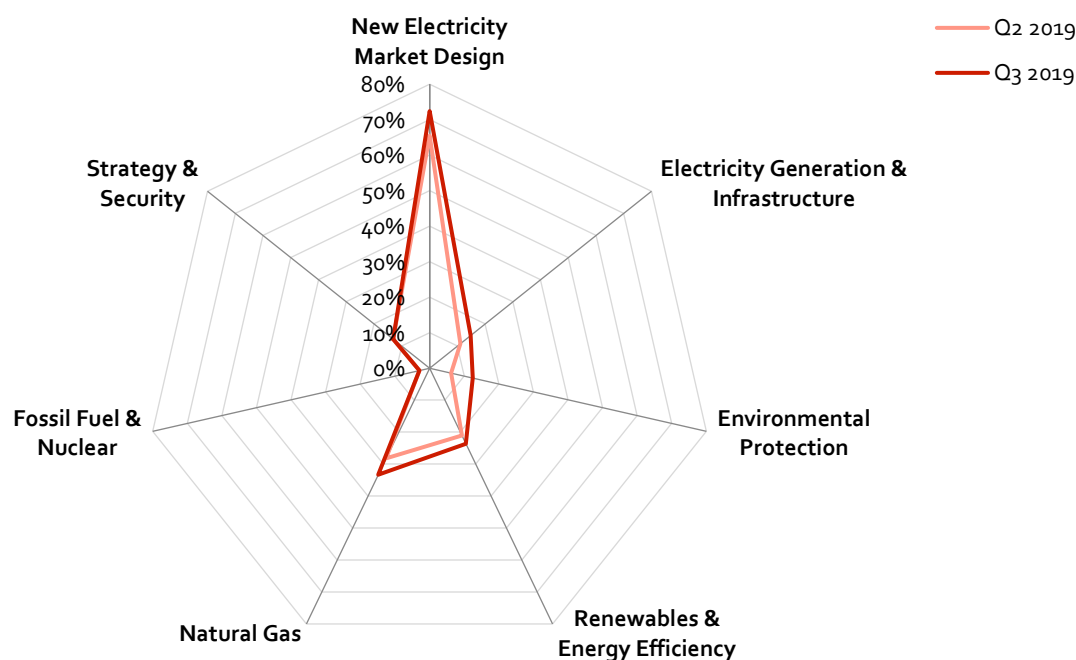


# Quarterly Monitoring Report on the Implementation of Ukraine's Energy Action Plan

November 2019



## Executive Summary

The past months were characterised by new **appointments** and organisational changes in the political and regulatory bodies that govern Ukraine's energy sector. A new ministry that is responsible for environment, energy efficiency and energy with seven new deputy ministers has been created. New commissioners were appointed at the regulator. And most MPs that form the Energy and Utilities Committee of the Rada have not been in parliament before.

In terms of substantive discussion, the question of how to achieve a new gas transit contract with Russia took centre stage. With the **unbundling of Naftogaz** Ukraine met long-standing European demands. But so far trilateral negotiations between Russia, the EU and Ukraine do not yet indicate how a compromise could look like.

The other big topic remains the **electricity market opening**. To keep prices low the new administration resorted to allowing electricity imports from Russia and Belarus as well as obliging state-owned power producer to sell more electricity below market prices.

Moreover, the new government indicated its desire to revise the **Energy Strategy of Ukraine**. We think this can be an opportunity to guide and streamline sectoral plans and policies (e.g., on renewables, transmission, energy efficiency) in a sector that is characterised by long investment horizons and also to improve the process of strategy implementation.

Finally, we observe an ongoing discussion on how Ukraine should deal with increasing **cost from the old feed-in tariff** system for renewable electricity. We argue that the cost of retroactive changes, in terms of possible legal action and increasing future capital cost, exceed the potential gain of somewhat lower subsidies.

# Assessment by Sector

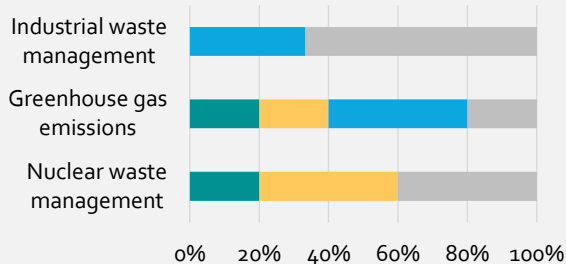
## About the Assessment

IN this quarterly monitoring report, we assess Ukraine's progress on implementing the Action Plan measures for the Energy Strategy of Ukraine until 2035 (ESU). We grouped 206 actions into **seven sectors** and rated their status of implementation: completed, in political process (e.g., being discussed or provisionally adopted), overdue, or scheduled for a later date. Completed actions are classified as serving or not serving the purpose, i.e., whether or not they contribute to achieving the goals laid out in the Energy Strategy of Ukraine until 2035. The report and additional material will be made available online at [www.LowCarbonUkraine.com](http://www.LowCarbonUkraine.com).

