POLICY BRIEFING 07|2020

German Economic Team
UZBEKISTAN

Electricity tariff reform in Uzbekistan: Options to protect vulnerable households

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1. Introduction

Background:

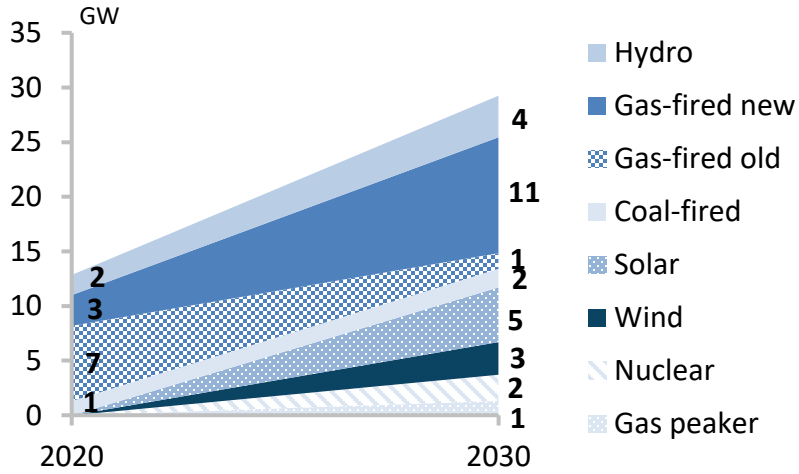
- Uzbekistan needs to invest in electricity infrastructure to cope with rising demand
- Investment cost should be partly financed by higher electricity tariffs
- But: Higher tariffs hurt low-income households (HHs) most
- How to ensure cost-recovering tariffs and protect vulnerable HHs?

This Policy Briefing will:

- Provide an overview of international tariff designs to protect vulnerable HHs
- Identify suitable electricity tariff models for Uzbekistan

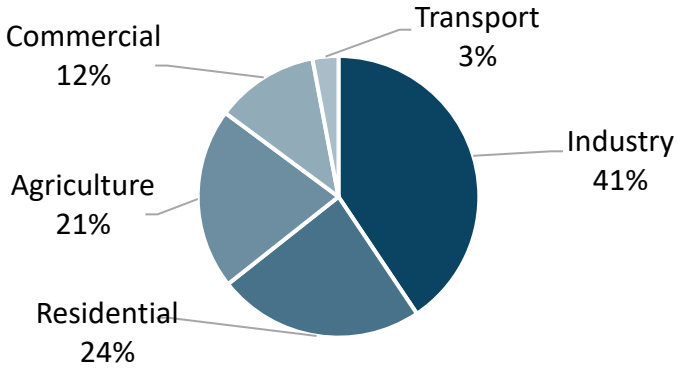
2. Investment need

2030 government capacity investment plan



Source: MinEnergo

Electricity consumption shares Uzbekistan, 2018



Source: EnergyCharter

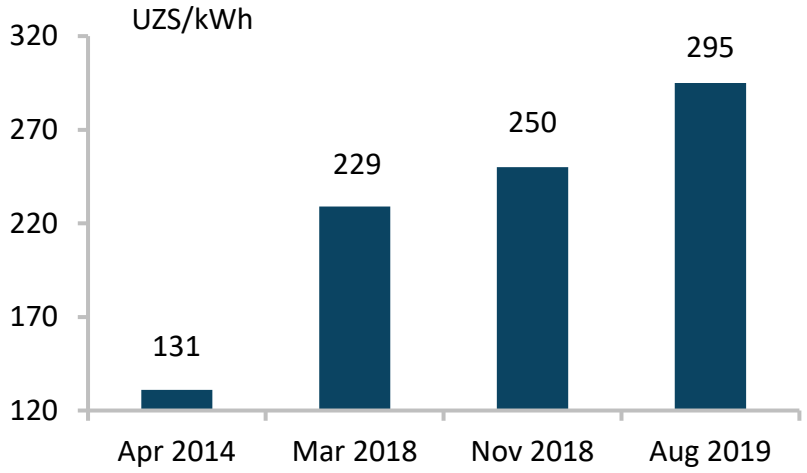
Massive investments ahead

- Electricity demand expected to grow strongly along with population and GDP
- Gov plan foresees generation capacity to more than double until 2030
- Significant investment needed into generation, transmission and distribution
- Gov wants tariffs to cover generation and transmission costs by 2023, plus 10-20% profit
- Predictable tariff policy and stable revenue to attract investors
- Significant share of consumption by HHs, which currently pay ~3UScts/kWh

