Energy security in Kazakhstan: the consumers' perspective

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Abstract

This paper aims to investigate the consumers' perceptions and opinions regarding various threats, impediments, and opportunities present in Kazakhstan when it considers its energy security. The chosen theoretical framework allows consumers' views to be explored through the lens of three variations of the energy security concept: as an arrangement ensuring availability, accessibility, affordability, and acceptability of resources; as security of energy supply; and as conceptualisation that focuses on ever-increasing utilisation of renewables and a corresponding decrease in reliance on fossil fuels. Using a qualitative approach based on in-depth interviews, this study identifies the consumers' views on three themes including security of energy supply, the role of renewables in ensuring energy security, and the links between energy security and environmental sustainability. The findings show that the views of the majority of study participants on energy security can be distilled into the opinion that oil is a guarantor of the nation's independence and stability. Study participants do not see how energy security links to economic restructuring. As for the role of renewables in strengthening energy security, residents of rural areas are likely to contribute to renewable energy generation. Interviewees viewed the role of renewables in ensuring ecological sustainability as very insignificant.

Keywords: energy security, renewable energy, sustainability, consumers, restructuring, Kazakhstan

1. Introduction

Energy security is an ongoing concern for many nations across the globe. Resource-poor countries are typically interested in long-term agreements with exporters of fossil fuels to ensure an uninterruptible supply of inputs to meet the needs of their economy. These countries, particularly in Europe, also show considerable interest in developing energy generation from renewable sources in order to continuously increase the share of renewables in their energy mix, have a cleaner environment, and mitigate climate change. Resource-rich nations seem to be in a better position, as their own fossil fuels ensure that their energy needs are met. However, these countries' export of oil, gas, and coal is highly dependent on constantly changing prices, as well as political uncertainty in many parts of the world. Rich in many natural resources including oil, coal, and uranium, Kazakhstan is one of those nations. After Kazakhstan gained independence from the Soviet Union in 1991, the country continuously relied on the export of its fossil fuels for its economic development (Ahmad et al., 2017). The revenue share from oil and other natural resources in the government budget in different years (1990s to present) varied from 50% to 75%, while the nation's exports of oil, gas, and by-products represented 21% of GDP in 2018 (World Bank, 2019).

Despite having favourable climate conditions for developing solar and wind energy, Kazakhstan's achievements in renewables are fairly modest, with the share of solar, wind, and bio energy in 2018 at just 0.5% (KEGOC, 2019). The small share of renewables in the energy mix appears to be in contrast with the policy on developing renewable energy generation that the country adopted in the mid-2000s (Karatayev et al., 2016; MacGregor, 2017; Koulouri and Mouraviev, 2018). At least two significant policy documents marked the beginning of the pathway towards increasing utilisation of renewables. The first was the Concept of transition to sustainable development (Decree of the President of the Republic of

Kazakhstan on the Concept of transition of the Republic of Kazakhstan to sustainable development, 2006). The second was the Law on supporting the use of renewables, adopted in 2009 and amended in 2013 (Law of the Republic of Kazakhstan 'On Support of the Use of Renewable Energy Sources', 2009).

A critically important step in committing to developing renewable energy in the nation was made by the *Kazakhstan-2050* strategy (Nazarbayev, 2012), put forward by then President Nazarbayev. This strategy has been heralded as 'a new political course', and its significance for the country's development should not be overlooked. Adopted by the government, the strategy currently serves as a long-term policy framework for many fields, and substantial increase of renewable energy generation has been set as one of the priorities. This goal should be achieved by 2050 when the nation aims to become one of the 30 most developed economies in the world (Nazarbayev, 2012).

Another contribution to the promotion of renewables was made by the 'green economy' concept (Decree of the President of the Republic of Kazakhstan on the Concept of transition of the Republic of Kazakhstan to 'green economy', 2013). Although it is a concept, rather than a law, it has established a range of tasks that the government and society at large need to achieve, including the increased generation and consumption of renewable energy. A further significant development in the field was a guide for investors in renewable energy, released by the International Finance Corporation (IFC, 2015). Explaining stages an investor should go through in order to launch a renewable energy generating facility, a guide is a useful document, although it cannot compensate for the gaps in the legal and regulatory frameworks for renewables (Koulouri and Mouraviev, 2018).

The details about fossil fuel utilisation and efforts to promote renewable energy in Kazakhstan provide the context for this study as they are directly linked to energy security. The latter is often discussed at many levels in Kazakhstan, as every resident understands that large reserves of energy sources are the nation's strategic resource. More than ten years of work in Kazakhstan have revealed to the researcher that residents, as energy consumers, usually have their opinions on the past, present, and future of energy use in the country. They follow the news and pay attention to the developments and changes in the energy sector. Although most consumers are not experts in energy security specifically (and they do not have to be), their opinions can be viewed as mirroring, to some degree, the government policy or actions.

