

Does Resource Abundance Require Special Approaches to Climate Policies? The Case of Russia

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Abstract

As the world's largest fossil fuels exporter, Russia is one of the key countries for addressing global climate change. However, it has never demonstrated any significant ambitions to reduce greenhouse gas (GHG) emissions. This paper applies ideational research methodology to identify the structural differences in economic, political, and social normative contexts between industrialized fossil fuel importing economies and Russia that lead to the fundamental gap in motivations driving decarbonization efforts. Consequently, Russia is unlikely to replicate the approach to the green transition and use instruments of climate policies which are utilized in energy-importing countries. In order to launch decarbonization in Russia, interested stakeholders need to frame climate policies in Russia differently. Specifically, the framing must address the priority of diversification as a means to adapting the national economy to a new green landscape, the combination of diverse channels for decarbonization, the promotion of energy-efficiency, closer attention to climate-related forest projects and linkage of climate change with other environmental problems. Moreover, considering Russia's emissions as a part of the global economic system and shifting from a simplistic national focus on GHG emissions reduction would help coordinate policies through dialogue between exporters and importers of fossil fuels energy-intensive goods, which is essential for the global movement towards a net-zero future.

1. Introduction

Countries vary in terms of their willingness to reduce GHG emissions. Many economic, geographic, and political factors lead to the differences in countries' climate policy ambitions (Schmitz 2017; Tørstad et al. 2020). In some countries, emissions reduction is a win-win strategy (Victor 2011; Hovi et al. 2016; Paroussos et al. 2019). In the literature (Victor 2011; Hovi et al. 2016; Makarov 2020), this group of countries is often called 'enthusiastic' and usually includes energy-importing countries, developed ones, and those with emerging economies such as China. It is these 'enthusiastic' countries that are the pioneers of the green transition. They develop the ideas that form the foundation for this process, create norms, and define decarbonization pathways. These ideas are reflected in conventional climate policy instruments such as various forms of carbon pricing and support of renewables.

At the same time, some countries are unwilling to make any significant efforts to cope with climate change. The core of this group consists of fossil-fuel-dependent countries (FFDC). They generate about 20% of global emissions, and 80% of global emissions are embodied in fossil fuels which they extract (Peszko et al. 2020). Russia is the largest of these countries, responsible for 5% of global emissions (Climate Watch 2018). Moreover, Russia is the world's largest exporter of hydrocarbons and one of the major suppliers of energy-intensive industrial goods.

The structure of the Russian economy and the country's specialization in fossil fuels determine different sets of motivations regarding GHG emissions reduction compared to 'enthusiastic' countries. Even though the temperature in Russia is rising 2.5 times faster than the world average, the physical risks of climate change are still perceived in Russia as a lesser threat than the risks of the green transition.

Similar to other FFDC, Russia worries that an active climate policy within the country may undermine its economy's significant competitive advantages (Peszko et al. 2020). At the same time, decarbonization worldwide is also a significant challenge as it poses a threat to the income originating from hydrocarbons exports (Makarov et al., 2020). In the long term, this external pressure may incentivize Russia to diversify its economy and decrease its reliance on fossil fuels, which would naturally reduce emissions.

This paper suggests that the different systems of motivations for GHG emissions reduction typical for Russia may require a different ideational base for climate policies and different instruments than those used in 'enthusiastic' countries. Based on the analytical framework of ideational research (Hall 1989; Hall 1992; Braun and Capano 2010) and the author's own experience of participation in policy-oriented discussions with Russian businesspeople and policymakers between 2015–2021, the paper aims to reveal the approaches to climate policies that may unlock Russian self-interest in GHG reduction and create better incentives for Russia to adopt more active climate policies.

The structure of the paper is as follows. The next section describes the dynamics of Russian emissions and provides an overview of Russian climate policies. Section three describes the significant concepts of ideational studies and reveals the methodological framework used in this paper. Section four compares Russia and 'enthusiastic' countries in terms of motivation, climate policy paradigm, frame, and instruments. Section five discusses the means by which Russia may become involved in joint efforts to reduce emissions. Section six contains the conclusions drawn from the research.

1. Overview Of Russian Climate Policies

Among national economies, Russia is the world's fourth largest GHG emitter after China, the US, and India. If land-use, land-use change, and forestry (LULUCF) are taken into account, it is also behind Brazil and Indonesia (Climate Watch, 2018). Russian emissions have decreased significantly since the collapse of the Soviet Union – primarily due to a deep transitional crisis in the 1990s (between 1990 and 1998, GDP dropped by more than 40%). Since then, the GDP has grown significantly, surpassing the 1990 level in 2007. However, GHG emissions have increased rather modestly alongside the restructured and significantly innovated economy (Bashmakov and Myshak 2012). Since 2010, Russian emissions have plateaued. As a result, they are now 30.3% lower than in 1990 without LULUCF or 47.6% with LULUCF (see Fig. 1).

Russia has been part of the international climate regime since its very beginning. It participated in the UN Framework Convention on Climate Change (UNFCCC) and was an essential part of the Kyoto Protocol. In 2019, it joined the Paris Agreement. Within its nationally determined contribution (NDC) Russia set the target of reducing its emissions to 70% of the 1990 level by 2030, "taking into account the maximum possible absorptive capacity of forests and other ecosystems" (Russia NDC 2020). The statement about forests and ecosystems is vague and may be interpreted in different ways. Even without it, Russia's NDC is lower than the business-as-usual scenario and is very likely to be fulfilled with no additional efforts (Climate Action Tracker 2020; Makarov et al. 2020).

Domestic climate policy in Russia has always been considered as continuing the country's participation in international negotiations. Kokorin and Korppoo (2013) defined it as a 'window dressing': a policy with the significant purpose of demonstrating its efforts to foreign partners rather than to start any decisive climate actions domestically. Though the first climate policy document, Climate Doctrine, was adopted in 2009 (President of the Russian Federation 2009), the first practical steps to implement climate policies were only taken after Russia joined the Paris Agreement. They include the 'National plan of measures of the first stage for adaptation to climate change until 2022' (adopted in 2019), the Presidential Decree on the reduction of GHG emissions (adopted in 2020), the long-term low-carbon development strategy (under revision by the government at the time of writing) and the federal law on the regulations of GHG emissions (under revision by the State Duma at the time of writing). By posting these documents, Russia will finalize the whole legislation recommended within the Paris process. However, this does not mean that Russia is going beyond the 'window dressing' approach. For example, the 'National adaptation plan' states that responsible ministries and regional administrations should be in charge of sectoral and regional adaptation plans by 2022 (Government of the Russian Federation 2019). The national regulation scheme does not include any policy instruments directed at emissions reduction; rather, it focuses on monitoring and verification of GHG emissions of Russian companies (Government of the Russian Federation 2021). The Presidential Decree sets the emissions reduction targets at the NDC level (President of the Russian Federation 2020) and lower than that of "business-as-usual." The long-term low-carbon economic strategy suggests the rise of emissions compared to the current level even in the most ambitious possible outcome (Government of the Russian Federation 2020).

