



particularly in the strategically important oil and gas sector. Stop-gap measures – such as extending the service life of capital stock through maintenance – have been implemented. For example, the initial 30-year operational lifetime of Russia's nuclear power plants has been extended by 15 years. Without this extension, 18 plant units with a combined installed capacity of 11.2 GW (representing nearly half of the existing capacity) would have already been decommissioned. Even with the extended service life, 11 plant units (4.8 GW) are to go offline by 2020. This would both jeopardize national energy security and increase the carbon intensity of the economy, unless energy demand is curbed accordingly and/or supply is replaced by other low-carbon energy sources.

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'WERE THE TECHNICAL POTENTIAL UTILIZED EVEN PARTLY, THE COUNTRY COULD BECOME A KEY EXPORTER OF RENEWABLE ENERGY.'

An additional threat to energy security and infrastructure is the changing climate. Climate change impacts are expected to put extra pressure on the energy system, with intensified disruptions to permafrost-based infrastructure, overhead power transmission lines, and the pipeline network. Such impacts would have serious implications for those dependent on Russia's energy supplies both within and outside the country.

Socio-economic and political aspects

Within Russia, there are three main power groups that benefit from a thriving oil and gas sector: the government, big business, and the state-dependent population. These groups are bound by a so-called 'social contract' through the funnelling down of resource rents. The 'no-change', or business-as-usual, political course

suits most actors as it promises relative stability. It is likely that the decarbonization process will only gain momentum if the system fails to satisfy one or more of the power groups.

In the current decarbonization debate, the emphasis is often on what could trigger the decline of the existing system, rather than on more 'positive' opportunities (for example, how the foundations for a low-carbon transition could be established), although the two are often difficult to separate. The current situation is socially unstable and unsustainable, and Russia's politico-economic regime is increasingly susceptible to both external and internal shocks. For example, a sharp increase in the domestic price of energy or a drop in the global oil price could result in a breakdown of the social contract. As history shows, seemingly small-scale events can instigate large-scale change in Russia.

However, the decline of the current system is a necessary but not a sufficient condition. Some of the unique characteristics of Russia provide opportunities for not only undermining the status quo, but also for building a new, low-carbon, system. For example, the country's dilapidated energy infrastructure will need to be replaced in the next 10 to 20 years regardless. Similarly, modernization of the manufacturing sector is one of the government's declared priorities. These opportunities, however, may lead to policies with competing objectives, unless the co-benefits of decarbonization are considered from the start.

To decarbonize or not?

A particularly compelling, if paradoxical, incentive for urgent decarbonization in Russia is that the country might not have the means to do so in the future if fossil fuel trade wanes. If this were to happen, Russia would struggle to

finance even its basic national needs, given that about half of its federal budget revenue comes from the oil and gas sector. Europe's strategy to wean itself off Russia's fossil fuels offers a preview of such a future. To this end, the EU is hoping to increase LNG imports from the USA and is exploring its own shale gas reserves; this, however, is not a sufficiently strong threat, as Russia's flows of fossil fuels could be re-directed to industrializing countries. This diversification of energy demand is already evident, with both Russia's natural gas and crude oil increasingly flowing towards Asia.

A complete halt to Russia's hydrocarbon trade seems unlikely at the moment. Yet if the world is to avoid 'extremely dangerous' climate change, 60–80 per cent of global reserves of fossil fuels would need to stay in the ground. Russia, together with other major emitting nations, is essentially choosing between two prospects: first, an 'unlikely' future without fossil fuel trade and, second, a practically unliveable future of extreme climate impacts. The urgent nature of 2 °C indicates that there is no middle way.

The consequences of both decarbonizing and of not decarbonizing are stark. To deliver a fair contribution to the global 2 °C commitment, Russia's carbon dioxide emissions would need to decrease rapidly and dramatically (in contrast to its current 25 per cent emission 'reduction' target). Following a genuinely low-carbon path would involve major changes to the country's infrastructure. The government's existing modernization agenda is a start, but the scale of transformation needed goes far beyond that.

