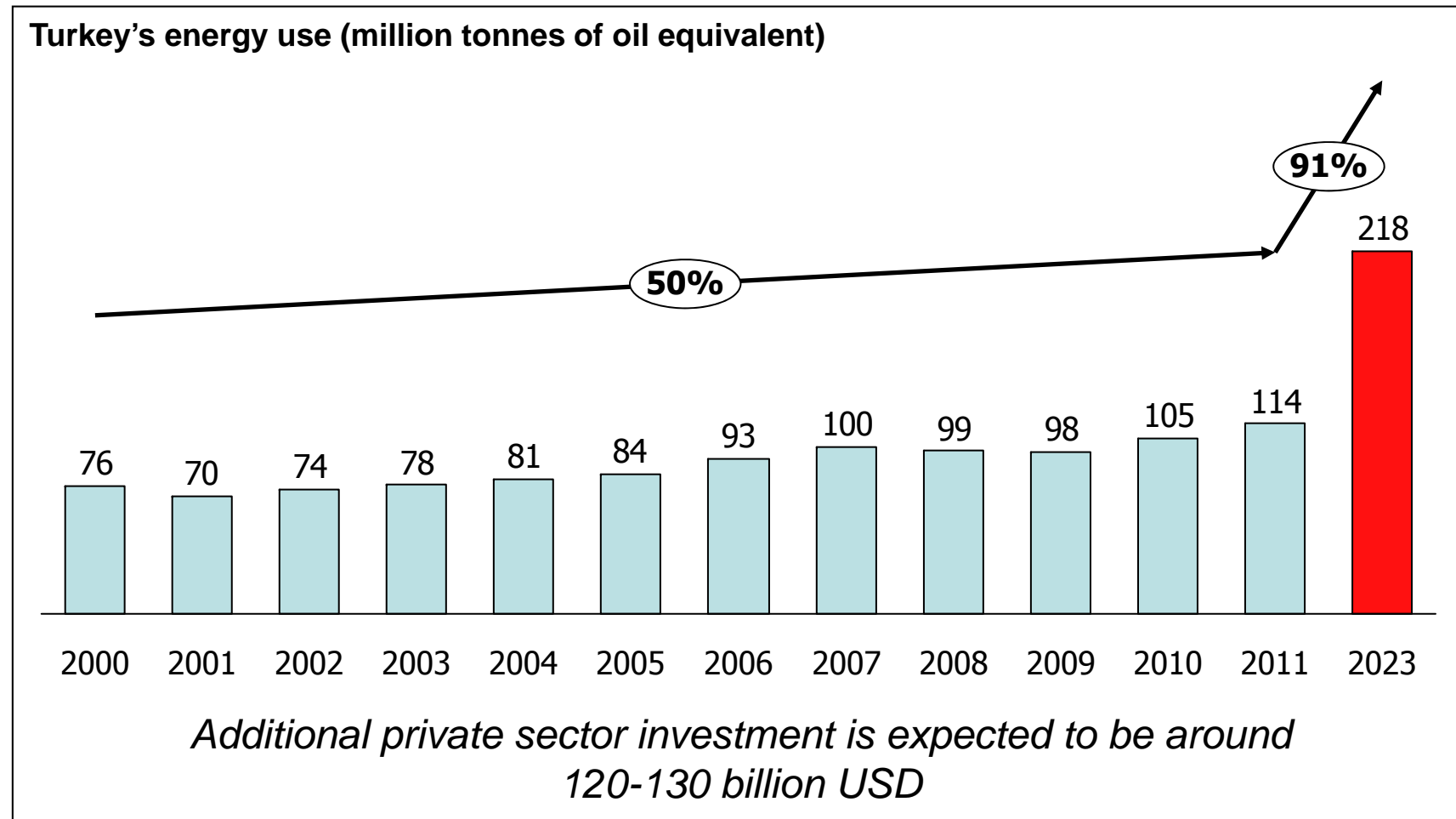


25,000 USD per capita income
(117% increase relative to 2012)

500 billion USD exports
(229% increase relative to 2012)

