

Raw materials for the energy transition in view of the Russia Ukraine war

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Is the energy transition threatened by the Russia-Ukraine war - both because of a lack of energy supplies and because of a lack of raw materials for the expansion of green electricity? Can or must the coal phase-out be brought forward to 2030? Does nuclear energy have a substitute function? Is there a need, as in the oil crisis of the 1970s, for a perspective of domestic supply security, which was in any case originally laid down in Section 1 No. 1 German Federal Mining Act? These questions are examined by law and its methods of interpretation. Finally, more cooperation is needed in international agreements and treaties for the supply of raw materials.

The relationship between the energy transition and the Russia-Ukraine war

Concrete consequences for energy supply

The Russia-Ukraine war has ushered in a new era – with fundamental threats for all mankind. It also has serious implications for energy and commodity supplies, and could profoundly affect the global economic order, according to the International Monetary Fund. "The war has the potential to fundamentally alter the global economic and geopolitical order as energy trade shifts, supply chains change, payment networks disintegrate, and countries rethink their foreign exchange reserves," the IMF, (Tagesschau, 2022).

Energy trade is specifically singled out. The energy sector is particularly affected, also in the context of climate protection. This is shown by the contribution of Working Group III of the IPCC's Sixth Assessment Report 2022 on 04 April 2022: "The new IPCC report comes at a moment of decisions. The Russia crisis is forcing energy policy decisions: Europe must brace itself for an oil and gas embargo, it must reduce its dependence on Russian gas and oil in a short time, invest in the development of hydrogen infrastructure and massively push forward the expansion of renewable energies."

Repercussions for energy transition and climate protection

Through this transition, CO₂ emissions can also be limited to a large extent. In its wake, a considerable amount of oil, which also comes from Russia, will be saved. However, this also increases the demand for electricity that therefore must result increasingly from renewable energies if CO₂ emissions are actually to be reduced. The EU Commission is also targetting electromobility in its 'Fit for 55' climate package, according to which CO₂ emissions from passenger cars are to be reduced by 100% by 2035. (European Commission, 2021b, p. 2). The new German government plans in its coalition agreement for at least 15 million electric cars in 2030 (Coalition agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 51). The electromobility thus envisioned depends not only on available electricity, but also on lithium-ion batteries. In general, the supply of raw materials is threatened by the Russia-Ukraine war. The EU formed a strategic partnership with Ukraine, home of numerous critical raw materials, such as cobalt, manganese and rare earths (Simon²⁰²¹). On a deeper level, the Russia-Ukraine war affects the switch to renewable energies itself. The energy transition is intended to reduce CO₂ emissions enormously by replacing conventional electricity with green electricity. In its Fit for 55 climate package, the EU Commission states that the energy sector accounts for 75% of CO₂ emissions (European Commission, 2021a, p. 11).

At the heart of this energy transition is an increase in power generation from renewable energies. The EU climate package envisages such an increase from 32% to 40% by 2030 (European Commission, 2021a, p. 11). Section 1 of the Renewable Energy Sources Act sets an expansion target of 80% (previously 65%), which means that Germany, in line with its strong economic performance, will contribute its share within the framework of the solidarity-based burden sharing that applies in the energy sector in particular (European Court of Justice, 2021), in accordance with Article 2 (2) of the EU Climate Act (Frenz, 2022a, p. 56; in detail Frenz 2022b, marginal no. 8 *et seq.*).

Linkage with raw material security

However, the raw materials needed for the additional solar modules, wind turbines and power lines - for example, for transporting electricity from northern to southern Germany - must be available all the sooner. If this is not the case, there is a risk that the energy transition will fail. This applies regardless of the problems of e.g., protection of species, to which the coalition agreement of the new German government intends to give relative priority, for the expansion of wind power for a limited period of time in regard to protected goods (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 56) - an approach that is critical under EU law in this generality (Frenz, 2022c, pp. 87-88 *et seq.*).