Despite the increasing number of climate-related normative documents, Russian domestic policy geared toward reducing emissions and coping with climate change is still fragmented and passive. It lacks any ambitions and strategic vision, is tactical by its nature and is determined by exogenous factors, primarily by commitments made at the international level. It also clearly shows the absence of any Russian policymakers' incentives to enacting emissions reduction measures, at least in the short term.

2. Methodological Framework

The comparative analysis of climate policies in Russia with 'enthusiastic' countries is based on the ideational research's analytical framework. This area of studies originated from King (1973) and got a new impulse in the 1990s after Hall's pioneering studies (1989; 1993). For the last few decades, this research has expanded significantly and now involves various social scientists, including institutionalists, constructivists, and rational choice scholars (Berman 2013; Hogan and Howlett 2015; Swinkels 2020). This field examines how policy ideas are institutionalized and turn into policy instruments.

This broad area of research deals with the wide variety of concepts that illustrate various stages, channels, and mechanisms of how a particular policy instrument's choice is attributed to a particular political idea (Braun and Capano 2010; Berman 2013). This paper borrows a system of variables from this theoretical framework: policy idea, policy paradigm, policy frame, and policy instruments. The

interaction among these variables may elucidate how different climate policies become relevant in different circumstances.

The starting variable used in the ideational research is a policy idea (Fig. 2). The policy idea indicates the problem, substantiates why some policy interventions are needed to address it, and shows the desirable result (Braun and Capano 2010).

However, policy ideas do not determine the choice of policy instruments directly. There are some exogenous factors and circumstances which motivate policymakers to intervene in different ways, including (Sabatier 1993):

- economic context: budget constraints; other problems which compete with the given problem for resources (money, efforts, public attention, and others) or, on the contrary, may create win-win strategies when the same policy instruments can solve different problems; the sources of the economic prosperity of the society (drivers of economic growth); set of public preferences, and others;
- political context: different characteristics of interest groups, as well as coalitions that are formed among them;
- norms and values which form a society's belief system.

These exogenous variables are closely interlinked. For instance, one of the key elements of social preferences regarding such a long-term issue as climate change is how the society discounts the future. The discount rate depends directly on the country's economic prosperity. Today, if a poorer country faces lots of other problems, including poverty, hunger, energy poverty, etc., it is likely to have higher social discount rate than a prosperous society that has the opportunity to take care of its descendants (Zhuang et al. 2007; Lopez 2008).

Another example of interlinkages between different factors determining policymakers' motivations concerns interest groups and coalitions. As the 'Resource Curse' hypothesis suggests, an abundance of natural resources can lead to the dominance of rent-seeking behaviour rather than to pro-development activities (Auty 2001; Ross 2015). The same can be true for climate policies: in fossil-fuel dependent countries, the interest groups that aim to protect the status quo are especially strong and efficient in confronting the green transition (Peszko et al. 2020).

The various factors which motivate policymakers determine the policy paradigm. This concept, which refers to Thomas Kuhn 'paradigm shift' as a driver of scientific revolutions (Kuhn 1962), was developed by Peter Hall (1992; 1993). Hall (1992, cited by Braun and Capano 2010, P. 5) defines policy paradigms as mental constructs that "specify how the problems facing [policy makers] are to be perceived, which goals must be attained through policy and what sort of techniques can be used to reach those goals". The difference in policy paradigms may be an important factor of divergence or convergence of policy instruments between countries (Popp 2019).

The next variable of ideational research is a policy frame (Braun and Capano 2010). The key aspect that helps separate policy frame from policy paradigm is the allocation of responsibility for the problem. Bhatia and Coleman (2003, pp. 717–718) define policy frames as:

a particular causal story that explains how the problem came to be, assigns blame for it, and identifies the goals or expectations to be pursued in solving the problem. Finally, a policy frame influences perceptions of which actors have legitimacy to address the problem.

The final variable of ideational research which describes the process of policy making is a policy instrument. Policy instruments may be interpreted as tools of governance, rules of the game, social institutions addressing the specific state-society relationships, or the results of policy ideas passing through the policymakers' goals, interests, and beliefs (Braun and Capano 2010).

It is worth mentioning that the scheme shown in Fig. 2 is not complete. The path from policy paradigms to policy instruments is far from linear. For instance, within the same policy frame there may be different policy instruments: carbon pricing may be implemented through a carbon tax or an emissions trading system, and each of them can be designed in different ways. There is a great deal of literature devoted to the principles of environmental and climate policy instruments choice (Weitzman 1974; Stavins 1997; Goulder and Parry 2008; Meckling and Jenner 2016), including those in Russia (Makarov and Stepanov 2017). It can be argued that Russia needs specific climate policy instruments based on its policy frame and policy paradigm that follow from the specifics of its system of motivation.

3. From Policy Ideas To Policy Instruments: Comparison Of Russia And 'enthusiastic' Countries

3.1. Policy idea

The policy idea that underlies climate policies is that climate change has negative impacts on the population and economy of any country. Climate change is caused by GHG emissions that lead to a rise in temperature. Climate change is a clear example of market failure: most economic agents would not reduce GHG emissions without any state regulation (Stern et al. 2006).

This policy idea is shared by policy makers both in 'enthusiastic' countries and in Russia. Russian scientists have participated in all the IPCC assessment reports that form the scientific foundation of climate policies worldwide. The Russian Federal Service for Hydrometeorology and Environmental Monitoring of Russia published two national assessment reports on climate change and its impacts on the territory of the Russian Federation (Roshydromet 2008; 2014). These reports contain conclusions very similar to those presented in the IPCC reports. The anthropogenic nature of climate change and significant risks it brings to the country are also recognized by the Climate Doctrine of the Russian Federation (President of the Russian Federation 2009).

However, this single policy idea manifests in different types of climate policies: they are relatively ambitious in ‘enthusiastic’ countries whereas in Russia, they are passive. It is argued that a difference in motivational factors is the reason for this.

3.2. Motivation

Motivation to foster the green transition is formed by the economic and political context as well as by norms and values. In ‘enthusiastic’ countries, the reduction of GHG emissions is strongly associated with economic and social progress through technological innovation, the creation of green jobs and the weakening of dependence on imported fossil fuels. In Russia, the green transformation of the economy is often considered a menace rather than an opportunity. For instance, the ‘Strategy of economic security of the Russian Federation until 2030’ states (President of the Russian Federation 2017):

changes in the structure of global demand and consumption of energy resources, the development of energy-saving technologies and the reduction of material intensity, the development of “green technologies” are among the challenges and the threats to the economic security of the country. Such formulation arises from the structure of the Russian economy, specifically its heavy dependence on the extraction and exportation of fossil fuels. In 2019, oil and gas provided 39.3% of the federal budget revenue (Ministry of Finance of the Russian Federation 2020), the share of fossil fuels in Russian exports reached 59.9%, and the share of fossil fuel rents in GDP amounted to 14.2% (Fig. 3). These numbers are much higher than in any country that has ever implemented an active climate policy. According to these parameters, among all the countries that have implemented or considered the implementation of carbon pricing, Russia may be compared only with Kazakhstan, which has a similar system of motivation and comparable ambitions regarding climate policy.

