

Breakout Session 2: Energy Subsidy Reform Scenarios – Country A, Importiana

Importiana is a continental country with a population of over 70 million. Its economy is very vulnerable to commodity markets price shocks as agricultural crops and metals form the bulk of its exports. Following the world economic crisis, GDP growth rates gradually recovered and reached 2% in 2017. Being in the group of lower-middle-income countries, about 50% of households in Importiana are considered vulnerable to high energy prices.

Importiana possesses a very limited coal and gas deposits and is a net energy importer. Although energy independence has been a major concern at least in the last 10 years, Importiana still heavily relies on a limited number of suppliers with over 80% of its energy imports coming from one destination.

Citizens of Importiana used to pay very cheap energy tariffs during Soviet times and perceive gas, heat and electricity as public goods, which should be available at low prices for everyone. Households used to pay their gas and heating bills based on normative consumption volumes (estimated by regulator based on the type of building, season, etc.) but recently the government introduced state programme aiming to reach 50% of household consumption metered by 2035.

Energy tariff setting is based on cost-plus methodology, which is supposed to cover production costs and limited investment programmes. Nevertheless, utility companies, most of which are in state ownership, are constantly facing losses and don't have enough resources for rehabilitation of their assets and efficiency improvement.

As even minor increases of energy tariffs were considered very unpopular, all governments of Importiana have tried to keep energy tariffs low since the time country got independence. To compensate utility providers the difference between full production costs and low energy tariffs for households, the government designed a range of direct and indirect subsidy instruments including budget transfers and capital injection into state-owned energy and utility companies.

As energy prices on the world market recovered, the subsidy burden on the budget and sovereign debt increased to highly unsustainable levels. The government even had to cut spending for public health and education to compensate losses of utility providers for the latter to have enough resources to purchase imported gas and coal.

The country is facing bankruptcy if energy subsidies are preserved at the same level for the next 2 years. At the same time, regular Parliament elections are scheduled in 16 months and any increases of utility tariffs are highly unpopular. Ruling party hopes to be re-elected for another five years and is very reluctant to support government decision to reform energy subsidies.

Breakout Session 2: Energy Subsidy Reform Scenarios - Country B, Atomistan

Atomistan is a coastal country with few indigenous energy resources and a population of 25 million people. The country has seen economic growth rates of around 3% a year for the last decade, although much of the growth has raised the incomes of the rich. Around 20 % of the population are estimated to be vulnerable to energy price rises.

It has a fleet of nuclear reactors built between 1950 and 1980 providing around 50% of the electricity supply. The majority of these are now more than 40 years old and approaching the age at which they will need to be decommissioned. The operating costs of the nuclear reactors are relatively low at around USD 2 cents per kWh. Since the reactors were originally built by a state-owned utility several decades ago the construction costs of these plants does not have a large impact on the operation of the sector. Electricity prices have historically been kept low to reflect the low cost of this electricity at around USD 5 cents per kWh including transmission, distribution and retail costs. The unit charge is the same for all consumer groups and industrial users.

Since 2000 electricity demand has doubled. This means that nuclear generation, which used to meet nearly all the electricity demand now only meets half the demand and is likely to drop further as nuclear power stations start to be decommissioned. The shortfall in electricity generation has been met by increasing the deployment of gas fired power generation. However, gas fired generation costs are significantly higher than the operational costs of the old nuclear. The levelised cost of energy (LCOE) has been estimated at around USD 10 cents per kWh. New nuclear power plants have been estimated to have an LCOE of around USD 15 cents per kWh. Neither of these figures include transmission and distribution costs.

The ruling party, the National People's Party, have been in power for the last 20 years and keeping electricity prices low has featured in their last two election manifestos in the form of a promise that electricity prices will be kept at a level where everyone can afford to pay their power bills. The national utility has reported that due to the current level of electricity tariffs it is only able to cover around 60% of their operational costs from electricity tariffs. The remainder is effectively a subsidy from the government to keep the power sector operating paid in the form of periodic transfers and debt write offs.

Despite the looming energy crisis, public awareness of the electricity sector, including the true cost of subsidies and the options facing the country are very limited.

Breakout Session 2: Energy Subsidy Reform Scenarios - Country C, Hubbertistan

Hubbertistan has been an exporter of natural gas since large fields were discovered in the 1970s. Between 1980 and 2010 royalties from the gas fields accounted for around 30% of all government revenues. Gas is exported via two pipelines and an LNG terminal to neighbouring countries. In 2008 gas production peaked and is expected to slowly decline over the next 20 years. Geological exploration has concluded that no further significant finds are likely.

