

## 2. SNAPSHOT OF BULGARIA'S ENERGY SECTOR: ENERGY SECURITY PERSPECTIVE

### 2.1. ENERGY SECURITY: IMPLICATIONS FOR BULGARIA

Low levels of energy security usually result in high-levels of **energy dependency** and **energy poverty**. Energy security, energy poverty and energy dependency are inter-related terms as low energy security and supply dependence usually translate into higher prices, or energy supply disruptions, and eventually into energy poverty and *vice versa*. Both producer and consumer countries rely on abundant supply of energy sources and the smooth-functioning of the market to ensure adequate supplies of energy to the economy at competitive prices. In an attempt to insulate themselves from market fluctuations and pursue a long-term strategy for reducing their dependence on energy imports, some countries opt for boosting their energy efficiency, as **reducing the energy intensity of the economy is the main preventive measure directly affecting the energy security of the country** – a strategy that seems particularly sustainable for Bulgaria, as well.

Monitoring the energy developments in Bulgaria and accordingly devising energy policy strategies that would adequately address the energy security risks, that the country is facing, is of an immense importance to the economic, social, and political well-being of the country. Bulgaria is in a unique energy security position in the EU. It is a small and open economy, which lacks geopolitical weight to be a policy maker not only in regards to EU's energy policy but also vis-à-vis regional powers like Russia and Turkey. Bulgaria's energy sector is mostly state-owned, poorly managed and heavily dependent on Russian resources and technology. The *National Security Strategy of Bulgaria* adopted in 2011, states that one of the biggest threats to Bulgarian national security is poverty, and in particular energy poverty<sup>36</sup> as Bulgaria has been indicated in a number of studies as the country most susceptible to energy poverty in the EU. When devising the country's energy policy, it is important to be mindful of the following **characteristics of energy security in Bulgaria**:

- a. **Availability of resources:** A sustainable strategy for Bulgaria has to incorporate a sizeable use of unconventional energy sources and map a route to the economy's transition to a more sustainable energy model. Furthermore, technologies have virtually revolutionized and democratized the oil and gas production industry – most countries in the world sit on unconventional resources and new technologies that allow for reintensification of production in depleted oil and gas wells. Bulgaria's major handicap in the process is

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<sup>36</sup> Bulgaria, Ministry of Economy and Energy, (2011), *National Security Strategy of the Republic of Bulgaria*. Accessed from: [http://www.mi.government.bg/files/useruploads/files/national\\_strategy1.pdf](http://www.mi.government.bg/files/useruploads/files/national_strategy1.pdf)

that it has so far ignored local oil and gas production, does not have a national oil and gas champion plus sustainable strategy, including engaging local communities and other stakeholders, and has limited itself in developing local alternative supply options by introducing the moratorium on fracking.

- b. **Reliability:** Considering the country's strained finances and extended state aid risks, measures to reduce the demand for energy are most logical for Bulgaria in both short- and long-term perspective due to the fact that the price to be paid will be distributed among the most dispersed number of actors. Further, it is imperative that the government's decisions for the construction of future energy projects are based on the projects' potential to diversify supply sources and ensure an uninterrupted energy supply. The set of criteria should be led by best value for money, with the value defined as effect on the resilience of the energy system to external and internal shock and the competitiveness of both consumers and the producers.
- c. Environmental **sustainability:** A sustainable energy future would require a low-carbon growth through policies that expand well beyond the energy system and support complex concepts such as smart cities and transport, green buildings, etc. The most important steps for the next decade towards this future in Bulgaria are to enhance the energy efficiency of buildings and to lower the energy intensity of the economy.
- d. **Affordability:**<sup>37</sup> Bulgaria faces critical issues in energy affordability: in 2010 over a third of the households report being unable to afford keeping their homes adequately warm, and roughly 60 % of the Bulgarian households have used wood for cooking and heating – a criterion for defining a household as energy poor<sup>38</sup> (Figure 5). Bulgaria is also a leader in the EU in terms of the share of households that have defaulted on their utility bills,<sup>39</sup> despite the fact that Bulgaria's pricing policy is devised around keeping electricity prices artificially low, with modest, yet frequent, price increases, to compensate for other economic weaknesses – a quite unsustainable approach in the long-term. The data from the 2011 census confirms these findings – nearly 54 % of the inhabited dwellings in the country use wood and coal as a main heating source, while in the villages, the respective share is 95.2 % (Figure 5). The residents of Bulgaria use disproportionately high amounts of environmentally harmful coal and wood, as well as costly electricity to heat their homes, and pay substantial portion of their incomes for energy bills (Figure 4 and Figure 5), while also not being able to keep their homes adequately warm. The limited reach of certain types of networked energy infrastructures (particularly gas) means that, in addition to affordability issues, energy deprivation is also predicated upon the spatial and technical limitations associated with switching towards more affordable fuel sources in the households. Some parts of the population have had no option other than using wood and coal for heating. In Bulgaria, switching towards this source of energy has clear positive income dimension. Subsidized household electricity

<sup>37</sup> Pascual, C. and J. Elkind (2010). "Energy Security: Economics, Politics, Strategies, and Implications", *Brookings Institution Press* (Washington, D.C.).

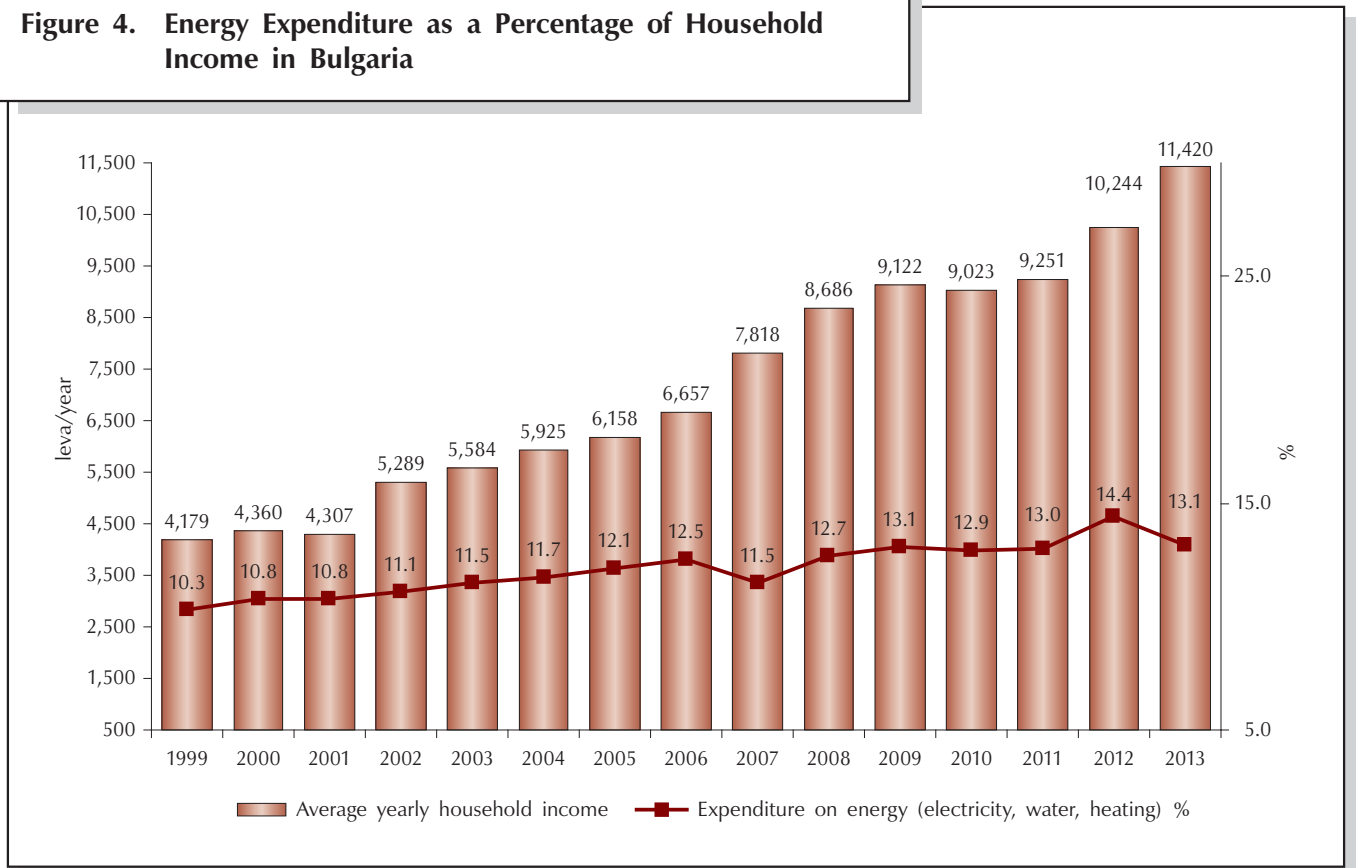
<sup>38</sup> According to the World Energy Outlook, energy poverty has two components: access to electricity and reliance on traditional use of biomass (mostly wood and coal, and inefficient stoves for burning them).

<sup>39</sup> According to Eurostat data.

prices have made Bulgarians in big cities overly reliant on electricity for heating. Hence, changes in electricity prices have had a disproportionately negative effect on energy poverty of households.

**As a whole, Bulgaria is in a unique energy security position in the EU.**<sup>40</sup> Energy poverty comes as the most serious energy security risk for the country with pervasive political and economic implications.<sup>41,42</sup> That is why focusing on energy efficiency, on developing alternative energy supplies and tapping into lower prices to help develop more efficient consumption are the most viable options for lowering the energy security risks for Bulgaria in the future. These options align well with European energy priorities on delivering clean, competitive, and secure energy. **Bulgaria should focus its severely constrained resources on implementing and leveraging EU policies,** which seems not to have been the case so far.

**Figure 4. Energy Expenditure as a Percentage of Household Income in Bulgaria**



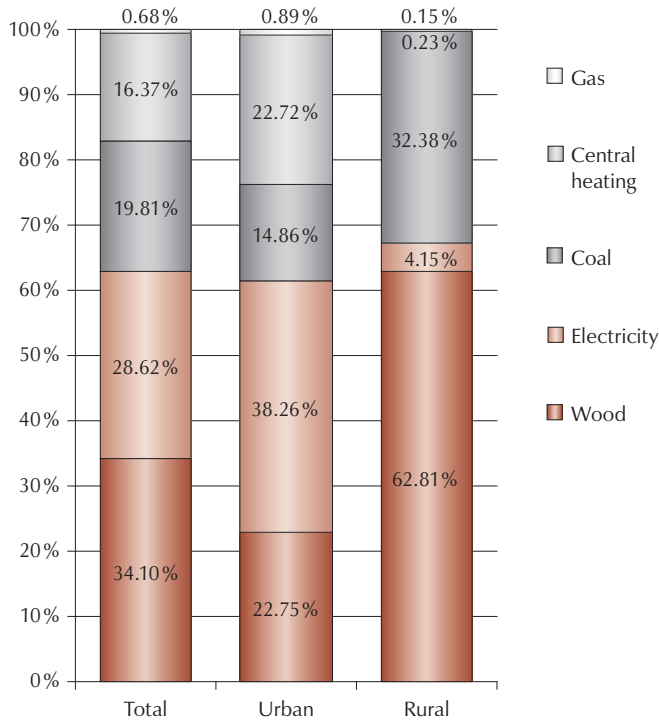
Source: NSI.

<sup>40</sup> CSD, (2013), *Bulgaria’s Energy Security Risk Index*, Policy Brief No. 40, Center for the Study of Democracy, Sofia, September 2013.

<sup>41</sup> Bulgaria, Ministry of Economy and Energy, (2011), *National Security Strategy of the Republic of Bulgaria*. Accessed from: [http://www.mi.government.bg/files/useruploads/files/national\\_strategy1.pdf](http://www.mi.government.bg/files/useruploads/files/national_strategy1.pdf)

<sup>42</sup> Bouzarovski, Stefan. “Energy poverty in the EU: a review of the evidence”. Paper presented at Workshop and Conference on Energy Efficiency – EU Regional Policy, Brussels, Belgium, November 29 – 30, 2011.

**Figure 5. Main Heating Sources by Type of Settlement in Bulgaria**



Source: NSI.

## 2.2. OVERVIEW OF THE ENERGY SECURITY POSITION OF BULGARIA

The International Index of Energy Security Risk (IIESR)<sup>43</sup> developed in 2012 by the Institute for 21<sup>st</sup> Century Energy at the American Chamber of Commerce shows that since 1980, **Bulgaria has had one of the worst energy security risk index scores** both nominally and compared to the OECD averages as Bulgaria's scores over the period averaged about 160 % higher than the average values for OECD countries. Reasons for the relatively low level of energy security in Bulgaria are deep-seated and while some of them are based on intrinsic and inherited inefficiencies of Bulgarian economy and energy sector in particular, others could be seen as the direct results of subpar policies in the area. However, unlike most of the other countries included in the index ranking, in absolute terms, Bulgaria's overall risk has been trending downward throughout the period (Table 3 and Figure 6).

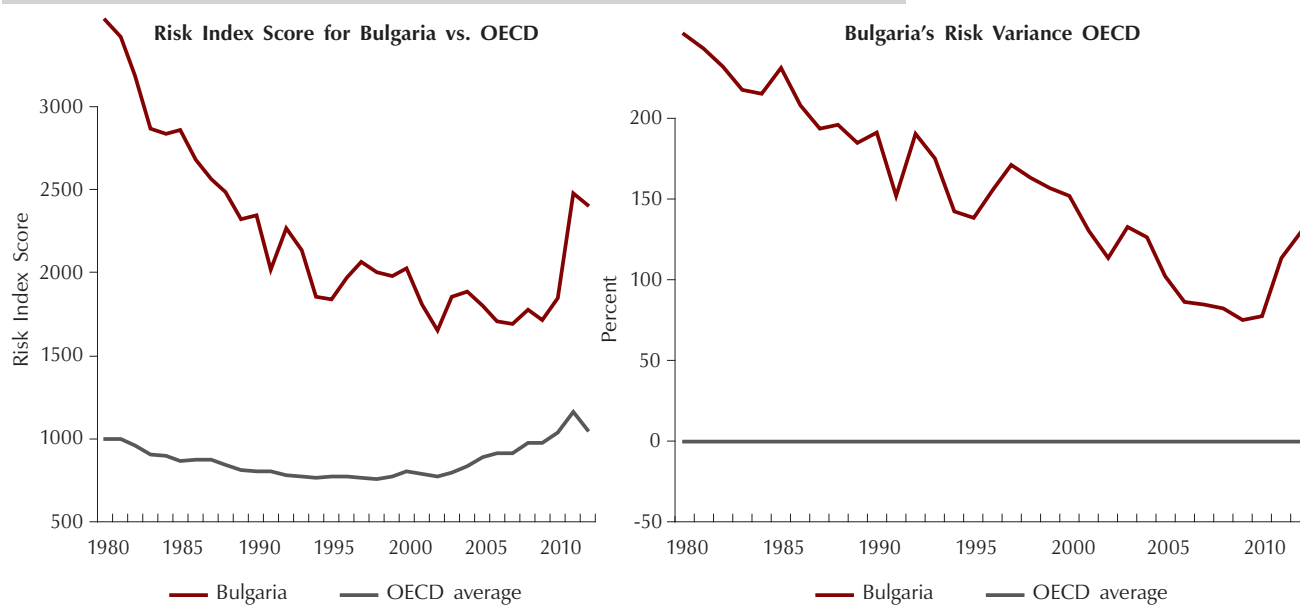
<sup>43</sup> "The International Index of Energy Security Risk", <http://www.energyxxi.org/energy-security-risk-index>

**Table 3. Bulgaria’s Energy Security Risk Summary**

|  |                     |
|--|---------------------|
| <b>Risk Scores:</b>                    |                     |
| <b>2012 Energy Security Risk Score</b> | <b>1,846</b>        |
| 2012 Top 75 Energy User Group Rank     | 73                  |
| Score in Previous Year                 | 1,714               |
| Rank in Previous Year                  | 70                  |
| Score in 1980                          | 3,524               |
| Average Score: 1980 – 2012             | 2,238               |
| <b>Best Energy Security Risk Score</b> | <b>1,654 (2002)</b> |
| Worst Energy Security Risk Score       | 3,524 (1980)        |
| Risk Scores Relative to OECD Average:  |                     |
| Average Annual Difference 1980 – 2012  | 158 %               |
| Best Relative Score                    | 75 % (2009)         |
| Worst Relative Score                   | 252 % (1980)        |

Source: IIESR, Institute for 21<sup>st</sup> Century Energy.

**Figure 6. Energy Security Risk Index Score for Bulgaria vs. OECD and Bulgaria’s Risk Variance OECD**



Source: IIESR, Institute for 21<sup>st</sup> Century Energy.

From its peak of 3,524 – 252 % above the OECD average – in 1980, the country's total risk score fell to 1,654 in 2002 – still about 114 % higher than the OECD average, but with a considerable improvement. The total risk spiked again in 2010, as a result of the economic crisis in the country, increasing energy poverty and social tensions. Above all, the relative deterioration of Bulgarian scores are based on worrying results in terms of **energy expenditures volatility**, which according to IIESR have increased more than 10 times in the years since 2009, reaching in 2012 one of its highest levels since 1980.

Like many other European countries, Bulgaria has no indigenous production of energy resources other than coal. Its import risks for everything except coal have been exponentially higher than the OECD average for most of the period since 1992. As a result, the country's expenditures on fossil fuels imports as a share of GDP, although improving, have, over the years, remained much higher than the OECD average. The problem is not solely that the share of the energy imports is high or the capital outflow servicing those imports is rising, but the fact Bulgaria controls miniscule segments of the energy value chain.

**On the positive side, Bulgaria's power sector is quite diverse.** It is one of the few countries with capacity diversity scores (though only marginally) better than the OECD average. Typical of an economy in transition, its energy use and emissions per capita measures are worse than the OECD ones, and these appear to be improving at about the same rate as the OECD's.