## Legend

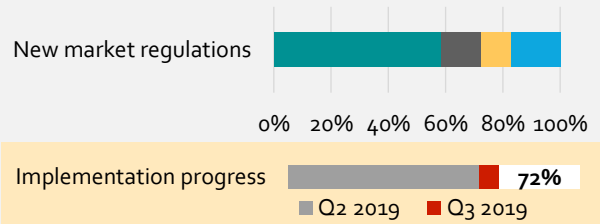
- Completed and serving the purpose of the ESU
- Completed but not serving the ESU's purpose
- In the political process
- Overdue
- Scheduled for later

## Environmental Protection



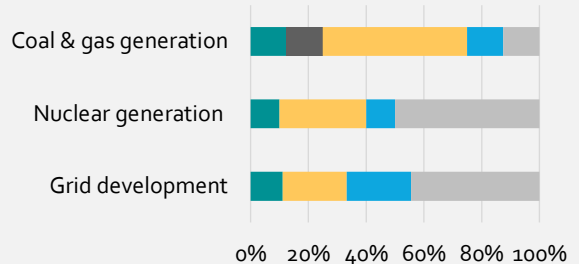
On August 21, the Cabinet of Ministers (CoM) approved the State Target Environmental Programme for the **decommissioning of uranium facilities** for 2019-2023 with a budget of UAH 247.9 mln. From three main scenarios of decommissioning under consideration – a) converting into "green field", b) conservation of the facility, and c) complex measures ensuring liquidation and deactivation of most polluted constructions and utilisation of nuclear wastes – the 3<sup>rd</sup> option was chosen. The construction of a **centralised storage facility for spent nuclear fuel** was assessed as "92-96%" ready. The "hot" testing of the facility is scheduled for February 2020. The work on updating Ukraine's **National Determined Contribution** is ongoing, with three main scenarios of greenhouse gases emission until 2050 elaborated and submitted to the EBRD. The development and submission to the CoM of a draft law on **waste from the extractive industry** is overdue.

## New Electricity Market Design



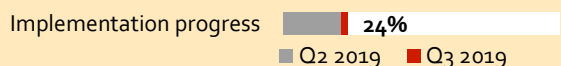
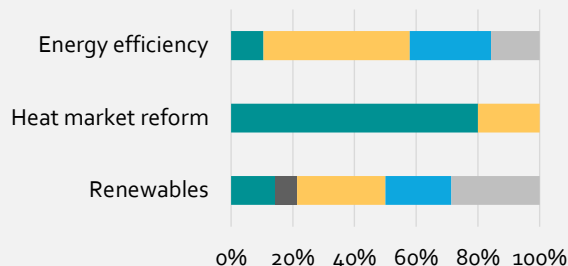
The state-owned transmission system operator (TSO) **Ukrenergo was corporatised** – a main requirement for its certification as an independent TSO. A revision of the mechanism to provide cheap power for eligible consumers (**PSO**) now obliges Ukrhydroenergo to sell 35% (instead of 20%) of its electricity production at below market prices. Amendments to the Law on Electricity Market allowed imports of electricity from non-Energy Community countries to different segments of Ukraine's electricity market. This led to growing **imports from Russia and Belarus**. The Antimonopoly Committee published recommendations for improving competition on the electricity market. The unbundling of electricity distribution system operators (DSOs) proceeded as **compliance programmes** for 19 of 34 DSOs were approved by the NEURC. On August 29, the draft law **"On Energy Ombudsman"** was withdrawn from parliament and no alternative draft law was submitted.

## Electricity Generation & Infrastructure



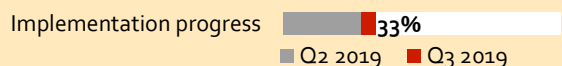
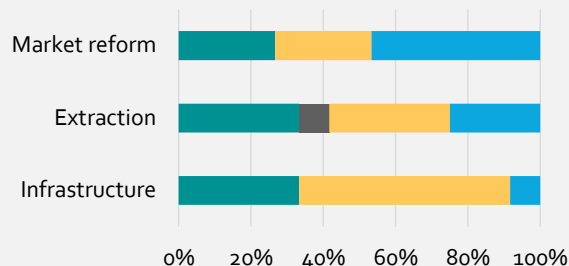
The NEURC did not yet approve the **generation capacity adequacy report** after Ukrenergo's revision of the report following the regulator's comments on the first draft. This also postpones the finalisation of the **Ten-year network development plan** and respective investment activity. No considerable progress on retrofitting TPPs and switching from anthracite to G-grade coal is observed. The government foresees that Centrenergo can be privatised within two years. The construction of Tashlykska HSPP's third unit is in progress. Energoatom gradually implements measures on **improving the safety, efficiency and reliability** of nuclear plants and publishes quarterly reports on the website. The lifetime extension operation of Uzhnoukrainska NPP's unit 3 and Khmelnytska NPP's unit 1 is in progress, while for Zaporizka NPP's unit 5 it is still in planning. Energoatom presented investment plans for 2020, with UAH 1.1 bln ensured for **reconstruction of the water supply system** at Uzhnoukrainska NPP.

