

Policy drivers for energy data: Post-COP21 energy data requirements

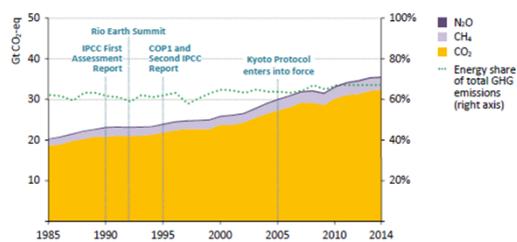
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Did COP-21 change something on energy?

Figure 1.3 Global anthropogenic energy-related greenhouse-gas emissions by type



“Greenhouse-gas emissions from the energy sector represent roughly two-thirds of all anthropogenic greenhouse-gas emissions and CO₂ emissions from the sector have risen over the past century to ever higher levels. Effective action in the energy sector is, consequentially, essential to tackling the climate change problem.”

IEA, *World Energy Outlook-2015*

**No, it did not – but it enhanced the need for mitigation action
As energy is the core driver for GHG emissions,
its relevance/importance remain high**



INDCs/NDCs under Paris Agreement

The Paris Agreement

- Requires all Parties to put forward their **best efforts through “nationally determined contributions” (NDCs)** and to **strengthen these efforts over time.**
- Provides for **enhanced transparency of action and support through a more robust transparency framework for action and support.**



INDCs/NDCs under Paris Agreement

Morocco	05.06.2015	Unconditionally reduce 13% of GHG emissions by 2030 compared to BAU for 2030; increased to 32% under certain conditions (additional financial support and enhanced technology)	Micronesia	24.11.2015	Commits to reduce GHG emissions by 28% by 2025 compared to levels in 2000 Conditional target: up to 35% emission reduction by 2025 compared to 2000 levels subject to availability of additional financial, technical and capacity building support from international community
Mexico	30.03.2015	Unconditionally reduce 25% of GHG and Short Lived Climate Pollutants emissions below BAU for 2030; to be increased to 40% subject to international carbon pricing, carbon border adjustments, technical cooperation, access to low-cost financial resources and technology transfer	US	31.03.2015	Reduce GHG emissions by 26-28 per cent below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%.
EU	06.03.2015	At least 40% reduction of GHG emissions by 2030 compared to 1990	China	30.06.2015	Achieve peaking of carbon dioxide emissions around 2030 and making the best effort to peak early Lower carbon dioxide emissions per unit of GDP by 60-65% from 2005 level Increase share of non-fossil fuel in primary energy consumption to around 20% Increase forest stock volume by around 4,5 billion cubic meters on 2005 level
Russia	01.04.2015	Limiting anthropogenic GHG to 70-75% of 1990 levels by the year 2030, subject to the maximum possible account of absorbing capacity of forests.	Central African Republic	28.09.2015	Reduction of GHG emissions by 5% compared to BAU by 2030
Singapore	03.07.2015	Reduce its emissions intensity by 36% from 2005 levels by 2030 and stabilise its emissions with the aim of peaking around 2030			

**INDCs/NDCs, as known by now, are ambitious – but more is needed
Achieving such targets is impossible without addressing GHGs in energy**



Energy-related component of NDCs

Measures to address GHG emissions from the energy sector

Energy supply

Important to estimate emissions from lower-carbon technologies and also to evaluate the impact of penetration of non-carbon/renewable energy

Energy use

Important to estimate impact of the introduction of measures to improve energy use efficiency and the transition to new standards in industries and buildings



Examples – INDC of China

- To increase the share of concentrated and highly-efficient electricity generation from coal;
- To lower coal consumption of electricity generation of newly built coal-fired power plants to around 300 grams coal equivalent per kilowatt-hour;
- To expand the use of natural gas: by 2020, achieving more than 10% share of natural gas consumption in the primary energy consumption and making efforts to reach 30 billion cubic meters of coal-bed methane production;
- To proactively promote the development of hydro power, on the premise of ecological and environmental protection and inhabitant resettlement;
- To develop nuclear power in a safe and efficient manner;
- To scale up the development of wind power;
- To accelerate the development of solar power;
- To proactively develop geothermal energy, bio-energy and maritime energy;