Of course, the consumers' and the government's perspectives on energy security (and on any other matter) might vary, and the study does not attempt to treat one perspective as a replica of the other. While energy security is typically a government's concern, investigating how the public understand the government's handling of this matter sheds light on the population's opinions about the use of fossil fuels and renewables in the past and into the future of Kazakhstan's energy sector. The paper's aim is to explore the consumers' perceptions and opinions regarding various threats, impediments, and opportunities present in Kazakhstan when it considers its energy security. This paper intends to answer the following research questions:

1. What are the consumers' perceptions and opinions about different dimensions of Kazakhstan's energy security, such as security of energy supply and utilisation of energy from renewable sources?
2. What are the consumers' views on how strengthening energy security in Kazakhstan could contribute to the nation's environmental sustainability?

The rest of the paper is structured as follows. Section 2 highlights the research methodology. Section 3 explains the theoretical framework chosen for this study. Section 4 delineates findings from the research, organised into three themes, and offers a discussion of each. Section 5 presents conclusions and identifies policy implications.

2. Methodology

This study adopts a qualitative approach that acknowledges that reality is subjective and that each study participant views the world differently. This aligned well with an intent to capture a variety of perceptions and opinions on the research topic. As energy security is a relatively novel concept for Kazakhstan, it was natural to expect many opinions, overlapping and conflicting, which would reflect how the government, researchers, and the media portray the concept to the public. Furthermore, there is no assumption that officials, experts, and the media speak with one voice. Rather, their perspectives on energy security might be quite different, which the study participants would show in their responses. The multiple facets of the phenomenon could be best investigated using rich data, and a qualitative approach was most appropriate for obtaining these data by conducting in-depth interviews with the study participants (Denzin and Lincoln, 2008). In a qualitative research paradigm, various data collection methods are available, although an interview is the only method that captures the individual perspective of each study's participant within a given context (Ritchie et al., 2014). The context and knowledge of Kazakhstan was absolutely critical for this study as participants were asked questions about aspects of energy security strictly in relation to the country in question, rather than in a general way.

Data were collected in 37 interviews, all conducted in Russian as this language is widely spoken in Kazakhstan. Interviews were semi-structured, where only some topics and some

questions in each topic were set prior to the interviews. Conducted in 2019 and 2020, semi-structured interviews allowed many follow-up questions to be asked in an effort to clarify a participant's position on a particular topic or sub-topic. Interviews lasted 30 to 45 minutes. Reaching the point of data saturation was quite important for this study owing to a potentially very broad range of opinions; this is why the number of interviews to be conducted was not set in stone from the outset. When data collection progressed, data saturation became evident when no new findings were received in four of the most recent interviews (Denzin and Lincoln, 2008). The main questions asked in semi-structured interviews are included in the annex.

About one-third of participants were selected by purposeful sampling with an intent to ensure diversity of participants' backgrounds and professions, particularly aiming to include academics in the sample. The remaining two-thirds were chosen by random sampling with the aim of ensuring unbiased representation of the larger population. The two criteria for including a participant in a sample were (a) their willingness to talk about energy security and share their personal views on this theme, and (b) a completed undergraduate university degree. Expert-level knowledge of the topic was not required. The rationale behind these selection criteria was that all study participants are energy consumers, and as energy is the topic of high importance in Kazakhstan, each participant has some knowledge of this topic and should be able to share her/his perspective as a consumer. All participants were native of Kazakhstan, and every participant lived in the country all her/his life. Out of 37 interviewees 20 were men and 17 were women. Table 1 highlights the participants' details.

<INSERT TABLE 1 ABOUT HERE>

Data analysis was driven by the themes shaped by the study's theoretical framework (Creswell, 2007). Thematic analysis has been helpful for comparing and contrasting the participants' opinions, and for identifying patterns in their understanding of energy security (Bernard et al., 2017).

3. Theoretical framework

This study's theoretical framework makes use of the energy security concept. The concept has many meanings and many interpretations by the researchers (see, e.g. Chester, 2010; Cherp and Jewell, 2011, 2014; Sovacool, 2011; Sovacool and Mukherjee, 2011; Ang et al., 2015; Dannreuther, 2017; Szulecki, 2018; Koulouri and Mouraviev, 2019). While this section does not intend to compare and contrast all or even most conceptualisations of energy security, it highlights several meanings and approaches that appear useful for this study. Their usefulness is determined by the study participants' ability to express their views. Participants are not experts in the energy sector; rather, they are Kazakhstan residents who have sound knowledge of their country's history, economy, and politics, and learn about developments in the energy sector and details about energy security principally from the mass media, personal contacts, and, to a small degree, from trade journals. This means that their understanding of the energy security concept is inevitably shaped and limited by the most commonly repeated statements and claims. However, this fits exactly with the purpose of the study – to investigate lay people's perceptions, shaped by mass media, and statements offered by experts in the field, society's activists, government officials, and politicians.