Several multibillion dollars infrastructure projects

How to fuel 2023 targets? The next 10 years will be way more challenging



Meeting the energy needs of 2023 is not an easy task

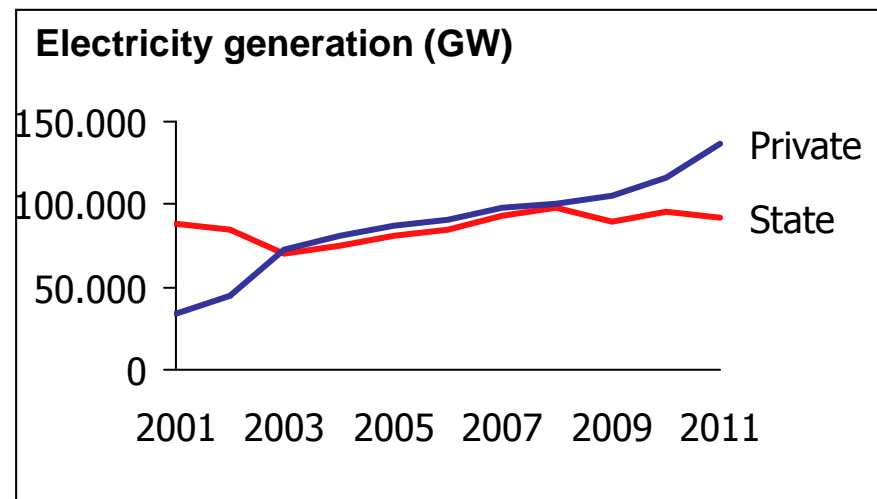
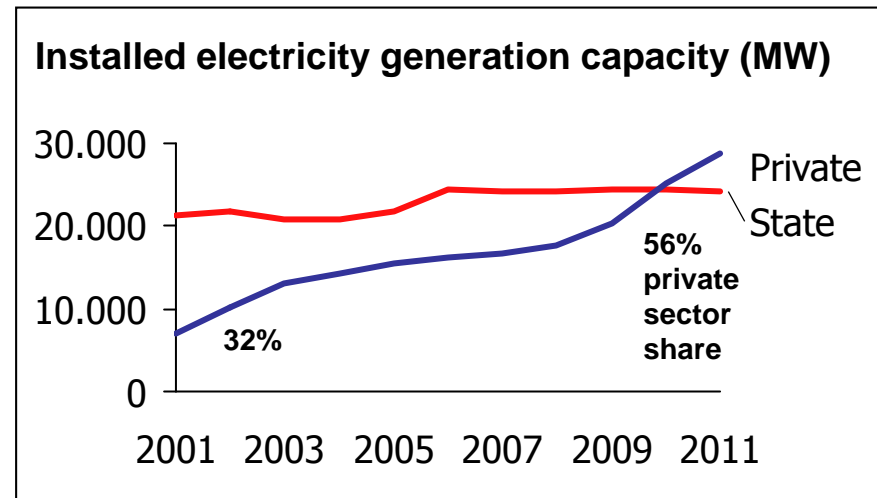
- Security of energy supply
 - A conducive business environment
 - Diversification of imports
 - Indigenous sources/renewables
 - Overseas exploration and production
- Efficiency and fairness issues
 - Efficient use of energy
 - Mitigating energy loss and theft
 - Environmental standards

Privatisation and liberalisation are prerequisites for boosting private investments

- There is an ongoing reform process in the Turkish power sector: Liberalized, efficient and economic market
- In 1993, the reform process started with the restructuring of Türkiye Elektrik Kurumu (TEK)
 - TEK divided into TEAS (production, transmission and wholesale power supply) and TEDAS (distribution)
- In 2001, a new Electricity Market Law was enacted
 - **TEAŞ**: EUAS (production), TEIAS (transmission), TETAŞ
 - Energy Market Regulation Board (EPDK) was established
 - Privatization of generation and distribution assets

Private sector is the dominant actor in electricity generation and will continue to be so

- 60% of remaining state power generating capacity will be privatized
- 3 out of 21 distribution companies were sold to the private sector in Dec 2012 and the remaining 19 will follow
- Global financial conditions are important determinants of the phase of privatisations (in 2010 and 2012 several deals were cancelled b/o lack of finance)
- A new draft electricity market law is at the parliament to take another step in full liberalization



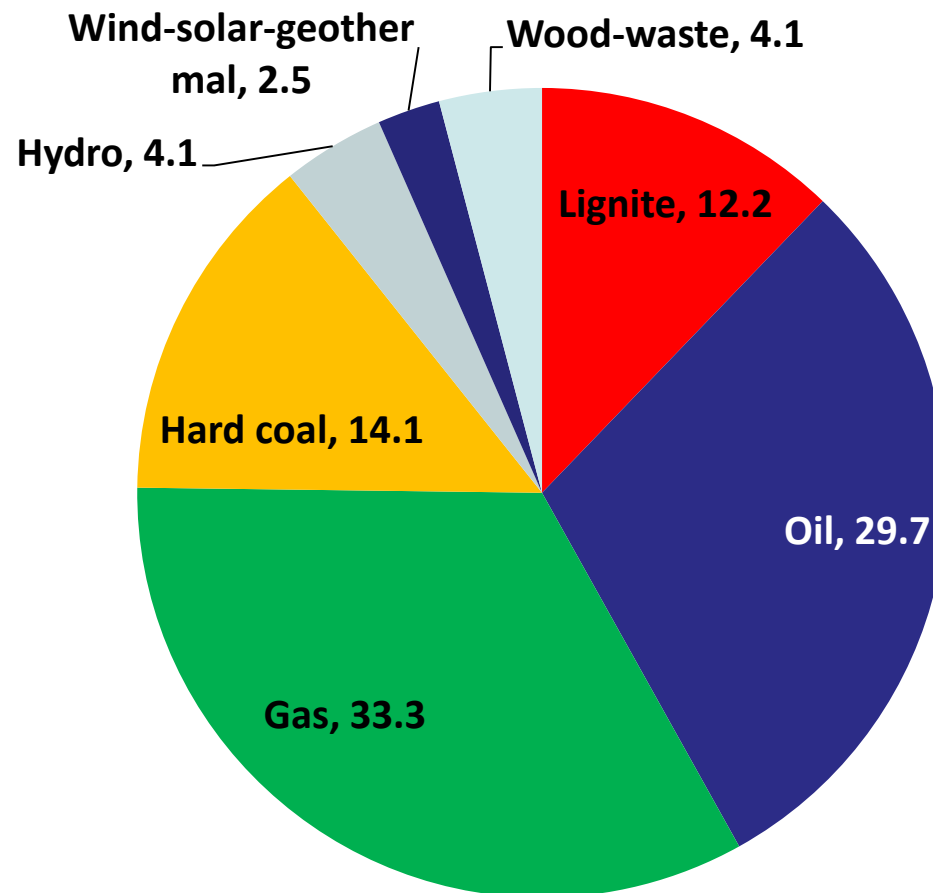
If it is FDI or long term foreign financing then the quality of governance matters

