Low Emission Development Strategy for Ukraine

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What is a Low Emission Development?

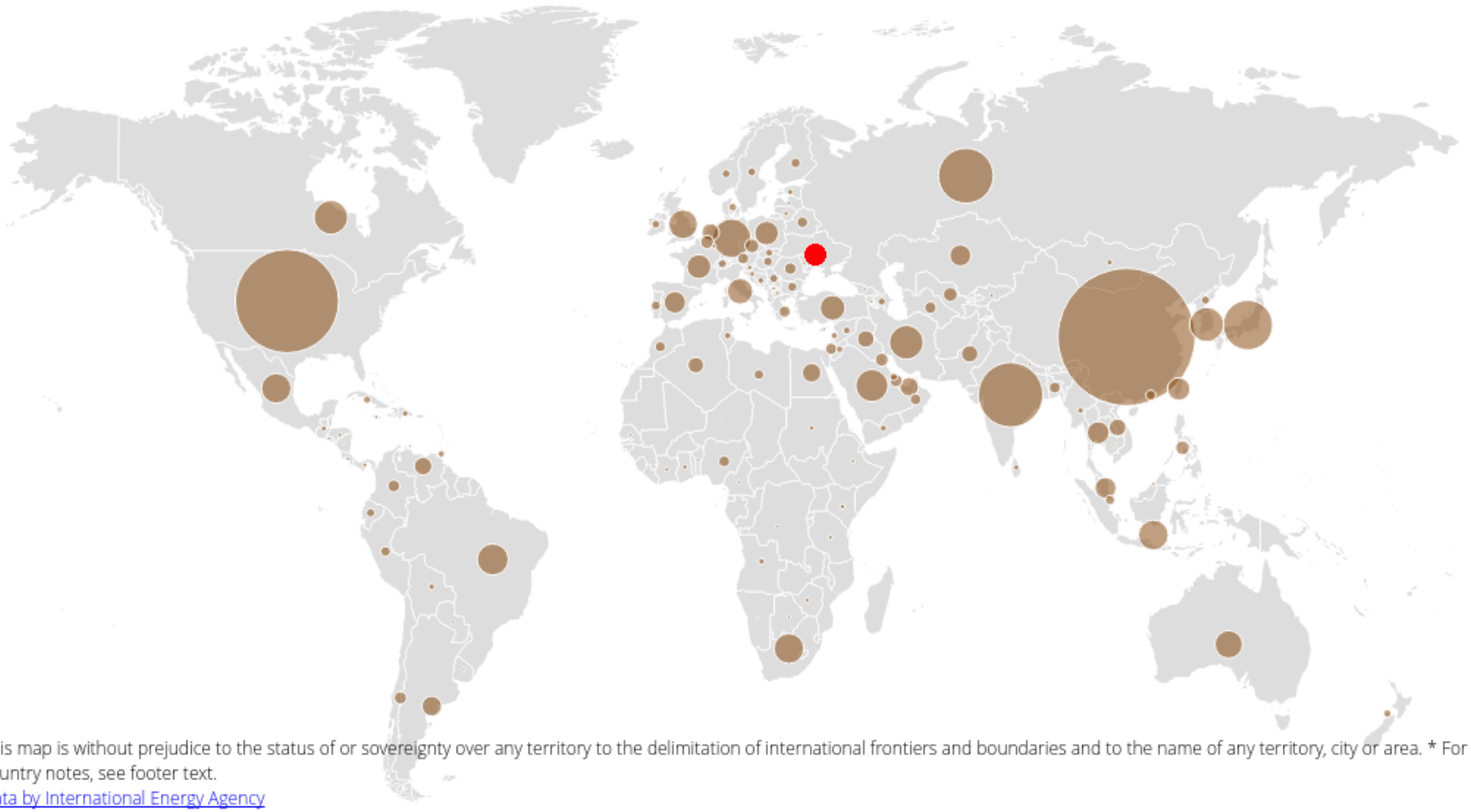
Low-carbon Development - is a long-term socio-economic development of the country, resulting in enhanced welfare while reducing long-term greenhouse gas emissions (GHG emissions are balanced by their absorption and/or capture)

The term "low-carbon development strategy" was introduced by the UN Framework Convention on Climate Change. But there are still on-going deiscussions on interpretations on the LCD-concept

IEA CO_2 Atlas (2014)*

In 2014 Ukraine was the 23d (236.5 million tons of CO2 largest emitter of CO_2 emissions from fuel combustion.