In ‘enthusiastic’ countries, some sectors also suffer from climate policies, which is why the issue of inclusive green transition has become central in climate-related political debate (OECD 2018). If the share of losers from the green transition in the economy is relatively small, redistribution policies may help to compensate for their losses. The Russian case is different: decarbonization not only leads to the economic losses in some spheres of business and sections of the population but undermines the whole economic model which the country has used for the last half of a century.

Decarbonization in Russia may be a challenge not only for economic stability but also for political and social stability. Nowhere in Russia is this threat so strong as in Kuzbass – the coal-producing region with a non-diversified economy and a long history of political protests with participation of coal miners (Cherdantsev and Thurner 2017).

Except for fossil fuels, the green transformation of the economy is a threat to Russian processing industries as well. Industrial products which lie at the core of Russian non-hydrocarbon specialization are also very GHG-intensive: iron and steel, non-ferrous metals, fertilizers, chemicals, and agriculture. The launch of carbon regulation would impose additional costs on these sectors.

This economic context makes the political landscape rather unfavorable for the green transition. While in 'enthusiastic' countries, there are strong interest groups supporting this transition with economic and political arguments (green technologies, green jobs, less dependence on imports of fossil fuels, etc.), in Russia, such groups are nearly absent. The largest businesses are oriented toward maintaining the status quo and see rent-seeking behavior more profitable than developmental changes. The political structures responsible for the economic and energy development are also oriented toward keeping the status quo, to a large extent, due to their conservatism, short-termism, insufficient knowledge and lack of initiative (Bashmakov 2020). Regarding climate change, these characteristics are supplemented by the climate skepticism that is widespread among Russian policymakers and is often supported by experts providing expertise for the government, including the Russian Academy of Science (Tynkkynen and Tynkkynen 2018). Such skepticism is often fueled by anti-western conspiracy theories which spread in Russia after the collapse of the Soviet Union not only among the general public but even among intellectual and political elites (Yablokov 2018).

To some extent, the inertia of political elites may be explained by the society's low demand for a green transition. This brings us to the discussion of social norms. While in the Western European countries, a large fraction of the population actively supports an ambitious climate policy, there is no such bottom-up pressure on politicians in Russia. The social and economic concerns of the population are much stronger. To illustrate this, in the Levada Center's (2020) annual survey devoted to the problems that concern Russians the most, environmental problems took eighth place – behind inflation, unemployment, poverty, corruption, the state of the healthcare system, inequality and economic recession. Furthermore, while in 'enthusiastic' countries climate change is considered the number one environmental challenge, Russian people (and experts, too (Dronin and Bychkova 2018)) are much more concerned by local environmental problems (Davydova 2020) which affect them directly in the present. The IPSOS (2020) survey shows that Russia is the last (with the huge gap) among 29 countries of the sample in terms of the share of people who include climate change as one of the top three environmental problems (Fig. 4).

Most Russians do not look at the green transition through the lens of civic values. While in 'enthusiastic' countries, green development is associated with a more harmonized society, lesser dependency on large oil and gas corporations and higher intergenerational equity, in Russia, these motives are nearly absent. Salonen (2018), who analyzed public justification of renewable energy strategies in Russia, was surprised to see that the renewables-related public debate lacked any environmental, ethical, or civil aspects. Instead, it concentrated on purely technical and concrete tasks rather than holistic goals to leave a better world for future generations.

It could be argued that in the absence of ethical and civil aspects in the climate-related debate, Russia's motivation for the green transition may come from what Smeets (2018) calls a 'green menace'. This term refers to the situation wherein the global green transition challenges the Russian economic model, which is based on fossil fuel extraction and exports. Russian policymakers may not see the intrinsic value of the green transition, but they must adapt their economy to the new global energy and environmental landscape.

Makarov et al. (2020) estimated the impacts of climate policies worldwide on Russian energy exports. According to their results, climate policies of other countries in correspondence with INDCs submitted by parties of the Paris Agreement would lower Russia's GDP growth rate in 2020–2030 by 0.2–0.3 percentage points. If the global community increases its ambitions in the GHGs emission reduction after 2030 in line with the 2°C trajectory, another half of a percentage point would be added to the negative impact on Russia's GDP growth rate in 2035–2050 (Ibid).

Another dimension of the “green menace” concerns industrial exports. Metals, fertilizers, chemicals and other major products that Russia specializes in are carbon-intensive (Makarov and Sokolova 2017). This makes them vulnerable to barriers appearing in foreign markets, such as border carbon adjustment measures that are widely discussed in the European Union (European Commission 2019). Russian businesses are concerned with these developments. In 2020, the debates about the regulation of carbon emissions were revitalized in Russia: for the Russian government, it would be preferable to charge Russian companies with carbon price itself rather than to let them buy in the European Union (Edelgeriyev 2020; Batmanova 2021).

The “green menace” is also a challenge for Russia's technological development: Russia is afraid of missing the technological revolution in the energy sector. Mitrova and Melnikov (2019) frame the major drivers of the energy transition worldwide into the concept of 3D: Decarbonization - Digitalization - Decentralization. For Russia, decarbonization and decentralization are mostly irrelevant, leaving space only for digitalization. The latter is at the core of the country's technological policy in the energy sector (Proskuryakova and Ermolenko 2019), which aims at preventing the emergence of a technology gap relative to other major economies. The same motivation dominates in the development of renewables – the major objective of the existing state support program is to catch up with global green development through building a strong export-oriented sector of renewables equipment (Smeets 2018).

3.3. Policy paradigm

The factors of motivation observed in the previous section determine the policy paradigm that specifies the major channels and general techniques regarding how a policy idea may be implemented. The policy paradigm of ‘enthusiastic’ countries has never been formally specified; however, there are a number of elements that are included in most of the strategic documents, policy plans, guidelines and communications (for instance, US House of Representatives 2019; von der Leyen 2019; European Commission 2020). The major objective of climate policies is to achieve carbon neutrality, which may be done through phasing out fossil fuels and substituting them with renewables. The major technique used to achieve carbon neutrality is providing governmental support to renewables and implementing carbon pricing.

This policy paradigm reflects a number of policy priorities which are usually mentioned in corresponding proposals: creation of green jobs, the decrease of fuel expenses, lesser dependence on fossil fuel imports and improvement of energy security (European Commission 2020). This policy paradigm is relevant to

the motivations which are driving a large fraction of the population and many interest groups in 'enthusiastic' countries (Tørstad et al. 2020).

