State Agency on Energy Efficiency and Energy Saving of Ukraine

Core Topic 2: EEAPs and monitoring - Ukrainian case

Ihor HOROVYKH,

Deputy Head of Strategic Development Department

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National Energy Policy Planning under implementation of Energy Community acquis

Strategy "Ukraine-2020" (as of 12 Jan.2015)
is a precondition and a framework for EE target setting

-20% in energy intensity
measured by IEA methodology

National Renewable Energy Action Plan

National Energy Efficiency Action Plan
(According to ESD provisions!)

approved by

Government Resolutions

As of Oct.1, 2014 № 902-p

As of Nov. 25, 2015 № 1228-p

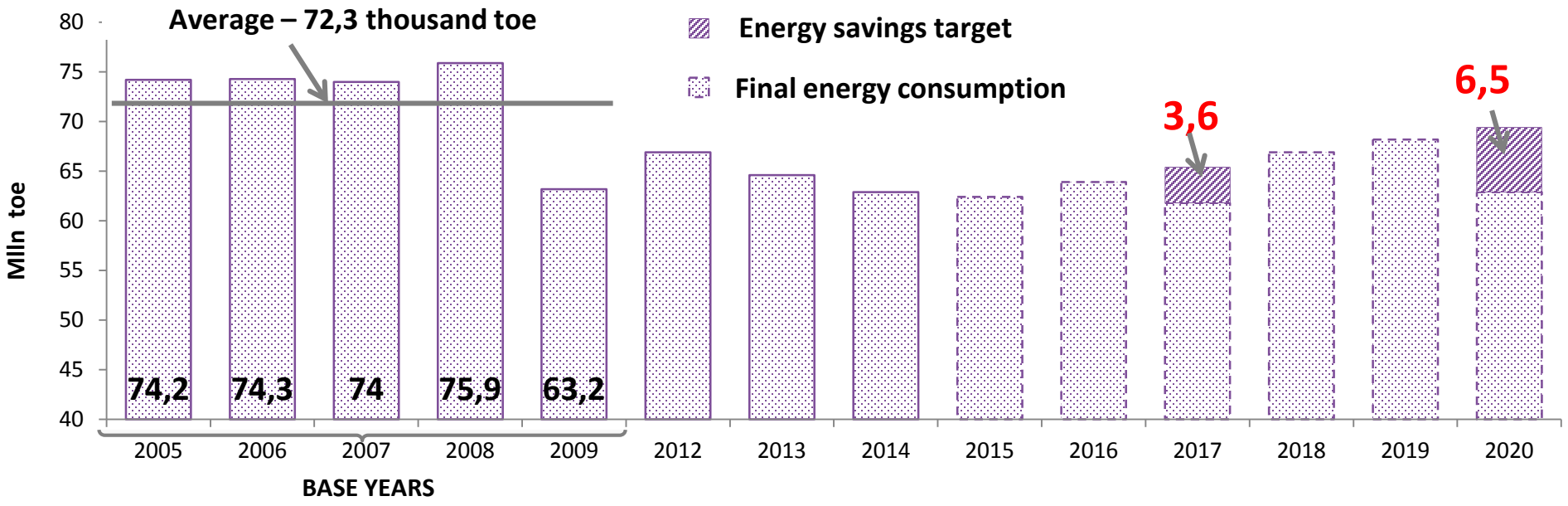
National Indicative Target

TIMES-Ukraine model was used

NEEAP targets

reduction (total target) of final energy consumption by 9% in 2020 (-6.5 mln. toe)

