

CONTRADICTIONS IN ELECTRIC POWER SECTOR DEVELOPMENT: UKRAINE VERSUS EU

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INTRODUCTION:

UKRAINE STRIVES TO INTEGRATE INTO THE EUROPEAN ENERGY SPACE AND



- is being a member of the Energy Community since 2010;
- implemented the pro-European model of the electricity market since the mid-2019;
- has been synchronized electric power system with the entire European one since Feb 24th 2022
- has become an observer member of ENTSO-E since Mar 16th 2022

23 June 2022 the European Council granted Ukraine the status of a candidate for accession to the European Union.

But the Ukrainian electric system suffered more than 250 strikes (BBC calculations on Mar, 4th 2023)

THE AIM AND METHODOLOGY OF THE RESEARCH

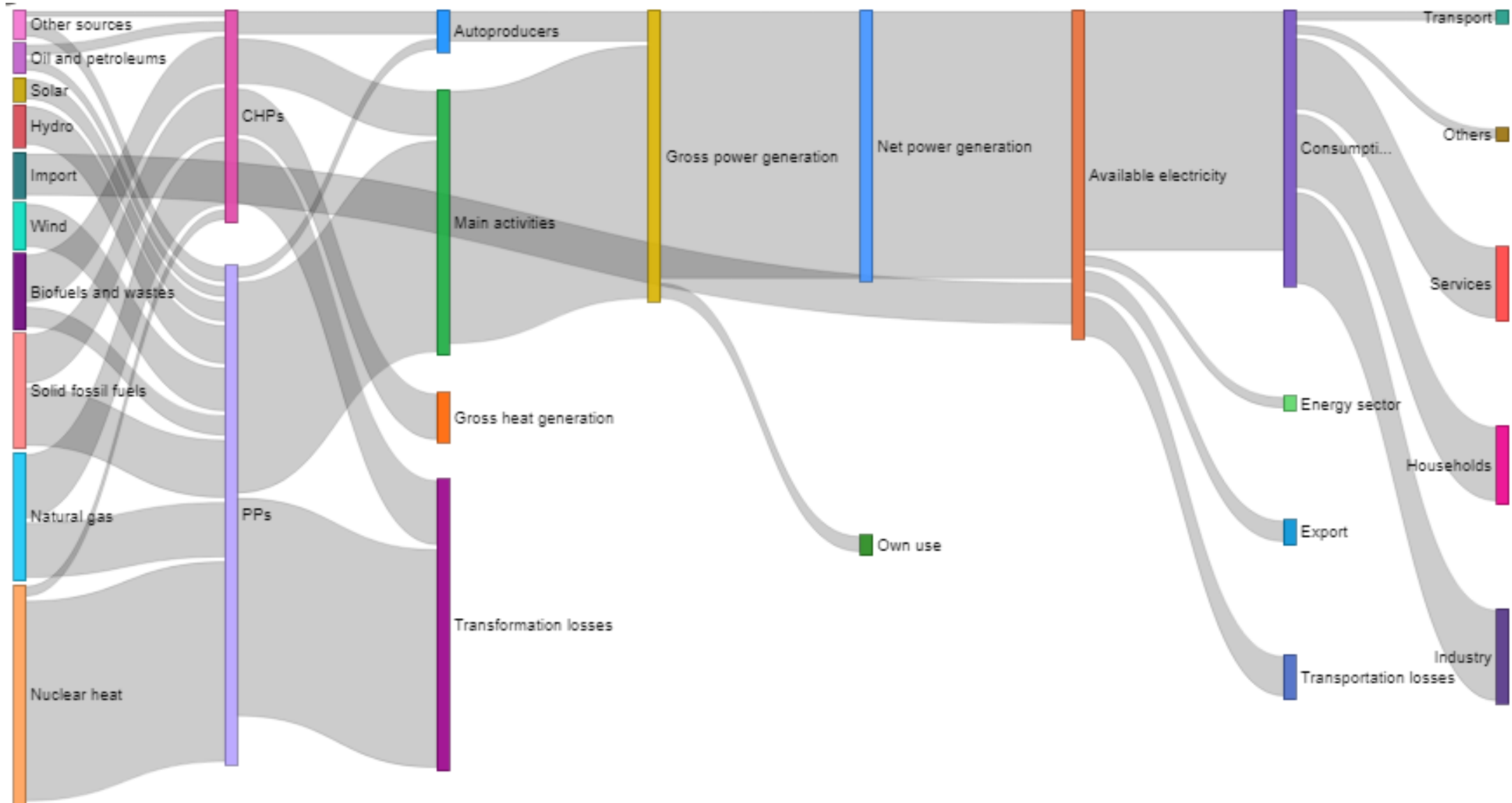
THE AIM OF THE RESEARCH IS TO DEVELOP METHODOLOGICAL SUPPORT FOR THE ANALYSIS OF INPUT-OUTPUT ELECTRICITY FLOWS AND COMPARE KEY TRENDS IN THE ELECTRIC POWER SECTOR DEVELOPMENT IN UKRAINE WITH THE EU COMMON ONES. ITS HYPOTHESIS IS FORMULATED AS FOLLOW: EXISTENCE OF SIGNIFICANT CONTRADICTIONS IN THE ELECTRIC POWER SECTOR DEVELOPMENT OF UKRAINE AND THE EU.