However, the question is whether using this paradigm would be enough of an incentive for a country with a different set of motivations to join in a common effort to decrease emissions. It is highly unlikely that proposals to phase out of fossil fuels and pass to the energy mix dominated by renewables that are supported with the arguments of green jobs, green recovery and energy security will spark any changes in Russia. Within such a narrative, the green transition would continue to be considered a menace rather than an opportunity and would have limited chances to be supported by policy makers, businesses and society.

The construction of a different paradigm which better corresponds with motivations dominant in Russia would be more helpful in fostering its green development. This paradigm should be based on the opportunities for win-win strategies that are specific to the economic and political contexts of Russia as well as its norms and values.

Firstly, diversification of the Russian economy should be at the core of a policy paradigm as it is the only means to adapting it to a new green reality and addressing the 'green menace'. In such a context, GHG emissions regulation may be considered an instrument of diversification as it redistributes wealth from conventional fossil-fuel related sectors to those that may substitute them as a driver of the economy. Makarov et al. (2020) built some stylized scenarios of diversification of the Russian economy. They show that taxing fossil fuel production and directing the corresponding tax incomes to education would significantly decrease the negative effects of global energy transition on GDP.

It is important to note that diversification is necessary for the Russian economy regardless of the energy transition. Hydrocarbons were able to ensure high rates of economic growth in the 2000s, in a period of high oil prices. For the last decade, this reliance has brought nothing but stagnation to the Russian economy (Bashmakov 2020). Considering carbon regulation as a means of diversification makes it an instrument of economic growth rather than an obstacle to it.

Secondly, increasing energy efficiency is a major element of Russian win-win strategy regarding climate change. Since the collapse of the Soviet Union, there has only been one period in which the Russian economy grew quickly: from 1999 to 2008. For this period, the energy intensity of the economy decreased by 5% a year. Since 2008, it has not changed at all and the economy has stagnated (Bashmakov 2018). In Russia, it is not renewables but energy efficiency which is able to link the green transition with economic and technical progress, allowing it to be seen as an opportunity rather than a threat.

Thirdly, new renewables like wind and solar are just a few of the possible channels of green transition. The fact that they are preferred in 'enthusiastic' countries which have invested intensively in their development for the last few decades and consider them a means of ensuring energy security (Lucas et al. 2016; Vakulchuk et al. 2020) does not mean that they should be the major channel of the green transition in Russia. Renewable energy in Russia is still quite expensive. Some of the reasons for this

come from the failure of governmental regulations while others are objective: low initial level of the development of the industry, large distances, a large share of heat generation in the structure of energy production and a high interest rate that is critical for a capital-intensive industry. Overcoming some of these obstacles may decrease the costs significantly (Lanshina et al. 2018; Kozlova et al. 2020); still, Russia may not consider renewables to be the only option. Instead, it makes sense to diversify efforts and, in particular, to use those low-carbon technologies in which Russia is already competitive.

One potentially positive example of Russian low-carbon technology development is nuclear power. It not only accounts for 18.7% of electricity production of the country (IEA 2020) but also forms one of the most advanced high-tech clusters in Russia with long-term traditions and strong competence, going as far back as the construction of the world's first nuclear power plant in Obninsk in 1954. This is one of the few innovative industries in Russia that is globally competitive (Minin and Vlcek, 2017). Russia is a global leader in fast neutron reactor technology, through which it is planning to take the significant step in closing the fuel cycle (Henderson and Mitrova 2020). Nuclear power as a means of decarbonization is considered highly controversial in many 'enthusiastic' countries, but in Russia, it would be almost impossible to launch the process of the green energy transition without relying on the nuclear industry.

Another important source of low-carbon power generation in Russia is hydro-energy, which accounts for 17.5% of total electricity production (IEA 2020). It provides carbon-neutral energy reliable enough to service energy-intensive industries, giving them the opportunity to reduce their carbon footprint and thus to create new competitive advantages in the era of the green transition. The Russian aluminum producer Rusal does exactly this and provides the global market with the least carbon-intensive aluminum in the world (Makarov 2018).

Another important area of technological development relevant to Russia is the technology of carbon capture and storage (CCS). Its development is associated with great uncertainty, but the preliminary estimates show the significant technical and economic potential of CCS in some regions of Russia, including on coal-dependent territories such as Kuzbass, the Krasnoyarsk Region and the Komi Republic (Cherepovitsyn et al. 2018). Oil companies in Russia have started to invest in CCS. In traditional energy regions like Kuzbass, it may be easier to implement CCS than to shift to renewables.

Last but not least, the use of hydropower and nuclear power may be a good means of producing hydrogen which is carbon neutral and relatively cheap. In some regions such as Karelia or the Magadan Region where these sources of energy dominate in the electricity mix, hydrogen maybe be produced by electrolysis and have almost no carbon footprint even without solar and wind power plants (Mitrova et al. 2019). Relatively low-carbon hydrogen may also be produced from natural gas: Russian companies build on technologies for producing hydrogen by using adiabatic conversion of methane. Gas-based hydrogen may be accompanied by CCS, which would make it nearly zero-carbon, but large efforts are still needed for commercialization of this technology (Mitrova et al. 2019).

Fourthly, forests may be one of the key elements of green development in Russia. The potential of reforestation in Russia is estimated at 151 million ha with mitigation potentials of up to 351 Mt CO₂/year (Leskinen et al. 2020). Many forest projects may be cost-efficient even with carbon price at less than 30 dollars (Austin 2020). This makes them cheaper (per unit of CO₂) than many measures to reduce emissions in other sectors. Many Russian companies are planning to use reforestation as a carbon offset mechanism (Henderson and Mitrova 2020) in order to compensate for the carbon footprint of the products delivered to global markets. If the forestry projects are recognized as mitigation efforts in other jurisdictions, Russia would also be able to attract finance in forestry projects through carbon markets from global companies that try to achieve carbon neutrality. The number of such companies would increase worldwide with the expansion of governmental carbon regulation and spread of voluntary schemes.

Fifthly, it makes sense to justify climate policy through linking it with other environmental problems. Many win-win options will come to light in this case. Decarbonization measures may help to reduce air pollution and related health damage, cope with deforestation and forest fires, prevent natural catastrophes, etc. Given that the population in Russian is more concerned with local environmental problems than with climate change, a focus on such linkages may improve the public's perception of emissions reduction measures.

3.4. Policy frame

Policy frame is a mental construct that defines the reasons and allocates responsibility for a policy problem. The current policy frame both internationally and in 'enthusiastic' countries is based on the "polluter pays" principle and lays the burden of responsibility on the producers of fossil fuels and carbon-intensive goods (Shue 2017).