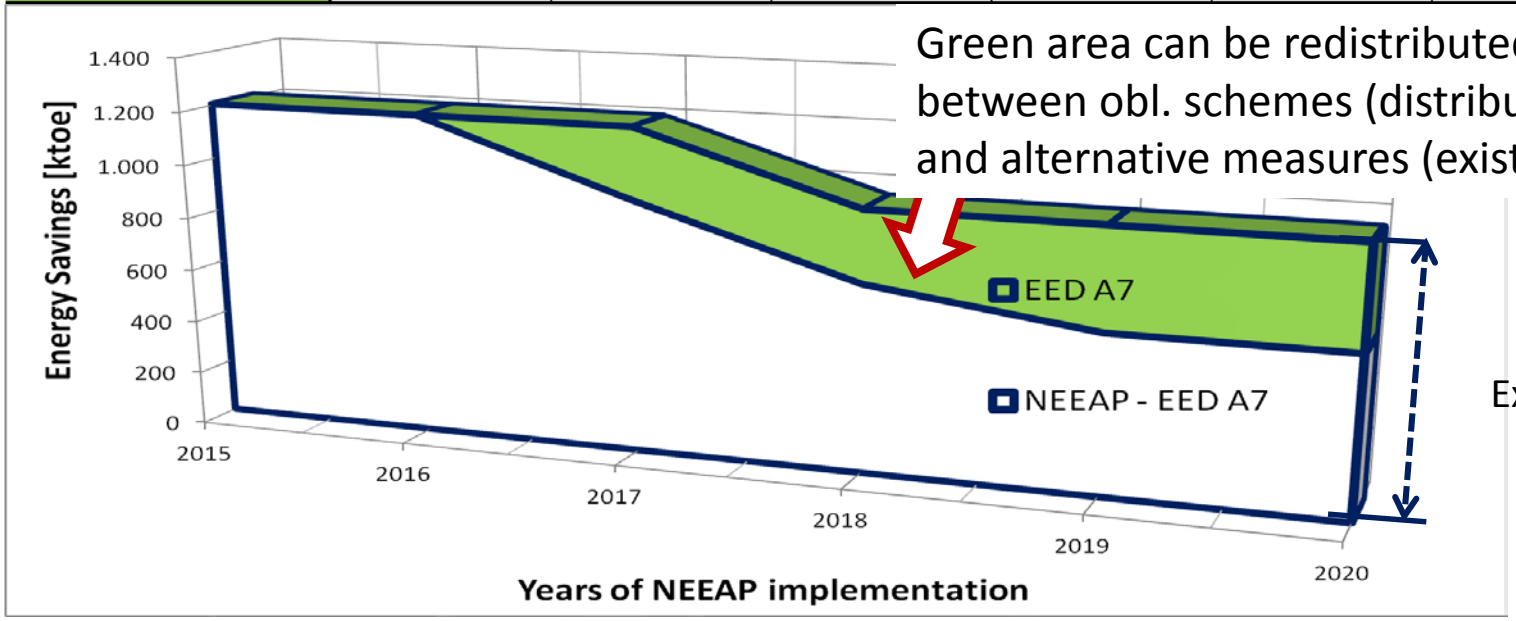
intermediate energy savings target of 5% in 2017 (-3,6 mln. toe)



