Latvia - as we are doing…

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Framework of CBA

Electricity market

- ✓ Open for all customer segments (except households) from 1 November 2012
- ✓ Nordpool in Latvia from 1 June 2013
- ✓ Fully open from 1 January 2015

Electricity market model

- One agreement
- One invoice
- One stop shop – customer services to be provided by retailer

Households

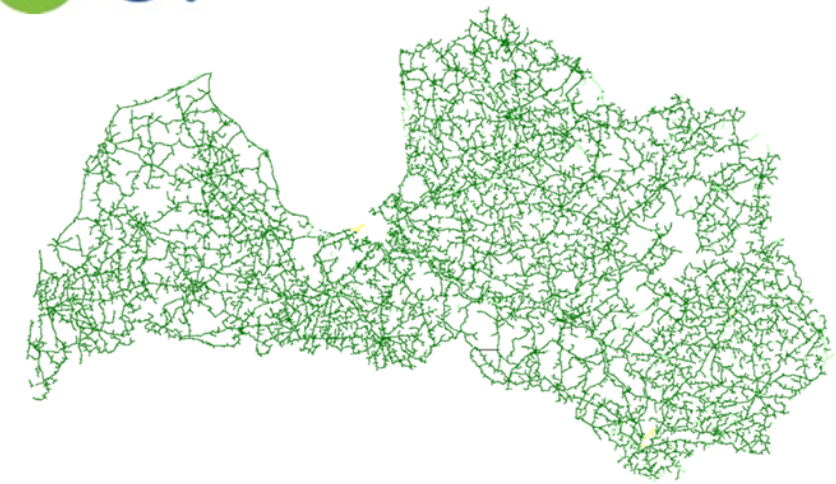
- Two agreements
- Two invoices
- Two independent customer services organizations

Business

Key facts about DSO

JSC Sadales Tikls

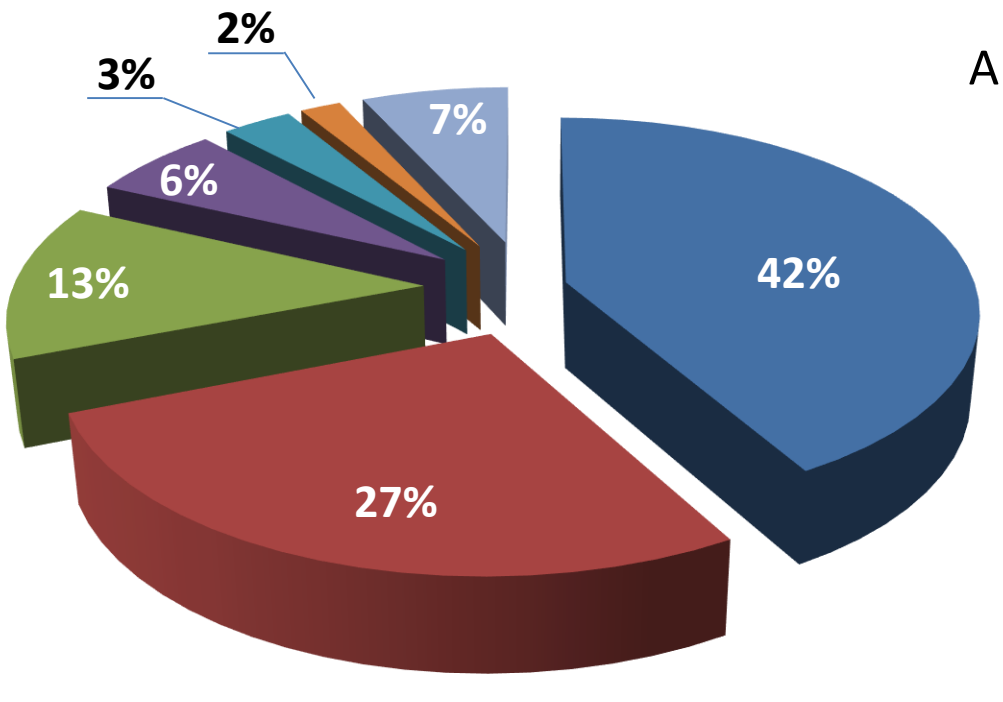
Supply of electricity to more than 1 million users of electricity - 99% of the country.