This allocation of responsibility is embedded into production-based accounting of emissions: within international agreements (the Kyoto Protocol and the Paris Agreement) those emissions are counted that take place "within national territory and offshore areas over which the country has jurisdiction" (IPCC 2006). The alternative approach is a consumption-based one. It considers those emissions which are generated in the production of goods that are consumed within a country (including emissions embodied in the country's imports but excluding those embodied in the country's exports) (Davis and Caldeira 2010). The production-based approach is technically easier and has a long history of implementation. However, ideologically, none of these approaches is better than the other.

The production-based approach is more favorable for economies which import fossil fuels and energy-intensive goods – this applies to most of 'enthusiastic' countries. Their production-based emissions are lower than their consumption-based ones. Moreover, these countries are able to reduce their emissions partly because they have the opportunity to import carbon-intensive goods from abroad, including from Russia (Makarov 2019).

On the contrary, in Russia, as well as in other emerging economies, production-based emissions are higher than consumption-based ones. A third of Russia's emissions are generated in the production of goods for exports (Makarov and Sokolova 2017). It makes Russia the second largest net exporter of emissions embodied in international trade, right after China. Russian export is the most energy- and carbon-intensive among all the leading economies, primarily due to Russia's specialization in exporting carbon-intensive goods (primarily metals and chemicals) rather than backward technologies (Makarov and Sokolova 2017).

Under the current policy frame, the resultant emissions are the responsibility of Russia's exporters rather than that of the consumers from the developed world, whose demand is a primary cause of these emissions. At the same time, Russia's specialization in exporting fossil fuels and carbon-intensive goods is not merely its own choice but is also a reflection of high consumption in developed economies. This is illustrated by the data extracted from multiregional input-output tables with associated emissions accounts presented in Table 1. It demonstrates the dramatic fault line between developed countries, the major consumers and net importers of carbon-intensive goods, and BRICS countries, which are their producers and net exporters. This fault line could even expand in the future: the movement of European and, likely, other developed countries towards carbon neutrality (in terms of production-based emissions) would create incentives to further substitute its energy-intensive products with imports that would further increase emissions in BRICS countries.

Table 1
Consumption- and production-based emissions in OECD and BRICS countries in 2018

Country	Production-based emissions		Consumption-based emissions		Net exports of emissions	
	Mt	% of world	Mt	% of world	Mt	% of national emissions
OECD, total	12602	34.6%	13865	38.1%	-1264	-10.0%
Canada	587	1.6%	588	1.6%	-2	-0.3%
France	332	0.9%	442	1.2%	-110	-33.3%
Germany	755	2.1%	862	2.4%	-106	-14.1%
Italy	348	1.0%	466	1.3%	-118	-33.8%
Japan	1136	3.1%	1312	3.6%	-177	-15.6%
Spain	270	0.7%	288	0.8%	-18	-6.6%
United Kingdom	380	1.0%	540	1.5%	-160	-42.1%
United States	5425	14.9%	5767	15.8%	-343	-6.3%
BRICS, total	15178	41.7%	13554	37.2%	1624	10.7%
Brazil	467	1.3%	489	1.3%	-22	-4.8%
China	9957	27.3%	8960	24.6%	997	10.0%
India	2591	7.1%	2355	6.5%	237	9.1%
Russia	1691	4.6%	1415	3.9%	277	16.4%
South Africa	472	1.3%	335	0.9%	137	29.0%

Source: Author's calculations based on Friedlingstein et al. (2020)

3.5. Policy instruments

Within the policy paradigm of 'enthusiastic' countries and the production-based policy frame, carbon pricing in the form of a carbon tax or an emissions trading system is the most appropriate climate policy instrument. However, it is not obvious that direct carbon pricing would be the best instrument within a different paradigm and consumption-based policy frame.

One important reason why it is difficult to introduce a direct carbon price in Russia is that energy is already taxed intensively. The share of oil and gas-related revenue in the Russian federal budget in 2019 was 39.3% (Ministry of Finance of the Russian Federation 2020). Energy taxes include a mineral extraction tax, tax on extra-income from oil and gas extraction, export duties, excise taxes on motor fuels,

etc. (Federal Tax Service of the Russian Federation 2020) These taxes cover all the fossil fuels in the country and, consequently, indirectly cover most of the country's emissions. These taxes increase the price of fossil fuels and potentially create strong incentives to decrease its consumption and therefore reduce emissions. Energy taxes may be considered an indirect carbon price. Their effect is weaker than that of conventional carbon pricing, but their coverage is greater. The introduction of a direct carbon price in addition to an indirect one would create a strong tax interaction effect and introduce distortions to the effects of other taxes, which could lead to a non-optimal result in terms of Pareto-efficiency (Goulder et al. 1997). Instead of introducing additional instruments, Russia may use the potential of energy taxation for decarbonization, a potential which is nearly absent in energy-importing countries. There are various ways to do this: for instance, the carbon price could be integrated into tax rates for different fossil fuels; fossil fuel subsidies could gradually be phased out; the maneuver from taxation of extraction towards taxation of consumption of fossil fuels could be implemented, which not only corresponds better to the consumption-based policy frame but also creates much more incentives for saving energy and promoting energy-efficiency.

While production-based emissions accounting determines the focus of climate policies on supply-side technology solutions (energy efficiency, development of renewables, etc.), the consumption-based accounting increases the significance of demand-side channels for mitigating climate change. These channels include strategies aimed at changes in consumption behavior, lifestyle, infrastructure and service provision (Creutzig et al. 2018). These solutions have never been popular in Western economies. However, for Russia, which is looking for a new model of economic growth, these instruments are of primary importance.

While a conventional carbon tax or emissions trading system lays the major burden of low-carbon transition on poorer people, consumption-based accounting of emissions and the focus on demand-side climate policies make it possible to use more flexible climate policy instruments which primarily address excessive consumption of richer parts of the population. Simply speaking, they may help transform the carbon tax into a tax on the consumption of carbon-intensive final goods. This policy framework is fiscally progressive and creates an important win-win opportunity in that it simultaneously addresses problems of climate change and income inequality (Grigoryev et al., 2020).

The demand-side policy instruments may include taxation of air flights (especially for business class passengers), luxury carbon intensive goods, and energy consumption above a specified threshold. They may also include the promotion of energy and material savings, green standards in construction and housing, waste management, etc. Choosing concrete policy instruments is a comprehensive task which requires an accurate comparison of all groups of costs and benefits. Such analysis is beyond the scope of this paper. The argument here is that if Russia follows the policy paradigm which matches its own motivations better than the paradigm used in 'enthusiastic' countries, it may require different policy instruments as well. Demand-side policy instruments and transformation of energy taxation may be among the first choices.