Standard difference between Turkey and the EU-27 countries in governance indicators



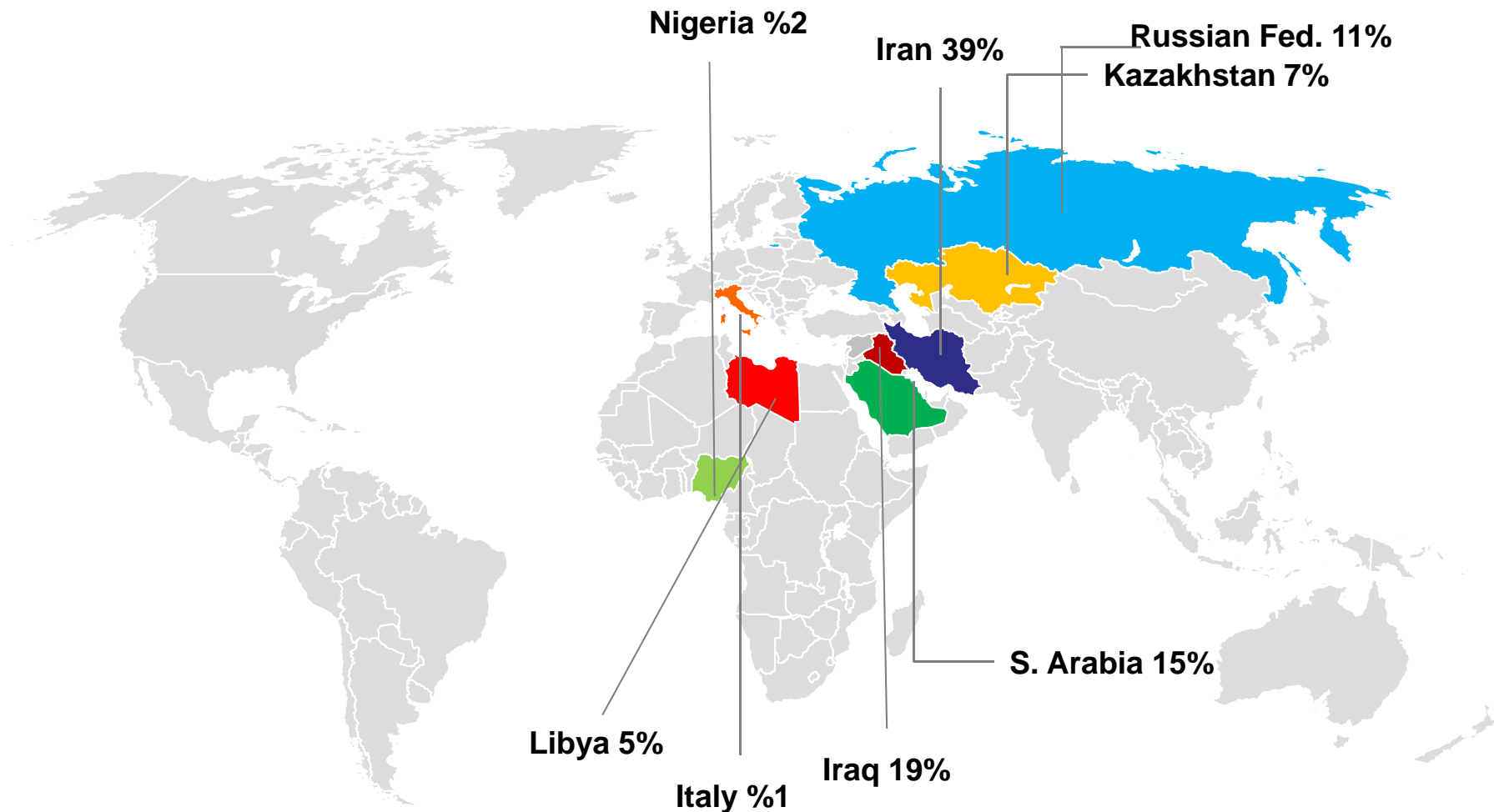
Oil and gas are the major sources of primary energy consumption in Turkey

Primary energy consumption by resources (% , 2011)

