ECONSTOR
Make Your Publications Visible.

A Service of

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Merk, Christine; Nordø, Åsta Dyrnes; Andersen, Gisle

Research Report

No trade for decarbonization: Public resistance to cross-border electricity and CO2-infrastructure

Kiel Policy Brief, No. 214

Provided in Cooperation with:
Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Merk, Christine; Nordø, Åsta Dyrnes; Andersen, Gisle (2026) : No trade for decarbonization: Public resistance to cross-border electricity and CO2-infrastructure, Kiel Policy Brief, No. 214, Kiel Institute for the World Economy (IfW Kiel), Kiel

This Version is available at:
https://hdl.handle.net/10419/342557

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Kiel Policy Brief

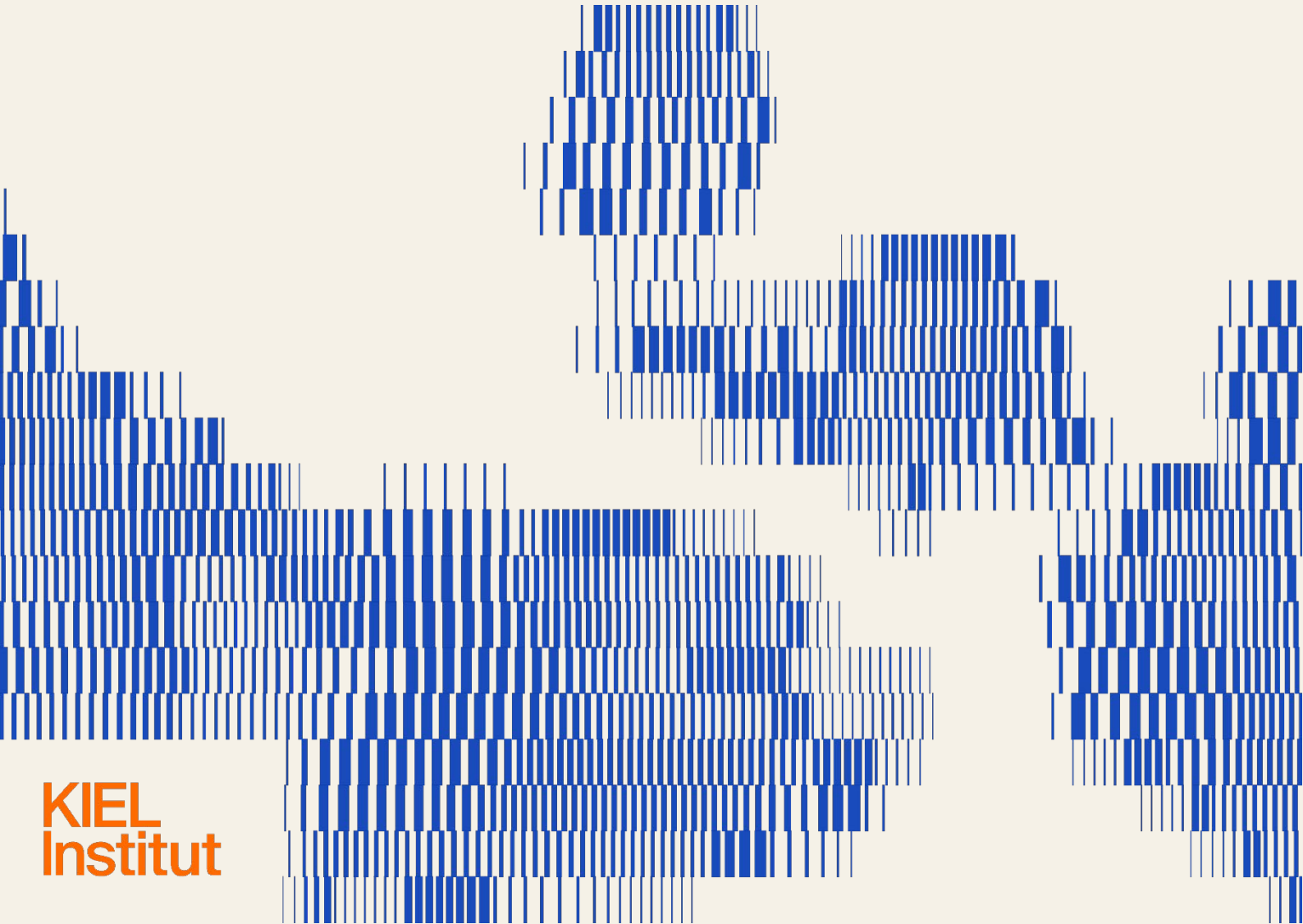
July 2026

No Trade for Decarbonization.

