

Organizing for Sustainability in Transnational Market Reforms

Studies of the EU Biofuels Market

Inês Peixoto



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Organizing for Sustainability in Transnational Market Reforms

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In the past few decades, the societal pursuit of sustainability in industrialized economies has impelled many kinds of market reforms. Aiming at sustainability—a rationalized ideal and a moralized template for the economy—multiple, plural actors use market reforms to narrow the gap between the beliefs about what a market should be (sustainable) and what it actually is (unsustainable). However, sustainability as an ideal seems difficult to achieve, and its urgency has invited new approaches. In sustainability-oriented market reforms, organization provides a coordination mechanism to integrate sustainability principles in markets, for instance through rule making. Such transnational market reforms, which ambitiously deal with globally traded commodities and their value chains, pose great challenges. They expand rule-making to multiple contexts and create fluid and permeable regulatory environments. Their underpinning strategic premise is the mutually supportive relation between stewardship of the environment and economic development. It is assumed that firms provide solutions to environmental problems that in turn motivate innovation. However, the organization of a market juxtaposes the interests and practices of the regulated with those of the regulators that may not be aligned. Thus, market reforms in transitions to sustainability enclose important tensions which, to the best of my knowledge, are underexplored. Against this background, and taking a phenomenon-driven research approach, I examine the recent transnational market reform in the European Union's market for road transport biofuels (2003-2015). As a backdrop of support to the research, I developed a theoretical framing of sustainability-oriented market reforms that builds on and adds to the concept of market reform. The empirical research consists of a collection of three interlinked, albeit independent, longitudinal qualitative studies. The studies provide independent contributions to various theoretical frameworks at the interorganizational and organizational levels. By combining their findings, I contribute to a further theorization of sustainability-oriented market reforms. The main contributions of this dissertation to the market reform and adjacent literatures are a view of market organization as a *negotiated order*, the conceptualization of *regulatory currency*, which I define as the general acceptance and prevalence of the solutions proposed through regulatory means in a market reform that tackles a social/societal problem, and a discussion of the role of *political, strategic and moral agencies*. The dissertation also contributes to the literature by offering a nuanced understanding of the dimensions, challenges, and implications of market reforms in complex, transnational, and contentious contexts and draws implications for policy and management practice that may improve the effectiveness of organizing for sustainability in market reforms.

Keywords biofuels; market organization; market reform; negotiated order; regulatory currency; sustainability; transnational market**ISBN (printed)** 978-952-60-8714-6**ISBN (pdf)** 978-952-60-8715-3**ISSN (printed)** 1799-4934**ISSN (pdf)** 1799-4942**Location of publisher** Helsinki**Location of printing** Helsinki **Year** 2019**Pages** 143**urn** <http://urn.fi/URN:ISBN:978-952-60-8715-3>

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Lisboa, September 2nd, 2019

Inês Peixoto

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Abbreviations

CAP	Common Agriculture Policy
CFC	Chlorofluorocarbons (<i>chemical compound</i>)
CO ₂	Carbon dioxide
CONCAWE	Conservation of Clean Air and Water in Europe
DDT	Dichloro-diphenyl-trichloroethane (<i>insecticide</i>)
DG	Directorate General
DG TREN	Directorate-General for Energy and Transport
EBB	European Biodiesel Board
eBIO	European Renewable Ethanol Association
EC	European Commission
EEB	European Environment Bureau
EP	European Parliament
EU	European Union
EUCAR	European Council for Automotive R&D
Europia	European Petroleum Refiners Association
GHG	Greenhouse gas(es)
GM	Genetically-modified
JRC	Joint Research Centre
MEP	Member of the European Parliament
NGO	Non-governmental organization
R&D	Research and development
STW	Seed-to-wheel
T&E	Transport & Environment
UN	United Nations
WTW	Well-to-wheel

Essays

This doctoral dissertation consists of a summary and of the following publications which are referred to in the text by their numerals

1. Peixoto, Inês; Temmes, Armi, 2019. Market Organizing in the European Union's Biofuels Market: Organizing for Favouring, Acceptability, and Future Preferences. *Journal of Cleaner Production* 236, 117476. (forthcoming, 1.Nov.2019) Published online in <https://doi.org/10.1016/j.jclepro.2019.06.307>

2. Peixoto, Inês (*Unpublished*) Risk Organization and Moral Multiplexity in the EU Biofuels Market. This paper was presented at the 35th EGOS Colloquium, July 4–6, 2019, Edinburgh, United Kingdom.

3. Peixoto, Inês; Välikangas, Liisa (*Unpublished*) Beyond Adaptive Search: Sustained Evolvability In An Industrial Company. An earlier version of this paper was presented at the 32nd EGOS Colloquium, July 7-9, 2016, Naples, Italy.

Author's Contribution

Essay 1. Market Organizing in the European Union's Biofuels Market: Organizing for Favouring, Acceptability, and Future Preferences

Research idea, choice of theoretical framework and literature review; research design, data collection; analysis and discussion of results in light of data and the literature.

Essay 2. Risk Organization and Moral Multiplexity in the EU Biofuels Market

Sole author

Essay 3. Beyond Adaptive Search: Sustained Evolvability In An Industrial Company

Research idea, identification of main concept, choice of theoretical framework and literature review; research design, data collection; analysis and discussion of results in light of data and the literature.

1. Introduction

1.1 Background and motivation

Sustainability has impelled a search for alternative models for the global economy, in particular, through market reforms. In recent decades, industrial firms have increasingly faced calls to solve the environmental problems caused by their activity and, accordingly, integrate sustainability principles with their business. Governments have motivated or enforced this integration by regulatory and non-regulatory means. Sustainability here means belief in a form of present economic growth that provides for the future needs of generations to come (WECD, 1987). In principle, the present reconciliation of economic development and ecological protection will ensure human survival and prosperity in the future and preservation of the Earth system. Climate change, in contrast, as the result of the threat posed by it to sustainability, epitomizes the harms created and amplified by industrial activity that must be assessed and controlled. Achieving that reconciliation requires avoiding the harms to socio-ecological systems, including the ecological resources that will sustain the livelihood of future generations.

Climate change is now being mitigated with considerable urgency, given the inadequacy of prior efforts to tackle it. New framings of the problem emphasize the complex nature of socio-ecological systems, turning societal attention to the preservation of a safe operating space for humanity (Rockström et al., 2009). Hence, the attempts to reform markets to tackle these environmental risks are now more systemic (Slawinski and Bansal, 2015; Whiteman et al., 2013). Also, the globalization of trade implies the global spread of the ecological impacts of business. Thus, the prior focus of transnational mitigation action has shifted and expanded from restraining or restricting the use of a few products (e.g., Maguire and Hardy, 2009) to tackling harms in globally traded commodities and global value chains (e.g., Reinecke et al., 2012). Calls for sustainable development now take a more systemic approach that attends to the varied impacts across value chains. Even so, recently emerging “cultural anomalies”, such as the fraught exploration of oil sands and hydraulic fracking, contradict the sustainability ideal (Misutka et al., 2013). Thus, ongoing calls for climate change mitigation underscore the need for a more robust understanding of the complex relations between contemporary business and the natural environment.

Intervening in this complex relation, governments assume the role of regulators, either constraining or incentivizing firms so that business is conducted in a more sustainable fashion. More pressing calls for change drive even broader

scopes of transformation. In climate change mitigation, the transitions from fossil-based to renewable-based energy production are a case in point. Well-known examples include the cross-industry carbon reduction and bioeconomy policies of the European Union (EU). These policies have caused substantive changes in firms, markets, and industries, whose outcomes are not only visible in the present but also expected in the future. On this account, the regulatory role of governments has taken a transnational dimension across industries and markets.