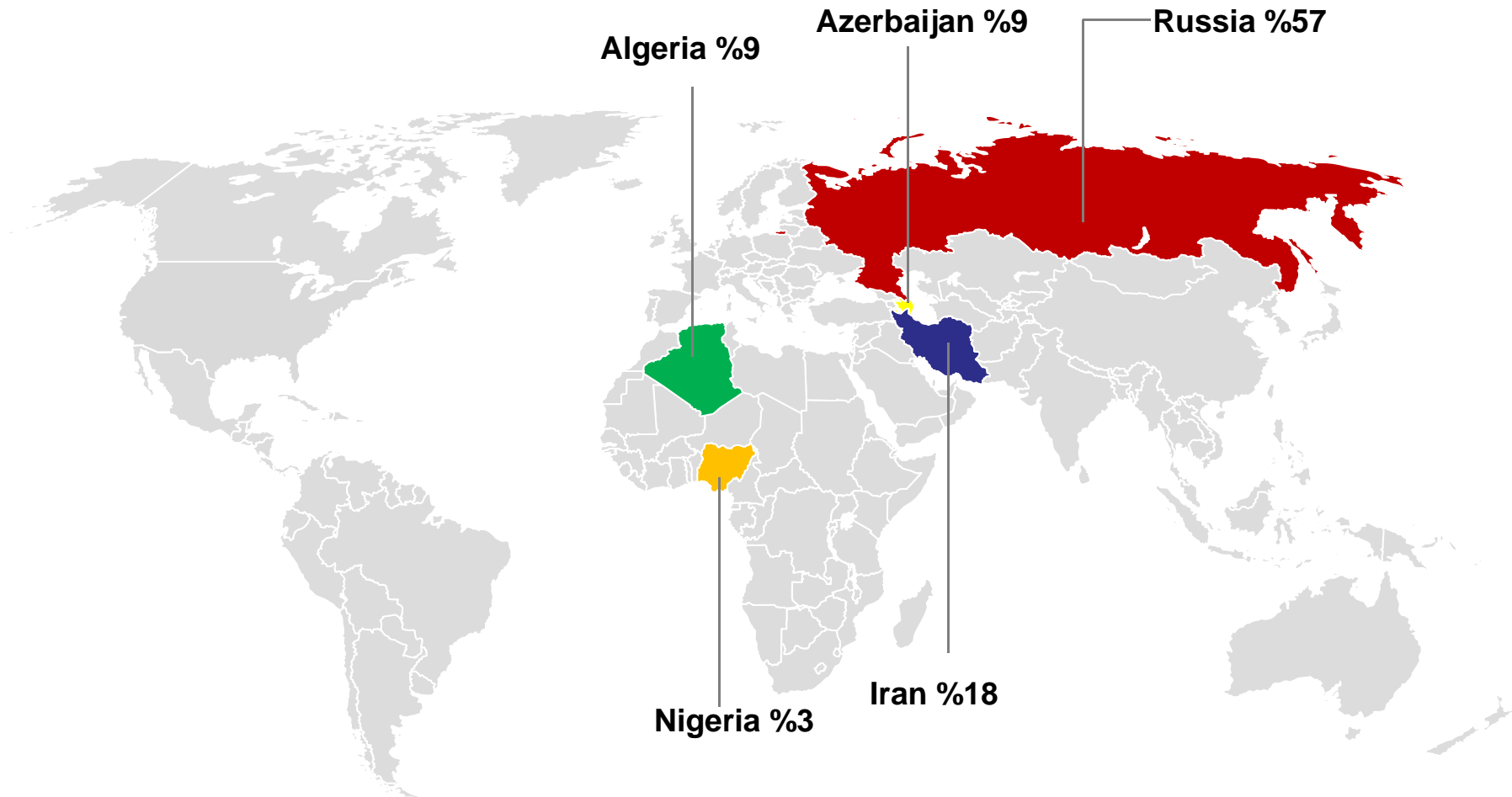


Import dependency
% 72
Oil: %92
Gas: %98

In 2012, 70% of Turkey's oil imports were from three countries with Iran taking the lead



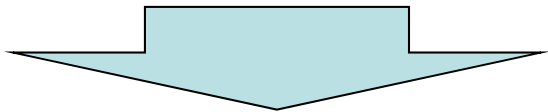
When it comes to natural gas, dependency is a more acute problem



Indigenous and renewable sources are important to decrease import dependency

Untapped local potential

- Hydro: 90-100 kWh
- Wind: 120 kWh
- Geothermal: 5-16 kWh
- Solar: 380 kWh
- Lignite: 108-116 kWh
- Biomass: 35 kWh



