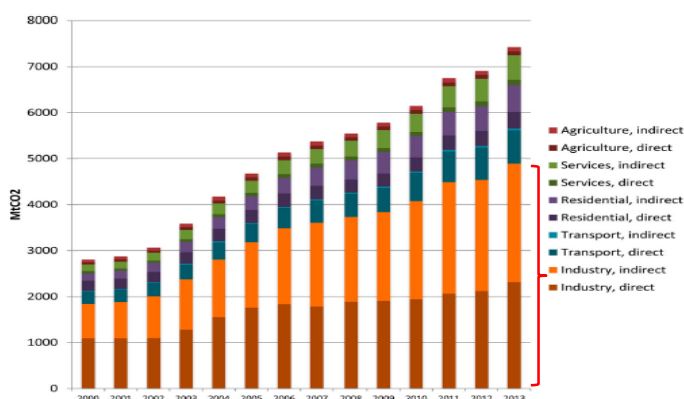


# EU – Candidate countries and Potential Candidates meeting on preparations for Paris COP 21

Energy transition and INDCs of  
selected countries

Institut du Développement Durable et des Relations Internationales  
41 rue du Four – 75006 Paris - France  
[www.iddri.org](http://www.iddri.org)

## China – historical emissions



**Figure 4.** Direct and indirect CO<sub>2</sub> emissions from fossil fuel combustion in different end-use sectors in China from 2000 to 2013  
Source: Authors, based on Enerdata Global Energy and CO<sub>2</sub> Database.

## China – INDC and policy drivers

### INDC:

- Peak emissions by 2030, and make best efforts to do so early
- Improve CO<sub>2</sub> intensity by 60-65% by 2030, compared to 2005
- Reach 20% non fossil fuels in primary energy by 2030

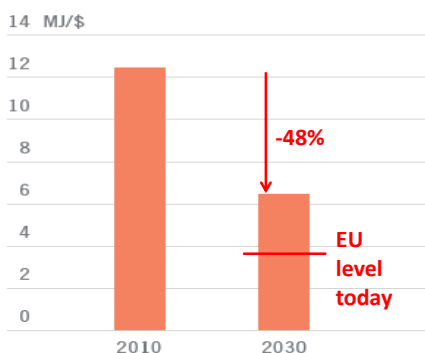
### Drivers:

- Local pollution concerns
- Energy security
- Economic considerations (macroeconomic strategy and industrial policy)
- Climate change

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## China INDC scenario – energy intensity

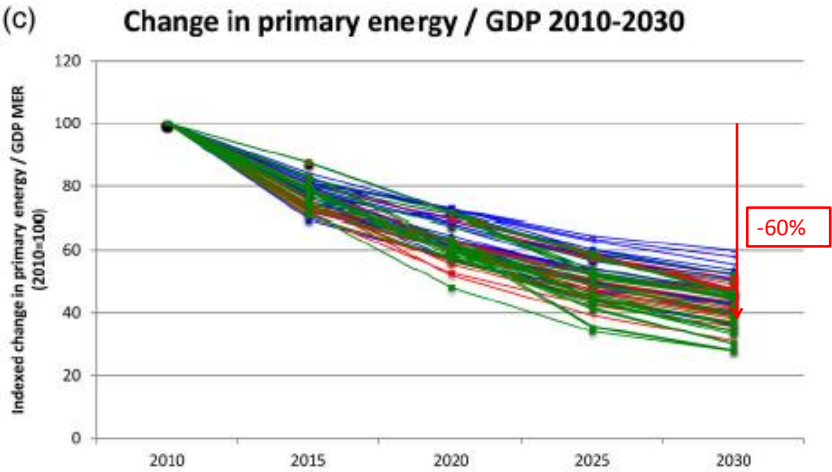
**Figure 24.** Energy intensity of GDP, China



- Continuous improvement of technical energy efficiency, although China is already quite efficient
- Significant contribution from macroeconomic and sectoral restructuring away from heavy industry
- Efforts to control energy service demand (denser cities, public transport, etc.)

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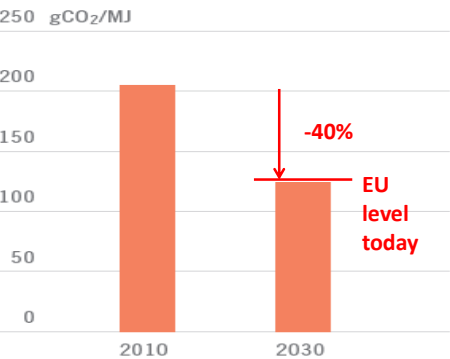
## China INDC scenario – energy intensity (II)



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## China INDC scenario – electricity supply