Public Resistance to Cross-Border Electricity and CO_2-Infrastructure

Christine Merk, Åsta Dyrnes Nordø, Gisle Andersen

No. 214, ISSN 2195-7525
Kiel Institute for the World Economy



KIEL Institut

Overview

- Citizens across five North Sea countries (Denmark, Germany, the Netherlands, Norway, the UK; N = 9,750) consistently rate cross-border electricity and CCS infrastructure projects more negatively than identical domestic projects, a robust "trade penalty".
- The direction of opposition depends on the good being traded: for electricity, exporting attracts the strongest resistance; for CO_2 storage, it is importing. Electricity is perceived as a valuable national resource, CO_2 as foreign waste.
- The trade penalty is not driven by fears of import dependence: respondents who value energy independence object most strongly to electricity exports, not imports. The underlying concern is national control over resources, not supply security.
- Neither climate concern nor general support for international cooperation overrides the preference for domestic solutions. Citizens who see decarbonization as a national responsibility (88 percent of respondents) show the strongest trade penalty.
- Expectations of concrete economic benefits, such as jobs or lower energy prices, improve acceptance of cross-border projects. This points to a communication lever that climate framing alone does not offer.
- Policymakers should foreground domestic benefits, make the costs of purely national solutions visible, establish transparent rules for sharing costs and benefits across countries, and calibrate communication to each technology.

Keywords: Cross-border infrastructure; Public acceptance; Carbon capture and storage (CCS); Electricity grid integration; Resource nationalism; EU climate policy

Authors

Dr. Christine Merk
Kiel Institute for the World Economy
Christine.Merk@kielinstitut.de

Assoc. Prof. Dr. Åsta Dyrnes Nordø
NORCE / University of Bergen
Asta.Nordo@uib.no

Dr. Gisle Andersen
NORCE / University of Bergen
gian@norceresearch.no

Responsibility for the content of this publication lies with the authors, not with the institute. Any comments should be directed to the relevant author.

Background

For energy-intensive sectors, decarbonization is no longer only a climate policy objective but a question of competitiveness: firms that cannot abate their emissions cost-effectively will lose ground against international competitors. Two levers are central to keeping European industry competitive under a rising carbon price: the electrification of industrial processes based on abundant renewable electricity, and carbon capture and storage (CCS) for emissions that cannot be avoided. Both levers are most effective as European projects. The EU Net-Zero Industry Act (NZIA) calls for linking renewable energy production hotspots with high-demand areas across Member States and neighboring countries[1,2]. Norway is a potential provider of hydropower-based intermittent storage for balancing the fluctuating availability of other renewables, and the UK plans a substantial expansion of capacity to connect it to the continental grid[3]. The NZIA also envisions an integrated infrastructure for carbon capture and storage (CCS): CO_2 captured at industrial sites would be transported and stored in geological formations under the North Sea[4].

Proponents point to system-level benefits: lower backup capacity requirements, more efficient use of fluctuating renewables, a higher level of energy security, earlier upscaling of CO_2 storage and lower infrastructure investment needs. Yet, technical and economic optimality does not guarantee political feasibility. Research on the politicization of globalization shows that citizens and parties increasingly contest cross-border authority and resource flows, a dynamic described in the energy domain as resource nationalism[5,6,7]. Whether and why citizens support or oppose cross-border decarbonization infrastructure has, however, been little studied.