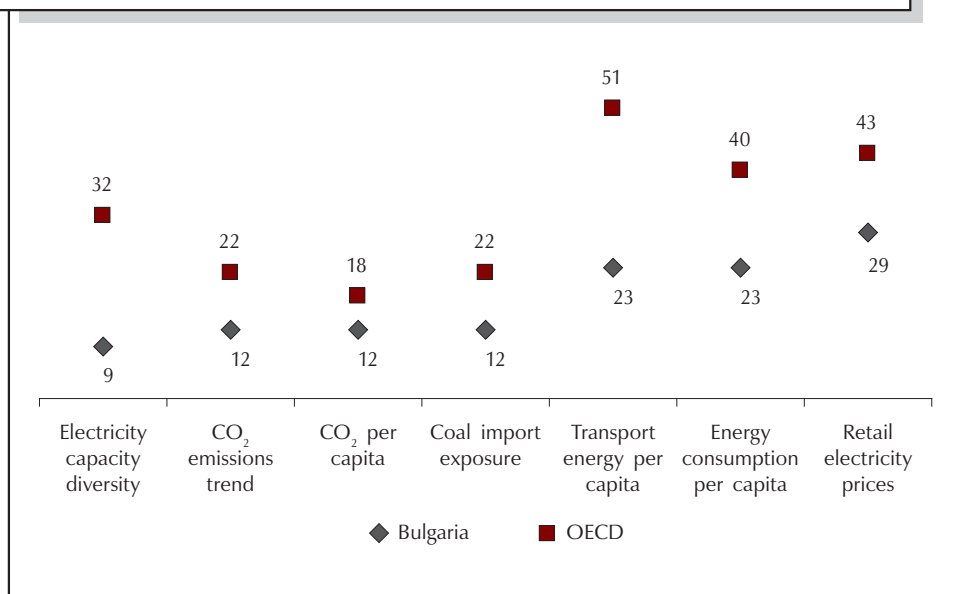
#### **Bulgaria shows lowest risks for the following metrics:**

- Coal import exposure (100 % below average OECD risk levels)
- Electricity capacity diversity (72 % below average OECD risk levels)
- CO<sub>2</sub> emissions trend (48 % below average OECD risk levels)
- Transport energy per capita (42 % below average OECD risk levels)
- Energy consumption per capita (42 % below average OECD risk levels)
- Retail electricity prices (31 % below average OECD risk levels)
- CO<sub>2</sub> per capita (30 % below average OECD risk levels)

From a developmental point of view only two of these comparative advantages look sustainable. These are the **coal import exposure** and the **electricity capacity diversity**. In Bulgaria, coal is the only indigenous energy resource, although it is only low-grade lignite coal. In electricity generation, Bulgaria has developed a variety of production options. However, a key challenge in this respect is keeping up with investment requirements for replacing existing generation capacity, e.g. nuclear, as well as better embedding the respective production in the local industrial and technological environment. It is advisable that investments cover both options – i.e. modernization and generation capacity upgrades to meet ecological standards and higher efficiency. Private owners and businesses should be given an option to meet standards before they are shut down provided that in the interim emission markets rebalance and prices shoot up.

The other demonstrated lower security risk level indicators are typical for less developed countries. CO<sub>2</sub> emissions trend and CO<sub>2</sub> per capita have been at lower levels because of the steep deindustrialization process of Bulgaria since

**Figure 7. Index Components with Better Performance for Bulgaria**



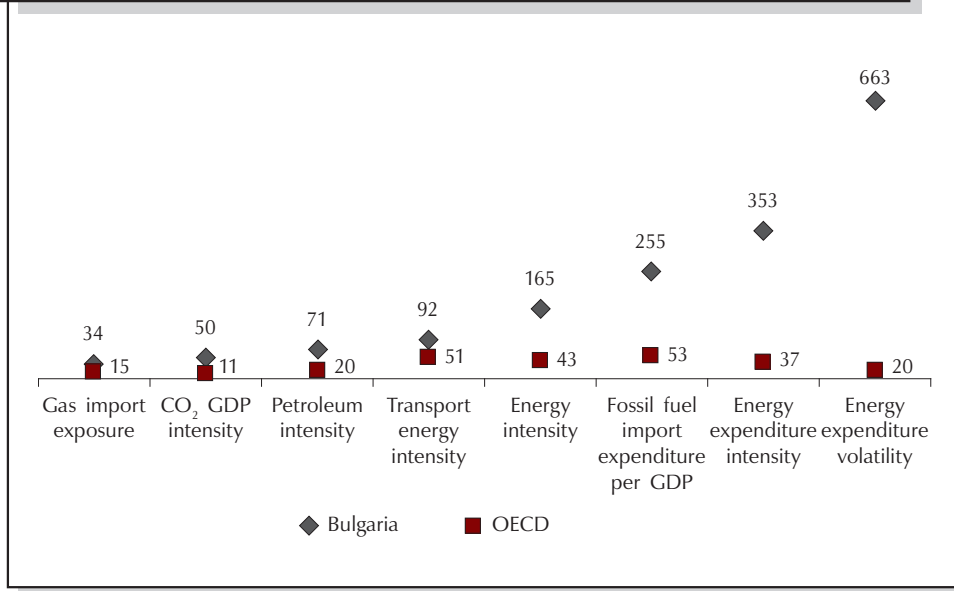
Source: IIESR, Institute for 21<sup>st</sup> Century Energy.

the collapse of its centrally planned industrial complexes in the 1990s. In fact, part of the steep decline in the industrial asset base has been the high price of energy, demonstrating the industrial dimensions of energy poverty. Transport energy per capita and energy consumption per capita have shown better scores as Bulgarians have been forced by lower incomes to use less energy for transport and consumption. The electricity retail prices have been lower because of continuing regulation of the household market. But their rise in 2012 caused widespread social discontent with substantial negative consequences for the country's security. This discussion comes to show that no single measurement of energy security risk should be regarded in isolation and without clear policy perspective. What is a low risk now can turn into a high risk potential in the future, due to changing circumstances, social and economic conditions, technological breakthroughs, etc. In terms of the main groups of metrics, the most **significant deficiencies** of Bulgarian energy sector has been demonstrated in the following groups:

- Energy expenditure volatility (3180 % above average OECD risk levels)
- Energy expenditure intensity (855 % above average OECD risk levels)
- CO<sub>2</sub> GDP intensity (370 % above average OECD risk levels)
- Energy intensity (289 % above average OECD risk levels)
- Petroleum intensity (252 % above average OECD risk levels)
- Transport energy intensity (197 % above average OECD risk levels)
- Gas import exposure (134 % above average OECD risk levels)

Similarly, Bulgaria's higher than the OECD energy security risk indicators also need careful consideration. Its low GDP and the high levels of hidden economy, combined with the country's aging energy infrastructure and deep-seated patterns of inefficient energy consumption (both industrial and residential energy use), lead

**Figure 8. Index Components with Worse Performance for Bulgaria**



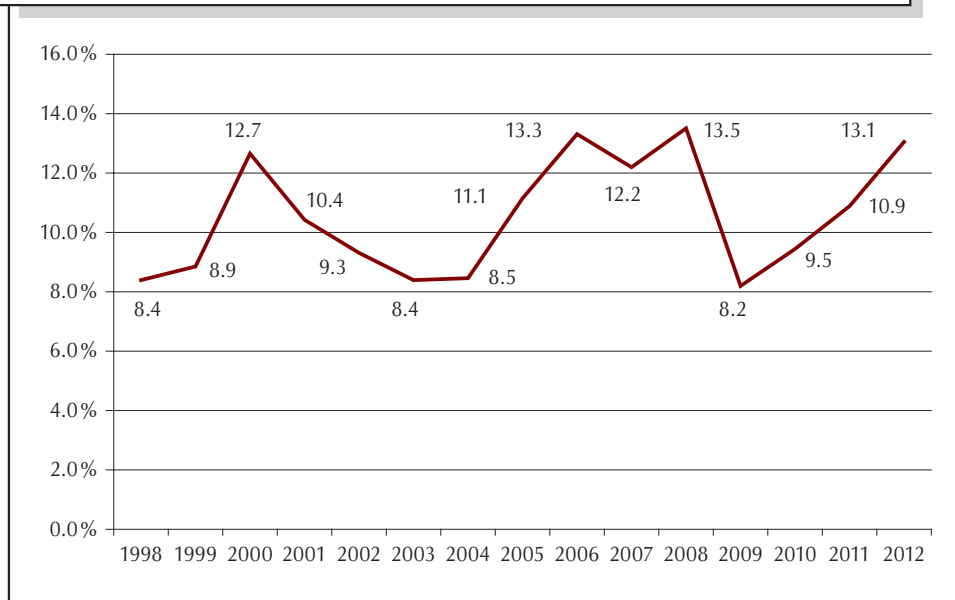
Source: IIESR, Institute for 21<sup>st</sup> Century Energy.

**Bulgaria to face abnormally higher energy security risks on all energy intensity dimensions.** These risks, however, are related to internal inefficiencies and costs and have been generally edging lower with the penetration of market economy rules in the country, yet are still at quite unsatisfactory levels. The highest demonstrated risk to Bulgaria’s energy security is its high energy expenditures levels and their volatility. Energy expenditures metrics show the magnitude of energy costs to produce a unit of national income and the exposure of consumers to price shocks.

This is reminiscent of the country’s high relative energy poverty and the low levels of its GDP. It also reveals the relation between the high exposure to fossil fuel import shocks, the low income levels, and the limited competitiveness of the Bulgarian economy (Figure 9). While gas import exposure risk does not appear that much higher than in the OECD countries, this is mainly due to the disproportionately low level of household gas consumption in the country, which relates to the overreliance of households on electricity for heating. The 2009 gas crisis in Europe has shown that while Bulgarian consumers, due to the low penetration of gas, can handle gas supply disruptions and price increase – they can’t handle power cuts and electricity price hikes. In effect, Bulgaria was among the top three worst affected countries by the gas supply disruption in Europe in 2009. That is why, given the high and rising prices of electricity in Europe, and the country’s energy poverty, developing alternative gas suppliers and tapping into lower gas prices to help develop household gas and central heating consumption is a viable option for lowering the energy security risks for Bulgaria in the future.



**Figure 9. Nominal Fossil Fuel Import as a % of Nominal GDP (1998 – 2012)**



Source: Bulgarian National Bank (BNB), National Statistics Institute (NSI).

## 2.3. BULGARIA'S ENERGY SECURITY CHALLENGES

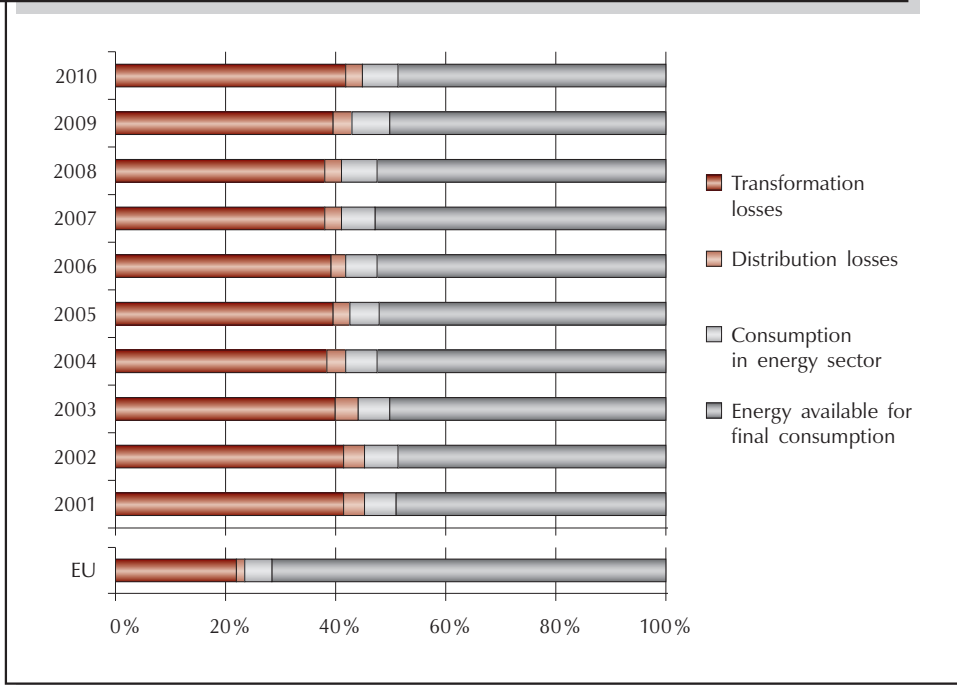
### 2.3.1. The Energy Efficiency Challenge: Energy Waste and Outdated Infrastructure

**Over half of the energy produced in the country is lost in the processes of transformation, transmission, and distribution**, while in the EU these losses are less than 30 % (see Figure 10 and Figure 11 below). Moreover, with regards to electricity, losses during the process of electricity distribution amounted to 4,480 GWh, far exceeding the amount of electricity produced by wind and solar energy in 2011 (which were 834 GWh and 100 GWh, respectively).<sup>44</sup>

**The country's energy intensity is historically high** (Bulgaria is a leader in the EU in terms of energy intensity) and has actually worsened since 2010. Gross inland energy consumption decreased in 2011 but consumption in the energy sector has increased in absolute terms and also relative to other CEE countries, as historically only Romania's energy sector shows higher rates of intensity. For comparison, distribution losses in Slovakia are nearly 9 times smaller than losses in Bulgaria and Romania (Figure 11). In addition, the slow economic growth has been fuelled by a disproportionate growth in fossil fuel imports (Figure 9). Considering that Bulgaria is not rich in conventional energy sources and imports a significant amount of energy resources, such wasteful energy trends seem

<sup>44</sup> According to preliminary data by Eurostat for 2011.

**Figure 10. Energy Losses and Energy Available to End Users (% of Primary Energy Consumption)**



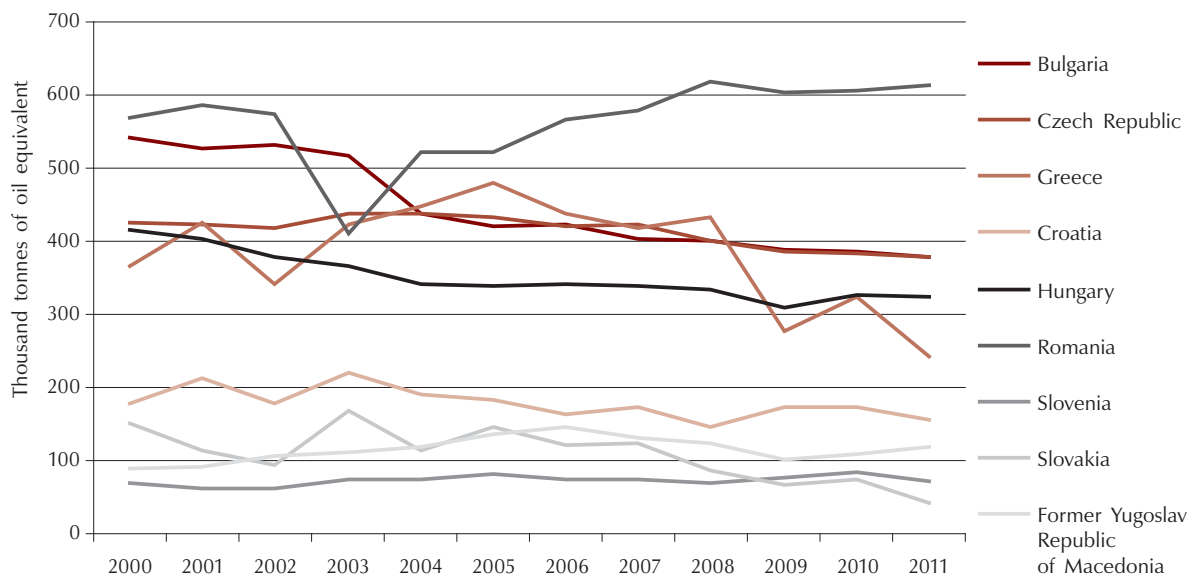
Source: Center for the Study of Democracy calculations, 2012, based on Eurostat data.

unsustainable. While charging customers for maintenance of the energy grid on a monthly basis, the past 20 years have seen a **continuous underfunding of the grid** leading to high depreciation and frequent blackouts. Moreover, as the country introduced a preferential regime in 2007 to boost the development of projects generating energy from renewables, as per EU latest regulations and developments in the energy sector, it became clear that the aged energy grid has no capacity to accommodate these advancements and is not physically located to serve the bulk of these projects.<sup>45</sup> However, ESO grid development plan for 2010 – 2020<sup>46</sup> concludes that no new capacities are necessary to balance out the system (incl. irregularities related to renewable energy production), given that wind energy does not exceed 1,832 MW of installed capacity by 2020 (and solar does not exceed 600 MW), TPPs Bobov Dol and Varna shut down, and HPP Tsankov Kamak is built. As of 2013, however, despite finishing HPP Tsankov Kamak and extending the license for operation of TPP Bobov Dol (while TPP Varna is also upgrading its systems, thus, not likely closing down), the regulator proclaims issues with balancing the grid as overwhelming and, subsequently, decisive for the latest amendments in the *RES Law*.

<sup>45</sup> For instance, the bulk of developed wind park projects in Bulgaria are located in the North-East, while the bulk of the transmission capacity (as per grid location) is concentrated at the Center and West.

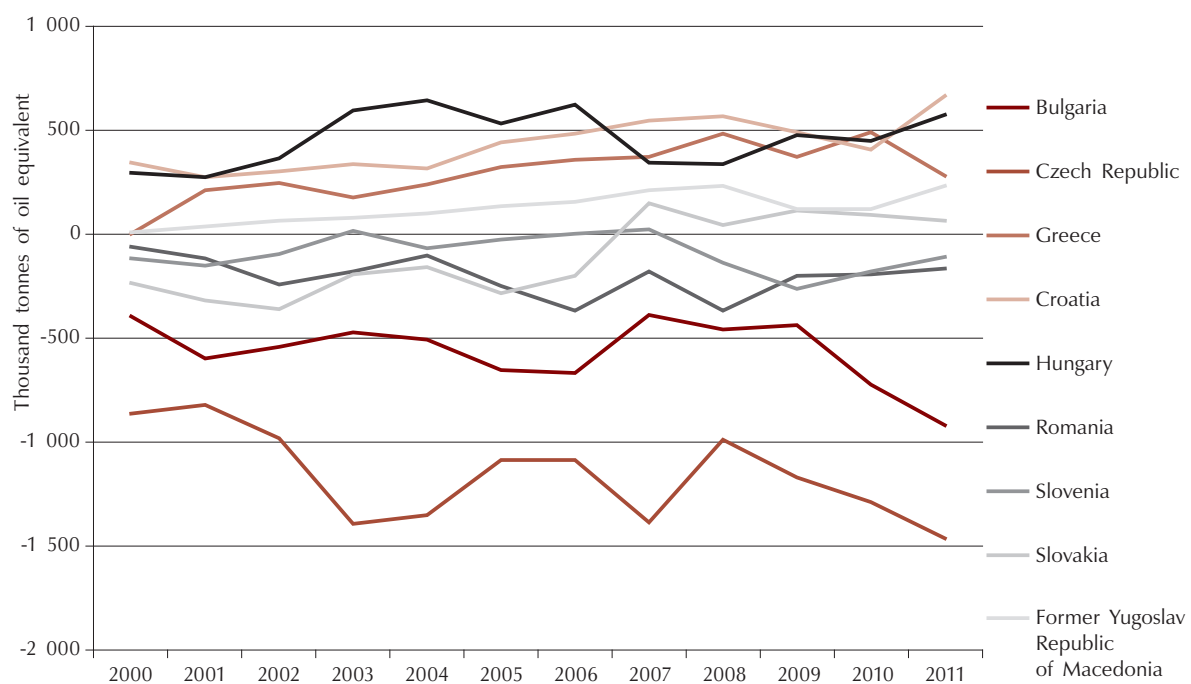
<sup>46</sup> Bulgaria, ESO, (2010), A Plan for the Development of the Electricity Transmission Networking Bulgaria for the Period 2010 – 2020.

