
FINAL SCIENTIFIC REPORT

The Political Economy of Coal Policy: Comparative Analyses of Stakeholder Strategies and Resource Industries' Embeddedness in the International Economy (Project COALSTAKE)

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Executive Summary

Despite the growing discussions around coal phase-out, coal-fired power reached an all-time high globally in 2021. One of the reasons blocking or delaying the transitions is the active resistance of coal regime actors who have vested interests. In COALSTAKE project, we analysed the coal policies in Australia, Germany and Japan. A particular focus was placed on identifying how actors try to destabilise or maintain the institutional structures underpinning the coal regimes, for instance, through actors' institutional work practices, strategies, and emerging coalitions among them. We also investigated the political role of the coal industry's relative economic power in different countries.

We started out with a series of systematic reviews on concepts related to the process of socio-technical destabilisation, “deliberate decline” (of technologies) and “phase-out.” As the second and most significant theoretical contribution, we built a novel theory, the EPI (Endowment-Practices-Institutions) framework, which links the macro policy courses, actors' institutional work practices, and the institutions. This theory serves as the basis for answering our empirical research questions:

- In each case, what forms of institutional work have been carried out by key actors in favor of or against a coal phase-out in each case? What are the interests of the actors and emerging coalitions concerning a coal phase-out?
- What are the commonalities and differences across the cases under investigation regarding actors' practices or strategies in pursuing their policy goals?
- Do concerns about jobs and the national economy play a role in shaping national coal policies?

Our case studies on the German, Japanese, and Australian coal regimes are based on original semi-structured interviews, a stakeholder survey, and document (media) data, combined with our knowledge gained from grey literature. For the large-N comparative study (though not necessarily involving the three countries we targeted) of the effect of labour-market concerns, we relied on existing cross-national survey data from European Social Survey (2016) combined with the employment and industry emissions data from Eurostat.

After conducting each case study based on different combinations of the available data mentioned above, we concluded the project with summaries from comparative perspectives. Here are excerpts of our main comparative findings.

- In order to defend their interests, incumbent actors (“pro-coal” actors) rely heavily on inside lobbying, which is often enabled by long-existing ties among the coal industry, trade unions, state actors, and bureaucracy. On the other hand, the actors challenging the coal regime tend to struggle to match the inside lobbying practices of incumbents. Even in the case of Germany, where civil society is more influential and environmental NGOs have more considerable resources, incumbent actors possess closer personal ties with the state actors and ministries.
- In all our cases, incumbent actors have also carried out outside lobbying, such as creating alliances with research institutions, commissioning or conducting studies, being active in social and conventional media, organising demonstrations, organising expert conferences, and filing lawsuits. Here, it is interesting to notice that even in the case of Japan, where there is no domestic coal production, the economic aspects and techno-optimism for new technologies such as CSS and ammonia co-firing are central in incumbents' discourse.
- A common pattern emerging from the practices of coal regime challengers is to first commission a scientific study, then disseminate the results through various media channels, followed by demonstrations.
- The contextual differences between the countries also lead to variations in actors' strategies. Given the lower public sentiment towards climate and environmental issues compared to the other two countries in question, the challengers in Japan have been trying to create an impact by approaching investors and financial institutions.
- Finally, potential economic loss and job losses linked to a phase-out policy are common narrative used by the incumbents in all the cases. The effectiveness of this narrative was also confirmed in a separate large-N study of the public's fossil fuel tax support in 21 European countries. (The study, which does not include Australia and Japan, was primarily to confirm the general pattern using an available large-N dataset.)

1 Introduction

1.1 Coal phase-out policy

Coal is one of the largest anthropogenic sources of carbon emissions. Despite the increasing number of countries pledging to stop coal use, global coal-fired power production reached an all-time high in 2021, accounting for more than 40% of growth in global CO₂ emissions (IEA, 2022). This reality is incompatible with our climate goals; for many years, we have known that 80% of the coal reserves must remain unused to limit global warming to 2°C compared to pre-industrial times (McGlade & Ekins, 2015). How can we find ways out of the current economic systems that rely on (now we know as) polluting technologies like coal? Since the state plays a central role in driving decarbonization (Diluiso et al., 2021), we start with the premise that a successful transition broadly reflects national policies aiming at the “deliberate decline” of coal use—in particular, “phase-out” policies (Kivimaa & Kern, 2016; Rogge & Johnstone, 2017), with those political decisions in turn shaped by countries’ institutions embedding the socio-technical regime of coal. The inevitable question is why some countries have successfully implemented coal phase-out policies while others have not. That is precisely the empirical question addressed by the project COALSTAKE.

Coal phase-out is more than a mere industrial policy change. Existing coal regimes involve vested economic interests and a wide array of material and non-material lock-in sources, such as codified rules, cognitive frames, values, and norms defining the society (Trencher, Rinscheid, Duygan et al., 2020); they are deeply rooted in the local economy and culture. Given these immense stakes faced by coal actors and the intense political contestation caused by phase-out (van Oers et al., 2021), we start with the theory that a successful transition of a socio-technical regime, particularly by a phase-out policy, hinges on the power dynamics among key actors—policymakers, interest groups, and civil society—that lead to the destabilisation or maintenance of existing institutional arrangements.

Regarding broader energy policy issues—including carbon taxes and renewable subsidies—there is evidence suggesting a significant influence of special interest groups on energy policy-making (Cheon & Urpelainen, 2013; Matisoff & Edwards, 2014; Schaffer & Bernauer, 2014). Concerning coal specifically, scholars have illuminated the importance of relevant actors’ roles, coalitions, objectives (Brauers et al., 2020; Hermwille & Kiyar, 2022), and strategies (Brauers & Oei, 2020; Kungl, 2015; Leipprand & Flachsland, 2018) in shaping coal policies.