This policy brief addresses that gap, drawing on a large-scale survey experiment across five North Sea countries to assess how public support for electricity grid expansion and CCS infrastructure varies depending on the direction of cross-border trade. It identifies the attitudes and beliefs that drive these reactions and draws out implications for how policymakers communicate and govern cross-border decarbonization projects.

Study Design

This brief draws on a survey experiment fielded in January and February 2023 in Denmark, Germany, the Netherlands, Norway and the UK (N = 9,750). These are the five countries most directly involved in North Sea electricity grid and CO_2 infrastructure plans. Respondents were randomly assigned to one of five scenarios on either electricity grid expansion or CCS infrastructure. The treatment conditions are the following:

1. **Not specified:** The country where the electricity/CO_2 is produced/captured and the country where the electricity/ CO_2 is used/stored are *not specified*.
2. **Domestic:** The electricity/ CO_2 is both produced/captured and used/stored *domestically* in respondent's country.
3. **Import:** The electricity/ CO_2 is *imported* from other European countries and used/stored domestically respondent's country.
4. **Export:** The electricity/ CO_2 is produced/captured domestically in respondent's country and *exported* to other European countries for use/storage.
5. **Abroad:** The electricity/ CO_2 is produced/captured abroad in other European countries and used/stored *abroad* in another European country.

All treatments linked the project explicitly to climate change mitigation and included a cost element. Respondents rated the project on a four-point scale from very negative to very positive. Post-experiment items measured attitudes toward costs, economic opportunities, and environmental risks related to CCS and renewable energy expansion, respectively. Furthermore, we measured attitudes toward energy independence, international cooperation, national responsibility for decarbonization, and climate change worry. These were averaged into seven indices.

What opinion would you have on such a project?

Percentage share of categories "somewhat positive" + "very positive"

Panel A: CCS

	Denmark N=984	Germany N=876	Netherlands N=936	Norway N=958	UK N=850
Not specified	76%	53%	53%	73%	77%
Domestic	74%	54%	62%	74%	77%
Import	61%	45%	45%	62%	57%
Export	62%	47%	62%	68%	64%
Abroad	70%	46%	65%	60%	65%
Average share	69%	49%	57%	67%	68%

Panel B: Electricity

	Denmark N=1089	Germany N=1029	Netherlands N=1017	Norway N=1060	UK N=1052
Not specified	100%	98%	95%	94%	98%
Domestic	99%	97%	96%	96%	98%
Import	82%	77%	88%	55%	83%
Export	86%	72%	60%	39%	78%
Abroad	91%	86%	86%	62%	88%
Average share	92%	86%	85%	69%	89%

lowest share of positive answers
highest share of positive answers

Figure 1: Share of respondents rating each project "somewhat positive" or "very positive" for CCS (Panel A) and electricity (Panel B) by treatment. N = 8,572 across five North Sea countries, excluding "don't know"/"no opinion" responses. Colour shading is relative to the distribution in the countries.

Findings: Electricity Grid Infrastructure

A strong trade penalty

Support for electricity infrastructure is high across all five countries, with positive evaluations approaching 90 percent in Germany, the Netherlands, Denmark and the UK. Norway is a notable exception: at 69 percent overall, Norwegians are considerably less enthusiastic about electricity grid expansion than their neighbours. Across all countries, domestic projects attract the strongest support, approaching up to 100 percent positive responses. Exporting electricity to other countries is rated more negatively everywhere, with positive responses ranging from 39 percent in Norway to 86 percent in Denmark, importing electricity is rated almost as negatively. The not-specified baseline ranges close to the domestic condition in most countries, confirming that the trade penalty is primarily triggered by explicit cross-border framing rather than by the domestic framing itself. Furthermore, it implies that when not specified people think in terms of national projects.

Export is the most unpopular scenario. Respondents appear to view sending domestically generated electricity abroad as giving away a national resource. This asymmetry in the penalty for export and import is important for political communication. Narratives or project descriptions that foreground the export dimension of grid integration are likely to attract the strongest public opposition.

What drives the electricity trade penalty?

