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COMMITTEE ON SUSTAINABLE ENERGY

REFORMING ENERGY PRICING AND SUBSIDIES

Addendum 1

PART 1: GUIDELINES ON REFORMING ENERGY PRICING IN COUNTRIES IN TRANSITION

1. Objectives

The primary goal of energy pricing reform should be to create a well-functioning competitive market, aimed at increasing economic efficiency and improving quality of energy services. It should fully take into account the economic, environmental and social concerns of governments and society, in promoting the sustainable production, transmission and use of energy.

Energy sector reform should be part of a broader process of macroeconomic restructuring. Key elements include:

- Commercializing energy commodities and services.
- Unbundling vertically integrated monopolies.
- Liberalizing the energy sector by introducing wholesale and retail competition.
- Promoting best practices in managing public and private energy companies.
- Improving the environmental performance of the energy sector.

The general public should be informed about the benefits of energy-sector reform and market-based pricing notably the resulting gains in economic efficiency and GDP growth, the more efficient use of energy consumption and lower emissions of CO_2 and pollutants.

Making the energy sector profitable and attracting domestic and foreign investment should be a primary policy objective.

2. Approach

2.1 General Principles of Tariff Regulation

The prices of energy products and services, with the exception of petroleum products, are usually set by some kind of a state body in countries in transition. Two major principles need to be taken into account in regulating energy prices:

- Customers should receive adequate service at reasonable rates.
- Utilities should be provided with a reasonable opportunity to recover all their costs, including the costs of capital (a fair return on investment).

For the efficiency of the energy sector and the entire economy the most important factor is that prices reflect long-run marginal costs (LRMC).[1] Certain subsidies, however, may be acceptable (see Part 2 of these guidelines): In principle, any subsidy can be justified if the gain in social welfare and environmental improvement that it brings exceeds the net economic cost.

2.2 Removing Price Distortions

The prices of network-energy services (electricity, gas and heat) - particularly to households - in countries in transition are often far below average EU prices, and LRMC.

Studies show that household prices are well below LRMC, often by as much as 90%, in almost all transition economies. Moreover, the ratio of industrial to household prices does not correspond to that observed in developed market economies. Industrial power tariffs are often relatively as a result of cross subsidies. The difference between prices and LRMC is covered by subsidies. The long-term objective should be to bring prices to different customer categories into line with LRMC.

2.3 Encouraging Efficient Consumption

The correct energy prices provide market signals that motivate consumers to use energy efficiently. In non-energy intensive sectors, where energy costs do not exceed 2-5 % of total operating costs, it is nonetheless important for companies to exploit opportunities to use energy more efficiently when the rate of return on investments in energy-efficient technologies is acceptable. Generally, such investments require a payback of no more than five years. Rational energy use is even more important in energy intensive sectors iron and steel, glass, non-metallic

[1] Marginal cost is defined as the cost of producing an extra unit of output using the existing capital stock. Long-run marginal cost (LRMC) is marginal operating cost plus the cost of additional capacity required to increase output.

minerals and heavy chemicals, where energy costs can account for as much as 40 % of total operating costs.

The importance of efficient residential energy use is increased by the fact that this sector accounts for a large proportion of final consumption. Under-pricing has discouraged energy-efficiency improvements up to now. Raising prices in the residential sector would boost interest in using energy more efficiently. In addition, it is important that technical solutions be made available to help people save energy if they wish to, including:

- Installation of meters and heating controls in individual housing units.
- Individual billing.
- Subsidies for family houses and multi-dwelling houses to finance investments in energy efficiency, such as cheap loans and tax concessions.

2.4 Attracting Investments into Energy Sector

The use of the energy by the energy industry itself in countries in transition represents on average 30% and 40 % of total primary energy supply. Because of low energy prices and non-payment of bills, energy producers and distributors often make commercial losses. This means that the necessary maintenance, investment and modernization do not take place.

Price reform would allow the sector to become profitable, which would attract domestic and international capital. To attract foreign funds, countries in transition have to provide a stable investment climate and competitive tax arrangements. Once the right conditions are achieved, energy companies could make good the lack of investment in the past. Energy price reform and liberalization of the energy industry would help improve the efficiency of energy production and supply.

3. Price Signals to Consumers

The population should be informed of plans to reform energy prices in a timely and effective manner. It is a major exercise to communicate to the population and to make it understand why the reform is necessary and beneficial for society and the economy as a whole. It should be explained that price reform is a key element of moves to promote sustainable development, protect the environment and raise people's standard of living.

The population needs to understand that the price of all products, including energy, should reflect production and distribution costs as well as a reasonable profit to cover the cost of capital. The population should be made to accept that energy is a commodity just like any other. It can be particularly difficult for people to accept this principle in some countries of Eastern Europe, Caucasus and Central Asia (EECCA) where the majority of consumers have become used to not paying their energy bills.

