Panel T14-P16 Session 1

The Role of Public Policymaking in the Termination of Unsustainable Technologies,
Products, and Practices

Title of the paper

A conceptual framework for elucidating how agency shapes destabilization of socio-technical
systems

Author(s)

Mert Duygan

Political Economics of Energy Policy, University of Basel

mert.duygan@unibas.ch

Aya Kachi

Political Economics of Energy Policy, University of Basel

aya.kachi@unibas.ch

Adrian Rinscheid

Chair for Management of Renewable Energies, University of St.Gallen

adrian.rinscheid@unisg.ch

Date of presentation

June 28, 2019

A conceptual framework for elucidating how agency shapes destabilization of socio-technical systems

Mert Duygan[a], Aya Kachi[a], Adrian Rinscheid[b]

[a]Political Economics of Energy Policy, University of Basel, Peter Merian-Weg 6, 4002 Basel, Switzerland

[b]Chair for Management of Renewable Energies, University of St. Gallen, Tigerbergstrasse 2, CH 9000 St. Gallen, Switzerland

Abstract

A timely transition to low-carbon socio-technical systems such as energy and transport is crucial in combating climate change and reducing the environmental and health impacts of human activities. While innovation policies have gained wide acclaim for driving technological change, the importance of destabilization policies for disrupting incumbent technologies such as fossil fuel-based electricity or mobility systems have been largely overlooked. Although destabilization measures such as phase-out policies can be highly effective, their enactment is challenging, as it is contingent upon the politics and power relations among the actors. Destabilization policies can be viewed as an act of disrupting institutions which is likely to be contested by incumbents who have stake in defending the existing institutional configurations. Therefore, it is crucial to unravel the interests and agency of key actors to understand why institutional changes for destabilizing socio-technical regimes can be realized in some cases but not in others. In this study, we present a conceptual framework that conceives actors' capability of changing institutional structures to be dependent on their varying practices and resource endowments. This framework enables systematic empirical analyses to understand how agency account for the change of institutions such as the adoption of destabilization policies. By offering testable propositions we strive to contribute to the theory-building in micro-foundations of institutions.

Keywords: destabilization policies, institutional work, agency, socio-technical systems, stakeholders, phase-out, resource endowments

1. Introduction

To overcome the environmental challenges societies face, *socio-technical systems*, such as energy, transportation, water and waste management, need to undertake a transition to more sustainable alternatives. Transitions of socio-technical systems require coordinated changes along the interrelated elements of technical, economic and socio-political nature such as regulations, norms and user practices that constitute these complex systems (Geels, 2004). This often involves changing the production and consumption patterns, abolishing unsustainable technologies and practices. While innovation and fostering of new technologies create alternatives for the existing regimes, they do not necessarily lead to their overthrowal. Socio-technical regimes such as nuclear energy, petroleum driven transportation or fossil fuel-based energy systems resemble established and often stabilized configurations of technologies and institutions that rule often over several decades, causing lock-ins and create path-dependencies. Considering the lifetime of large technical infrastructures such as power plants or sewage networks and interests of incumbent actors vested in them, new technologies face a big inertia. In addition to material dimensions, institutional infrastructure which is intertwined and co-evolved with incumbent technologies also impede the uptake of novel arrangements. Therefore, the Schumpeterian idea of creative destruction through innovation does not always transpire to the replacement of established system with new entrants or technologies. Rather, incumbents tend to display some capacity to defend and absorb destructive forces by integrating novel elements to their operations through processes such as creative accumulation (Bergek, Berggren, Magnusson, & Hobday, 2013; Kivimaa & Kern, 2016). This underlines an overlooked aspect of incumbents, who rather than being passive or cumbersome guards waiting to be overthrown, can be highly reactive and even proactive in defending their field against technological and institutional pressure.

As a result, agency and power relations among actors can be decisive in adoption of policy measures that bring discontinuity in socio-technical systems. However, there has not been a systematic inquiry into how agency of actors account for the change in policies or institutions for that matter. A further shortcoming is the lack of insight on determinants of political influence; who are the influential actors and what makes them more influential than others? In this paper, we present a framework which conceives adoption of discontinuation policies as a

major institutional change that is likely to cause contention between actors seeking to transform institutional arrangements and others pursuing to maintain them. We conceptualize actors' ability of impacting institutions to be dependent on their practices and resource endowments that enable these practices. The framework provides several propositions which can be used to derive further hypotheses for testing in empirical studies. By facilitating systematic analysis in different empirical settings, the framework contributes to theory building in actors' role and struggle in shaping institutional structures to destabilize socio-technical regimes.

The paper is structured as follows. In section 2, we provide a brief overview of concepts related to destabilization of socio-technical systems and deduce the notable research gaps in this literature. In section 3 and 4 we introduce insights from political economy and institutional sociology that address some of these gaps while also elaborating further on its own shortcomings. We then propose our conceptual framework in section 5 that depicts how agency of actors might account for the changes in policies or institutions that they are embedded in. Finally, section 6 highlights the contributions and relevance of the framework as well as some open issues that need further attention.