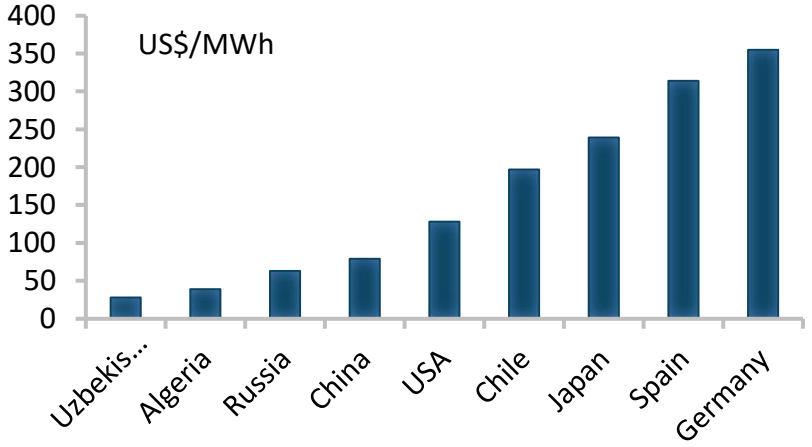
➢ **HH electricity tariffs will rise in order to finance investments**

3. Current Tariff Situation & Existing Policies

Electricity tariff changes for residential consumers



International residential electricity tariffs (PPP-adjusted, 2019)



Source: IEA 2019

First tariff reform steps

- Residential tariffs up 125% since 2014
- Recent tariff raises have been coupled with increases in minimum wage and pensions for low-income HHs
- 2019 experiment in Tashkent district: Block tariff with 20% higher tariff if consumption exceeds 300kWh
- Nevertheless, UZB residential electricity tariffs at ~3UScts/kWh still very low in international comparison
- Despite low tariffs, energy poverty is high and would rise if prices were cost-recovering

➢ **Uzbekistan needs to find balance between the need to raise tariffs and reducing energy poverty**

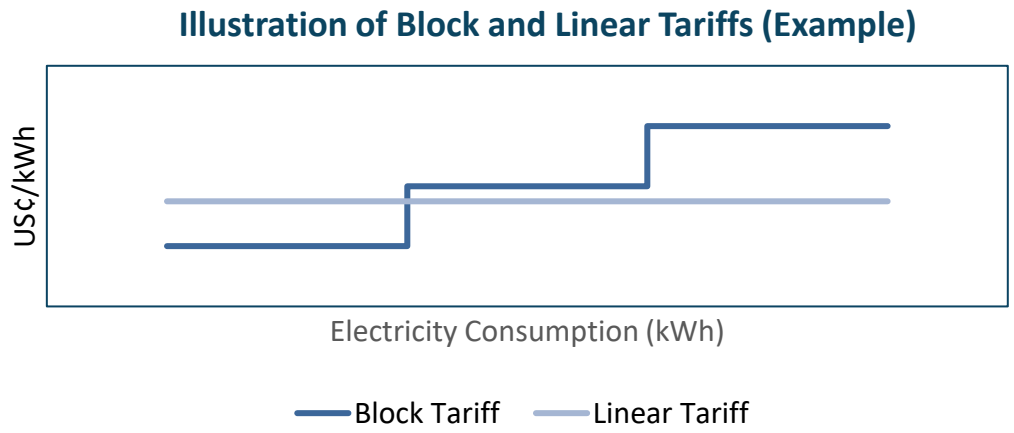
4. First principles of electricity tariffs

- **Low complexity for HHs:** consumers should know how much they pay and why to be able to adapt their behavior to price incentives
- **Saving incentives**: Prices should properly incentivize HHs to save electricity
- **Limited regressive effect of electricity tariffs**: Poor HHs should not pay larger share of their income for electricity than rich HHs
  - Social measures are **well-targeted**: only truly poor HHs should benefit
  - Social measures are **well-covering**: all truly poor HHs should benefit
- **Adoptability to market reforms:** Social support measure should also work well under liberalized electricity markets
- **Low administrative complexity:** Targeting and covering of poor HHs should be possible at low administrative cost
- **Welfare Maximization:** Those with smallest demand elasticity should pay most of overall tariffs (Ramsey Pricing)

5.1 Basic tariffs models

Volumetric

- Depends on level of electricity consumed (kWh) by household
  - Linear
  - Block tariffs



Time-of-Use

- Depends on total demand at the time of electricity use
- Electricity is cheaper during off-peak consumption hours
- High metering costs
- Usually only for large consumers

Load/Connection-based

- Depends on maximum load delivered in a given time period (in kW)
- Or on: maximum load possible through connection
- if no connection tariff → users feeding electricity back into the grid do not pay for connection service
- E.g.: Different connection tariffs for industry, agriculture and HHs