Total length of distribution networks is 94 701 km - more than twice the circumference of the Earth at the equator.

Overhead lines	**– 69 569 km**
Cable lines	**– 25 132 km**
Electrical power transformer substations (6-20/0,4 kV)	**– 26 052**
Number of Customers	**– 854 500**
Number of metering points	**– 1 125 400**

Electricity end consumption

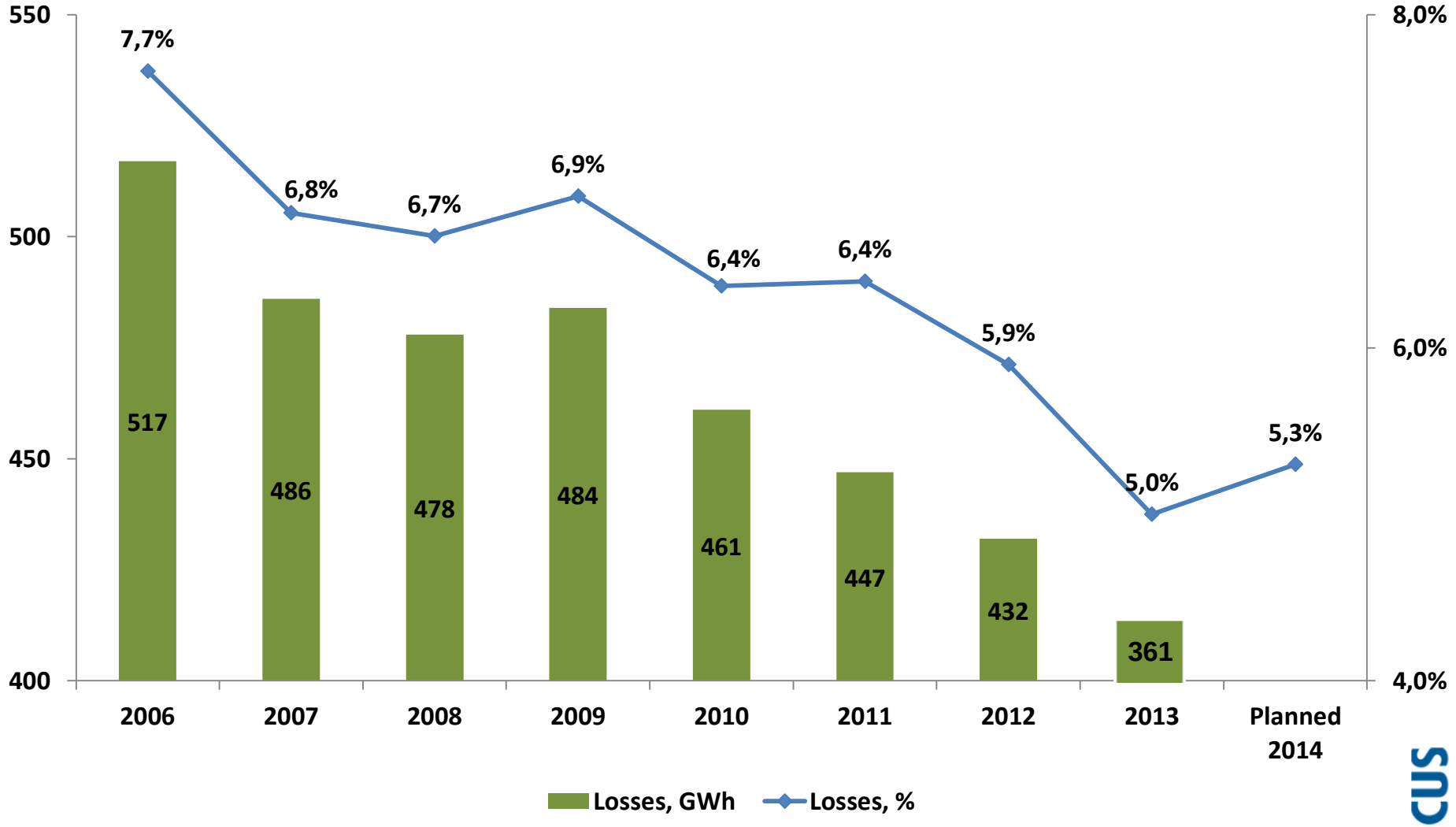


Customers: 3% business / 97% households

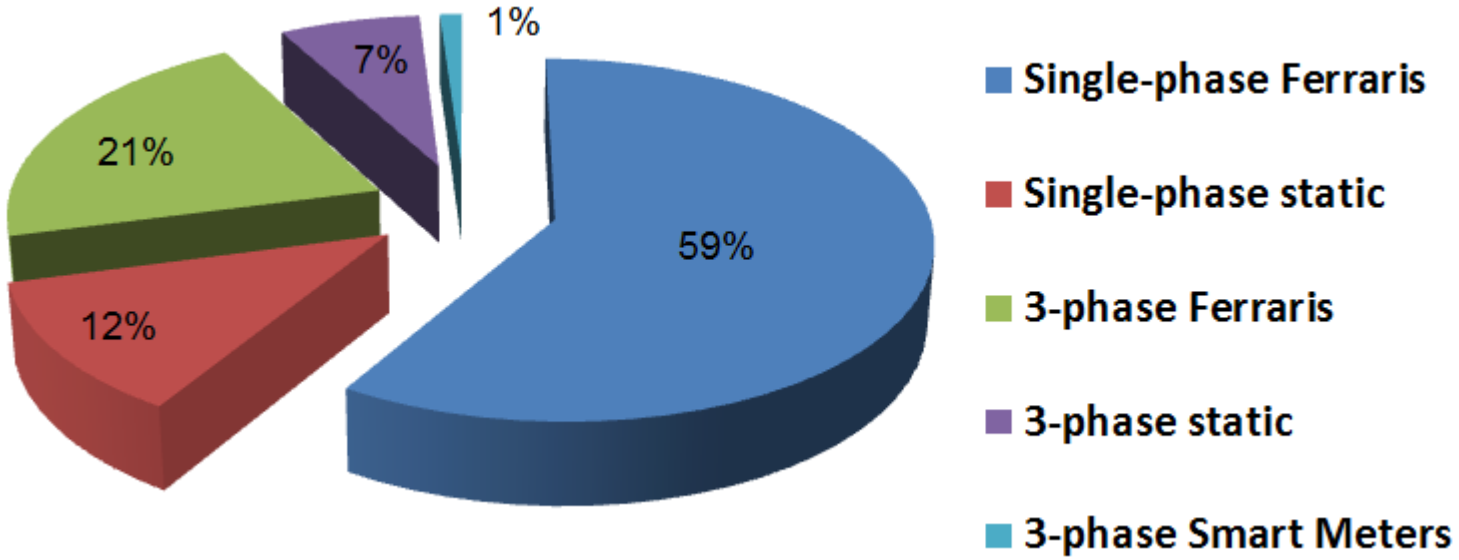
Consumption: 75% business / 25% households

Distributed electricity: 6 447 GWh (2013)

