



Energy Sector of Ukraine — the stage of important transformations

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Energy in action

DTEK

Global World's Trends



DIGITAL TECHNOLOGIES



GROWTH OF CONSUMER'S ROLE



ACTIVE RES DEVELOPMENT



ENERGY EFFICIENCY



Global Trends



- Distributed generation will be introduced. The share of households participating in the energy market will make 50% of the EU population by 2030. Their market share will be 20%.
- Smart grids, smart meters, smart homes are provided.
- Energy markets function within the framework of direct agreements and exchange.

- Consumers are entitled/able to change a supplier.
- Electronic invoices' share in the EU is more than 70%.
- Smart meters' level of penetration in the EU is 77% (100% in certain areas).



- Depreciation of electrical grids and generation equipment is about 80%.
- New large projects have a long-time history (KHNPP Units 3/4, KHPSPP and DHPSP) and their expediency is questionable.
- Market liberalization has not started, the law No. 663 on a new market is not complied with and a new law "got stuck" in the Parliament...

- The most of consumers are stuck to regional generation companies.
- Electronic invoices' share is not above 10%.
- Only up to 15% of consumers have dual-zone meters.

Global Trends



- Iceland gets almost 100% of energy from RES.
- Long-term objective is 50% of RES in the EU energy balance.
- Sweden and the Netherlands will forbid the sale of ICE cars in 2025.

- 1/3 of investments in the energy sector will be channeled into energy efficiency by 2040.
- The EU aims to reduce the GDP energy intensity by 30% by 2030.
- Many new houses are self-sufficient in terms energy and heating.