**Figure 11. Energy Distribution Losses in CEE Countries**



Source: CSD, based on Eurostat data.

**Figure 12. Gross Inland Consumption of Electrical Energy in CEE Countries**



Source: CSD, based on Eurostat data.

## Box 2. Energy Efficiency Initiatives Across EU MSs

The EU has put great emphasis on energy efficiency in buildings, setting specific targets through the Energy Performance of Buildings Directive (EPBD). In particular, it requires MSs to develop strategies on how to make the national building stock energy efficient and climate neutral, as well as introduce mandatory requirements for all new constructions to be nearly Zero-Energy Buildings (nZEB) after 2020. In view of these requirements, most countries have imposed specific legal obligations that buildings must fulfil in order to achieve the overall energy efficiency goals set by the EU, imposing a relatively small financial burden on the government. However, given the current harsh economic climate, governments all across Europe have developed grant and loan schemes so that poor households are not deterred from investing in energy efficient technologies. Some of the schemes developed by various MSs include:

**Germany:** The government has developed the most comprehensive and ambitious energy-saving plan in the EU, which is based on a three-pronged approach including strict national regulation on renovations and use of renewable energy resources, financial incentives such as loans and grants provided by a government-sponsored public investment bank (Kreditanstalt für Wiederaufbau) and dissemination of information and awareness raising through pilot projects aimed at behavioural change.

**United Kingdom:** The “Green Deal” scheme allows homeowners to employ certified contractors with energy efficiency credentials. The cost of the renovations is paid through the electricity bill and the certificate is linked to the building rather than the owners.

**Italy:** The government has set minimum requirements for new and existing buildings undergoing major renovations. Buildings are awarded energy certificates and there are tax reductions for up to 55 % on the installation of energy-saving technologies in households.

**Portugal:** In the residential sector, a progressive tax scheme has been implemented based on the energy class of the building. Furthermore, homeowners have access to low interest rate loans for renovations as well as subsidies to build new buildings with energy class A, A+ or A++.

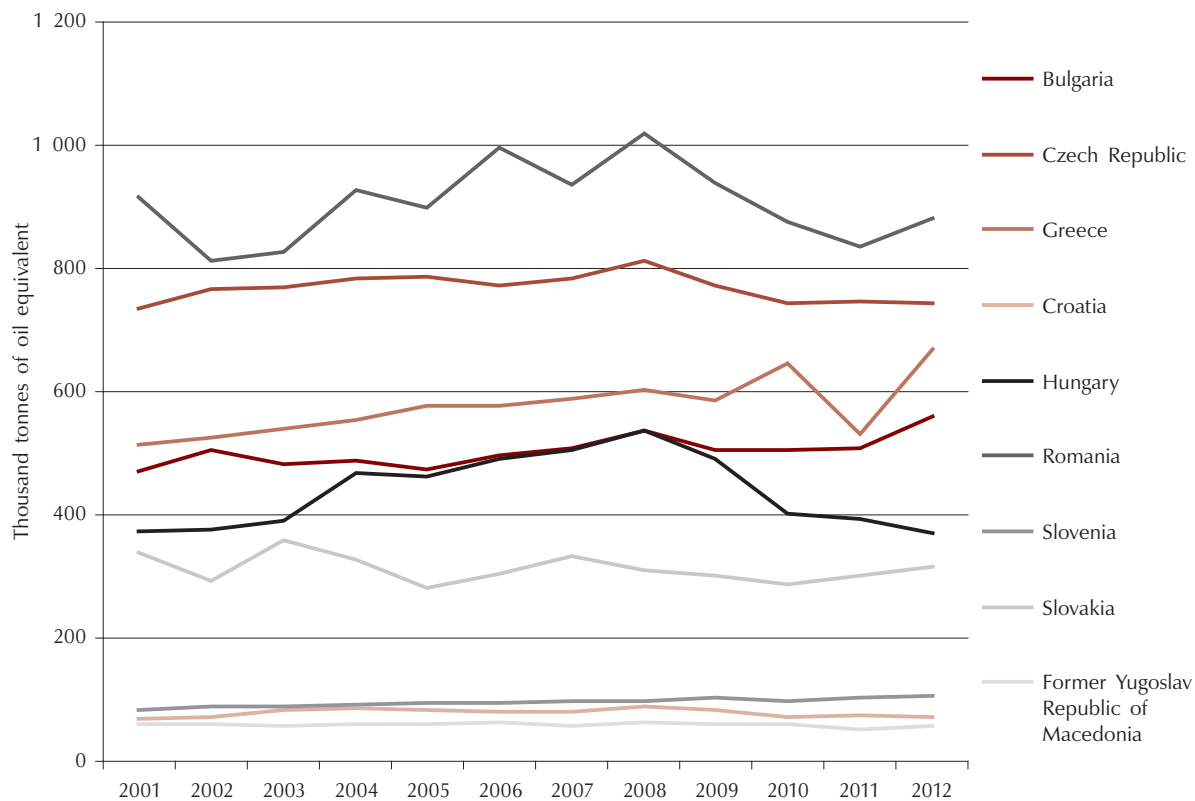
**Czech Republic:** The Green Savings programme funds the installation of heating systems using renewable energy sources as well as energy saving renovations and new buildings, such as insulation. The funds for the program were raised through the sale of emission credits under the Kyoto Protocol on greenhouse gas emissions.

**Hungary:** The government provides financing for the renovation of old buildings and the use of energy efficient technologies in new buildings. The financing is proportional to the cost of the renovation and can reach up to 60 % of the value of the work. In case a building is awarded energy efficiency class B or above, there are opportunities for additional financing.

**Latvia:** Homeowners can receive a credit for energy efficient home renovations, as well as grants to help them fill in the application documents through the Joint European Support for Sustainable Investment in City Areas (JESSICA) programme.

**Estonia:** A revolving fund scheme for the energy efficient refurbishment of housing has adopted a ‘do more, get more’ approach – homeowners receive grants proportional to the energy label that will be awarded following the renovation. As a result, projects that apply for loans under the scheme achieve average energy savings of 33 %.

Figure 13. Consumption in the Energy Sector



Source: CSD, based on Eurostat data.

### **Bulgaria's physical residential infrastructure is seriously weathered and outdated.**

Despite this fact, Bulgaria is set to exceed the 9 % energy saving target set out in the Energy Services Directive,<sup>47</sup> and expects to achieve 16.9 % energy savings by 2016 (against a 2007 baseline).<sup>48</sup> The reductions achieved to date have come predominantly through the decline of certain inefficient industry sectors such as metallurgy, which have helped to reduce the total amount of energy used in the country.

A quarter of the energy consumed in Bulgaria is used in the residential sector (Figure 15).<sup>49</sup> Unlike other sectors, **energy usage in Bulgarian households has actually increased in recent years** – the total final energy consumption of the residential sector increased by around 3.6 % between 2007 and 2009, while showing direct negative correlation between rates of energy efficiency and level of central heating penetration.<sup>50</sup>

<sup>47</sup> Directive 2006/32/EC, (05.04.2006).

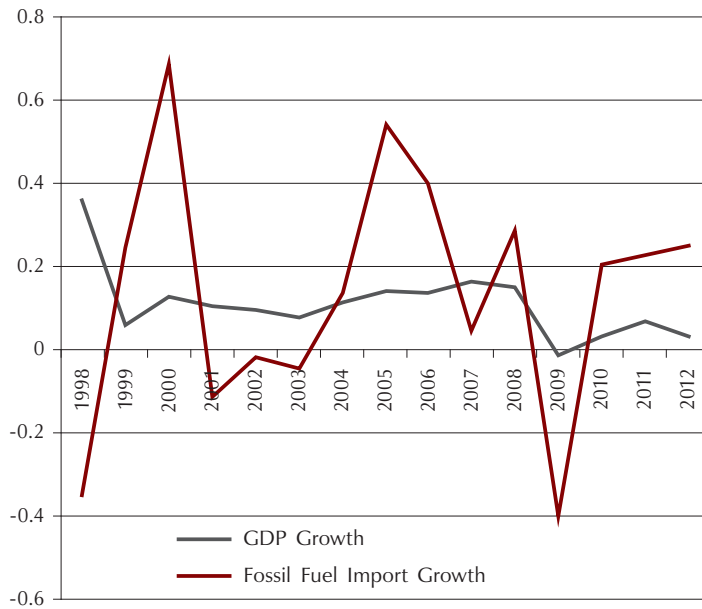
<sup>48</sup> Bulgarian Government, (2011), *Second National Energy Efficiency Action Plan 2011 – 2013*.

<sup>49</sup> Eurostat, (2012), *Final energy consumption, by sector*.

<sup>50</sup> From 2073 kilotonnes of oil equivalent (ktoe) in 2007 to 2149 ktoe in 2009.

Bulgarian Government, (2011), *Second National Energy Efficiency Action Plan 2011 – 2013*.

**Figure 14. Growth of Nominal Fossil Fuel Import vs. Nominal GDP Growth (1998 – 2012)**



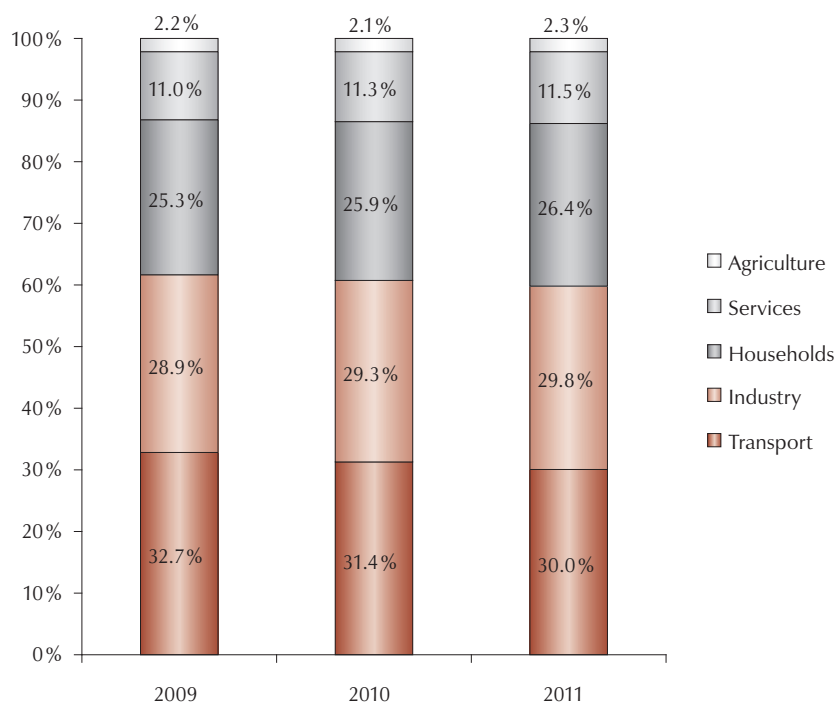
Source: Bulgarian National Bank (BNB), National Statistics Institute (NSI).

The 2011 census provides the first nationwide statistics about the levels of energy efficiency of Bulgarian homes. According to this data, **88 % of all residential buildings in Bulgaria were built before 1990** and only 5 % were built after 2000. Therefore most residential buildings were not built in line with any energy efficiency considerations.

Despite the proven economic and lifestyle benefits of wall insulation and energy efficient windows, only 16 % of all households have installed insulation. Urban homes are significantly more active in this regard with 42 % having energy efficient windows, of which only 41 % also have wall insulation. In rural areas on the other hand, where residential buildings are significantly older, less than 4 % of all households have installed energy efficient windows and wall insulation. Overall, it appears that if a family must choose between the two measures, energy efficient windows prevail with 22 % of all households, while 2.9 % of all homes only have wall insulation.

In terms of heating materials, **the most popular fuels are wood and electricity, used by 31.1 % and 28.6 % of households** respectively. Only 0.7 % of households use gas, which is a result in part of the low levels of gasification even in urban areas. The energy mix varies significantly between urban and rural areas. 38.3 % of urban households use electricity for heating, followed by wood and central heating. The vast majority of rural households on the other hand use wood (62.8 %) and coal (32.4 %).

**Figure 15. Bulgaria's Final Energy Consumption by Sector, 2009 – 2011<sup>51</sup>**



Source: National Statistical Institute (NSI).

The European Commission has estimated that in urban areas, **a Bulgarian home can produce on average 1600 KWh/m<sup>2</sup> every year**, amounting to 30 % of the average household electricity consumption. The census data shows that this potential remains largely untapped, as only 1.5 %, or 30,629 out of the total 2,060,745 residential buildings in the country, had installed solar panels at the beginning of 2011. More than half of them – 60 %, are in urban areas. The majority of solar panels – 87 % are installed in single family homes.

### **Key Challenges for Bulgaria in Improving the Energy Efficiency of the Domestic Sector**

While there is huge potential for improving the energy efficiency of housing in Bulgaria, there are some key challenges and barriers to be overcome, including:

- Lack of data on both the housing stock and, more specifically, on the energy consumption of the residential sector which make targeting (and monitoring progress) difficult.
- Lack of mandatory audits in place as part of an incentives program to measure energy and carbon footprint at household level.

<sup>51</sup> Eurostat, (2012), *Final energy consumption, by sector*.

- Increasing use of energy consuming domestic appliances is likely to lead to a higher level of energy use in the residential sector in Bulgaria if steps are not taken to counteract this. A high proportion of flats in multiple ownership buildings, particularly large panel residential buildings, also have direct negative effect on attaining sustainable levels of efficiency gains.
- Critical issues in taxing cars based on engine power and not on emissions – not green tax – therefore limiting purpose collection of proceeds from green taxes and channelling them to cover.
- Dated district heating systems and prevalence of central heating compared to other European countries.
- The lack of dual accounting which reward savings (night) and consumer driven RES power generation at present.
- Low average incomes and high levels of energy poverty, which are a barrier to being able to afford energy efficiency improvements.

### **Box 3. Government-Funded Programs for Energy-Efficient Measures in Bulgarian Homes**

Some progress has already been made towards energy efficiency in residential buildings through financing programmes set up by government agencies. It was estimated that 700,000 residential units, inhabited by over 2 million Bulgarians, could greatly benefit from retrofitting energy-efficient technologies. Approximately 50 % of primary energy consumption could be saved through retrofitting, which would result in a 600 EUR annual savings from energy bills per household. The average cost for these renovations was calculated to 5,000 EUR per household, which would be returned in a 7 year period.

#### *Support for energy efficiency in multifamily residential buildings*

In 2013, the Ministry of Regional Development and Public Works (MRDPW) launched a three-year (2012 – 2015) nation-wide programme for energy efficient renovations. The “Energy renovation of Bulgarian homes” project is supported by the Operational Programme Regional Development, co-financed by the Regional Development Fund of the EU, for a total of BGN 50 million and is available to associations of home owners in 36 towns and cities. A year after the programme was introduced, and as a result of the very low interest from home owners, in April 2013 the size of the grants part was increased from 50 % to 75 % of the total cost of renovation. The programme covers insulation, replacement of windows and doors, refurbishment of heating installations, mounting of RES (e.g. solar panels), and replacements of heating/cooling/electrical/ ventilation installations. Since the launch of the programme, only BGN 218 135 have been claimed, implying a persistently low level of engagement of home owners.

#### *Residential Energy Efficiency Credit Line (REECL)*

Homeowners can also benefit from the joint program of the Sustainable Energy Development Agency (SEDA), the European Commission and the European Bank for Reconstruction and Development, which have set up a EUR 40 million Residential Energy Efficiency Credit Facility running until 2014, providing credit lines to banks to make loans to householders and associations of home owners for specific energy efficiency measures. To help stimulate the project, an additional EUR 14 million in grant financing has



**Box 3. Government-funded Programs for Energy-efficient Measures in Bulgarian Homes (Continued)**

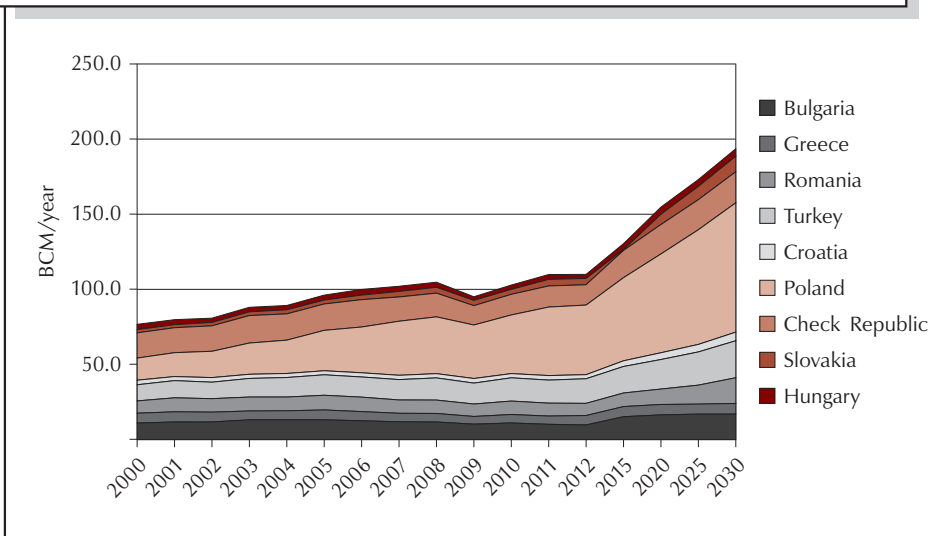
been made available by the Kozloduy International Decommissioning Support Fund (KIDSF). Borrowers can benefit from up to a 35 % incentive towards the cost of their energy saving projects, once an independent consultant has assessed their eligibility. It is estimated that up to 30 000 households could benefit from this scheme. Since 2006 the program has committed to 41,496 energy efficiency loans, while EUR 11 903 952 have been issued as incentive grants.