4. Possible Areas Of Russia'S Cooperation With 'Enthusiastic' Countries

The first step to systematizing the fragmented opportunities mentioned in the previous sections and to fostering decarbonization in Russia is to unlock the country's self-interest to reduce GHG emissions. The recognition of the diversity of policy paradigms, policy frames and policy instruments of the green transition is crucial. Attempts to apply the policy paradigm of 'enthusiastic' countries based on ambitious renewables targets and introducing carbon pricing to Russia can hardly be successful. Decarbonization gives Russia a number of 'win-win' opportunities, but they are very different from those in energy-importing countries. A combination of different low-carbon technologies, a focus on energy efficiency, efforts to increase CO₂ absorption by forests, consumption-based emissions accounting, implementation of indirect carbon pricing through changes in energy taxation – all these policies play a secondary role in the current climate agenda of 'enthusiastic' countries but are crucial for decarbonization in Russia. Contrary to the energy importing countries, a major incentive for decarbonization in Russia is the diversification of the economy and mitigation of risks brought by the green transition worldwide.

However, Russia is unlikely to use this potential unilaterally. Climate policies are costly in the short term; they require capital, which is expensive in the country, as well as skills and experience, which are limited. That is why it is important for the global community to build a system of incentives for fossil-fuel dependent countries like Russia. The efficiency of such incentives is proven by the history of Russian climate policy: its international cooperation has always been one of its important drivers (Kokorin and Korppoo 2013; Makarov 2016; Korppoo 2019).

Creating international incentives is not an intervention in Russia's domestic affairs. It is important that both Russia and its foreign partners consider this country's emissions within the global context. The carbon-neutrality of Western countries, for instance, those in the EU, would be no more than a formality without the decarbonization of Russia, which provides them with carbon-intensive raw materials and intermediate goods. Exports specialization of Russia and its focus on fossil fuels and carbon-intensive goods is not only its own choice but also is a reflection of high consumption in the West.

Peszko et al. (2020) divides possible international incentives for fossil-fuel dependent countries into negative and positive. The former include border carbon adjustment of all types. The latter are more diverse, ranging from financial and technology transfers and project-to-project climate finance to the creation of coalitions or clubs of different countries which may have joint NDCs, systems of carbon offsets, mutual recognition of GHG reduction efforts, etc. Unfortunately, in the case of Russia, negative incentives are primarily discussed. The European Union plans to introduce a carbon border adjustment mechanism (European Commission 2019; Marcu et al. 2020), and Russian exporters are expected to be one of the major targets. This may foster the development of climate policy in Russia but will have some negative effects as well, including the vanishing of trust provoked by the shift of climate-related interactions from cooperation to confrontation. This loss of trust may easily spill over into other areas of international relations (Palackova 2019; European Parliament 2020).

Positive incentives to the green transition in Russia have been used in the past. Within the Kyoto Protocol, 108 carbon-reduction projects were allocated in Russia through the Joint Implementation mechanism, which brought \$600 million to Russian companies and became an important help in their green modernization (Makarov 2016). In the 1990s and 2000s, numerous green projects in Russia were held under the auspices of the UN Development Programme, the Global Environment Facility, the European Bank for Reconstruction and Development, the International Finance Corporation, etc. Frequently, investments went hand in hand with clean technologies and expertise services. Sanctions introduced after the Ukraine political crisis put nearly all these projects on hold (Makarov 2016).

Considering Russian emissions in the global context as a part of a global problem will help to frame Russia as a part of the solution as well. Relatively high energy and carbon intensity, an initial low level of development of renewables, and high energy losses as a result of the outdated infrastructure all make Russia a country with significant potential for relatively low-cost emission reduction.

If it is cheaper to reduce emissions in Russia than in most other countries, then this means that Russia could benefit from participating in international market mechanisms. This potentially gives Russia opportunities to attract financial support for low-carbon projects through carbon markets from global companies that are trying to reduce their carbon footprint.

The impetus for such projects may be given if the corresponding offsets are taken into account within the European emissions trading system. Much work needs to be done in this area, however. Carbon market infrastructure is only at the initial stage of development in Russia, and it is up to the government to support and expand it. However, if national carbon pricing appears in Russia within the coming decade, the country would benefit significantly from linking it with the EU Emissions Trading System, and the EU would also benefit from involving Russia in joint efforts for decarbonization.

5. Conclusion

The provided analysis shows that Russia as a fossil fuel dependent country has very different motivating factors regarding climate change mitigation compared to 'enthusiastic' countries. These factors arise from the economic and political context as well as the country's dominant norms and values. Russia is a middle-income country that specializes in fossil fuel extraction and carbon-intensive industries, with strong pro-fossil fuel interest groups and relatively low awareness of climate change among the population. Using the analytical framework of ideational research, we suggest that the policy paradigm put forth in 'enthusiastic' countries and implemented there with relative success can hardly succeed in Russia. The implementation of this paradigm would only lead to imitation of the GHG reduction effort, i.e., 'window dressing'.

To a large extent, Russian emissions are the result of the development of the global economic system based on specialization: the consuming countries importing energy- and carbon-intensive goods coexist in its framework with producers of these goods who release corresponding emissions. Active climate

policies in the former are one-sided and environmentally and economically cost-inefficient without involving the latter.

In order to launch the green transition in countries like Russia, interested stakeholders inside and outside the country need to find or create incentives other than those that have been successful in 'enthusiastic' countries. These incentives may arise from a different climate policy paradigm based on 1) the priority of diversification as a means to adapting the national economy to a new green landscape; 2) the use of diverse channels for decarbonization, including nuclear, hydropower and relatively low-carbon options within the fossil fuel sector; 3) the promotion of energy- and carbon-efficiency; 4) the implementation of forest projects aimed to absorb CO₂; 5) the closer linking of climate change with other environmental problems.

At the level of policy frame, consumption-based emissions accounting may be more beneficial for countries like Russia than production-based emissions accounting. This frame also suggests the more feasible policy instruments, including demand-side instruments and energy taxation reforms rather than direct carbon pricing.

Furthermore, dialogue and cooperation are needed between fossil fuel importing and exporting countries aimed at the creation of new incentives for decarbonization in the latter. These incentives should not be only negative (border carbon adjustment) but also positive, ranging from providing green finance for specific low-carbon projects to mutual recognition of carbon regulation schemes with possible offsets aimed at unlocking the potential of relatively cheap low-carbon projects, which are numerous in Russia.

Finally, it should be noted that visions of decarbonization are very different for fossil-fuel exporting and importing countries. Recognizing that this difference is a fundamental phenomenon and cooperating accordingly are essential for building a low-carbon future globally.