2. Destabilization policies for socio-technical regimes

While much research about the political dimensions of current energy transitions focuses on the political drivers of and barriers to phasing in new technologies (Aklin & Urpelainen, 2013; Jacobsson & Lauber, 2006; Laird & Stefes, 2009; Lipp, 2007; Meckling & Nahm, 2019; Stokes, 2013) some scholars emphasized the need for a specific attention to ways and means of destabilizing incumbent socio-technical regimes (Kivimaa & Kern, 2016; Turnheim & Geels, 2012). A relevant concept which has already been introduced in 1980's in institutional and organizational studies and later in sectoral innovation studies is *exnovation* (Clark & Staunton, 1989; Kimberly, 1981). Referred to as terminating a practice or a technology, exnovation has also recently gained attention in transition research. There are different views on whether it is necessary for innovation to flourish and thus should actively be initiated as a preceding step to make way for innovation or does it follow innovations as its consequence (David, 2017). Exnovation is considered as a process initiated by a diverse set of policy instruments including negative economic incentives and regulatory actions such as

"Klimareserve" plan in Germany which took some large lignite plants off the grid (David, 2017). Such policies are also addressed under the rubric of destabilizing policies (Kivimaa & Kern, 2016) and consists of policy measures and instruments that target socio-technical regimes through inducing changes in its components: rules, technology and actor-networks. Some examples are control policies such as carbon tax aiming to internalize the environmental costs and others that induce significant changes in institutional rules, removal of subsidies or R&D funding and reconfiguration of actor networks through balancing the access of actors to policy settings. Among these policy options, phase-out policies which set concrete timelines for enacting bans towards the use of certain technology, product or energy sources (e.g. fossil fuels) is the most direct and stringent form of a destabilization measure (Kivimaa & Kern, 2016). An example is Norway's planned sales ban for petrol and diesel cars by 2025 (Meckling & Nahm, 2019). In fact, phase-out policies can be very effective as demonstrated by the German nuclear energy case. Survey of German manufacturers of renewable energy technologies revealed that phase-out policy is perceived among the respondents to be most important policy instrument; even ahead of R&D support schemes for the expansion of renewable energies (Rogge & Johnstone, 2017). This finding signifies the extent of interpretive effect (Edmondson, Kern, & Rogge, 2018) that phase-out policies have on stakeholders' investment decisions. It also provides an empirical support to the view that specific measures targeting destabilization of regimes are essential in accelerating and amplifying the destructive potential of innovation. However, despite these promising aspects, the making of destabilization and particularly phase-out policies has so far received limited attention by researchers (Davidson, 2019). Hence, we lack structured knowledge on how an incumbent socio-technical regime can be destabilized and discontinued by public policies (Rogge & Johnstone, 2017; Turnheim & Geels, 2012).

Another important caveat is politics, struggle of actors and role of agency in destabilization of socio-technical regimes. The aforementioned studies address what policies or instruments might be pertinent for disrupting regimes. Yet enactment of destabilization policies is likely to be challenging, as it is contingent on the politics, interests and agency of actors. This is due to the typical burden-sharing structure associated with regime changes. The cost of achieving such transitions is often concentrated on a small number of economic actors and their employees. Therefore, these actors, which benefit from incumbent technology regimes (e.g.

fossil fuel regime), have a large incentive for politically organizing themselves to avert or direct the changes (Rinscheid, 2019). At times, the influence of such stakeholders on public policy can be even greater than that of the average preference by voters (Bernauer, Gampfer, & Kachi, 2013; Grossman & Helpman, 2002; Rinscheid, 2015). Nevertheless, in contrast to the wide popularity of public acceptance studies in energy policy, not sufficient research has been done on these stakeholders. However, to understand why and how destabilization of socio-technical regimes worked out more effectively in one setting than another, or why for instance a phase-out policy is successfully enacted in one jurisdiction but not in another, actors' agency and power relations need to be analysed.

3. Political Economy perspectives on stakeholders' policy goal attainment

The political struggle among actors and its influence on policymaking has been a focus of much research in political science. Stakeholders' resources tied to their policy goal attainment can be roughly divided into 4 categories as (1) financial assets, (2) organizational capacity, (3) conflict capacity, and (4) networks.

For lobbying, which is seen as a resource exchange between stakeholders and policymakers (Stigler, 1971) (as in the most popular perception of lobbying), *financial assets* play an important role. They can be mobilized directly (Hillman & Hitt, 1999) or indirectly (such as knowledge and human resources incurred by lobbing) (Binderkrantz & Pedersen, 2016; Hall & Deardorff, 2006) as a means to achieve their policy goals. At the same time, interest groups also need to mobilize the motivational and material resources to overcome a collective action problem in representing their group interests (Offe & Wiesenthal, 1980). This is why *organizational capacity* also becomes a vital class of resources. Besides an organizations' size (Olson, 1965), the type of membership (individual vs. collective actors) and organizational structure have an influence on actors' political influence (Dür, 2008). One also needs to consider electoral pressure for vote-seeking politicians; particularly, economic factors that are tied to private sector profitability (e.g., employment rate and voters' personal income) are known to influence electoral outcomes (Levy & Egan, 1998, p. 342). We refer to the degree to which stakeholders create (re)electoral pressure as a conflict (bargaining) capacity resource— resources that accrue to their implicit bargaining power against the state (Korpi, 1985; Offe, 2003). Finally, it is evident that stakeholders do not act in isolation. *Network relations* serve

as important resources in achieving their policy goal attainment (Hacker & Pierson, 2014; Varone, Ingold, & Jourdain, 2016; Walker & Rea, 2014). The position of an actor within a network constrains how monetary and other resources can effectively be converted to influence. Some studies provide empirical evidence for well-connected stakeholders' disproportionate influence on political outcomes (Baumgartner, Larsen-Price, Leech, & Rutledge, 2011; Box-Steffensmeier, Christenson, & Hitt, 2013).