The amplified role of governments includes many kinds of attempts to reform markets. These reforms attempt to narrow the gap between beliefs about what markets should be (e.g. *sustainable*) and what they actually are (e.g. *unsustainable*). In other words, market reforms aim at alignment of market practices with beliefs about what the economy is or should be from the perspective of particular interests (Brunsson, 2009a; Brunsson and Jutterström, 2018a). They include different kinds of changes, such as transnational rule-making (Djelic and Sahlin-Andersson, 2008), market-based incentives (Veal and Mouzas, 2012), and the creation of new markets (Engels, 2006; Levin and Espeland, 2002). Sustainability-oriented market reforms by governments have become increasingly popular and influential means of initiating societal change. Reforms offer a promise to align markets with the sustainability ideal, which makes them attractive policy instruments.

In this dissertation, I focus on the market reforms that predominantly consist of transnational rule-making. States and non-state actors use rules in industrialized economies as instruments to change markets and industrial infrastructures (Bansal and Hoffman, 2012; Hoffman and Ventresca, 2002). Rule-making, as a means of public regulation of private organizations, aims at changing the behaviour of firms to incorporate sustainability principles in business. Rules define the actions that firms need to, should, or must take in order to tackle the problems of environmental impacts leading to climate change. Transnational rule-making expands this impact across globalized value chains (Harnesk et al., 2017; Manning et al., 2012), which is illustrated by EU market-based policy instruments. However, rule-making in market reforms may remain attempts to change rather than lead to actual changes (Brunsson, 2009a). Also, implementation of rules may not follow prior intentions (e.g., Engels, 2006). The failure to effect change appears to be a hallmark of reforms and a motive for further reform (Brunsson, 2009a), thereby undermining the promise of reforms as instruments of change. Hence, the effectiveness of transnational rule-making in sustainability-oriented market reforms is unclear. Their underpinnings and dynamics merit further scrutiny.

1.2 Focus, scope, and objectives of this dissertation

This dissertation explores the conceptual dimensions and empirical problems of a sustainability-oriented market reform of transnational scope and contentious nature. First, these reforms are anchored on a view of sustainability as an ideal, yet highly rationalized template for changes in the economy and on a view of economic development and environmental protection as interdependent and

reconcilable. Second, market organizing is the mechanism that enacts these market reforms. Through rule-making, it aims at aligning the practices of market actors (e.g. industrial firms) with sustainability ideals. Third, the framing allows a study of the challenges of market reforms as they are amplified by plurality and contentiousness, which are features of sustainability contexts. Taken together, these elements underpin a unifying theoretical background to conceptualize sustainability-oriented market reforms. To the best of my knowledge, the concept of market reform has been hitherto underexplored analytically as a form of organizing for sustainability. Thus, in this dissertation, I ask the following question: how are market reforms enacted through forms of organization amidst contentiousness about practices and beliefs?

Taking a phenomenon-driven approach, the dissertation combines multiple literatures to answer this research question from different angles. It develops a kaleidoscopic perspective to analyze complex and changing phenomenon (the emerging EU biofuels market reform) from distinct theoretical viewpoints. Essay 1 combines the market organization and meta-organization literatures to study change in the process of market organizing over time. Essay 2 mobilizes the pragmatist justification theory to analyze moral multiplexity as agency, adding to the literature on risk organization. Essay 3 explores evolvability as an industrial strategy that contributes to the literature on strategic adaptation in changing environments. The theoretical scope of the dissertation expands across the various theoretical lenses used in the essays, which are compiled in Part II. The key features of each essay are presented in Table 1. In turn, the fragmented insights resulting from this kaleidoscopic approach are used to distil and develop empirically-grounded attributes that characterize this kind of market reforms. In Part I, these insights are coherently linked to key conceptual features of market organization as a mechanism of market reform. In this way, I attempted to probe into the complexity of organizing for sustainability in transnational market reforms. In spite of being generative and rewarding, this research strategy has important limitations that are identified and discussed in a separate section.

Table 1. Summary of key features of the essays.

Essays	Tensions and sources of contentiousness	Theoretical frameworks	Research questions	Key contributions to defining sustainability-oriented reforms
Essay 1	Contestation of biofuels and policy	Meta-organization and market organization	How does market organizing address the challenges of contestation and varying implementation?	Hybrid role of market-organizing meta-organization Conflicting purposes, inter-temporal discrepancies, and hybridity

Essays	Tensions and sources of contentiousness	Theoretical frameworks	Research questions	Key contributions to defining sustainability-oriented reforms
Essay 2	Contested views of biofuel acceptability	Organization of risk and pragmatist justification theory	How does moral multiplexity define and shape risk organization?	Negotiated acceptability and moral agencies
Essay 3	Public backlash impairing innovation	Organizational adaptation in changing environments	How do organizational actions constitute evolvability over time?	Evolvability as strategic adaptation Interplay of plasticity and robustness

The empirical scope of the study is the development of the EU biofuels market in the period 2003-2015, which I defined as a case of sustainability-oriented market reforms. In this reform, I observed contentiousness and continuous change, remarkable features that I found provocative and intriguing. Although the market reform aimed at replacing fossil fuels, partly to mitigate climate change, biofuels nevertheless became one of the most controversial renewable energies. Drawing on the observed contentiousness in the reform, I focused the empirical scope on different instances in which this contentiousness emerged and operated as a driver of organizing processes. This is consistent with the phenomenon-driven approach taken. Hence, each essay follows distinct research methodologies that share commonalities at different levels of analysis and uses various sets of data produced throughout the research process. Process and pragmatist views further inform the research strategy. The empirical data used are synthesized in a separate methodology section in Part I and also extensively documented in each essay in Part II.

The main objective of this dissertation is to conceptualize and contextualize market reforms as mechanisms for organizing sustainability transformations. This objective contains a threefold set of sub-goals. First, I seek to problematize the concept of market reform for sustainability and its underlying assumptions. Second, I pursue a contextualized understanding of the organizational underpinnings and dynamics of these reforms. Third, I explore conceptual insights about the organizational effects of contentiousness in these reforms.

1.3 Significance of the study and structure of the dissertation

Market reforms have gained traction as organization-based solutions to urgent sustainability problems. Governments, civil society, and firms engage in transnational market reforms that take systemic approaches with broad repercussions in the economy. The effectiveness of these reforms—as promised mechanisms of societal change—is premised on the nexus between marketization and environmentalism.

This essay-based dissertation unpacks this nexus and explores market reforms as arenas of negotiation in which multiple, heterogeneous actors meet. In this

way, it contributes to the research on sustainability in markets, from the perspective of market organization, in which there is a lack of empirical studies. Hence, it also extends the literature on the social construction of markets. Overall, the dissertation contributes to a better understanding of the organizing instruments and repertoires of action that societal actors may employ to tackle sustainability problems in reforms.

The dissertation is structured in two main parts. Part I (this chapter) introduces the motivation and theme of the dissertation, presents the theoretical background undergirding the study of organizing for sustainability in market reforms, offers a brief empirical account of the phenomenon, and discusses the dissertation's overall contributions. It is structured in the following way. Section 1 introduces the background, motivation, focus, scope, objectives, and significance of the study. Section 2 elucidates the theoretical background that supports and provides a motive for each essay's literature framework. This unifying background serves as a backdrop that connects the essays' distinct theoretical frameworks around the key main concept of market reform. Section 3 describes the methodological foundations of the essays' research strategies, as well as the methodological limitations, and contextualizes development of the EU biofuels market as a market reform. Section 4 summarizes the main features of the interlinked, independent essays, including their theoretical frameworks, methodologies, and main contributions. Section 5 distils and discusses the overall contributions to the literature. Section 6 describes the limitations of this dissertation's research. Section 7 introduces and discusses the implications for future research, policy, and management practice. Part II compiles the three empirical studies (i.e., the essays), which were previously summarized in Part I (Table 1 and Section 4).