Table 1. Qualitative indicators of the electric power sector development.

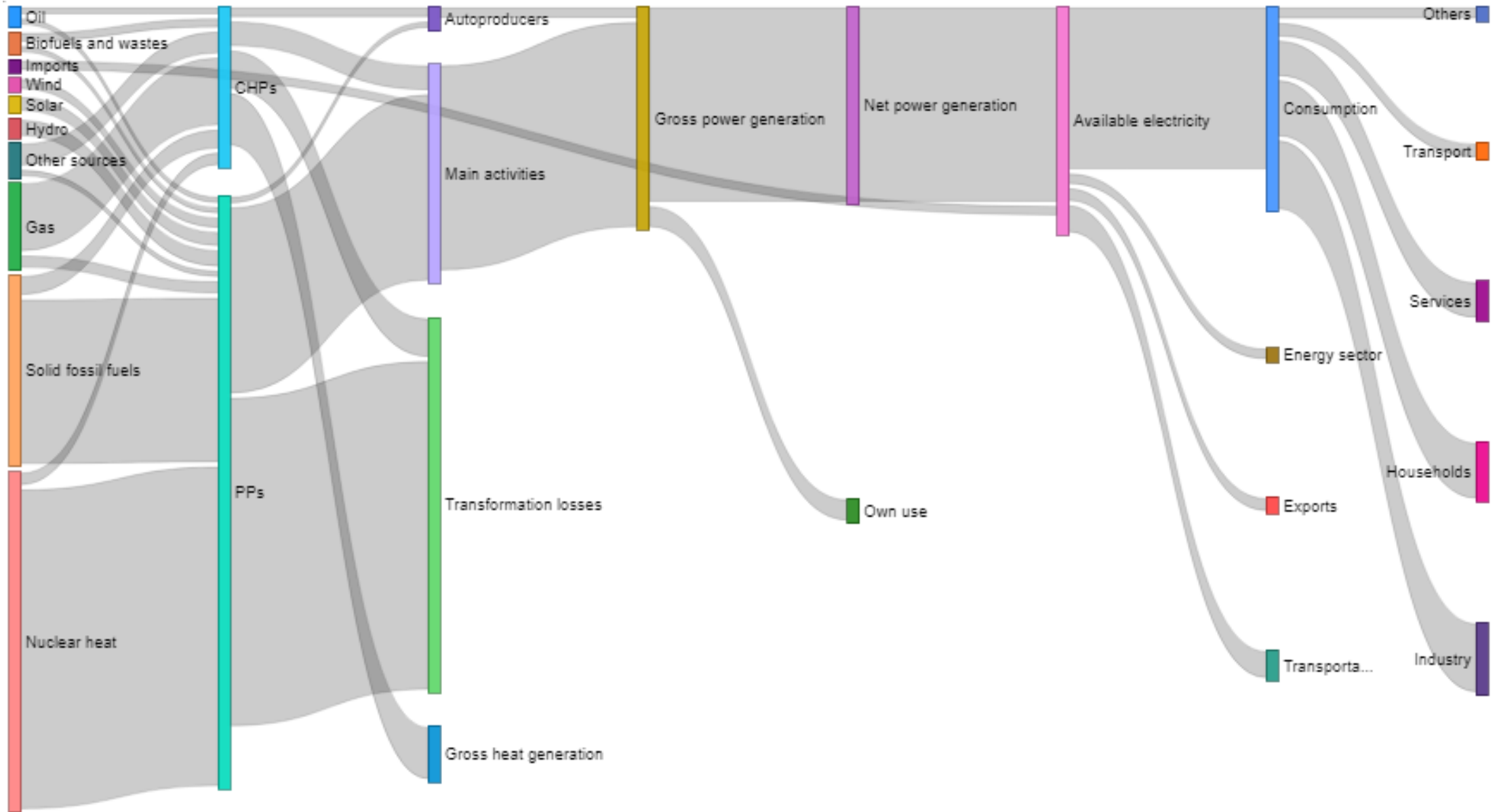
Group indicator	Indicator
Energy efficiency indicators	Energy efficiency of transformation by PPs
	Energy efficiency of transformation by CHPs
	Energy efficiency of generation
	Energy efficiency of transportation electricity
Structural indicators	General energy efficiency of electric power sector
	Share of RES in transformation inputs of electric power sector
	Share of OFF in transformation inputs of electric power sector
	Share of cogeneration in gross electricity generation
	Share of autoproducers in gross electricity generation
Security and Integration indicators	Share of commercial electricity consumption
	Share of non-commercial electricity consumption
	Self-sufficiency of electric power sector
	Export dependency of electric power sector
	Import dependency of electric power sector

Notes: RES – renewable energy sources; OFF – organic fossil fuels.