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Figures

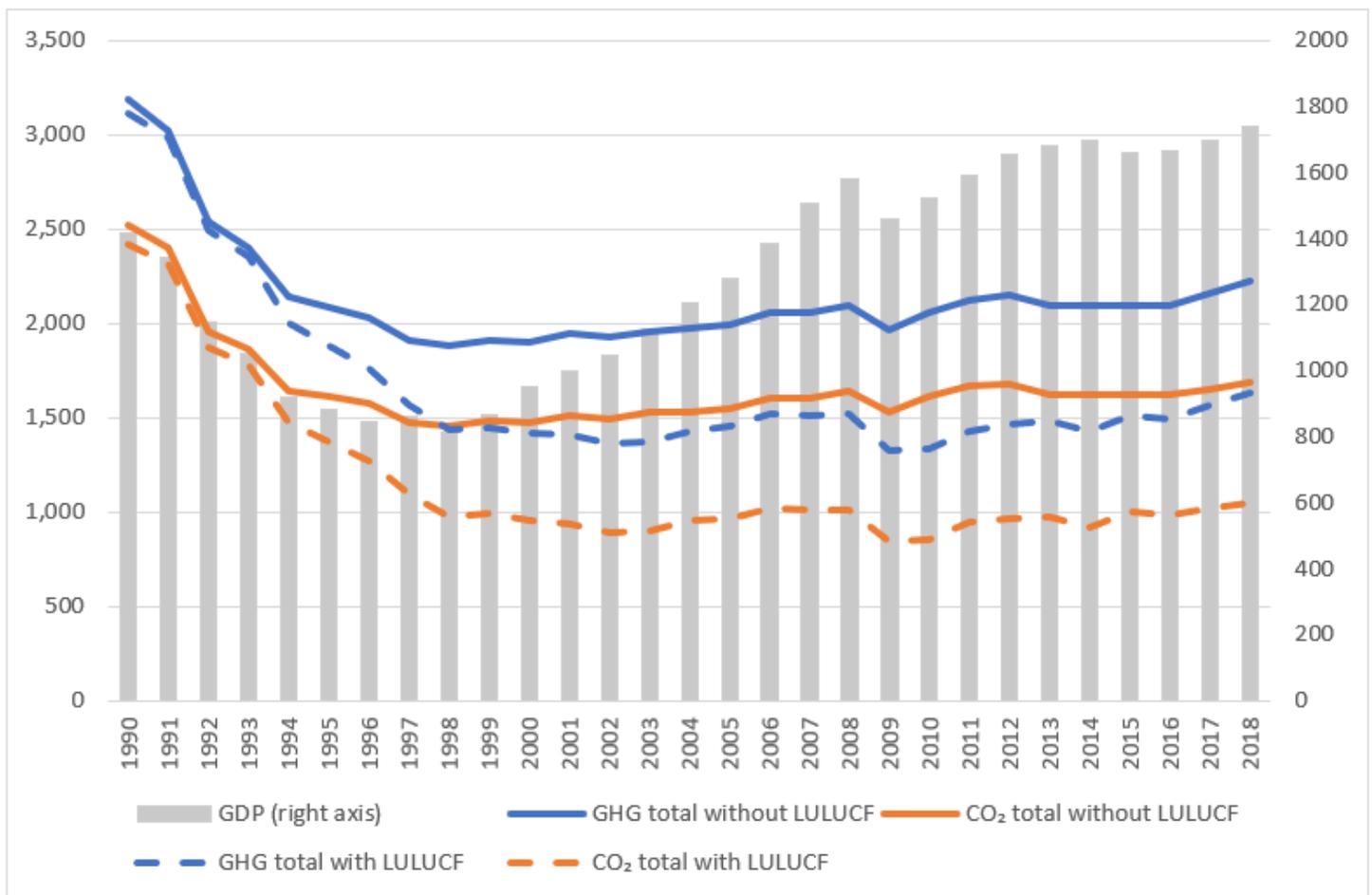


Figure 1

GHG emissions (Mt, left axis) and GDP (bn 2010 US\$, right axis) in Russia in 1990-2018 Sources: UNFCCC, 2020; World Bank 2020b.

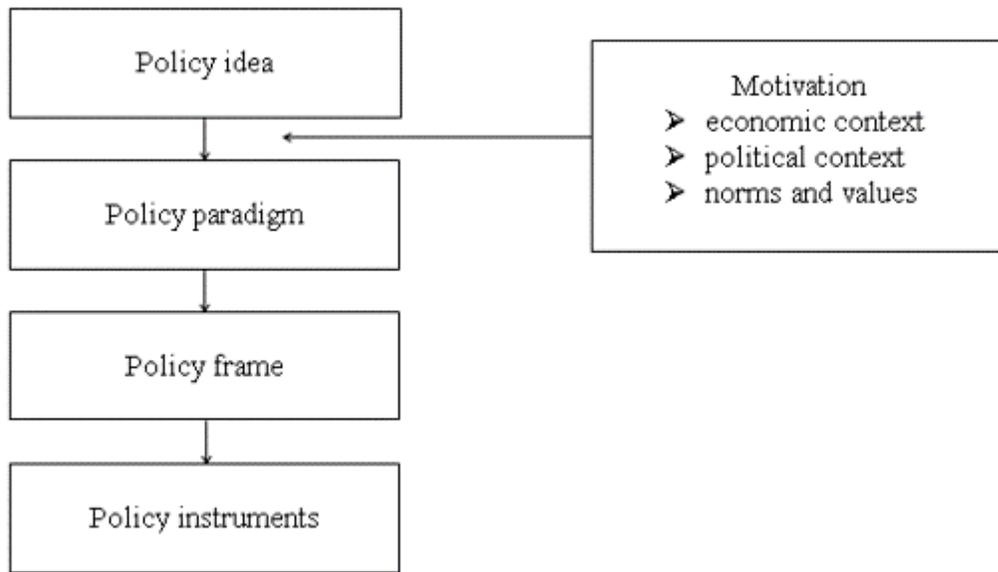


Figure 2

The path from a policy idea to policy instruments Source: composed by the author based on Braun and Capano (2010)