### Renewables & Energy Efficiency



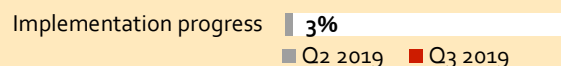
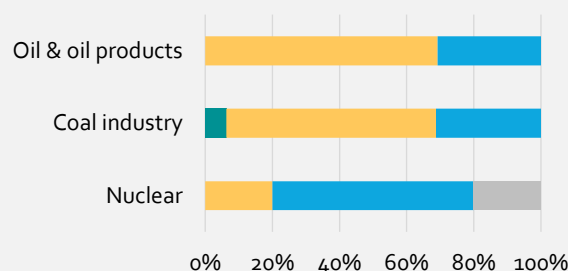
The draft procedures for conducting **RES auctions**, **auction quotas** and competition for electronic platform operators were published by the new Ministry of Energy and Environment Protection (MEEP). On November 1, a draft law to increase **tax rates on greenhouse gas emissions** was submitted. The SAEI submitted a draft law on financing **energy efficiency retrofitting measures for industrial enterprises**. After the CoM approved the national energy efficiency target until 2020, the SAEI set up a working group to elaborate the national **energy efficiency target until 2030**. The programme on residential energy retrofitting "EnergyHouse" was approved on August 16. The draft law #2284 on the introduction of a **green bonds market** in Ukraine was submitted to Parliament on October 17. The government has improved the implementation of **monetised subsidies**, and the parliament adopted the law on **verification of social assistance**. Yet, the monetisation of benefits only started on October 1.

### Natural Gas



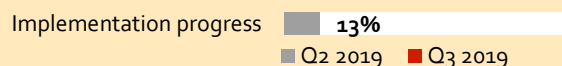
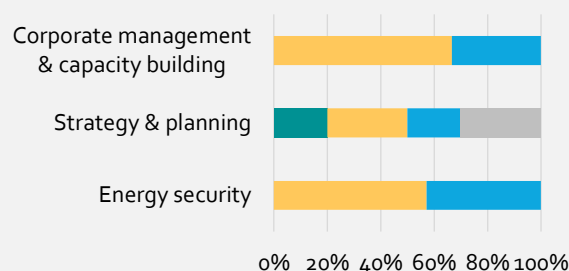
The TSO unbundling process is a major achievement: The CoM adopted a new **action plan** with ISO as the core model, **the law on unbundling** was adopted, and the TSO of Ukraine LLC submitted an **application for certification** and shall become a subsidiary of MGU on January 1, 2020. The new **Law on Concessions** provides foreign TSOs with new opportunities. The **trilateral talks** on gas transit yielded some progress to consider standard agreements under European rules. However, the Naftogaz restructuring strategy is incomplete as it entails no provisions on storages. There is little information on measures to improve the **management of state property** in gas distribution systems. The NEURC has **improved tariff methodologies** in both transmission (based on the capacity-weighted distance approach) and distribution (based on pre-booked capacity). The government seeks to develop a **new strategy for gas production by 2025** and to digitalise geological information.

### Fossil Fuels & Nuclear



No activity was reported on the creation of minimum stocks of crude oil and petroleum products and on updates of technical regulations for LPG and motor fuels. Working groups continue to discuss draft concepts for the development of **oil and gas refining**, for **public policy in crude oil supply and transit**, and for **development of oil transmission system**. Special duties on Russian fuel imports have increased the diversification of sea imports. The **Krasnolymanska coal mine privatisation was restarted**, and the new **audit of state-owned enterprises** was initiated to determine prospective and non-prospective mines. The MEEP is considering best practices of socio-economic transition of coal mining regions. There is still **no information on nuclear fuel production activity**.

### Security, Strategy & Governance



The new government has merged the former **Ministry of Energy and Coal Industry** with the **Ministry of Ecology and Natural Resources** to form the new **Ministry of Energy and Environmental Protection (MEEP)**. The government announced to review the **Energy Strategy of Ukraine** and developing a new **Naftogaz statute**. In the field of critical infrastructure protection, a draft law was withdrawn and the interagency expert group discussed the draft procedure for defining **critical infrastructure facilities and requirements to cybersecurity**. The MEEP published parts of the draft law "**On Basics of Energy Security**" and held a public discussion. Despite progress, the **Ukrainian report on transparency in extractive industries** is unlikely to be published in 2019.