For analysing the drivers of the trade penalty, we aggregate the countries and compare groups with low and high levels for the perceptions of the infrastructures and more general attitudes. Thus, we can identify mechanisms that can be found in all countries. None of the seven attitudinal indices looked at fully explain the trade penalty, but several shape how it manifests:

1. **Cost concerns** amplify opposition to export: respondents worried about electricity prices or the costs of infrastructure investments rate the export treatment significantly more negatively than all others, including import. Those with low level of concern about costs do not differentiate between these two treatments.
2. **Expectations of economic opportunities** reduce opposition to cross-border arrangements generally: respondents who expect job creation or economic growth from the electricity project rate it more positively in all conditions. However, they do not eliminate the export penalty, as even those with high levels of expectations for economic opportunities rate infrastructure expansion for export significantly more negatively than domestic expansion. Economic co-benefits improve acceptability but do not override fairness concerns about who ultimately benefits.

3. **Climate change worry** partially mitigates the export penalty: among highly climate-concerned respondents, the gap between export and import is not significant, whereas among less-concerned respondents it is substantial. However, even highly climate-concerned respondents prefer domestic solutions over any cross-border option.
4. **Support for decarbonizing the electricity supply** does not eliminate the trade penalty either. The share of respondents who favour a low-carbon electricity grid is very high with 92 percent. However, also this group rates the export treatment significantly more negatively than the domestic treatment. Perceived climate urgency is not sufficient to override the preference for national solutions.
5. **Energy independence preferences** amplify opposition to export but not to import. Among respondents who strongly value energy independence, export is rated most negatively, with a significant gap compared to import. If supply security were the main concern, import, i.e. depending on other countries, should be rated worst; the opposite pattern suggests the underlying concern is about giving up national resources.
6. **National responsibility** is endorsed by 88 percent of respondents and is among the strongest moderators. Those who believe countries are responsible for generating enough renewable electricity to meet their domestic demand rate treatments involving trade more negatively, especially export, and give a significant bonus to the domestic condition. Among the small minority who do not endorse this as a national responsibility, no differences across treatments emerge. This reflects the broader pattern identified in prior research[8]: citizens prefer unilateral climate action and apply the same logic to physical infrastructure.
7. **International cooperation** mitigates the export–import gap but not the preference for domestic solutions. Even among the most internationally oriented respondents, domestic projects remain preferred over any cross-border arrangement.

Taken together, these interactions point to a dominant national frame: respondents conceptualise electricity generation as a national obligation. Cost-benefit reasoning, environmental values, and climate concern all modulate how the trade penalty manifests, but none offsets it.

Comparison: Carbon Capture and Storage

The same experiment was run in parallel for CO_2 capture and storage (CCS). Comparing the two technologies illuminates what is specific to electricity and what reflects a more general public orientation toward cross-border decarbonization infrastructure.

The same national frame, a smaller spread

Support for CCS infrastructure is lower and more variable across countries than for electricity – 49 percent in Germany, 57 percent in the Netherlands, and approaching 70 percent in Norway, the UK and Denmark. Norway is the one country where support levels are similar across the two technologies (67 percent for CCS, 69 percent for electricity), driven by its comparatively skeptical views on electricity trade rather than by unusually high CCS support. As with electricity, domestic projects are received most positively, ranging from 53 percent in Germany to 73 percent in the UK. Importing CO_2 for domestic storage is rated most negatively in all countries, with positive responses ranging from 45 percent in Germany and the Netherlands to 61 and 62 percent in Denmark and Norway, respectively. Citizens do give domestic CCS a bonus in the same way they do for electricity.

Import, not export, is the most unpopular CCS scenario

For CCS, the asymmetry is reversed compared to electricity: import of CO_2 for domestic storage is rated most negatively, notably also more negative than export. This reflects the nature of the good being traded. CO_2 is widely perceived as waste[9,10]: accepting other countries' captured emissions for storage on domestic territory is seen as taking on their burden. The assessment of the distribution is the same as for electricity: the own country should not bear costs for others, but the direction reverses because electricity is a valued resource and CO_2 is a waste product.