Conclusions for bringing forward the coal phase-out and continuing operation of nuclear power plants (NPP)

Coalition plans

Does this mean that bringing forward the coal phase-out is off the table? An accelerated phase-out of coal-fired power generation is seen as necessary in the coalition agreement of the new German government to meet climate protection targets and is accepted "ideally by 2030." (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 58). This would require modifying the Coal-Fired Power Generation Phase-Out Act, which sets the date of the coal phase-out to 2038. The background to this is the increasing restriction of the scope for CO₂ reductions, which is necessary due to the German Federal Constitutional Court's climate decision. In its wake, the 2030 climate target has been tightened to 65% in Section 3 (1) KSG. The restriction is also necessary due to the upcoming tightening of EU emissions trading supported by the German government (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 58).

Requirements of the German Federal Constitutional Court

However, the German Federal Constitutional Court does not mandate an earlier coal phase-out. It only requires that CO₂ reduction should be initiated in good time so that future generations are not unduly burdened (German Federal Constitutional Court, 2021a, marginal no. 249, see above I.2.). The specific areas in which this is to take place are not clearly defined. Rather, the legislator determines which products, services, infrastructural, administrative and cultural facilities, consumption patterns or other structures that are still CO₂-relevant today must soon be significantly redesigned (German Federal Constitutional Court, 2021a, marginal no. 249).

However, Germany must meet its self-imposed target of reducing CO₂ emissions by 65% by 2030. Therefore, if no corresponding reduction of CO₂ emissions in the field of coal energy is achieved, the corresponding compensation must be made in another area.

EU requirements

In this respect, the EU Commission also monitors the extent to which Germany is making progress in reducing CO₂ emissions in accordance with Article 7 of the EU Climate Act, in order to be able to see for itself whether the Europe-wide climate targets, and thus a reduction there of 55% by 2030 can be achieved. In this respect, it is entirely possible that the Commission will recommend Germany moves ahead with the coal phase-out in line with the coalition's current plans. Conversely, the early coal phase-out is not a consequence of the EU Climate Change Act: this, too, does not impose very specific reduction measures on the member states and does not itself determine any concrete national reduction targets. The Commission evaluates and recommends in accordance with Article 7 of the EU Climate Change Act, which imposes a duty to justify non-compliance, but does not impose any possibility of enforcement (in detail Frenz, 2022a, pp. 56 *et seq.*). The EU Effort Sharing Regulation, which is to be

recast, provides for national emission reduction targets, namely for buildings, transport, agriculture, waste management and small businesses (European Commission, 2021d). The tightening of EU Emissions Trading System by lowering caps on emissions and increasing annual cuts (European Commission, 2021c) also does not necessarily require an accelerated phase-out of coal-fired power generation. Instead, certificate prices at the European level, which have now settled at €60 per ton of CO₂ emissions, are increasing, making coal-fired power more expensive. However, this is taking place in the market and does not require a government response by prematurely fixing the coal phase-out. As a result, the price of coal-fired power generation will continue to decline until it disappears altogether, possibly even before 2030, due to a lack of profitability. It is therefore crucial to maintain the EU Emissions Trading System. This limits EU-wide CO₂ emissions to a fixed level, regardless of when coal is phased out. This is in line with the decarbonisation envisaged in the Green Deal (see above).