5.2 Social support measures – Overview

1. <u>Block Tariffs</u>

- Prices differ by level of consumption
- Rich HHs consume more, thus pay more for electricity (see slide 5.2.1)

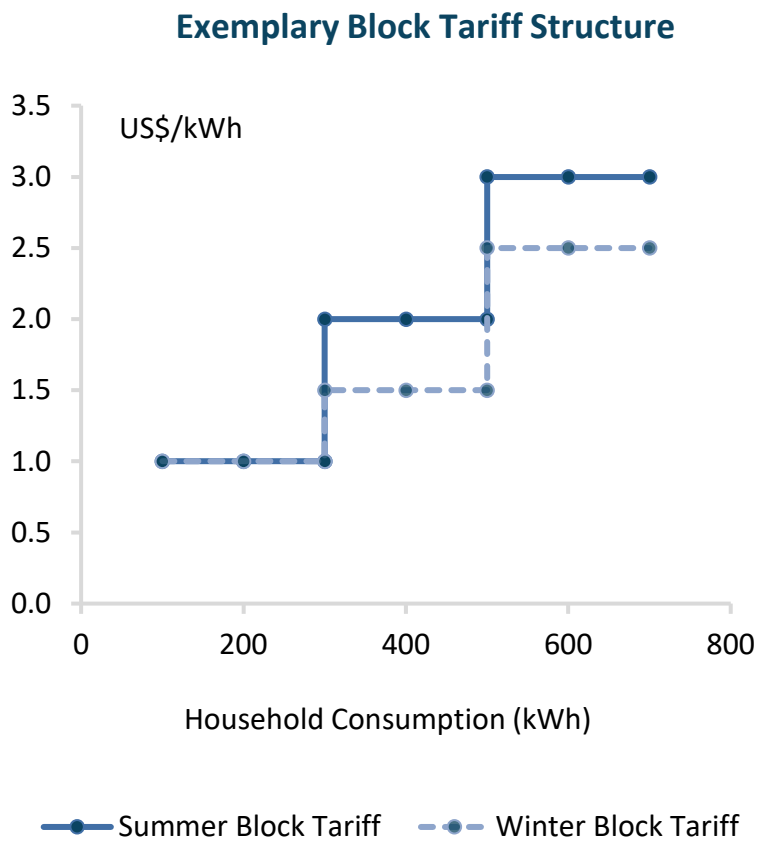
2. <u>Social Tariffs</u>

- Offer lower tariffs for low-income HHs (e.g. poor HHs pay only half the price of rich HHs per kWh)
  (see slide 5.2.2)

3. <u>(Un)conditional Transfers</u>

- Provide rebates in forms of vouchers for electricity bills or non-earmarked cash handouts (see slide 5.2.3)

5.2.1 Block Tariffs



Source: Own visualisation

Overview

- Consumption of first block at lower costs, next block at higher costs
- Income elasticity of demand in UZB at around 0.8 (wealthier HHs consume more electricity)
  - Block tariffs somewhat justified in UZB

Advantages

- Easy to understand for consumers
- Incentive to only use electricity of first block

Disadvantages

- Subsidy for high-income HHs (consumption is an imperfect proxy for household income)
- Large HHs discriminated by metering of total HH consumption
- Defining blocks is non-trivial
- Not compatible with liberalized market
- Prone to manipulation by e.g. splitting HHs to stay within first block

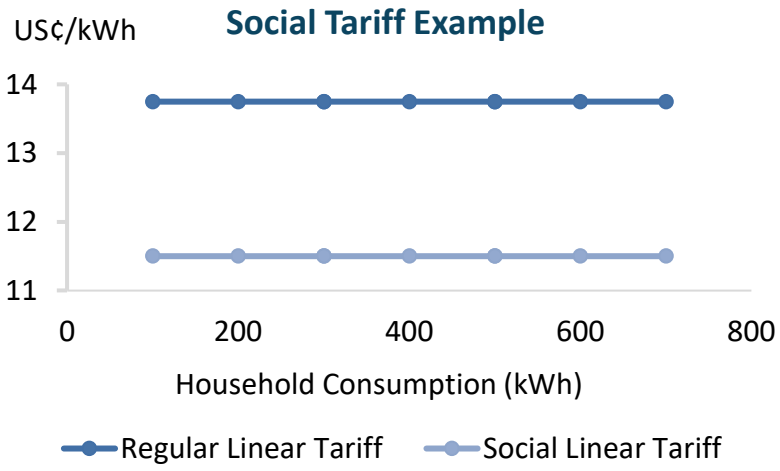
5.2.1 Block Tariffs

Implementation

- Some evidence (from Hungary): 3 block-structure improves targeting
  - Need to determine price per block
  - Need to determine "length" of blocks (how many kWh per block)
- 1st block below cost-recovery
  - Determine "fair" tariff for low-income HHs (on international average 1st block covers 57% of operational costs)
  - Determine "fair" consumption limit for low-income HHs (on average 50% of average HH consumption, or 111% of median consumption)
- Middle block at cost-recovery
- Last block higher to balance first block