EED Art.7 contribution in NEEAP target

ECS experts estimations in 2015

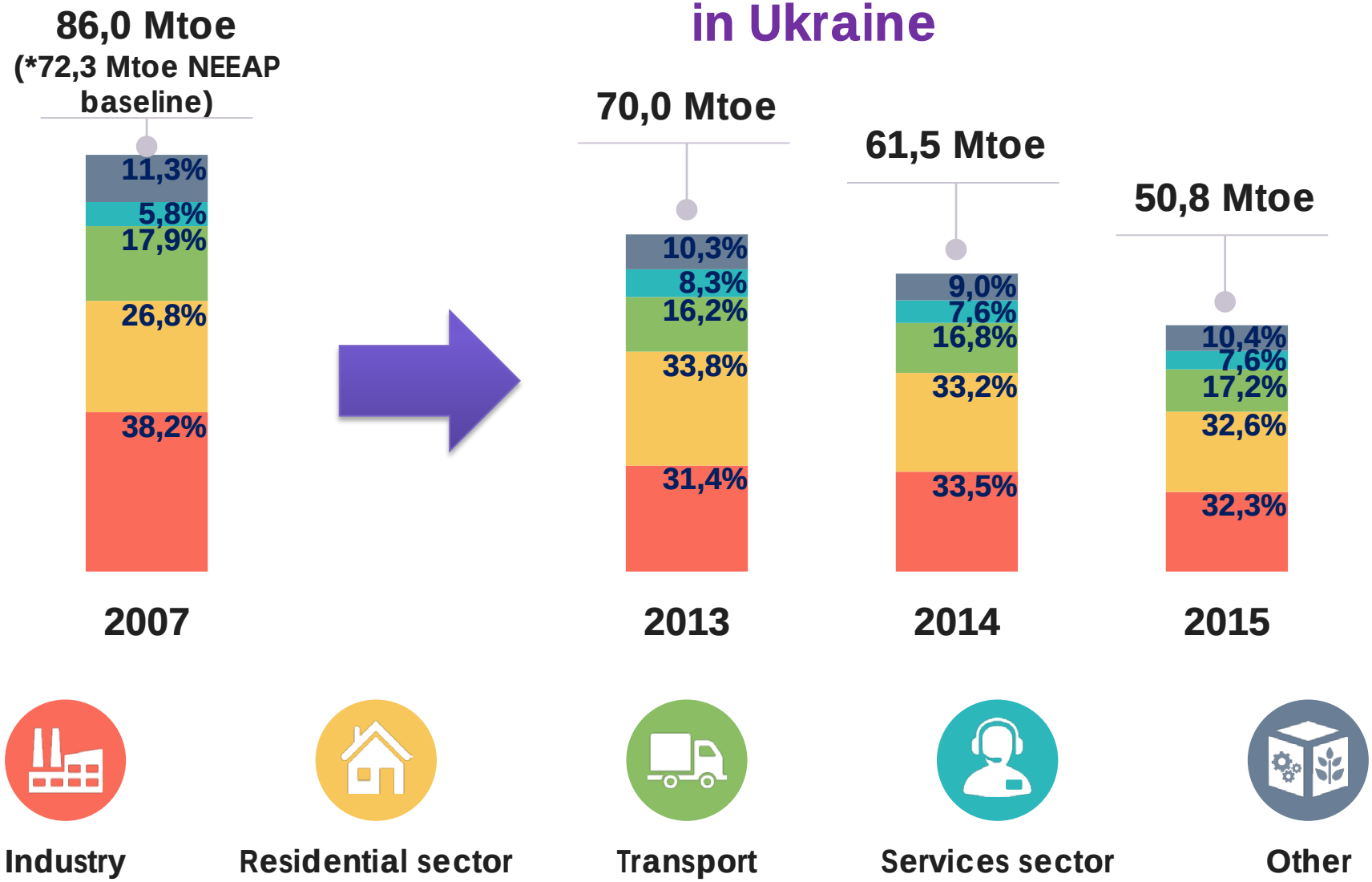
UKRAINE	Targets for EED A7 set according to paragraph 2 (0,5% 2y, 0,7% 2y)					
Savings per year [ktoe]	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
NEEAP	1.204	1.204	1.204	961	961	961
EED A7	0	0	267	267	373	373
% of A7 in NEEAP	0%	0%	22%	28%	39%	39%