But important open questions remain in the literature on the stakeholder influence on policymaking. One is the insight into what makes some actors more politically influential than others (Kuzemko et al., 2016). By “what,” we not only mean who the actors are and how visible they are; we go one step further and ask “how” they strategically weave their policy interests into policymaking.

Questions also remain about the political role of the coal industry's relative economic power in different countries. In countries with large numbers of workers holding coal-related jobs, coal actors might legitimise their resistance more easily, and public support for coal phase-out can be more fragile, as both people working in the industry and the entire national economy have more to lose from the policy (Tvinnereim et al., 2016). The hypothesis relates to so-called “just transitions” (Doorey, 2017).

1.2 Cases: Australia, Germany, and Japan

Our studies address these questions by examining the cases of Australia, Germany, and Japan. We selected these cases because, first, they are major coal exporters or coal power users, i.e., coal countries and large greenhouse gas (GHG) emitters. Second, these are countries that dramatically diverge in their coal policy trajectories. Coal phase-out is not an agenda in Australia; Germany has enacted a policy to phase out coal by 2038; and Japan sends an enigmatic signal to the international community by indicating its political will to reduce coal use, and yet other corners of the same government discuss the wonder of “clean coal.” Third, the three cases allow us to rule out alternative explanations for the divergence in coal phase-out trajectories. The countries are similar in their political system (advanced democracies with stable political institutions), the level of economic development (advanced industrialized, market economies), and the potential to innovate (high R&D spending).

1.3 Research questions

The project's conceptual and theoretical contributions are summarised in the first part of the present report. This part answers the following questions:

1. Drawing on the literature from multiple disciplines, where does the research on “deliberate decline” stand? Particularly, is the focus on phase-out policies truly useful?
2. How can we build a unified theoretical framework linking the macro-level policy courses, actors' political efforts (“institutional work”), and the institutions? (The EPI framework.)

The project's empirical findings are summarised in the second part, which addresses the political-economic challenges of phase-out, focusing on actors' interests, agency, and emerging coalitions. We answer the following questions by fitting the EPI framework built in the previous step to various original data we collect for Germany, Japan, and Australia:

3. In each case, what forms of institutional work have been carried out by key actors in favor of or against a coal phase-out in each case? What are the interests of the actors and emerging coalitions concerning a coal phase-out?
4. What are the commonalities and differences across the cases under investigation regarding actors' practices or strategies in pursuing their policy goals?
5. Do concerns about jobs and the national economy play a role in shaping national coal policies?

2 Conceptual and Theoretical Contributions

2.1 A systematic overview of “deliberate decline” and “phase-out” studies

Prior transition studies have focused on innovation- and technology-push policies for low-carbon transitions (Kivimaa & Kern, 2016). However, there is a growing view that the support of green niche technologies alone is not sufficient to enable the transition due to the path dependency of incumbent technologies (Pierson, 2000), technology lock-in (Trencher et al., 2020; Unruh, 2000), and active regime resistance by some actors blocking or delaying transitions (Geels, 2014).

Critical scholars argue, therefore, that a purposeful *destabilisation* or *deliberate decline* of existing socio-technical regimes is necessary to initiate a systemic change (Rogge & Johnstone, 2017). To name a few, *destabilisation policies* include control and the deliberate reconfiguration of actor networks that promote some actors' access to policymaking processes. Despite the emerging attention to these policies (Davidson, 2019; Turnheim & Geels, 2012), the role of technologies' deliberate decline in decarbonization is still poorly understood, and the literature in this area is dispersed among various disciplines. The same applies to *phase-out*, one of the measures for a deliberate decline.

Against this backdrop, several scoping and systematic (literature) reviews by COASTAKE researchers have led to the following publications, which help us grasp the frontier of research on these topics and place our project's empirical focus in a broader scientific context. First, to clarify the literature's use of the concepts, Rosenbloom and Rinscheid's (2020) “Deliberate decline: An emerging frontier for the study and practice of decarbonization” provides a summary of processes considered in the current research on deliberate declines specifically of carbon-intensive technologies. This review confirms that our project's focus on *phase-out* is a representative *policy-oriented* way for transition, which complements another possibility, *divestment*, a market- and society-oriented way forward.

Second, systematic reviews by Trencher, Rinscheid, Rosenbloom et al. (2022) and Trencher, Rinscheid, Rosenbloom et al. (n.d.) map the research landscape of a narrower thematic focus, phase-out. The literature statistics show the rapidly increasing number of phase-out studies over the past four decades—notably, a significant increase in *decarbonisation-related* phase-outs in more recent years. Still, the work by Trencher, Rinscheid, Rosenbloom et al. (2022) illuminates how nascent the study of *coal* phase-out is (emerged in the past five years) among various technology phase-outs surveyed.

Finally, a perspective piece by Rinscheid, Rosenbloom et al. (2021) brings our attention to the most needed areas of future research on phase-out in sustainable transitions. Among the suggested topics—(i) macro-systemic changes, (ii) interactions of policy and innovation, and (iii) politics of policymaking, our empirical studies primarily address (iii), with direct implications on (i).

Readers interested in the proliferation of phase-out studies are welcome to read the reviews. As far as our project’s focus is concerned, these studies confirmed the **necessity for the empirical work on coal phase-out policies** with a greater **emphasis on the political challenges** behind them.

2.2 The novel EPI framework for an actor-oriented study of regime destabilisation

The project’s largest theoretical contribution is the development of the Endowment-Practices-Institutions (EPI) framework, which links the macro policy courses, actors’ institutional work, and the institutions (Duygan, Kachi et al., 2021). Our project is multidisciplinary; so is this theory.

Phase-out policies (banning technologies and products) are the most stringent measure as they set a timeframe to enact bans (Kivimaa & Kern, 2016). As a result, phase-out policies can be effective but typically contested. Enacting a phase-out of coal therefore requires substantial changes in formal and informal institutions. While challengers seeking to end the coal regime would try to destabilise the existing institutional structures, incumbent regime actors would actively defend the structures from which they benefit. That is an ongoing struggle whose outcome is primarily determined by what practices actors resort to and how well they conduct them. The EPI framework offers theoretical implications that can be empirically tested to study such contentions over the institutional structures underpinning social-technical regimes such as coal power.