2. Theoretical background

This theoretical framework defines sustainability-oriented market reforms and contextualizes these reforms within in broader societal phenomena. It draws on and combines different literatures to provide support to the conceptualization of market reforms, in particular focusing on their organizational underpinnings and the role of rule-making, regulators, and regulated organizations. The different research fields combined in this theoretical background are thematically related but rarely interlinked in the literature. This framing provides a unifying canvas upon which the study of organizing for sustainability in market reforms is drawn.

2.1 Sustainability driving changes in markets

Sustainability has transformed the modern view of the relation between industrial activity and natural environment. As an ideal, sustainability provides principles for economic action that aim at reconciling economic development, social equity, and ecological development (WECD, 1987). However, the simultaneous fulfilment of these principles is a highly demanding endeavour because in the current economic systems they appear to be incompatible. Achieving such fulfilment, however, is desirable for prosperous and peaceful societies. The pursuit of this ideal builds on the view of a human capacity to act in the present in order to change or shape the future (Giddens, 1990). Hence, the institutionalized belief that these incommensurable principles are compatible and reconcilable has motivated a myriad of templates for economy change.

Organizational interventions now tackle sustainability across its many aspects (Bothello and Salles-Djelic, 2018; Hoffman, 1999). I highlight four recent historical events of exceptional public attention that illustrate this expansion of scope. Publication of *Silent Spring* by Rachel Carson in 1962 generated awareness to the link between technological progress and biodiversity harms, leading up to the demise of DDT decades later (Maguire and Hardy, 2009). It is an example of a product ban and substitution caused by concerns about ecological degradation. The scientific discovery of ozone depletion prompted the assembly of a UN convention in 1987 that culminated in the international agreement to halve the production of ozone-destroying CFCs by 1999 (i.e., the Montréal Protocol). The ban on CFCs epitomizes profound changes in a product market as a result of the identification of global ecological and health impacts (Maxwell and

Briscoe, 1997; Rothenberg and Maxwell, 1997). The greenhouse gas (GHG) effects and climate change science motivated multiple international agreements whose deliberations have had wide-ranging repercussions for multiple sectors and global value chains (Giddens, 2011; Levy, 1997). This illustrates an expansion of scope at the levels of organizations and the natural environment. More recently, the emerging science on planetary boundaries has drawn attention to the critical impacts of industrial activity on climate change, impacts that potentially threaten the maintenance of a safe operating space for humanity (Rockström et al., 2009). Not only researchers but also international organizations, such as the United Nations, have proposed concrete forms of organizational intervention that involve wide-reaching efforts (e.g., Whiteman et al., 2013). The repercussions for organizations and industries are still unclear, given the diffuse and elusive nature of sustainability.

Taken together, these events illustrate an ongoing process of redefinition of the ecological implications of past and contemporary industrial activities as social problems (Blumer, 1971), which some have recently labelled grand challenges (George et al., 2016). By redefining what is right and wrong in the economy-ecology relationship, sustainability offers a normative lens through which the place and role of business is viewed in society.

2.2 Sustainability as an ideal yet rationalized and moralized template

The definition and tackling of social problems in sustainability is highly rationalized, hence bearing scientific and moral meaning (Meyer, 1996, p. 245). Scientization, in which scientific expertise and science professionals play a pivotal role (Hironaka, 2003; Meyer and Bromley, 2013, pp. 370–371), indicates this rationalization. It supports the definition of problems, for instance in climate change mitigation, with a focus on metrics, quantification, and monitoring (Bothello and Salles-Djelic, 2018; Espeland and Stevens, 2008; Meyer and Bromley, 2013). Another example is the burgeoning development of lifecycle thinking and the proliferation of lifecycle analysis tools (Baumann et al., 2002; Heiskanen, 2002). Scientization “bring[s] rational order to areas of uncertainty” (Bromley and Meyer, 2015, p. 3), in spite of the great contemporary uncertainties about the global scope and magnitude of impacts.

Furthermore, the notion of actorhood, which posits that organizations become “responsible citizens of the global society” (Bromley and Meyer, 2015, p. 134), also underpins this rationalization. As actors, organizations seek to influence not only society but also complex physical phenomena (Frank et al., 2000), thereby juxtaposing the social and physical worlds. The scope of expansion described in 2.1—e.g., from local to global concerns—indicates a reconfiguration of values (Alexius et al., 2014), which supports the role of actorhood in the definition and tackling of societal sustainability problems. For instance, past and present energy debates “reflect conflicting value and moral positions regarding the “right’ energetic basis for society” (Beamish and Biggart, 2017, p. 178).

By placing ecological protection and economic development on an equal footing, sustainability also implies the moralization of markets (Fourcade and Healy, 2007; Stehr et al., 2006). An example is the trend of marketization to tackle societal issues, defined as the use of “policies fostering the emergence and development of markets and weakening . . . alternative institutional arrangements” (Djelic, 2006, p. 53). The use of markets as “policy tools” (Levin and Espeland, 2002) exemplifies this trend. These developments infuse markets and changes therein with competing meanings and contending interests (Hoffman and Ventresca, 1999). Thus, as an ideal, sustainability provides a moralized template for changes in markets to tackle societal problems defined in a highly rationalized fashion.

2.3 Defining market reforms

As social constructions, markets are defined as social institutions that govern economic activity (Carruthers and Babb, 2000) and interweave technical, social, political, and economic dimensions (Callon, 2007). Markets are also cultural projects and sites of moral meaning (Fligstein and Dauter, 2007; Fourcade and Healy, 2007; King and Pearce, 2010). States play a fundamental enabling role in markets (Dobbin, 1994; Edelman and Suchman, 1997; Fligstein, 2001). For instance, through regulation and standards, states play a shaping role in defining the products traded, their production conditions, or enabling and controlling competition. Markets can also be organized. In organized markets, “at least two actors come together and decide on the order of the market” (Aspers, 2009). From the standpoint that markets are not fashioned “out of a vacuum” (Ahrne et al., 2015, p. 9; Fligstein, 2001, 1996), and “[neither] spontaneously arise and develop into a self-sustaining order” (Engels, 2006, p. 330), organized markets result from intentional organizing efforts (Ahrne et al., 2002, p. 51). On that score, the use of markets to tackle sustainability issues is closely linked to rationalization (Brunsson and Jutterström, 2018b, p. 249).

Market reforms are one way of changing markets. In the *Oxford English Dictionary*, reform is defined as “the action or process of making changes in an institution, organization, or aspect of social or political life, so as to remove errors, abuses, or other hindrances to proper performance”. The term market reform has been loosely used in economics and finance to refer to different things, such as deregulation and transitions from state-controlled to market-based economies. This particular view of reform reflects a general notion of facilitating competition mechanisms. By contrast, I use a broader definition of market reform. I draw on Brunsson’s definition of organizational reforms, i.e. “attempts at changing the local situation [which] represents something incorrect that should be corrected . . . [or] does not work as intended”, which is also applied to the context of markets (Brunsson, 2009a, p. 38).

In other words, a market reform encloses the prospect of market changes based on an ideal or a belief in relation to ill-fitting or outdated market practices. Accordingly, reforms are prompted by the discrepancy between institutionalized beliefs and local practices and involve “explicit descriptions of the state for

which one is striving” (Brunsson, 2009b, p. 6). This sufficiently open definition enables the use of market reform as an analytical concept that includes integration of non-market principles in markets such as ecological protection or management of climate risks. Sustainability-oriented market reforms, a particular kind of market reform, pivot on market principles as solutions for stewarding ecological protection.

