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6SSG3083 Policy and Application of Geography Research

CW2 Policy Brief

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Energy inefficiency – key obstacle of Ukrainian economic, political and social progress

Key Facts:

UKRAINE IS THIRD MOST ENERGY INTENSIVE COUNTRY IN EASTERN UEROPE, CAUCASUS AND CENTRAL ASIA. (IEA, 2015)

UKRAINIAN ENERGY DEPENDENCY IS PRIMARILY THE RESULT OF INEFFICIENT ENRGY USE (WORLD ENERGY COUNCIL, 2016)

ONLY 5% OF UKRAINIAN ENERGY MIX IS COVERED BY RENEWABLES (VERENYCH, 2020). HIGHT ENERGY INTENSITY = HIGHT CABRON EMISSIONS PER CAPITA AND UNIT OF GDP (YANG, 2019)

Importance of Energy efficiency for Ukraine

The two **main problems of Ukrainian energy sector – extreme (67%) dependency** on imported energy sourses, particularly from Russia (Balamaceda, 2014) and **inefficienct exploitation of energy within country.** Together, these issues put Ukraine at high risk of enrgy insecurity. At the end of 2019 the national energy saving potentional was still realized by less than 50% (Ukrainian Institute of General Energy, 2020). Threfore, government should invest in energy effciiency as a tool to restructure Ukrainian energy system to more independent, diversified and less fossil fuel intensive. Furthermore, current govenmental strategies for **attraction of foreign direct investment (FDI) pre-determine continious growth of energy prices (IEA 2012, ECS, 2013).** Trend may become significant concern for popuation, if energy effciency will stay at current low levels . Moreover, Ukrainian geopolitical development tragectory towards the intergration with EU (Kuzio,2017), supported by **EU-Ukraine Association Agreement implies introduction of strict environmental protection policies** (Golovko, 2020).

Energy Efficiency - the ratio of energy output (or equivalents: **service –** i.e. transportation**, goods** – i.e. computers**, performance –** i.e. thermal heating) to input of energy.

(European Parliament, 2013)

To continue assimilation with EU, Ukraine must prioritize the reduction of greenhouse gases emissions (GHG), as **environmental protection is one of the core common technical standards and regulations that all Member States of Single Market must obey (Copsey, 2009).** Recent directive of Association Agreement introduced **'Nearly Zero-Energy Buildings' (NZEB)** that Ukraine must implement since start of 2020 (Zgajewski, 2015). The regulation forces all new/renovated buildings to emit a maximum of *3kg of CO2 per m^2 annually* (BPI, 2011). For EU this policy is a vital strategy to achieve the Kyoto Protocol agreement *and reduce its GHG by 80% from 1990s by 2050* (Emerson, 2015). Ukraine is obliged to achieve the same goals to satisfy the Association Agreement clauses, securing its geopolitical position by promoting environmental values. **Energy Reforms Coalition (NGO) frequently reviews Ukrainian execution progress** of above regulations, reporting that current policies are too ambitious and expensive to implement. Last report suggested the government to **limit the amount of energy efficiency goals and re-design policies to limited focus points and clearly defined aims and agendas** (Terzyan, 2020).

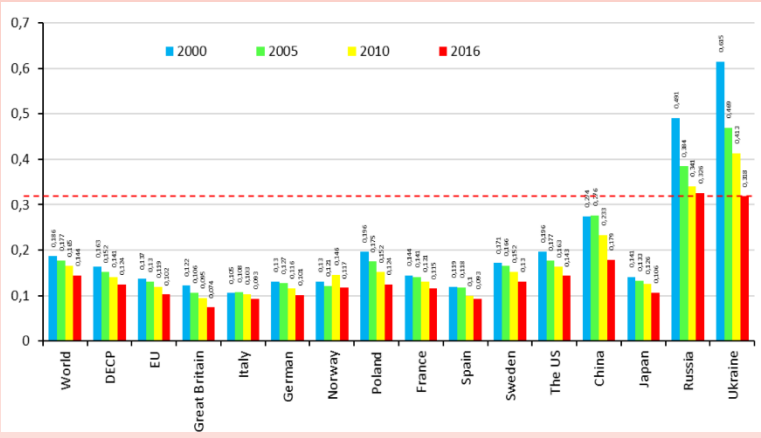


Figure 1: International Comparison of Temporal Change of Ukrainian Energy Efficiency (2000 - 2016)

Causes of Inefficiency

Policies must be designed to tackle core roots of the issues. Each energy-use sector must be rigorously analyzed to identify key problems that must be aproched by policy makers.