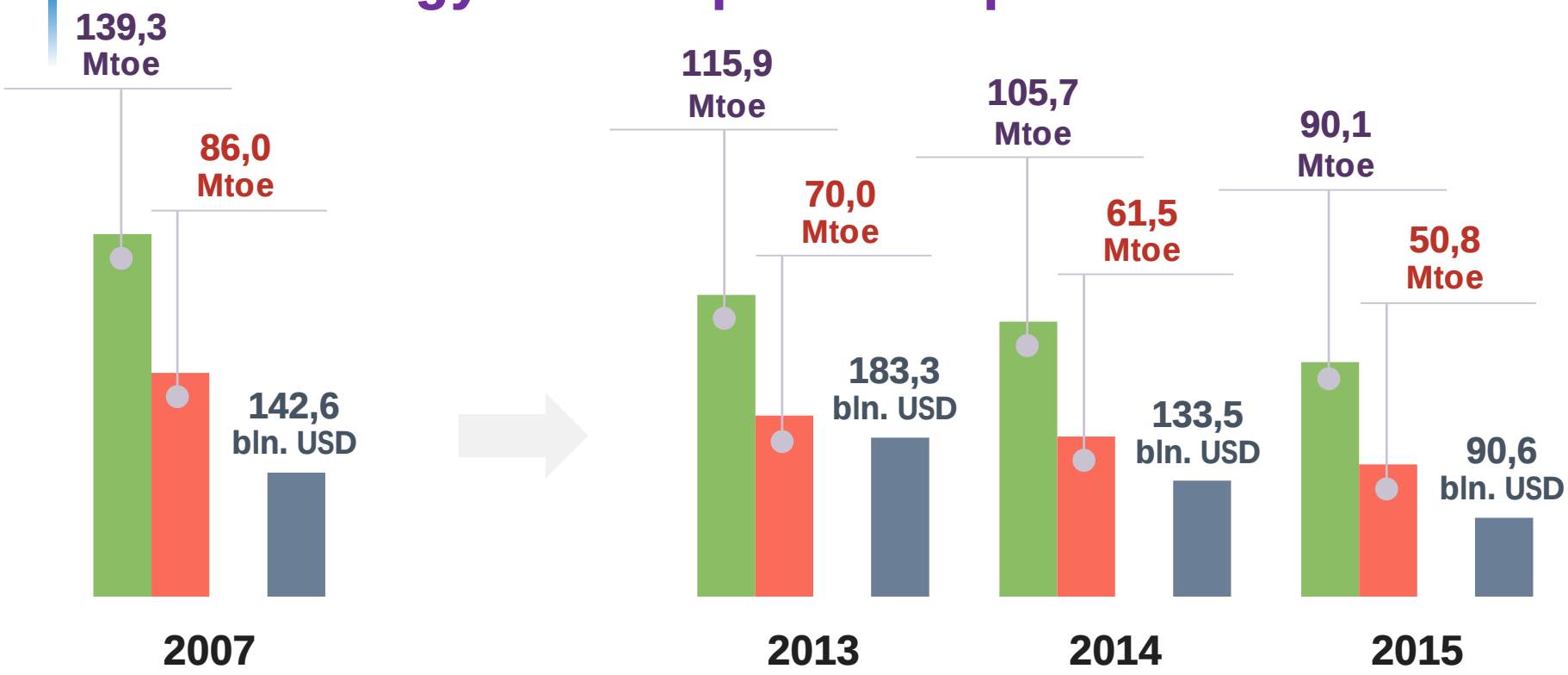
Green area can be redistributed between obl. schemes (distributors) and alternative measures (existing!)

Existing NEEAP targets

Structure of Final Energy Consumption (FEC) in Ukraine



Dynamics of total primary energy supply and final energy consumption compared to GDP trend