In 1990 Ukraine was ranked the 6th among the countries – largest emitters of energy-related CO_2



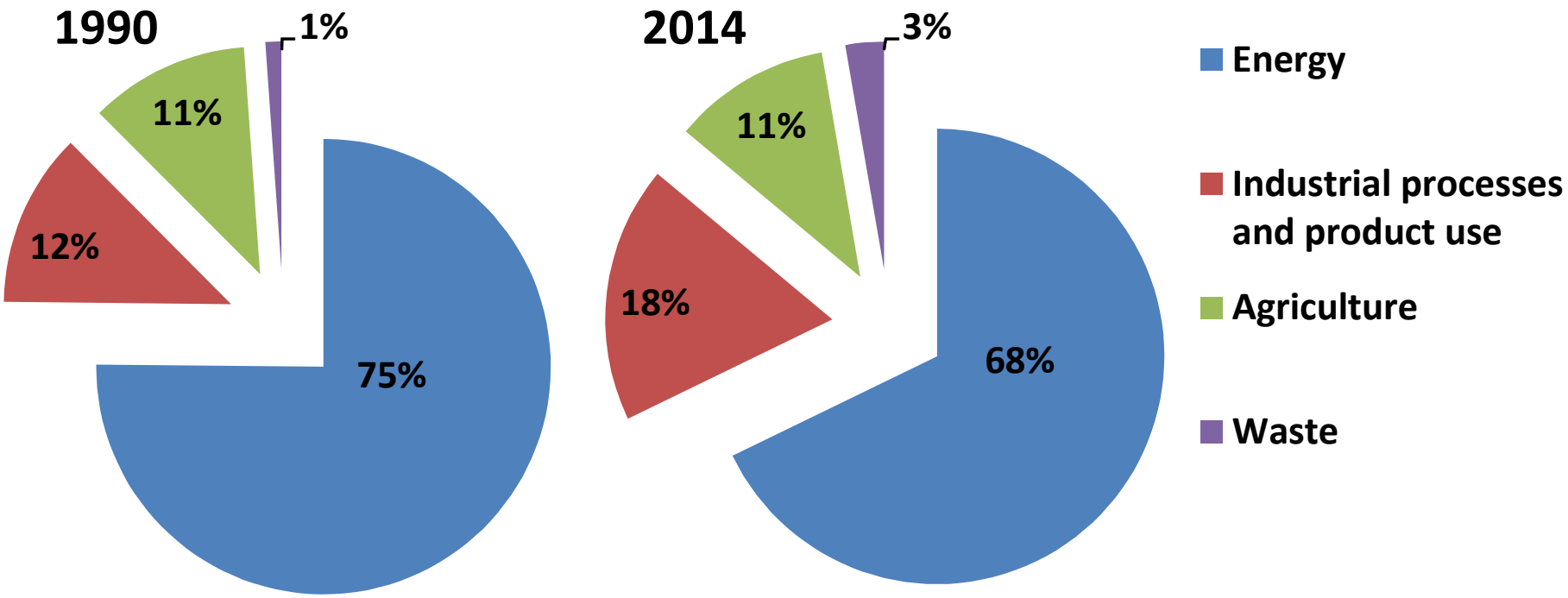
This map is without prejudice to the status of or sovereignty over any territory to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. * For country notes, see footer text.