Several studies have found interest groups' influence on energy policies significant when taking into account other predictors such as international influences and macroeconomic factors as well (Cheon & Urpelainen, 2013; Matisoff & Edwards, 2014; Schaffer & Bernauer, 2014). However, these studies provide insights neither on who the influential actors and their political positions are (e.g. emerging coalitions) nor what makes some more successful than others and why (Kuzemko, Lockwood, Mitchell, & Hoggett, 2016). The main caveat of this field, thus, is the lack of comprehensive empirical analyses that can illustrate the relative importance of each resource type. Furthermore, it also remains to be elucidated how these resource endowments are translated to actors' political influence. What mechanisms in between mediate this relation? How do actors manage to create influence and succeed in pursuing their interests, whether it is destabilizing a regime or maintaining it? To address these gaps, one needs to address actors' practices, what they do specifically to influence the trajectories of socio-technical systems and what set of endowments are associated with these practices?

4. Institutional change and role of agency in destabilization processes

The role of actors or organizations gained broad attention in some strands of sociology and management literature such as *institutional studies*; especially in *new institutionalism* and *organizational institutionalism*. New institutionalism has resurrected the relation among agency, politics and institutional change (Wooten & Hoffman, 2017) that was addressed much earlier in this field (Selznick, 1949). Institutions are defined as formal (i.e. regulative structures) and informal rules (i.e. normative and cognitive structures) that condition actors and organizations' behaviour and their relations with one another (Scott, 2008). They can be considered as backbones of socio-technical systems enabling durable configurations of actors, cultural-cognitive meaning systems and technologies. Since regimes co-evolve with

institutional structures and thereupon derive its stability and legitimacy, institutional change can be decisive in their destabilization. Yet, this leaves us with some unresolved questions that are key to understanding the destabilization of incumbent regimes. How does an institutional change occur? What role does agency play in institutional changes? Do some actors influence institutional structures more than others? If so, how?

Institutional theory has long been silent to these questions. However, in response to the overwhelming focus on institutions' constraining forces on actors' behaviours (i.e. isomorphic pressure), *new institutionalism* has extended the scope of research by focusing on how actors in turn impact institutions despite being subject to their structural constraints—a phenomenon referred as *embedded agency* (Garud, Hardy, & Maguire, 2007; Sewell, 1992). Despite being embedded in institutions, actors who manage to change institutional arrangements by strategizing actions and skilfully mobilizing resources are denoted as *institutional entrepreneurs* (D. Levy & Scully, 2007; Maguire & Hardy, 2006). It has been proposed that incoherencies, uncertainties and crisis within an institutional field as well as external shocks favour institutional entrepreneurship since actors can frame their path-breaking novelties as solutions to the actual problems faced (Hardy & Maguire, 2017). However, for actors to take advantage of such instances, these irregularities should also be interpreted as problematic by other actors in the first place. Therefore, it requires the agency of institutional entrepreneurs to problematize issues, theorize solutions to those problems and thereby legitimize their interventions (Munir, 2005). While such an act require actors to mobilize their resources, provide new issue frames and meanings to initiate a collective action, the literature remains vague on what resources enable institutional entrepreneurship (Hardy & Maguire, 2017).

Drawing on the insights from institutional entrepreneurship, *institutional work* presents a more refined approach to the study of agency in transformation of institutions. While institutional entrepreneurship narrowly focuses on successful actors, the concept of institutional work broadens the scope by adopting a *practice* turn. This is achieved by altering the focus from the accomplished acts in change of institutions to any purposeful practice relevant for shaping institutions. Based on the review of empirical studies, Lawrence and Suddaby (2006) have identified 17 distinct form of institutional work practices and classified them with respect to three different objectives: creating, maintaining and disrupting

institutions. While practices pertinent for creating institutions target reconfiguration of belief systems, rules and property rights, maintaining activities include reproduction of norms and belief systems and enforcement of compliance with existing rules. The least researched practices are ones that disrupt institutions and they are composed of practices striving to detach sanctions and reward mechanism associated with the existing configurations of rules, technologies and routines. These refinements account for a broader understanding of agency as the focus lies not only on successful actors or creation of institutions but also on counter-moves such as maintaining institutions or further disrupting acts.

However, there are still some major caveats remain to be addressed. As mentioned earlier, neither institutional entrepreneurship nor institutional work literature provide a compelling account of what individual level factors enable institutional work. In other words, what resource endowments are required and how does this change for different forms of institutional work and why some actors overall create more impact on institutional structures. Furthermore, institutional work approach has so far neglected the influence of institutions, resulting in a similar actor conception as institutional entrepreneurs who are portrayed as institutionally disembedded, heroic agents. However, institutional setting can have a large impact on what practices, including institutional work, gain higher leverage and legitimacy as well as on the distribution of resources among actors. In essence, more attention needs to be paid to the recursive interplay between actors and institutions in to provide a more accurate view of embedded agency.

In the next section, we present a framework that conceptualizes embedded agency with respect to actors' endowments, their practices and existing institutional set-up. Discontinuation policies such as carbon taxes or removal of fossil fuel subsidies can be viewed as a significant, disruptive change in regulative institutions. Given their implications, incumbent actors who have vested interests in the system are expected to defend the existing rules or maintain them with minor changes to avoid more drastic shifts. Hence, enaction of these policies would represent a case where disrupting work overcomes the maintenance work. The framework is developed to analyse agency of actors and explain how and why some actors have more impact on institutional structures.

5. Conceptual framework

Conceptual framework is illustrated below in Figure 1. In this framework, agency of actors is conceived as their capability of shaping institutions through institutional work practices. Some actors display higher capability and thus exert more influence on the institutional arrangements. These influential actors are assumed to have more effective display of institutional work than their adversaries and effectiveness of institutional work is theorized to be contingent on two main factors: how relevant are the conducted institutional work practices for that specific institutional setting and how successfully institutional work practices are performed. While the former is conditioned by the broader institutional arrangements, the latter is dependent on actors' endowments (Figure 1). Therefore, we hypothesize influential actors to be the ones conducting the forms of institutional work with higher leverage for that political-institutional context and along this process skilfully mobilizing the endowments necessary to perform that work. In the following, we elaborate further on these two important aspects.