**2.3.2. Security of Oil and Gas Supply Challenges**

**a. Security of Gas Supply**

Gas supply diversification and disruption risks are closely related to energy security and also to energy poverty and electricity prices, as affordable gas supply is the most viable option for the Bulgarian economy to receive cheaper energy alternatives comparable to coal and wood, which are very harmful to the environment and the living conditions in settlements. Although gas supply and diversification risks stand as one of the most pressing challenges to the country’s energy security in the next decade, no significant mitigation of the negative circumstances in that regard has been achieved in the 5 years after the Russian-Ukrainian gas supply crisis of 2009. **Having achieved little progress in terms of diversification, Bulgaria is currently paying some of the highest natural gas prices in the EU** (Figure 17), also leading to unsatisfactory progress in the level of natural gas consumption compared to peer countries (Figure 16). In addition, the very high concentration of the Bulgarian gas market-monopoly

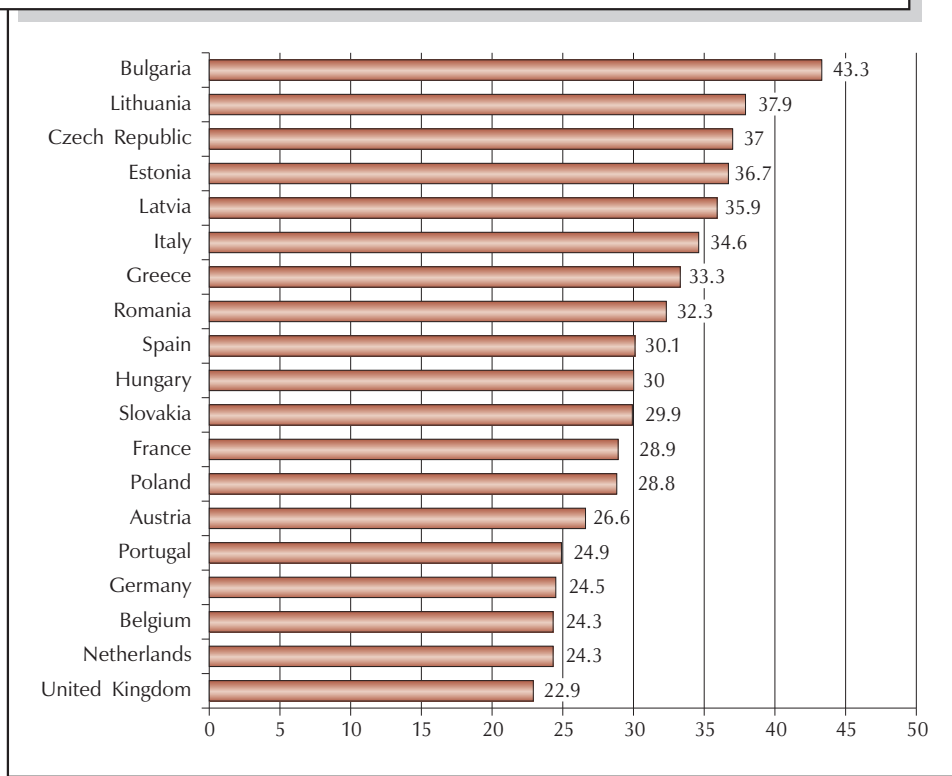
**Figure 16. Natural Gas Consumption (2000 – 2030)**



Source: Innovative Energy Solutions, CSD.

of supply and distribution provides ample opportunities for lack of transparency and rent-seeking behaviour of state actors. What also presents a very troubling case is that **the bulk of information on gas transit through the country (i.e. tariffs, taxes, fees, and revenues) is not publicly available online.** Unlike transit tariffs, the tariffs for transmission and distribution, as well as storage, are regularly published on the web. The decision of the Bulgarian government to leave the transit fee revenues with Bulgartransgaz EAD infuses an additional element of non-transparency. It prevents state authorities and taxpayers from overseeing what part of the payments go to the company for the actual transportation of gas, and what share goes to royalties for the state for using its territory for transit. Thus, independent oversight on gas transit revenues is reduced and public understanding of the transiting company's performance efficiency is blurred.

**Figure 17. Average Gas Price per EU Country (EUR/MWh)**



Source: European Commission.

### ***Domestic Organization of the Gas Sector***

Following EU accession in 2007, Bulgaria had to implement the *Second Gas Directive*, which stipulated that the state-owned natural gas supplier, Bulgargaz has to be unbundled. The restructuring led to the creation of the Bulgargaz Holding EAD, and the business was split off into newly established, separately-owned companies: Bulgartransgaz EAD and Bulgargaz EAD. The former has played the role of the gas TSO transiting the natural gas via the Transbalkan pipeline and distributing natural gas to domestic consumers. The latter was, until 2012, the de-facto monopoly

wholesale supplier on the natural gas market in Bulgaria. An amendment to the *Energy Law* from July 2012 has allowed gas customers to independently choose their supplier, and hence remove Bulgargaz as a sole intermediary selling natural gas to its customers, including its main competitor, the largest private natural gas distributor, Overgas EAD, owned by Overgas Holding (50 %), Gazprom Export (49.51 %), and Gazprom (0.49 %).

While the market has been liberalized since 2007, Bulgargaz has been able to prevent competition in the distribution of natural gas by purchasing in advance the whole transit capacity wholesale at the Romanian border. On 15 November 2012, Gazprom Export, a subsidiary of Gazprom, signed a new 10-year take-or-pay contract with Bulgargaz for the deliveries of 2.9 bcm/y to Bulgaria. The new contract adopted the changes in the *Energy Law* from July 2012 and removed the natural gas intermediaries allowing for de-facto competition on the domestic market. Private distributors like Overgas or Citygas can conclude natural gas delivery contracts directly with Gazprom without passing first through Bulgargaz. The result of the EU liberalization has been a double-edged sword for Bulgargaz and Bulgarian consumers. On the one hand, the liberalization of the Bulgarian internal market would allow consumers a direct choice of a gas provider, but on the other, it imposes further pressure on the financial health of Bulgargaz, which will continue to lose market share. By the end of 2012, Overgas with all of its subsidiaries controlled 65 % of the natural gas distribution market, and close to 35 % of the total amount of gas consumed.

While liberalization of the natural gas market is taking place (as per the Third Liberalization Package), **third-party access to the Bulgarian gas transmission network is permitted but the sector as a whole is not unbundled**. The largest Bulgarian distribution company, Overgas, the majority share of which is owned by Gazprom and its subsidiary Gazprom Export, violates the condition that the owner of the natural gas resource cannot also be the owner of the distribution company. In this respect, the Bulgarian gas sector remains dependent on one source of gas, and in the near future possibly also on one distribution entity.

Furthermore, the entry into force of the EU rules on **the liberalization of the gas market create the conditions for another gas distribution monopoly** by Overgas that threatens to price out Bulgargaz EAD unless Bulgaria applies for derogation until alternative supply routes and sources are made available. The financial situation in Bulgargaz remains difficult. The state regulator, SEWRC, cut gas tariffs by around 10 % in Q1 2013 and by another 3.89 % in Q2 on the back of lower import prices and a more favourable USD/BGN exchange rate. SEWRC has also continued squeezing the company's profit margins, so that the gas price for domestic consumers remains one of the lowest in the EU. Meanwhile, the domestic supply fell by 18 % y/y in Q1 2013 on the back of declining industrial activity. In addition, the Bulgarian heating and power companies owe Bulgargaz around 300 mln leva for delivered gas because they are unable to collect unpaid bills by customers in large cities. The start of the South Stream pipeline at the start of 2015 will further expose the company to a long-term financial risk. As one payment option, the company mulls using future transit fees as leverage. The gas distributor has tried to stabilize the financial situation by sharply decreasing imports from Russia in Q1. In addition, the company plans to borrow up to

USD 150 mln to purchase the natural gas necessary to fill the storage facility at Chiren. SEWRC and Bulgargaz have also negotiated to keep the gas tariffs practically unchanged until the end of 2013, which will give the gas monopoly some breathing space. Nonetheless, it will be difficult to maintain long-term financial stability if the government does not stop subsidizing gas tariffs at the expense of Bulgargaz hoping for a drastic change in Bulgaria's dependence on expensive gas imports.

**Table 4. Oil & Gas Demand Projections**

|                       | 2005 | 2010 | 2015 | 2020 | 2030 |
|-----------------------|------|------|------|------|------|
| Gas Demand (Mtoe)     | 2.8  | 2.8  | 2.8  | 3.0  | 3.3  |
| Oil demand (Mtoe)     | 4.9  | 4.6  | 4.9  | 5.0  | 4.8  |
| Import Dependence (%) | 47.4 | 49.5 | 51.5 | 45.8 | 43.3 |
| GDP (mn '000 EUR)     | 21.9 | 25.8 | 30.5 | 34.7 | 42.2 |

Source: Bulgarian Energy Strategy 2020.

### *Local Production, Storage and Usage*

Bulgaria depends on imports for approximately 90 % of its natural gas requirements, with domestic production accounting for the remaining 10 %.<sup>52</sup> All gas imports come from Russia under long-term contracts with Gazprom. Bulgaria has only 2 bcm of conventional gas reserves but has significant shale gas reserves relative to the size of the gas market. Domestic natural gas production is limited. In terms of conventional exploration and production, in 2012, extraction of natural gas in Bulgaria was 389,454 thousand cubic meters (tcm),<sup>53</sup> marking a 12 % decrease in extraction rates compared to the previous year. Extraction in the first quarter of 2013 was 73,561 tcm – a 30 % decrease y-o-y compared to Q1 2012.<sup>54</sup> In comparison, in Q1 2012, the total volume of natural gas imports (solely through Gazprom Export) was 657,979 tcm, almost twice more than the existing indigenous extraction capacities.

Domestic production of natural gas was very limited until 2003/2004 when Melrose Resources Bulgaria developed the offshore Galata field. The company exploited the field between 2005 and 2009, when it was exhausted with only 8.5 bcf (240 mcm) of gas reserves left.<sup>55</sup> By 2008, the field was contributing to around

<sup>52</sup> Bulgargaz, (2013), Independent Annual Activity and Financial Report.

<sup>53</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria*.

<sup>54</sup> Ibid.

<sup>55</sup> Galata Gas Field, Bulgaria, accessed from <http://www.offshore-technology.com/projects/galata-field/>

8 % of Bulgaria's gas consumption. The depleted field could be turned into a gas storage facility after Melrose signed a memorandum of understanding (MOE) with Bulgargaz for its construction in 3 phases for a projected capacity of 1.8 bcm. Since 2009, Melrose has also developed and started production from two satellite fields, Kaliakra and Kavarna fields, with a current output of 38 mcf/d (1.07 mcm/d) and with probable reserves of around 1.7 bcm.<sup>56</sup> The two fields are producing around 20 % of Bulgaria's natural gas needs, although still the dependence ratio on imported Russian gas is higher at around 85 % due to take-or-pay clauses in the gas import contract.

Conventional production capacity has recently been expanded with the discovery of gas deposits in Bulgaria's Black Sea shelf, and in the Moesia shale basin with potential commercial discoveries pending. Melrose is also developing the Kavarna East offshore gas field that is due to become publicly available in 2014, and which could contain reserves of around 277 mcm. **The total amount of prospective natural gas resources being explored offshore in the Black Sea is around 3.64 bcm.** In addition to the E&P activities of Melrose (recently acquired by the Irish Petroceltic) the French giant, Total, in partnership with the Austrian OMV and the Spanish Repsol were awarded an exploration contract of the so-called Khan Asparuh Block, which borders Romania's territorial waters, where exploration activities led to the discovery of 40-80 bcm of technically recoverable reserves.<sup>57</sup> Finding considerable natural gas reserves will diminish Bulgaria's dependence on imported gas, which is still about 40 % more expensive than domestic production. However, according to the EIA, Bulgaria also potentially holds technically recoverable reserves of 453 billion cubic meters (bcm) or 16 trillion cubic feet (Tcf) of shale gas and 200 million barrels of shale oil in the Moesian platform.<sup>58</sup>

Additionally, Bulgaria holds a total daily extraction capacity of 4.5 mcm gas reserves in the USG Chiren storage facility almost entirely used during the gas crisis in January 2009. At the end of the gas crisis, plans were announced to expand the annual gas storage capacities to 1 billion cubic meters (bcm) and 11 mcm of daily withdrawal rate; however, no adequate progress has been achieved since. In fact, it is continually challenging to provide sufficient volumes of gas to be stored in Underground Storage Facility (USG) Chiren due to the Bulgargaz' liquidity problems. There are plans to convert the Galata gas field into a gas storage facility. The first phase (not commissioned yet), would provide storage capacity of 700 thousand cubic meters; phases 2 and 3 would raise the capacity to 1.2 bcm and 1.7 bcm respectively. A storage facility in Mirovo is currently in the planning phase for 2014. This facility is a joint venture between the national company Bulgargaz and Gazprom. The salt cavern site is expected to have a capacity of 400 million cubic meters upon completion.

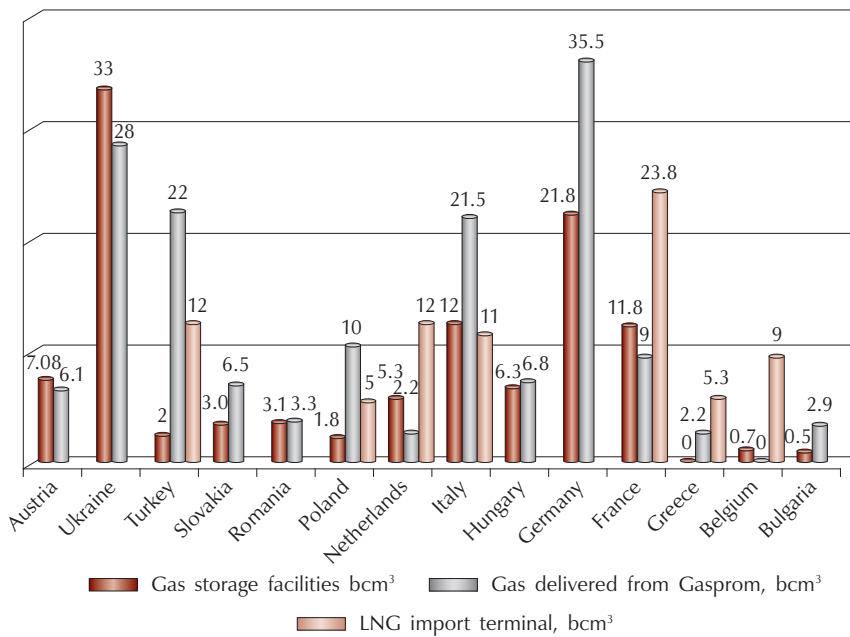
<sup>56</sup> Presentation of Melrose Resources Bulgaria at Romania Oil & Gas Conference, 4-5 December, 2012. "Black Sea Experience: Offshore Bulgaria and Romania".

<sup>57</sup> "French Total will look for oil and gas in the Bulgarian waters of the Black Sea", *Dnevnik*, July 25, 2012.

<sup>58</sup> US Energy Information Administration, (2013), Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United State.

Currently, the Chiren gas storage facility has the goal of balancing seasonal fluctuations of gas demand based on high consumption rates in the winter and very low demand levels in the summer. The expanded facility in Chiren and the new ones in Galata and Mirovo would play a strategic supply role assisting in the improvement of Bulgaria's energy security and the country's transformation into a regional gas hub. After the completion of the regional reversible interconnectors with Turkey, Greece, Romania and Serbia, the gas storage facilities in Bulgaria can become a regional trading hub for Russian and Azeri gas arriving through the Southern Gas Corridor via Turkey and the Transadriatic Pipeline (TAP) in Greece. For the interconnectors to be adequately linked to the gas storage facilities, the Bulgarian system operator has a comprehensive investment program for the construction of reversible flow links between the transit and domestic pipeline system; the inspection and rehabilitation of the gas transmission system; the increase in the number of gas compressor stations; and the development of electronic management systems.

**Figure 18. Gas Storage Capacity versus Gazprom Supply versus LNG Supply in bcm (EU)**



Source: CSD.

Due to the unfavorable gas market condition natural gas demand in the country has also been declining as total gas consumption for Q1 2013 was 923,209 tcm – a 10.19 % reduction from Q1 2012.<sup>59</sup> **Natural gas demand in Bulgaria has fallen over the past decade** – as the economy has undergone restructuring – but the demand trend has reversed in recent years, increasing in line with GDP growth

<sup>59</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria*.

and investment in Bulgaria's gas network. Current annual domestic gas demand is approximately 3.2 bcm. Nonetheless, the structure of the economy does not allow for significance expansion of natural gas consumption beyond 4.5 bcm/y even in the longer term.

### ***Unconventional Potential***

Bulgaria imposed a moratorium on shale gas exploration on January 17<sup>th</sup>, 2012 after initially moving aggressively in developing the large Dobrudja shale basin. As a consequence, the government revoked the permit for exploration given earlier to Chevron. The main reason for the opposition is concern about the possible effect of hydraulic fracturing (fracking) on underground water in this large agricultural region. In the first study by the US Energy Information Administration in 2011, the geologists confirmed the existence of 260 bcm in technically recoverable shale gas reserves at a depth of around 3,000 meters, making them relatively less accessible, but also less environmentally damaging.<sup>60</sup> Two years later, the second study by the EIA revised its estimate of the technically recoverable reserves to 453 billion cubic meters showing more gas potential than was initially perceived. There has not been an official national study on the shale gas potential of the country. Yet the US energy company, Direct Petroleum, believed that it has made a discovery of 6 billion cubic meters of shale gas in Deventsi and 300 billion cubic meters in the Etropole basin.<sup>61</sup> Although there are no specific governmental policies on the taxation of shale gas exploration, in the future there will be a royalty on production ranging from 2.5 % to 30 %, depending on quantities and size of the production area. Hence, it is not surprising that there was a big interest in the development of shale gas resources from North American companies, among which Chevron, which successfully won a bid in November 2011 for the exploration of shale gas in the Novi Pazar field.

The decision to impose a moratorium on shale gas exploration in January 2012 was the result of environmental protests and it came as a surprise to the public, given that the government was a supporter of exploration up to the very day of the protests. The decision also coincided with the acceleration of the Bulgarian entry into the South Stream project, which is meant to transport 63 bcm/y of Russian gas via Bulgaria, Serbia, Hungary, Austria and ending in Northern Italy.