# Key Developments in Ukraine's Energy Sector

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## Gas TSO unbundling and certification

In September, the government approved the new unbundling plan, introducing the independent system operator (ISO) model. Ukraine's gas transmission system will be passed to TSO of Ukraine LLC (TSOU) under terms of "economic management" but will remain state property. Other assets of Ukrtransgaz will be put on TSOU's balance and purchased by Magistralni Gazoprovody Ukrainy PJSC (MGU), a state company subordinated to the Ministry of Finance, under 15-years installment. The legal unbundling will take place on January 1, 2020.

The model was designed to keep the possibility for Naftogaz to defend its interests in the new arbitration with Gazprom. However, if MGU payments to Ukrtransgaz will be high, there is a risk that TSOU will not have sufficient financial resources to perform its functions. Also, the plan has no provisions on storages, with Naftogaz retaining control but still being subject to legislative requirements on unbundling.

On October 4, TSOU submitted an application for conditional certification. The NEURC amended the procedure, thus allowing to place additional mandatory conditions to be fulfilled before the final certification. The amended procedure is expected to take up to 4 months.

The Verkhovna Rada adopted the law on unbundling, including relevant property transfer issues and Ministry of Finance's independent status as the authority managing corporate rights. Despite being considered a major success, the legislation still has provisions allowing the CoM to overrule any regulatory acts issued by ministries. The new Law on Concessions (as a form of public-private partnership) provides foreign TSOs with opportunities to engage in management of Ukraine's gas system.

## Corporatisation and certification of Ukrenergo

On 29 July 2019, the Ministry of Finance approved an act of transforming Ukrenergo into a private joint stock company (PrJSC), 100% of which is state-owned. The Ministry of Finance also approved the charter of NPC Ukrenergo PrJSC, whose authorised capital amounted to UAH 37.2 bln. In August 2019, Ukrenergo submitted documents to the NEURC for certification as an independent TSO as required by the Law on the Electricity Market and the EU Directive 2009/72. It is also a prerequisite for obtaining a license for conducting transmission of electricity in a new market. On October 7, the NEURC adopted a preliminary decision on certification of Ukrenergo as a TSO that generally confirms its compliance with the requirements of unbundling and independence. At the same time, the final decision on the certification will be made only after implementation of a certain list of measures and receiving the conclusion of the Energy Community Secretariat. One of those measures is the regulation of transmission system ownership. It is hence necessary to amend the Law on the Electricity Market, since according to Part 3 of Art. 32 of the Law, only the transmission system operator can be owner of

the transmission system. To comply with this condition, Ukrenergo asked the regulator to initiate appropriate changes to the legislation. However, a final decision on the certification is only possible after the company has amended its charter. For that reason, the Ministry of Finance has to convene a general meeting of shareholders. The preliminary NEURC decision also states that a number of points should be excluded from the company's charter. This includes e.g. the monitoring and analysis of equipment operation and fuel movement, calculations of electricity production and fuel structure of TPPs, as well as participation in the development of repair schedules for power plant equipment and in development of projected balances of fuel. The NEURC states that under the current legislation, these are not the functions of the TSO.

## Licensing in the upstream sector

Under the e-auction mechanism, eight rounds were held in 2019 that allowed to sell 19 special permits for oil and gas exploration, although more were planned. The government has prolonged the experimental scheme and improved it, including the possibility to decrease starting prices.

For nine PSA tenders finished in 2019, President Zelenskyi ordered the government to negotiate and sign agreements by December 1, 2019, although this deadline is unlikely to be met. Another three PSA tenders have been officially announced, with the deadline for applications later extended until February 4, 2020. The PSA tender for the offshore Delfin field on the Black Sea was cancelled, even though a winner (Trident Acquisitions) had been selected.

The CoM has already changed the PSA Interagency Commission composition and the parliament considers improving legislation on PSAs. Moreover, the MEEP created a working group to develop a new concept for gas production.

## NEURC issues

In August, the President submitted a draft law amending Article 106 of the Constitution of Ukraine, confirming its powers to establish independent regulatory agencies. The draft was endorsed by Parliament and submitted to the Constitutional Court (CC) for review. In the best-case scenario, the amendments could be completed by February 2020, far beyond the implementation deadline set by the CC's June decision. The respective changes to the NEURC Law are still not published.

In October, two NEURC members – Oleksandr Formahei and Yevhen Mahliovanyi – resigned. President Zelenskyi appointed four provisional members for a three-month term, until the vacant positions are filled. The competition for two NEURC positions was announced on November 5; another two positions are subject to a competition blocked since 2018 by lawsuits.