Relevance of institutional work practices

Depending on the objective of the actors, some institutional work practices might gain prominence. The categorization of Lawrence and Suddaby (2006) already elucidates what sort of practices would be relevant for creating or disrupting versus maintenance of institutions. For instance, in pursuit of maintaining institutions, incumbents can engage in *mythologizing*, the activity of creating myths, to preserve the normative underpinnings of existing institutions. Another relevant practice for maintenance can be *policing*, which ensures compliance through enforcement, auditing and monitoring. On the other hand, actors seeking to disrupt institutions tend to employ strategies targeted at *undermining assumptions and beliefs* concerning a practice or a technology. Concerning creation of institution, *theorizing*, the act of defining new categories and developing chains of cause and effect might be relevant. An alternative classification is provided by based on the means of institutional work practices and distinguished the three types as *symbolic*, *relational* and *material* (Hampel, Lawrence, & Tracey, 2017).
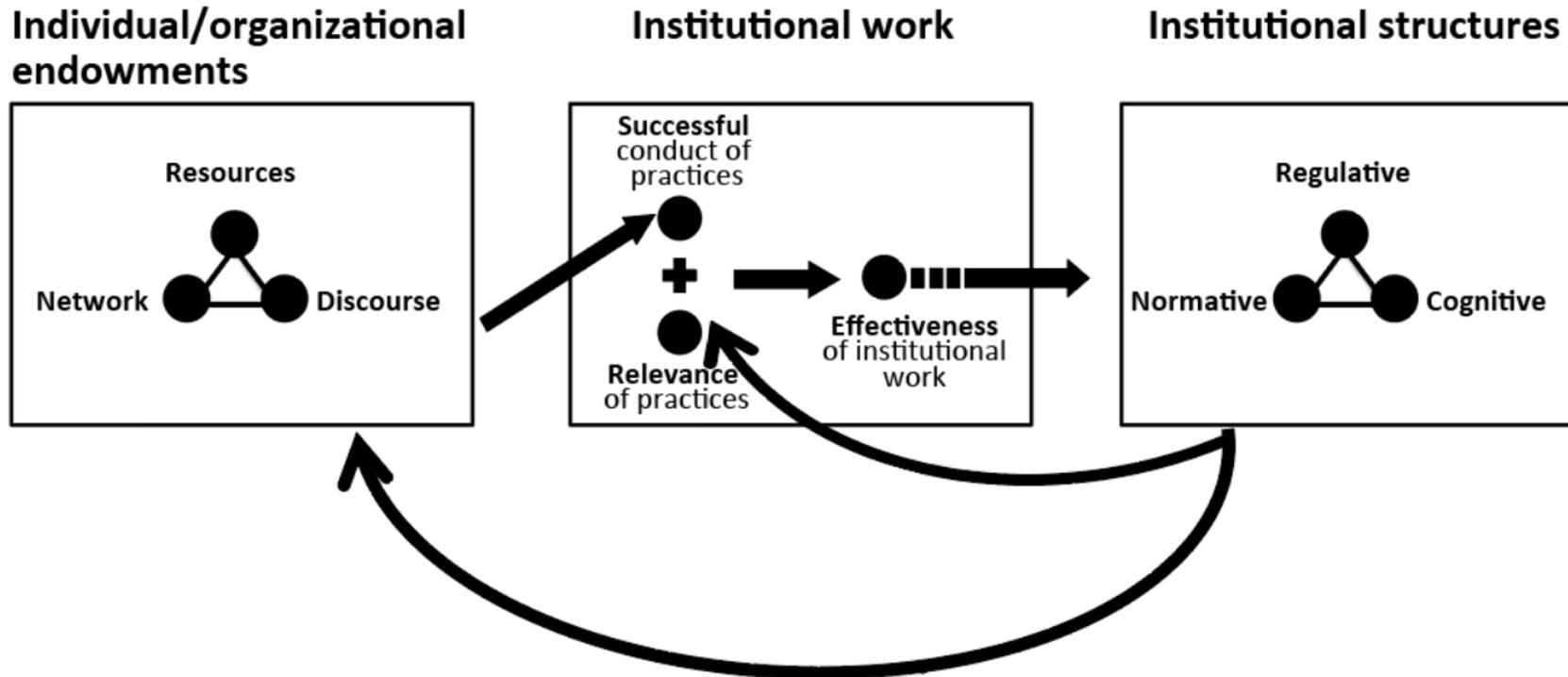
Figure 1. Conceptual framework depicting the relations among actors' endowments, their institutional work and institutional structures

Institutional work of symbolic nature relies on use of signs, language and identities, relational refers to interaction with other actors and material work draws on physical artefacts and technologies. While such classifications are neither exhaustive nor definitive, they deduce a certain pattern between different practices and objectives of actors as well as the means required for those practices. Based on those patterns, it can be hypothesized that for actors to be effective with their institutional work, a coherency between their objectives (i.e. creating, maintaining or disrupting of institutions) and practices that serve best for those objectives needs be established.