National prices for natural gas have been historically set around the cost of production to share the natural resource wealth with the people. In 1990, domestic consumption accounted for only around 20% of production but over the years this has risen to so that only 15 % of production is exported today and revenues from exports are dwindling. The underpricing of nationally sold natural gas means that the domestic price is only around 40% of international prices and only 25% of the price of imported LNG.

The historic abundance of natural gas has led to an energy sector that is reliant on the continued availability of cheap natural gas. Almost all electricity is generated from gas fired power stations, the majority of houses are heated through gas fired district heating systems and even the use of gas to power around 10% of private cars. The low prices of gas available in the electricity sector have made it very difficult for other types of generators to enter the market as the typical power purchase prices demanded by generators appear to be very high compared to the gas generators, in part due to the fact the the fuel they consume is effectively subsidised. The low prices of gas have led to low electricity prices that have encouraged excessive consumption. Much of the countries housing stock is badly insulated and many households use air conditioners for much of the summer.

In 2005 an LNG terminal was constructed to provide another route to export natural gas. This was built partly to ensure energy security due to geopolitical tensions in the region. As domestic demand rises close to production it is likely that within the next 3-5 years the country will become a net importer of natural gas. The LNG terminal is expected to provide the primary route for the import of gas.

The availability of cheap energy is one factor that enables the country to support a significant aluminium smelting industry. This industry employs around 50,000 people (the total population of Hubbertistan is around 12 million). The aluminium industry consumes around 15% of total electrical generation and have raised concerns that price increases may affect their international competitiveness.

Domestic consumers are billed on a tiered pricing system where consumers pay USD 3 cents per kWh for the first 300 kWh of consumption and prices gradually rise to to USD 15 cents, per kWh which is estimated to be close to the cost recovery level, for the highest domestic consumers. Industrial consumers pay a flat rate of USD 5 cents per kWh.

Breakout Session 2: Energy Subsidy Reform Scenarios - Country D, Carbonia

Carbonia is a country of around 30 million people with a large coal mining industry located in the south of the country, an area with few other industries and high levels of social deprivation. As the main indigenous energy source, coal has been used for many end use applications. In particular, heating to the urban parts of the country delivered by municipal publicly owned district heating schemes powered by coal boilers and in some cases coal-fired combined heat and power (CHP) units.

Many of the CHP units were installed between the 1950s and 1980s and since then maintenance and upgrades have been limited. As a result, many of the heating systems and CHP units have very low levels of controls and metering and operate at a low level of efficiency. Some of the largest CHP units make up an important part of the generation capacity of the country so are often dispatched in a power led mode with heat effectively dumped.

Winter temperatures can drop as low as minus 20 degrees Celsius in Carbonia so access to heat is extremely important. Historically, heating has been included in the cost of rent for tenants. Since heat is often unmetered, buildings have often little incentive to invest in improved insulation and tenants have little incentive to reduce consumption.

Until recently all coal production was nationalised. A programme of coal industry reform and privatisation in the last few years has led to the closure of around half of the countries coal mines with accompanying job losses. The remaining mines, which tend to be the largest, are now operated by three international mining corporations. The price of coal that the state used to pay for the district heating schemes was a special reduced rate. Under the new system the price paid to the coal mines is now based on international benchmarks using a cost-plus pricing methodology.

To avoid increases in the cost of energy and prevent the publicly owned district heating schemes from facing financial losses and being unable to buy coal, the energy ministry has stepped in to fix the price paid for district heating schemes at pre-privatisation levels in the short term. Coal boilers and CHP units for district heating pay a special reduced price for coal that is around 50% of the cost of supply with the government making up the shortfall.

If coal prices for the district heating schemes were increased the price increase would currently be passed through in the form of rising rents for tenants. This could push many of the tenants into poverty. Historically, the provision of low cost coal has been considered as a mechanism to share the benefits of the coal industry with the people. However, the special coal prices are only available to district heating schemes, in rural areas, private consumers of coal have to pay the full market price for coal. Some of these areas are just as poor as the urban areas that are receiving subsidised coal. The cost to the government of subsidising coal is considerable and accounts for just over 50% of the Energy Ministry's total budget each year this has caused all other investment scheme from the ministry to be suspended until the burden can be reduced.