The EPI Framework (see Figure 1) draws mainly on the New Institutionalism in Sociology and particularly the “institutional work” which are the goal-oriented, strategic practices actors pursue to create, maintain, or disrupt institutions (Lawrence & Leca, 2009; Lawrence & Suddaby, 2006). The framework conceives actors’ ability to shape institutions to be dependent on the effectiveness of their institutional work practices, which is determined by the following factors: (i) salience of the practices performed for a given institutional setting (ii) how competently these practices are performed, and (iii) contingencies and the time order in which these practices are performed (Duygan, Kachi et al., 2021). As the Political Economy literatures on lobbying theorise, implicitly or explicitly, the actors’ abilities are then determined by various hard and soft resources endowed to these actors. As a result, EPI Framework focuses on actors’ practices (i.e., activities), institutional structures as both objective and the context, and finally actors’ resource endowments as enabling elements for their practices.

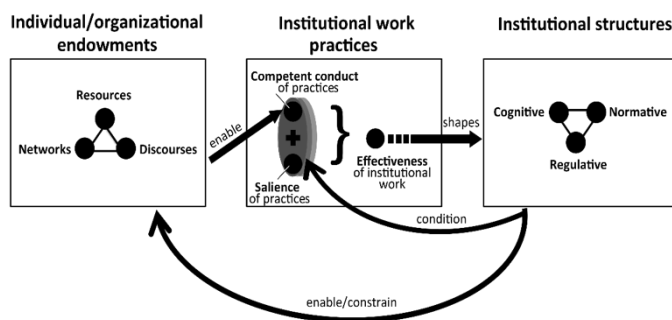


Figure 1. Illustration of the recursive interplay among actors’ endowments, institutional work practices, and institutional structures in the EPI framework.

An actor's influence on institutions is determined by the relative effectiveness of their institutional work vis-à-vis other actors. This comprises the joint effect of multiple practices, which depend on the salience of practices, how competently these are conducted, and the contingencies among practices.

While the salience of practice is conditioned by institutional structures, competent conduct of practices is enabled by the mobilization of endowments required for that practice. Actors’ access to endowments can be enabled or constrained by institutional structures (Duygan, Kachi et al., 2021).

In addition to enabling systematic empirical studies of the role of institutional contestations, the EPI framework makes important theoretical contributions to the Political Economy and Institutional Sociology (i.e., New Institutionalism) literature looking at actors’ policy influence.

3 Empirical Analyses

How and how effective do each country’s coal actors undertake institutional work practices to destabilise or maintain the existing coal regime? From a comparative perspective, do these practices

differ, depending on the political institutional contexts and the current stand of the coal regime? Our case studies on the German, Japanese, and Australian coal regimes are based on the following data.

3.1 Data

Most are our original interview, survey, and document (media) data, combined with our knowledge from grey literature. For the large-N comparative study of the effect of labour-market concerns (the last research question), we relied on existing cross-national survey data (*European Social Survey*, 2016) combined with the employment and industry emissions data from *Eurostat* for 21 European countries.

For Germany, the most advanced case regarding the enactment and implementation of coal phase-out and hence the most important, we based our analyses on a large-N survey with coal energy stakeholders and semi-structured interviews with 11 of the previously surveyed organisations. The survey addressed themes such as: (i) stakeholders' preferences regarding the future of coal in Germany, including their preferences about the temporal aspects of the coal phase-out; (ii) their views on the process and outputs of the coal commission; (iii) and their political activities and interest alliances in the political process. Themes (i) and (ii) are particularly vital for understanding the institutional hindrances of phase-out through the lens of stakeholders. To offer a glimpse into the rigorous survey design, we recruited the participants as follows. To identify relevant stakeholders, we listed the population of 384 coal energy stakeholders based on our 6-step protocol (p.4, Rinscheid, Kern & Kachi (2022)). It started with scraping actors appearing in news articles (Jan.-Jun. 2020) and government documents in legislative processes. We extended the list by including large energy companies and major shareholders of coal companies. Of the 384 actors identified as the actor population, 99 completed the survey (surveyed Sept. – Dec. 2020) (Rinscheid, Kern & Kachi, 2022).

As for the interviews in Germany (N=11; Jun.-Aug. 2021), important sampling criteria were that the sample covers varying actor types (federal and regional policymakers, trade unions, economic associations, research institutions, think tanks, and environmental NGOs); that it includes both incumbents and challengers of the coal regime, and that they participated in the Coal Commission—the institution seen as vital (Table 1, Duygan, Kachi et al., n.d.). **The analysis of Japan** also relied on semi-structured interviews (N=7; Jan.-Apr. 2022). Given the lack of a clear phase-out prospect in Japan, we focused on regime challengers, i.e., actors outside the coal regime, to elicit how they push for a coal phase-out, including agenda-setting. Accordingly, the sample included a think-tank, research institution, and environmental NGOs (transnational and domestic). In both countries, interviews addressed: (i) how actors intentionally seek to influence coal policy; (ii) by what strategies and practices; and (iii) if any of these actions were effective in making an influence in their views.

For **Australia**, given the lack of original interview or survey data and given the highly guarded coal industry (even by the state), we specifically focused on so-called “outside lobbying,” actors' mobilisation of political interests through a non-legislative venue—media. By using web-scraped text data, we tracked whether the average sentiment toward coal surfaced on varying media outlets changed over time (2017-2020). Here, we use tweets (“public opinions” on coal) and news articles published in the ABC network (state-operated) as well as the Courier Mail (Murdoch-owned, hence, high proximity to the coal industry) (Stutzer et al., 2021).