767 billion kWh

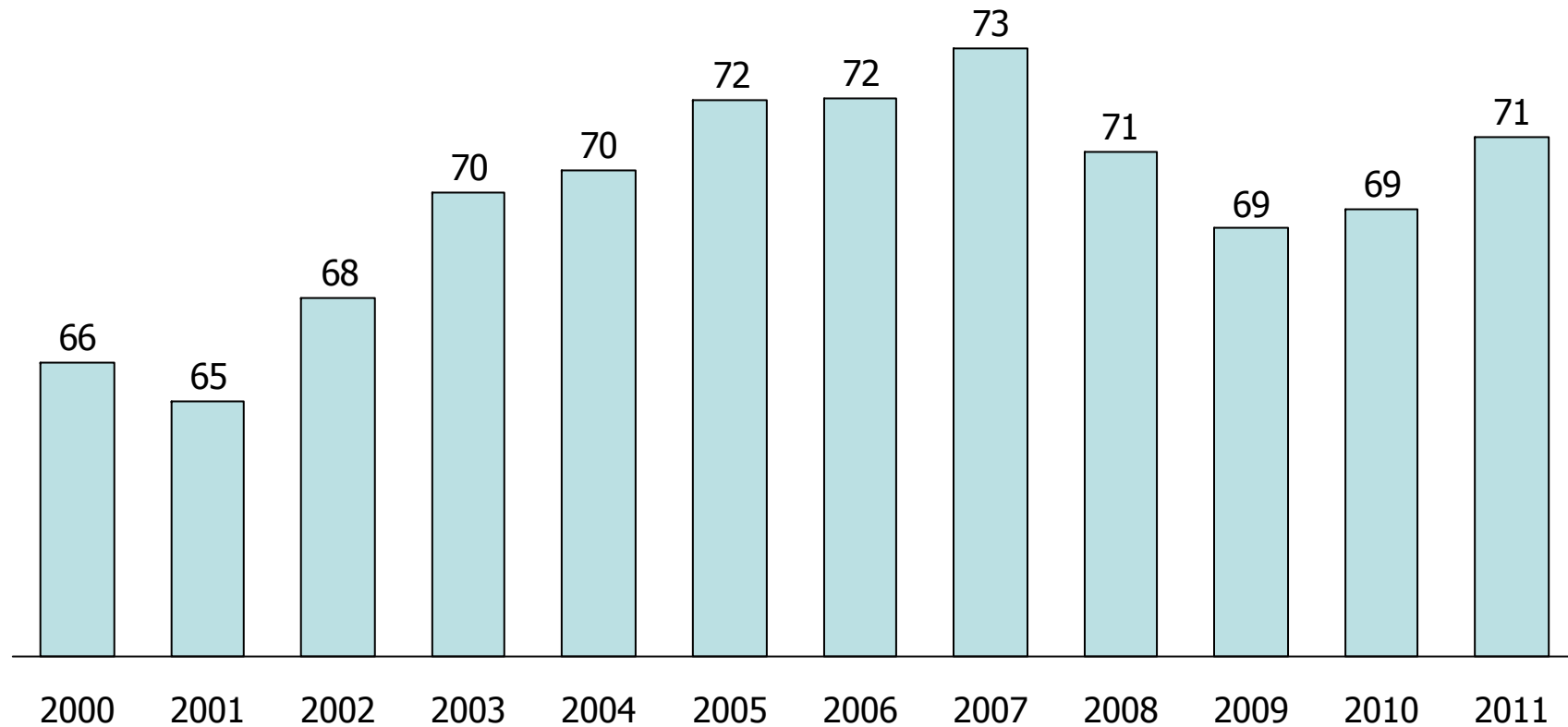
note: Electricity consumption
in 2011 was 229 billion kWh

Decreasing import dependency?

- New gas fired power plants
 - Under construction: 13,284 MW
 - New licenses processed and/or under evaluation: 36,582 MW
 - In total, 94% of total current capacity
- Coal-fired plants that work with imported coal
 - 21 new licenses
 - 17,448 MW additional capacity
 - 30% of current capacity

Does Turkey's import dependency in energy use really decreasing?

Energy imports, net (% of energy use)



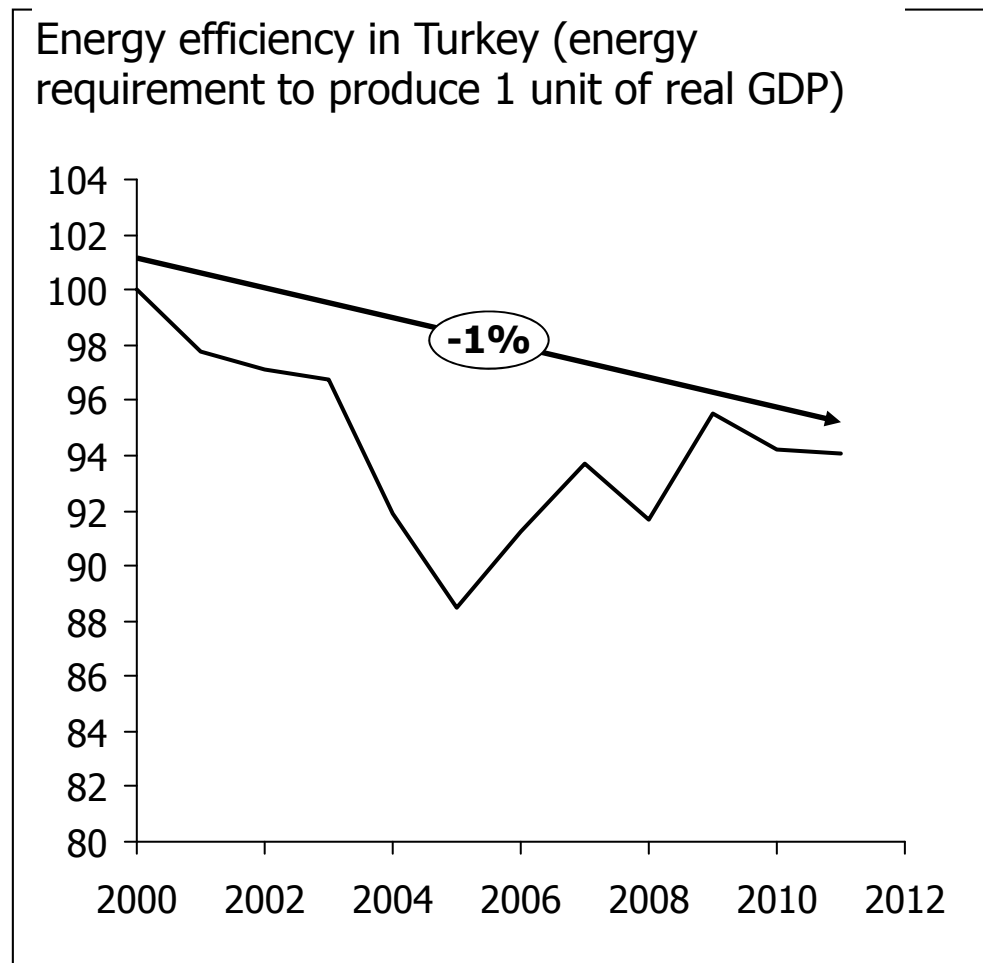
In order to reduce its import bill, Turkey is joining the nuclear club