Aside from the objectives of actors, type of institutions targeted, and nature of the policy issue can also determine which institutional work practices become relevant. Based on Lawrence and Suddaby's (2006) definition of different practices, a further categorization is provided concerning the type of institutions (Guillemette, Mignerat, & Paré, 2017). For each of the institutional work practice, Guillemette et al. (2017) distinguished them as relevant for regulative, cognitive and normative pillar of institutions. For instance, *theorizing* that was classified as relevant for creating institutions is further designated to be appropriate for targeting cultural-cognitive dimension as opposed to *mythologizing* deemed to be relevant for normative or policing for regulative pillar. Although practices related to regulative dimensions would be of interest for enaction of destabilization policies, work on normative and cognitive dimensions might also be required to create legitimacy for such an action. Therefore, actors' strategy in employing the right practice at the right time for the right purpose would be decisive in their struggle over institutional landscape. Moreover, the nature of the institutions or the policy issue also determines what practices are more relevant. For instance, while symbolic or ideational work might be sufficient to ban smoking in all public places or work on cognitive institutions to foster open-access transition in academic publications, material work concerning technological artefacts might be primarily relevant in a policy issue such as coal phase-out. To combat the environmental concerns over carbon emissions, incumbents of coal regime can seek to implement cleaner production techniques or invest in new technologies such as carbon capture and storage.

Moreover, broader institutional infrastructure, including governance arrangements (Hinings, Logue, & Ziestma, 2017) influencing how decision are made can also determine what practices

gain higher leverage. For example, a prior study has found discursive abilities of actors to be neither necessary nor sufficient for a political influence on the total revision of the technical ordinance in Swiss waste management (Duygan, Stauffacher, & Meylan, n.d.). The authors proposed that the specific arrangements of consultation process might have led to this outcome. The revision process has led by a single federal agency and in contrast to revision processes concerning laws, revision of the ordinance was not subject to any parliamentary sittings. Instead the federal agency organized the consultation process and invited concerned actors to submit their position papers regarding the draft of a new ordinance. The federal agency did not disclose position papers to public as there was no such mandate. Then, following an evaluation process that lacks transparency, the agency issued the new ordinance. Since, civil society was not involved and public did not have access to the position papers, the federal agency remained the sole addressee for the policy preferences and arguments of actors. As there are also no established criteria for how position papers ought to be evaluated by federal agency and what approach is to be taken in reconciling the conflicting preferences of actors, the revision process resembled a bureaucratic battle behind the doors. As a result, the authors asserted that in such a setting, covert forms of institutional work such as lobbying or advocacy that rely on large resources and networks could become especially relevant compared to rather overt types of work which require discursive abilities for creating compelling narratives. Finally, degree of institutionalization, or in other words, structuration of the field (Fuenfschilling & Truffer, 2014) can also influence what type of institutional work create more resonance. For instance, while work for creation of institutions might be eminent for determining the trajectories of an emerging field, disruptive work could be more decisive in established fields such as fossil fuel driven energy systems.

Overall, our proposition is that the relevance of different institutional work practices is context-dependent and as elaborated above there can be various factors determining what practices gain higher leverage. Consequently, it can be hypothesized that actors engaging in forms of institutional work with *higher relevance* gain advantage over adversaries that do not. However, it is one thing to strategize what is the right course of action and another thing to perform those practices with competence. In the next sub-section, we elaborate on what endowments actors need to possess to conduct different institutional work practices successfully.

Successful conduct of institutional work practices

While literature is relatively ripe with what kind of practices actors conduct to shape institutional structures, inadequate attention has been paid to what enables these practices on individual or organizational level. A recent contribution was made to identify those factors that set the foundation of actors' ability to impact institutions (Duygan, Stauffacher, & Meylan, 2019). By reviewing the activities or key features mentioned in institutional work and institutional entrepreneurship literature, the authors have deduced *resources*, *networks* and *discourses* of actors as three broad categories of endowments that enable institutional work practices.

Resources are further specified as material and non-material resources. Material resources consist of technical artefacts such as technology, infrastructure or raw materials possessed by actors or financial assets such as capital funds and monetary stocks. Non-material resources refer to knowledge and expertise in political, technical and judicial realms that strengthen actors' hands in policymaking areas for activities such as suasion or litigation. Denoted by the concept *social capital*, networks can also be crucial as actors' relational ties and their position in social networks can be essential in reaching to new information or for gaining access to resources. While it can be a liability in some cases, actors use their position in networks to create dependencies and leverage their status. Finally, actors convey their ideas and preferences in the form of narratives or frames which in constant interaction with others influence collective sense-making and opinion formation. Therefore, discursive elements are an important mean of agency.

This conceptualization has some overlaps with what Political Economy literature offers (see Table 1). Apart from the financial assets and networks that are common, organizational and conflict capacity can be argued to depend also on the actors' non-material resources and discourses. Moreover, our conceptualization is in close alignment with the classification of Hampel et al. (2017). In our framework, resources would thus be of primary means for enabling institutional work of material nature, networks for relational and discourses for symbolic. Hampel et al. (2017) however do not specify what concrete practices correspond to material, symbolic or relational work.

Table 1. Similarities and overlaps among resource endowments tied to policy goal attainment, classification of institutional work practices according to its means and the conceptualization used in this framework for the resource endowment relevant for institutional work practices

Categories of resource endowments associated with policy goal attainment in Political Economy literature	Classification of institutional work according to its *means* (Hampel et al., 2017)	Conceptualization of resource endowments relevant for institutional work practices (as used in this framework)
Financial assets Organizational capacity: Mobilization of motivational and material resources	Material work: Draws on material and technological artefacts	Resources - Material resources (financial assets, physical, technological artefacts - Non-material resources (political-judicial expertise)
Conflict capacity: creating (re)electoral pressure, strengthening bargaining position	Symbolic work: Work that rely on the use of signs, language and identities	Discourses: Narratives, frames generated to influence collective meaning systems, public opinion.
Networks: Position of actors within a network	Relational work: Interaction with other actors	Social Networks: Actors' relational ties and position in the networks