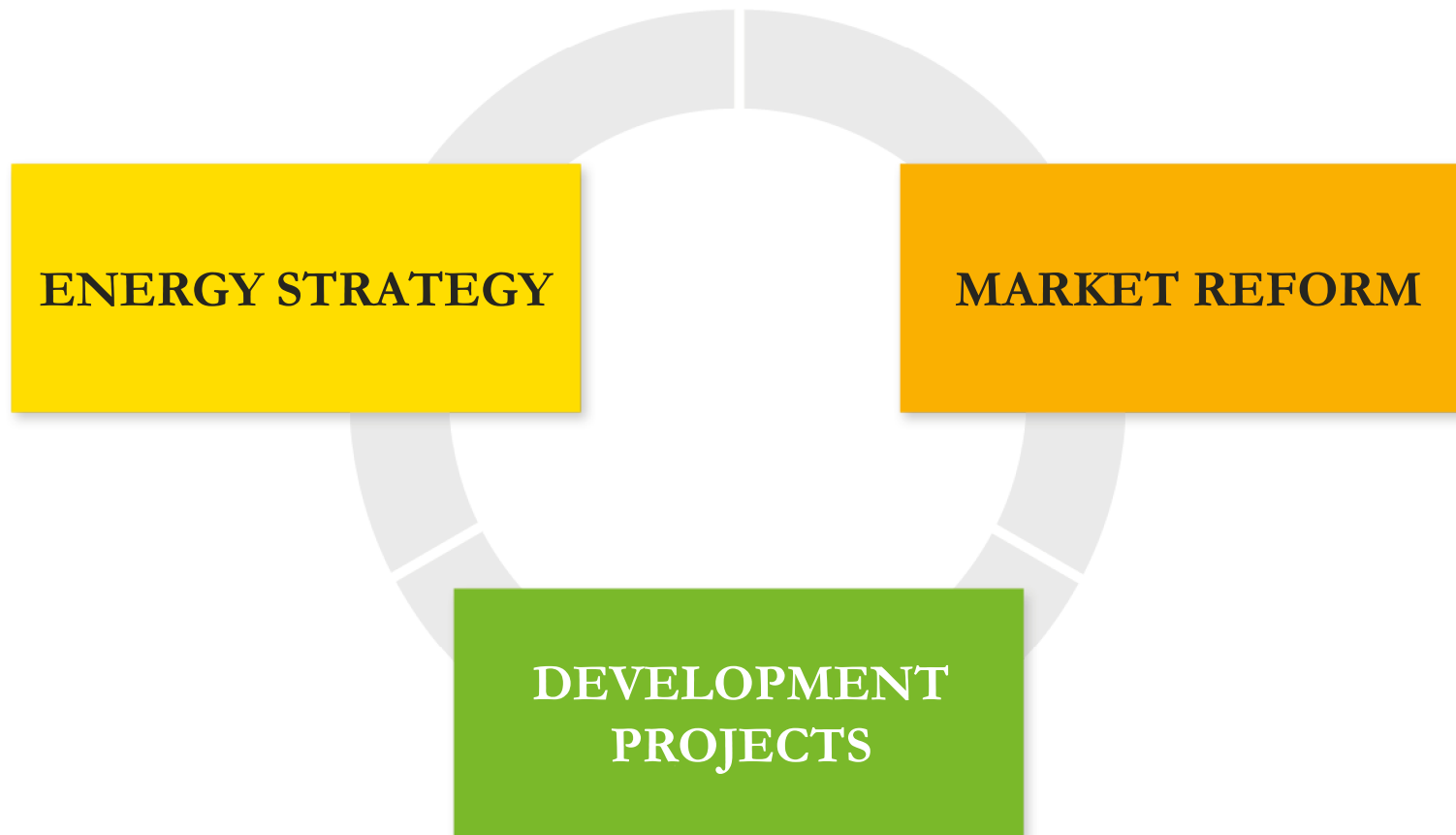


- RES share in the energy balance of Ukraine is less than 2%.
- Average time of new RES connection is 1.5–2 years. *
- Electric cars' share in the overall volume of vehicles is about 0.02%.

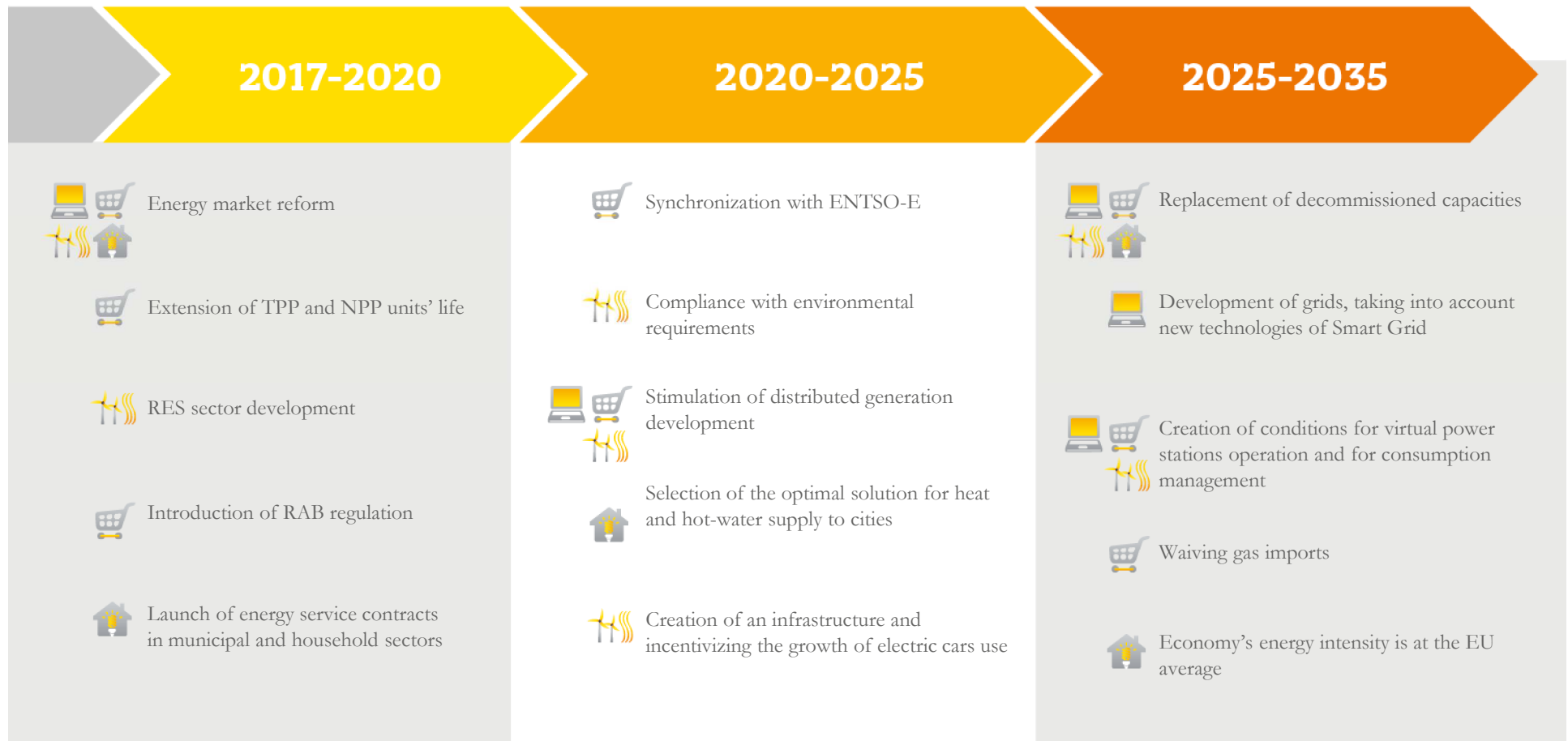
- The GDP energy intensity of Ukraine is 3-4 times more than in the EU.
- There is no legal framework for energy service contracts.
- Due to inefficiency, Ukraine loses €11 billion every year.