An understanding of energy security is shaped by at least three elements: (a) a nation's specific context; (b) a nation's position in the energy market (e.g. importer or exporter); and (c) a certain perspective (e.g. continuity, vulnerability or political aspect) (Koulouri and

Mouraviev, 2019). As energy resources are typically viewed as strategic because they meet the economy's and citizens' critical needs, the political aspect often comes to the fore first with questions around whom energy security is for, where the threats come from, and how these threats are mitigated. The above-mentioned three elements are directly relevant to Kazakhstan: the republic was formed relatively recently, in 1991, and as a developmental state, Kazakhstan for many years to date has been relying on the sale of its natural resources; the country is an established exporter of energy resources; and as a medium-sized country, Kazakhstan is concerned about its political and economic independence.

A common approach to energy security focuses on the four As: availability of resources, accessibility (i.e. conditions affecting access to resources), affordability for consumers (individuals and firms), and acceptability (i.e. impact on climate change and environment, and/or on political stability) (Kruyt et al., 2009). This view is echoed by a similar approach that emphasises availability, accessibility, affordability, and sustainability (Elkind, 2010). Another approach is also aligned with the first two and includes availability, affordability, efficiency, sustainability, and governance (Sovacool, 2013). The core of the noted conceptualisations is *security of supply*, but they do not pay adequate attention to the security of an energy system, that is the system's vulnerability analysis is beyond their scope (Koulouri and Mouraviev, 2019). Regardless of some drawbacks, the approach focusing on the four As serves as a useful framework for this study because it affords interviewees as energy consumers an opportunity to comment on each of the four energy security dimensions, without any preparation or expert-level knowledge of the field.

Another understanding of energy security is that of *energy supply continuity* consisting of commodity supply continuity, service supply continuity, and continuity of the economy

(Winzer, 2012). While the first two dimensions overlap with availability and accessibility in the four As, the third seems to be an all-embracing category that lacks focus.

To rectify the deficiencies of the approaches noted, the theoretical framework incorporates one more conceptualisation that focuses on ever-increasing utilisation of renewables (Koulouri and Mouraviev, 2019). This approach views energy security as a process: it includes expanding the utilisation of renewable energy sources and improving resource use efficiency. The essence of this perspective on energy security is the sustainable use of renewables, 'which means the purposeful and ever-increasing utilisation of renewable sources for the production of power, and a corresponding decrease in reliance on non-renewable sources, complemented by resource efficiency programmes' (Koulouri and Mouraviev, 2019: 29). The utility of this approach for the purposes of the current study is two-fold: it allows the researcher to assess how interviewees perceive the role of renewables in the country's energy sector and view the continuous utilisation of fossil fuels.

Three parts of the chosen theoretical framework are somewhat overlapping, but this does not present any problems for the study, as they are complementary, allowing the researcher to capture and assess interviewees' perceptions and opinions in a more comprehensive way. Figure 1 depicts the study's theoretical framework.

<INSERT FIGURE 1 ABOUT HERE>

4. Results and discussion

This section is organised into three themes: Theme 1: Security of energy supply – consumers' perception, Theme 2: Energy security – the role of renewables, and Theme 3:

Energy security and environmental sustainability. Findings in each theme are reported and discussed below.

Theme 1: Security of energy supply – consumers' perception

In this theme, interviewees were asked about their understanding of energy security. There was no expectation that interviewees would demonstrate expert-level knowledge of the concept, although some participants were academics working in the energy field. They were selected by purposeful sampling with an intent to see whether their insights into the concept were significantly different from those who do not have any expertise in the energy sector.

All interviewees were familiar with the concept and confirmed that they had heard the term *energy security* multiple times in the media and saw it being used in the news and other programmes on TV. When asked about the meaning, interviewees linked it mostly with politics surrounding oil and other fossil fuels (coal, gas, and uranium) as Kazakhstan's strategic resources. In the words of one respondent, 'we are a relatively small country. Our resources are of interest to many large international companies and many countries including our neighbours. Of course, we need to make sure that our natural resources are not used up quickly by others' (Interviewee 9). The political aspect of energy security is echoed by another study participant:

> Energy security was a real concern in the 1990s. Back then Kazakhstan did not have a strong legal system, and talks about corruption were very common. Newspapers were full of those stories, and many were exactly about irresponsible use of the natural resources. Foreign companies clearly took advantage of this situation: they got access to oil, paying very little. But things have changed – the country is strong and stable

> now. I don't think that there is a particular foreign company that takes advantage of our oil, they now pay market prices. (Interviewee 12)

Interviewees clearly understand energy security as a threat to Kazakhstan's status as an independent country; a threat which, in the opinion of some respondents, existed in the 1990s (right after the disintegration of the Soviet Union and at the time of its formation as an independent state) but not at the present time. Yet another dimension of energy security, as displayed by interviewees, can be described as a threat from the perceived attempts of some countries and their corporations to access Kazakhstan's fossil fuels and extract its resources while paying fees below the world level or using corruption schemes. This was viewed as a threat to security, as receiving little in return for its natural resources would have impeded Kazakhstan's ability to continue its development.