Data by International Energy Agency

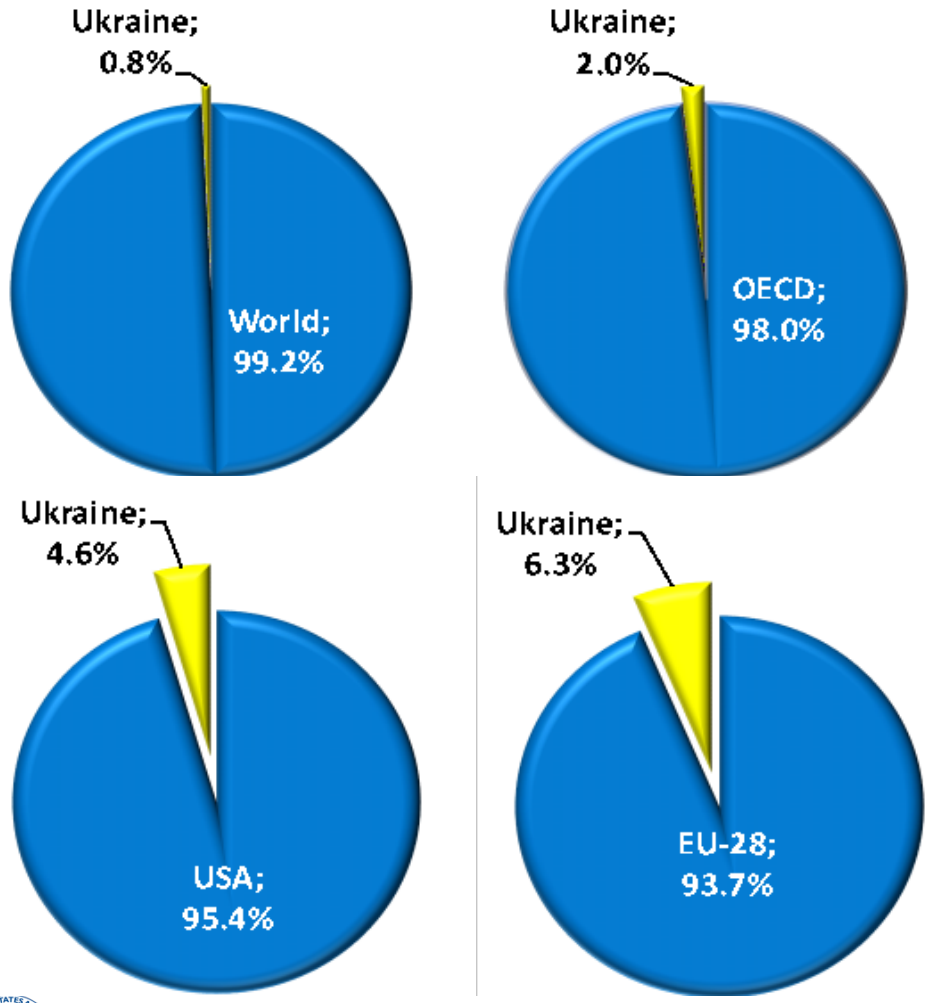
** CO2 Emissions from Fuel Combustion only*

Structure of GHG Emissions in Ukraine

GHG emissions in "Energy" sector in 1990-2012 constituted **67.7-75.7%** of total GHG emissions (8.0% difference). together with emissions related to "Industrial Processes" it constituted **84.4-90.0% (**5.6% difference). This determined general dynamics of GHG emission in Ukraine.



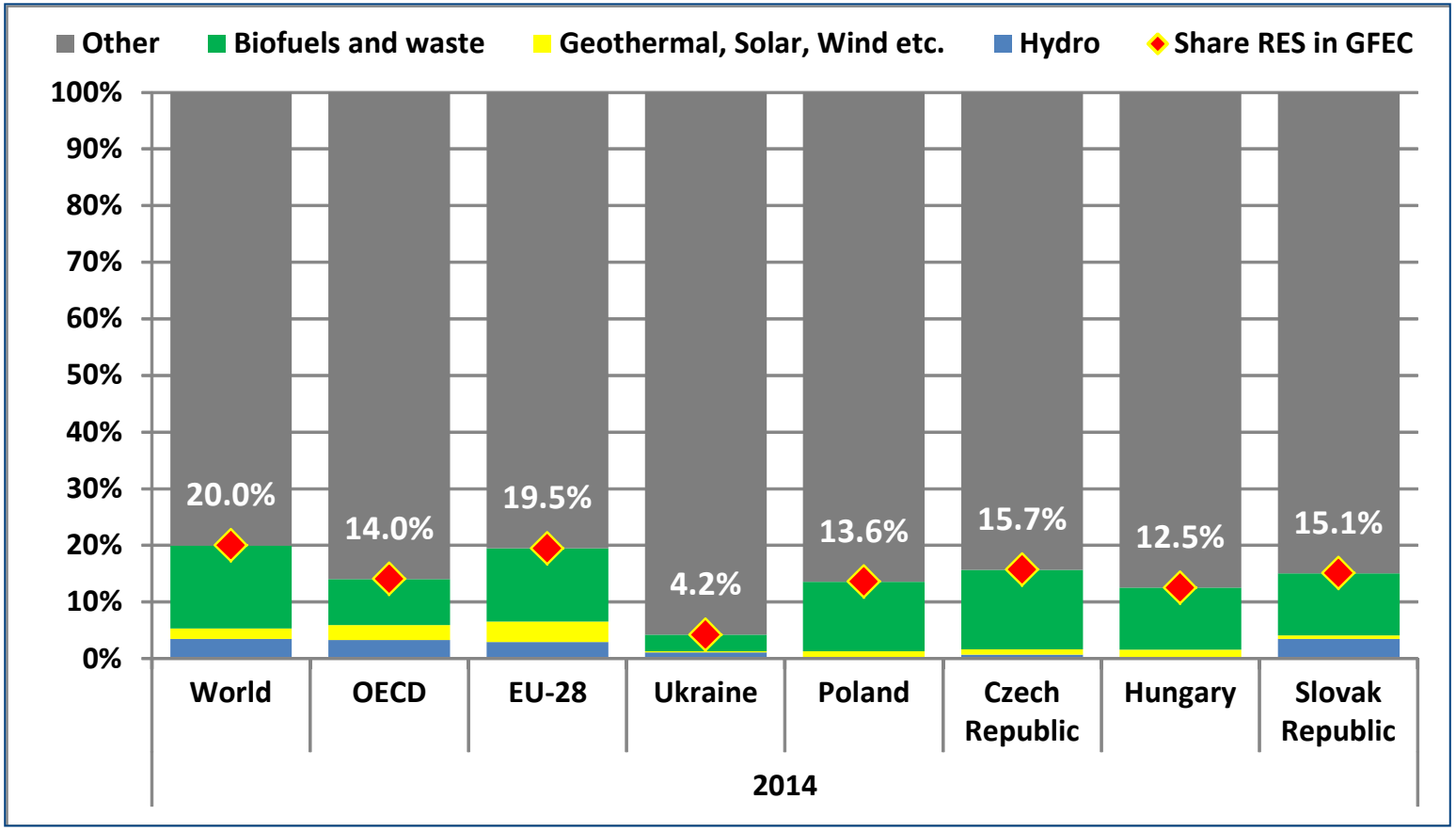
Ukraine´s share in Total Primary Energy Supply in 2014