No mandatory targets - not even for continued NPP operation

This means that bringing forward the coal phase-out to 2030 is not mandated by either national constitutional law or EU law. It can be retained with an end date of 2038 in order to absorb supply shortfalls in the electricity and energy sectors. Even nuclear power plants can be kept online longer, as Belgium has now decided with regard to its nuclear reactors until 2035 (on 18 March 2022). The German Federal Constitutional Court justified bringing forward the phase-out of nuclear power by means of an evidence-based review of suitability and necessity with regard to the goods to be protected (German Federal Constitutional Court, 2016, marginal no. 285 *et seq.* with notes by Frenz), but did not make it mandatory - despite its classification as a high-risk technology (German Federal Constitutional Court, 2016, marginal no. 219). This means that there are alternatives to compensate for the threat of supply shortfalls caused by oil and gas supply failures from Russia, which cannot be easily compensated for by the expansion of renewable energies: This expansion will take time and threatens to be held up, above all, by EU regulations on the protection of species (see above). The switch to liquefied gas tanks must first be realised and, as a point of discussion, entails the possibility that gas extracted with the help of fracking will be stored, even though fracking has just been largely banned in Germany by Sections 13a, 13b Federal Water Act (Frenz, 2017a).

Securing raw materials as part of the energy transition

However, the continued operation of coal-fired or even nuclear power plants will only be politically feasible for a short time at most. Therefore, the only way forward is to step up the expansion of renewable energies. And this requires the raw materials needed for this expansion. The energy transition as an essential part of climate protection is therefore based to a large extent on the supply of raw materials. Against the backdrop of the Russia-Ukraine war, climate protection as a whole is also about securing raw materials. Therefore, this is a necessary component of the climate protection requirement developed by the German Federal Constitutional Court based on the environmental state objective provision in Article 20a of the German Constitutional Law (German Federal Constitutional Court, 2021a, marginal no. 197 *et seq.*). Germany must therefore ensure that its supply of raw materials is secure. Only in this way can it assume the exemplary function for climate protection under conditions worth living in (German Federal Constitutional Court, 2021a, marginal no. 203 *et seq.*), assigned to it by the German Federal Constitutional Court. However, this also applies to the EU, which, in accordance with Art. 191 (1), 4th indent, TFEU, also intends to play an important role at international level under its climate package (European Commission, 2021c, p. 16).

The subsequent implications are summarised in the following theses (in detail Frenz, 2022d).

1. Against the background of limited own reserves and cutting off access to numerous raw material deposits by the Russia-Ukraine war, the EU's climate goals, like the climate protection requirement from Article 20a of the German Constitutional Law, require an expansion of the perspective for securing raw material supplies to include international reserves. The best solution would be to develop a set of rules for raw materials that grants access to all states and at the same time ensures global compliance with minimum standards for extraction. The new German government agreement places particular emphasis on this (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 56).