- Turkey's 2023 nuclear energy targets
 - 2 reactors in Akkuyu and Sinop will be put into operation
 - Construction of a third facility will be started
- Two reactors is expected to replace 16 bcm natural gas and decrease the import bill by 7.2 billion USD
- Government's decision to build nuclear reactors raises some concerns among multiple parties

To what extent does the Turkey's national oil company contribute to Turkey's energy security?

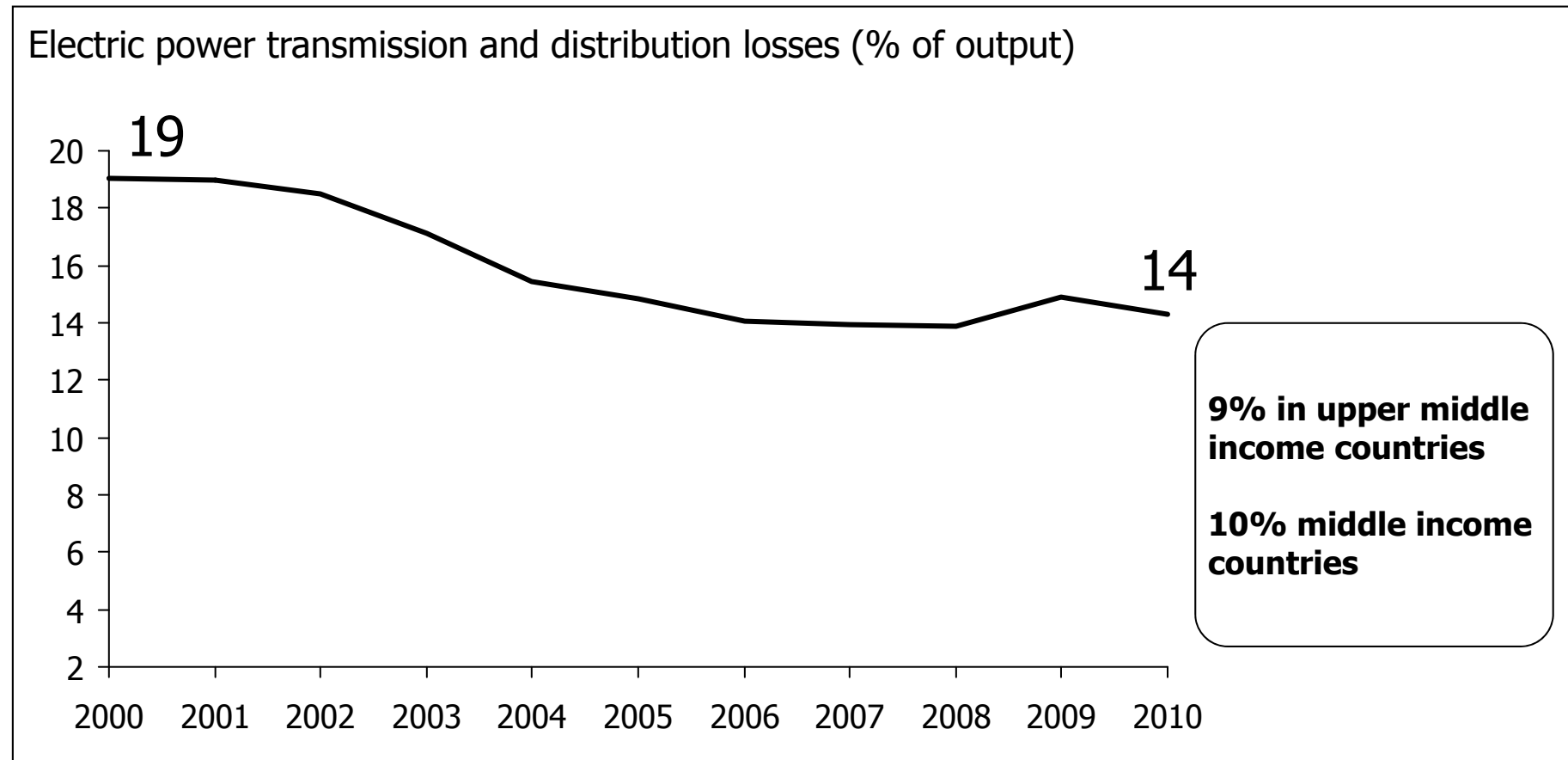
- TPAO has exploration and production activities in only 5 countries
 - Kazakhstan, Azerbaijan, Colombia, Iraq, and Libya
- Competitors are active in higher number of countries
 - Austria's OMV in 16 countries
 - Oil India in 14 countries
 - S. Korea's KNOC in 17 countries
- Why TPAO is not as active as its competitors in overseas markets?
 - TPAO cannot act like a private sector company,
 - No incentive to play risky bets,
 - Bureaucratic structure is highly rigid