The spread between the highest and the lowest share in positive responses is considerably smaller for CCS than for electricity. This likely reflects CCS's lower public salience: CCS is a low-familiarity topic that receives little attention in political or public debate[11,12,13], so citizens have less formed views and react less strongly to framing variations. By contrast, electricity is central to everyday life, energy bills, and political discussions, making citizens more sensitive to how it is presented.

Shared and distinct drivers

The interaction patterns for CCS broadly mirror those for electricity in one respect: **national responsibility** is the strongest moderator for both technologies. Respondents who see reducing emissions and dealing with their country's climate change impacts as a national responsibility rate cross-border CCS arrangements more negatively and favour domestic configurations. Countries should manage their own emissions rather than outsourcing storage to others.

For CCS, respondents with a high level of **cost concerns** rate importing CO_2 for domestic storage significantly more negatively compared to the domestic or the not specified treatment, whereas those with a low level of cost concerns show no differentiation. Environmental concerns also matter. Respondents with strong environmental concerns perceive importing CO_2 significantly more negative than the not specified or domestic condition, consistent with concerns about bearing environmental side-effects or risks for the benefit of other countries.

Economic opportunity expectations improve overall evaluations of the project but, as with electricity, do not eliminate the trade penalty. Respondents who anticipate economic benefits from the infrastructure build-up are more positive about all conditions, including cross-border ones, but they still differentiate between domestic and trade scenarios.

Climate change worry does not moderate reactions to CCS treatments in the same way it partially mitigates the electricity export penalty. For CCS, high and low levels of climate concern produce similarly negative reactions to cross-border arrangements. This may reflect that CCS is already somewhat removed from citizens' intuitive understanding of climate action, limiting the bridging effect of climate concern.

Policy Implications

Foreground domestic benefits, not export volumes. For electricity, project communication should lead with what the connection delivers for domestic consumers price stability, backup in periods with low renewable supply, and avoided curtailment of domestic renewables. Framing grid expansion primarily as export capacity attracts the strongest opposition. For CCS, communication should avoid imagery of accepting foreign CO_2, and instead emphasise domestic industrial decarbonization and Norway's or the UK's potential to generate revenue and expertise from storage services.

Make the costs of national self-sufficiency visible. Citizens consistently underestimate the systemic efficiency gains of integrated infrastructure[14,15]. Communicating the additional investment, stranded capacity, and higher consumer prices associated with purely national solutions can reframe the choice. Burghard et al.[16] find that political and industry elites also tend to underestimate the societal benefits of cross-border energy cooperation, limiting their capacity to construct positive narratives.

Address resource sovereignty, not just energy security. Opposition to electricity export reflects concerns about giving up a national resource, not about dependence on foreign supply. This is a distinct political concern that supply-security messaging will not resolve. Governance arrangements that give sending countries a clear stake in revenues or that formalize reciprocal access rights may be more effective[6,7].

Do not rely on climate framing alone. Climate-concerned citizens still penalise cross-border projects. Climate urgency must be combined with visible distributional fairness, credible governance of shared resources, and concrete domestic co-benefits. The widespread belief that decarbonization is a national responsibility reinforces rather than overrides the trade penalty.

Calibrate communication to each technology. The trade penalty is not a generic anti-globalisation reflex: its direction reverses between electricity (export most opposed) and CCS (import most opposed), reflecting the different nature of the two goods. Generic "cross-border clean energy infrastructure" messaging will miss these technology-specific concerns. Tailored narratives, for electricity emphasising domestic security benefits; for CCS emphasising national industrial and revenue opportunities, are more likely to be effective.

About this research

This brief is based on: Merk, C., Nordø, Å.D. & Andersen, G. "No trade for decarbonization: Citizens think about infrastructure expansion as national projects." Survey experiment fielded January–February 2023 across Denmark, Germany, the Netherlands, Norway and the UK (N = 9,750). Supported by the Norwegian Research Council (Grant 325960, CCSMARKET). Data and code: DOI 10.22000/36c8qtc3rnsczwxb.

[1] European Commission. (2020). *An EU strategy to harness the potential of offshore renewable energy for a climate neutral future*. European Commission.