- To embark on a new pattern of urbanization, optimizing the urban system and space layout, integrating the low-carbon development concept in the entire process of urban planning, construction and management and promoting the urban form that integrates industries into cities;
- To enhance low-carbonized urbanization, improving energy efficiency of building and the quality of building construction, extending buildings' life spans, intensifying energy conservation transformation for existing buildings, building energy-saving and low-carbon infrastructures, promoting the reutilization of building wastes and intensifying the recovery and utilization of methane from landfills;
- To accelerate the construction of low-carbon communities in both urban and rural areas, promoting the construction of green buildings and the application of renewable energy in buildings, improving low-carbon supporting facilities for equipping communities and exploring modes of low-carbon community operation and management;

- To promote low-carbon development of industrial sectors, implementing *Action Plan of Industries Addressing Climate Change (2012-2020)* and formulating carbon emission control target and action plans in key industries;
- To research and formulate greenhouse gas emission standards for key industries;

To effectively control emissions from key sectors including power, iron and steel, nonferrous metal, building materials and chemical industries through energy conservation and efficiency improvement;

To strengthen the management of carbon emissions for new projects and to actively control greenhouse gas emissions originating from the industrial production process;

To construct a recycling-based industrial system, promoting recycling restructure in industrial parks, increasing the recycling and utilization of renewable resources and improving the production rate of resource;

To phase down the production and consumption of HCFC-22 for controlled uses, with its production to be reduced by 35% from the 2010 level by 2020,



Examples – INDC of USA

- Under the Clean Air Act, the United States Environmental Protection Agency is moving to finalize by summer 2015 regulations to cut carbon pollution from new and existing power plants.
- Under the Clean Air Act, the United States Department of Transportation and the United States Environmental Protection Agency are moving to promulgate post-2018 fuel economy standards for heavy-duty vehicles.
- Under the Clean Air Act, the United States Environmental Protection Agency is developing standards to address methane emissions from landfills and the oil and gas sector.
- Under the Clean Air Act, the United States Environmental Protection Agency is moving to reduce the use and emissions of high-GWP HFCs through the Significant New Alternatives Policy program.
- Under the Energy Policy Act and the Energy Independence and Security Act, the United States Department of Energy is continuing to reduce buildings sector emissions including by promulgating energy conservation standards for a broad range of appliances and equipment, as well as a building code determination for residential buildings.



Examples – INDC of Morocco

National Energy Strategy

- Provide 42 % of the installed electrical power from renewable sources, of which 14 % is from solar energy, 14 % is from wind energy and 14 % is from hydraulic energy by 2020.
- Achieve 12 % energy savings by 2020 and 15 % by 2030, compared to current trends.
- Reduce energy consumption in buildings, industry and transport by 12 % by 2020 and 15 % by 2030. The breakdown of expected savings per sector is 48 % for industry, 23 % for transport, 19 % for residential and 10 % for services.
- Install by 2030 an additional capacity of 3,900 MW of combined-cycle technology running on imported natural gas.
- Supply major industries with imported and regasified natural gas by pipelines.



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The current (pre-Paris) reporting/data needs

Annex I Parties (44):

- **Very detailed GHG inventory annually:**
 - Data in formatted tables (CRF)
 - Methodological report (NIR)
 - Additional information*
- **Policy-related information (mitigation, adaptation, funding):**
 - every 4 years (“national communication”),
 - with an interim update in 2 years (“biennial report”)
- **Methodological basis:**
 - 2006 IPCC guidelines

Non-Annex I Parties (152):

- **Less detailed GHG inventory:**
 - every 4 years in a “national communication” and an update in 2 years (“biennial update report”), depending on funding
- **Policy-related information (mitigation, adaptation, funding and capacity building needs):**
 - every 4 years in a “national communication” and an update in 2 years (“biennial update report”), depending on funding
- **Methodological basis:**
 - 1996 Revised IPCC guidelines
 - Can also use IPCCs good practice guidance (2000, 2003)



* There is additional reporting for Kyoto Protocol Parties

** IPCC = Intergovernmental Panel on Climate Change



What may well change after Paris, in energy?