3.2 Empirical Findings from the Cases

In this section, we will summarize what we found in our case studies using these data. Our accounts are a synthesis of Barbato (2022), Duygan, Kachi et al. (n.d.), Stutzer et al. (2021), and Trencher, Rinscheid, Duygan et al. (2020), and Rinscheid, Kern, and Kachi (2021).

Both Germany and Japan are advanced industrialized economies and have historically relied strongly on coal, which makes up 30% of the power mix in these countries. However, their coal policies have recently started to diverge remarkably. While the German government has decided to phase-out coal-based electricity generation by 2038, the Japanese government is committed to maintaining a 22% share of coal in the electricity mix in 2030 (METI, 2021b) and have no plans to abandon coal from its power mix by 2050 (METI, 2021a) This makes the two countries ‘deviant cases’ (Rohlfing, 2012). While Germany is the world's largest producer of lignite, an active regime destabilization has started,

whereas Japan, despite the absence of domestic coal reserves is facing a lock-in. To explain this counterintuitive development, we used the EPI Framework to assess “institutional work” practices (i.e. activities) of the incumbent regime actors and their challengers. Now Australia is a country where the state and the coal industry have long been dependent. As a result, there are even new major coal mines approved. The only predominantly anti-coal actors are the citizens. If we see any changes in Australia’s future coal trajectories, it will likely be bottom-up. Therefore, we pay special attention to how the public sentiments might have been shifting (or not) around the debate over the recently-approved Carmichael coal mine in Queensland.

3.2.1 Germany

The policy debate around the phase-out of coal started with the convening of the “Commission for Growth, Structural Change and Employment” (also known as the coal commission) by the governing coalition in 2018 (Heilmann & Popp, 2020; Oei et al., 2019). The commission consisted of about 30 representatives from industry, energy sector, mining regions, trade unions, environmental NGOs, scientific institutions and the parliament. Representatives from German states and federal ministries were also present in the plenary sessions (WRI, 2021).

The policy process resulted in the passing of the Coal Phase-out Act and the Structural Development Act which stipulate coal phase-out latest by 2038 and structural support measures totalling up to 40 billion euros. While this brings an end to the German coal regime, most actors challenging the coal regime including some research institutions, think-tanks and environmental NGOs are not content with the outcome as they see this too late and too expensive and argue that as a result of the prolonged phase-out timeline, Germany will still not fulfil its climate targets.

Our interviews revealed that even before the coal commission, incumbent coal actors which mostly involve the coal states, coal industry and trade unions were already aware that there is no future for the lignite in Germany and their goal going into the policy negotiations was to secure a financially favourable deal. Trade unions have organised expert conferences regularly in the past 15 years and discussed how to shape the phase-out process. In addition to having a clear strategy, the coal states, Brandenburg, Saxony, Saxony-Anhalt and North Rhine-Westphalia have also worked very closely together despite the fact that they were not run by the same political parties. As a result, they have managed to exert considerable influence in the coal commission and the subsequent policy formulation stage. One of the key reasons to their influence is the long-established ties they have with the bureaucracy and policymakers as well as the financial resources which makes them advantageous for inside lobbying. In addition, the incumbent actors have also skilfully framed the coal-phase out beyond the energy sector as something that has far reaching social and economic consequences. This narrative is particularly salient when considering that the eastern parts of Germany where the lignite mines are located are also economically behind the rest of the country and harbours far-right movements that are gaining popularity.

Compared to the incumbents, the challengers advocating for a faster phase-out appears to have a more effective outside lobbying. They were especially more active in social media and drew larger support among the think-tanks and research institutions which provide credibility and social legitimacy to some of the activities of NGOs such as demonstrations or litigation. Owing to Germany’s strong and established environmental movement, coal has been problematized since a few decades with growing intensity. Despite the growing environmental pressure, coal has remained heavily subsidised and received staunch political support due to the strong ties between mining industry, unions and government (Rentier et al., 2019). Nevertheless, the rising civil society pressure and growing international climate policy ambitions has put coal phase-out on the policy agenda and led to the coal commission (Kalt, 2021, 2022). Although the enactment of the Phase-Out Law indicates a definite destabilisation of the coal regime, a delayed phase-out timeline with significant compensations to coal companies (Raitbaur, 2021) indicate that coal regime has also exerted significant influence on the policymaking to ensure that the coal exit, which in their view is also inevitable, is at least financially favourable.

3.2.2 Japan

Despite having no domestic coal production, Japan is one of the largest consumers of coal and there is no sign of a phase-out in the foreseeable future. The current energy plan projects a reduction of coal power to 22% by 2030 (METI, 2021b). Nevertheless, most of the environmental NGOs still find this very high and advocate for a coal phase-out by 2030 in order to comply with the Paris Agreement. As the fourth largest consumer and the third biggest importer of coal in the world, government and industry actors in Japan (along with China) have also proactively financed international coal power developments (Hughes & Downie, 2021; Trencher et al., 2019)

The challengers of the coal regime, which mostly consists of the environmental NGOs, some progressive thinktanks and research institutions focus on two objectives: i) reducing the share of coal in the power mix, and ii) ending public financing for coal projects overseas.

In contrast to Germany, the Japanese public are not well sensitised on the coal issue. Japan's environmental NGOs have fewer resources and are also less established than in Germany. Furthermore, the energy policymaking in Japan resembles a closed political system, with actors from legislature, bureaucracy and industry being particularly influential (Duygan et al., 2021). Due to these contextual differences, challengers of coal regime in Japan follow a distinctly different strategy. The capacity of these actors to conduct "inside lobbying" is significantly hindered as they have fewer opportunities to access policymakers, especially among the ruling party. Although some NGOs actively approach to journalists to increase media coverage of their activities or reports, these efforts have not led to attracting public attention towards coal in general, even in the communities living nearby coal-fired power plants).

As a result, challengers of the coal regime conduct an indirect form of "inside lobbying", targeting international organisations and financial institutions that could potentially exert some influence on the Japanese government's decisions. Apart from being a necessity, there is also a strategic side to this type of action, because the Japanese government is likely to be influenced more from the international scene.