What do market reforms entail? They materialize the ideas of reformers about “solutions” to the “problems” that they seek to address. Moreover, reformers interact with a broad spectrum of other actors that represent or foster other solutions, present different framings of the same “problem” or focus attention on different kinds of “problems”. These interactions may generate contentiousness in markets (King and Pearce, 2010, p. 250), as conflicts among different interests and values are negotiated (Bartley, 2003; Etzion, 2007). Contentiousness potentially shapes the content of reforms (Brunsson and Jutterström, 2018a). Hence, the great diversity of actors involved in a market reform increases the supply of potential problems and possible solutions, which increases the likelihood of further reform (Brunsson, 2009b, p. 14). Figure 1 presents a simplified schematization of the aforementioned conceptual elements, which are further discussed below.

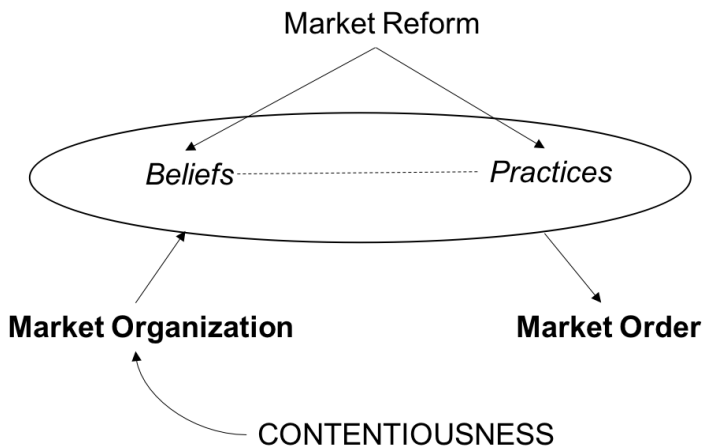


Figure 1. Schematization of elements in the conceptual framework.

2.3.1 Using market organization as a mechanism of reform

Market organization is a key mechanism of market reform. It consists of attempts to arrange markets with a given purpose through the use of rules, monitoring, sanctioning, hierarchy, and membership (Ahrne et al., 2015; Ahrne and Brunsson, 2011). Many markets are organized with the aim of supporting the achievement of policy goals (Callon, 2007; Djelic, 2006), such as the promotion of low-carbon economies, of which emission permits markets are a well-known example (Engels, 2006; Levin and Espeland, 2002; MacKenzie, 2009). As a mechanism of reform, market organization motivates, shapes, or determines

the behaviour of market actors because “markets [themselves] are not actors that can change.” (Brunsson and Jutterström, 2018a, p. 6).

Market organization produces an organized market order that is decision-based (Ahrne et al., 2015; Luhmann, 2005). Counterintuitively, organizer orders are fragile and prone to continuous change. Decisions are influenced by an heterogeneous set of market organizers, which include policy-makers, legislators, and regulators as well as sellers, buyers, industry representatives (e.g. in technical standards), and non-governmental organizations (e.g. in sustainability standards) (Alexius and Tamm Hallström, 2014; Boström and Hallström, 2010; Djelic and den Hond, 2014). These actors “tend to air opinions, to intervene, or to suggest that others should intervene in order to organize markets in ways that protect social values or special interests” (Brunsson and Jutterström, 2018a, p. 2). Moreover, the market organization may make multiple, open interpretations regarding what organization means and entails, even when enacted as regulation (Schneiberg and Bartley, 2008).

The features of the market organization hitherto discussed posit that, in organized market making, the order created is not pre-determined or fixed, but often unstable. This instability, however, highlights its limits as a mechanism of reform to achieve sustainability.

2.3.2 Conceptualizing the role of transnational regulation in market reforms

States play a pivotal, albeit changing, role in market reforms. Previously, states typically placed constraints on industrial activity through regulation that “internalized the negative externalities of businesses” (Bromley, 2007). More recently, the command-and-control forms of regulation have been partly replaced with less coercive rules followed by more flexible forms of control. A narrow focus on states as drivers of reform is remarkably insufficient for understanding the dynamics of rule-driven sustainability transitions. By exerting their authority, states have unique abilities to shape markets and the practices of firms in the geographical area of their jurisdiction (Bartley, 2014, p. 96). However, states have limited power to provoke large-scale change in transnational market reforms that involve cross-border commodity trade (Engels, 2006). Also, in the case of the EU, member-states also act as “regulated regulators” (Djelic and den Hond, 2014, p. 68). Furthermore, transnational regulation is shaped not only by the common interests of the regulators but also by science, professional expertise, and public concerns about harms and risks (Lidskog et al., 2005). As states have become part of a constellation of rule-making actors (Engels, 2006), transnational regulation has become “a complex compound of activities bridging the global and the local and taking place at the same time within, between and across national boundaries” (Djelic & Sahlin-Andersson, 2008: p.3). Thus, transnational regulation in sustainability-oriented market reforms is multicentered, permeable, and adaptable.

Transnational regulation for sustainability also takes an incentive approach to innovation (Bergek et al., 2014; Georg, 1994; Kivimaa, 2008), thereby differing from prior instruments of pollution control. It includes the setting of long-term

strategic targets for regions and industries, in order to tackle diffused, large scale problems, to reduce consumption of finite resources and to shift the foundations of energy-production systems away from fossil sources and towards renewable sources (Hoffman, 2001; Kivimaa and Mickwitz, 2011). The capacity of transnational regulation to enable innovation is typically supported by flexible market-based instruments that have become popular among governmental and non-governmental organizations promoting and initiating sustainability transformations (e.g., Sharma, 2001). These have largely replaced command and control approaches (Bansal and Hoffman, 2012).

By virtue of these changes, such reforms are as increasingly complex as the problems they tackle. Rule-making is characterized by a multiplicity of rules proposed, developed, and implemented by a plurality of actors with varying stakes and interests (Djelic and den Hond, 2014, p. 71). The broader scope now includes the pivotal role of states as well as that of non-governmental organizations and for-profit firms. NGOs and social movements influence transnational regulation, including standard-setting (e.g. Bartley, 2007, 2003; Boström and Hallström, 2010) and participate in defining what is harmful or safe (Maguire and Hardy, 2013). The role of states as reformers shifted from being single, central regulators to being integrated in a plural constellation of other actors that also drive and shape market reforms (Djelic & Sahlin-Andersson, 2008). Furthermore, the recent calls to attend to the complexity of the socio-ecological systems (Bansal and Gao, 2006; Whiteman et al., 2013, p. 329) will likely contribute to the growing complexity and density of transnational regulation (Djelic, 2011, p. 36). Regulation remains an important instrument for path-breaking market changes with a broader impact on ecological systems, thereby meriting greater attention and study (Hoffman and Jennings, 2015).

2.3.3 Expectations for industrial firms in market reforms

Contemporary rule-making steers corporate behaviour by inviting innovative responses in an opportunity-seeking and entrepreneurial fashion (Hoffman & Ventresca, 2002). The regulated firms are expected to follow the rules set by others (possibly having also contributed to shaping them) and to build on their profit-seeking orientation to steward sustainability. They are expected to behave in a way that matches, or goes beyond, the regulatory prescriptions (Hart, 1997, 2010; Hoffman & Georg, 2012), for instance by using environmental problems and regulation as sources of innovation (Halme and Laurila, 2009, p. 330). Moreover, as social actors, firms bear responsibility for stewarding the natural environment (Meyer and Bromley, 2013). Hence, firms are viewed as both the problem and the solution.

Compliance functions as an enabler of new business practices and future business opportunities (Porter and van der Linde, 1995). The underpinning premise is that firms benefit from taking ecological protection concerns into their business strategy (Halme and Laurila, 2009; Shrivastava, 1995), for instance as sources of innovation in long-term corporate strategy (Hart, 1995; Hart and Dowell, 2011; Marcus, 1987; Starik and Marcus, 2000). In other words, reconciling ecological protection and economic development promises to be a win-

win strategy. However, market actors do not necessarily comply with, follow, or implement the rules (Oliver, 1991), thereby also taking an adversarial approach to rule-following (Marcus, 1984). Thus, in response to regulation, transformative changes are still uncommon.