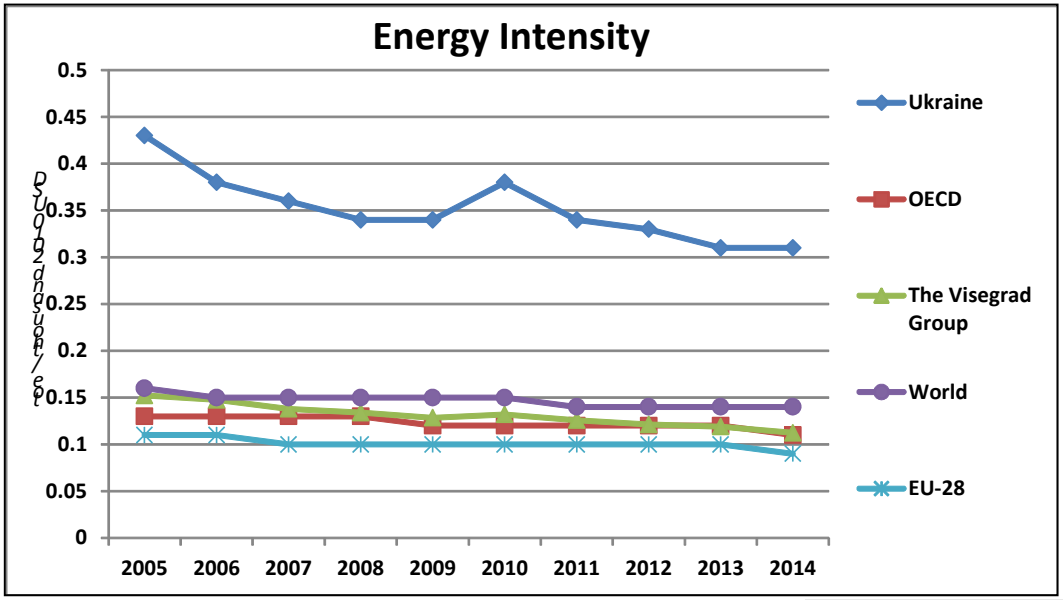
- The share of Ukraine in the global **Total Primary Energy Supply (TPES)** was less than 0,8%.
- Ukraine´s share in TPES compared with OECD-countries constituted 2%
- Ukraine´s TPES share compared with EU-28 in 2014 made 6,3%,
- Compared with USA – 4,6%.

Ukraine in world TPES and other countries

In terms of Renewables share in TPES Ukraine lags behind not only developed countries (including the countries-members of Visegrad Group) but also globaly.