EU SANKEY CHART OF ELECTRICITY FLOWS IN 2020

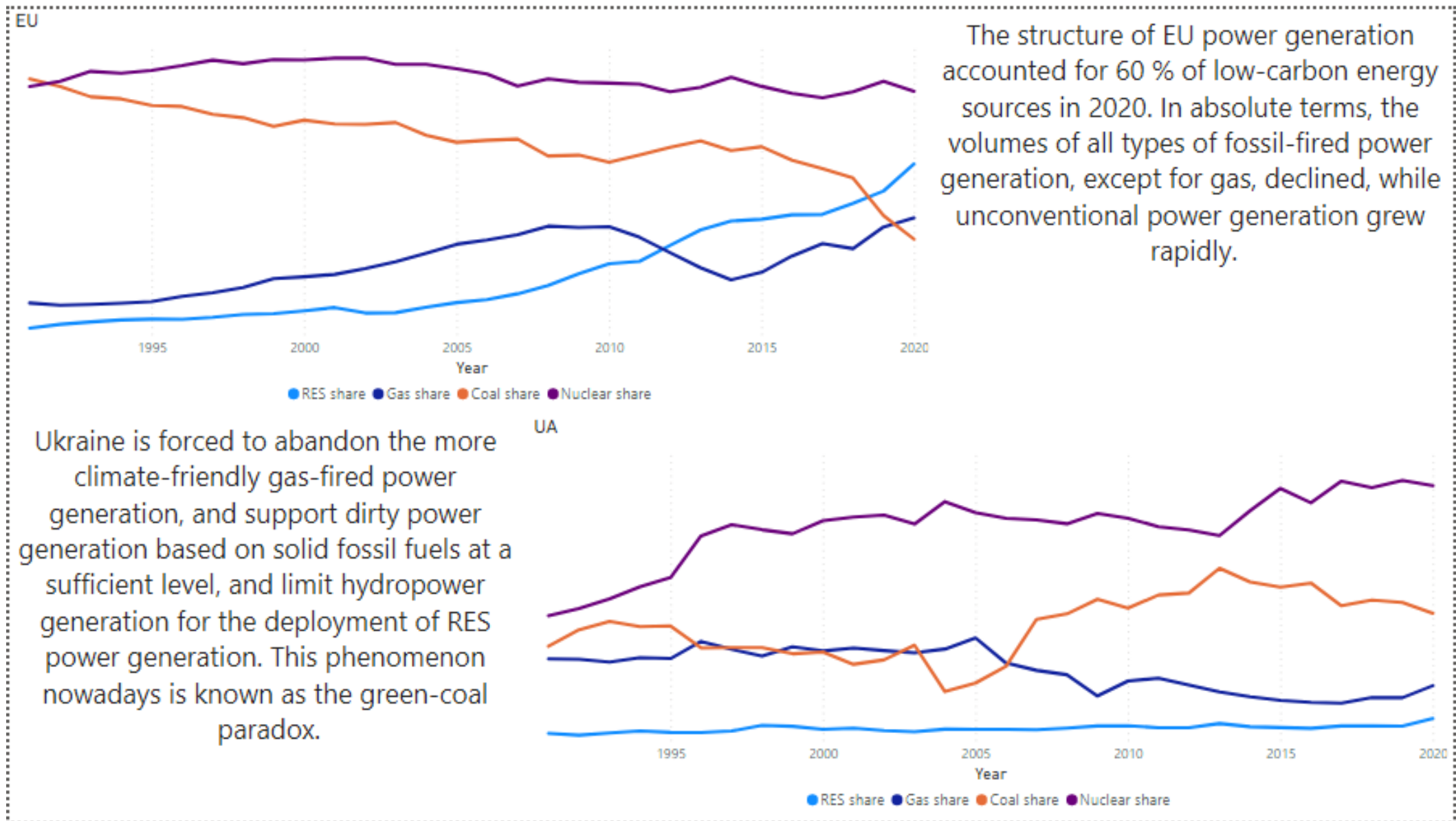


UA SANKEY CHART OF ELECTRICITY FLOWS IN 2020