The fulfilment of these expectations is extremely challenging. In order to fulfil the win-win promise, firms need to be able to develop specific capabilities (Sharma and Vredenburg, 1998; Zollo et al., 2013). For instance, firms need to possess “market, law and regulation knowledge” and “R&D investments” and develop “interfunctional collaboration”, within the firm and with other organizations, and “innovation-oriented learning” that enables complex capabilities (de Medeiros et al., 2014, p. 82). Transformative responses imply greater integration of sustainability within strategy (Bansal, 2005; Halme and Laurila, 2009) and require “significant investments in knowledge-based organizational systems and practices” (Sharma and Henriques, 2005, p. 176). In order to achieve this integration, firms may need to take a dynamic approach that focuses “not only the firm’s profitability at a point in time but also its sustainability over time” (Bansal and DesJardine, 2014, p. 76). Moreover, the burgeoning environmental problems generated by globalization and economic growth have led to expansion of the scope of corporate responsibility. For instance, expansion of transnational standards to whole value chains impels producers to consider socio-ecological impacts across the globe (Boons and Mendoza, 2010). However, the capabilities organizations need to develop in order to fulfil these expectations are still poorly understood, especially in the complex context of permeable and fluid transnational regulation.

2.3.4 Summary of the conceptual background

The theoretically informed elements discussed here problematize the interface of beliefs and practices at the core of a market reform. State-organized market reforms have become permeable and fluid as a result of the changing nature of transnational regulation. States are now part of a constellation of actors capable of influencing and shaping regulation through various forms of engagement. Also, the organization of a market juxtaposes the typically misaligned interests and practices of regulators and regulated firms. Decisions about these reforms are potentially contested and debatable—at least in public arenas—partly as a result of the contested and ambiguous nature of the sustainability ideal. Thus, the plurality of views on the definition of a sustainable market has resulted in the expansion of the scope of problems and solutions. Taken together, these elements complicate market reforms. Furthermore, the mutually supportive relationship of ecological protection and economic development is the strategic premise underpinning these reforms. Their success implies the fulfilment of this interdependence, but the reconciliation is nuanced and fraught with tensions. In addition, the capabilities needed to enact this reconciliation are unclear. Against this background, I examine the case of a sustainability-oriented market reform in the transport fuels market.

3. Methodological foundations and research strategy

This dissertation is based on a qualitative inquiry (Denzin and Lincoln, 2008; Miles et al., 2014) that comprises three qualitative longitudinal analyses of multiple sources of data. I developed and employed an empirical research strategy that fit its emerging and evolving nature, which I labelled a phenomenon-driven approach (e.g., von Krogh et al., 2012). The conceptual definition of the phenomenon as a *sustainability-oriented market reform* emerged during the process of research. In this section, I describe the methodological foundations and limitations of this emerging research strategy. Each essay documents in greater detail the research strategies and methodologies used in each of the three empirical studies.

3.1 Contextualizing the phenomenon: The EU biofuels market reform

At the turn of the millennium, the European Commission presented biofuels as desirable alternative fuels to replace fossil fuels in the road transport fuels market. As liquid transport fuels produced from biological materials—mainly harvested from arable land (e.g. soybean oil, sugar cane, corn) as well as organic waste—biofuels offered an alternative to the polluting extraction and refining of crude oil. At the time, the transport sector generated about a quarter of the total GHG emissions in the EU, thus being the second largest emitting source (European Commission, 2015).

The early European biofuels policy fostered the supply of an alternative fuel that engaged the farming sector in the production of biofuels and their raw materials. In 1992, the reform of the Common Agricultural Policy (CAP) had provoked changes in the agricultural markets. The effects of these changes on the balance sheets of farming businesses were partly offset by creating new outlets for farm produce that potentially created jobs in rural areas. Prior to that, in the 1980s, the EU had taken the first steps to explore the material and economic viability of biofuels, for instance, by commissioning studies, issuing calls for tenders on research projects, and performing cost-benefit analyses of the use of agricultural crops for biofuel production. In the 1990s, a proposal for an exceptional taxation regime for biofuels (European Commission, 1992a), as substitute

fuels produced from surplus agricultural crops, hoped to motivate cost reductions and “kickstart . . . a viable biofuel industry” (European Commission, 1992b) to diversify the supply of energy sources away from crude oil. In 1992, the CAP reform year, biofuels were depicted as “a decisive factor in the future of agriculture” (European Commission, 1992c) and, by Members of the European Parliament, as an economic outlet that tackled CAP issues such as surplus crops and set-aside land (European Parliament, 1992).

Policy-makers promoted biofuels as suitable lower-carbon fuels that promised to solve the increasing greenhouse gas emissions and the growing dependence of the transport sector on fossil fuels. At the time, biofuels were deemed environmentally-friendly. Believed to be almost carbon-neutral, they represented a desirable substitute for fossil-based fuels (European Commission, 1993). The Commission committed to exploring their potential to solve air pollution from motor fuels as one of the “long term renewable sources of energy such as solar, wind, biomass, biofuel and geothermal which produce little or no pollution [and] will constitute the main sustainable energy source” (European Commission, 1996). In 1997, the Council approved the change in fuel standards that allowed fuel producers to add biocomponents to petrol and diesel (European Council, 1997). In 2003, the prior policy attempts to increase biofuel demand culminated in a legislative act through which European regulators organized a market space for biofuels. The EU Directive established a non-binding target of 2% market share for biofuels in all transport motor fuels by 2005, which would rise to 5.75% by 2010. This legislation was framed within the broader set of carbon-reduction policies that intersected related industries, such as automotive and energy production. However, the adoption of the biofuels policy backfired. Contradicting prior views, some claimed that biofuels were a “cure worse than the disease” (Doornbosch and Steenblik, 2007).

Dissenting voices, such as those of NGOs, challenged the prior understanding of biofuels as well as the policy. Various actors claimed that GHG emissions resulted from the displacement of crop cultivation land to produce biofuels and from deforestation to grow crops for energy production. Various environmental groups expressed concern that land-use change would lead to shifts in natural ecosystems, that the energy used in producing biofuels was greater than the energy they provided, and that forests were being burdened with increasing demands. For instance, Transport and Environment (T&E) criticized the European Commission for “bluntly dictating targets” without acknowledging the impacts and for the lack of an impact assessment in its proposal. However, the magnitude and temporal scope of the global harms associated with biofuels was quite unclear at the time. The observable effects included deforestation and biodiversity loss in Southeast Asia, as reported first by numerous environmental NGOs and featured later in official EU reports. For instance, a group of NGOs claimed that “if the target is, as is widely accepted, almost completely to be met through the use of biofuels, it is highly unlikely to be met sustainably”, that is, “there is a very substantial risk that current policy will cause more harm than

good.” (BirdLife European Division et al., 2009). These views echoed, for instance, in the public backlash around development of renewable diesel from palm oil (Essay 3).

The critique intensified and took centre stage in the regulators’ arena, thereby leading to regulatory changes. As the biofuels policy became contentious, biofuels from agricultural sources became indefensible. Instead, the new regulations supported non-crop-based fuels. Policy-makers changed market rules substantially between 2003 and 2015 (Essay 1). The biofuels policy changed from a single flexible target into a complex framework that regulated biofuels production and defined the acceptability of these products (Essays 1 and 2). Also, the innovative biofuels that avoided these controversial impacts gradually received more regulatory and public attention (Doornbosch and Steenblik, 2007). These innovative biofuels warranted a great deal of investment; the strategies of some companies succeeded (Essay 3) while others failed. Even so, continuous problems thrust the market further into new market rule changes and a myriad of issues related to biofuel acceptability remained unresolved.