Energy Transmission Infrastructure

Given that Ukraine is an energy-dependent country, its extensive transmission network is of key importance. Yet, **54% of pipelines are at least 21 years older of acceptable operational age (UCEPS, 2020).** Such severe outdatedness increases the frequency of accidents and leads to energy loses. Furthermore, pumping system is almost nonoperational and each year requires more energy for maintenance**. In 2017 ~10% of annual gas consumption was used to force gas through transmission network**, highlighting the inadequate energy intensity of the system.

Buildings

75% of Ukrainian buildings were build in Soviet era (1970s - 1980s) requiring urgent modernization. **In 2011 residential sector consumed 40% of Ukrainian heat**, but only 25% of households had installed energy control systems (IEA, 2012). Residents are unable to monitor and adjust their energy usage individually. *"Law of Ukraine on Associations of Co-owners of Multifamily Buildings"* has been reported as very poorly designed policy (Emerson, 2015). **Only 7% of apartment blocks implemented this practice**, as poorer resident could not afford investment in efficiency technology and more well-off households refuse to take such financial burdens.

Industry

Subsidies and consequential low energy prices (Copsey, 2009), led to industries using energy-intensive equipment. **Industrial sector overuses energy by 35% on average**, however the metallurgy uses particularity old-fashioned production system and wastes at least 40% of total electricity consumed (Somasundaram, 2018). Main industrial enterprises are state-owned (Rybitskyi, 2019) and rely on its financial support (Ogaranko, 2013), that eliminates incentive to invest in energy efficiency.

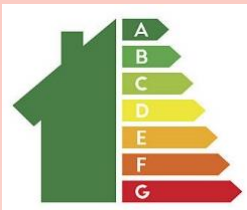
Potential Solutions

- **Invest in energy data warehouses and analytics** to evaluate stages of policy implementation and adjust it accordingly (Harizopoulos, 2009). Advanced data modelling can yield potential **scenarios corresponding to legislation options** allowing government to adopt most sustainable tactic.

- **Impose Energy Management Protocols (e.g., ISO 50001) individually per industry type.** Specialized management approach of each manufacturing process would allow execution of **progress-reporting of pre-identified aims scheme recommended by (Gillingham, 2016)**

- Set **minimum energy performance standards (MEPS)** with comparative labels for building elements and industrial gear to ensure insulation and avoid energy overuse. MEPS act as limiting tool for most energy-intensive appliances on the market (Schleich, 2020) and labels enhance public awareness of best options (Sorrell, 2004)

- **Install Building Energy Management Systems (BEMS) with incorporated individual heating units (IHU)** per apartment. This way, single-pipe district heating system will be modernized, but construction works will be cheaper than replacement with double-pipe system (Fei, 2011). Training programs for operators must be carried out in collaboration between government and hardware providers to ensure best quality training and reliable financial support.



By Researcher from Ukrainian Energy Efficiency Association

Conclusions

The urgent need to limit energy consumption in Ukraine is evident in the geopolitical strategy of EU integration as well as national outdatedness of energy use sectors. If business-as-usual would remain in Ukraine, country would stay reliant on expensive imports and fossil fuels as the infrastructure would continue to degrade and overuse energy supplies. By modernizing the energy efficiency policies and shrinking them to tackle core issues, government can invest in the eradication of problems' roots at minimum expenditure. Theis brief outlines four potential approaches policy makes could take to tackle major inefficiency issues.

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Reflective Piece

The Communication Problem

Researchers often face the challenge of the "So What?" question (Nafukho, 2020). It is widely known that academics must communicate clearly how their findings can influence population, environment, or industries, for their research to be eventually rendered into policy. During 1999 -2003 the discipline of geography was less popularized. Thus, scholars experienced severe lack of communication between policymakers, because the knowledge created by them was inapplicable to 'real-world' problems (Pollard, 2000). The fundamental reason for lack of cooperation was the ambiguity and uncertainty of the geographical research itself, vagueness of research questions and complexity of language used (Rydin, 2004; Banks and MacKian, 2000). Sidaway (2000) explains and critics the position of geography behind more specialised disciplines, touching on issues of competition and marketisation in present-day academia. Sidaway raises the question of academic geographers' position and role in creating 'commodified knowledge', interviewing various academics, including Gillian Rose, about their shifting experience of academic work. The participant's statement; *'academic work is judged according to appropriate in government departments or industry'* illustrates the pivotal point in the geographical field. Initially, research aims were mainly theoretical, aiming to justify the core concepts of space, scale, and place but evolved to policy-orientated, where findings must serve the purpose of social welfare improvements. Financing is the core driver of such everchanging trends (Bassett, 1996). Research grants are provided by institutions and governments, who have specific interests in justifying proposed policies and regulations. Thus, research should be fabricated accordingly with results communicated to policymakers using the straightforward and clear language for it to be considered.