1. THE DECARBONIZATION OF THE EU ELECTRIC POWER SECTOR

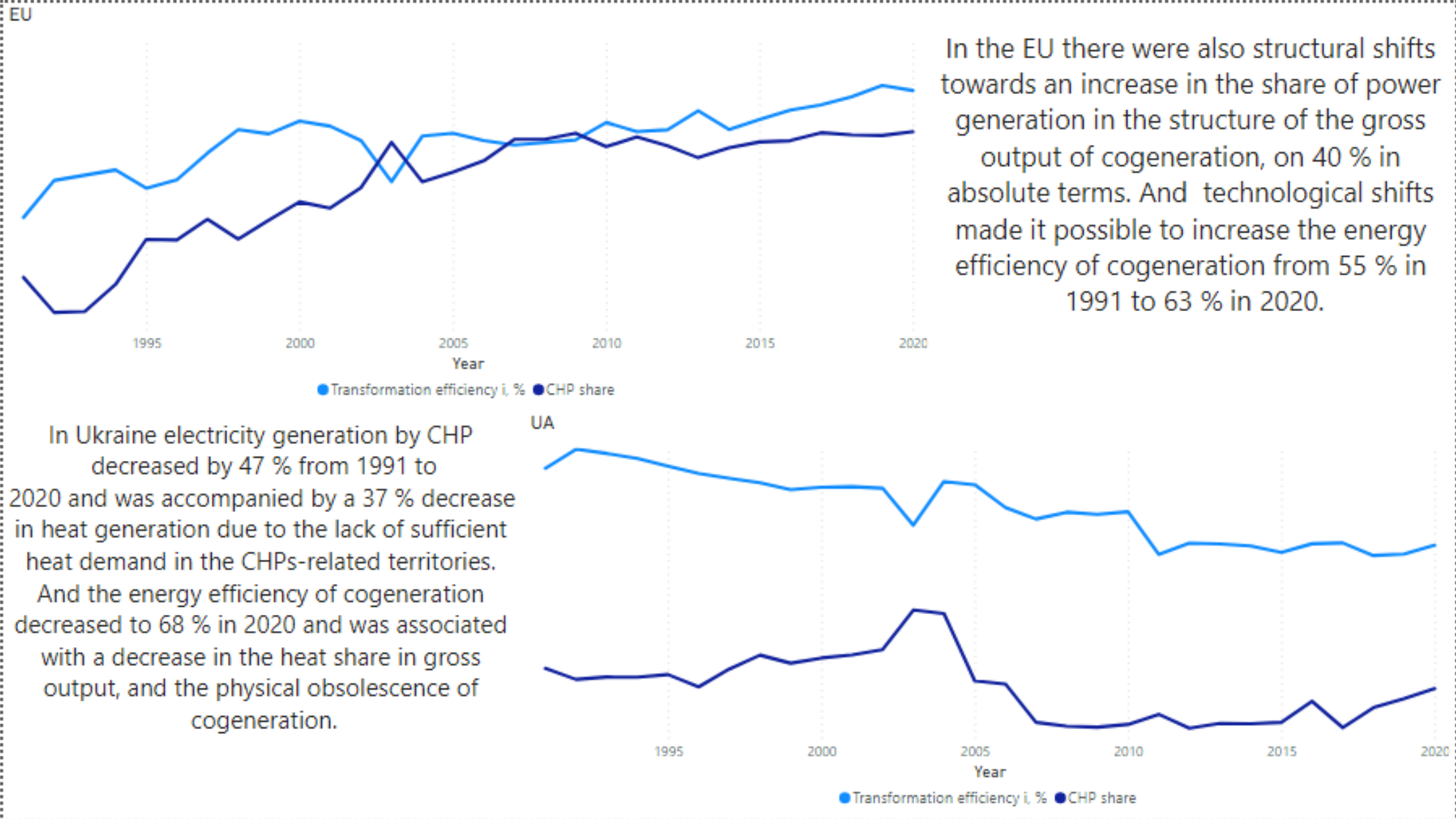
VS GAS-TO-COAL SWITCHING OF THE ELECTRIC POWER SECTOR OF UKRAINE