The population should also be persuaded that prices reflect only those costs that are related to the supply of the energy service in question and that the relevant costs are as low as possible. It should also be made clear to people that prices will be raised gradually and that the most vulnerable segments of the population who could lose out from the transition will be protected.

4. Transparency of Pricing

In countries in transition, end-user prices are often subsidized. Producer side subsidies are also common. Within large, vertically integrated energy utilities, cross-financing between the different functions along the supply chain – production, transport and distribution – is widespread. Where import prices are volatile, prices changes are often passed on to consumers by the regulatory body in an arbitrary manner. This lack of transparency, which hinders efforts to improve the efficiency of energy pricing and remove subsidies, is a pressing issue in many countries in transition.

In vertically integrated network industries, unbundling of the accounts and management of the different parts of the supply chain would reveal cross subsidies and make it easier to remove them. At the same time the regulatory body responsible for pricing should take care that the logic behind pricing and the frequency and timing of price changes are widely known and understood. Predictability of prices is necessary to make it easier for utilities and consumers to plan ahead.

5. Pricing Methodologies

In almost all countries in transition, the regulatory authorities responsible for pricing of network-based energy services do so in an arbitrary manner, based on broader economic considerations, such as protecting activities likes mining, maintaining employment and reducing imports, and social considerations, such as supporting the incomes of poor households. The most important initial step in reforming energy pricing is to move away from an approach based on ability to pay philosophy towards one based on cost of service. The ultimate objective should be to move towards market-based pricing based on competitive in generation and supply. The pricing of the natural monopoly elements, including transmission and distribution, would, however, normally remain regulated.

Normally there are four main cost elements in the price structure for electricity and gas:

- A one-time payment for connection to the grid.
- A standing or fixed charge (usually monthly), not related to the amount of the commodity consumed. This charge covers costs such as metering, billing and capacity.
- A usage cost related to the amount of energy consumed, to cover the production of the commodity itself and the variable costs of delivering it to the end-user.
- A capacity charge, which is intended to cover the cost of building and maintaining capacity regardless of the extent to which that capacity is issued.

Other charges, such as environmental taxes, excise and value added taxes, regulatory charges, costs of compliance with economic and energy policy requirements, would be added the above charges in the bill to consumers.

Regulators can use different approaches to setting the average price that utilities are allowed to chare their customers:

- Rate-of-return regulation.
- Price cap regulation.

- Revenue cap regulation.
- Performance based regulation.

With rate-of-return regulation, profits are guaranteed and prices are predictable and transparent, but there are limited incentives to reduce costs. The other types of price control are known as incentive-based regulatory approaches. Producers have incentives to minimize costs. But there is a risk of windfall profits and the quality of service can suffer.

Whatever the chosen approach, prices should normally reflect the LRMC of energy production, transport and distribution, including a fair return on investment. In determining the LRMC, the exact cost of all elements of energy supply needs to be calculated for the various consumer categories taking account of differences in load characteristics. The introduction of cost-based tariffs should be seen as a transitional move. In the long run, the goal should be to move to market-based pricing though the introduction of competition in the wholesale and retail supply. In this way, the free market would determine the price of the energy commodity, with price being free to rise and fall in response to scarcities and surplusses. Market mechanisms provide a system of price adjustments to signal where resources are required and where they are not. The same mechanisms also promote the deployment of the most economically efficient energy technologies.

6. Methods for Allocating Costs

Utilities' costs, including operation and maintenance, administration, depreciation, tax and interest charges, can be grouped according to the various functions of energy supply; namely, production, storage (in case of gas), transmission, distribution and overheads.

In practice, these costs have to be allocated to different customer categories, to different types of service (for example, firm and interruptible) and to different types of charges, as described in section 5 above.

Energy costs reflect the volume of consumed energy. Capacity costs can be calculated for each customer category through detailed analysis of system loads, taking into account how certain customers influence such costs. Determining which customers account most for peak load is particularly important.

7. Types and Structure of Rates

Consumers enter into various classes of contracts with utilities for different types of energy service. The main types of regulated tariffs are as follows:

- *Firm customer tariff system*: The majority of customers opt for firm supply. These customers have a long-term relationship with the utility, cannot be switched to alternative fuel and require a continuously available service. They include households and most commercial businesses. They generally pay a fixed charge and an energy charge according to metered consumption. Flat rates are also quite frequently used where the energy charge is independent of actual consumption, usually where the service is un-metered. The amount of capacity charge is a controversial issue in the case of such customers.