**Figure 25.** Carbon intensity of electricity production, China



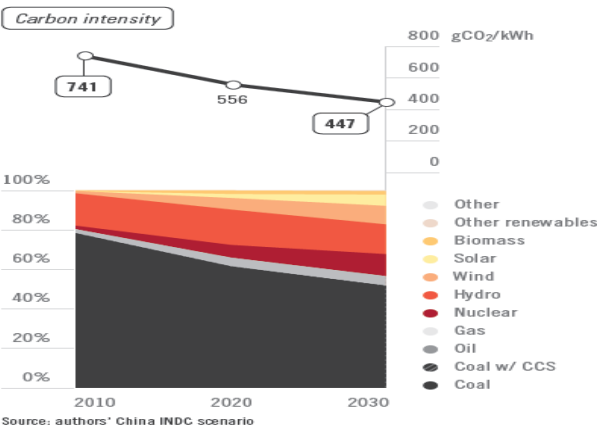
Source: authors' China INDC scenario

- High carbon electricity supply is a crucial driver of Chinese CO<sub>2</sub> emissions and local air pollution, heavily based on coal
- The INDC objective of 20% non fossil fuels in primary energy requires a much greater share in electricity (ca. 45%)
- The Chinese electricity system will therefore undergo significant change: stabilization/decline of coal demand, huge increase of renewables, nuclear and, to a lesser extent, natural gas

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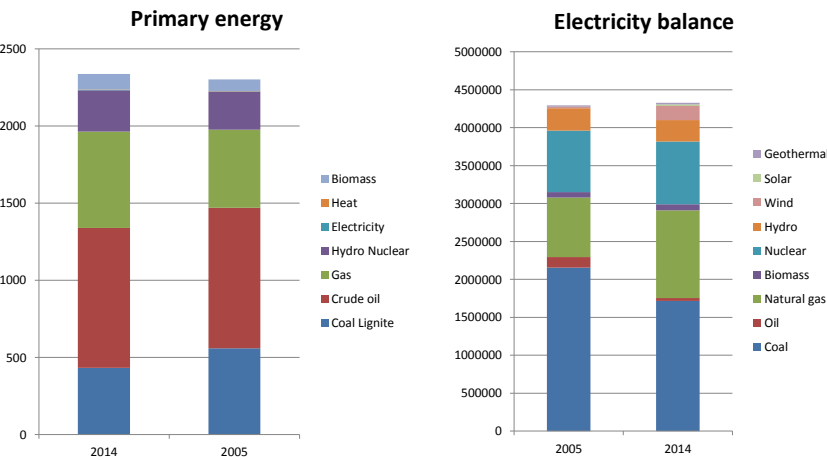
# China INDC scenario – electricity supply

Figure 27. Electricity generation mix, China



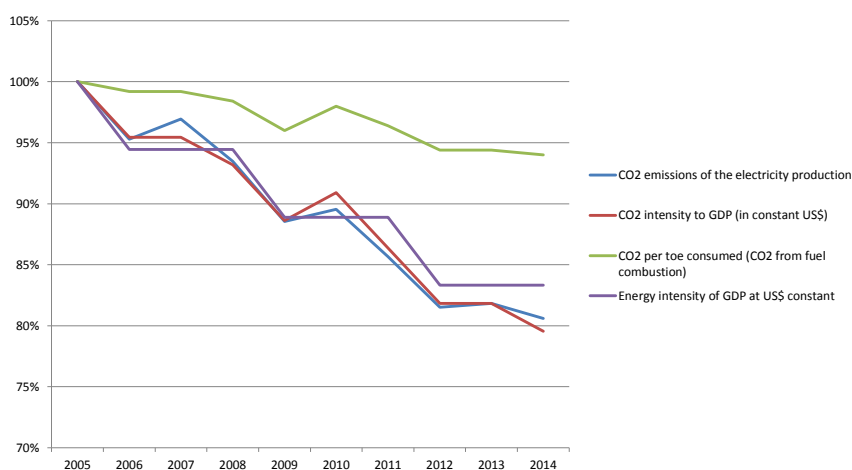
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# United States



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## United states



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## US INDC – overview

**Table 8.** Scope and Coverage of the United States INDC

Commitment	26-28% reduction in greenhouse gas emissions relative to 2005 in 2025.
Greenhouse Gases	Carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF <sub>6</sub> ), and nitrogen trifluoride (NF <sub>3</sub> )
Calculation	Net emissions (including land-use change)
Aggregation Across Gases	CO <sub>2</sub> -equivalent using 100-year global warming potential (GWP) values taken from IPCC AR4.
Sectors	All IPCC sectors
Reference Year	2005
Target Year	2025 (no intermediate year commitments)

Source: <http://www4.unfccc.int/submissions/INDC/Published%20Documents/United%20States%20of%20America/1/U.S.%20Cover%20Note%20INDC%20and%20Accompanying%20Information.pdf>

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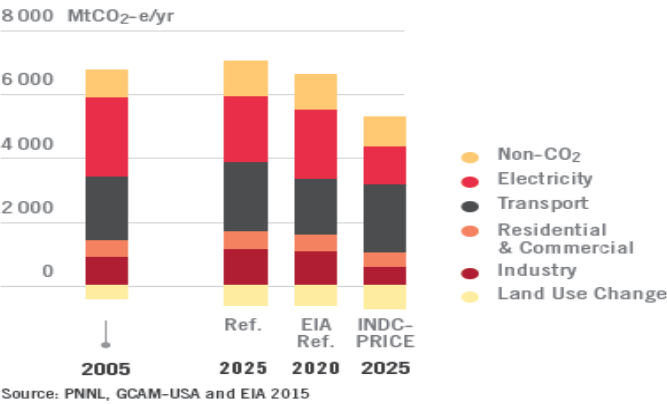
## US INDC – overview of measures