The Basis for Future Changes

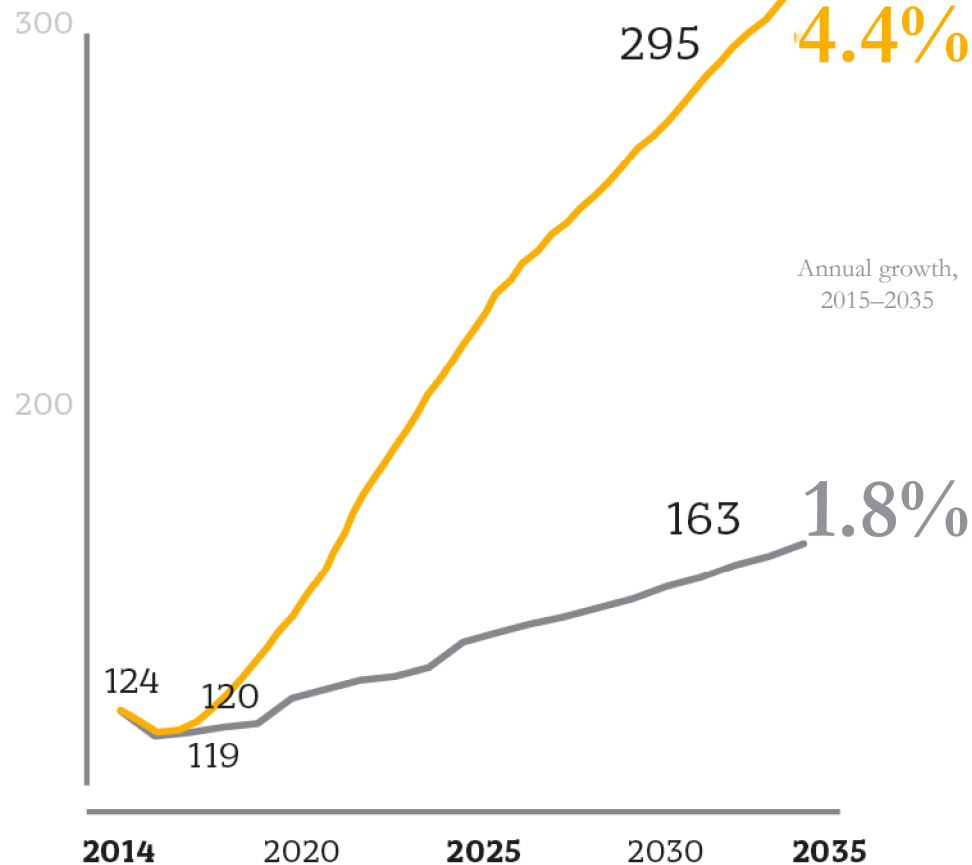


The key initiatives of the energy strategy of Ukraine must meet and follow the global trends in the industry



Modernization of the energy sector may be the driver of economic growth

Electricity consumption forecast in Ukraine, billion KWh



Optimistic scenario

Ukraine has to be ready for substantial growth of energy consumption and take this possibility into account in the energy strategy. Annual GDP growth may be at 6%, which corresponds to historical GDR growth for the previous 14 years.