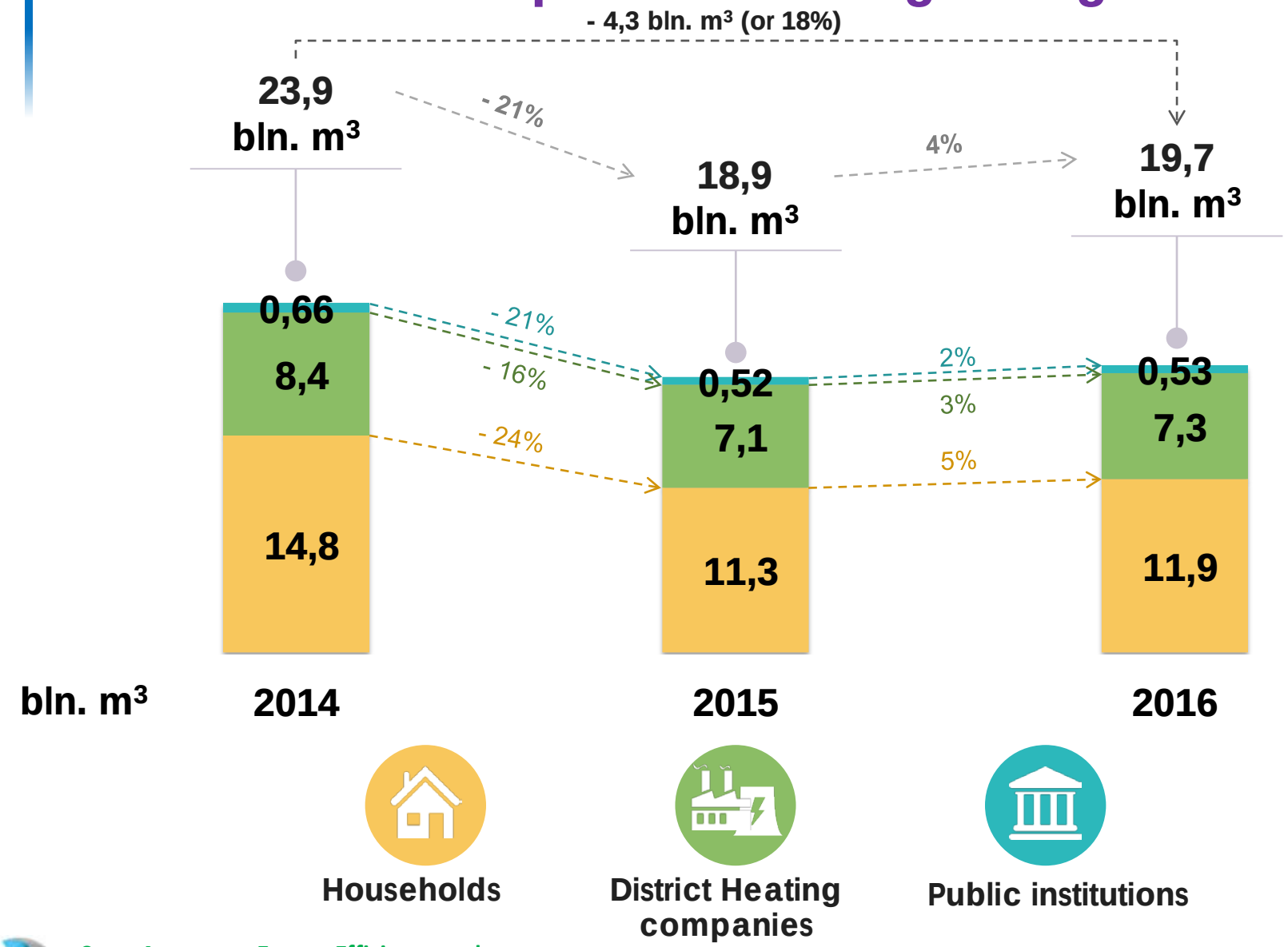


TPES

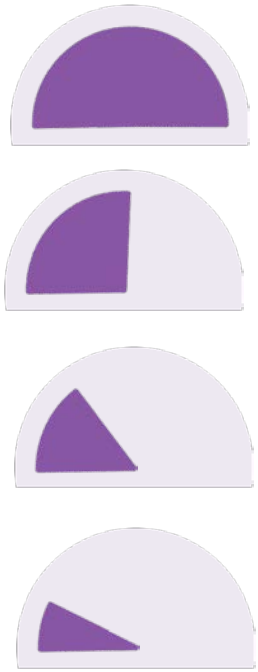
FEC

GDP, World Bank data, (current US$)

Gas consumption for heating during 2014-2016



National Indicative Targets Allocated to 4 Main Sectors



3226 ktoe	(50%)	Residential Sector
1610 ktoe	(25%)	Industry (+Agriculture)
1041 ktoe	(16%)	Services
624 ktoe	(9%)	Transport