➢ **Highly difficult to achieve both affordability, electricity savings, and cost-recovery**

5.2.2 Social Tariffs



Source: Own visualisation

Examples

- **Portugal**: automatically lowers the price per kWh by 33.8% for low-income HHs, who do not exceed a certain capacity limit (Link)
- **France** lowered electricity tariff acc. to HH income and heating system used (Link, until 2018)

Overview

- Based on HH income and/or consumption and/or seasonality
- Recipients pay less for every kWh consumed
- Government covers rest of the bill

Advantages

- Improves fairness of the tariff system
- Better targeting than consumption-based rebates

Disadvantages

- High data requirements on economic situation of HHs
  - Achieve high coverage of all low-income HHs
- Price does not reflect actual cost of electricity
- Undermines saving incentives

5.2.3 (Un)conditional transfers

Overview

- Linear, cost-recovering tariffs for all HHs plus support of poor HHs via cash transfers (non-earmarked) or vouchers (earmarked) for HHs energy payments

  (1) Relative: HHs do not have to pay more than certain percentage of monthly income for electricity

  (2) Absolute: Poor HHs do not have to pay more than certain amount per month

  (3) No Price Cap: HHs receive fixed amount of money per month

Examples

- **Germany**: monthly social allowance for low-income HHs ((3) & non-earmarked)
- **UK**: rebates during winter for low-income HHs (Link) ((3) and earmarked)
- **Ukraine:** cash for low-income HHs not to pay more than 15% of income on electricity ((1) and non-earmarked)

5.2.3 (Un)conditional transfers

Advantages

- Combination of (3) and non-earmarked transfers provides highest economic incentive to save electricity
- Few changes needed if electricity market is liberalised

Disadvantages

- High data requirements: need to understand well the economic situation of HHs
  - Achieve coverage of all low-income HHs
- Transfers need to be approved in budget plan
- In case of (1) and (2), price incentive does not reflect actual cost of electricity
- In case of conditional (earmarked) transfers, reduced incentive for HHs to save electricity

5.2.3 (Un)conditional transfers

Implementation

- Until now, not sufficient HH-level data established in UZB to target transfers to poor HHs
- But: Due to Covid-19, Uzbek government is currently developing “iron register” to enlist poor HHs
- Register to be used to direct cash transfers to poor HHs affected by Covid-19 quarantine measures

➢ **Register could also be used to direct non-earmarked cash transfers in order to reduce the share of income that poor HHs pay for electricity**

6. Comparison of social support measures

First principles	Block tariffs	Social tariffs	Conditional transfers: earmarked	Unconditional transfers: not earmarked
Incentive to save electricity	-	o	+	++
Fairness	o	++	++	++
Targeting	-	++	++	++
Coverage	++	++	++	++
Adoptability to liberal market	o	++	++	++
Low complexity for HHs	++	+	+	+
Administrative complexity	o	--	--	--

--: very problematic, -: problematic, o: neutral, +: beneficial, ++: very beneficial

- Unconditional transfers: fair, incentivise energy efficiency and compatible with a liberalised market, but difficult to administer
- Social tariffs: Same advantages as transfers, but less incentive to save electricity
- Block tariffs: Disadvantages compared to other models, but easy to administer

7. Conclusion

- **First Best**: Linear, cost-recovering tariffs and unconditional transfers for low-income HHs economically preferable

- But: Does the social security net permit well-targeted transfers or social tariffs?

- "Iron register" for poor HHs currently under development could potentially be used for targeted transfers

- **Second Best**: If targeting of poor HHs is not possible, implement block tariffs based on HH consumption and number of people in HH plus connection charge

About the German Economic Team

The German Economic Team (GET) advises the governments of Ukraine, Belarus, Moldova, Georgia and Uzbekistan regarding the design of economic policy reform processes and a sustainable development of the economic framework. As part of the project we also work in other countries on selected topics.

In a continuous dialogue with high-level decision makers of the project countries, we identify current problems in economic policy and then provide concrete policy recommendations based on independent analysis.

In addition, GET supports German institutions in the political, administrative and business sectors with its know-how and detailed knowledge of the region's economies.

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