The arrival of the new government in the beginning of June 2013 did not bring a change to Bulgaria's gas strategy. The ban on fracking is based on a decision by the Parliament. In February 2012, the Ministry of Economy and Energy amended the ban to allow conventional drilling and the usage of the Chiren gas storage facility, which the framing of the ban also *de facto* forbade. The changes to the ban allowed at least to a certain degree the use of chemicals for conventional extraction and to a certain depth and pressure.<sup>62</sup>

<sup>60</sup> US Energy Information Administration, (2014), Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 14 regions Outside the United State.

<sup>61</sup> "Shale Gas in Bulgaria – Is a Breakthrough Imminent", Natural Gas Europe, November 26, 2010, <http://www.naturalgaseurope.com/shale-gas-in-bulgaria-is-a-breakthrough-imminent>

<sup>62</sup> Center for Eastern Studies, (2012), Shale gas in Bulgaria, Czech Republic and Romania: Political Context – Legal Status – Outlook.

The shifting of fracking policy has revealed **a lack of strategic thinking on part of the Bulgarian government**, which seems torn between fostering diversification of energy sources and preserving the monopoly of Gazprom as a chief gas supplier. Amid the political crisis in Ukraine, other countries in the neighbourhood including the Baltic countries and the members of the Visegrad 4 Group sought ways to diversify their gas supply including by promoting unconventional exploration. Bulgaria, on the other hand, stalled efforts on regional gas infrastructure development, and instead pushed through amendments to the energy law that ease the start of the construction of the South Stream pipeline on EU territory.

Enhancing Bulgaria's energy security requires consistency of decision-making, which is crucial for long-term infrastructure investment decisions. Lack of predictability dissuades foreign investors from playing a more active role on the Bulgarian energy market, and allows dominant market players to lobby extensively the maintenance of the status-quo. Hence, the successful development of shale gas resources will require the independence of Bulgarian energy policy from shifts in the political colour of the government and from competing lobbies among the natural gas distributors and service companies. **State capture in the energy policy of the country by third-party interests**, mostly by Russian political and economic circles, **distorts Bulgaria's core interest**, which is the promotion of energy independence through domestic resources, diversified foreign supply and improvement of energy efficiency.

### *The Shale Gas/Renewables Nexus*

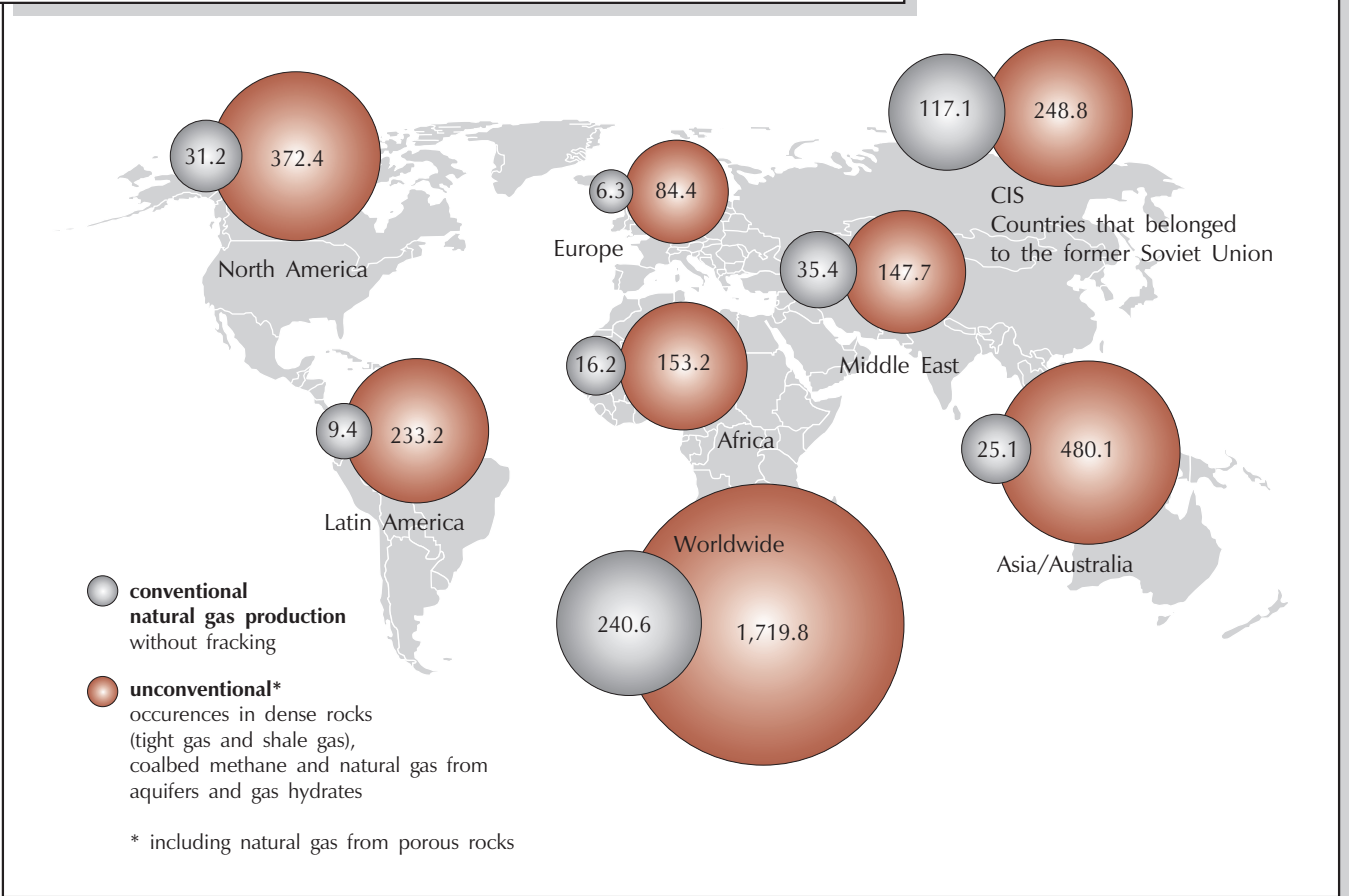
The shale gas debate is also related to EU's climate change policy, which was recently updated with the Union's targets until 2030 and 2050. According to EU's new strategy, member countries have to reduce greenhouse gas emissions by 40 % below the level of 1990 by 2030 and expand renewable energy to 27 % of total energy consumption. The EU climate targets are very ambitious considering the trends in global energy demand until 2035. According to British Petroleum (BP) World Energy Outlook to 2035, primary energy consumption from renewables will hover around 14 % by 2035. For Europe (EU) and Eurasia (CIS countries, Turkey and the Western Balkans) the share is even lower – around 10 %. At the same time natural gas will remain the fuel of choice for the continent, as coal and oil demand declines somewhat (albeit not enough to grant big relief from greenhouse gas emissions).

Most of the increase in natural gas consumption is likely to come from increased imports from Russia, Norway and Qatar. Natural gas can provide the continent with the opportunity of decreasing its carbon footprint as gas emits almost half the amount of CO<sub>2</sub> that coal emits. In addition, under a scenario of enhanced exploration and development of unconventional gas resources, natural gas prices in the EU may go down substantially, allowing for a more comprehensive and economically sustainable shift in electricity generation from coal to natural gas. According to the EIA, by 2035 49 % of the natural gas production in the US will originate from shale gas extraction. With EU and Norway's conventional gas reserves on the decline, most of the new indigenous natural gas reserves will come from the development of an estimated 84.4 trillion cubic meters of



unconventional gas reserves in Europe spread all around Europe. The increase in unconventional gas output will hit two birds with one stone. On the one hand, it will diminish the EU's dependence on gas imports, enhancing the energy security of the continent, and on the other, it will help diminish the carbon footprint from electricity generation without an excessive cost burden on consumers.

**Figure 19. Conventional versus Unconventional Gas Reserves by Region**



Source: Federal Institute for Geosciences and Natural Resources.

**Box 4. Poland – Shale Gas Development**

Medium-term prospects for shale gas production in Europe seem brightest in Poland, where there is a combination of vast underground resources and relatively minor above-ground contentious issues. More recently, though, doubts about the shale prospects have become more visible. According to the Energy Ministry, commercial extraction of shale gas would begin this year. There is not a common agreement about the exact amount of natural gas trapped in shale rock formations. The EIA has said recoverable Polish shale gas reserves are some 148 trillion cubic feet and shale oil reserves are 1.8 billion barrels.

#### Box 4. Poland – Shale Gas Development (Continued)

The EIA also noted that the Polish Geological Institute had estimated recoverable shale gas reserves at a much lower 230.5 – 619.4 billioncubic metres (8-22 tn cubic feet). Although Exxon decided to pull out of shale gas exploration after disappointing initial drilling results, Poland, which aims to diversify its gas consumption away from Russian imports, granted more than a hundred exploration licenses in the past two years covering circa 2.5 mn acres of land. The government has continued to push through the shale gas agenda despite setbacks. The largest Polish refiner PKN Orlen agreed to purchase Exxon's exploration licenses at the end of 2012. The company drilled 6 exploration wells in 2013 with a total investment of USD 150 million. A partnership agreement between PGNiG, ENEA, KGHM, PGE, and TAURON Polska Energia have launched an investment plan in July 2012 to invest EUR 408 million by 2014 – 2015 in shale gas projects in the Northern part of Poland. The Polish government has stood firmly behind the new joint venture and might succumb to pressures from the industry to give tax breaks to shale gas exploration projects.

After dredging over a year on the creation of final shale gas legislation, in March 2014 the government of PM Donald Tusk passed new regulations that will help develop the source of energy. The government has said that it is dropping an original plan to create a state shale gas operator called National Mineral Energy Operator (NOKE) that would have to have a stake in each concession. The eventual passing of the shale gas framework by parliament, depending on how profits are taxed, and the dropping of the NOKE initiative should help moods in the shale gas industry. In addition, the Polish state-owned company, PGNiG, will oversee concession activities and the timely execution of production targets. One of the main changes was a delay of taxes. In a previous version of the bill actually released in October 2012, royalty taxes on shale gas were to total 40 % of gross profits from 2015. This scared a lot of industry players, many of which have already left Poland. In line with announcements made in 2013, PM Donald Tusk said royalty taxes on shale gas would de facto not be charged until 2020. Another previous sore point was the creation of a NOKE that was to have stakes in each concession. This also scared investors worried about excessive state interference. But the rules get rid of the NOKE conception, though state regulations will exist to protect state interests. Another change is to be the creation of one type of concession for exploration and for production, down from the current three variations. The government said this should help speed up commercial production of shale gas. Concessions will be given for 10-30 years. Environmental decisions tied to shale gas exploration will also be made more favourable.

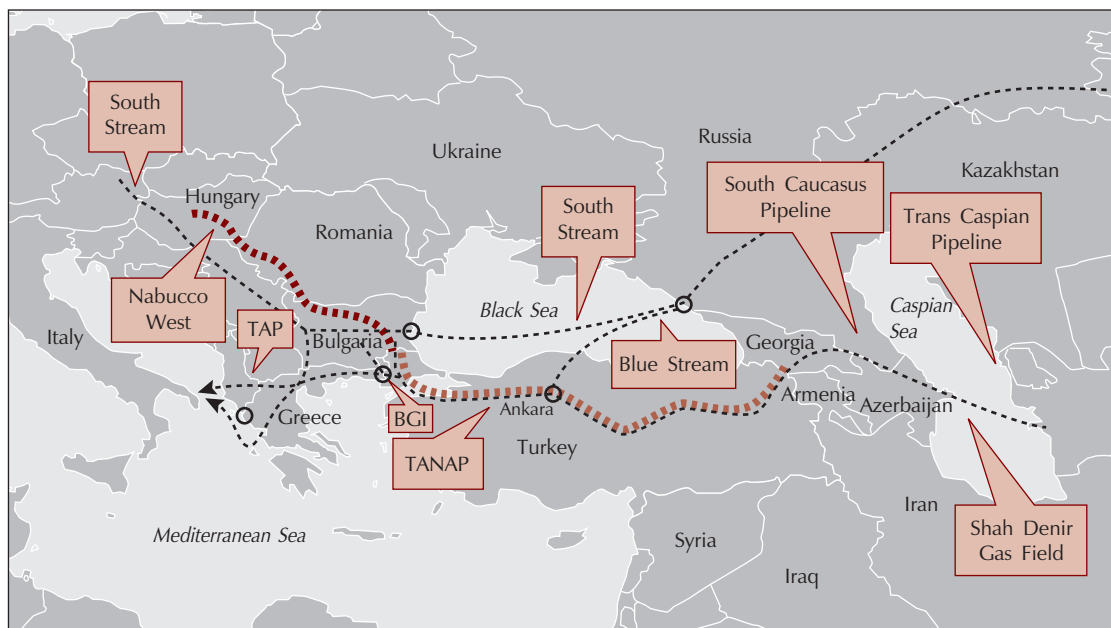
However, shale gas production in Poland could still be problematic due to higher production costs and potentially low purchase price agreements. Production costs are estimated to be 3-4 times higher than in the US due to the larger depth of reserves and the lack of infrastructure on the ground. The creation of a flexible fiscal/tax incentive, backed by a concessionary structure, will create the necessary commercial logic to justify entry into this market.

#### *Gas Transit Arrangements and Involvement in International Pipeline Projects and Regional Interconnectors*

Bulgaria meets around 90 % of its gas demand through imports from Russia through a single pipeline, the TransBalkan Pipeline. The import and transit pipeline systems are physically separated. **The transit system has been effectively reserved for Gazprom's use by contract until 2030**, although Gazprom has agreed to let

the transit pipeline to Greece in SW Bulgaria to be used for regional supplies. Under existing contracts, Bulgaria receives a payment from Gazprom for the transit of up to 17 billion cubic meters (bcm) annually for Turkey, Greece, and Macedonia above the actual shipping volumes as per the ship-or-pay clause. This was more than six times the entire internal demand of the country for 2010.<sup>63</sup> These current arrangements between Bulgaria and Russia for gas supply and transition are a constraint from security of supply standpoint, while also being in clear violation of EU’s market liberalization guidelines with regards to third party access to pipelines and the “take or pay” clauses, utilized by Gazprom. The “take or pay” issue is related to payment of volumes of gas that have not been effectively taken by the Bulgarian importer. Similar complaints by other EU importers on non-compliance with EU legislation have triggered a wave of legal precedents against Gazprom on the part of RWE, Eni, Transgaz, OMV.<sup>64</sup>

**Figure 20. The Southern Gas Corridor Competition**



Source: CSD.

Bulgaria is at the crossing point of two major competing international pipeline projects for new gas supply to Europe and plans the development of as much as four interconnectors to all of its neighbouring countries, including reverse flow options with Turkey and Greece on the existing pipeline networks. However, the country has so far not provided detailed independent public cost-benefit

<sup>63</sup> “Gazprom Export – Bulgaria”, accessed July 30, 2013, <http://www.gazpromexport.ru/en/partners/bulgaria/>

<sup>64</sup> “Gazprom lost the case on an important condition in its European contracts”, *Capital Weekly*, 25.10.2012, accessed from [http://www.capital.bg/politika\\_i\\_ikonomika/sviat/2012/10/25/1933012\\_gazprom\\_izgubi\\_delo\\_po\\_vajno\\_uslovie\\_ot\\_dogovorite\\_si/](http://www.capital.bg/politika_i_ikonomika/sviat/2012/10/25/1933012_gazprom_izgubi_delo_po_vajno_uslovie_ot_dogovorite_si/)

analyses<sup>65</sup> for the different options and there is no clear cut prioritization or preferred options, which leads to lack of transparency and frequent (real or perceived) inconsistencies in the Bulgarian position regarding major energy projects. This also creates higher energy security risks and uncertainty about the effects of these projects for Bulgaria's economy.

### ***Nabucco and EU's Southern Corridor Pipelines***

Bulgaria has voiced repeatedly its preference towards the development of the EU's Southern Corridor pipelines, and in particular the Nabucco project as part of its EU integration project. Through the BEH 16.67 % stake in the Nabucco's consortium, Bulgaria is a founding partner in the project, which aims to bring as much as 30 bcm of gas annually to Europe. The fact, that commercial funding was unlikely to be secured until capacity was booked and future transit fees budgeted for, led to the creation of a smaller Nabucco-West project. However, it became obvious that a phased development would be necessary with different pipelines delivering gas to the Turkish-Bulgarian border and another one transferring it across the region. In that context, an intra – 'Southern Corridor' competition emerged between other planned Southern Corridor pipelines such as TAP and SEEP plus eventual connection to the ITGI interconnector system. As the TAP project does not cross Bulgarian territory, the ITGB interconnectors would offer Bulgaria access to Azeri gas contracted by Bulgargaz and other traders and further on to SEE/CEE countries. It was obvious that, if affordable, a connection between the Trans-Anatolian gas pipeline (TANAP) and Nabucco-West would be the ultimate Southern Corridor solution for Bulgaria. The project may have also aided the development of a competitive national energy market, through adding competitors to the current sole supplier – Gazprom, and permitting half of the capacity to be available for third party access.

On 28 of June 2013, the Shah Deniz Consortium (SDC) announced its choice of the TAP pipeline for gas to be linked with TANAP in Turkey, dealing a heavy blow to the Nabucco idea, and effectively halting the project. This choice is expected to have far reaching implications not only for Bulgaria but also for Central and Eastern Europe and the Southern energy corridor – a cornerstone of energy security for the European Union, Central Asian and Caspian countries in the short to medium term perspective. Although the quantities of potential gas deliveries from Shah Deniz are too small to directly challenge Russian gas dominance, they could tilt critical gas market balances in SEE with a multiplier effect across Central and Eastern Europe.