By closely reviewing the original descriptions provided by Lawrence and Suddaby (2006), Duygan et al. (2019) have proposed a first link between institutional work practices and set of endowments that are relevant for these practices. Depending on the form of institutional work, the set of endowments required is also expected to vary. For example, while actors need to be proficient in shaping discourses so as to undermine assumptions and beliefs surrounding the

coal industry's claims regarding their positive influence in job security and a country's prosperity, a policing work for safeguarding the standards benefiting the coal industry might rely more on financial resources and judicial expertise along with ties to strategic actors in networks. Furthermore, some forms of institutional work might be more demanding than others. For example, advocacy as one of the institutional work practices, is defined as "the mobilization of political and regulatory support through direct and deliberate techniques of social suasion". Further descriptions of advocacy also refer to lobbying, advertising and litigation as examples. Therefore, to be able to conduct a successful advocacy, actors might need to rely on all three group of endowments: resources, networks and discourses. On the other hand, changing normative associations defined as "re-making the connections between sets of practices and the moral and cultural foundations for those practices" might solely depend on discourses. However, even though a practice is supposed to depend on a single category such as resources, networks of an actor might have played an indirect yet important role for achieving that critical resource. In that sense, these three categories we deduce are complementary and yet not totally independent from one another. However, such interdependencies are not of concern for our framework as we focus on the endowments that are required and not on mechanisms of how they are attained. Nevertheless, we assert that institutional setting also conditions actors' opportunities and abilities by influencing how some of these endowments are distributed among the actors.

Propositions of the conceptual framework

In the end, several propositions can be derived from our conceptual framework:

Proposition 1: Actors' influence on institutional structures (e.g. adoption of a discontinuation policy) is based on the effectiveness of their institutional work practices.

Proposition 2: The effectiveness of institutional work is contingent on two main factors: relevance of the performed practices for a given institutional setting and how successfully these practices are conducted.

Proposition 3: Relevance of an institutional work practice is context dependent.

Proposition 4: Successful conduct of an institutional work practice is dependent on the mobilization of endowments required for that practice.

Proposition 5: Three main categories of endowments relevant for institutional work practices are: resources, networks and discourses of actors.

Proposition 6: Hence, influential actors are the ones that successfully conduct relevant forms of institutional work by skilfully mobilizing the necessary endowments.

Based on these general propositions, further hypotheses can be formulated and tested empirically. For instance, a systematic inquiry on the link between institutional work practices and endowments can elucidate whether actors are indeed constrained and also reflexive in their choice of action. Any pattern between institutional context and institutional work practices can provide new theoretical insights and enrichment of this research stream.

6. Conclusion

In this paper, we present a conceptual framework to assist empirical research that seeks to uncover political determinants and micro-level processes of institutional transformation. The framework combines complementary insights from political economy, organisational institutionalism and institutional sociology to analyse how actors' resource endowments and practices account for their influence on institutional structures.

The framework provides several contributions. First, it represents an interdisciplinary approach, integrating theoretical insights from related yet distant research fields to build a conceptualization of how actors influence institutions and why some do this better. As a result, it complements the studies in political economy by elucidating the set of practices translating actors' resource endowments to their policy goal attainment. Likewise, it extends the theoretical scope of institutional work approach by explicating resource endowments enabling actors' practices. A step towards uncovering the link between actors' endowments and the effectiveness of their institutional work practices will be, to our best of knowledge, first of its kind and thus generate novel insights. It also proposes ways of how institutional structures condition the effectiveness of institutional work and thus provide a more comprehensive account of embedded agency. The conceptualization of institutional work as part of the recursive interplay between actors and institutions present new theoretical advancements. Finally, the framework facilitates conducting empirical research to unravel why some actors are more influential in shaping institutional structures. The propositions derived from this framework can guide formulating hypotheses concerning the relation

between actors' endowments, their practices and influence on institutions. These hypotheses can then be tested systematically to develop theories on political determinants and the role of agency in destabilization of socio-technical regimes. Uncovering of causal effects and mechanisms pertinent for disrupting institutions can also have a practical relevance for understanding how the enaction of destabilization policies such as phase-out of fossil fuels can be initiated to foster low-carbon transitions.

Further research should tackle how such a framework can be operationalized, what methods suit best for an empirical inquiry and how the limitations in data collection and analysis can be overcome. One of the challenges is to account for the dynamic and on-going interaction among actors' endowments, their practices and the feedback from the institutional structures. Analysts should be attentive to the temporal patterns among actors' practices and also to the interaction between the adversaries' strategies. While political-institutional context, goal of actors and their resource endowments condition the relevance of different practices, the necessity of counteracting to opponents' moves might indeed be the most crucial factor determining actors' strategy and thus leading the script of agency struggle to be re-written continuously. It is the challenge awaiting the further research to reduce this complexity to a reasonable scale that allows conducting empirical analysis systematically in various settings.

Bibliography

Aklin, M., & Urpelainen, J. (2013). Political Competition, Path Dependence, and the Strategy of Sustainable Energy Transitions. *American Journal of Political Science*, *57*(3), 643–658. https://doi.org/10.1111/ajps.12002

Baumgartner, F. R., Larsen-Price, H. A., Leech, B. L., & Rutledge, P. (2011). Congressional and Presidential Effects on the Demand for Lobbying. *Political Research Quarterly*, *64*(1), 3–16. https://doi.org/10.1177/1065912909343578

Bergek, A., Berggren, C., Magnusson, T., & Hobday, M. (2013). Technological discontinuities and the challenge for incumbent firms: Destruction, disruption or creative accumulation? *Research Policy*, *42*(6–7), 1210–1224. https://doi.org/10.1016/J.RESPOL.2013.02.009