2. In order to get such comprehensive international cooperation underway, trust is equally necessary, which Germany should strengthen through its exemplary role in the area of climate protection (German Federal Constitutional Court, 2021a, marginal no. 203) and which is the basis for the EU's international efforts, too. At the same time, both could become a model when it comes to access to their own raw materials. This would then be the 'currency' for gaining access to raw materials abroad. Accordingly, local extraction would also have to be ensured.
3. On this basis, efforts could then be made to ensure that the availability of raw materials is recognised as a component of climate protection in a follow-up climate agreement and that the signatory states guarantee access that ensures this availability. The loss of key raw materials from Russia and Ukraine makes such an approach mandatory. Otherwise, climate protection will come to a standstill and neither the European nor the national climate goals can be achieved.
4. The Russia-Ukraine war shows that climate protection is also about securing raw materials. This must therefore be ensured efficiently through international efforts. This is the only way to achieve the energy transition.
5. Climate protection must be conceived on a global scale. This means that all circumstances that are indispensable for climate protection must be considered globally. This also applies to the necessary raw materials. The supply of these raw materials must be secured across national borders.
6. At the same time, German mining law must be viewed more broadly: Securing the supply of raw materials pursuant to Section 1 No. 1 Federal Mining Act must be viewed and considered internationally. Therefore, the climate protection requirement under Article 20a of the German Constitutional Law requires that the securing of raw materials under Section 1 No. 1 Federal Mining Act should be extended to include international reserves, even if the raw materials in question are those specifically available in Germany. The creation of international trust for access to raw materials begins in one's own country - just as Germany and the EU can only underpin their pioneering role in climate protection with their own ambitious climate protection policies.
7. To do this, however, these raw materials must then be mined locally in Germany, and in quantities that satisfy not only national but also international demand. The extraction of these local raw materials can therefore be the basis for Germany securing its supply of those raw materials that it does not have itself, but that are required for climate protection and the energy transition.
8. However, this access to international sales markets must be taken into account when estimating the need to secure a local supply of raw materials. At the same time, it is a component of the site-dependency according to Article 1 Nr. 1 German Federal Mining Act: The raw materials located abroad, but urgently needed for climate protection, are in this respect also bound to their location. In respect of the supply of raw materials from Germany to other countries, and companies that can contribute to their supply, this factor is also part of securing the supply of raw materials in this country. Although these raw materials are exported, their function is indirect. Their site-dependency does not conflict with this indirect function, instead it is provided by the fact that they can play an important role in the international exchange of raw materials. In this context, Germany has to make a contribution in advance, as it does in the case of climate protection, in order to bring other countries on board.
9. Germany can thus set an example by providing access to its own raw materials and through contract clauses for environmentally compatible mining that respects human rights, thus strengthening international trust, which is indispensable for the broadest possible exchange of and access to raw materials. Accordingly, their exploration, extraction and processing should be generously permitted. In this respect, the environmental state objective affects the interpretation of Section 1 No. 1 German Federal Mining Act as well as the handling of the licensing requirements.
10. This also brings into play the raw material security clause of Section 48 (1) sentence 2 German Federal Mining Act. In the wake of the German Federal Constitutional Court's climate decision, climate protection concerns are becoming increasingly prevalent as global warming continues. This must then also apply to the mining of raw materials needed for measures to slow down

further global warming. In any case, raw material concerns take precedence in individual cases when weighed against conflicting aspects. In order to safeguard raw materials, however, the availability and usability of secondary raw materials must also be taken into account because of the changeover from a primary to a secondary raw materials economy, which is intended both at European and national level to protect the climate (in detail specifically from the perspective of the Energy Transition, see above).

11. Overall, the Russia-Ukraine war shows the importance of the supply of raw materials for energy transition and climate protection. Security of supply under Section 1 No. 1 German Federal Mining Act and the raw materials security clause under Section 48 (1) Sentence 2 German Federal Mining Act must therefore be considered globally. At the same time, security of supply also consists of making sufficient raw materials from Germany available for global supply in order to obtain the raw materials from abroad that are lacking here - especially those that will now no longer come from Ukraine and Russia.

Outlook

Internationalisation in the energy sector

The aforementioned internationalisation must be specified in more detail for energy transition. In addition, the raw materials for the still strongly conventional energy supply will no longer come from within Germany as far as possible (see Frenz, in Frenz, 2019, marginal no. 27 *et seq.*) with the expiry of coal mining in 2018 and the ongoing reduction in lignite mining, as now demonstrated by the threatened loss of supplies of gas, oil and hard coal from Russia.

In this case, however, nuclear power from France or Belgium may close the inland supply gaps despite the German nuclear phase-out. The EU's freedom of movement of goods secures such supply. Environmental considerations, on the other hand, can hardly be raised, especially if nuclear energy is classified as green electricity at EU level; moreover, the European Atomic Energy Community (EAEC) treaty continues to exist, which provides for the retention, even promotion, of nuclear energy. It would be a contradiction of values if individual member states could stop this form of energy at their borders and exclude it for deliveries of goods, especially since possible environmental hazards occur during production and are not caused by the electricity already produced.