Losses of electricity



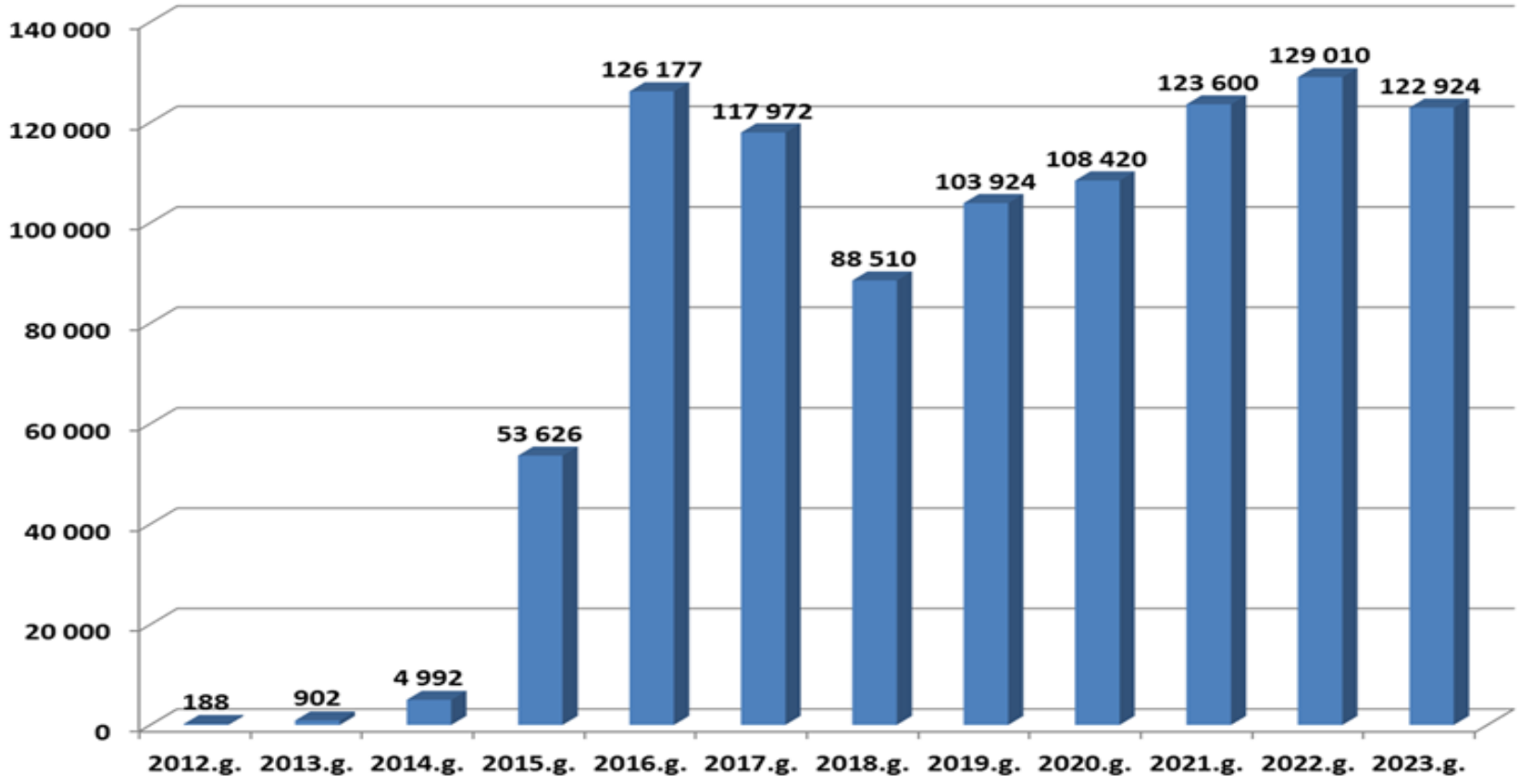
Electricity meters



More than 11,000 or 1% of all meters is connected to MDC/MDM system

53% of all energy delivered to customers are measured by those meters

Re-verification of meters



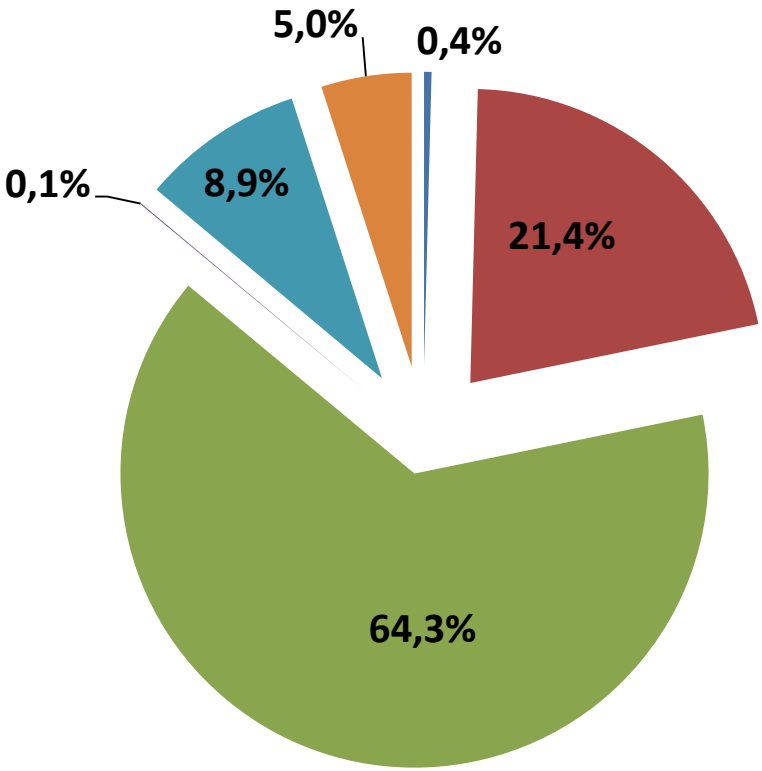
- ✓ Re-verification are costly
- ✓ Simple static meters are very cheap