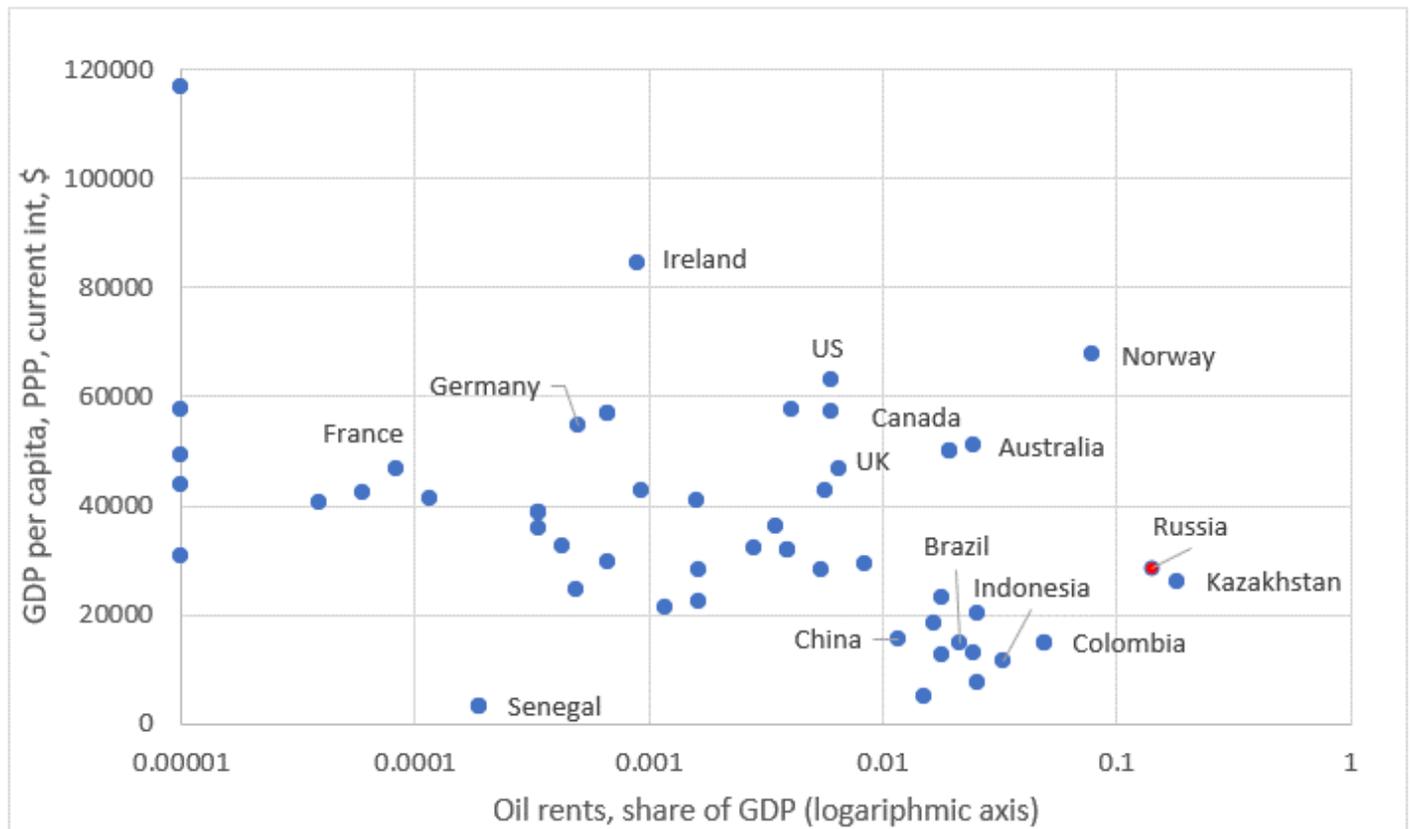


Figure 3

Fossil fuel rents and GDP per capita in Russia and countries that have carbon pricing schemes implemented, scheduled for implementation or under consideration Source: World Bank (2020a), World Bank (2020b)

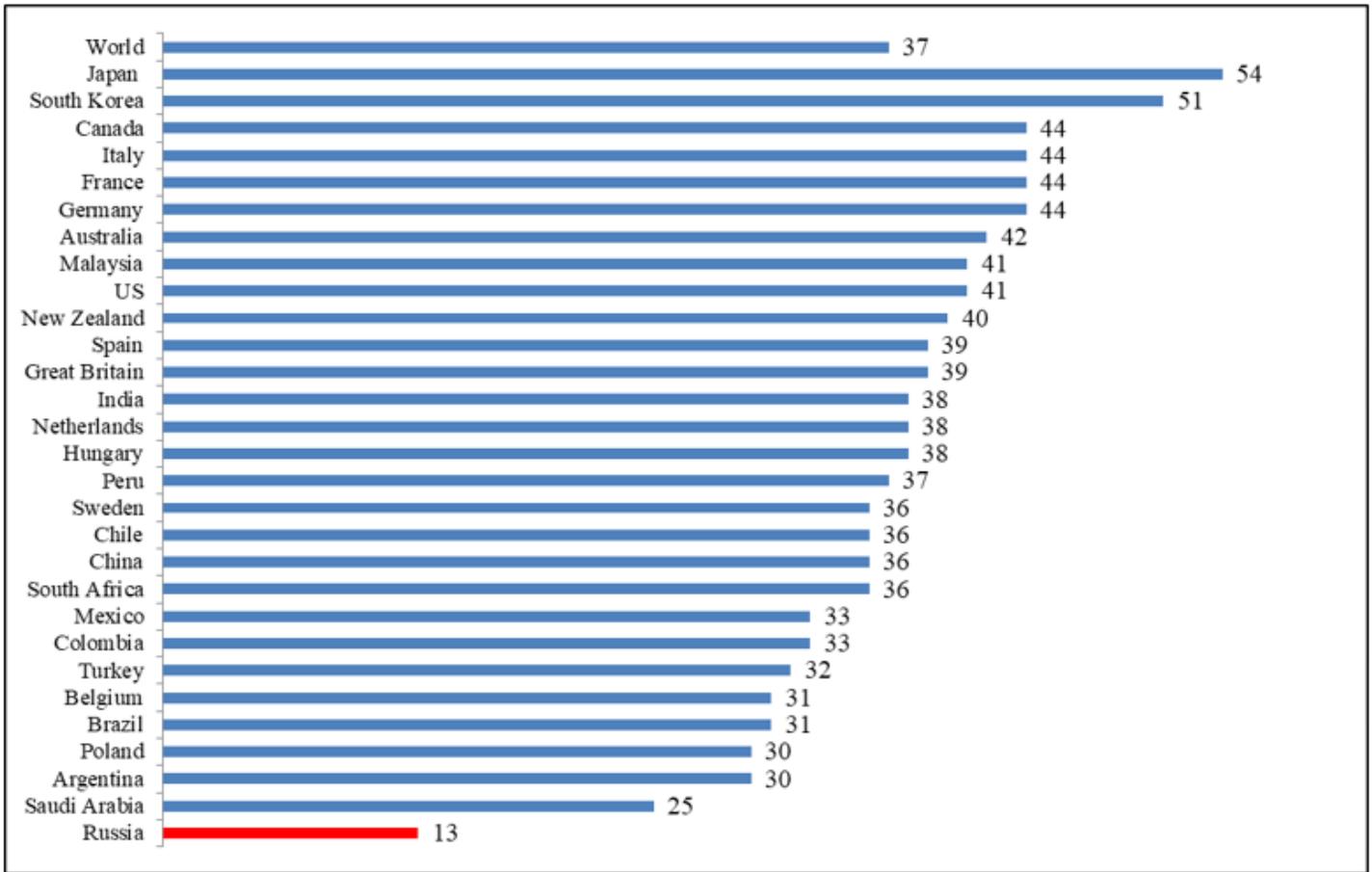


Figure 4

Percentage of respondents placing climate change in one of top-3 most important environmental issues in the country Source: IPSOS report on Earth Day, 2020.