When asked about security of supply, interviewees displayed confidence that Kazakhstan's natural resources would be available for many years ahead, perhaps hundreds. 'I read that our coal reserves are for a thousand years or even longer. I don't know if it's 100% true but we are talking about at least hundreds of years' (Interviewee 3). All interviewees were also extremely optimistic about availability of oil in the country, arguing that oil reserves are among the largest in the world. Only some comments had shades of concern, expressed lightly, such as 'at some point oil will be used up' (Interviewee 5), although it was apparent that these concerns were very low on the agenda.

Most interviewees, with only a few exceptions, did not connect what was in their view an abundance of available fossil fuels with how exactly revenue from their sale is used. The

prevailing view was that oil money pays for everything in the country. The following excerpt from one interviewee demonstrates this popular opinion:

> The government gets a lot of money from oil. It's a big business in our country. Taxes are low in Kazakhstan, and this is probably because there is no need to tax people and companies heavily. Money from oil is enough to pay for police, education, healthcare, army. Of course, when there is a crisis, the price of oil goes down, and the money in the budget is tight. Well, in this case they [the government] cut expenses. And I think they also need to sell more oil, but it is not always quick and easy. (Interviewee 35)

One interviewee, an academic, alluded to the critical aspect of security of supply:

> We have, and always have had, plenty of oil for domestic needs. There was never a big problem with supply for the domestic market. Another story is how much oil we export and for what purpose. I believe it should be for the development of the economy. For a long time I hear about restructuring [of the economy]. One [government's] programme was adopted, and then another one, and then one more. Since the 90s, there were probably seven or even ten of them. Where are the results? The talks about diversification of the economy emerge every year. But I don't see any diversification. (Interviewee 29)

This observation was echoed by another interviewee:

> I think oil gives stability to our country. Development is, of course, important, but for many years the government was focusing on stabilisation of the economy and everything. Oil provided a guarantee to everyone, that there will always be jobs, pensions, decent roads, schools. Oil provided all that, and it also allowed entrepreneurs to do business, and this is how private business grew. (Interviewee 2)

In the above excerpts, interviewee does not link oil proceeds with the country's future and its developmental needs. Rather, oil is perceived as a backbone of past development, without attaching any aspiration to its role for the years and decades ahead. A similar perception was expressed in another interview: 'We built our independent state using oil as a strategic resource. Oil is our strength. Oil is our security' (Interviewee 11). The perspective of the previous two excerpts above can be explained by the interviewees' reflection on the government's policy and achievements over the 30 years since 1991, when the government's high priority was to stabilise certain sectors, such as agriculture, water supply, higher education, and, in fact, the energy sector, rather than aiming at boosting rapid growth. In these interviewees' opinions, energy security was perceived as security provided by oil to the whole nation in terms of ensuring the economy's and society's durability and resilience.

It is worth noting that interviewees' focus on what a secure supply achieved in the past might suggest that an abundant (i.e. secure, in their perception) supply is also seen as a guarantee for economic stability in the present and future. However, rapid fluctuations in the world's oil prices over the past 20 years and the nation's overall significant dependency on oil, which in 2008–9 and 2019–20 (and at other times) led to a significant slowdown of Kazakhstan's development, showed that the need for economic restructuring becomes increasingly urgent.

Theme 2: Energy security – the role of renewables

The study participants were asked about what role renewables, such as wind and solar power, play in ensuring Kazakhstan's energy security. Most participants did not see any connection between energy security and renewables. In the words of one interviewee, 'security is provided by our fossil fuels – chiefly, oil and coal. I don't understand how renewable energy

can make the country more secure' (Interviewee 34). This perception was reiterated multiple times by other interviewees, as in this example: 'I don't know how much of renewable energy is generated in Kazakhstan. I don't hear much about it, so I think the proportion of renewable energy is very small' (Interviewee 3). Yet another excerpt is also indicative of the situation with renewables: 'I hear some talks about renewable energy but I'm unaware of facilities that really work and generate this energy. Of course, there are quite a few hydro power stations, but they were around for years, mostly from the Soviet time' (Interviewee 21).

The comments above demonstrate that the public, who are not experts in the energy field, are largely uninformed about any noticeable progress in the promotion of renewable energy in the nation, which suggests that these developments are either very small (or non-existent) or not publicised to the general population. This explains, at least in part, that although renewable energy could potentially replace a significant proportion of energy from fossil fuels in the future, the study participants did not see this link and did not attach any particular role to renewables.