Energy Savings Measures under NEEAP

Residential	Industry
✓thermal modernization of buildings, financial support for households and creation of Energy Efficiency Fund; ✓100% metering and billing; ✓energy audits and certification schemes; ✓energy labeling; ✓adaptation of building regulations, building codes and standards according to the requirements of the European legislation etc.	✓implementation of energy efficiency measures incl. via EPC; ✓energy audit and energy management systems; ✓energy labelling; ✓eco-design; ✓adoption of incentive tariff (RAB-regulation); ✓unbundling of natural monopolies in the heat supply etc.
Services	**Transport**
✓thermal modernization of public buildings with involvement of energy service companies (energy performance contracts); ✓implementation of energy monitoring and energy management; ✓energy efficiency criteria in public procurement procedures; ✓Review of building codes and standards etc.	✓Optimizing the structure of passenger and freight traffic in cities; ✓Adaptation of fuel standards and its technologies of use to European standards; ✓Public and private transport fleet renovation; ✓Promotion and supporting of bicycles and conducting Car-free days etc.

The most important horizontal measure - **conducting of awareness campaigns in EE**

Verification of state incentive programme for households

Results of 2014-2016

1164,94 mln. UAH of budget expenditures = **107,22 min. m^3** of natural gas saved **(597,2 mln. UAH)** → **≈ 0,1 m^3 of gas saved / 1 UAH of expenditures**

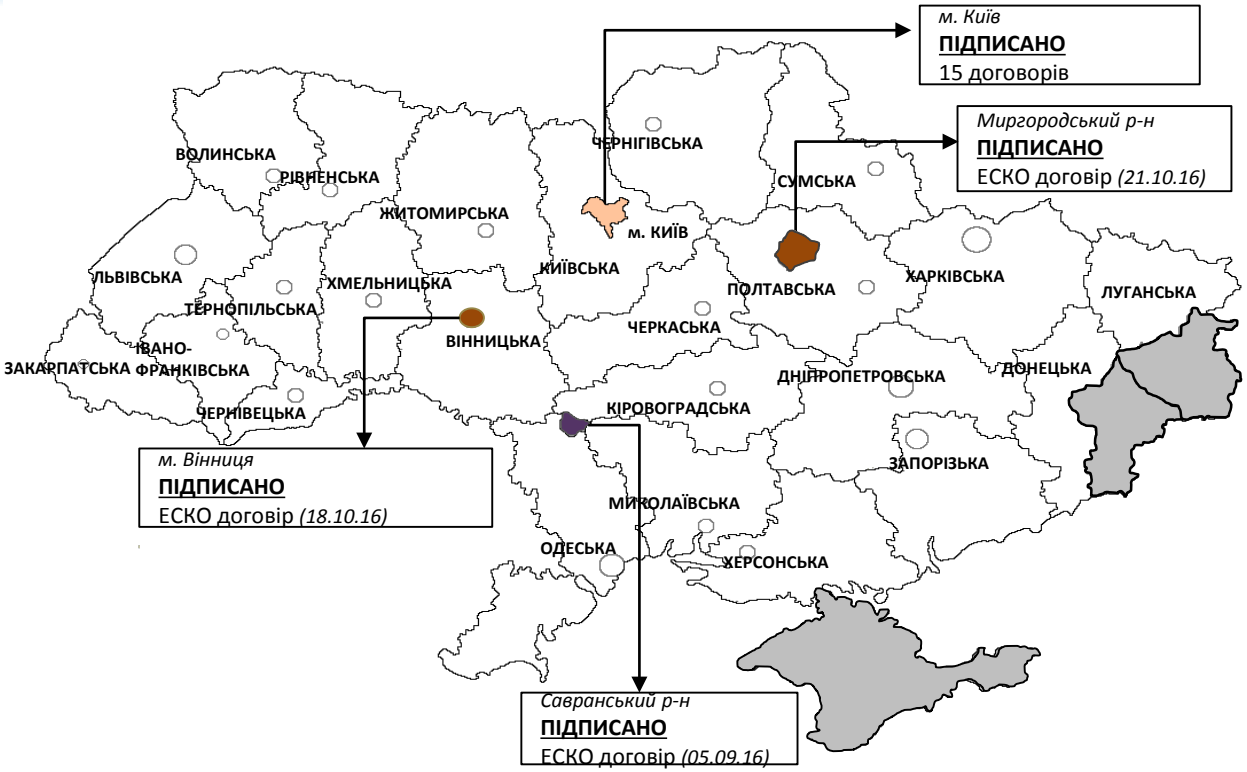
Multiplicative effect of various scenarios of Program funding in 2017