The second key target group for challengers is banks and financial institutions. Japan's major banks have long been important players in the financing of coal overseas. In order to influence financial institutions, Japanese NGOs conduct various practices including sending petitions, arrange meetings, organising demonstrations and writing letters to investors, urging them to divest from the banks or companies associated with coal finance and filing shareholder resolutions.

Considering that government export-finance organisations have not been required to explicitly address stranded asset risks (Hughes & Downie, 2021), the activities of NGOs can be considered as an effort to alter the cognitive institutions, namely the professional practices and shared understandings among financial organisations.

Despite the close collaboration among domestic and international NGOs and thinktanks, the overall influence of Japan's challengers is considerably less than the lobbying power of incumbent industry actors, which have a long standing and established relations within the bureaucracy. Yet, activities of challengers appear to have some level of impact on the finance institutions, which is certainly also affected by the attitude of investors and international political developments. However, despite recent changes in national policies for exporting coal-fired power plants (METI, 2021b) not only is any destabilization of the coal regime yet to occur, but incumbent actors have adapted to growing international pressures to reduce coal dependence and pursue carbon neutrality by strengthening engagements with "clean coal" and new technologies such as CCS and ammonia co-firing (Tao et al., 2022; Trencher et al., 2019)

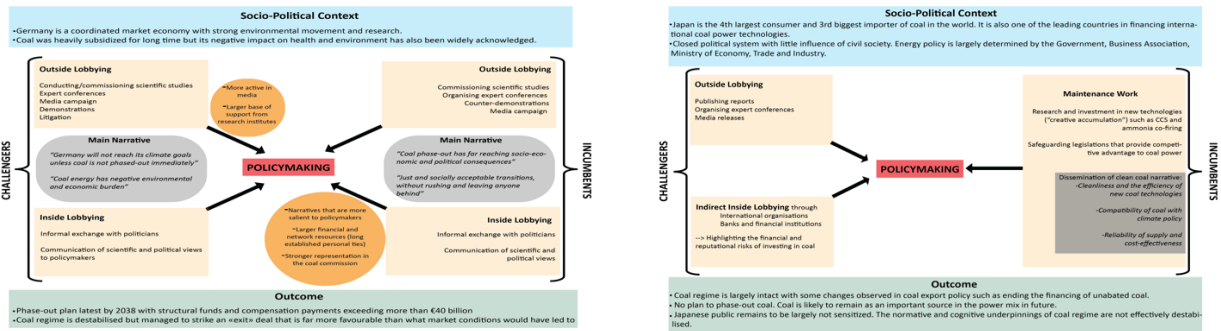


Figure 2. (Left) An overview of the socio-political context, actors' practices and policy outcome in the German case. (Right) In the Japanese case, originally created for the paper, Duygan, Kachi et al. (n.d.).

3.2.3 Australia

For Australia, we specifically focused on so-called "outside lobbying," actors' mobilisation of political interests through non-legislative venues, in this case, media.

Our empirical study (Stutzer et al., 2021) in Australia focused on the recent debates around the coal industry and, in particular, the approval of Adani's Carmichael coal mine in the Galilee Basin approved in 2019 after nine years of political contestation. The opening of this coal mine represents a major setback to Australia's efforts to mitigate climate change. Our study uncovered how the coal industry enhances its already very strong structural power (the implicit economic bargaining power held by businesses against the state) by conducting inside- and outside-lobbying activities. For the latter, we particularly focused on the practices of discursive legitimization by the coal regime and explored how segments of the traditional media have advanced pro-coal narratives. Using the Latent Semantic Analysis (a natural language processing technique), we analysed the discourses about the coal mine between 2017 and 2020 in traditional and social media (Twitter).

We found that the corporate-funded (owned by Murdoch, consistently pro-coal) mainstream media discourse has gotten farther away from both the state-funded (relatively coal-neutral) conventional media, ABC (Australia's National Broadcaster), and public sentiments expressed on Twitter between 2017-2020 (before and after the mine's approval). Even though this may be an indication of pro-coal narratives being increasingly contested among the Australian public, our analysis concludes that it is still far away from overcoming the strong presence of mining sector in country's political economy.

3.3 Concerns about jobs and the national economy

Finally, this section will address the last research question: do concerns about jobs and the national economy play a role in shaping national coal policies? As our observations of any decarbonization policymaking and the literature shows, "but the policy will cost our economy" is a powerful narratives used by policy oppositions among the mass public and the political elite. Our text analysis for Australia, a large coal exporter, vividly shows this pattern; in both the pro-coal and the relatively neutral newspapers, "job" is the most frequently appearing word in coal-related articles (Stutzer, et al. 2021). The survey by Rinscheid, Kern & Kachi (2021) shows that the perceptions on this issue by German coal stakeholders are not overly pessimistic but not uniform either (Figure 3).

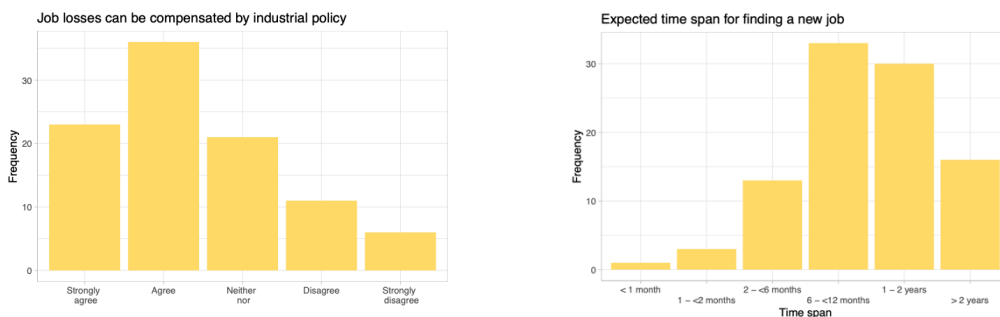


Figure 3. German coal stakeholders' perceptions on job losses caused by coal phase-out. From Rinscheid, Kern & Kachi (2021).