3.2 Developing a phenomenon-driven research approach

This phenomenon-driven approach is anchored on a social-constructivist ontology and epistemology (Berger and Luckmann, 1966; Eriksson and Kovalainen, 2008, pp. 11–24). For instance, as discussed in the section 2.2, I define markets as socially constructed. I developed this phenomenon-driven approach as a “strategy of inquiry” (Denzin and Lincoln, 2008, p. 33). I participated from the standpoint of a socially-situated researcher in the process of framing and defining the research object of interest, thereby playing an intervening role in definition of the phenomenon at the empirical and conceptual levels. Hence, this approach is also phenomenological (Denzin & Lincoln, 2008: p.29).

I began this study with an interest in the case of a historically- and geographically-relevant oil refiner developing renewable fuels—apparently for regulatory compliance reasons—and later grew intrigued by the sheer change and instability that pervaded the emerging EU biofuels market. This refining company had developed a pioneering renewable diesel that avoided the use of oil in road transport; however, it made the rational but contentious decision to utilize palm oil as its main cost-efficient raw material. What made the outcome of this pioneering ingenuity, meant to reduce transport’s dependence on oil, so controversial? Could it be explained as a result of wrongdoing, ill-planning, or unforeseen consequences? Subsequently, I observed the unfolding controversy in the biofuel regulatory process in the EU, which I found provocative and appealing. The ongoing controversy reflected the *emergent* nature of the phenomenon. Also, I observed a punctuated process of regulatory changes, and attempts thereof, which engaged a growing set of actors. As a result, I decided to explore various instances of contention and change within the developing EU biofuels market in three independent empirical studies.

The research strategies in the three studies emerged and developed from these empirical observations. Having started the first data collection phase in 2011, I

traced the historical development of attempts to organize this market until 2003, then retrospectively traced development of the ongoing market reform between 2003 and 2011 and generated observations of its unfolding in real-time until 2016, when I interrupted data collection. The extensive data collected for the three studies are summarized in Table 2. Throughout the inquiry, I explored sensitizing concepts (cf. Blumer, 1954 cited in van den Hoonaard, 2012) that resonated within the phenomenon and with the literature.

Table 2. Synthesis of data collected and used in the analyses, by type of data source, including the period of data production.

Essays	Archival/Documents	Interviews	Non-participant observation
Essay 1	<i>Period: 2003-2015</i> Legislation, policy documents, and policy reports in online repositories (EU digital databases and websites) and websites of official governmental authorities in three EU member states Media and press releases in Lexis Nexis Documents by selected companies and consortia (e.g., annual reports, press releases)	-	-
Essay 2	<i>Period: 2006-2009</i> News articles (EURActiv) Digital EU archives (documents by the European Commission, Parliament, Council, Joint Research Centre) (about 172 documents) Documents by six key stakeholders (three industry associations and three environmental NGOs)	<i>Period: 2014-2016</i> Transcripts of seven recorded semi-structured interviews with representatives of the oil and biofuel industries (companies and industry association), environmental NGOs, and experts at research institute and private consultancy	<i>Period: 2014</i> Observation notes from a two-day international industry event in the Netherlands
Essay 3	<i>Period: 2004-2015</i> Releases to the media and to investors, annual reports, presentations, and corporate magazine (about 360 documents), and website content --- Media articles (368) on biofuels in Europe (EurActiv, Financial Times, Reuters, The Economist, Wall Street Journal) and policy documents (7)	<i>Period: 2011-2016</i> Transcripts of 12 semi-structured interviews, different company functions (R&D, strategy, business development, sustainability, and human resources) --- Transcripts of four semi-structured interviews with locally-based organizations (competitor, industry association, environmental NGO, research institute)	<i>Period: 2012-2017</i> Notes from observation of company presentations in four different events in Finland --- Observation notes from a two-day international industry event in the Netherlands

Supported by a developing conceptual framework, I used theoretically-focused and empirically-informed questions that further guided the study. For instance, how did the market organizing elements come about (Essay 1)? How did the actors negotiate the conflicting values and the contested meaning of biofuels as harmful or desirable (Essay 2)? Also, how did firms in this market cope with regulatory uncertainty and a strong public backlash against biofuels (Essay 3)? By doing so, I “establishe[d] and describe[d] the empirical facts and constructs that enable[d] scientific inquiry to proceed.” (von Krogh et al., 2012, p. 290). Thus, given the back-and-forth process between theory and data to delimit and conceptualize the focus of analysis, the research approach was also akin to *cas-ing* (Ragin, 1992). Taken together, the empirical studies enabled development of the *distinguishing key features* of the phenomenon, one of the early steps in this research approach (von Krogh et al, 2012: p. 284-285).

Early on, I focused on understanding the increasing complexity and apparent instability that I observed in this market reform rather than on examining the effectiveness or the normative underpinnings of the reformed market. This research choice committed the study to an exploratory approach rather than to a normative one, which influenced the direction of the research and the analytical choices made. However, avoidance of a normative approach does not prevent me, as a researcher, from contributing to the qualitative research process (Denzin & Lincoln, 2008: p.28-36). A phenomenon-based approach warrants a reflexive and transparent account of the research strategies and processes, including the interpretive paradigm mobilized, i.e. the “basic set of beliefs that guides action” (cf. Guba, 1990, p.17 cited in Denzin & Lincoln, 2008: 31). In developing a phenomenon-based research strategy in a contentious and unfolding empirical setting, I attended to the plurality and multiplicity of voices in the market reform, in order to develop sensitivity to the way in which these voices shaped the phenomenon. As a participant in the research, I also shaped the exclusion and inclusion of particular viewpoints through the choice of data, conceptual frameworks, and methodologies.

3.3 Process and pragmatist approaches in the empirical research strategy

The three independent essays present three different longitudinal qualitative analyses of the empirical materials collected in the period of research. The methods of each individual study are documented and justified in each essay.

Common to these studies is a process approach (Langley et al., 2013) focused on changes over time and across organizing processes and within an organization. In organized markets, market order is the “(temporary) result of organizing processes” (Brunsson and Jutterström, 2018b). Hence, I examined how the biofuels market became organized in a particular way, how organization changed over time and through patterns of action and interaction of multiple actors, and also how these processes unfolded given the mobilization of certain forms of agency.

The three empirical studies feature longitudinal analyses that reflect weaker or stronger process views (Langley and Tsoukas, 2016). A weak-process view posits “the temporal evolution of things or substances that nevertheless retain their identity over time” (*idem*, p.3). This view is more prevalent in Essays 1 and 3. From a strong-process view, “a particular phenomenon is thought to be constituted through the work agents do over time” (*idem*, p.4). This view is more prevalent in Essay 2. I suggest that the phenomenon—sustainability-oriented transnational market reforms—encompasses both views of process. The market reform unfolds over time; in principle, it is possible to zoom in on specific organizations or organizing devices that retain their identity over time. In turn, as sustainability is contested, and as the market reform unfolds, the meanings of sustainability are enacted and negotiated through organizing processes. Hence, the market reform becomes an enacted environment in which individuals and organizations “create the materials that become the constraints and the opportunities they subsequently face (Weick, 1995: 31)” (Langley & Tsoukas, 2016: p.3).

Agency also plays a role in the phenomenon from a pragmatist approach, which “views reality in terms of processes and relations, and highlights the interplay of meaning and action” (Farjoun et al., 2015, p. 1787). From a pragmatist view, organizational accomplishments are constructed from social meanings and values, as actors cope with situated experiences (e.g., Emirbayer & Mische, 1998). Essays 2 and 3 most prevalently reflect a pragmatist view. They reflect the view that organizations evaluate actions in terms of their consequences and engage in experimenting possible lines of action. Agency and a pragmatist lens are consistent with the strong-process view (cf. Langley & Tsoukas, 2016).