A few study participants were more informed about renewables projects in the country and they argued that some progress is being made. However, all of them confirmed that renewable energy does not play any conspicuous role in the nation's energy mix. The following comment exemplifies this: 'Sure, I've heard of some renewables projects, but I honestly don't remember where they were launched. Anyway, I don't think that any renewables project can compete or be compared to a power station that uses, for example, coal, in terms of the output' (Interviewee 4). Another participant was slightly more optimistic, although in a general way: 'It's important to develop energy generation from renewable sources [in Kazakhstan], the whole world is going in this direction' (Interviewee

7). In another comment, a participant showed a blend of enthusiasm and concern about promoting renewables and pointed to availability of oil as a possible barrier:

> I know that the European countries are developing renewable energy generation very fast. This is the growing trend, and in light of accelerating climate change I think the EU countries will be doing a lot more to promote renewables. Kazakhstan wants to be an advanced country, so we also need to develop renewables. But we have oil. Why do we need renewable energy? (Interviewee 27)

The participants' interest towards renewables was further investigated through questions regarding interviewees' willingness and intention to contribute to the generation and/or consumption of renewable energy. The answers were overwhelmingly negative, showing that considering themselves as contributors to renewable energy generation, even on a very small scale (e.g. for a household), was not on their minds. They also did not see themselves as contributors in the future. A typical comment illustrates this: 'I live in a flat – like most people in Almaty. There is no way to install a solar panel in a flat. Where would I set it? I'm afraid renewable energy generation is not for people who live in flats. Perhaps people who own a house may be interested' (Interviewee 19).

In relation to the owners of individual houses who might have an opportunity to install solar panels (e.g. on the roof), another interviewee commented:

> If a family has a good house, which is now quite expensive to buy or build in major cities, this means that a family has a very good income. Sure, they can invest in solar energy if they want. And I see solar panels on some houses. Yes, these houses are expensive. But if some people have a small and old house, I doubt that they have any money to invest in solar or wind energy. (Interviewee 35)

Another observation was on possibilities available to house owners, particularly in rural areas:

> In the villages people are more interested in renewable energy. They have small earnings and they want to economise on energy. Also, in some spots across the country, residents don't have energy, and installing a windmill or solar panels is a great opportunity for them to get power to their homes. But they don't have much money and they often buy cheap panels and batteries. Two or three years down the road this equipment goes wrong, breaks, and they need to buy again but this expense is not small for them. (Interviewee 20)

The cost issue was echoed in another excerpt: 'I never heard anyone say that installation of facilities [for renewable energy generation] is affordable for many. The considerable installation cost is an impediment. And I doubt that anyone would be able to get a bank loan for this' (Interviewee 3). A further comment provided a bigger picture: 'Electricity that we get in our homes is quite cheap. Although the tariffs are rising almost every year, the overall expense is still a small part of my family budget. In these conditions, why would people like me want to invest in renewable energy?' (Interviewee 6).

The above comments and excerpts can be summarised as follows. First, renewable energy generation is often viewed as a privilege that belongs to high-income households who are able to purchase a house of their own. Second, the vast majority of people who live in flats or small houses do not have the necessary architectural structure and/or financial means, or a monetary incentive to install facilities for renewable energy generation. It is worth noting that

technical possibilities for renewable energy equipment are extremely limited or non-existent in most flats, unless the facilities are installed on the roof of a block of flats.

Assessing perceptions of the renewable energy's role in changing Kazakhstan's energy mix, the prevailing views attached no real significance to developing renewable energy generation. The perceptions of renewables varied from 'fashionable trend' to 'we need to promote renewable energy', although there was no indication that interviewees had a certain degree of understanding (or expectation) that renewable energy has potential to substitute, at least in some noticeable part, fossil fuels. This means that the renewables' role in energy security was not even acknowledged in any way by the study participants. As a strategic resource in ensuring security of supply for the near and distant future, oil dominated the interviewees' perceptions.

Theme 3: Energy security and environmental sustainability

The theme of sustainability emerged in the course of the interviews as the study participants shared their opinions about the importance of keeping the nation's environment free from pollution while many companies are engaged in extracting fossil fuels. MacGregor (2017: 210) argues that 'Kazakhstan has a poor record on some environmental indicators, in respect of others – such as the exploitation of its large oil reserves, high national carbon dioxide emissions, and its high per capita carbon dioxide emissions'. In light of these environmental concerns, he further claims that 'there is a discernible political move towards promoting sustainable policy and investments' (MacGregor, 2017: 210).

It appeared that interviewees were aware of a range of cases when environmental damage had been carried out by the oil companies, and interviewees were unhappy about this. One participant expressed his strong opinion as follows:

> If a company is responsible for some damage like an oil spill, it has to clean things up and probably pay a hefty fine. This is to make sure that they are not allowed to do this again and again. The government should be tough on them. The oil companies should not assume that they can extract oil and just go away. We need to protect our land. (Interviewee 10)

This opinion was shared, in a variety of ways, by many other study participants. They overwhelmingly argued that the oil and coal mining companies should not be damaging the country's environment while using its resources. However, direct damage in the form of a disaster (e.g. an oil spill) was the only aspect that they emphasized, discussing their perceptions of the link between energy security and environmental sustainability.