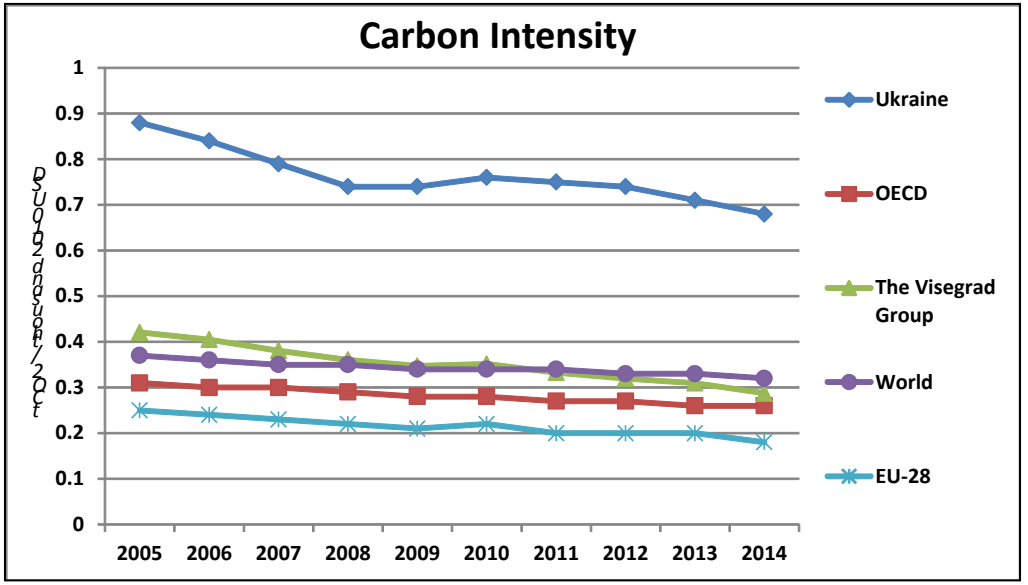


Energy and Carbon Intensity



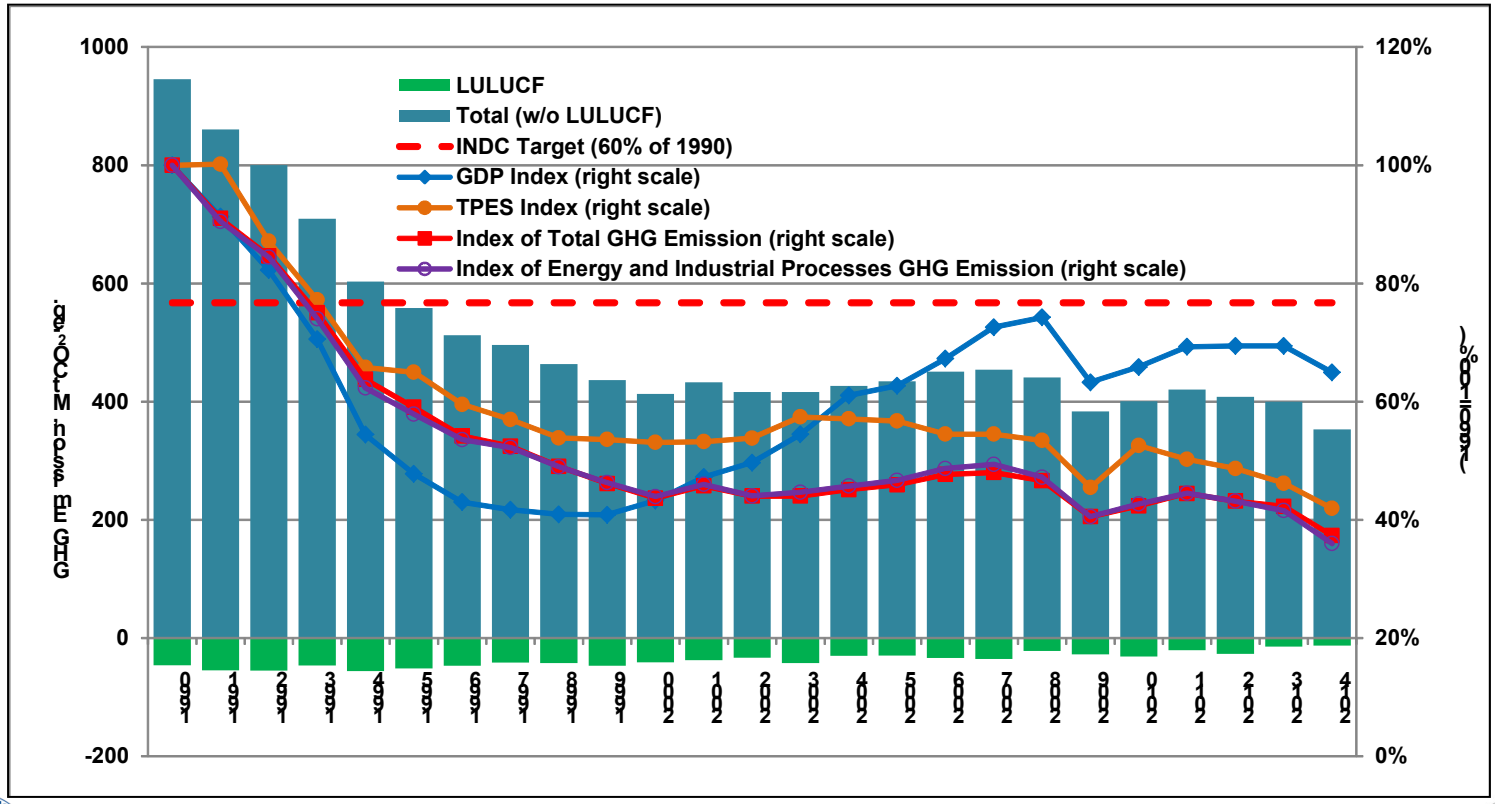
The energy intensity of Ukraine's GDP (2014) was correspondingly 2.6 and 2.4 times higher than in OECD countries and in the countries-members of the Visegrad Group. And it was 3,4 times higher than in EU-countries.