2. DEPLOYMENT OF HIGHLY EFFICIENT COGENERATION IN THE EU

VS

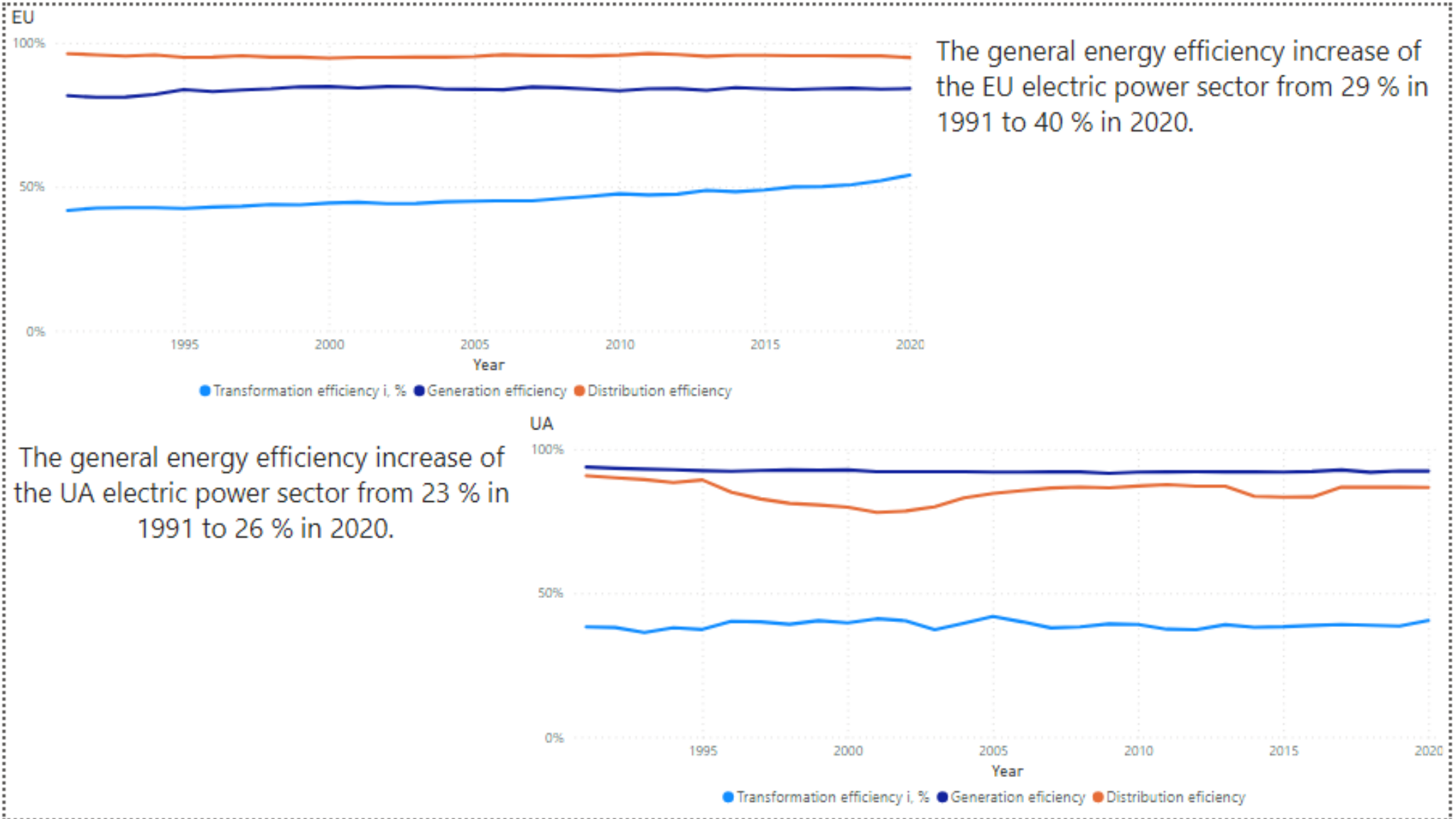
REDUCING THE VOLUMES AND ENERGY EFFICIENCY OF COGENERATION IN UKRAINE.