Bernauer, T., Gampfer, R., & Kachi, A. (2013). European unilateralism and involuntary burden-sharing in global climate politics: A public opinion perspective from the other side. *European Union Politics*, *15*(1), 132–151. https://doi.org/10.1177/1465116513496878

Binderkrantz, A. S., & Pedersen, H. H. (2016). What is access? A discussion of the definition and measurement of interest group access. *European Political*. Retrieved from http://link.springer.com/article/10.1057/eps.2016.17

Box-Steffensmeier, J. M., Christenson, D. P., & Hitt, M. P. (2013). Quality Over Quantity: Amici Influence and Judicial Decision Making. *American Political Science Review*, *107*(03), 446–460. https://doi.org/10.1017/S000305541300021X

Cheon, A., & Urpelainen, J. (2013). How do Competing Interest Groups Influence Environmental Policy? The Case of Renewable Electricity in Industrialized Democracies, 1989–2007. *Political Studies*, *61*(4), 874–897. https://doi.org/10.1111/1467-9248.12006

Clark, P. A., & Staunton, N. (1989). *Innovation in Technology and Organization*. London: Routledge.

David, M. (2017). Moving beyond the heuristic of creative destruction: Targeting exnovation with policy mixes for energy transitions. *Energy Research & Social Science*, *33*, 138–146. https://doi.org/10.1016/J.ERSS.2017.09.023

Davidson, D. J. (2019). Exnovating for a renewable energy transition. *Nature Energy*. https://doi.org/10.1038/s41560-019-0369-3

Dür, A. (2008). Measuring Interest Group Influence in the EU. *European Union Politics*, *9*(4), 559–576. https://doi.org/10.1177/1465116508095151

Duygan, M., Stauffacher, M., & Meylan, G. (n.d.). Determinants of strong agency in socio-technical transitions: A study of Swiss waste management.

Duygan, M., Stauffacher, M., & Meylan, G. (2019). A heuristic for conceptualizing and uncovering the determinants of agency in socio-technical transitions. *Environmental Innovation and Societal Transitions*. https://doi.org/10.1016/j.eist.2019.02.002

Edmondson, D. L., Kern, F., & Rogge, K. S. (2018). The co-evolution of policy mixes and

socio-technical systems: Towards a conceptual framework of policy mix feedback in sustainability transitions. *Research Policy*. https://doi.org/10.1016/J.RESPOL.2018.03.010

Fuenfschilling, L., & Truffer, B. (2014). The structuration of socio-technical regimes— Conceptual foundations from institutional theory. *Research Policy*, *43*(4), 772–791. https://doi.org/10.1016/J.RESPOL.2013.10.010

Garud, R., Hardy, C., & Maguire, S. (2007). Institutional Entrepreneurship as Embedded Agency: An Introduction to the Special Issue. *Organization Sttudies*, *28*(7), 957–969. https://doi.org/https://doi.org/10.1177/0170840607078958

Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy*, *33*(6–7), 897–920. https://doi.org/10.1016/J.RESPOL.2004.01.015

Grossman, G. M., & Helpman, E. (2002). *Interest Groups and Trade Policy*. Princeton University Press.

Guillemette, M. G., Mignerat, M., & Paré, G. (2017). The role of institutional work in the transformation of the IT function: A longitudinal case study in the healthcare sector. *Information & Management*, *54*(3), 349–363. https://doi.org/10.1016/J.IM.2016.09.003

Hacker, J. S., & Pierson, P. (2014). After the "Master Theory": Downs, Schattschneider, and the Rebirth of Policy-Focused Analysis. *Perspectives on Politics*, *12*(3), 643–662. https://doi.org/10.1017/S1537592714001637

Hall, R. L., & Deardorff, A. V. (2006). Lobbying as Legislative Subsidy. *American Political Science Review*, *100*(1), 69–84. https://doi.org/doi:10.1017/S0003055406062010

Hampel, C. E., Lawrence, T. B., & Tracey, P. (2017). Institutional Work: Taking Stock and Making It Matter. In R. Greenwood, C. Oliver, T. B. Lawrence, & R. E. Meyer (Eds.), *The SAGE Handbook of Organizational Institutionalism* (2nd ed., pp. 558–591). SAGE Publications Ltd.

Hardy, C., & Maguire, S. (2017). Institutional Entrepreneurship and Change in Fields. In R. Greenwood, C. Oliver, T. B. Lawrence, & R. E. Meyer (Eds.), *The SAGE Handbook of Organizational Institutionalism* (2nd ed., pp. 261–280). London: SAGE Publications.

Hillman, A. J., & Hitt, M. A. (1999). Corporate Political Strategy Formulation: A Model of Approach, Participation, and Strategy Decisions. *The Academy of Management Review*, *24*(4), 825–842.

Hinings, C. R., Logue, D., & Ziestma, C. (2017). Fields, Institutional Infrastructure and Governance. In R. Greenwood, C. Oliver, T. B. Lawrence, & R. E. Meyer (Eds.), *The SAGE Handbook of Organizational Institutionalism* (2nd ed., pp. 163–189). London: SAGE Publications.

Jacobsson, S., & Lauber, V. (2006). The politics and policy of energy system transformation—explaining the German diffusion of renewable energy technology. *Energy Policy*, *34*(3), 256–276. https://doi.org/10.1016/J.ENPOL.2004.08.029

Kimberly, J. R. (1981). Managerial Innovation. In P. C. Nystrom & W. H. Starbuck (Eds.),

Handbook of Organizational Design (pp. 84–104). Oxford: Oxford University Press.

Kivimaa, P., & Kern, F. (2016). Creative destruction or mere niche support? Innovation policy mixes for sustainability transitions. *Research Policy*, *45*(1), 205–217. https://doi.org/10.1016/J.RESPOL.2015.09.008

Korpi, W. (1985). Power Resources Approach vs. Action and Conflict: On Causal and Intentional Explanations in the Study of Power. *Sociological Theory*, *3*(2), 31–45.