Maintenance of environmental and human rights standards

In the case of an urgently needed international supply of energy and raw materials, the question arises increasingly as to what extent supplies can be obtained from states if indispensable environmental and human rights standards are not complied with during extraction there. What then takes precedence - climate protection in this country or human rights or environmental protection in other countries? Alternatively, what mechanisms can be developed and implemented to maintain standards that are not dispensable in other countries? To what extent can these also find their way into trade or climate agreements - as an indispensable basis for ambitious climate protection, so that raw material supply and climate protection become united? For example, special aid for climate protection could conceivably be exchanged for a supply of raw materials needed for climate protection efforts in this country. In addition, the improved supply of raw materials could also be included in climate impact agreements (see above). This could then also set minimum standards for compliance with human rights and environmental standards in the extraction of raw materials, so that Germany does not (largely alone) bear the burden of strictly demanding compliance with them as stated in the coalition agreement of the new German Government (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 56). Do supply shortfalls from the Russia-Ukraine war justify weakening such standards? Thus, in its bilateral partnerships as well as in multilateral organisations, the EU believes it sufficient to consult partners, to explain the EU's position to them, to support them and to respond to their concerns as far as possible, but without deviating from the main objectives of the Paris Climate Agreement (European Commission, 2021a, p. 16). This is primarily a matter of preserving the broad lines. To the extent that these lines are preserved, the Commission thus also accepts deviation from sub-objectives of the Paris Climate Agreement if a greater international effort can thereby be achieved to reach the climate targets (Frenz in Frenz, 2022b, Introduction A marginal no. 118). This would also be an approach to securing

the supply of raw materials for climate protection and for energy transition in order to achieve the main goals of the Paris Climate Agreement at all.

Social component

The increase in oil and gas prices as well as fuel prices in the wake of the Russia-Ukraine war demonstrates the social explosive power of an increase in the cost of energy supply. The EU climate package very clearly emphasises the social side of energy supply and climate protection in general. To this end, an EU climate social fund is being set up (European Commission, 2021x, p. 4). The member states are to use part of the funds from certificate trading for CO₂ rights for social purposes (European Commission, 2021x, p. 5). The coalition agreement also ties in with the higher CO₂ price components and wants to ensure that energy prices are socially just and competitive for the economy. One measure to achieve this is to end the financing of the Renewable Energy Act surcharge (EEG-Umlage) via the electricity price, now as of 01 July 2022 and not only as of 01 January 2023, as still intended in the coalition agreement of the new German government (Coalition Agreement of SPD, Bündnis 90 Die Grünen and FDP, 2021, p. 56). The already burgeoning protests against excessively high energy and fuel prices make it clear that social peace will be jeopardised if the state does not take countermeasures in this respect. It is not for nothing that the social component is an equally important part of the principle of sustainable development (in detail Frenz, 2021a). It must therefore also be adequately safeguarded.

Only then will the energy transition be successful. It requires acceptance by consumers. The state must ensure this if it does not want to undermine the achievement of climate targets, which can only be reached by changing numerous lifestyles, especially in the areas of transport, food and buildings.

Strengthening the secondary raw materials economy

In this respect, there are numerous legal approaches to strengthen the secondary raw materials industry - also in the interests of sufficient raw materials for energy transition. For example, end-of-life green power plants must also be consistently recycled or, ideally, used for as long as possible, even after the 20-year subsidy phase has ended.

Overall conclusion

The energy transition and, above all, the raw material supply on which it is based must be viewed and considered internationally. It is precisely because of this that Germany must fulfill its exemplary function as called for in the climate decision by the German Federal Constitutional Court. In addition, the use of secondary raw materials must be strengthened. The social component must always be adequately safeguarded. The state must therefore provide sufficient relief if it wants to achieve the climate targets together with the citizens, as is necessary. This, too, is part of effective climate protection based on Article 20a of German Constitutional Law. Bringing forward the coal phase-out to 2030 should therefore be carefully examined. The energy turnaround must be continued with these measures. In this way, Germany will still make a significant contribution to the success of the Green Deal, which will and must remain as such. It would be advisable to promote better international cooperation in the raw materials sector, preferably through agreements and treaties.

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Researchfields:

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