With a pro-presidential majority in the NEURC and delays in legislative changes, securing the regulator's independence in compliance with the EU acquis is becoming a concern.

# Review of the Energy Strategy: Lessons learnt from implementation

## Development and adoption

### History of the process and lessons learnt

**POLITICAL and expert coordination.** In 2016, a Steering Committee for coordinating the development of the updated Energy Strategy of Ukraine (ESU) was created first under the Energy Minister (4 persons). Two months later, it was expanded (6 persons) with the Vice Prime Minister as chair. It was not meeting regularly, delegating the role of developing proposals and recommendations to the Expert Council, which consisted of representatives from civil society and IFIs/donors. The draft ESU was developed by the National Institute for Strategic Studies and the Razumkov Centre, discussed at the Expert Council meetings and publicly with stakeholders in order to include relevant proposals.

**Wide stakeholder discussions, but last-minute amendments for vested interests** led to a low level of trust into the policy documents from internal stakeholders, investors, IFIs and other partners.

**No thorough modelling and forecasting.** The best global practice of energy policy-making is the development of policy documents that consider the results of comprehensive modelling and impact assessments. Such modelling exercises provide policy-makers with an understanding of a range of possible scenarios within the documents projection horizon and gives them an idea of projected economic, environmental and social outcomes as well as required technologies, investments and other resources. Otherwise, the defined targets, corresponding policies and measures of the action plan could be inconsistent, unachievable and even contradictory – which has been the case for the ESU and its action plan until 2020. With the ESU adopted in 2017, actual modelling exercises were held only in 2019.

**The ESU structure is complicated and dominated by sectoral logic.** The ESU action plan has 186 different measures and 206 indicators for successful implementation distributed among

several categories and subcategories without a clear hierarchy and structuring. Most categories are sector-related instead of being priority-based – an out-of-date approach that very much complicates linking different groups of measures of the action plan to key priorities and key targets of the ESU.

### Recommendations

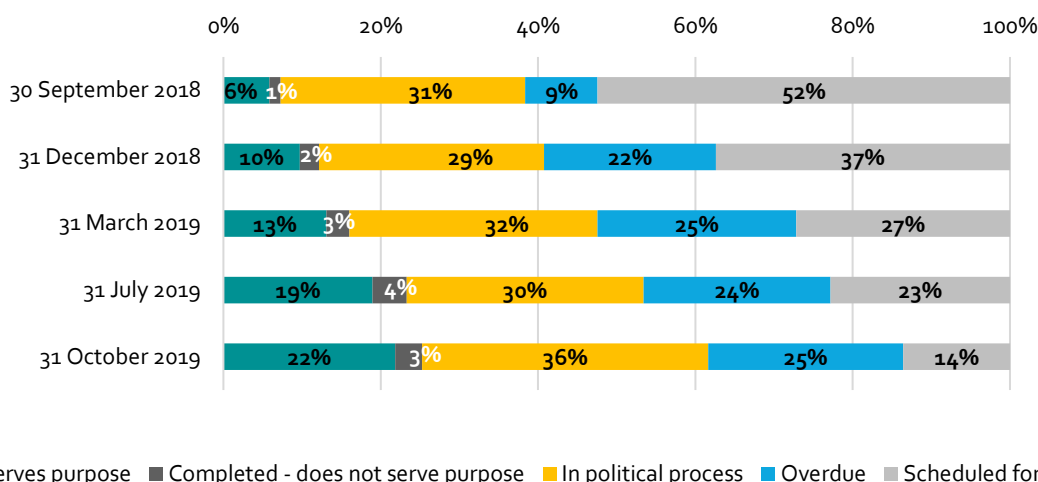
**Ensure high-level leadership and organise process.** Since the implementation of the ESU can have a considerable impact on the national economy, as well as the environmental and social sphere, the CoM should lead the ESU and action plan development process by setting up a steering committee and strategic working group under the Prime Minister's Office. Also, wide stakeholder discussion and independent reviews from external stakeholders should be ensured to avoid contradictory provisions.

**Run modelling exercise first.** A scenario-based economic modelling ("business as usual" vs. ESU policy scenarios) of the ESU' impacts should give policy-makers a comprehensive idea of potential long-term economic outcomes.

**Improve structuring.** A functional, priority-based approach should be applied for structuring the ESU and the action plan. The compatibility of these policy documents with the Energy Union dimensions will ensure a better external understanding and support. The hierarchic composition of the documents implies defining 3-4 main objectives/priorities, which should be further broken down into targets corresponding to each priority, appropriate policies and measures contributing to the achievement of defined targets and objectives.