	Volume of gas saved per year
CURRENT FUNDING: 432,44 mln. UAH	**43,27 mln. m^3**
SCENARIO 1: 832,44 mln. UAH	**75,34 mln. m^3**
SCENARIO 2: 1 232,44 mln. UAH	**107,41 mln. m^3**

! CONCLUSION:

Saving 1 bln. m^3 of gas per year (worth 200 mln. USD or 5.4 bln. UAH) by implementing the government Program ("warm loans") requires 10 bln. UAH (or 40 mln. USD) of budget funding (one-time).

First 19 Energy Performance Contracts for public buildings thermal modernization were concluded in 2016



27 tender procedures

19 contracts

Total price of EPCs is 7 mln UAH (or 250k USD)

If the draft Law #4549 is adopted it is foreseen to conclude 10 times more EPCs in 2017

Measures for industry should be expanded

Mechanism of tax incentives for reducing energy consumption and emissions of CO_2 for industry

1. Gradual increase of carbon tax rate

2. Accumulation of tax revenues in the Fund (state budget)

3. Financing energy efficiency projects in industry from the Fund (co-financing)

4. Verification of projects' results and regular reporting on energy consumption

Important issue: compliance with new State Support legislation

Data for quantification of indicator under Annex XIV (EED) is available

in the year before last (year X - 2)

Available data and indicator collected by State Statistic Office and some other involved Ministries

(i) primary energy consumption;
(ii) total final energy consumption;
(iii) final energy consumption by sector (industry; transport; households; services)
(iv) gross value added by sector (industry; services)
(v) disposable income of households;
(vi) gross domestic product (GDP);
(vii) electricity generation from thermal power generation;
(viii) electricity generation from combined heat and power;
(ix) heat generation from thermal power generation;
(x) heat generation from combined heat and power plants, including industrial waste heat;
(xi) fuel input for thermal power generation;
(xii) passenger kilometres (pkm), if available;
(xiii) tonne kilometres (tkm), if available;
(xiv) combined transport kilometres (pkm + tkm), in case (xii) and (xiii) are not available;
(xv) population

Collection and estimation of EE indicators within Ukrainian-Danish Energy Center (1)

Residential

Residential Energy Efficiency Indicators

- Energy efficiency index
- Specific consumption by dwelling, by end uses and by equipment
- Specific emissions of CO2
- CO2 indicators

Residential end-uses

- Space heating
- Water heating
- Cooking
- Electrical appliances (Refrigerators, Freezers, Washing machine, Dish washing machine, TV)

Services & Agriculture

Services & Agriculture Energy Efficiency Indicators

- Energy intensity
- Electric intensity
- Specific consumption per employee, floor area
- CO2 emissions

Services & Agriculture Branches

- Hotels & Restaurants
- Health
- Education
- Administration
- Wholesale & retail trade
- Private offices
- Agriculture

Collection and estimation of EE indicators within Ukrainian-Danish Energy Center (2)

Industry

Industry Energy Efficiency Indicators

- Energy efficiency Index
- Energy intensity by branch
- Energy intensity at adjusted structure
- Specific consumption by intensive products (toe/ton)
- CO2 intensity by sector

Industry Branches

- Chemical industry (Primary metals, Steel)
- Non-ferrous
- Non-metallic mineral (Cement, Glass)
- Paper & Printing
- Food & beverages
- Textile
- Machinery & Fabricated metals
- Transport equipment
- Miscellaneous industries
- Wood
- Mining
- Construction