3. INCREASING THE ENERGY EFFICIENCY OF THE ELECTRIC POWER SECTOR AT ALL STAGES

VS

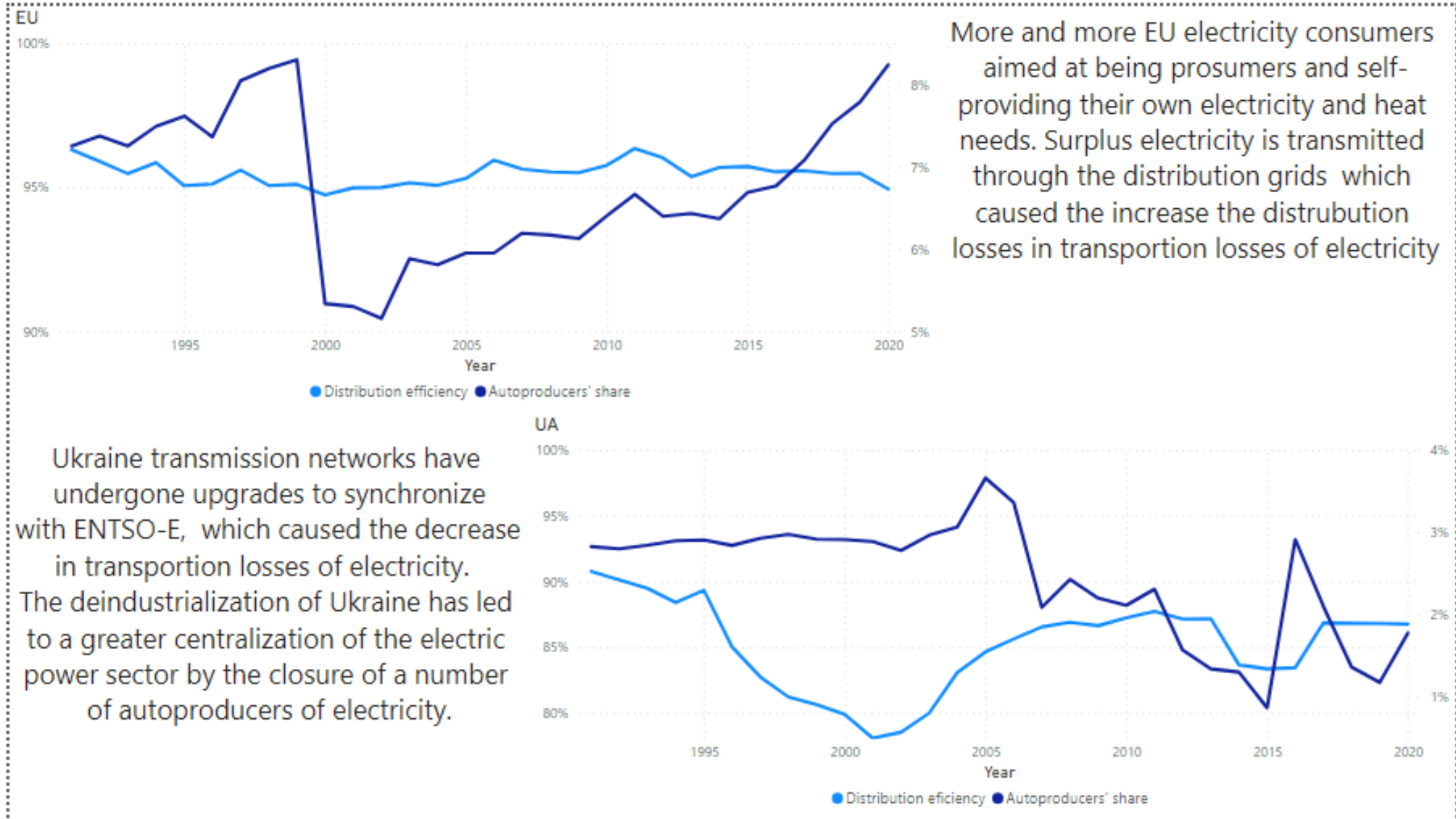
STABLE TOO LOW ENERGY EFFICIENCY OF THE ELECTRIC POWER SECTOR IN UKRAINE.