Cost Benefit Analysis

Scenarios of Cost Benefit Analysis

Scenario	Smart meters, %	Number of smart meters	Finish of implementation	Notes
A	-	0	-	Base scenario (as usual)
B	100	1 099 578	2022	Full rollout. Communication - PLC
C	74	815 878	2022	Yearly consumption >50 kWh, first 3 years – customers with consumption more than 2500 kWh. PLC
D	89	974 163	2023	Accordingly re-verification schedule. Communication - PLC
E	23	250 495	2017	Only for customers with yearly consumption more than 2500 kWh. Communication - GSM/GPRS
F	23	250 495	2017	Only for customers with yearly consumption more than 2500 kWh. Communication - PLC

DSO benefits



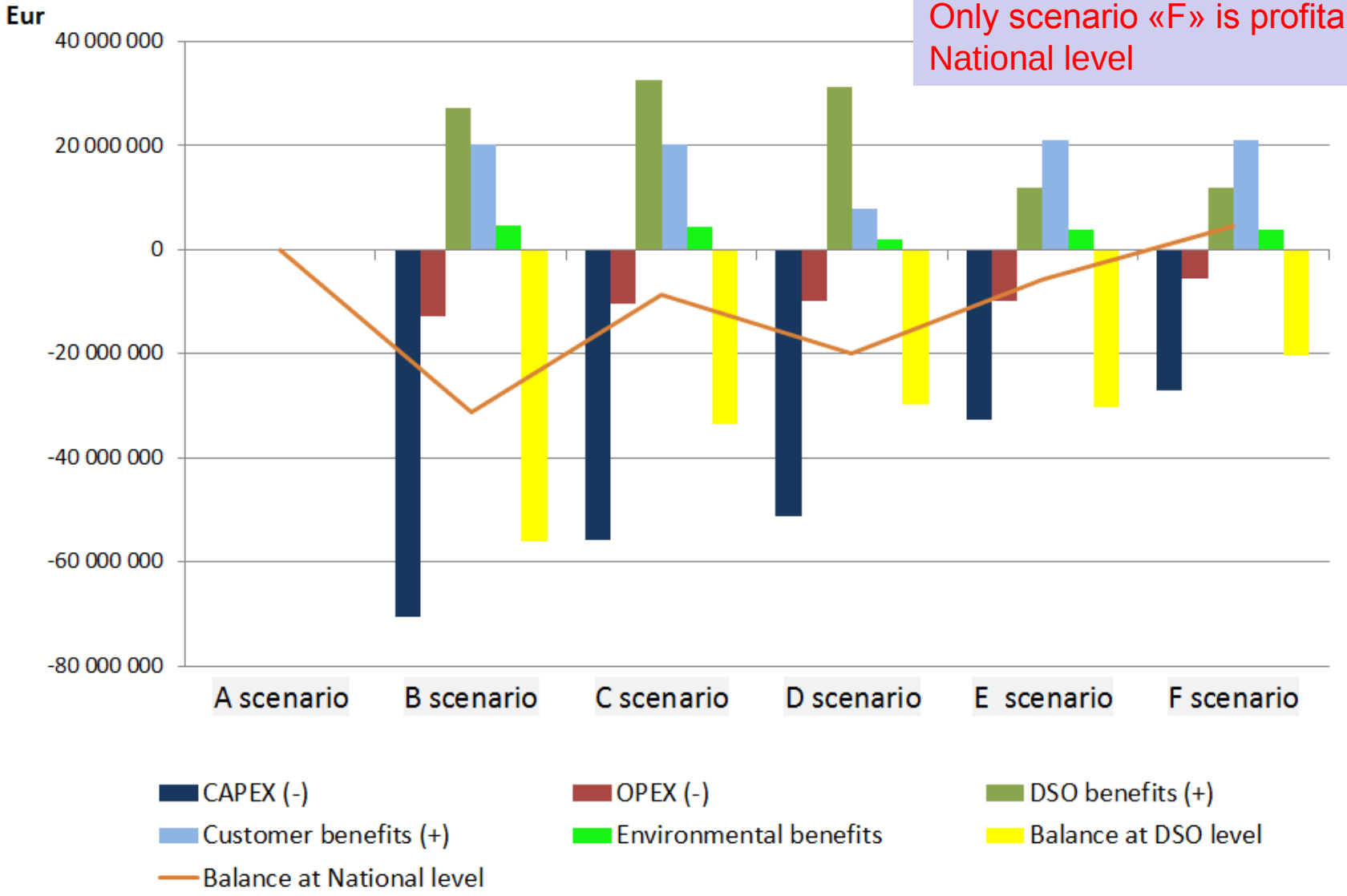
- Grid infrastructure theft reduction
- Reduction of electricity losses
- Reduction of labour expanses
- Reduction of SAIDI
- Reduction of disconnection costs (bad debtors)
- Reduction of costs for renovation of metering infrastructure