**The decision for the Shah Deniz consortium to name TAP as the priority pipeline for the deliveries of new gas supply from 2017 to Europe does not fulfil the strategic purpose of EU agenda for diversification.** The TAP gas pipeline, instead would cross countries, whose dependence on monopoly gas exporters, including Russian, is far lower than the one facing the CEE region and is

<sup>65</sup> Over the last decade, the Center for the Study of Democracy (CSD) has championed the introduction and widespread utilization of internationally recognized energy project management principles and cost-benefit analysis tools such as Extractive Industries Transparency Initiative (EITI) and COST in Bulgaria (for more information on EITI initiative in Bulgaria, visit <http://www.csd.bg/artShow.php?id=15111>).

due to drop further in line with emerging into the prospective timeline alternative gas sources. The reliance of Greece on Gazprom gas has come down from 83 % in 2005 to 51 % in 2011. Italy's gas market is one of the most diversified in Europe and dependence on Gazprom gas is less than 38 %. Over the same period Bulgaria's dependence on Russian supplies has remained at the same high level well above 85 %.<sup>66</sup>

It seems that the selection of TAP over Nabucco West is indicative of a broader trade-off, in which South Stream scraps the southern leg of the pipeline, which allows TAP to be the only gas link between Greece and Italy, in exchange for the Consortium's dropping of the alternative Nabucco West route. Such an agreement was meant to effectively put an end to the Nabucco West project forcing the shareholders to write off substantial losses well in excess of 100 million euro, leaving a yawning gap for alternative gas supplies in SEE and CEE. The choice of TAP coincided with the buying by Azeri national oil company, SOCAR, of the Greek gas transmission company, DESFA. Gazprom, which also took part in the bid, at the final stage decided to withdraw from the competition. The latter raised concerns that there has been a **behind-the-scenes market-sharing agreement between the members of the Shah Deniz consortium and Gazprom**. The goal is that the Shah Deniz partners will not promote a competitive pipeline to the Russian-led South Stream, and Gazprom will not meddle in Greece's natural gas market.

The outcome of such a deal for the security of gas supply of the SEE and CEE regions is not solely associated with the availability of physical alternative gas flows but would decrease the CEE importers' bargaining power in on-going negotiations with Gazprom on prices, revision of the re-export ban, oil-indexation and other critical contractual terms. In effect, the result of a successful construction of the South Stream pipeline instead of Nabucco-West would further strengthen the ability of Gazprom and other Russian economic interests to directly influence political life in the region, largely ignoring the local interests of the countries.

### **South Stream**

Bulgaria has also subscribed to the South Stream gas pipeline from its very beginning, despite the fact that there have not been publicly available cost-benefit or risk analyses of the project, for its Bulgarian part. The latter is to be operated by a company equally owned by Russia and Bulgaria, through Gazprom and BEH, which was set up in November 2011, following a 2009 Agreement of Cooperation between the two parties. Negotiations on the project have been opaque, characterized by pressure exerted from the Russian side during a number of unannounced visits from Gazprom's top management. Bulgaria has demonstrated a varying degree of willingness to proceed and up to a point was "kicking the can down the road" in the hope that the hot issues will be resolved at a higher EU – Russia level.<sup>67</sup> In November 2012, however, a memorandum of understanding (MoU) was signed that clarified to an extent the investment structure with few highly sensitive aspects discussed. A year later, on 30 October

<sup>66</sup> Statistics based on Eurostat data on energy dependence levels in the EU.

<sup>67</sup> Stefanov, R. and M. Tsanov. "Bulgarian Energy Policy", *Aspen Review*, (2012). [http://www.aspeninstitute.cz/images\\_upload/files/Aspen%20Review/Bulgarian\\_Energy\\_Policy.pdf](http://www.aspeninstitute.cz/images_upload/files/Aspen%20Review/Bulgarian_Energy_Policy.pdf)

2013, a bilateral agreement was announced stipulating that the construction of South Stream on Bulgarian territory would start by the end of 2013. According to the statement, the total cost of the project would be EUR 3.5 bln compared to EUR 3.3 bln referred to in 2012 and almost twice the cost estimated in 2008. The project is to be financed through 30 % equity and 70 % debt financing for the Gazprom-BEH consortium. BEH would finance its equity part through a loan from Gazprom's bank at 4.25 % interest for an amount of EUR 625 mln that exceeds the announced estimate for the 50 % equity part (EUR 525 mln) in the project.

A number of further questions are also raised regarding the lack of publicly available cash flow and demand projections; the time gap between the envisaged start date of gas transit (December 2015) and the first dividend payments (January 2018); the contingency issues related to dividends dependent on questionable pipeline capacity fulfilment requirements (at least 50 % of the 63 bcm) that delineate the commercial viability of the whole project and could turn out to be unrealistically high as no sufficient demand could be currently projected; the lack of clarity about the 70 % debt financing and expected high interest rates; compatibility problems between South Stream existing gas transit arrangements to Greece and Turkey and the related potential loss accumulation for Bulgartransgaz.

In addition to all of these issues, **the steady spikes in the price of the project since its inception have raised doubts about rent-seeking and poor resource allocation** by the state. The latter includes the uncertainty of revenues from transit fees as they are pegged to unrealistic assumptions of the actual volumes of natural gas flowing in the South Stream compared to the announced capacity of 63 bcm. Finally, the project also holds **little promise of improving the affordability aspect of energy security** in the country in the future without continuing subsidies from transit towards consumption, as it only provides a new route but not a different supplier. In December 2013, it was announced by the European Commission that the South Stream bilateral agreements (including the agreement between Gazprom and BEH) are in breach of EU law and need to be renegotiated from scratch.<sup>68</sup> According to the Commission, intergovernmental agreements cannot be the basis for the operation of South Stream as three major issues were highlighted:<sup>69</sup>

- EU's network ownership 'unbundling' rules need to be observed, meaning that Gazprom, which is both a producer and a supplier of gas, cannot simultaneously own and operate production units and transmission networks as well as trade.
- Non-discriminatory access of third parties to the pipeline needs to be ensured. There cannot be an exclusive right for Gazprom to be the sole supplier; and tariff structure needs to be made transparent after being renegotiated.

### ***Transmission Network Challenges and Regional Gas Pipeline Infrastructure***

Bulgaria's gas TSO, Bulgartransgaz, is operating a 2,645 km long network that reaches most of the country's largest cities. However, the distribution network is

<sup>68</sup> "South Stream bilateral deals breach EU law, Commission says", *EurActiv*, December 4, 2013, accessed from <http://www.euractiv.com/energy/commission-south-stream-agreemen-news-532120>

<sup>69</sup> Ibid.

highly undeveloped and **residential demand remains only 6 % of the country's total gas demand.**<sup>70</sup> There have been plans for the expansion of the gas grid and the significant local gasification of cities but the process remains stifled by disputes between the transmission company and the main distributor, Overgas.<sup>71</sup> The other reason is that there has been only limited investment in the gas infrastructure by Bulgartransgaz despite its sound financial health based on solid transit tariffs. Overgas has proposed on a number of occasions to Bulgartransgaz to create a public-private partnership, which would invest in the gasification of the country. The planned investment according to the CEO of Overgas could amount to EUR 400 mln.<sup>72</sup> Currently, Overgas and the other smaller distributing companies have to pay transit fees to Bulgartransgaz for transmitting the gas to the end-consumers. The difficulties in negotiating the terms of access to the transmission network create a significant investment risk for distributors to expand the gas networks in the cities.

More regional approaches concerning supply, notably the construction of interconnectors and reverse flow links with Turkey, Romania, Greece and Serbia have become projects of immense strategic importance as a result of the lack of bargaining power and non-realization of national priorities regarding international pipeline projects coupled with the failure of far-reaching diversification efforts both through domestic production and through the promotion of alternative energy routes. Bulgarian diplomacy and companies could enjoy more influence on such smaller projects, making them an immediate priority on the agenda for achieving more competition of natural gas supply in Bulgaria, and potentially lower prices in the future. In addition, the EU has provided  $\frac{1}{4}$  of the funds for all interconnectors to neighbouring countries, which makes the projects particularly cost effective for the country, though the question of ensuring gas supplies over the planned pipelines remains. As of September 2013, a sub-contractor has been selected for the construction of the reverse flow connection with Romania.<sup>73</sup> The Bulgarian part of the connection is constructed (up to Rousse) and is undergoing tests. However, for the under-river part, connecting Bulgaria and Romania, a contract has been signed between Bulgartransgaz EAD (Bulgaria) and Transgas S.A. (Romania) for project design and construction. The project is running behind schedule, as it was envisaged that the connection would be operational by Q1 2013.<sup>74</sup> The reverse flow connection with Greece is in its roadmap consulting stage and impact assessment and market interest analysis procedures are taking place in Bulgaria and Greece.<sup>75</sup>

As a whole, interconnectors and reverse flow connections are seen as essential for lowering energy security risks for Bulgaria, the surrounding region, and for

<sup>70</sup> "Bulgaria's Natural Gas Sector: Country Profile", IHS, 2012.

<sup>71</sup> Bulgaria, (11.2008), Council of Ministers, Bulgaria Energy Strategy 2020.

<sup>72</sup> Peeva, V., "From an intermediary "Overgaz" is becoming a competitor to Bulgargaz", Mediapool, May 27, 2010.

<sup>73</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria*.

<sup>74</sup> "The gas link with Romania delayed for next year", Mediapool, July 31, 2013.

<sup>75</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria*.

the EU as a whole. The interconnectors' contribution to Bulgarian security of supply is three-fold: a) they allow reverse flow emergency supplies in the case of a supply disruption from other sources, and b) they enable import diversification for both the transit route and supply source, and c) they allow instant diversification and peak-demand balancing through virtual or at a later stage direct gas swaps. However, the share of pipeline capacity allocation between the countries sharing the interconnectors has not been decided yet, which, together with ensuring contracts for the supply of gas, has turned into a special point in the negotiations. The fact that despite EU financial support, it took Bulgaria more than three years after the January 2009 crisis to officially launch the construction of the first of these interconnectors (Bulgaria-Romania) shows that **the successful implementation of energy policies in the region faces various political challenges**, beyond financial and economic concerns. It is due to this reason that Bulgaria is facing legal action from the European Commission with regards to its failure to make sustainable progress in the area of reverse flow connections with neighbouring countries.

#### Box 5. Liquefied Natural Gas (LNG) as a Supply Factor

The demise of the Nabucco-West project has been seen as a failure of the Common European External Energy policy in the face of increasing dependence of the Central and Eastern European countries on Russian natural gas imports. However, the abandonment of a cross-Balkan gas link connecting the energy-rich Caspian basin with the gas hubs in Central Europe did not dissuade efforts for diversification along the Southern Corridor. A relatively new idea is to foster the construction and expansion of LNG facilities on the Mediterranean Sea. Recently built interconnectors between Hungary, Slovakia, Ukraine and Romania as well as introducing reverse flow options in almost all transit pipelines in the region, allows for an immediate and scalable growth in gas supply from indigenous or external sources – LNG and pipeline. The North – South Gas Corridor framework allows for integrating potential new LNG facilities as entry points for alternative gas supplies to the region and resides within the immediate grasp of the CEE governments. These efforts address immediate synergies and set the fundament for a more efficient mode of accommodating regional gas markets dynamics, individual countries' policies.

Existing LNG terminals in the region and planned new ones such as in the Gulf of Saros (Turkey), Alexandroupolis-Kavala (Greece) and Krk (Croatia) could significantly boost the resource base, increase the entry points from global gas; enhance gas market integration and trigger gas demand growth in the region. The LNG gas would not necessarily contribute in the short term to a significant reduction in gas prices but would enhance the security of supply, promote energy source diversification hence independence and improve the economics of new and existing projects in interconnectors, gas storage and pipeline transport. Even without full physical gas market integration a coordinated use of the free capacities at LNG terminals for direct or virtual gas swaps in the region could trigger immediate diversification of gas supplies even before the completion of planned interconnectors and the physical entry of alternative gas supplies.

The proposed new LNG terminal in the Gulf of Saros (Turkey) developed jointly with Qatar is well located to serve both a local Turkish European part gas market and via the Bulgarian and Greek interconnectors the whole regional market. The project is in early planning stage (announced at the



### Box 5. Liquefied Natural Gas (LNG) as a Supply Factor (Continued)

beginning of 2013 with feasibility study ready by the summer of the same year) with proposed send out capacity of 6 billion cubic meters per annum. On the Greek side, the proposed new LNG terminals in Kavala (promoted by the gas company DEPA) or floating LNG in the port of Alexandroupolis (promoted by Copelouzos Energy Holding – CEH), enjoy certain advantages being part of the approved EU project list eligible for EU funding and enjoying the lobbying leverage of the Greek owned shipping sector, that has built a third of the world’s largest LNG vessels and seeking to establish Greece as a regional LNG hub.

Croatia has also strongly pushed for the construction of an LNG terminal at the Northern Adriatic. The proposed LNG infrastructure at the island of Krk (Adria LNG) could allow for the regasification of up to 5 bcm/y supplying most of the natural gas needs of the countries in the Western Balkans. The terminal at Krk could also serve as an entry point of Qatari gas into the large Central European market. For gas traders, this would provide the opportunity of price arbitrage between Russian and Qatari supply at the European gas exchanges. In addition, increased liquidity on the CEE and SEE gas markets (virtually dominated by Russian gas) can create a competitive environment imposing downward pressure on prices.

#### *b. Security of Oil Supply*

The Bulgarian oil sector is entirely dependent on crude oil imports as the country’s oil reserves are minimal at around 15 million barrels.<sup>76</sup> Bulgaria’s Exploration and Production of Oil and Natural Gas company produced around 22 thousand tonnes in 2011. One way to boost the oil output is to invest in the rehabilitation of depleted oil fields in Tulenovo on the Black Sea shore and in Northwestern Bulgaria in the vicinity of Pleven. Most of the oil, above 80 %, is with Russian origin, while there is a more limited supply of Kazakh oil via the CPC pipeline and then via tankers from the port of Novorosiisk. Bulgaria consumed close to 80,000 barrels per day (bpd) or 3.8 million tonnes per year in 2012, around 20 % less than before the 2008 economic crisis. However, total crude oil imports are around 7.5 million tonnes per year as Bulgaria is a significant manufacturer of refined products from the Lukoil’s Neftohim refinery and petrochemical complex with a capacity of 145,000 bpd, the largest refinery on the Balkans. After the privatization of the refinery, its output capacity was slashed from 220,000 bpd but plans for upgrade initiated in 2013 will see a significant capacity boost by 2015. Lukoil will invest USD 570 million in the upgrade of the existing refinery units increasing the output of the high quality EURO 5 diesel by 1.2 million tonnes per year.<sup>77</sup> Additionally, the Russian oil giant will build a new hydrocracker unit to come online in January 2015 expanding the capacity of the refinery by little over 50,000 bpd to around 200,000 bpd making one of the largest refineries in Eastern Europe and the single largest industrial enterprise in the country.

<sup>76</sup> Nitzov, Boyan, R. Stefanov, V. Nikolova, and D. Hristov, “The Energy Sector of Bulgaria”, Atlantic Council Issue Brief, April, 2010.

<sup>77</sup> Kennedy, Charles, “Lukoil Deal Makes Bulgaria Largest Eastern Europe Refiner”, January 8, 2014, accessed from <http://oilprice.com/Energy/Energy-General/Lukoil-Deal-Makes-Bulgaria-Largest-Eastern-Europe-Refiner>

The distribution market is dominated by four companies including Lukoil Bulgaria, Rompetrol Bulgaria, Naftex Petrol and OMV Bulgaria. Nonetheless, Lukoil Bulgaria remains the largest distributor with revenues rising by 3 % year-on-year in 2012 to BGN 3.6 billion.<sup>78</sup> Together with the Lukoil refinery and port terminal, Rosenez, Lukoil is the largest company in Bulgaria contributing, according to the company itself,  $\frac{1}{4}$  of the state budget revenue. Unlike in the natural gas sector, where the state-owned Bulgargaz yields significant influence on the domestic gas market, the downstream oil sector is entirely private. However, we can hardly talk about a hands-off approach towards the sector from the state. It influences the sector and its players via two main ways: 1) directly via the imposition of excise taxes and VAT on the fuel sales, and 2) indirectly by intervening in the market relations of the main players vis-à-vis one another and vis-à-vis the state.

### ***Direct State Involvement – Price Formation***

The Bulgarian state is directly involved in the formation of the fuel prices through the inclusion of excise taxes and value-added tax (VAT) on sales. According to the Bulgarian Oil & Gas Association, the VAT and excise tax on the diesel fuel contributes 40 % to the final price. In the unleaded A95 gasoline the taxing level is 44 %. The share of the taxes in the fuel price formation is in line with the EU legislation on the minimum excise duty of EUR 421 per 1,000 litres (0.421 cents per litre), and the Bulgarian excise duty is among the lowest in the EU at 0.424 cents/l.<sup>79</sup> Hence, the fuel price of A95 gasoline is the second lowest in the Union after Poland. With operational, refining and crude oil costs relatively similar in the different member states, Bulgaria has one of the lowest fuel taxation rates. Despite the low prices and the apparent liberalization of the sector, **there is high concentration of market power in the crude oil import and refining sector**, visible in the Commission for Protection of Competition (CPC) probing Lukoil Bulgaria in 2012 for abusing its monopoly power on the wholesale market for diesel and A95 unleaded gasoline. In March the commission found out that there has been an illegal agreement between Lukoil Bulgaria, Rompetrol Bulgaria, Naftex Petrol and OMV Bulgaria for the coordination of the price formation. Although three months later the commission announced that Lukoil Bulgaria's market behavior does not constitute a breach of competition law, there have been continuous allegations by non-governmental organizations and large fuel clients that by providing wholesale buyers with discounted fuel prices in exchange for loyalty, the company is dominating the downstream market in effect preventing the entry of international competition.

### ***Indirect State Involvement – Political Protection***

Bulgaria's 100 % dependence on crude oil imports, the majority of which of Russian origin has influenced two Bulgarian governments to issue stricter control

<sup>78</sup> "Lukoil Neftohim Bulgaria again tops the ranking of "Capital" 100 largest companies", *Dnevnik*, June 27, 2013.

<sup>79</sup> European Commission, Excise Duty Tables: Energy Products and Electricity – DG Taxation and Customs Union, July 2013.

over the business operations of the Lukoil Neftohim and Lukoil Bulgaria. The Bulgarian Customs Agency has tried to halt the practice of cooking the data coming from the tax warehouses storing the fuel products. In 2011, the director of the Customs Agency revoked Lukoil's refinery license after the company declined to install measurement devices at the entry and exit points of its fuel warehouses. The Customs Agency returned later Lukoil Bulgaria's license to sell fuels, following a several-month legal dispute between the two sides. The agency justified the returned license, saying that the oil refinery installed all the needed measuring instruments at its warehouse and thus complied with the new legislation for trading with excise goods. Lukoil Bulgaria officials confirmed the motion, approved also by the regional Court, which was in charge of the legal dispute. The company, however, has been given another 18 months to install all instruments at its port fuel depot Rosenez. In October 2012, the Customs Agency changed regulation № 3 requiring all tax warehouses to install measurement facilities until March 31, 2013 at each point where the fuel can enter or exit the facilities for sale purposes.