Efficient use of energy would be extremely helpful in lowering import dependency



- There is a significant untapped potential
 - Buildings: 50%
 - Industry: 20%
 - Transport: 15%
 - Total cons: 25%
- Energy efficiency strategy document was published in 2012
 - Secondary legislation is not in place yet
- Everybody knows how important it is but...
 - Who is the champion?

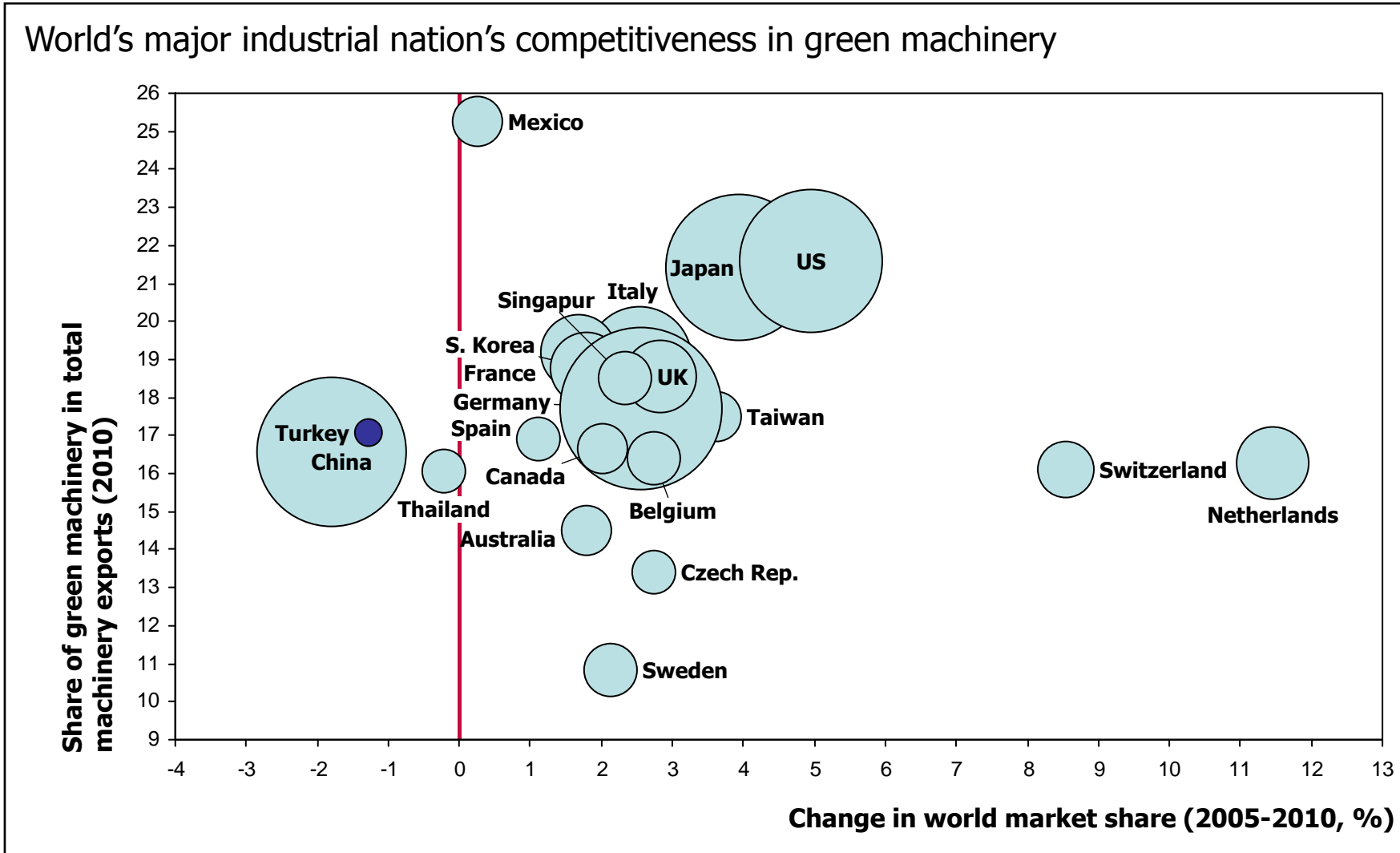
Energy losses during transmission and theft are other issues that need to be tackled