4. DECENTRALIZATION OF THE EU ELECTRIC POWER SECTOR.

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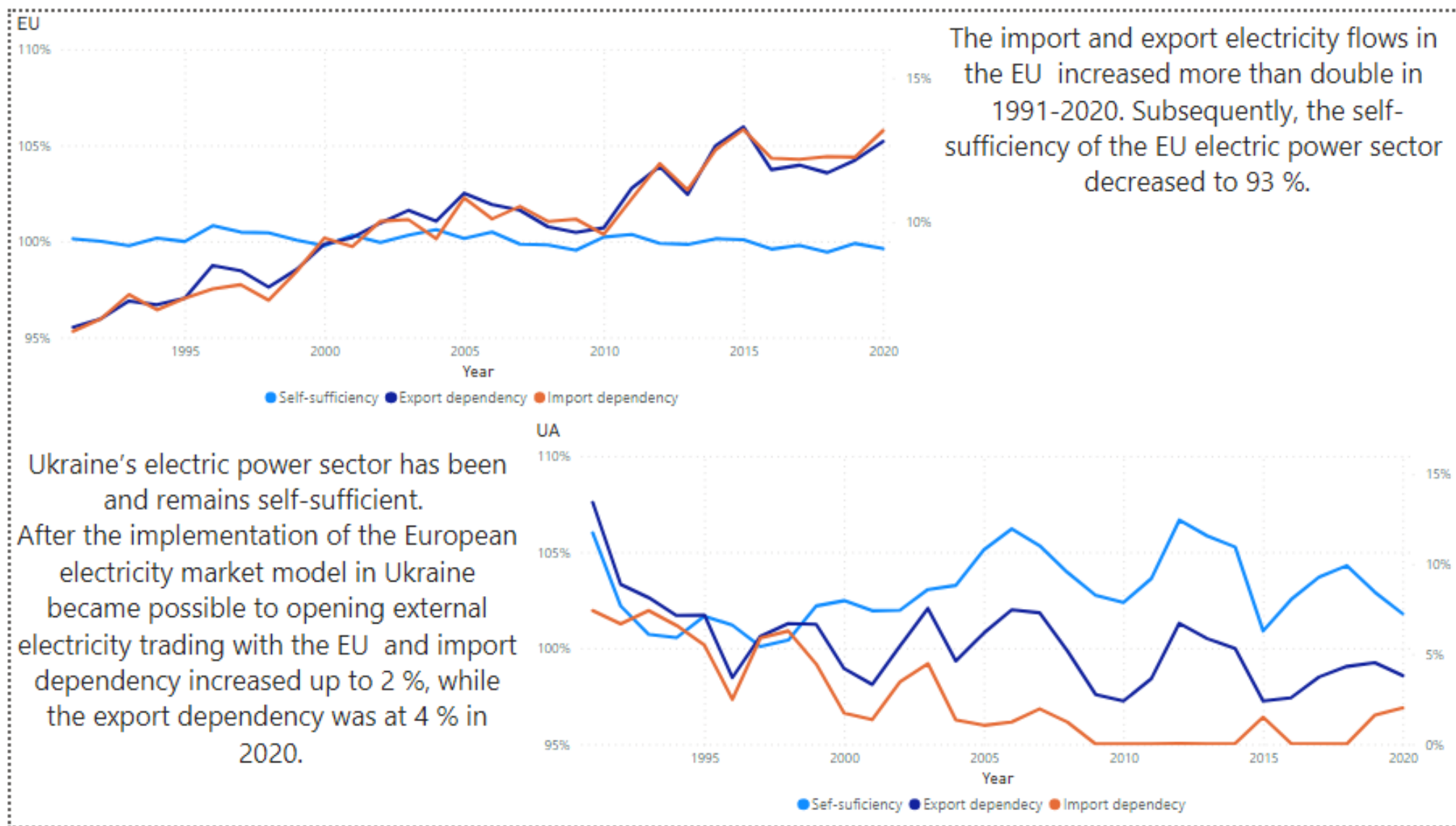
CENTRALIZATION OF THE UA ELECTRIC POWER SECTOR DEVELOPMENT, .



5. OPENING THE BOUNDARIES OF THE EU MEMBER STATES AND INCREASING THEIR ELECTRICITY DEPENDENCY

VS

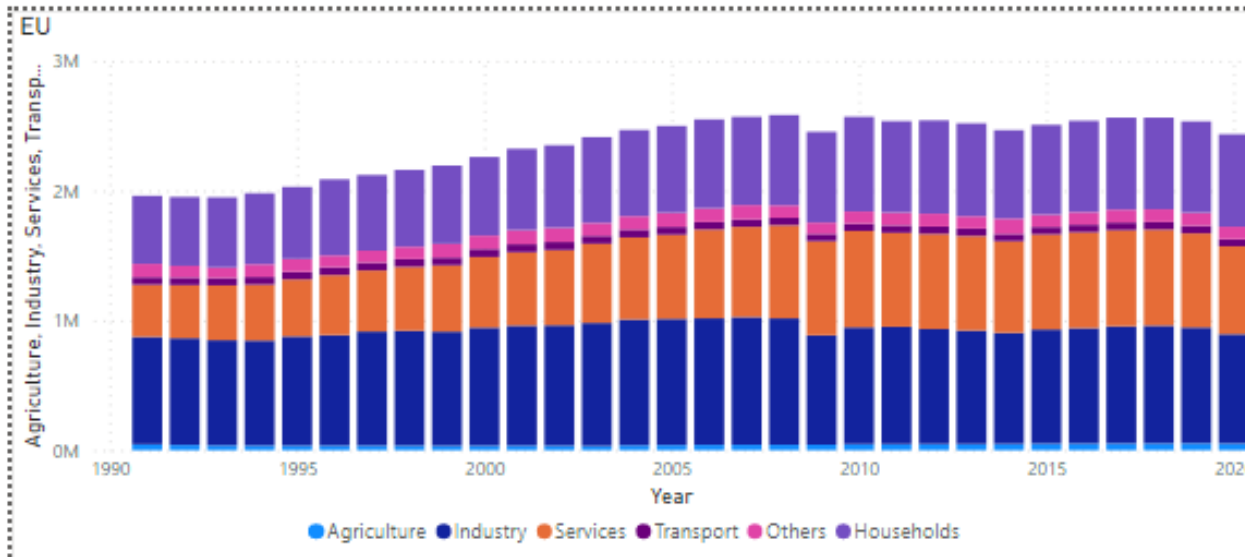
ISOLATION AND SELF-SUFFICIENCY OF THE UA ELECTRIC POWER SECTOR