- *Lifeline tariffs:* In many countries, lifeline tariffs are used for household consumers. Its objective is to meet the basic energy needs of the poorest customers at an affordable, subsidized price. The price subsidy is restricted to the initial (one or two) block(s) of consumption.

- *Interruptible tariffs:* The objective of interruptible energy supply is load management. It is primarily aimed at certain industrial consumers who are inclined to accept this type of service by temporarily interrupting their activity or by switching to an alternative back-up fuel. In return, interruptible customers benefit from a discount on the firm tariff. Some household customers use interruptible service for off-peak water or space heating.

- *Seasonal tariffs*: These are used where consumption varies markedly with the seasons, usually for space heating. A distinction is normally made between peak and off-peak periods for commodity charges to reflect the higher cost of meeting demand at peak.

- *Public lighting tariffs:* In some cases, a separate tariff may be applied for this type of use.

- *Incentive tariffs*: These may be used where the utility wishes to encourage or discourage consumption during certain periods

In many cases, regulated tariffs contain various price subsidies to meet social objectives. In assessing the justification for these subsidies, the following considerations should be taken into account:

- The extent to which the poor benefit from the subsidies (coverage)
- The share of the subsidy that goes to the poor (targeting)
- Market distortions caused by the subsidy
- Administration costs.

Other issues also need to be considered, such as the extent to which revenues are collected in cash, how much consumption is not billed and un-metered consumption. Raising tariffs towards LRMC requires these issues to be resolved

8. Frequency of Price Adjustments

Regulated energy prices should be adjusted in a timely and predictable manner. The adjustment may occur at certain pre-determined periods e.g. annual review or may be linked to some other event. Changes in price would normally be based on the changes in several economic indicators, for instance, import prices, the rate of inflation and the exchange rate. The price-adjustment formula may also include a revenue or productivity improvement-related element.

9. Support Mechanisms for the Poor

Reform of energy pricing should be accompanied by measures to compensate households for the loss of income that would normally entail. At present, there is no standard approach to dealing with this issue in the countries in transition. Income support mechanisms must be developed taking into account local characteristics, including income levels and the extent of the household-price increase bright about by reform. Key issues that policymakers must address

include establishing criteria for determining eligibility for support and the mechanism for providing that support.

9.1 Criteria for Eligibility for Support

The poorest consumers would normally be eligible to receive support following the price reform. Identifying those customers is not always easy because of incomplete household statistics on poverty and energy consumption. Human passivity, health conditions, cultural reasons and pride which can discourage poor people from applying for subsidies, can also prevent support from being directed to targeted households.

The group of eligible consumers can be determined based on earlier applications for aid, voluntary application and affordability criteria. Affordability may be defined based on income per capita . Another approach is to use the share of spending on energy in total household income. If this share exceeds a given level, the so-called fuel-poverty level (for example, 15 %), the household would be eligible to receive support. In some countries, eligibility is linked to the energy consumption of the household. In this case, eligibility would be determined by a threshold: in kWh/year for electricity or m3/year for gas.

9.2 Evaluating Support Mechanisms

In deciding on the most appropriate support mechanism, policymakers must try to achieve five key objectives:

- The mechanism should cover all eligible poor people.
- It should reach only those consumers who need it and not those who can afford to pay full cost prices.
- It should minimize the cost to the government or utility.
- It should be fair and cost-effective.
- It should minimize distortions.

None of the support mechanisms currently in use in transition countries fully satisfy the above criteria. Across-the-board subsidies, whereby all l residential consumers are subsidized, should always be avoided because of bad targeting. Supply-side subsidies should also be avoided for the same reasons. The following solutions are more acceptable:

- Life-line tariffs with two or three fixed or floating blocks with subsidized tariffs. But they can be implemented only when consumption is properly metered.
- Targeted subsidies in the form of grants related to measures of affordability. The metering of the households' energy consumption and reliable information on household incomes are necessary for this approach to work effectively.
- Direct income support.
- Support for energy-saving investments for poor households.
- Combinations of the above systems.

10. Regulatory Framework

Simultaneously with the reform of prices and the energy sector in general, a regulatory authority must be established for the network energy industries. Key tasks of the authority include the following:

- Setting prices in areas where a free market does not operate. Regulation should cover wholesale prices, retail prices for captive customers (where there is not supply competition) and the network access charges.

- Licensing of energy production/generation, transmission, storage and distribution.

- Protection of consumers interests.

- Other activities, such as developing standards for environment protection and safety, promoting energy efficiency etc and monitoring the behaviour of market participants and industry performance.

The authority should be independent of day-to-day political interference and should ensure equal conditions and non-discrimination of all sector participants. It should be given responsibility for encouraging competition and ensuring financial viability of industry participants.