[2] Regulation (EU) 2024/1735 of the European Parliament and of the Council of 13 June 2024 on establishing a framework of measures for strengthening Europe's net-zero technology manufacturing ecosystem and amending Regulation (EU) 2018/1724, *OJ L*, 28.6.2024.

[3] UK Government (2024). Clean Power 2030 Action Plan: A new era of clean electricity. https://assets.publishing.service.gov.uk/media/677bc80399c93b7286a396d6/clean-power-2030-action-plan-main-report.pdf

[4] Tumara, D., Uihlein, A., & Hidalgo González, I. (2024). *Shaping the future CO_2 transport network for Europe*. Publications Office of the European Union.

[5] Conversi, D. (2020). The ultimate challenge: Nationalism and climate change. *Nationalities Papers, 48*(4), 415–421.

[6] Hansen, S. T., & Moe, E. (2022). Renewable energy expansion or the preservation of national energy sovereignty? Norwegian renewable energy policy meets resource nationalism. *Political Geography, 99*, 102760.

[7] Koch, N., & Perreault, T. (2019). Resource nationalism. *Progress in Human Geography, 43*(4), 611–631.

[8] McGrath, L. F., & Bernauer, T. (2017). How strong is public support for unilateral climate policy and what drives it? *WIREs Climate Change, 8*(1), e418.

[9] Jones, C. R., Olfe-Kräutlein, B., & Kaklamanou, D. (2017). Lay perceptions of carbon dioxide utilisation technologies in the United Kingdom and Germany: An exploratory qualitative interview study. *Energy Research & Social Science, 34*, 283–293.

[10] von Rothkirch, J., Guðlaugsson, B., Finger, D. C., & Stauffacher, M. (2025). How is international CCS discussed locally? The case of Iceland. *Global Environmental Change, 94*, 103048.

[11] Ansolabehere, A., & Konisky, D. M. (2014). *Cheap and clean: How Americans think about energy in the age of global warming*. MIT Press.

[12] Whitmarsh, L. (2015). UK public perceptions of shale gas hydraulic fracturing: The role of audience, message and contextual factors on risk perceptions and policy support. *Applied Energy, 160*, 419–430.

[13] Merk, C., Nordø, Å. D., Andersen, G., Lægreid, O. M., & Tvinnereim, E. (2022). Don't send us your waste gases: Public attitudes toward international carbon dioxide transportation and storage in Europe. *Energy Research & Social Science, 87*, 102450.

[14] Gazmararian, A.F., Mildenberger, M. & Tingley, D. (2026) Public opinion foundations of the clean energy transition. *Environmental Politics, 35:*4, 846-868.

[15] Kallbekken, S., Skjeflo, S. W., & Westberg, N. B. (2026). Against the current: Interconnectors, public opposition and the energy trilemma. *Energy Policy, 210*, 115012.

[16] Burghard, U., Dütschke, E., Caldes, N., & Oltra, C. (2022). Cross-border concentrated solar power projects-opportunity or dead end? A study into actor views in Europe. *Energy Policy, 163*, 112833.

Imprint

Kiel Institute for the World Economy
Kiel location
Kiellinie 66, 24105 Kiel, Germany
Phone: +49 431 8814-1
info@kielinstitut.de

Berlin location
Chausseestraße 111, 10115 Berlin, Germany
Phone: +49 30 30830637-5
berlin@kielinstitut.de

The Kiel Institute for the World Economy - Leibniz Center for Research on Global Economic Challenges is an independent foundation under the public law of the German federal state of Schleswig-Holstein.

It is represented by the Board of Directors
Prof. Dr. Moritz Schularick, President, Executive Scientific Director
Michael Doberschütz, Acting Executive Administrative Director
Prof. Dr. Christoph Trebesch, Vice President

Responsible Supervisory Authority
Ministry of General Education and Vocational Training, Science, Research and Culture of the Land Schleswig-Holstein
Jensendamm 5, 24103 Kiel, Germany

Value Added Tax Identification Number
DE 251899169

© 2026 Kiel Institute for the World Economy.
All rights reserved.

Kielinstitut.de/publications