**Ensure the consistency of policy documents.** A strong cohesion of the ESU, its action plan and other core policy documents should be ensured, especially with the National Energy and Climate Plan (NECP). The emerging crucial point is a clear understanding of the NECP role and place in the hierarchy of policy documents, since the NECP could even replace the ESU action plan.

### Overall implementation progress





**Streamline adoption.** Consider options to make the CoM decision-making process faster, ensuring all controversial issues are discussed and settled at the Steering Committee meetings, and thus agreement protocols are clean. Another idea to be considered is the ESU adoption as a law, such as the Law on Fundamental Principles (Strategy) of Environmental Policy of Ukraine by 2030.

### Implementation

The first quarterly monitoring – and baseline assessment – of the ESU action plan implementation was finalised on September 30, 2018. After 13 months, the share of successfully completed measures as defined by the relevant indicators increased from 6% to 22%. Although this means certain progress has been made, a full implementation until 2020 seems unlikely. Nearly one-third of the action plan measures constantly remain in political process. At the same time, the share of overdue measures increased from 9% to 25%. Notably, 3% of the action plan measures were completed, but due to different reasons do not serve their purposes.

The most considerable progress has been made in the “New electricity market design” category due to highly consolidated efforts of public authorities and the strong support of international partners and IFIs. At the same time, approx. 14% of the implemented measures do not comply with the intended purposes as their implementation was much accelerated and thus accompanied with mistakes and market distortions. Also, comparatively notable progress was made in the “Natural gas” (31%) and “Renewables & Energy Efficiency” (21%) sectors. Still, this progress will be insufficient for successful timely implementation until 2020. Least progress has been made in the “Electricity Generation & Infrastructure” (11%), “Environmental protection” (13%) and “Fossil fuel & Nuclear” (3%) sectors.

### History of the process and lessons learnt

*The action plan was developed with delay*, mostly with a purpose of collecting data from implementing governmental agencies rather than assigning tasks.

*Tasks with passed deadlines were (mostly) not enforced.* The CoM and the MEEP did not pay increased attention to the implementation of overdue measures and did not initiate appropriate amendments.

*Many measures were formulated vaguely* with no clear indicators and deadlines to be reached, e.g.: “Involvement of

international assistance to mitigate the social and environmental consequences of the elimination of coal mines and the social rehabilitation of mine closure regions” (not specific, not achievable in the first ESU stage);

“Appointment of members of the supervisory boards, including representatives of the state and independent members, based on the results of the competitive selection” (not specific, not time-bound);

“Ensuring the conclusion of agreements for the lease of gas distribution systems or their constituents with operators” (not relevant, i.e. not result-based but focused on process);

“Improving the efficiency of the operation of electricity distribution networks by transferring to a higher voltage class; introduction of technical (technological) measures of reactive power compensation” (not measurable, not time-bound); etc.

*Sectoral plans and strategies are not aligned with the ESU*, often being developed autonomously by different authorities or institutions. Thus, several of these documents are confusing, overlapping, not consistent enough, which much complicates their efficient implementation, overall policy-making and governance.

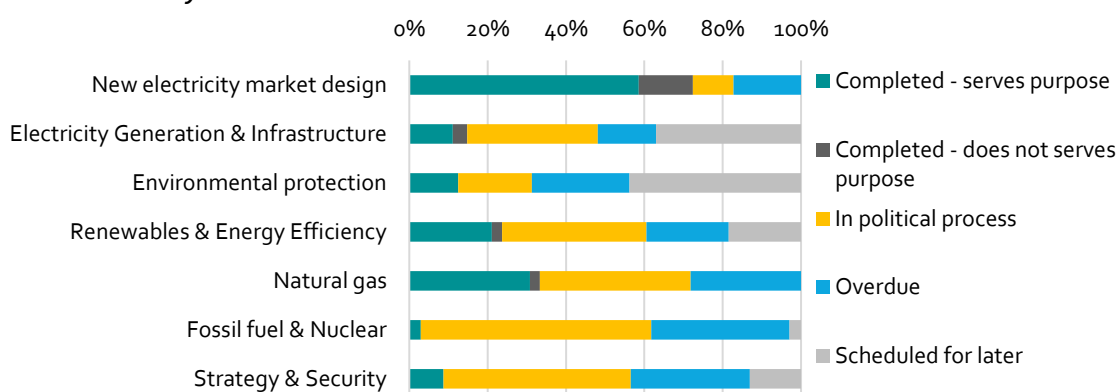
### Recommendations

**Structure the implementing actions.** For the purpose of enforcing the ESU, the CoM should develop comprehensive mid-term (3-5 years) action plans for each sector, preferably by the same strategic working group set up for ESU development. An example of such a document agreed with IFIs and stakeholders is the Gas Sector Reform Implementation Plan adopted in 2015, which – at least until 2017 – was quite effective. This would also imply invalidating any existing policy documents (plans/concepts/programmes) which overlap or duplicate the comprehensive plan. Cross-sectoral plans related to infrastructure development, management issues, energy security are also possible.