The ongoing damage to the environment from oil, gas, and coal extraction and using their by-products (e.g. petrol and diesel fuel) or burning gas and coal, was not a serious concern for study participants. When asked about the future of coal-burning power stations (that usually produce substantial air pollution), an interviewee argued that 'we need to keep using coal for energy generation. Coal is cheap and abundant; I don't think coal can be replaced quickly' (Interviewee 4). This was supported by a similar, typical (of other interviewees) opinion: 'Of course we need to use coal [as a source of energy]. If it's not coal, what's the alternative?' (Interviewee 23).

Yet another excerpt highlighted a few problems:

> Everybody knows that oil and petrol are polluting substances. Coal is even more polluting. But what's the choice? As for cars, electric cars are very expensive. Only a few people in Kazakhstan could afford an electric car. And there is no infrastructure, almost no charging stations for them. In Europe I have seen quite a few electric cars on the roads but not here. I know that thermal power stations use coal. We take advantage of our own resources, nothing is wrong with that. How can we replace coal? Renewable energy is more expensive, and the output [volume of energy] from facilities that use renewables is usually very small. You can't compare it with the output of a coal power station. (Interviewee 16)

The above comments show contradictory views. On the one hand, interviewees expressed their concerns about the environment and argued that it should be kept clean. On the other hand, their understanding of what should be done to recapture and preserve a clean environment was limited just to the situation surrounding extraction of fossil fuels and occasional environmental damage that occurs there. They did not extend their views to comment on Kazakhstan's current energy mix in which oil, gas, and coal dominate, while energy from renewable sources (i.e. clean energy) occupies a negligible proportion. This current type of energy mix is indicative of deep concerns for the environment (from the perspective of using clean versus not environmentally friendly energy sources), and it has surfaced in the country since it gained independence in 1991. Nonetheless, by instantly agreeing that the country should keep using its fossil fuels in much the same way it used them in the past, interviewees did not see the link between an opportunity to increase the proportion of renewable energy and making improvements in the nation's ecological sustainability. They focused on the existing pattern (stemming from the past) of resource

utilisation, which has been embedded in the country's economic policy for many years and largely continues to the present day.

5. Conclusion and policy implications

As discussions about Kazakhstan's energy security continually resurface in the country, this paper contributes to the theme by investigating consumers' perspectives on various aspects of the concept and how it transpires in practice. This is useful for understanding the public's perceptions of energy policy and its implementation, including promotion of renewables. By listening to people's voices, the research community, experts in the field, and the authorities can build a constructive dialogue with the public, enabling the citizens to express their views on the critical energy-related issues and proposals to develop the energy sector (Pateman, 1970; Bishop and Davis, 2002). It is important to hear a range of consumer voices because policy changes in the energy sector affect their interests, and capturing a variety of perspectives is helpful for understanding concerns and aspirations of different populations.

The adopted theoretical lens which incorporates three perspectives on energy security appeared useful for this study as it afforded an opportunity to comprehensively assess the public's perceptions and opinions in relation to energy policy in Kazakhstan. Rather than focusing exclusively on a single perspective, such as security of supply of oil, interviewees commented on a broader spectrum of aspects that include the citizens' ability to engage in energy generation from renewable sources; ecological concerns stemming from the dominance of fossil fuels in the nation's energy mix; and the links between the oil sector, renewable energy and the long-term sustainable development. Therefore, making use of a few theoretical perspectives as complementary allowed to collect rich data on a broader range of topics and issues and, thus, make a picture of people's voices regarding energy security in the

country more informative and draw conclusions that might be useful for better understanding the public's perceptions of energy policy and, more generally, for policy making.

The first conclusion to be drawn is that interviewees appeared overwhelmingly proud of the stability the country was afforded by oil and other natural resources that Kazakhstan has exported for three decades. Study participants clearly understand energy security as protection from a threat to Kazakhstan's status as an independent country. While this political and economic kind of threat refers mostly to the 1990s, interviewees' outlook shows their confidence that oil will continue to be Kazakhstan's strategic source of economic strength for many years ahead. In their opinion, energy security, therefore, narrows down to viewing oil as a guarantor of the nation's independence and stability.

The above conclusion allows to infer that study participants do not pay much attention to how the oil proceeds are used by the government. It seems largely unimportant to interviewees. 'Oil money pays for everything' appears to be a satisfying way of thinking for most of them. This means that restructuring of the economy – that is, creation of the new sectors that would provide reliable tax revenue streams to the government budget instead of revenue related to extraction and sales of fossil fuels – is a view adopted by some, but not by most interviewees. Most study participants do not see the link between how oil money is used in the country and (lost) opportunities for restructuring.

The second conclusion is that renewable energy is not perceived by study participants as an important contributor to energy security. They do not view a transition to the ever-increasing utilisation of renewables as a pathway to energy security. There are at least two reasons that explain their thinking. Part of it is scepticism regarding developing renewable energy stems

from abundant oil reserves. Oil dominates interviewees' thinking about energy security, and oil is viewed (by some, although not all interviewees) as an impediment: abundant oil means that there is no need for renewables. The other reason is the lack of economic incentives: the currently relatively low tariffs for electrical power from fossil fuels serve as a barrier to consumers to invest in renewable energy generation (Mouraviev and Koulouri, 2018; 2019b).