In our project, we wanted to take a step further and examine how “effective” this concern or narrative is in determining policy policymaking. Our case studies above highlighted that actors use this argument not only to engage with policymakers but to generate fears among people (outside lobbying). Therefore, though different from the methodological approaches we took in the above analyses, we decided to rely on an existing large-N public opinion survey in Europe and see whether, in general, people’s decarbonization policy support is affected by the fear of job loss and the loss of the national economy. The focus on Europe is a pure artifact of data availability, especially the need for a survey that contains both the respondents’ industry of employment *and* climate policy opinions.

We analyze the determinants of public support for carbon taxation by highlighting the role of carbon emission intensity linked to the industry of people’s employment. Analysing the data on about 28,000 individuals in 21 European countries, we found that support for fossil fuel taxation policies is indeed lower among people who work in industries with high emission intensity (such as coal) *and* those who live in countries whose labor markets rely more on polluting industries. In addition, we also found that the marginal effect of job-related emissions varies depending on whether they are politically left- or right-leaning. For those who claim to be politically right-leaning, policy support is low regardless of their employment industry. Many elements are approximated, but one interpretation of this result is that coal actors’ narrative strategies are effective in mobilizing public opinion.

4 Conclusion from Comparative Perspectives

We set out to provide both theoretical and empirical insights into the strategies and (institutional work) practices actors perform to influence coal policies. By developing and applying the EPI framework to our empirical cases (Australia, Germany, and Japan), we unravelled how the actors’ choice of practices (i.e. strategies) change with respect to institutional context and the endowments they possess and why in the end some actors more influence on the institutional structures. Our conceptual framework and analytical approach can be used to determine the micro foundations of the regime maintenance and destabilisation and thus to enrichen our understanding of why low-carbon transitions occur in some cases and not in others.

So, from all the data collection and case studies we have conducted, what can we conclude about the institutional work practices and strategies undertaken by actors who try to influence coal policies? There are several insightful patterns emerge across our cases.

First, to defend their interests, incumbent actors rely heavily on inside lobbying (policy influence effort made directly to policymakers), which is enabled by the long-existing ties among the coal industry, trade unions, state actors, and bureaucracy. This special access to policymakers is enabled not only by financial resources but also by personal ties established over the years —another reason incumbents have a greater advantage over challengers for simply being long-standing players in the policy domain.

Second, in all our cases, incumbent actors have also carried out outside lobbying (policy influence effort made indirectly to policymakers through mobilising the opinion of citizens) by being active in media and disseminating narratives that are salient to policymakers and often also to voters, such as economic interests and employment. It is interesting to notice that even in the case of Japan, where there is no domestic coal production, the economic aspects and techno-optimism for new technologies such as CSS and ammonia co-firing are central in incumbents’ discourse.

On the other hand, the actors challenging the coal regime tend to struggle to match the inside lobbying practices of incumbents. Even in the case of Germany, where civil society is more influential and environmental NGOs have more considerable resources, incumbent actors possess closer personal ties with the state actors and ministries. This leads the challenging actors to focus more on outside lobbying practices such as creating alliances with research institutions, commissioning or conducting studies, being active in social and conventional media, organising demonstrations, organising expert conferences, and filing lawsuits.

Another common pattern emerging from the practices of challenging actors is to first commission or conduct a scientific study, then disseminate the results through various media channels (social media especially) to draw the public attention. These steps are followed by the mobilisation of

support through demonstrations, especially at times when there is greater media and public attention, such as during or at the onset of significant international events (e.g., climate conferences). In some cases, these series of activities are also followed by lawsuits. The contextual differences between the countries also lead to variations in actors' strategies. NGO activities in Japan show it clearly. Given the lower public sentiment towards climate and environmental issues compared to the other two countries in question, the challengers in Japan have been trying to create an impact by approaching investors and financial institutions and highlighting the financial and reputational risks of investing in coal energy--a narrative that is presumably the most competitive against the powerful narrative of "economic harms" used by the incumbents.

5 Outlook for further exploration

5.1 Broader contributions of the project COALSTAKE

Insofar as we found different practices purposefully pursued by the coal regimes' incumbents and challengers to achieve their policy goals in varying contexts, we have shown—especially **to policymakers**—that (1) the feasibility of coal phase-out is not guaranteed merely by green innovation or decreasing costs of renewable energies, and (2) policymakers must address the needs (or the sources of grievance) of these actors; and moreover, (3) the flip side of these findings would be our better understanding of the institutional set-up that facilitates the contesting dynamics among the actors in the phase-out process. Here, there is much we can learn from the German Coal Commission, which served as an official platform to translate the voice of coal regions, including the job security issue.

Similarly, our results are useful also **for non-policymaking practitioners** especially on the challenging side of coal regimes. We showed that there are practices, a certain sequence of practices, and liberal media outlets that can start to crack the inherently strong osmosis of the dependence between the state and coal businesses.

To the scientific community striving to accelerate sustainability transition in various disciplines, both our theoretical and empirical findings offer actor-oriented, micro-level explanations as to why we see the destabilisation or maintenance of a socio-technical regime in different country contexts. Prior studies have barely explored detailed micro-mechanisms thus far.

5.2 Outlook

With the generous support of the SNIS and the guidance of its scientific board, our studies have made significant scientific and practical contributions. Still, most projects come with weaknesses and end with further research questions that emerge from the study. We conclude this report by highlighting two fruitful avenues of future research.

First, considering that the health-/climate-related dispute and the delegitimisation of coal energy have been ongoing for at least two decades before the destabilisation of the coal regime in Germany, further studies should investigate how this process can be accelerated, especially in countries like Australia and Japan, where the environmental movement and influence of civil society in politics may not be as high as in Germany. To this end, a good starting point would be constructing comparable datasets for Australia and Japan, including semi-structured interviews with coal actors (both coal-incumbent and coal-challenging actors) and coal stakeholder (special interest) surveys. The new datasets would allow researchers to inspect the direct applicability (or non-applicability) of the institutional set-up used in Germany.