Kuzemko, C., Lockwood, M., Mitchell, C., & Hoggett, R. (2016). Governing for sustainable energy system change: Politics, contexts and contingency. *Energy Research & Social Science*, *12*, 96–105. https://doi.org/10.1016/J.ERSS.2015.12.022

Laird, F. N., & Stefes, C. (2009). The diverging paths of German and United States policies for renewable energy: Sources of difference. *Energy Policy*, *37*(7), 2619–2629. https://doi.org/10.1016/J.ENPOL.2009.02.027

Lawrence, T. B., & Suddaby, R. (2006). Institutions and Institutional Work. In S. Clegg, C. Hardy, T. Lawrence, & W. Nord (Eds.), *Handbook of organization studies,* (pp. 215–254). SAGE.

Levy, D. L., & Egan, D. (1998). Capital Contests: National and Transnational Channels of Corporate Influence on the Climate Change Negotiations. *Politics & Society*, *26*(3), 337–361. https://doi.org/0803973233

Levy, D., & Scully, M. (2007). The Institutional Entrepreneur as Modern Prince: The Strategic Face of Power in Contested Fields. *Organization Studies*, *28*(7), 971–991. https://doi.org/10.1177/0170840607078109

Lipp, J. (2007). Lessons for effective renewable electricity policy from Denmark, Germany and the United Kingdom. *Energy Policy*, *35*(11), 5481–5495. https://doi.org/10.1016/J.ENPOL.2007.05.015

Maguire, S., & Hardy, C. (2006). The Emergence of New Global Institutions: A Discursive Perspective. *Organization Studies*, *27*(1), 7–29. https://doi.org/10.1177/0170840606061807

Matisoff, D. C., & Edwards, J. (2014). Kindred spirits or intergovernmental competition? The innovation and diffusion of energy policies in the American states (1990–2008). *Environmental Politics*, *23*(5), 795–817. https://doi.org/10.1080/09644016.2014.923639

Meckling, J., & Nahm, J. (2019). The politics of technology bans: Industrial policy competition and green goals for the auto industry. *Energy Policy*, *126*, 470–479. https://doi.org/10.1016/J.ENPOL.2018.11.031

Munir, K. A. (2005). The Social Construction of Events: A Study of Institutional Change in the Photographic Field. *Organization Studies*, *26*(1), 93–112. https://doi.org/10.1177/0170840605049463

Offe, C. (2003). *Herausforderungen der Demokratie: zur Integrations- und Leistungsfähigkeit politischer Institutionen*. Frankfurt a.M./New York: Campus.

Offe, C., & Wiesenthal, H. (1980). Two logics of collective action: theoretical notes on social class and organizational form. *Political Power and Social Theory*, *1*(1), 67–115.

Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Harvard University Press.

Rinscheid, A. (2015). Crisis, Policy Discourse, and Major Policy Change: Exploring the Role of Subsystem Polarization in Nuclear Energy Policymaking. *European Policy Analysis*, *1*(2), 34–70.

Rinscheid, A. (2019). *Behavioral and Institutionalist Perspectives on Preference Formation in a Contested Political Context: The Case of Divesting from Nuclear Power*. University of St.Gallen.

Rogge, K. S., & Johnstone, P. (2017). Exploring the role of phase-out policies for low-carbon energy transitions: The case of the German Energiewende. *Energy Research & Social Science*, *33*, 128–137. https://doi.org/10.1016/J.ERSS.2017.10.004

Schaffer, L. M., & Bernauer, T. (2014). Explaining government choices for promoting renewable energy. *Energy Policy*, *68*, 15–27. https://doi.org/10.1016/J.ENPOL.2013.12.064

Scott, W. R. (2008). *Institutions and Organizations: Ideas and Interests* (3rd ed.). Los Angeles: SAGE Publications.

Selznick, P. (1949). *TVA and the Grass Roots: A Study of Politics and Organization*. University of California Press.

Sewell, W. H. (1992). A Theory of Structure: Duality, Agency, and Transformation. *American Journal of Sociology*, *98*(1), 1–29. Retrieved from http://www.jstor.org/stable/2781191

Stigler, G. J. (1971). The Theory of Economic Regulation. *The Bell Journal of Economics and Mangagement Science*, *2*(1), 3–21.

Stokes, L. C. (2013). The politics of renewable energy policies: The case of feed-in tariffs in Ontario, Canada. *Energy Policy*, *56*, 490–500. https://doi.org/10.1016/J.ENPOL.2013.01.009

Turnheim, B., & Geels, F. W. (2012). Regime destabilisation as the flipside of energy transitions: Lessons from the history of the British coal industry (1913–1997). *Energy Policy*, *50*, 35–49. https://doi.org/10.1016/J.ENPOL.2012.04.060

Varone, F., Ingold, K. M., & Jourdain, C. (2016). Studying policy advocacy through social network analysis. *European Political Science*, *preview*, 1–15. https://doi.org/10.1057/eps.2016.16

Walker, E. T., & Rea, C. M. (2014). The Political Mobilization of Firms and Industries. *Annual Review of Sociology*, *40*, 281–304. https://doi.org/10.1146/annurev-soc-071913-043215

Wooten, M., & Hoffman, A. J. (2017). Organizational Fields: Past, Present and Future. In R. Greenwood, C. Oliver, T. B. Lawrence, & R. E. Meyer (Eds.), *The SAGE Handbook of Organizational Institutionalism* (2nd ed., pp. 55–74). London: SAGE Publications.