4. Summary of the research essays

The three essays compiled in this dissertation draw on different literatures to illuminate different aspects of a sustainability-oriented market reform, at the interorganizational and organizational levels.

4.1 Essay 1: Market Organizing in the European Union's Biofuels Market: Organizing for Favouring, Acceptability, and Future Preferences

The first essay, co-authored with Armi Temmes and published in the *Journal of Cleaner Production* (Peixoto and Temmes, 2019), examines the market organization process. It analyzes the joint influence of contentiousness and the expanded role of states in market reforms. In order to do so, it combines the literatures on meta-organizations and organization of markets (Ahrne et al., 2015) to analyze the market organization steered by the EU, a meta-organization capable of regulating its members, and by member-states, which play the role of “regulated regulators” (Djelic and den Hond, 2014). The study presents a longitudinal qualitative analysis (2003-2015) of multiple sources of archival data on market organizing and its outcomes in the EU and in the Denmark, Finland, and France. In the multi-step analysis, we combined thematic coding (Miles et al., 2014) and process methods (Langley, 1999). We identified three different configurations of organizing schemes that constitute broad repertoires of responses to policy. These schemes redefined the market boundaries and produced market fragmentation but potentially undermined fulfilment of the prior policy goals. As main contributions to the literature, we found that the market reorganization produced conflicting purposes and intertemporal discrepancies. Also, the hybrid role of the EU as a market-organizing meta-organization blended authority and autonomy and challenged coordination of actors towards a common purpose. The essay also contributes to the market-creation policy literature. We suggest that market organization and meta-organization literatures provide a valuable framework and a nuanced approach to market creation as a policy instrument that can inform the normative policy literature as well as policy practice.

Within the overall scope of the dissertation, the first essay draws the conceptual and empirical backdrop to market organization and identifies and describes the dynamics of reorganization in the market reform as a result of contentiousness. Also, the essay defines the roles of market organizers in the reform.

4.2 Essay 2: Risk Organization and Moral Multiplexity in the EU Biofuels Market

The second essay was presented at EGOS 2019, in Edinburgh, in the track “Enlightening the Future through Riskwork”. In contrast with the first essay—which focuses on the outcomes of the contentiousness—this essay examines the way various actors organize regarding the uncertainty of biofuel harms that underpinned that contentiousness. Drawing on the moral dimensions of risk, the essay examines the organizing processes underpinning the construction of biofuels as risk objects. In order to do this, I used the pragmatist justification framework (Boltanski and Thévenot, 1991; Reinecke et al., 2017) as an analytical lens. The longitudinal qualitative study (2006–2009) used a grounded theory methodology (Charmaz, 2014) to analyze multiple sources of data, predominantly archival data produced by official European Union authorities, non-governmental organizations, and industry associations, which were complemented by interviews and non-participant observation. The approach enabled me to conceptualize moral multiplexity as agency and use this conceptual foundation to examine a process of risk organization. I found four interrelated agencies through which multiple actors negotiated moral multiplexity in the creation of a risk organizing device and attempted to transcend the conflicts. Moral multiplexity plays a role, not only in framing certain objects as harmful, but also in the processes through which the acceptability of harms is defined, interpreted, and controlled. The study shows the malleability of this device, which accommodated new interpretations of acceptability. Furthermore, the transcendence of any conflicts between moral schemes excluded harms deemed significant by a part of the actors involved in risk organization. Thus, the risk organization process supported rule-making but simultaneously created instability. The findings contribute to the literature on risk organization (Gephart et al., 2009; Maguire and Hardy, 2013; Scheytt et al., 2006), which appears to substantiate a recent revival of the interest on risk, as a social phenomenon, in organization studies.

Within the overall scope of the dissertation, this second essay offers a conceptualization and detailed account of a risk organizing process that supported market organization in a contentious market reform. The organizing device was used by regulators as a scaffold for transnational rule-making and by other actors as an artefact to dispute rule-making. Prior literature in the organization of markets has highlighted the importance of supporting elements—such as diffusion of information and technology artefacts (Brunsson and Jutterström, 2018b, pp. 256–257)—but has not yet explored supporting organizing processes of this kind.

4.3 Essay 3: Beyond Adaptive Search: Sustained Evolvability in an Industrial Company

The third essay, co-authored with Liisa Välikangas, explores the strategy of an industrial firm that responds to ongoing market reform by innovating and substantially transforming its business. It was presented at EGOS 2016, in Naples, in the track “Innovating towards Sustainable Organizations: The Role of Power,

Dependence and Stakeholder Expectations”. This essay draws on prior research on strategic adaptation in changing environments (e.g., Levinthal, 1997; March, 1991; Tripsas, 1997) and builds analytically on the concept of evolvability (Jain and Kogut, 2014) as a capability that firms may develop and deploy as they cope with or adapt to continuous change. Using a case study of an industrial incumbent’s innovation in the period 2003-2015, the essay examines how the firm—also the object of reform—adapted to the ongoing, complex, and contested market reform in which it experienced regulatory uncertainty and public backlash against its renewable diesel. The longitudinal case study analysis combined case study (Yin, 2014) and grounded theory methods (Corbin and Strauss, 2008; Gioia et al., 2013) to analyze multiple sources of data, including interviews and archival data. Adaptation, apparently, fails to be a good strategy under regulatory uncertainty. We found that a company may instead seek evolvability, manifested as a repertoire of organizational and managerial actions, which enables it to maintain robustness to external changes while developing new capabilities that provide plasticity. Hence, the essay explores the interplay between robustness and plasticity, which has hitherto received scant attention in the literature.

Within the overall scope of the dissertation, the third essay underscores the challenges of industrial innovation in contested market reforms, as innovation processes become impaired, leading up to more transformative organizational change. The study suggests that in such a context the difficult juxtaposition of compliance and innovation warrants specific capabilities, risks losses, and challenges the win-win view of regulation.

5. Discussion: Conceptualizing organizing for sustainability in market reforms

This dissertation explores the phenomenon of market reform—in particular, the case of regulatory favouring of an alternative product in a transnational market reform with sustainability goals. I begin this discussion by revisiting the general question that motivated the dissertation, which is, *how are market reforms enacted through forms of organization amidst contentiousness about practices and beliefs?* A key empirical finding is the redefinition of the reform content and the reform beliefs as a result of the contentiousness. I theorize this finding as emerging from the negotiated ordering of the market. From the analysis of this negotiated order, I distil and propose the emerging concept of *regulatory currency* and the roles of political, strategic, and moral agencies. The contributions of the essays provide the organizational underpinnings of these redefinition processes in the negotiated order.

5.1 Market organizing as *negotiated order*

One major contribution of the dissertation is the notion of market organizing in a reform as the negotiated ordering of a market. The contentious nature of this market reform, which I explored in the essays from different theoretical and empirical angles, is an entry point for understanding and untangling this “negotiated order” (originally Strauss, 1978 cited in Barley (2008: p.12)). Borrowing from prior literature, the concept points to the temporally-bounded configuration of all the market-organizing elements at play, together with the corresponding agreements regarding these elements, which produce a specific market order. Although from a pragmatist perspective, the market organization is not necessarily a negotiated order, it may become one. In this way, contentiousness takes on more substantive meaning as a key feature of a negotiated order. I suggest that actors engaged in market reform should not only address contentiousness but also contribute to it through organizing.