In April 2013, after customs officials noted the absence of installed devices the saga repeated itself. The Customs Agency again withdrew the license of oil refinery Lukoil Bulgaria for operating a tax warehouse which is a product pipeline with adjacent bases connecting the refinery with Sofia. In addition, the decision took into account findings from inspections that the volume of fuel at the warehouse did not correspond to the reported amounts. In response, Lukoil immediately appealed this decision before the administrative court, accusing the Customs Agency of administrative arbitrariness. It said that it had complained to the Finance Minister on the case, saying that the instalment of the measurement devices requires more time and is an excessive financial burden to the company, which implies unfair treatment by the state. Two days later, the administrative court in Sofia stopped the administrative decision by the Customs Agency in unprecedented speed.

The argument that the instalment of measurement devices constitutes excessive financial burden on Lukoil Bulgaria seems ungrounded considering the dominant position of the company on the Bulgarian fuels market. In addition, its refusal to abide by the government's regulations and the quick revocation of the state license has placed the Bulgarian consumers under increased energy risk. During every tax crisis with Lukoil the company has threatened to cut the supply of finished fuel products to the market, and hence has been able to influence milder subsequent treatment by the government. In November 2013, the Customs Agency sharply changed its position towards the measurement devices officially, stating that the existence of tax measurement devices is considered "department secret", which means that **the Customs Agency will no longer provide information about the current status of instalment of measurement devices**. This comes at a time when the Supreme Administrative Court is looking at Lukoil's complaint about the Customs Agency's regulation of the instalment of measurement devices. The Russian company lost the case at first instance and has brought the case to the highest court of order.

Overall, **Bulgaria's oil sector remains not fully transparent** and not entirely independent of state involvement at least partially helping the dominant company

preserve its monopoly status. Moreover, different sources point to **the existence of substantial shadow sector in the oil industry**, in which almost a third of all refined products are not accounted by tax authorities. Estimates of the size of this underground market vary between EUR 800 million to EUR 2 billion.<sup>80</sup>

#### Box 6. Balancing Geopolitical Interests – the Case of the Burgas-Alexandroupolis Pipeline

The TransBalkan pipeline also known as Burgas-Alexandroupolis was dubbed one of the strategic ways of avoiding the Bosphorus strait for the passage of crude oil tankers. The pipeline was planned to be built by a consortium consisting of the BEH, the Greek energy consortium HELPE-Traki, as well the Russian Rosneft, Transneft, and Gazpromneft. The Russian consortium would have held 51 % of the venture, which means that the Bulgarian and Greek side would have divided their participation in shares of 24.5 %. The change of government in Bulgaria in 2009 brought a centre-right government of Boyko Borissov, which was quick to change Bulgaria's energy priorities and abandon the project. The official explanation was the environmental evaluation of the pipeline, which reached the conclusion that the dangers for a potential oil spill close to some of the largest sea resorts of the country poses too big of a danger. The unofficial explanation for the change in Bulgaria's position was the Bulgarian government is afraid that the pipeline does not yield enough rent to cover for the investment and maintenance costs. Transit fees are expected to vary between USD 20 and USD 40 m annually, which is well below the Bulgarian proposal of USD 330 m.

Burgas-Alexandroupolis has been also stalled because of the general geopolitical situation. Russia, on the one hand, will not be able to supply enough oil for the pipeline. Currently, 80 % of Russia's oil exports go to the EU via pipelines through Ukraine and tankers through Bosphorus. Another 12 % go to Asia, but this number is likely to rise as China and Russia opened this year a major pipeline. One of the ways for Russia to secure the capacity of the Transbalkan pipeline is to use the Caspian Pipeline Consortium, which brings oil from the Tengiz fields in Kazakhstan to the port of Novorosiisk. The capacity of the pipeline is similar to that of Burgas-Alexandroupolis, which makes it unlikely that its supplies will be enough to fill the new pipeline. Despite attempts for the expansion of its capacity, the CPC could not be included in the Balkan project in the short run.

Moreover, the route of the Transbalkan pipeline, despite being the shortest and most economically viable, goes against the new geopolitical redistribution in the Black Sea region. The energy rapprochement between Russia and Turkey has made the alternative oil route, Samsun-Ceyhan, more attractive. This Black Sea-Mediterranean oil link is part of a larger triangular cooperation between Russia, Italy and Turkey. The Italian giant "Eni", which has also a 50 % share in *Blue Stream* and *South Stream*, is looking to capture the oil transit market. It is already involved in oil exploration in the Russian Caspian shore, which could secure additional oil for the Samsun-Ceyhan connection.

<sup>80</sup> Nitzov, Boyan, R. Stefanov, V. Nikolova, and D. Hristov, "The Energy Sector of Bulgaria", Atlantic Council Issue Brief, April, 2010.

### 2.3.3. Sustainability vs. Affordability Challenges: Costs and Operational Stability Risks

The EU's strategic energy policies set ambitious goals for reaching a carbon-neutral power supply in Europe by 2050. The strategy is seen by many as the only sustainable approach to the future economic development of Europe. Expansion of renewable energy production and introduction of clean technological solutions in Europe's industrial and household sectors is being incentivized on EU and national level, including through subsidy schemes (e.g. feed-in tariffs for renewable electricity production and CHP cogeneration). However, many challenges, lie ahead on the road to 2050. In fact, the renewables take-off brings about far-reaching consequences that affect the way electricity systems are operated in terms of both costs and the operational stability. Bulgaria is one of the EU countries where **state failure to adequately accommodate European policies has led to exponential growth of renewable energy production**, which poses risks to the balance of the electricity system.

#### *Booming Costs*

During the 2009 – 2013 period, a total of 1,568 MW of renewable energy capacities have been installed in Bulgaria, including 942.1 MW of photovoltaic and 342.9 MW of wind power generating capacities.<sup>81</sup> Overall, one of renewable energy capacities installed in the country amount to 1,651 MW with more than 80 %, of which installed between 2009 and 2012.<sup>82</sup> In 2012 alone, 136 MW of wind (84 % growth y-o-y) and 823 MW of solar energy (523 % growth y-o-y) generating capacities have been connected to the electricity grid, while projections for the next 3-5 years indicate that further 1,741 MW of solar and 651 MW of wind electricity generating capacities will be connected to the grid.<sup>83</sup> Similarly to the situation in other European countries, the exponential growth of renewable energy installed in Bulgaria has come about as the result of the introduction of feed-in tariffs (FITs) for the development of renewable and CHP energy production. In Bulgaria, the price for solar and wind energy is respectively EUR 118.13 MW/h<sup>84</sup> and EUR 66.35 per MW/h<sup>85</sup>. For reference, the price for electricity produced by Kozloduy NPP is EUR 13.5 per MW/h.<sup>86</sup> There was also almost a threefold increase in the purchased amounts of CHP cogeneration electricity in 2012 at prices between EUR 65 per MW/h and EUR 70 per MW/h.<sup>87</sup> There is a 'green' supplement for subsidizing the higher prices of renewable electricity of EUR 5.505 per MW/h and a 'brown' supplement of EUR 1.915 per MW/h, both paid through the final consumers' bills.

<sup>81</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria* and data by the Bulgarian Photovoltaic Association as per December 2013.

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> SEWRC website, [www.dker.bg](http://www.dker.bg)

<sup>85</sup> Ibid.

<sup>86</sup> Ibid.

<sup>87</sup> Bulgaria, (07.2013), Ministry of Energy and Economy, *Bulletin on the State and Development of the Energy Sector in the Republic of Bulgaria*.

### Box 7. Lessons from Renewable Energy Development in Spain

Spain has been one of the countries with the most outstanding growth of renewable energy production in the period between 2007 and 2013. At the same time, large financial deficits in Spain's energy system have been accumulated as a result of a widening gap between the sum paid by companies to power generators and the amount utilities have recouped from their customers. The main contributor to the deficit problem was a poorly designed policy that kept consumer rates low even as supply costs climbed, so the true costs were never passed on to the user. According to Bloomberg, this annual discrepancy between utility payments to renewable power producers and the revenue they collected from customers was 5.6 billion Euros (\$ 7.3 billion) for 2012, despite the introduction of new taxes. The trend is worsening, as the 2012 gap represented a 46 % increase over the previous year's shortfall. All told, the entire deficit – which has been growing since 2005, but really took off in 2008 with the financial crisis – exceeds EUR 25.5 bn.

The Spanish government has proposed new measures to address this situation, including a 7 % tax on generation, and a drastic cut in subsidies for new clean energy projects. To deal with the financial ramifications of this issue, the utilities are working to bundle this increased debt into securities that will be sold to investors (to be paid by consumers on future electricity bills – or so the securities investors hope).

Meanwhile, in March, Fitch downgraded five existing Spanish electricity tariff deficit securizations, citing the structural imbalance and the negative trend observed on the overall electricity system cash flows, as well as the uncertainty of the regulatory environment affecting the electricity sector. Despite the government's efforts in 2012 to tackle the on-going tariff deficit problem, Fitch believes that the Spanish electricity system will likely continue generating tariff deficits beyond 2013.

On the one hand, introducing FITs is a powerful mechanism to attract investment in the renewable energy sector, and to accelerate the transition to cleaner and lower carbon energy as they provide long-term contracts (usually 20 years) for electricity generated from RES. This helps attract private investment, and engages citizens, farmers, businesses and investors directly in the transformation of the electricity system. FITs have been implemented in different jurisdictions around the world, and most prominently in the EU and the US, and despite all the criticism they have received, they remain one of the most widely used renewable energy policies. However, if a comprehensive policy to scale-up privately financed renewable energy investment is implemented, it is also necessary to establish a credible, long-term mechanism to ensure that those costs will be recovered over time. **This policy includes ensuring that the overall framework has the broad support of tax-payers, and that it is based on clear and well leveraged financial and capacity demand projections, which would make it resilient to changes in governments, and overall economic conditions.**

As was the case in some other European countries (namely Spain, Czech Republic), it could be said that to a large extent **the introduction of FITs in Bulgaria was mismanaged and has led to the creation of a speculative investment environment because it was not part of a strategic framework**

**planning moderated with adequate subsidization buffers.** Large deficits started accumulating in the period after subsidy schemes were introduced in 2008, as the costs of generating electricity rose faster than what utilities can lawfully recover from electricity rates, while capacity demand actually shrunk during the economic crisis. In view of large untapped energy efficiency potential in addition to modest economic growth projections for the Bulgarian economy, it could not be expected that energy demand would fluctuate significantly away from the pretty much levelled trends of the last 10 years.

Besides the effect from the renewable FITs, price hikes have also been further exacerbated by the cogeneration subsidization that is often the subject to speculations. According to government officials, “booming sale of CHP electricity frequently occurs without meeting the minimum permission conditions (e.g. reaching required levels of high-efficiency production, sale only after primary production necessities are met)”.<sup>88</sup> The root cause for the emergence of the subsidization gap is the fact that the amount by which electricity prices can increase is regulated by the state. **The independence of SEWRC as a regulator is highly compromised** and real market reflection, including accounting for renewable subsidization, is constrained by evident political and social circumstances. The liquidity issues created as a result of subsidizing the renewable and CHP sector coupled with the losses occurring from other long-term purchase contracts, cold-reserve management and “black hole” investment projects, inevitably trigger large deficit accumulation primarily for NEC and the whole energy system on Bulgaria (See Section 3). According to different estimates, electricity produced from renewable sources **accounts for 13 % of the electricity available for final consumption and for 36 % of the final electricity price mix.**<sup>89</sup> Estimates of the cost of renewable FITs paid by consumers in Bulgaria vary from EUR 400 m (excluding newly-built hydropower capacity) and nearly EUR 650 m.<sup>90</sup> **EUR 150 m is the estimated annual deficit** – the sum that could not be recovered by electricity rates but is payable to producers under the FITs arrangements.

From an investment security standpoint, the approach to renewable energy development was initially flawed from the very beginning in 2008 as it did not provide adequate FITs buffers, while also not accounting for market, social and economic risks in a country with persistently high rates of energy poverty. The Bulgarian authorities failed to step in pro-actively and cut subsidies when the renewable investment bubble continued inflating over the 2010 – 2012 period – there were caps on new capacity introduced while RES outputs grew beyond control. **The possible crisis management options for policy manoeuvring during the 2014 – 2020 period are very limited and include mostly retroactive measures, such as introducing new grid access tariffs, capping profits, introducing various tax cuts or production freeze schemes.** It is highly likely that the problem will remain politicized while temporary remedies could achieve little to no effect – projects often are entitled to receive subsidies over a 20 years period.

<sup>88</sup> “Assen Vassilev: The surcharges for “green” and “brown” energy are remained”, Energy Online. bg, 17 May, 2013, accessed from [www.energyworld.bg/2013/OS/асен-василев-всички-такси-за-зелена-и/](http://www.energyworld.bg/2013/OS/асен-василев-всички-такси-за-зелена-и/)

<sup>89</sup> Data by the Bulgarian Photovoltaic Association quoted by [www.renewables-bulgaria.com](http://www.renewables-bulgaria.com) on December 12, 2013.

<sup>90</sup> Tasev, A. “Energy on crossroads – or what can be done”, Trud, July 3, 2013.

The adjustment and remedial costs will remain high regardless of the measures. Furthermore, **this would inevitably denigrate the investment environment, exacerbate debt servicing risks and invite a deluge of lawsuits challenging the legality of such measures.** The net effect and the outcome scenarios will also depend to a great extent on the price levels – the higher the price, the lower the gap between FIT and price. Hence, the survival of subsidies is conditional upon adopting a policy for targeted social support for energy poor consumers and **fostering energy efficiency on a mass scale rather than subsidizing prices.** Positive measures could also be related to developing a national strategy for more active social engagement by the renewable sector, including adopting mandatory local education and R&D investment schemes, community 'give back' programs, NGO and expert community engagement, etc.

### ***Power Ramps: Costs and System Stability Risks***

Another immediately apparent shortfall of abrupt growth of renewable electricity production is that renewable energy supply is intermittent in its very nature and solar and wind power facilities cannot offer operational flexibility and respond to fluctuating electricity demand. In addition, long-term supply contracts mandate the purchase of RES energy which creates severe limitations for the sale of conventional electricity, during the months with the largest number of sunshine hours and/or adequate wind flow. RES also impose an additional cost for balancing capacities. RES pose numerous challenges, including reduced operating hours and extra management expenditures – and hence profitability – of other generators used for back-up while also potentially creating the need for constructing adequate infrastructure to integrate the varying output of different RES. More importantly, they put stress on the system's stability and require more flexibility and back-up resources in other parts of the power system, with **the greatest risk being the low level of demand in the April – May and September – October periods** when demand collapses below 2600 MW in the daytime and 650 MW at night – too little to keep the system on standby and in stable condition.

An issue arises from the fact that RES introduce a new layer of complexity to load fluctuation. Traditionally, power generation follows the load, i.e. the sum of the requirements of all consumers connected to the power grid, plus losses throughout the grid itself. Although the load varies throughout the year (summer vs. winter), the week (working day vs. weekend) and the day (night vs. daytime), such variations are largely foreseeable. Power plants are dispatched (i.e. called upon to generate electricity) following the merit order according to their marginal cost. However, with the introduction of substantial RES production, load fluctuation problems are further intensified. Wind farms and photovoltaic systems generate electricity only upon minimum thresholds of radiation and/or wind speed. As long as the share of variable RES in a given market/power system is low the system can operate as usual. Yet, as RES start to be deployed on a large scale, new challenges emerge. This is precisely the situation that many European countries, including Bulgaria, are facing today. When the wind stops blowing or the sun stops shining the remainder of the installed capacity has to make up for the loss of variable RES. On the other hand, when sun is high and winds are blowing, FITs scheme mandates purchase of RES production, so mandatory quotas are achieved and days with unfavourable conditions are compensated for, often



at the expense of conventional electricity producers. Such sudden and massive demand peaks, so-called power ramps, create new requirements for conventional generators, including fossil-fired, nuclear and dispatchable RES.

The “start-stop” mode of conventional power plants operation is very costly and environmentally harmful. Hydropower plants are the most responsive plants and can be called upon to generate electricity within very short timeframes. In Bulgaria, back-up requirements are almost entirely met by hydropower plants production. However, power ramps create additional security requirements and call for further investments in an overly decapitalized energy system; the overall environmental and financial risks associated with RES back-up capacities plus the opportunity costs from reduced operating hours and hence severely limited profitability pose a serious threat to the sustainable development of renewable energy in countries like Bulgaria.

### 2.3.4. Electricity Market Liberalization Challenges

Bulgaria’s energy sector transformation towards becoming a well-functioning part of the planned European internal energy market, as required by the Third energy package of the EU, is taking place at a very slow pace. Given that the inevitable changes will have an effect on both industries and individual consumers, politicians have been reluctant to sign on the dotted line and initiate the final stages of liberalization of the retail market. This has made ample room for speculation on the potential outcomes of this process, based on rather limited technical knowledge and expertise. **The date for full liberalization is still unclear and has been changed several times.** A growing number of commercial consumers have switched to the unregulated market. Although on paper all consumers, including small enterprises and households, have the right to switch their supplier since 2007, this is still not possible as the necessary regulatory changes have not yet been introduced.

**Table 5. The Third Liberalization Package**

#### Key aims:<sup>91</sup>

- reducing prices and increasing efficiency through enhanced competition
- increasing investment and innovation in new technologies
- diversification of energy supply leading to energy security
- emphasis on RES in line with climate change provisions

#### Key provisions:<sup>92</sup>

- unbundling of transmission and distribution network operators from vertically integrated undertakings
- ensuring the independence of national regulators and determining their authority
- establishing rules to enable the functioning of retail markets

<sup>91</sup> Directive 2009/72/EC, (13.07.2009).

<sup>92</sup> CSD, “Energy and Good Governance in Bulgaria: Trends and Policy Options”, Sofia, 2011.

As electricity has traditionally been provided as a universal good, selling it on a competitive market has been a slow and long process that is not yet completed in several MSs, including Bulgaria. The string of directives providing increasingly specific rules is reflective of **the reluctance of MSs to commodify electricity**. While industrial and retail markets have been open since 2004 and 2007 respectively, many MSs maintain some form of regulation on small commercial and domestic consumers.<sup>93</sup>

The assessment of the European Commission from November 2012 regarding the progress towards the development of a fully competitive electricity market in the EU suggests that there is still a lot of work to be done before the 2014 deadline for the full implementation of all legislative provisions, running of efficient cross-border markets and the implementation of plans for smart grids. MSs are persistently reluctant in changing national legislation to be more outward-looking, putting several obstacles ahead of market liberalization. To a large extent, this is the result of politicians' primary concern with maintaining public support, particularly at a time of economic hardship. In order to achieve the long-term goal of creating a competitive environment, which will lead to more competition and lower consumer prices, it is necessary to introduce new measures and invest in the modernization of the electricity grid. These changes require significant financial costs, which are ultimately borne by the general public through their utility bills. In the current climate, **an increase in energy prices would lead to widespread discontent, which politicians want to avoid, even if this leads to EU sanctions**. In Bulgaria, it is particularly apparent that short-term interests prevail over long term societal benefits.