This links to the third conclusion: study participants do not view themselves as potential contributors to renewable energy generation. All of them disassociate from renewables, pointing to technical difficulties and financial disincentives. Although their comments about greater opportunities for renewables that exist in rural areas provide useful insight into where the need is, the notes about village residents' low income raise concerns about whether it is realistic to expect significant deployment of renewables facilities in those areas. Therefore, a low amount of renewables development in Kazakhstan's rural and urban areas at the level of households does not point to this factor as a contributor to energy security, from the perspective of replacing energy from fossil fuels by clean energy (Mouraviev and Koulouri, 2019).

Yet another conclusion is that interviewees did not see the link between increasing the proportion of renewable energy and improving the nation's ecological sustainability. By confirming that the country's existing and future needs can be met by continuous reliance on fossil fuels, they largely disregarded the role of renewables in ensuring a secure and ecologically friendly energy supply, although they all acknowledge the need to keep Kazakhstan's environment clean.

5.1 Policy implications

In light of consumers' low uptake of renewables, one policy implication refers to the need to promote all of the government's renewable energy projects and programmes to the general population, aiming to explain and publicise what the government is doing and why. A special promotional campaign could be launched in rural areas, addressing the energy needs of the local residents in villages and smaller towns and how these needs could be met by renewable energy.

Another implication is the need to complement existing energy policy with public participation. This could be accomplished by partnering with the non-governmental organisations (NGOs), community activists, environmental groups, business associations and social enterprises. The benefit of public participation (e.g. by consultations, proposal reviews, public hearings, public–NGO projects, and public–private partnerships) is in the population's stronger support of the energy initiatives that affect their interests, to ensure citizens' overall greater satisfaction with the government, its policy, and governance. As in the long term Kazakhstan needs to reduce its dependency on fossil fuels to ensure its economic, social, and environmental sustainability, making renewable energy promotion a required agenda item in the debates about energy security is likely to be beneficial for all actors involved in developing energy policy and for society at large.

5.2 Study's limitations and areas of further research

One limitation of this study refers to sampling. Although the study has reached the point of data saturation when interviewees reported no new data and their comments were similar to the comments of previously interviewed participants, a possibility that the sample does not adequately represent the population cannot be fully excluded, due a limited number of study participants residing in one area of the country. This limitation is typical for many qualitative

studies, owing to the nature of data collection methods that focus on collecting rich data (Creswell, 2007; Bryman, 2012). In addition, it should be acknowledged that there might be some difference between those who participated in the study and those who did not participate in terms of their opinions and attitudes. These limitations have been mitigated by recruiting interviewees from both gender groups, with varying educational backgrounds, from varying sectors of the economy, and from different age groups, which ensured considerable diversity of the sample.

There are also limitations of the findings in terms of their generalisability. While mechanical application of the findings to other ex-Soviet oil-rich nations, such as Azerbaijan and Russia, is hardly possible due to the differences in the political, economic, ecological and business conditions and many other context-specific features, e.g. the intensity of the power struggle within a nation or the influence of business elites, nonetheless the findings are likely to be useful for policy makers, business analysts, energy sector experts and community activists in terms of drawing their attention to the level of public understanding of energy security and the role that the public could play in facilitating transition to clean energy.

Some avenues for further research include investigation of the interplay between energy security, renewable energy and ecological sustainability in resource-rich nations; public participation in the promotion of renewables for enhancement of energy security; and methods of mobilising the public and specific communities (e.g. in rural areas) for the accelerated utilisation of renewables. Additional studies may provide answers on how to incentivise citizens to become prosumers of renewable energy to make greater contribution to nation's energy security.