National benefits

- ✓ Energy savings of customers with annual energy consumption more than 2 500 kWh by 5%
- ✓ Reduction of Greenhouse gas emissions

Results of Cost Benefit Analysis

Only scenario «F» is profitable in National level



Conclusions

- ✓ Regulator and Stakeholders are passive
- ✓ No changes in National legislation
- ✓ No specific tasks for DSO

Next steps

DSO development plan

DSO Development Plan for next 10 years (2014-2023) include Smart Grid development in two main areas:

- ✓ Network automation. Remote control of electrical power transformer substation, remote reclousers, fault indicators ect.
- ✓ Implementation of Smart Metering System

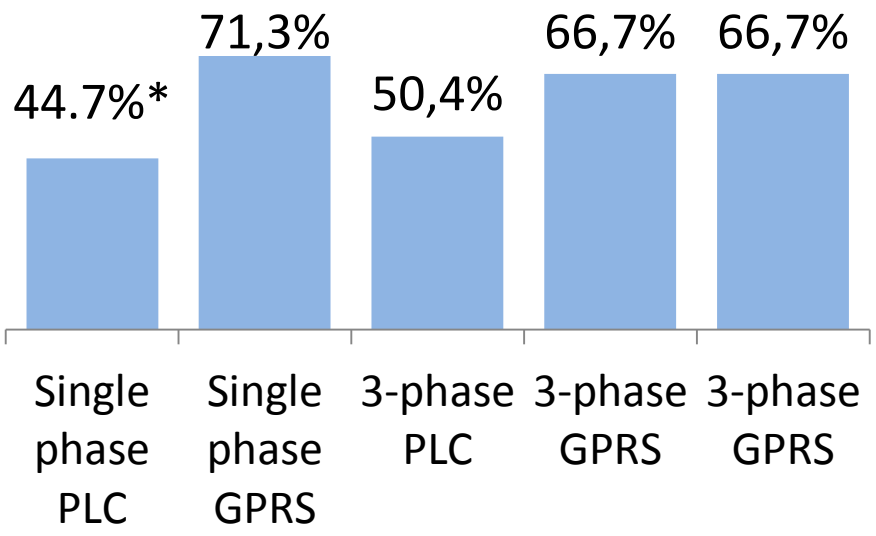
Smart meter implementation

Accordingly scenario of CBA

* First tender for smart meters

CBA reassessment (1)