### ***Bulgaria's Progress***

Bulgaria has made only moderate progress towards putting in practice the requirements of the EU Directives and lacks a comprehensive strategy and sufficient financial resources for the overall restructuring of the sector. This is primarily the result of short-term planning dictated by personal interests and populist agendas, rather than by long-term social benefits. While in principle all consumers have been free to choose their electricity supplier since 1 July 2007, as required by EU law, in practice they are still subject to state-regulated prices and can only purchase electricity from the only authorised supplier in their area.<sup>94</sup> Currently, a more viable option for these consumers to reduce their costs are on-site generation (using renewable resources such as solar and wind power) and investing in energy efficient technologies and materials.

Albeit slowly, some progress was made towards liberalizing the electricity market by changing key legislation to comply with EU requirements, while some other policies hinder the process. In particular, the introduction of additional taxes for producers of RES (in particular solar and wind power, which represents further discrimination in the sector) go against EU requirements,

<sup>93</sup> Slovenia, ACER, "ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2011", 2012, Ljubljana.

<sup>94</sup> Ministry of Economy, Energy and Tourism, (2013), Development of the power market, <http://www.mi.government.bg/bg/themes/razvitie-na-elektroenergiiniya-pazar-222-299.html>

effectively becoming market barriers, as the liberalization directives encourage the use of RES. **These taxes represent a significant cost for the small and medium renewable energy producers and make Bulgaria an unpredictable international trade partner.** These policies led to a formal notice in September 2011 and a reasoned opinion in February 2012. The European Commission referred Bulgaria, to the European Court of Justice in January 2013 for failing to fully transpose EU rules on the energy markets. Bulgaria has only until 1 July 2014 before it has to start paying daily fines of EUR 8,448 if it fails to rectify its shortcomings. The public outcry against high electricity prices and the lack of competition among suppliers at the beginning of 2013 was a clear sign that the current system needs to change. At the same time, **public opinion is among the main factors slowing down energy reforms as people are much less willing to accept any more price increases**, which are necessary to implement the required changes. Energy poverty in Bulgaria is widespread, and although nominal prices are the lowest in Europe, they are among the highest in terms of purchasing power parity.

In an attempt to soothe public discontent about electricity prices, the government introduced amendments on the *Energy Law* at the beginning of July 2013, which are a clear sign of a U-turn on the progress made in the energy sector. One aspect of the reform is particularly worrying. The “green” and “brown” fees for RES and cogeneration (introduced by the previous government) will be transferred from the transmission tariffs to the producers and will be borne entirely by the domestic market instead of being imposed on exports too. This means that instead of eliminating these tariffs, the new government will simply ‘shift’ them and electricity on the domestic market might become more expensive than the exported energy. The fundamental weakness of this approach is that the absolute revenues generated in the system will decrease. Therefore there will not be sufficient funds for the maintenance and upgrade of the system. Furthermore, the reform will combine all tariffs in one, making them much less transparent and difficult to understand.

In order to guarantee the sustainable modernization and liberalization of the energy market and comply with EU regulation, **the government should focus on implementing reforms in three main areas:**

- ensuring total **independence of the regulatory authority**, as well as the effectiveness and quality of its decision-making process;
- unbundling of the transmission and distribution system operators in order to enhance competition;
- **extending access to the open electricity market** to small enterprises and household consumers.

### ***Regulation of the Unregulated Market***

Although the aim of the Third Energy Package is liberalization, this does not mean that the electricity and gas markets will be left completely unsupervised. Instead, in order to ensure that the free market is run properly, the European Commission has emphasised the importance of an independent national regulatory authority, with sufficient power and discretion to guarantee the correct application of the

legislation in this field.<sup>95</sup> **In the case of Bulgaria, public consultations might also be necessary in order to ensure that social needs are also taken into consideration in the decision-making process.**<sup>96</sup> This independence can be achieved by allocating a separate budget to the regulator, which it can implement autonomously, as well as by setting up a limited term of office, so that no one individual can gather too much authority over a prolonged period of time.

In theory, once the market is fully open, final consumers should be able to choose the supplier, who offers them the most suitable electricity deal for their consumption needs. However, some aspects of the market will still be subject to some regulation, namely network tariffs, which are an important component of the final price paid by customers. The regulator is responsible for approving these tariffs or the methodology used to formulate them, as well as monitoring the effectiveness of market liberalization in collaboration with the national competition authority. It also has to ensure that the transmission and distribution system owners comply with the rules governing their operation and penalise them accordingly if they don't. In relation to this, the regulator should ensure that new market players are granted network access in order to avoid the formation of regional or national monopolies in the electricity sector.<sup>97</sup> **The greatest challenge the regulator is facing in creating a competitive market is designing and implementing policies at the lowest social costs possible.**

Key challenges:

- The SEWRC already acts as a market regulator, however, **its independence and the quality of its decision-making have been deemed inadequate.** The European Commission has identified several operational shortcomings, such as insufficient financial and human resources necessary to attract independent and qualified professionals. Experts often leave due to low salaries, preventing the Commission from maintaining a strong internal knowledge base, necessary for a coherent long-term operation.<sup>98</sup>
- The independence of the regulator derives from its **commissioners.** Currently they **are appointed and dismissed by the Council of Ministers,** as stipulated by the *Energy Law*.<sup>99</sup> There has been a proposal to assign the task of appointing the members of the commission to the Parliament,<sup>100</sup> which should make the choice more democratic and open to debate, reducing the chance of political appointments. Removing the formal potential for political affiliations or influences should have a positive effect on the autonomy of the regulator. However, it is much more difficult to limit the influence of private economic

<sup>95</sup> Directive 2009/72/EC – preamble 33.

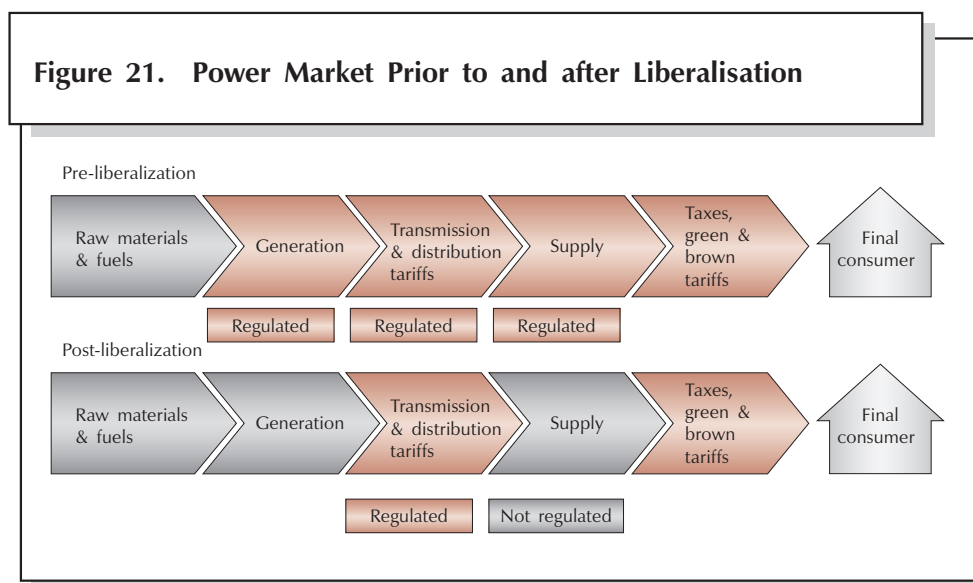
<sup>96</sup> Ibid., Article 35.

<sup>97</sup> Ibid., Articles 36 and 37.

<sup>98</sup> European Commission, “Findings and recommendations related to Bulgarian energy policy”, published by the Ministry of Economy, Energy and Tourism, <http://www.mi.government.bg/bg/theme-news/konstatacii-na-evropeiskata-komisiya-i-svetovната-banka-za-balgarskiya-energien-sektor-1194-m0-a0-1.html>

<sup>99</sup> Bulgaria, *Energy Law*, Art. 11, para 2, State Gazette, Issue 66, July, 2013.

<sup>100</sup> “The MPs passed an amendment to allow SEWRC to be appointed by parliament”, Capital Weekly, 19.02.2013, [http://www.capital.bg/politika\\_i\\_ikonomika/2013/02/19/2006280\\_deputatite\\_glasuvaha\\_dkevr\\_da\\_se\\_izbira\\_ot\\_parlamenta/](http://www.capital.bg/politika_i_ikonomika/2013/02/19/2006280_deputatite_glasuvaha_dkevr_da_se_izbira_ot_parlamenta/)



Source: CSD.

interests in the sector through regulations. Therefore, the administrative procedure should also be specified in more detail to make it as transparent as possible.

- A key issue that needs to be addressed is the degree of **political influence** that is exercised over the Commission once the market is fully open. Previous attempts by government officials to stop regulated prices from rising for fear of public discontent at the time of renegotiation with suppliers<sup>101</sup> should be avoided. Furthermore, the industry is often influenced by **private interests**, which have poor corporate governance standards. These interests have often been reflected in SEWRC's decisions when prices increased, instead of promoting efficiency and system savings. Switching to a free market should ensure that prices are formed based on supply and demand, eliminating any incentive for political involvement.
- SEWRC has not always fulfilled its duties as a strict **regulator** by failing to impose appropriate and proportional sanctions<sup>102</sup> to the three distribution system operators, when they did not comply with the *Law on Public Procurement* by employing firms which are part of their vertically integrated undertaking and avoiding tender procedures.<sup>103</sup> If this is the result of a political pressure, improving the independence of the authority should lead to more effective law enforcement and consequently to a more competitive market.
- At the core of the free energy market is the idea of prices being dependant on supply and demand, rather than regulation. The *Energy Law* stipulates that the **prices of electricity should not be subject to regulation** if the Commission deems that sufficient competition exists and prices are set according to market forces.<sup>104</sup> However, in practice, many components of the final energy bills for

<sup>101</sup> Capital Weekly, April 10, 2013, [http://www.capital.bg/politika\\_i\\_ikonomika/redakcioni\\_komentari/2013/04/10/2039405\\_nezavisimi\\_regulatori\\_drug\\_put/](http://www.capital.bg/politika_i_ikonomika/redakcioni_komentari/2013/04/10/2039405_nezavisimi_regulatori_drug_put/)

<sup>102</sup> Bulgaria, *Energy Law*, Art. 21, para. 43, State Gazette, Issue 66, July, 2013.

<sup>103</sup> Public Financial Inspection Agency „Results of the public procurement inspection of the three distribution system operators”, <http://www.adfi.minfin.bg/bg/pubs/73>

<sup>104</sup> *Energy Law*, Art. 30, para. 3.

households and small enterprises are still regulated, including the prices paid by final consumers to their supplier. As one of the key roles of the regulator is to monitor and promote the opening of the market, the Commission will have to shift its focus from setting tariffs to promoting competition by facilitating the entry of new market players at all stages of the electricity system.

- A proportion of the final consumer bill is composed of different taxes, which will be regulated even after the market is fully liberalised. These include tariffs for the access and use of the transmission and distribution networks, as well as the **public service obligation tax** which covers the obligation of the government to purchase electricity produced from RES (green and brown fees). The so-called 'green' fees have raised great public concern and are often identified as the main reason for the constantly increasing electricity prices. SEWRC introduced additional fees for RES producers to have access to the electricity network, which were quickly revoked by the Supreme Administrative Court, only to be recently replaced by yet another similar fee. A great challenge for the regulator is to **find a balance between supporting renewable energy resources and the rise of retail prices.**

### *Unbundling*

In order to guarantee non-discriminatory access to the transmission network, the Bulgarian transmission system must also be independent from any vertically integrated undertakings which are involved in the generation and/or supply of electricity. The Directive offers three possible unbundling options for transmission system operators:

- Ownership unbundling (OU);
- Independent System Operator (ISO);
- Independent Transmission Operator (ITO).

The OU option provides for an entirely separate legal entity to assume both the ownership and the operation of the transmission system. In case this new entity was previously part of a vertically integrated company, the latter may retain only a minority stake, without voting rights in the operator. As in most cases this entity is state-owned, control over the new TSO is entrusted to a public authority different from the one that administers the vertically integrated company.

If a MS decides for an independent system operator, then the vertically integrated company it was originally part of retains ownership of the transmission system. The regulatory authority then certifies an independent system operator, which must be legally separate from the vertically integrated company and be under the control of a public authority other than the one in control of the transmission system owner.

In the case of an independent transmission operator, the vertically integrated company transfers the assets and management of the transmission network to an autonomous operator who can be part of the group, but a separate legal entity with guaranteed autonomy of management. A public authority in charge and the vertically integrated entity can participate in the supervisory body of the ITO.<sup>105</sup>

<sup>105</sup> CSD, (2011), "Energy and good governance in Bulgaria: Trends and policy options".

Table 6. Types of Transmission Network Unbundling

|                      | Network owner                      | Control   |
|----------------------|------------------------------------|---|
| Ownership unbundling | TSO (ESO)                          | No external control   |
| ISO                  | Vertically integrated entity (NEC) | Different public authority than that controlling vertically integrated entity e.g. Ministry of Finance  |
| ITO                  | TSO                                | Public authority (Ministry of Economy) and vertically integrated entity (NEC) can participate in supervision (including in decisions about financing) |

The aspect of liberalization which final consumers, particularly small enterprises and households, will experience first-hand is their ability to choose the supplier from which to buy electricity instead of having a contract with the only supplier licensed to operate in their area. In order to ensure free competition among suppliers, distribution system operators (DSOs) must also be legally and operationally unbundled from the vertically integrated undertakings, whose activities include production and distribution. Unbundling these undertakings should give DSOs the incentive to grant network access to other suppliers too. The parent company will only be permitted to approve the annual financial plan of the DSO and to set limits to its levels of indebtedness. The regulator will monitor closely distribution system operators to ensure that they don't grant privileged network access to their parent company.<sup>106</sup>

Key challenges:

- After a long delay, which was the result of the close financial interdependence between NEC and ESO, the transmission system operator (**ESO**) **has finally been unbundled by the vertically integrated undertaking (NEC)**. ESO is in the process of being certified as an independent transmission operator by SEWRC. Given their close ties in the past, it is important to ensure that the unbundling will not only be a formality, but will be reflected in ESO's operation and that it will move away from previous practices of favouring producers, which are part of NEC.
- High electricity prices prompted mass protests calling for the end of the **supply monopolies** of the three electricity suppliers operating across the country and even the withdrawal of their license to operate. This reflects one of the main downsides of a regulated consumer market as households have no choice but to purchase power from the only licensed supplier to operate in their area. The three distribution system operators are already legally unbundled from the vertically integrated undertaking they are part of. However, given that there is only one licensed supplier in each area (the

<sup>106</sup> Directive 2009/72/EC, Article 26.

supply branch of their vertically integrated undertaking), they have no choice but to grant them access to the network, thus creating a monopoly. In order to end this monopoly the regulator should **grant nationwide supply licences to the three current suppliers as well as to new market entrants**, most probably large foreign firms, so that they have an incentive to perform better and lower their prices. In order to guarantee the end of supply monopolies, the regulator could impose a maximum market share for each supplier in order to encourage new entrants.

### *Market Opening*

Guaranteeing the independence of the TSO is not only important for the equal access to the transmission network. Indeed the TSO also has another crucial function for the proper development of the liberalized market: running the electricity market. For regulated consumer prices, all electricity production is sold to NEC in its capacity of universal provider. For the industrial sector a multi-layered market is already in place in order to meet the demands for electricity and accommodate production fluctuations. A physical supply of 1 MWh of electricity to the final consumer may be the result of several earlier transactions between the market players. The market is split into several parts:

- Bilateral contracts between market participants on individually negotiated prices for reach delivery time interval;
- Day-ahead market on which registered participants can place offers and make bids to buy or sell electricity for each one-hour delivery interval for the day following the transaction;
- Spot market in which electricity is traded for almost immediate delivery;
- Balancing market run by the TSO in order to ensure that demand is met by generation. The TSO buys or sells electricity in order to compensate for potential changes in the estimated levels of production or consumption.
- The Directive is not very specific about the exact way in which the market is to be opened, other than specifying that this is to be done gradually by dividing customers in groups based on their consumption capacity. Each MS must define the eligible customers for the next section of market opening at the beginning of each year. The deadline for opening the retail market was July 2007.<sup>107</sup> However, many MSs still haven't completed this process, including Bulgaria, despite national legislation being fully adapted.

Based on the criteria of size of consumption, each group is set a deadline, by which it has to switch to an unregulated contract, either with its current supplier or with an entirely new one. Until a consumer switches to such contract, they will be able to purchase electricity through a default distributor at regulated prices. The same firm can be a default supplier and a free market supplier at the same time, until all of its customers which purchase electricity at regulated prices, switch to free market prices. Eventually switching to the free market will become compulsory. However, those who are not able to switch supplier, for example due to being in a remote location, can still maintain their contract with a supplier of last resort, but this will also have to be based on market mechanisms.

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<sup>107</sup> Directive 2009/72/EC, article 33.



**Box 8. The Liberalization Process in Other MS**

The greatest concern for Bulgarians is the impact that these changes will have on their monthly electricity bills. Given that MSs' energy markets will be increasingly connected, price trends in Bulgaria must be considered in the context of European energy policies. The 2050 Energy Roadmap aims to decarbonise Europe's economy, by phasing out fossil fuels and consequently reducing greenhouse gas emissions to 80-95 % below 1990 levels by 2050. As electricity will play a growing role in this process, the sector will also need to be gradually restructured to move away from carbon-intensive generation methods. Early projections indicated that average EU prices would rise until 2030, when they will start to decrease again. However, on average, technological and resource decarbonisation, as well as improvements in energy efficiency have led to smaller increases than expected. Nevertheless, price increases due to decarbonisation measures depend largely on the existing infrastructure, and given Bulgaria's outdated and highly intensive energy system, prices may rise significantly over the coming years. By 2030, households and small and medium enterprises are expected to spend about 16 % of their incomes on energy and transport – in 2012, Bulgarian households spent 14.4 % of their incomes on energy. In order to offset the rising electricity prices, MSs are encouraged to promote energy efficiency in order to reduce energy consumption. In Bulgaria, the potential benefits of improving households' energy efficiency still remain largely untapped, despite several government financing schemes being available. This is likely due to the fact that lowering energy prices artificially through populist government measures acts as a disincentive to invest in energy efficient technologies among the population.