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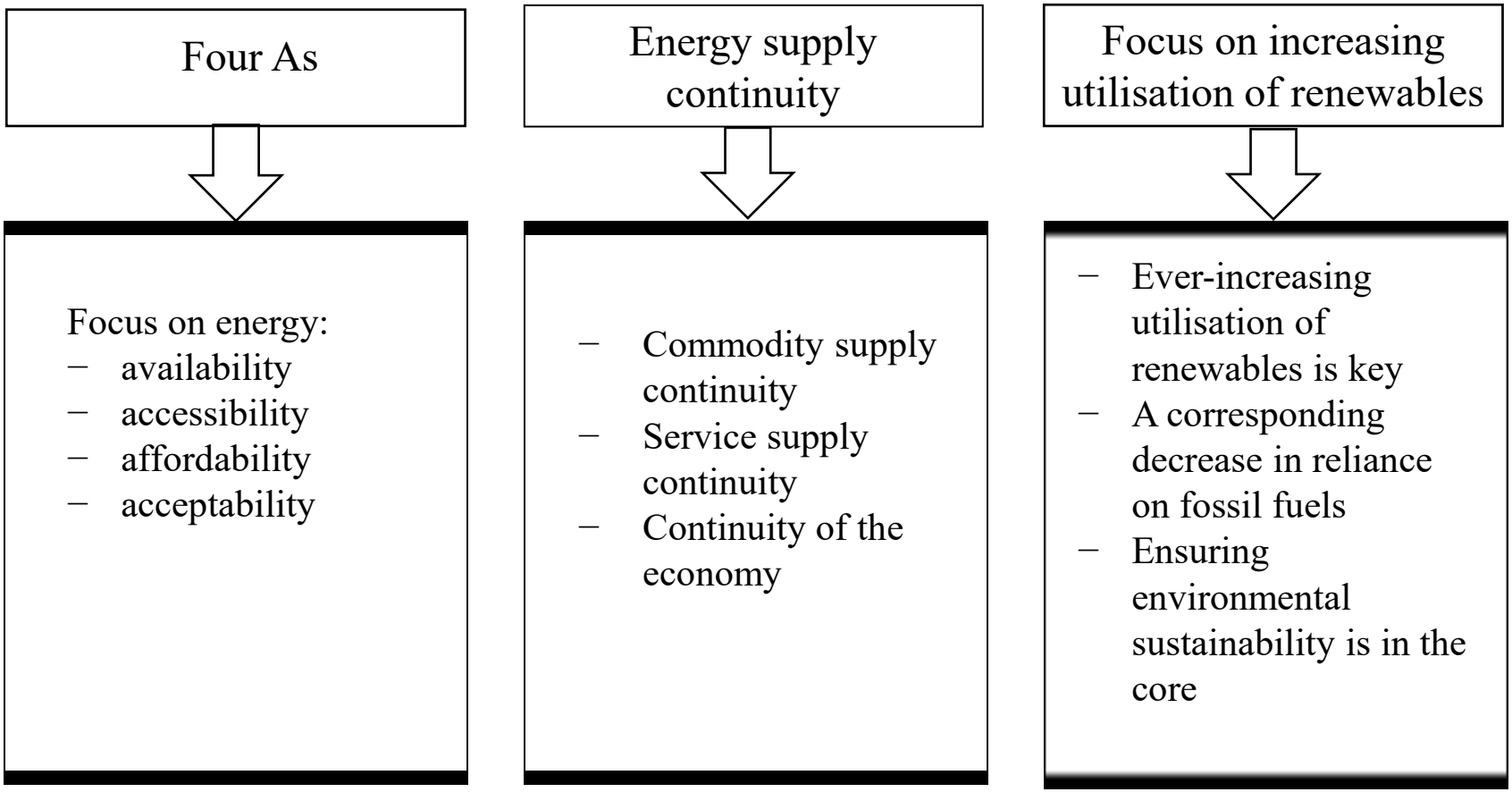
Figure 1. Theoretical framework:

Making use of varying concepts of energy security



Source: Compiled by the author from Kruyt et al., 2009; Winzer, 2012; Koulouri and Mouraviev, 2019.

Table 1. Interviewee profiles

Interviewee	Profession	Sector or company	Gender	Age group
1	Engineer	Construction	M	50–54
2	Manager	Employment services	F	35–39
3	Manager	Financial services	M	40–44
4	Consultant	Business consulting	M	45–49
5	Lecturer	Higher education	F	45–49
6	Manager	Investment company	M	55–59
7	Lecturer	Higher education	F	35–39
8	Entrepreneur	Trade	F	25–29
9	Expert	Investment company	F	30–34
10	Research fellow	Research institute	M	50–54
11	Manager	Higher education	M	50–54
12	Entrepreneur	Advertising agency	F	30–34
13	Manager	Pharmaceuticals	F	40–44
14	Entrepreneur	Online trade	M	30–34
15	Entrepreneur	Trade	F	50–54
16	Lawyer	Legal and consulting services	M	35–39
17	Analyst	Financial services	M	30–34
18	Sales representative	Technological equipment	M	50–54
19	Owner	Technology company	M	60–64
20	Expert	Technology company	M	30–34
21	Manager	NGO	F	30–34
22	Project leader	NGO	F	25–29
23	Lecturer	Higher education	M	45–49
24	Manager	Real estate company	F	40–44
25	Analyst	Real estate company	M	30–34
26	Sales manager	Pharmaceuticals company	F	45–49
27	Entrepreneur	Consumer goods	F	35–39
28	Engineer	Construction company	M	50–54
29	Project manager	Construction company	M	45–49

30	Owner	Education services company	M	60–64
31	Training expert	Training centre	F	35–39
32	Co-founder	Hospitality business	F	25–29
33	Co-founder	Social enterprise	M	30–34
34	Project leader	Social enterprise	F	30–34
35	Lecturer	University	F	50–54
36	Expert	Event management company	M	35–39
37	Technical expert	IT company	M	30–34