Research design for the policy application

Widespread publications explain that 'relevant' geographical research is 'policy-relevant' (Ward, 2006). Johnston and Plummer (2005) designed the research-design strategy with nine stages, ensuring geographical work to be considered in the policy proposal. They recommend focusing investigations on 'public interests' with minimum attention to global philosophical issues of 'commodified and privatized world'. These recommendations are relatively crude and multiple professors debated against them (Castree, 2005), arguing for their relevance in modern pollical tactics. While disagreement continued for several years and most prominent paper by Michael Burawoy (2005) received a lot of attention within the geographical community, Johnston's core ideas are still being used (Martin, 2002, 2011; Soto, 2018). However, a more truthful definition of 'relevance' of geographical findings could be *'public geographies'* (Ward, 2006). A similar idea was discussed during American Sociological Association conference in 2004, where adjective *'public'* was used to illustrate academic engagement with media and NGOs to educate the population, raise awareness and ease the policy implementation. This approach in sociology resonated with dynamics of geography, as Castree (2002) acknowledged that for many years progression within academia was valued much more than public involvement. As Imrie (2004) states, academic research is only one of the multiple sources of data for policy-makers, not always given the most significant consideration. Economists tend to have a superior voice in

for the government, mainly due to carefully crafted marketing strategies of their knowledge (Rydin, 2003). Contrary, the geographical research, specifically in environmental and sustainability segment outcomes and consequent recommendations, does not always correlate with current political and economic aims, whether on a global or national scale. Thus, the communication approach is fundamental for geographers if they aim to make their research count. Science advisory committees are essential and useful communication instrument for geographers and other scientific communities to publicize their opinions to the government (Boyd, 2013).

On the one hand, members of such committees are obliged to come up with a single, collective opinion on an issue, erasing the geographical knowledge's variation and richness. Still, the probability to successfully deliver core research findings to policymakers is maximized. Furthermore, larger committees always aim to make the minority interpretations of results heard, ensuring equality in academic communities.

Energy Efficiency Policy Brief

Writing a policy brief to the Ukrainian government about energy efficiency highlighted the challenge choosing the most critical aspects that regulation must tackle. Energy problems play a most significant role in economics and politics of Ukraine, as it is central to political instability and a core obstacle in affiliation with the European Union (Balmaceda, 2004). Saprykyn (2004) outlined that the most prominent problem in current energy-efficiency policy is 'often-changing rules' and the consequential inability for long term planning. Furthermore, Ukraine must achieve similar sustainability goals to EU, that directly relate to energy efficiency. Therefore, policymakers often set very ambitious goals that require a significant investment of money and labour resources. Accordingly, to avoid such mistake, it was vital to shrink the number of recommendations in the policy brief and ensure the correspondence of legislation to eradicate the problem's roots. Therefore, this brief does not suggest implementing strict fines for energy overuse, nor it introduces abrupt elimination of energy price subsidies. Instead, the introduction of Management Protocols, and Minimum Energy Performance Standards minimizes energy use in a relatively short timeframe and starts the innovative functioning of the Ukrainian energy market. These policy recommendations are 'soft approach' to change national energy-use administration without setting unrealistic energy-supply transformation aims or replacing building stock.

Conclusion

Field of geography is changing to become more 'relevance-orientated' and communication of scientific findings to the general public, NGOs, and governments, is no less important than the production of academic knowledge itself. Potentially, 'knowledge' is only created if it is communicated and spread to masses, not only recorded, and published in academic literature. Therefore, significant investment is needed for effective collaboration between policymakers and the scientific community, especially for geographers, whose academic position has been widely seen as inferior to others. Lastly, the geographical approach of place, space and scale may play a revolutionary role in policy design, as illustrated in the case of Ukraine. Too ambitious and

unrealistic goals, aiming at immediate integration with the EU, have not been effectively practised. Thus, the use of place concept to reflect current national geopolitical and socio-economic conditions is essential in the design of successful legislation.

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