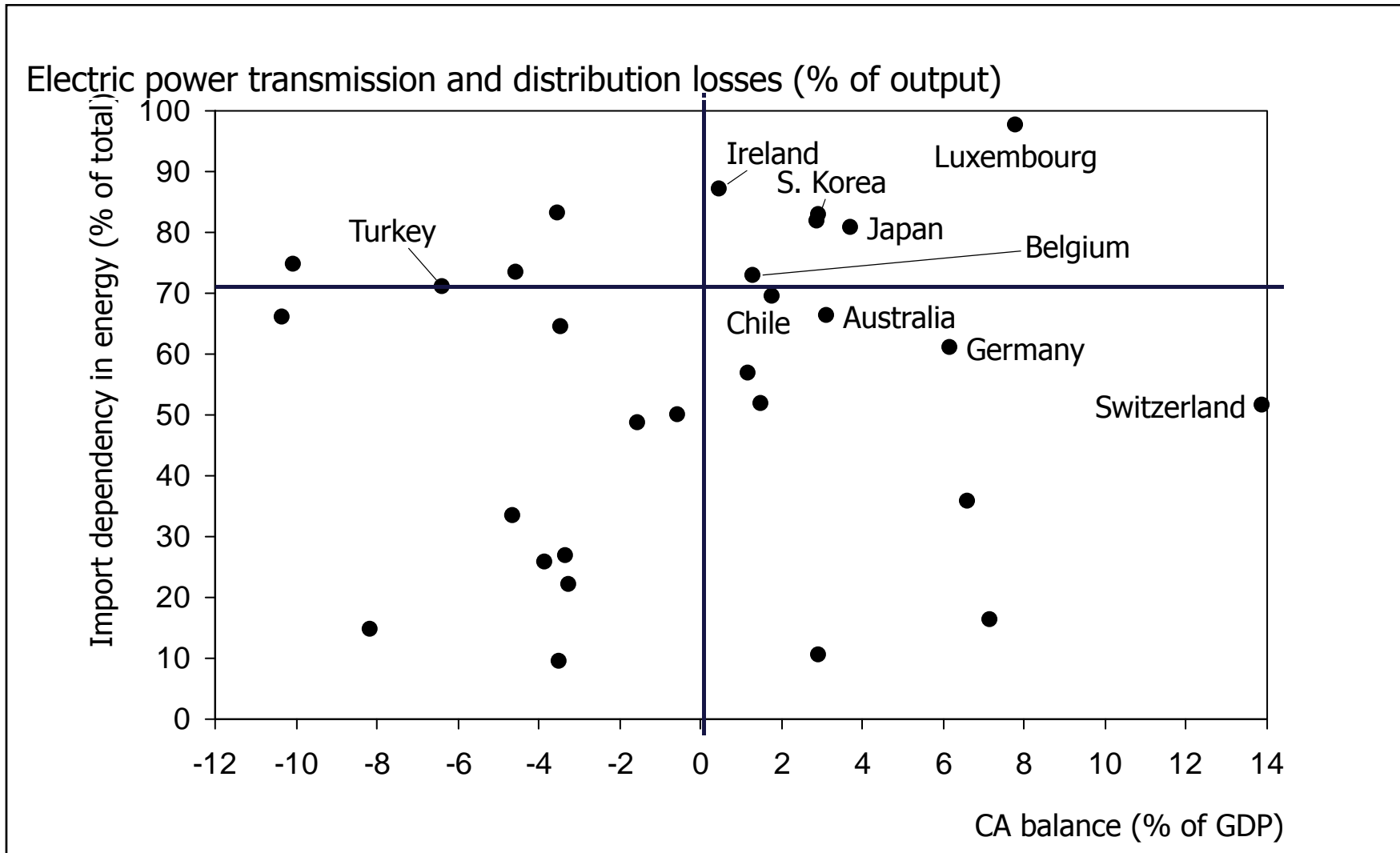
Lagging behind in environmental standards is a limiting factor on energy efficiency

	Efficiency in environmental governance	Private sector's responsiveness to environmental issues
Sweden	1.8	13.8
Canada	1.9	12.8
Belgium	1.9	10.9
USA	1.7	12.6
Netherlands	2.1	13.1
Switzerland	2.3	13.6
S. Korea	0.8	12.4
Australia	1.8	12.9
UK	2.0	13.2
Germany	1.8	13.9
France	1.7	12.5
Japan	1.1	14.24
China	0.2	10.6
Mexico	0.2	10.3
Italy	0.9	12.9
Average	1.5	12.7
Turkey	-0.2	9.2

renewables + energy efficiency + environmental standards = green growth + industrial development



Producing higher value added goods can solve the CA problem despite the high import dependency in energy



Conclusion

- To reach 2023 targets Turkey needs to double its energy generation capacity
- Turkey should ensure its energy security while increasing the generation capacity
 - ➔ Diversification and the Turkish foreign policy making are not independent from each other
- Energy constraint can serve as a push factor for Turkey's industrial advancement