The carbon intensity of the country´s GDP, in 2014 was almost 2.8 times higher than in OECD- countries and 2,4 higher than in Visegrad Group-countries. And it was 3,8 times higher compared with the EU-28 countries.



Structure of GHG Emission in Ukraine

Dynamics of GHG emission follows the curve of primary energy general supply.
In 1990-2000, rate of GHG emission was comparable to the rate of GDP decrease, but after 2000, as a result of changed structural proportions in economy, GDP increase was no longer accompanied by the relevant GHG emission increase (**decoupling**).

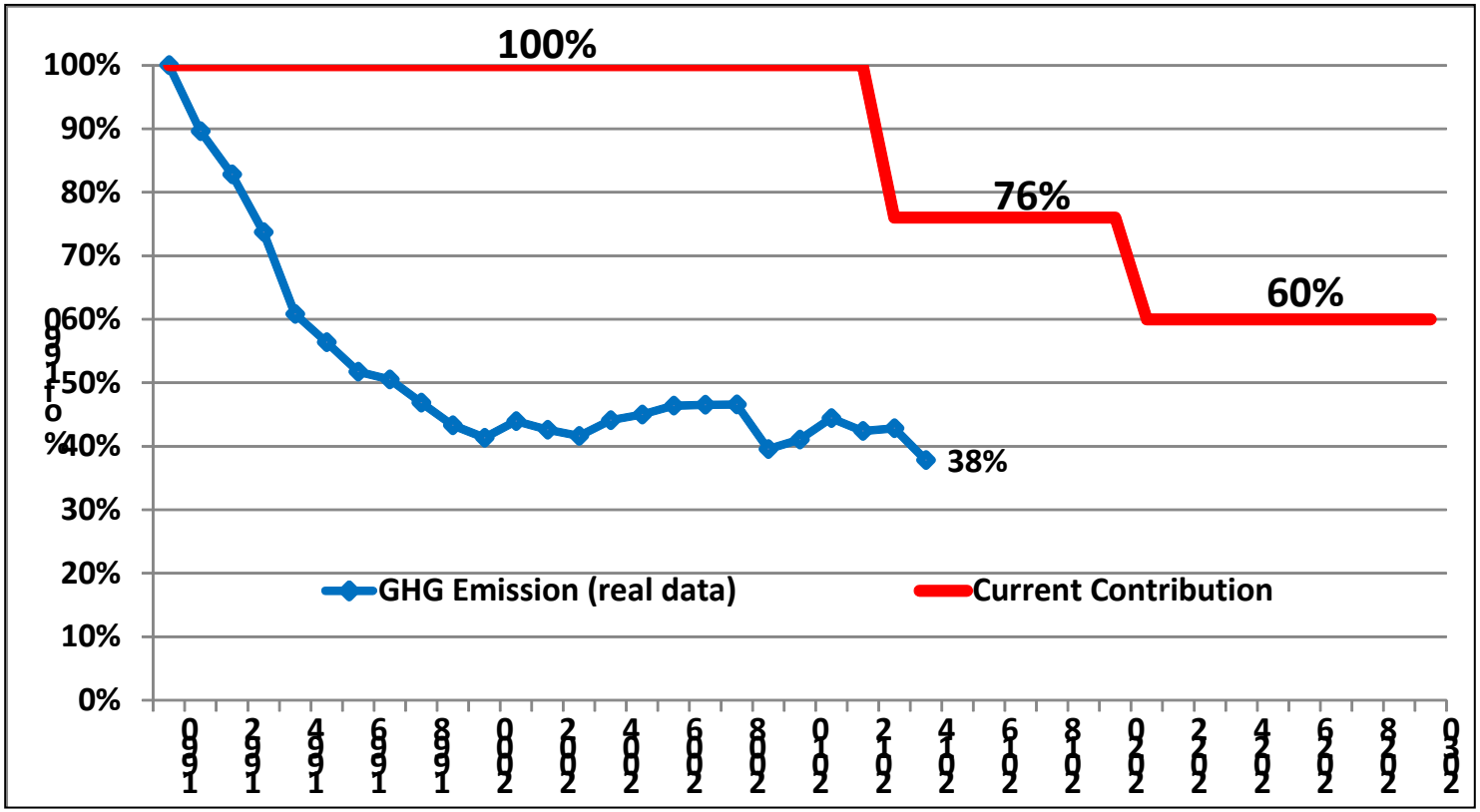


Ukraine in International Climate Agreements

- ✓ Ukraine is Annex I Party to **United Nation Framework Convention on Climate Change** since 1996
- ✓ Ukraine is Annex B Party to the **Kyoto Protocol** since 2004 (Second Commitment Period of the Kyoto Protocol is under ratification process)
- ✓ Ukraine is a Party to **Paris Agreement** starting from September 19, 2016 with **Nationally Determined Contribution (NDC)** that presents national goals on climate actions – both mitigation, reduction of GHG emissions and adaptation to impacts of climate change

Ukrainian Nationally Determined Contribution (INDC)

"Ukraine defines ambitious, but at the same time substantiated and fair target with regard to the level of GHG emissions. It will not exceed 60% of 1990 GHG emissions level in 2030".