**Introduce SMART criteria.** All measures of the ESU action plan should be sufficiently specific, measurable, achievable, relevant and time-bounded to facilitate monitoring of the implementation and ensure timely interventions and adjustments.

**Include regular high-level discussions on the progress** and annual revisions (at least, in terms of deadlines) by the Steering Committee and the strategic working group.

### Current implementation status by sectors



### Monitoring and reporting

#### History of the process and lessons learnt

*Formal and uninformative monitoring mechanism.* The benchmarks listed by the ESU include 23 general indicators on energy efficiency, security, reliability, environment, losses (Annex 1), and structures of TPES and electricity generation (Annex 2). The ministry has issued one report on ESU implementation in 2018, focusing mainly on the ministry's activities. Their assessment of benchmarks is based on 2017 data and presented in one of the annexes, as the main part of the report is textual information based on documents developed and actions completed rather than achievement of ESU goals. There are also internal reports on implementing the ESU action plan, which were created by the ministry but were not disclosed.

*The status of certain tasks was not (regularly) reported.* The ESU benchmarks can be tracked and reported on an annual basis, with no specific statistics available for semi-annual or quarterly monitoring. Based on the experience of our monitoring, certain tasks or even sectors lack updates or any public information on their implementation status. Among those were actions related to the management of gas distribution networks, nuclear industry strategy, issues of waste management in extractive industries, co-generation support, reform of coal SOEs, and development of educational programmes.

*The ESU revision decision was not based on a review.* The decision announced by the new government to revise the ESU

was a political one, it was not based on a review of the actual implementation of the current strategy, significant changes in strategic goals (e.g. faster decarbonisation) or shifts in priorities. This is evidenced by the fact that the new energy policy is still being formed following the adoption of the CoM Programme.

#### Recommendations

*Introduce a more flexible ESU benchmarking framework.* The annual reporting for key performance indicators (like balances, energy intensity etc.) should be maintained, but rather as a checklist to track the projected reference scenario. For the purpose of regular monitoring, a more frequent quarterly reporting should be introduced. A framework of indicators being developed by the OECD (to be presented in early 2020) may become a tool for such monitoring.

*Improve the structure of performance monitoring.* Introduce a third-generation balanced scorecard approach for each of the ESU overarching goals (alternatively – for each of the sectoral action plans) to track specific tasks assigned to responsible authorities, 'customers' perspective, as well as operational issues (coordination, learning).

*Create necessary institutional capacity and mechanisms.* At least one permanent position should be created at the MEEP and the Steering Committee should meet for regular (quarterly) high-level discussions on the progress and decide on updates to both the action plans and the ESU.

## Limiting the cost of feed-in-tariff subsidies

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**UKRAINE** has guaranteed renewable energy producers to pay them a fixed feed-in tariff, which is significantly above current wholesale market tariffs. The guaranteed feed-in tariff regime was meant to provide a stable environment to RES producers and thus incentivise them to invest. Looking at the increase of renewable energy capacity which benefits from feed-in-tariffs suggest that this policy had been successful in the sense that it led to a significant increase of RES capacity. We estimate that RES capacity eligible for feed-in-tariffs is likely to increase to 5.6 GW<sup>1</sup> by the end of 2019 – up from 3.2 GW as of June 2019. Thus, in the second half of 2019 alone, at least 2.4 GW of renewable capacity will be installed. The strong recent increase partially reflects the attractiveness of investors but is also due to the fact that the current feed-in-tariff regime will run out at the end of the year as it will be replaced by an auction-based support scheme.

In fact, the support scheme has been so successful in attracting investments, that there are concerns that the cost of providing the subsidy may become too large. Additionally, there are

concerns that the cost of funding feed-in-tariffs may lead to an increase of electricity tariffs. In order to determine, if these concerns are relevant, it needs to be analysed what exactly is the level of subsidies and who pays for them.

Feed-in-tariffs are guaranteed tariffs which are established above wholesale market prices. The actual subsidy for the RES producer, therefore, is the difference between the feed-in-tariff and the wholesale market price – the tariff RES producers would obtain if they had to sell their electricity on the open market similar to other producers not eligible for feed-in-tariffs. The larger the difference between the feed-in-tariff level and the wholesale market price, the larger the cost of subsidising RES producers. The wholesale market price currently stands currently at around UAH 1,700 per MWh. The level of feed-in-tariffs differ depending on when the RES installation was built and the type of renewables. As a rough estimate the feed-in-tariff level of existing installations is about UAH 4,000 per MWh suggesting that currently each MWh is subsidised with UAH 2,300.