Annex I Parties (44):	Degree of detail GHG in inventory	Non-Annex I Parties (152):
<ul style="list-style-type: none"> Very detailed GHG inventory annually: <ul style="list-style-type: none"> Data in formatted tables (CRF) Methodological report (NIR) Additional information* Policy-related information (mitigation, adaptation, funding): <ul style="list-style-type: none"> every 4 years ("national communication"), with an interim update in 2 years ("biennial report") Methodological basis: <ul style="list-style-type: none"> 2006 IPCC guidelines 	<ul style="list-style-type: none"> Less detailed GHG inventory: <ul style="list-style-type: none"> every 4 years in a "national communication" and an update in 2 years ("biennial update report"), depending on funding Policy-related information (mitigation, adaptation, funding and capacity building needs): <ul style="list-style-type: none"> every 4 years in a "national communication" and an update in 2 years ("biennial update report"), depending on funding Methodological basis: <ul style="list-style-type: none"> 1996 Revised IPCC guidelines Can also use IPCCs good practice guidance (2000, 2003) 	

Assessment of mitigation impact

Evolution of the methodology for inventory



* There is additional reporting for Kyoto Protocol Parties

** IPCC = Intergovernmental Panel on Climate Change

Example: degree of detail may change (time/capacity)

Table 1. National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol¹ and greenhouse gas precursors

Greenhouse gas source and sink categories	CO ₂ emissions (Gg)	CO ₂ removals (Gg)	CH ₄ (Gg)	N ₂ O (Gg)	CO (Gg)	NO _x (Gg)	NMVOCs (Gg)	SO _x (Gg)
Total national emissions and removals	X	X	X	X	X	X	X	X
1. Energy	X	X	X	X	X	X	X	X
A. Fuel combustion (sectoral approach)	X		X	X	X	X	X	X
1. Energy industries	X		X	X	X	X	X	X
2. Manufacturing industries and construction	X		X	X	X	X	X	X
3. Transport	X		X	X	X	X	X	X
4. Other sectors	X		X	X	X	X	X	X
5. Other (please specify)	X		X	X	X	X	X	X
B. Fugitive emissions from fuels	X		X	X	X	X	X	X
1. Solid fuels			X	X	X	X	X	X
2. Oil and natural gas			X	X	X	X	X	X
2. GREENHOUSE GAS SOURCE AND SINK CATEGORIES								
Total Energy								
A. Fuel combustion activities (sectoral approach)								
1. Energy industries								
a. Public electricity and heat production								
b. Petroleum refining								
c. Manufacture of solid fuels and other energy industries								
2. Manufacturing industries and construction								
a. Iron and steel								
b. Non-ferrous metals								
c. Chemicals								
d. Pulp, paper and print								
e. Food processing, beverages and tobacco								
f. Non-metallic minerals								
g. Other (please specify)								
3. Transport								
a. Domestic aviation								
b. Road transportation								
c. Railways								
d. Domestic navigation								
e. Other transportation								
4. Other sectors								
a. Commercial/institutional								
b. Residential								
c. Agriculture/forestry/fishing								
5. Other (as specified in table 1.A(a) sheet 4)								
a. Stationary								
b. Mobile								
B. Fugitive emissions from fuels								
1. Solid fuels								
a. Coal mining and handling								
b. Solid fuel transformation								
c. Other (as specified in table 1.B.1)								
2. Oil and natural gas and other emissions from energy production								
a. Oil								
b. Natural gas								
c. Venting and flaring								
d. Other (as specified in table 1.B.2)								

1996 IPCC guidelines (for non-Annex I Parties under UNFCCC)

2006 IPCC guidelines (for Annex I Parties under UNFCCC)



In summary

- The energy sector is indisputably a major source of GHG emissions; sizable reductions in GHG emissions worldwide cannot happen without reducing energy-related emissions
- Assessing emissions from the energy sector is necessary for the preparation of a national GHG inventory; it is also necessary for assessing the impact of energy-related mitigation measures
- There are still large uncertainties about the exact nature of new or changed data/information requirements; the implementation of the post-Paris work programme is expected to bring clarity in that respect – this process has been already launched under the UNFCCC
- Most of such new requirements will emerge as part of the implementation of the new transparency framework established by Article 13 of the Paris Agreement; that framework is for both developed and developing countries but flexibility relating to the capacity of developing countries is part of the framework
- This is a change; developing capacity to respond to this change is important

Figure 1.5 ▶ Global energy-related CO₂ emissions |