Moreover, the energy sector may be the driver of economic development due to the following factors:

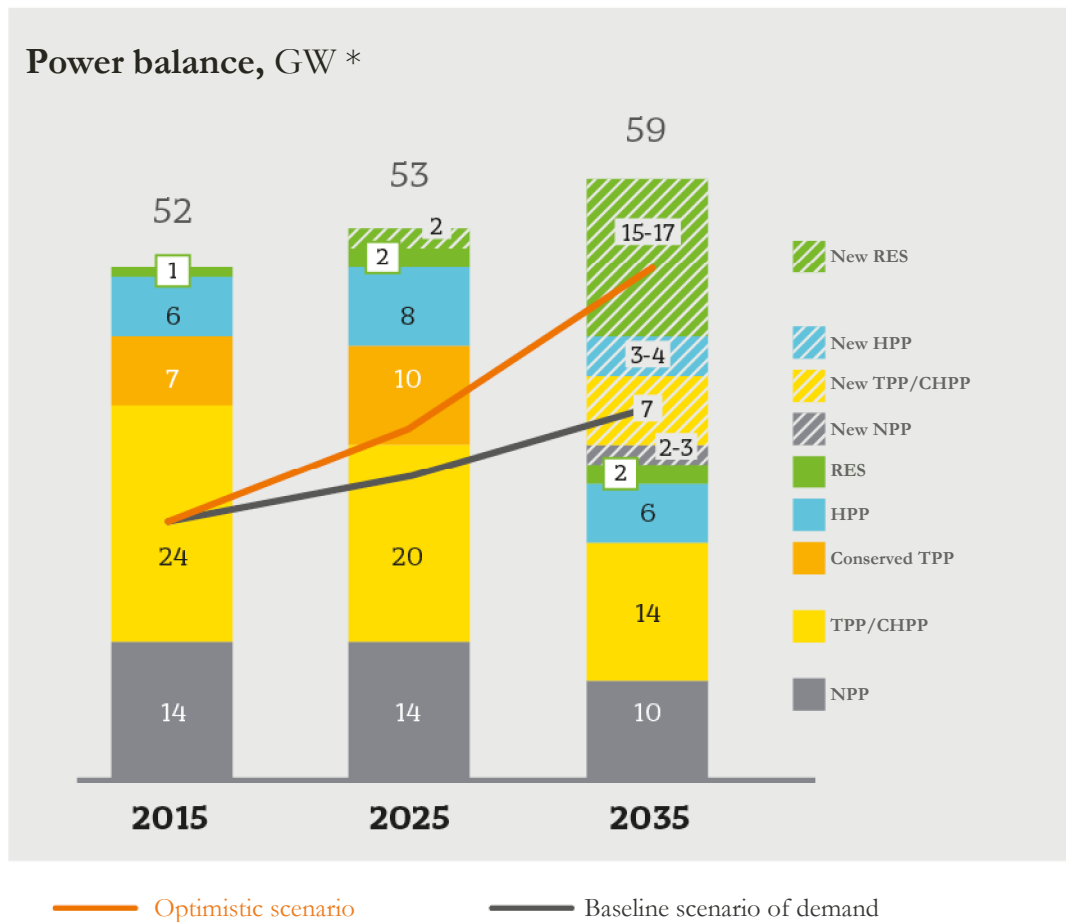
- Replacement of obsolete centralized heat and hot-water supply systems with individual heating
- Extension of electric cars' share
- Decentralized co-generation based on biofuel, development of distributed generation.

Baseline scenario — draft Energy strategy

Annual GDP growth is 4% (according to IHS and MEDT forecasts), including the following factors:

- Growth of metallurgical sector by +3.8%
- Decline in chemical sector by -4% per year
- Growth of domestic household by +2.4% per year
- Growth of other sectors by +4.1% per year.

Energy strategy: the key role is reserved for RES



NPP will be the base capacity for the country by 2030 with the 50% share of the market. It is important to keep in mind that the diversification of nuclear fuel supplies is needed.

Until 2030, the role of coal generation in the balance will remain significant (25–30%), which will require the import of about 30 million tons of coal per year. Domestic coal production at competitive prices remains to be the important component of Ukrainian energy security.

RES share in the power balance may reach 30% by 2035 due to the construction of new SPP and WPP, +15 GW.

By 2025, new capacities will not be demanded. This means that weighed decisions in respect of the construction of generation capacities must be made until 2020.