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<sup>1</sup> Other estimations assume even higher RES capacities of up to 5.9 GW until the end of 2019. We have based our estimations on the

estimate of 5.6 GW, which thus represents a lower bound of RES capacities.

Taking into account the expected increase of capacity until end of the year, annual expenditures of subsidising feed-in-tariffs above market prices are expected to rise to UAH 28 bln in 2020 (approx. EUR 0.85 bln) and to remain at similar levels until 2030. As such, FIT expenditures constitute significant expenditures which are equal to 0.6% of GDP or 1.5% of public expenditures. Given these significant expenditures in the form of RES subsidies through feed-in-tariffs, this raises the question if these costs are likely to translate into higher electricity tariffs. The answer to this question depends on how feed-in-tariff subsidies are financed. In case feed-in-tariffs are financed through a surcharge on electricity costs, then indeed, the increased expenditures will directly translate in higher electricity costs. Financing them through the budget would mean that there is no direct impact electricity tariffs – although nevertheless a burden on public finances.

### Current and expected RES capacities and FIT expenditures

	Capacity (GW)	Electricity produced in 2020 (GWh)	Gross FIT expenditures 2020 (EUR mln)	Net FIT expenditures 2020 (EUR mln)
Already installed and receiving FIT (as of 30/06/2019)	3.4	5,400	807	530
Expected add. capacities until end 2019	2.2	4,250	541	323
Total capacity eligible for FIT after 2020	5.6	9,650	1,347	853

Source: Own calculations

A closer inspection of the way feed-in-tariff support is financed in Ukraine suggest that the increasing cost of RES support will only partially translate into higher electricity costs. This is due to the fact that feed-in-tariff subsidies are only partially financed through a TSO tariff surcharge – which indeed has a direct impact on electricity tariffs. However, the main source of financing of feed-in-tariff subsidies currently originates from proceeds from electricity sales from state-owned generating companies Energoatom and Ukrhydroenergo, which are obliged to supply electricity at tariffs significantly below market level to the Guaranteed Buyer.

The Guaranteed Buyer in turn sells this electricity on the wholesale market at much higher market prices. The profit generated this way is used to subsidise low household tariffs (so-called PSO operations) and recently the government allowed the Guaranteed Buyer also to use these profits to finance RES feed-in-tariff expenditures. As Energoatom and Ukrhydroenergo are state-owned companies, forcing them to sell electricity below market tariffs reduces revenues for the state budget, which effectively resembles budget financing. As such this way of funding feed-in-tariff subsidies does not affect electricity prices.

Amidst the increase of FIT subsidy cost, there have been calls to reduce the feed-in-tariff levels for existing renewable energy installations. Such a proposal is understandable from a policy-makers' perspective but problematic as this means reneging on the feed-in-tariffs guaranteed to investors until 2030. Breaking these guarantees would inevitably damage the investment climate and undermine trust in any future government contract.

It is also likely to undermine the success of the planned auction regime which is meant to become the main instrument of subsidising RES capacity from 2020 onwards. Each attempt to renounce on past guaranteed feed-in-tariffs will make investors think twice whether to participate in the auctions. Those that decide to bid, will factor in a considerable risk premium. Thus, fewer investors will bid at higher prices increasing the cost of future RES support.

What is more, international experience suggests that retroactive feed-in-tariff changes carries the risk of legal action from foreign investors seeking arbitration. The government of Spain – which retroactively changed the terms of RES support in 2010 – had several arbitration court rulings against it.

Amidst the disadvantages and risks of an outright retroactive reduction of FIT levels, it is sometimes proposed to stretch support. That is, paying RES investors the same amount of revenue but stretched over a longer period of time. It needs to be understood that this is effectively the same as cutting FIT levels. Any revenue postponed into the future has to provide sufficient interest in order for investors not to be worse off.

Policy makers may therefore decide to compensate investors for having to wait longer for their revenues – for example by guaranteeing them the present value of revenues as before the FIT adjustment. While this may mute protests from the investors, it also implies additional cost of financing the prolongation of subsidies.

Amidst the cost and risk of changing existing FIT contracts, we advise against it. Instead, we recommend to focus on more effective and less risky measures. It should be analysed if the financing of RES support could be changed so as to de-couple it from electricity prices and to allow Energoatom and Ukrhydroenergo to sell their full capacity on the wholesale markets. This would increase liquidity thus diminishing market power of dominant players and thus reducing prices for the population and industry.

This project is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag.

All results of the project are available online at [www.LowCarbonUkraine.com](http://www.LowCarbonUkraine.com).

We are grateful for feedback on this monitoring report, in particular comments how to make it even more useful for supporting the implementation of the energy strategy and contributing to a low-carbon development for Ukraine. Please get in touch via [info@LowCarbonUkraine.com](mailto:info@LowCarbonUkraine.com).

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