6. ALL-AROUND ELECTRICITY PENETRATION IN THE EU

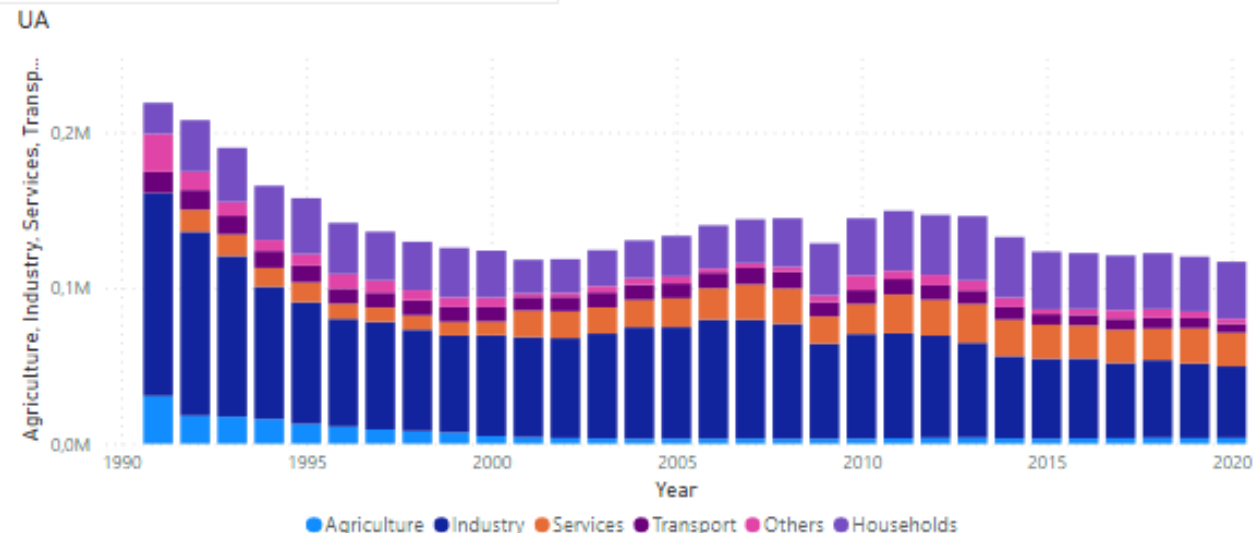
VS

CHANGES IN ELECTRICITY CONSUMPTION PATTERNS DUE TO DEINDUSTRIALIZATION OF THE UA



EU final electricity consumption increased by 26 % in absolute terms from 1991 to 2020. It can be admitted the ongoing convergence of the shares of the three types of activity in the EU: industry, services, and households.

Final electricity consumption in Ukraine decreased by 43 % in 1991-2020. In 2020, the total share of non-commercial electricity consumption exceeded the share of commercial electricity consumption by 6 %, although in 1991 this ratio was reversed exceeded 4 times.



CONCLUSIONS: THERE IS STILL A SIGNIFICANT GAP BETWEEN UKRAINE AND EUROPEAN ELECTRIC POWER SECTOR DEVELOPMENT

- The first one is that Ukraine is forced to keep coal-fired generation for demoting gas dependency and as for supporting RES-generation. At the same time the EU prioritizes the development of ecology-friendly generation, both gas and renewable, looking for more favourable market conditions to meet primary energy source needs.
- The second one is the falling of cogeneration in Ukraine while as the EU strives to support deployment of highly-efficiency cogeneration. But the solution to this issue in Ukraine depends on the comprehensive development of electric power and district heating sectors.
- The third one is outdated and low energy efficient electric power generation in Ukraine, while in European countries development of highly efficient generation supporting through capacity remuneration mechanisms or even green auctions. In Ukraine, such mechanisms aren't implemented yet.
- The fourth trend is the centralization of the UA electric power sector vs the decentralization of the EU one. Ukrainian electricity consumers have restricted investment abilities and legal obstacles in deploying their own generation, while the EU strives to support the development of distributed generation.
- The fifth one is differentiation on energy security: whereas the EU aims at create single European electricity market, disregarding electricity dependency of member-states, Ukraine remains isolated but self-sufficient due to the lack of cross-border capacities. Synchronization of the Ukrainian electricity system with the European one poses new challenges for Ukraine: where and how to integrate into the European space.
- And the last but not least trend is divergence in the electricity consumption patterns in Ukraine and the EU. Unfortunately, it cannot be solve internally inside the electric power sector and it has to adopt to these challenges: through the develop more flexible capacities, provide incentives for consumers of levelling the electricity consumption schedule.

THANK YOU FOR YOUR ATTENTION

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