Transport

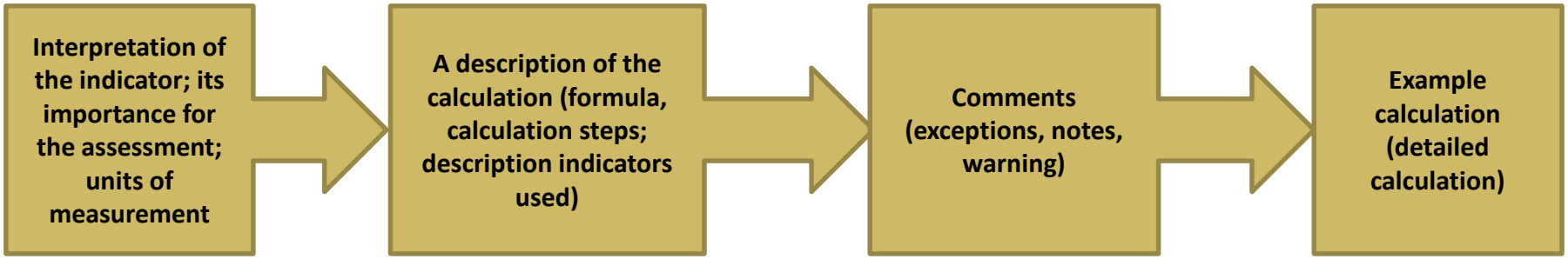
Transport Energy Efficiency Indicators

- Energy efficiency index
- Specific consumption by vehicle, in liters/100km
- Specific emissions of CO2 by mode and vehicle

Transport modes

- Road (Cars, Two-wheels, Bus, Trucks & light, vehicles, Light vehicles)
- Trucks
- Rail
- Water
- Air

Structure of calculation methodology



Example:

1. Indicator E - is ...

2. It is used to assess the ...

3. Measured in units of ...

4. The indicator is calculated in ... steps

5. To calculate the indicator are using the following data ....

6. Formula:

$$E = \sum_{i} C_{i,t} * \frac{I_{i,t-1}}{I_{i,t}}$$

where *C* – ...

I – ...

i – ...

t – ...

7. **Comments :**

If the value of indicator is ... then ....

The indicator can not be calculated if ....

If the data is ... then ....

etc.

8. Example of indicator calculation and detailed calculation algorithm

NEEAP does not apply to Energy Supply and Transmission (ESD provisions)

Draft Government Resolution on DH modernization is developed by MinRegion

Medium-term OBJECTIVES:

- Investment and innovation development of DH companies with simultaneous mass thermomodernization of buildings (40 - 50% of buildings)
- Reconstruction and modernization of DH systems at all stages of technological process, achieving Ukraine's average consumption of thermal energy in buildings not more than 80 - 60 kWh / m2 / year;
- Achieving the share of alternative energy sources in the overall balance of DH systems up to 30%;
- Transition to market conditions of operation for DH companies
- Development of competitive environment in the field of DH

Main legislative measures under NEEAP should be voted in Parliament at nearest "Energy Day"

Agenda for "Energy Day":

Law on Energy Efficiency in Buildings, #4541-д (EPBD implementation) – *1st reading*

Law on Metering in DH and WS, #4901 (EED implementation) – *2nd reading*

Law on Energy Efficiency Fund, #5598 (EED implementation) – *1st reading*

Law on e-procurement of EPCs for public buildings, #4549 (EED implementation) – *2nd reading*

NEEAP: actions for full compliance

What has already done?

NEEAP is adopted

Inter-Ministerial Coordination Group is established (SAEE is a Chair)

Regular reporting for the Government on NEEAP actions implementation

Verification of incentive programme for households

What to be done?

Amplification of delivery of legislative and non-legislative measures

Reporting on EE target within NEEAP and EED (incl. M&V)

Support from new international assistance projects (as GIZ)

Next Ukrainian NEEAP should be developed and approved till Apr. 2019

State Agency on Energy Efficiency and Energy Saving of Ukraine

Thank You for Your Attention

Ihor HOROVYKH

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