

6. Для обеспечения интересов общества и социальных групп населения необходимо через средства массовой информации, публикации, конференции и т.п. убедить общественность и заинтересованные стороны в том, что государственно-частное партнерство является одним из наилучших способов предоставления государственных услуг, необходимых для жизнедеятельности человека (пользование электричеством, отоплением, водоснабжением, лечением, образованием и др.)

Принятие действенных мер позволит определить стратегию поэтапного введения и использования моделей партнерства, в том числе в инновационной сфере, а также разработать на законодательном уровне четкие ориентиры развития отраслей и сфер на принципах партнерства.

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ENERGY SECURITY OF BELARUS: MAIN TENDENCIES AND CHALLENGES IN THE CONTEXT OF NEW REGIONAL GEOPOLITICS AND EXTERNAL POLICY VECTORS

In this paper I analyze the role and potential of the Belarusian energy sector in the country's economic growth challenge; provide the overview of the old and new energy security issues faced by Belarus; discuss in details the main energy security challenges to be faced by Belarus in 2011-2015 and, finally, discuss possible policy measures that allow solving these challenges.

Underlying conditions

Following a substantial economic growth triggered by a privileged access to Russian markets for Belarusian industrial and agricultural output exporters and energy importers; preferential support of the enterprises and sectors with a large state share, especially those producing exports, and governmental policies on wage and price control, which resulted temporary cost advantage for traditional exports as well as productivity increase within the firms with only limited labor reallocation induced productivity change. The recent data shows that productivity growth is slowing down – a sign of the productivity improvements through “low hanging fruit” type investments being exhausted.

Currently, Belarus is gradually approaching a point at which output growth would require either costly capacity expansion or increase of capacity usage efficiency as the years of reclaiming unused capacities become a history. Energy efficiency growth, probably, remains the only existing source of the productivity change that does not show signs of being exhausted in the nearest future. Currently, as implicit subsidies from Russia in the form of cheap oil, natural gas and electricity diminish and economic growth induced by the productivity increase and capacity reclaiming is being exhausted, it becomes apparent that a search for the new sources of economic growth must incorporate energy security considerations.

Main energy security challenges for Belarus in 2011-2015

The paper considers the following components of the energy security of Belarus are considered to be the issues of primary importance:

- Reducing energy intensity of the economy;
- Diversification of energy sources used in heat and power generation, especially diversification away from natural gas consumption;
- Diversification away from Russian fuel imports;
- Securing stable operation of gas and oil pipeline systems close to full capacity;
- Reducing impact of energy production and consumption on environment.

The main trends in Belarusian and regional policy and economy which will undoubtedly have an impact on the country's energy security include:

- Natural shale gas and liquefied natural gas revolution in Europe;
- Launch of the Nord Stream gas pipeline system in 2011-2012;
- Construction of nuclear power plant station in Astravets;
- New suppliers of hydrocarbons to Belarus.

We purposefully do not discuss such important topics as carbon-free technologies development in Belarus, participation in the international carbon-reduction dialog, etc., since these trends are unlikely to become anything close to significant determinants of the Belarusian energy security puzzle within the next five years.

Table 1 – Summary of the existing trends and their impact on energy security of Belarus

	Shale gas and LNG revolution	Nord Stream launch	Astravets nuclear plant construction	New suppliers of hydrocarbons
Reducing energy intensity of economy	-	-	+	-
HPG sector diversification away from gas	-	-	++	-
Diversification away from Russian fuel imports	++	+	++/-	++
Usage of pipeline system to full capacity	--	--	0	+/-
Environmental effects of energy	+/-	-	+/-	-

Legend: ++/+ strongly positive/positive effect; 0 no effect or very limited effect;
 -- strongly negative/negative effect; +/- mixed effect;
 ++/- mixed effect with strong positive effect and possible risks.

Policy recommendations

Table 1 suggests that the most of the vital energy security components will experience both positive and negative shocks in the nearest future. Yet, it is possible to undertake a number of policy measures to enhance positive effects and secure against risks as outlined in Table 2.

Table 2 – Summary of the suggested policy measures to improve energy security of Belarus