Target Emissions	Instrument
Reduce power plant emissions	Clean Air Act: regulations to cut carbon pollution from new and existing power plants.
Reduce transportation emissions	Clean Air Act: fuel economy standards for light-duty vehicles (2012-2025 model years), heavy-duty vehicles (2014-2018 model years with the intention to adopt standards for heavy duty vehicles in 2016 for model years 2021-2027);
Reduce building sector and related emissions	Energy Policy Act and the Energy Independence and Security Act: Energy conservation standards for 29 categories of appliances and equipment as well as a building code determination for commercial buildings.
Reduce non-CO <sub>2</sub> emissions	Clean Air Act: use specific alternatives to high GWP HFCs in certain applications through the Significant New Alternatives Policy program; Reduce methane emissions from landfills and oil and gas production.

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## United States INDC - overview

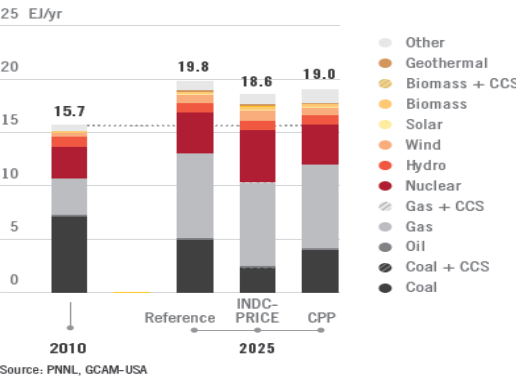
**Figure 17.** Emissions by sector, Reference and INDC-PRICE, US



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## United states INDC – electricity production

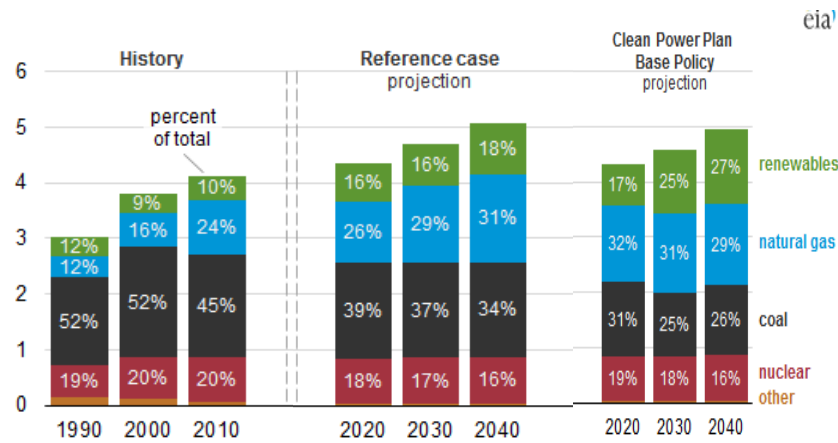
**Figure 20.** Changes in electricity generation compared to 2010 in Reference, INDC-PRICE and CPP scenarios



- US INDC is significantly based on the decarbonization of electricity supply
- Direct regulation is the key policy instrument
- The objective is -32% of 2005 emissions by 2030; -56% of carbon intensity of electricity 2010-2030
- The key of the transition is reduced coal, increased gas and increase renewables

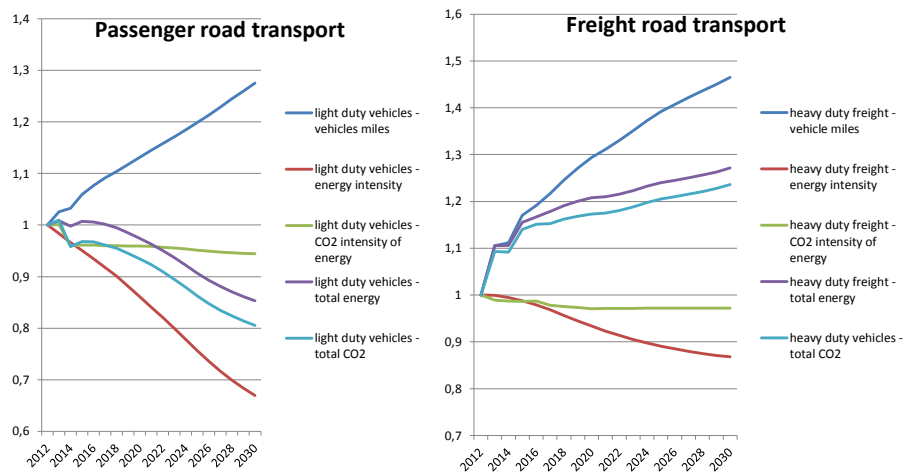
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## United states INDC – electricity production



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# United states – transport sector



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