Second, the last part of our project started to address the issue of stakeholders' economic concerns regarding phase-out. The issue is critical because "but the policy costs our economy" is a highly effective narrative the opposition uses to any decarbonization policies. Here, the studies we conducted provide two distinct dots: yes, the German Coal Commission's addressing the labour issue was a key enabler of their phase-out, and yes, the public support for fossil fuel taxes (proxying the success of coal actors' outside lobbying) indeed depend on people's concerns about losing jobs (especially when they hold jobs in high-emitting industries) *and* about the loss in the national economy (especially when countries' employment significantly depend on high-emitting industries like coal). But somewhere in between, there are actual labour statistics, such as the availability of greener and

browner jobs in different countries. Since *narratives and perceptions* influence policymaking while the task of the government is to provide optimal compensation reflecting *actual labour-market conditions*, we urge researchers to investigate both aspects further, as well as the gap between them.

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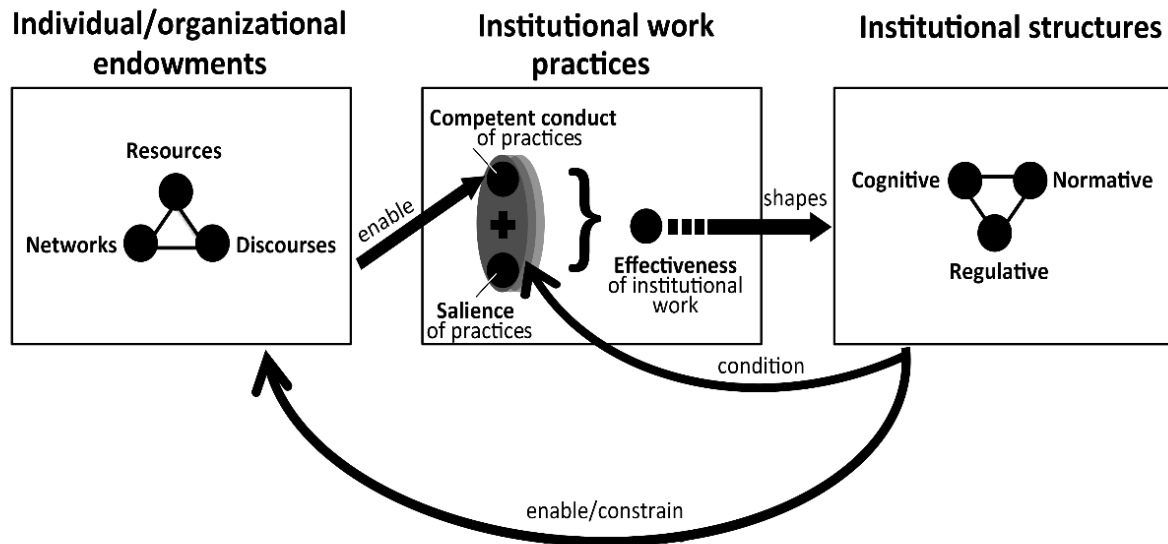
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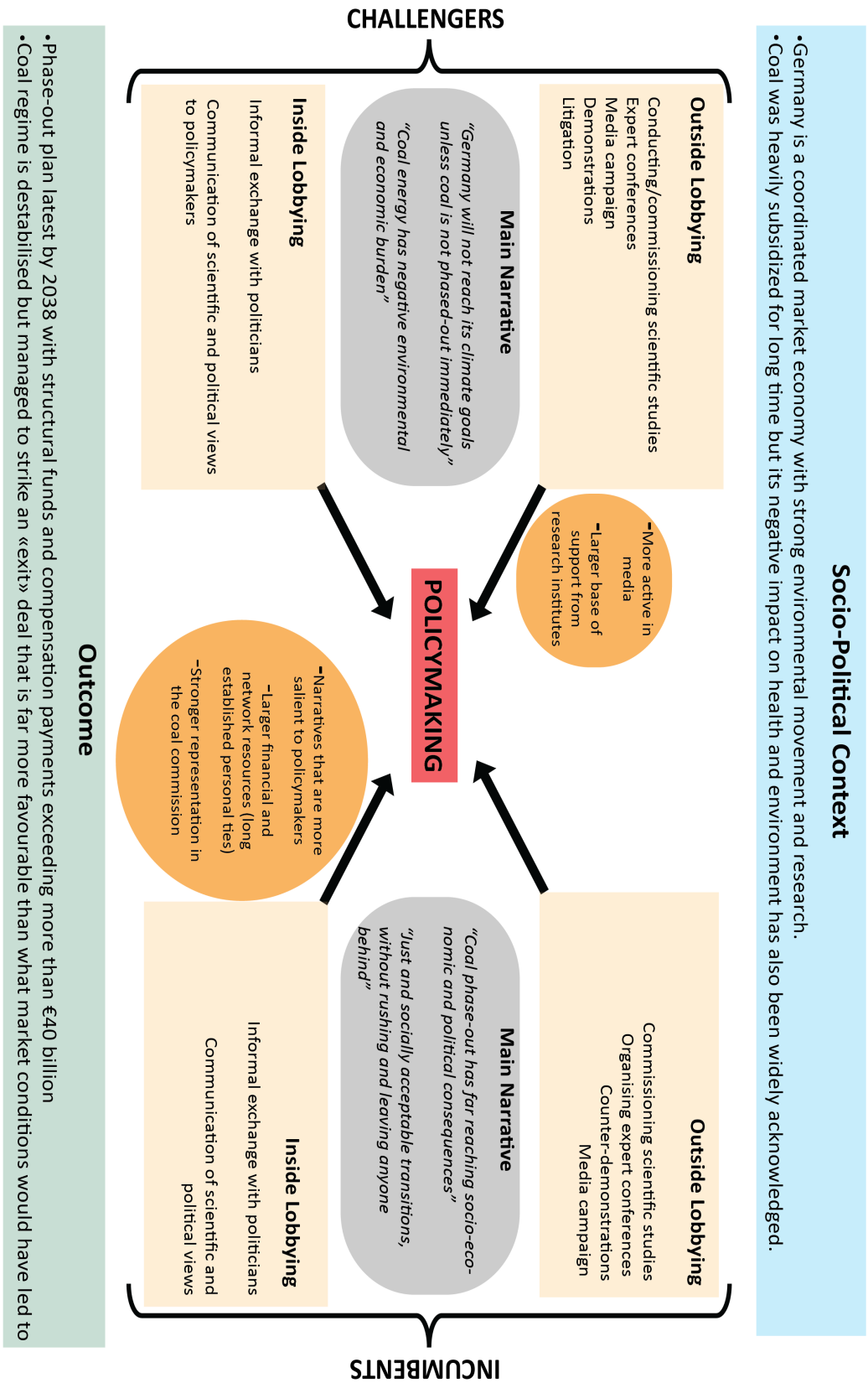
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Appendix to the Final Scientific Report