* According to draft Energy Strategy

Synchronization with ENTSO-E

Main drivers

- Sufficient generation capacities
- Competitive cost of Ukrainian electricity
- Availability of export infrastructure
- Expected growth of electricity price on the European market
- Moderate growth of consumption in Europe is forecast
- Expected lack of electricity in Germany after NPP closure (2022)

Key benefits

- Full use of generation capacities
- Opportunity to develop exports and diversify imports
- Control over own UES and its frequency
- Improvement of the system's quality standards
- Coordination of incumbents' actions aimed at further development

~0.3 billion Euro *

Cumulative amount of investments
in ENTSO-E

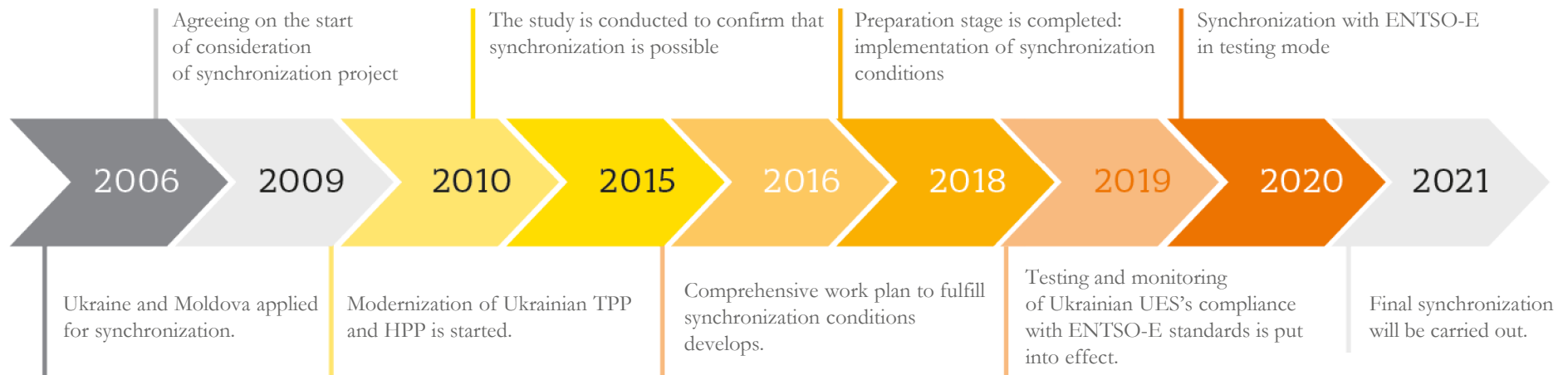
7–10 TWh/year

Potential volume of electricity exports
by 2025

15–25 TWh/year *

Potential volume of electricity exports
by 2035

Timed action plan for synchronization*



* According to additional materials to draft Energy Strategy of Ukraine up to 2035, figures 32, 33 and 34

The energy strategy of Ukraine has planned the actions on energy market reform by 2020

Forecast date of publication and entry into force of the Law 4493

EXISTING WEM

2017

2018

2019

2020

FREE MARKET

Reorganization of the market

- Market rules
- Day ahead market and intraday market rules
- Overload management rules and procedure for allocation of cross-border connection capacity
- Retail market rules

The date of a new market introduction is determined by CMU (not later than 01.07.2019).

There is an alternative date — not later than 30 months from the date the law takes effect.

Transition period

Introduction of the transition period (NPP and HPP will finance increased RES tariffs) will be provided.

There is an alternative — NPP and HPP will prevent the growth of tariffs for households.

DTEK is a driver of qualitative changes in the industry

PROJECTS

DTEK IS READY TO CARRY OUT THE FOLLOWING STRATEGY



DIGITAL TECHNOLOGIES

Billing system ERP system



To be a leader in the implementation of digital technologies in the energy sector.

GROWTH OF CONSUMER'S ROLE

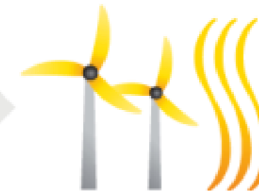
Multizone metering. Personal account



To be the best choice for our clients in competitive market conditions.

ACTIVE RES DEVELOPMENT

Primorskaya WPP, Trifonovskaya SPP



To increase the share of RES in the capacities structure.

ENERGY EFFICIENCY

DTEK ESCO Energy management



To actively develop energy efficiency activity in order to reduce the energy intensity of GDP.

An aerial photograph of a wind farm in a rural landscape during sunset. The foreground features a large white wind turbine with three blades, one of which is prominently visible with red and white stripes. The landscape is a patchwork of green and yellow fields, with a road and a small white building near the base of the turbine. In the background, several other wind turbines are visible, and the sun is setting on the horizon, casting a warm, golden glow over the scene. The sky is a mix of orange, yellow, and light blue.

Energy sector: is it the
driver or the anchor of
Ukrainian economy?