	Main measures
Reducing energy intensity of economy	<ul style="list-style-type: none"> Establishing R&D program on energy efficiency; Creation of energy efficiency fund to be used for the modernization and energy intensity reduction measures; Imposing standards of energy use, esp. in energy intensive sectors; Introducing taxation schemes on energy use with industry-specific energy intensity reference values; Issuing a mandate requiring gradual replacement and rehabilitation of obsolete equipment, esp. in heat and power generating and energy intensive industrial sectors.
HPG sector diversification away from gas	<ul style="list-style-type: none"> Ensuring adequate progress of the Astravets power plant construction; Imposing standards and taxation schemes of energy use by the sector; Study options for electricity imports, especially in off-peak hours; Gradually replace and rehabilitate obsolete equipment. Study possibilities of expanding production and/or imports of coal; Transfer smaller-scale heat plants to coal or wood as environmental conditions permit; Integrate production of fuel wood into conventional forestry and timber procurement; Assure quality standards and efficient use for forest chips.
Diversification away from Russian fuel imports	<ul style="list-style-type: none"> Ensuring adequate progress of the projects enhancing the diversification away from Russian fuel supply, namely LNG terminal in Kaunas, Astravets power plant and search of alternative suppliers of hydrocarbons; Exploring possibility to access and explore Polish and Ukrainian shale gas fields with a possibility to operate some of the extraction facilities; Studying an option to create a coal-bed methane extracting consortium with Ukraine to develop technology and extract coal-bed methane in coal-rich Eastern Donbas region; Researching and developing biomass as an energy source replacing oil and gas usage.
Usage of pipeline system to full capacity	<ul style="list-style-type: none"> Creating a gas-transporting consortium with Ukraine to gain an additional market power to ensure adequate transit tariffs and share of volumes of the residual Russian gas exports to Europe after Nord Stream is launched; If Russian hydrocarbons transit volumes fall below critical level, transfer to the reverse direction to make the best use of the Polish shale gas and Baltic seaports' ability to receive oil for Belarus. By doing so, Belarus will ensure both hydrocarbons imports diversification and adequate operation of its pipeline systems; Continuing search for alternative suppliers of oil and natural gas (including LNG) in order to assure adequate usage of the pipeline systems in the reverse direction.
Environmental effects of energy	<ul style="list-style-type: none"> Establishing an R&D program on environmental effects of energy use; Imposing environmental standards and taxes on energy use, especially in energy intensive sectors and bringing these policies closer to international standards; Issuing a mandate requiring gradual replacement and rehabilitation of obsolete equipment, especially in heat and power generating and pollution intensive industrial sectors; Establishing emission trade relations with the Kyoto Protocol Annex B countries to collect funds for the environmental modernization of equipment. <p>The following steps should be undertaken to minimize both objective and perceived environmental risks of the Astravets nuclear power station:</p> <ul style="list-style-type: none"> Working with the general public to educate them about modern technologies that guarantee nuclear power safety as well as inform them of virtually accident-free record of civil nuclear power besides Chernobyl disaster; Establish relations with the stakeholders that might be affected by the environmental impact of the projected power station, especially, local communities along Neris river; On early stages study the possibilities for the spent nuclear fuel treatment and reach the preliminary international agreements over the potential nuclear waste storage if needed; Ensure compliance with the international standards of the power plant construction and operation and advertise this compliance strategy to the stakeholders.

Concluding remarks

Currently Belarus enters a completely new stage of its development as the old economic growth factors vanish, political situation both within and outside the country transforms and geopolitical context changes. This new stage of the country's development presents new challenges and new opportunities for Belarusian energy security, the key for any country's independence. Careful consideration of the most critical energy security challenges coupled with professional and effective policy measures to tackle them is a vital task for securing Belarus' economic growth, political sovereignty and quality of life improvement.

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РОЛЬ ПОТЕНЦИАЛА ЗНАНИЙ В ИННОВАЦИОННОМ РАЗВИТИИ ЭКОНОМИКИ

Преимуществом Республики Беларусь является достаточный инновационный потенциал, который определяется численностью высококвалифицированных кадров, специалистов и ученых, развитой сферой исследований и разработок. Способность экономики внедрять результаты инновационной деятельности во многом зависит от подготовленности кадров и программ повышения профессиональной квалификации на производстве. Основой экономики инновационного типа является приоритетное развитие отраслей, обеспечивающих воспроизводство и совершенствование человеческого капитала и рост научных знаний, который достигается за счет инвестиций в знания и человеческие ресурсы. Однако ни одна инновация не может появиться без творческого процесса и соответствующего инновационного климата. Последнее характеризуется комфортной обстановкой в организации, где способный к творчеству работник чувствует себя свободным, умным, мотивированным и не боится ошибок. Творчество же преподавателя проявляется в оригинальных подходах организации учебного процесса, разработке методов подачи учебного материала, соединении теоретической и практической частей. Цели инновационного климата в производственной организации направлены на достижение прибыли, а в высшей школе – на привитие навыков обучаемому контингенту, которые впоследствии будут способствовать развитию личностных качеств будущего специалиста, мотивированного на инновацию. Проблема использования образовательных технологий в ВУЗах сводится в основном к компьютеризации, использованию мультимедийных и других технических средств обучения. Несомненно, лекционные курсы в вузе авторские, и их эффективность во многом зависит от личности и подготовки преподавателя, которому, прежде всего, необходимо руководствоваться принципами научности и творчества. Вузовское образование не только профессионально ориентировано, но и готовит к возможной, в дальнейшем, научной деятельности. Поэтому любой теоретический курс должен строиться с учетом освещения различных и даже взаимоисключающих подходов и теорий.

В образовательном комплексе осуществляется расширенное воспроизводство знаний, а в научных подразделениях – фундаментальных знаний, выступающих основой дальнейших прикладных исследований и создания новых технологий. Необходимо также учитывать, что затраты на образовательный ком-