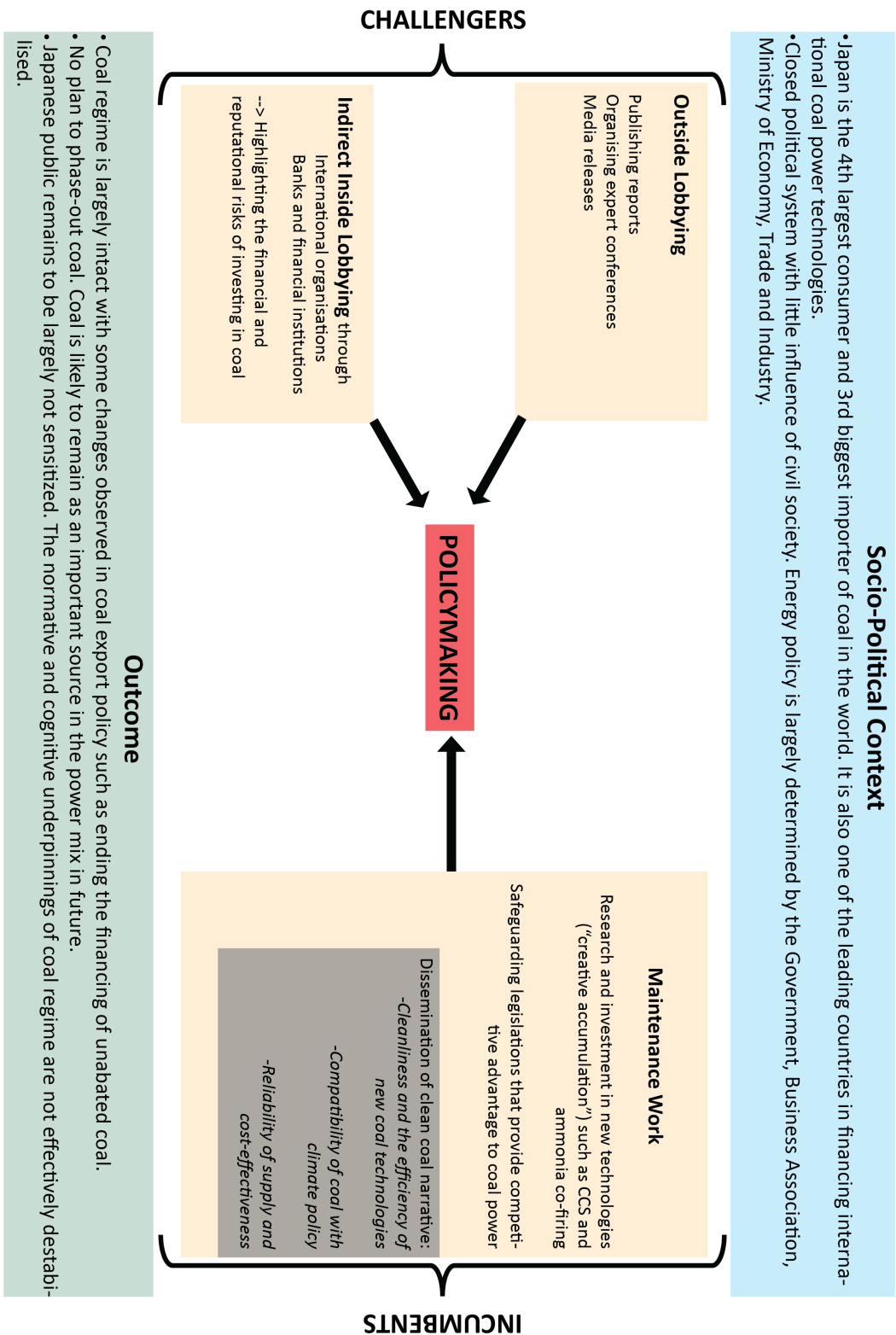
Appendix 1: A zoom-up of Figure 1 (Illustration of the recursive interplay among actors' endowments, institutional work practices, and institutional structures in the EPI framework), originally published in



Appendix 2. A zoom-up of Figure 2 (Panel Left) (An overview of the socio-political context, actors' practices and policy outcome in the German case), originally created for the working, Duygan, Kachi et al. (n.d.)



Appendix 3. A zoom-up of Figure 2 (Panel Right) (An overview of the socio-political context, actors' practices and policy outcome in the Japanese case), originally created for the working paper, Duygan, Kachi et al. (n.d.)



Appendix 4. A zoom-up of Figure 3 (German coal stakeholders' perceptions on job losses caused by coal phase-out), originally published in Rinscheid, Kern & Kachi (2021).