A refusal by Russia to decarbonize would have similarly far reaching, but qualitatively different, consequences. If the rest of the world stays on the high-carbon path, devastating climate impacts would become all but inevitable. If the rest

of the world chose instead to become low-carbon and stop importing Russia's hydrocarbons, the country would lose its main source of income and, with it the means to invest in decarbonization.

If an internal or external shock leads to a breakdown of the 'social contract' in Russia, both the population and the government are likely to have other prime concerns. Therefore, as decarbonization is not currently seen as an immediate issue, it is important that it is at least viewed as a significant and strategic 'co-benefit'. For example, legislation on land, agriculture and forests, water, and especially energy could explicitly account for climate-related issues or it could even be integrated with climate legislation. Such policies could be directly linked to Russia's national priorities, such as creating a more stable investment environment, attracting a highly skilled labour force, and reducing Russia's dependence on the global demand for fossil fuels. Although some of these 'priorities' may not be regarded as such by the current government, the process of decarbonization will not necessarily happen solely as a consequence of a government's actions. It could be taken up or, at least, prompted by non-governmental actors. The engagement of the Russian public is likely to snowball as climate change impacts intensify. The combination of potential 'shocks',

shifting agency, and opportunities for re-industrialization may create a springboard for a low-carbon transition.

A stark choice

Keeping the global temperature rise below 2 °C is becoming extremely challenging. However, a slim chance of staying within the carbon budget associated with this 'dangerous climate change' threshold remains, if industrialized nations start an extensive decarbonization programme within the next few years. As an industrialized country, Russia shares the responsibility to make a fair contribution to emission reductions.

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'AS AN INDUSTRIALIZED COUNTRY, RUSSIA SHARES THE RESPONSIBILITY TO MAKE A FAIR CONTRIBUTION TO EMISSION REDUCTIONS.'

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The international climate negotiations are in need of leadership. This need was evident when recent headlines hailed the US plan to cut emissions from power plants by 30 per cent by 2030 (compared to 1990), despite this level of reductions falling far short of the 2 °C commitment. Genuinely low-carbon and science-informed policies would receive even more recognition and, it is hoped, followers. This is an opportunity for Russia to become the

leader it aspires to be.

Russia's stance matters, both for the global climate and for the global climate change negotiations. Each year, the country emits hundreds of millions tonnes of greenhouse gases, having retained its place among the five highest emitters globally for the past several decades. Russia is still influential both politically and economically, and an aggressive *domestic* emission reduction strategy could both reduce *global* emissions and nudge the international negotiations towards a meaningful climate deal. The urgency of the 2 °C target leaves Russia with a stark choice: it can either embrace sweeping decarbonization in the near future, or face potentially destructive impacts of climate change.

Further reading

Kokorin, A. and Korppoo, A. (2014). *Russia's greenhouse gas target 2020: Projections, trends, and risks*, Friedrich Ebert Stiftung: Berlin. Available at <http://library.fes.de/pdf-files/id-moe/10632.pdf>.

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Russian gas exports to Europe: unravelling the misconceptions

Jonathan Stern and Katja Yafimava

Russian gas exports to Europe, and Soviet exports before them, have been controversial since they started, in the late 1960s. As the largest single component of European gas supply, they are the subject of ongoing security and geopolitical controversies. However, much of the commentary on

these controversies is subject to misconceptions which, in the 2010s, have been compounded by growing regulatory complexities, particularly in relation to pipeline infrastructure.

Volume issues

One important misconception is the idea

that the majority of European countries have become increasingly dependent on Russian gas. Russian exports to Europe exceeded 100 bcm in virtually every year in the 1990s; they rose to more than 160 bcm/year in the mid-2000s and fell below that level only in the late 2000s, before recovering to