Price drops for Smart meters

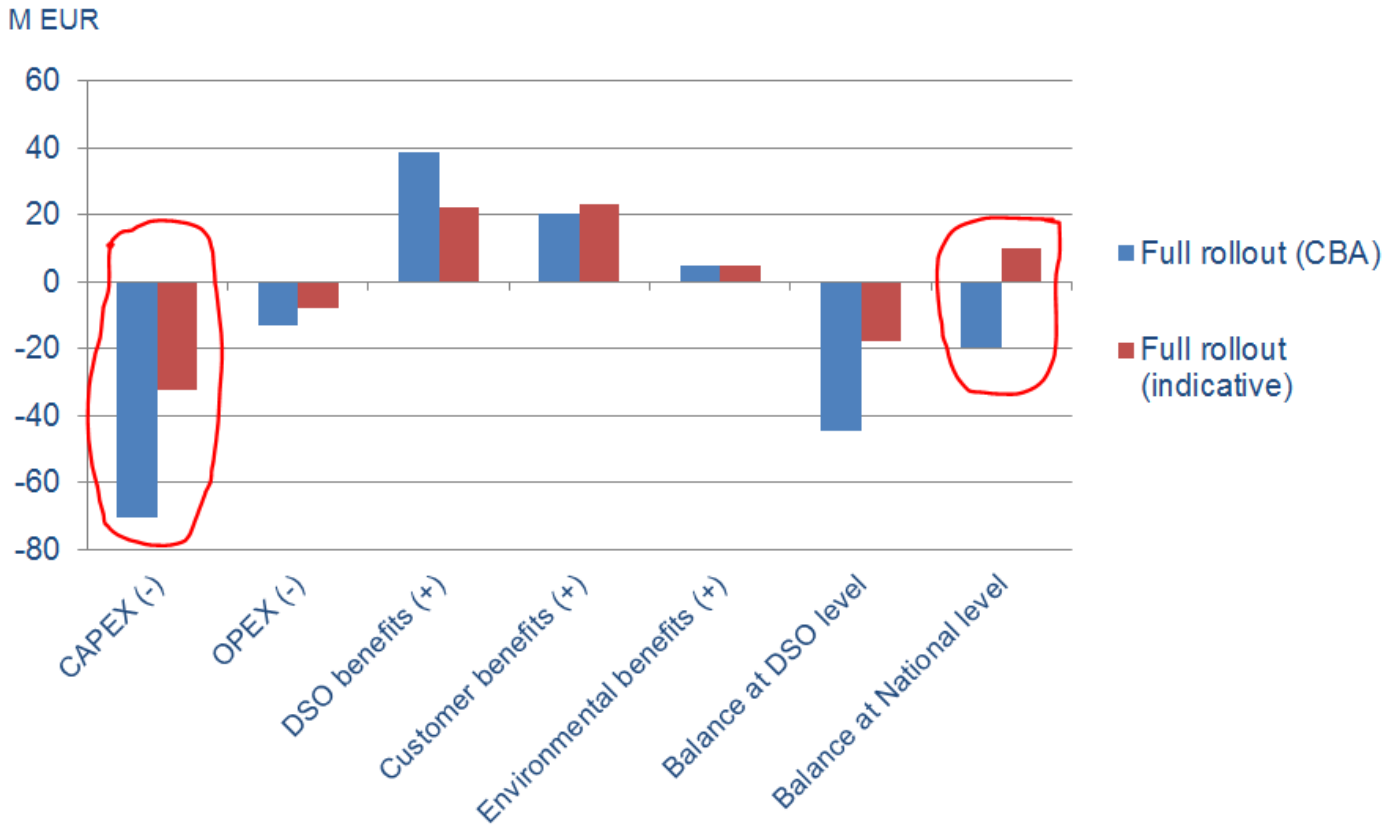


* Comparison between prices in CBA and last tender prices

- ✓ Single phase smart PLC meter costs around 38 EUR
- ✓ 3-phase smart PLC meter costs around 68 EUR
- ✓ PLC data concentrator costs around 250 EUR

CBA reassessment (2)

Results of CBA if reduce CAPEX for Smart meters*



* This is not officially approved results, only illustrative!

Benefits for Customers

1. Distance readings of consumption and automatic invoicing

2. Fast information about network faults

3. Actual information about electricity consumption and hourly load profiles.

4. Nets billing for micro generation

5. Different electricity tariff plans

Benefits for Retailers

1. Actual information about consumption – hourly load profiles

2. Customer portals, applications

3. New services (prepaid, e-mobility ect.)

4. Automatic billing

Benefits for DSO

DSO

1. Electricity data for market participants and automation of processes

2. Development of Smart Grid

3. Reduction of SAIDI in low voltage level

4. Optimization of control of electricity losses

5. Increasing efficiency and reducing the OPEX

Challenges

Smart meters:

- Rollout aligned with verification cycles & top consuming households
- Interoperability among vendor products (specifications, protocols etc.)
- PLC technology – G3 vs PRIME
- Data transmission between DCs and HES – alternatives to 3G/4G
- ‘disconnected’ meters

Balance meters:

- Technical solutions and functionality
- How exactly smart transformer substation should look like?

Thank you for your attention