Ukrainian NDC "will be revised after the restoration of its territorial integrity and state sovereignty as well as after the approval of post-2020 socio-economic development strategies".

4E Approach for LEDS

National legislation on Low Emission Development aims to set the goals and provide mechanisms for low emission development of Ukraine and covers all economy sectors.

- **Economy:** facilitate development of low carbon economy and create new jobs
- **Energy:** ensure energy security and energy sufficiency; improve energy efficiency and energy conservation; growth of renewables in energy production
- **Environment:** reduction of the anthropogenic impact on the environment; mitigation of climate change
- **Engineering:** support and promotion of R&D; increase the domestic market share of innovative products and technologies

LEDS process in Ukraine

USAID project «Municipal energy reform in Ukraine» supports Ministry of Ecology and Natural Resources of Ukraine in development LED Strategy in next 10 steps:

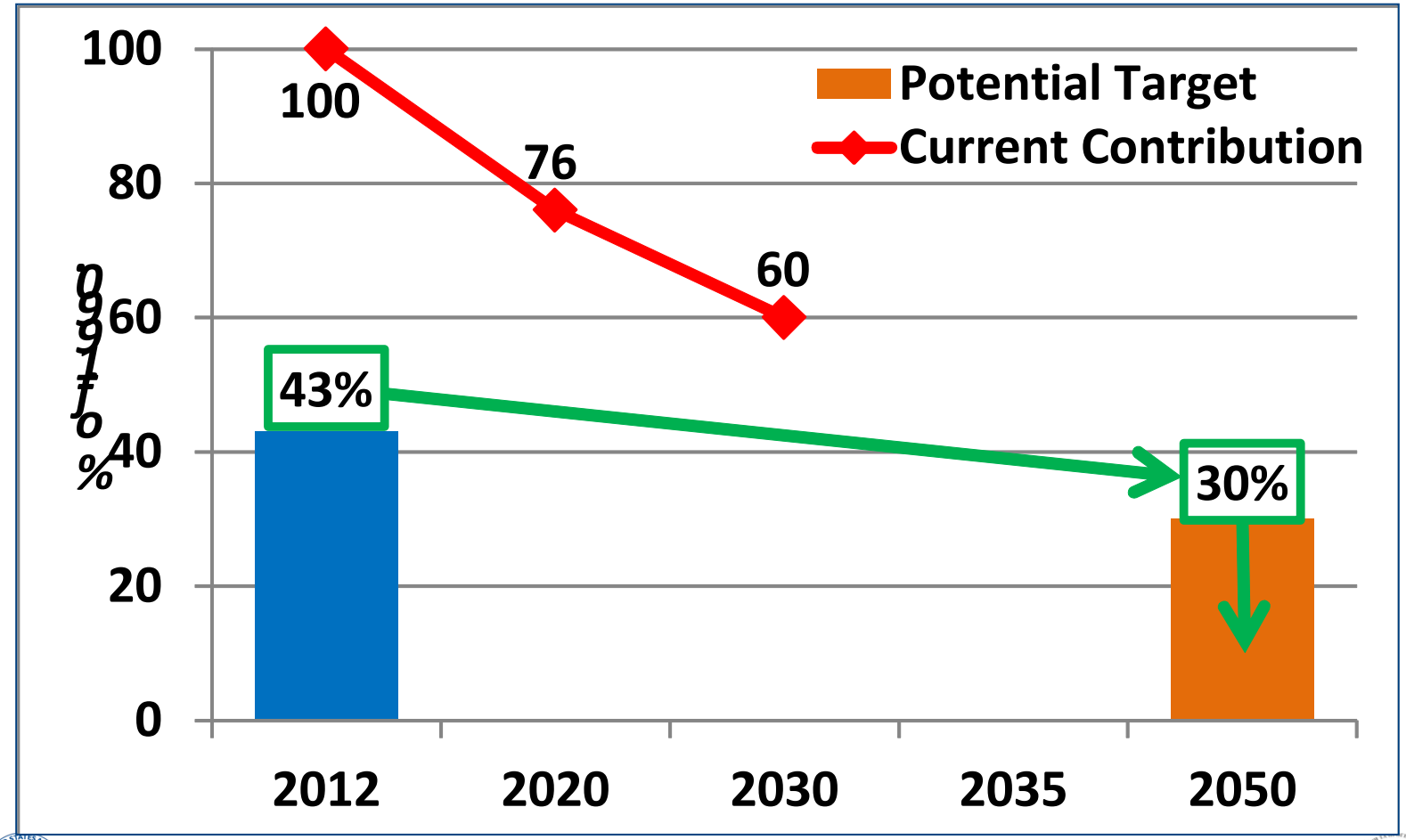
1	• Formation of Technical Working Groups	√
2	• Formation of the Master-Catalog of Policies and Measures by Sectors	√
3	• Expert Rating Policies and Measures by Criteria	√
4	• Formation of the Master-Catalog by Cross-Sector Priorities	√
5	• Estimation of GHG Emissions Reduction (modelling)	
6	• Integrated Socio-Economic Impact Assessment (modelling)	
7	• Defining Key Targets of LEDS	
8	• Developing Policy Option Document for LEDS	
9	• Developing structure of LEDS	
10	• Presentation and public discussion of LEDS	

Priorities of Ukrainian LEDS

1. Energy Efficiency
2. Renewable Energy
3. Market and Institutions
4. Energy Upgrade and Innovation
5. Waste Management and Resource Recovery
6. CO_2 Absorption

Potential GHG-target for Ukrainian LEDS

Institute for Economics and Forecasting proposed target for Ukrainian LEDS – GHG Emission will not exceed 30% of 1990 GHG emissions level in 2050.



Modelling Tools

TIMES-Ukraine Energy and Environmental Optimization Model[1]

General Equilibrium Macroeconomic Model with expanded energy block[2]

WASP4 Electric Power Sector Optimization Model

TIMES-Ukraine Energy and Environmental Optimization Model describes all the energy flows in the country on the aggregated level, production to the end consumer, as well as energy resources import and export. It allows for research of various energy saving case scenarios in Ukraine, and optimization of the energy balance in the long-term perspective.

WASP4 Electric Power Sector Optimization Model allows detailed and quality presentation of its work in more details taking into account the technical and economic features of electric power plants and electricity transmission lines, as well as allows evaluating the reliability of the forecasted structure of the power generating facilities.

The Computable General Equilibrium (CGE) is used for the purpose of evaluation of the Ukraine's energetic development case scenarios economic and social results, as well as for the purpose to improve the energy balance optimization economic policy.

[1] Podolets P.Z., Diachuk O.A. Strategic planning in the fuel and energy complex based on TIMES-Ukraine Model: scientific report NAS of Ukraine; Institute for Economics and Forecasting. — Kyiv, 2011. — 150 p. Available at: http://www.ief.org.ua/NaukDop(PodoletsDiachuk)2011.pdf

[2] Chepelev M.G. Modelling and economic impact assessment of changes in tariff policy in electricity sector of Ukraine // Economy and Forecasting. – Kyiv, 2014. – № 1. – P. 121–138. Available at: http://eip.org.ua/docs/EP_14_1_121_en.pdf.

Contacts

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Ukrainian INDC Implementation – Legislation

1. Development and adoption of *legislative acts* to implement NDC

- Draft **State Climate Policy Concept** now under approval process;

2. Long-term action plan for climate change mitigation and adaptation

- **National Low Emission Action Plan** under development
- Draft **National Adaptation Plan** developed in 2013 BUT never approved

3. Long-term actions aimed at reducing greenhouse gas emissions

- **Energy Strategy** needs to be revised
- **National Renewable Energy and Energy Efficiency Action Plans** - covers time period till 2020

4. Policy measures aimed at increasing absorption of greenhouse gases

- Strategic legal document on **Forestry and Agriculture Development**

5. **Low Emission Development Strategy** now under develop process