An important source of contentiousness in the market reform was productive doubting about the safety and desirability of biofuels, i.e. their actual climate risks (Essay 2). Doubting is identified here as an expression of moral agency that initiates questioning of reform beliefs. The beliefs about biofuels are embedded in systems of scientific and moral meaning that constructed particular ideas

about the appropriate substitutes of fossil fuels. For instance, doubting partly disrupted these meanings, thereby contradicting prior policy claims about the climate-mitigation potential of biofuels. Thus, doubting may be a means for re-configuration of values in markets, i.e. adding to, expanding, and relocating the locus of contestation (Alexius et al., 2014).

Doubting produced *risk organizing elements that redefined the reform beliefs* (Essay 2). Multiple actors participated in this redefinition; through mobilization of moral agencies, these actors negotiated the common good. Hence, the reform beliefs are neither the privileged domain of market organizers nor that of market actors. The engagement of plural constellations of actors participating in contemporary rule-making (Djelic and den Hond, 2014; Djelic and Sahlin-Andersson, 2008) underscores the negotiated nature of these beliefs. Furthermore, the identified risk organization processes (Essay 2) suggest that reform beliefs are not only co-constructed in the process of reforming but also known and substantiated through an organizing device.

Market organization redefined the content of the reform through organizing schemes that, in turn, redefined market boundaries (Essay 1). The two forms of redefinition are closely linked: by defining acceptability, risk organizing provided a new rationale for decisions about market organization elements (Essay 1, Essay 2). Market reorganization enacted the new meanings of acceptability, for instance, specification of acceptable and preferred products (Essay 1). This resulted in market fragmentation, which is a form of reorganization. Whereas at a prior stage the reform content reflected a flexible approach to rule-making, its later redefinition produced market fragmentation, which fundamentally altered the market order. Fragmentation either constrains or enables the strategic actions of firms (Essay 3), thereby shaping competition in the market.

Also, redefinition of content and beliefs recursively shaped the market-order basis of “what is traded”. This noticeably juxtaposed the market environment and the regulatory environment and produced regulatory uncertainty for the regulated firms operating in the emerging market (Essay 3). Regulatory uncertainty potentially undermines the high capital investments needed for the market to develop and grow. The findings suggest that adaptation may be useless or detrimental in this kind of context. In a negotiated order, under market reform, firms may benefit from developing capabilities for evolvability (Essay 3). Individual firms may be unable to exert substantial influence on market organization or risk organization among a polycentric constellation of actors.

On this account, the effect of a negotiated order on corporate strategies may be more difficult to untangle and to tackle than that of regulatory uncertainty. Firms may be able to reduce the uncertainty related to regulation through lobbying, corporate political activity, or collaboration with regulators or others. This uncertainty reduction involves a large amount of resources in the case of the EU, given the sheer number of individuals and organizations participating in rule-making within the EU single market. However, a negotiated order appears to be a more fundamental form of uncertainty in market reforms because it combines the redefinition of content and beliefs. The literature posits that fundamental uncertainty is a key feature of market organization because of the

precarious and contested nature of decisions (Ahrne et al., 2015). The notion of market organizing as a negotiated order, especially through the role of moral agency, indicates an additional source of uncertainty apart from decisions. This potentially contributes to research on market organization.

5.2 Untangling the role of agencies in the negotiated order

The notion of organizing for sustainability as a negotiated order highlights the role of multiple agencies. A negotiated order is accomplished through the interweaving of agentic forms that complement and influence decisions to organize markets (Ahrne et al., 2015).

Agency refers to “temporally embedded social engagement” (Emirbayer and Mische, 1998, p. 963). Political agency refers to the interests of the multiple plural actors involved directly and indirectly in the reform. As an example, market organizers adapt transnational rule-making, and multiple political agencies are enabled by the hybrid role of the EU as a market-organizing meta-organization (Essay 1). Strategic agency refers to the “systematic attempt to reach conceived ends through the planned and purposeful applications of means” (Beckert, 1999, p. 782). It is illustrated by the responses of firms to market reforms (Essay 3). Moral agency refers to actors’ use of their reflexive competences in the imperative of justification (i.e. sense of justice) in situated practices (e.g., Boltanski and Thévenot, 2000). This is illustrated by struggles in defining and negotiating the common good among a constellation of actors (Essay 2). Overall, from a pragmatist perspective, the mobilization of these agencies combines interests and values, meaning and action (Farjoun et al., 2015). Also, they are constituted by the socio-material arrangements employed in market organizing (e.g. organizing devices, regulation).

These agencies provide a useful analytical lens for the classification of actors in market reforms. Individual agentic forms are not unequivocally tied to specific types of actors (e.g. policy-makers have political agency). Instead, the agencies are employed or mobilized by any of the actors influencing any aspect of the reform. For instance, non-governmental organizations pursue particular interests, such as stewardship of the environment, through which they try to influence regulatory processes. At the same time, they mobilize a moral agency in justification of the common good (Essay 2). In addition, the member-states engaged in the reform as market organizers act upon national interests provided by local political cultures, resource contexts, and industrial infrastructures (Essay 1). In a similar vein, the strategic actions of firms enact views of the future based on their own interests and on what is justified (Essay 3). In spite of the accuracy of prior classifications of actors from a phenomenological perspective—e.g. market organizer, profiteer, buyer and seller, or others (cf. Ahrne et al, 2015)—these classifications may be insufficient in the context of a negotiated order. The potential implications for the literature are the characterization of the changing role of states in market reforms and a more granular analysis of the role of actors labelled “others” in market organization (Ahrne *et al.*, 2015).

This suggests the relevance of a pragmatist approach, as the actorhood in sustainability-oriented market reforms combines and interweaves these political, strategic, and moral agencies.

5.3 *Regulatory currency as an outcome of the negotiated order*

Contributing to the literatures on transnational rule-making and market reforms, I suggest that redefinition of reforms shapes the *regulatory currency* of the market solutions proposed in the reform. I define regulatory currency—a conceptual term emerging from the overall findings—as *the general acceptance and prevalence of the solutions proposed through regulatory means in a market reform that tackles a social/societal problem*. Regulatory currency is a socio-material arrangement that ascribes a certain import to a product within a regulatory framework. This is reflected in the commensuration and ranking of products by regulators. The term currency here reflects its general semantic meaning. However, the term also evokes the disciplinary economics definition, i.e. a medium of exchange, a unit of account, and a store of value. Analogously, regulatory currency depends on how sustainability is accounted for; it possesses two definitional attributes—societal acceptability and strategic value. I suggest that contentiousness influences these attributes.

Regulatory currency emerges from the negotiated order in a market reform. It is shaped by the political, strategic, and moral agencies, which operate in the processes leading up to the redefinition of the content, beliefs, and practices in the reform. In this case, regulatory currency is the combined outcome of the use of market organizing schemes (Essay 1) and risk organizing devices (Essay 2). The former refers to organizing for future preferences and for acceptability (Essay 1), and the latter to how acceptability is defined and accounted for (Essay 2). Both forms of organizing constitute socio-material arrangements that ascribed different import to biofuels within the regulated market. Similar other forms of organizing are, for instance, processes of problematization and normalization of risk meanings (e.g., Maguire and Hardy, 2013) that contribute to shaping the societal acceptability attribute. The strategic value attribute is reflected in the strategic choices that firms make, for instance, investing in innovation to develop a product of higher currency (Essay 3). Over time, regulatory currency contributes to the construction of shared understandings and practices of what is traded, a fundamental element of market order (Aspers, 2011). On that account, it possesses societal resonance and profound implications for the emergent market order and, subsequently, for market competition.

Regulatory currency possesses malleability, by virtue of the mobilization of political, strategic, and moral agencies. These agencies shape the regulatory currency of a particular product in time; it may be gained or lost, precarious or definitive, or not yet realized. Thus, this malleability suggests two attributes, stability and temporality, as presented in Figure 2. The regulatory currency of a solution can be mapped and traced across a continuum of stability (from precarious to definitive) and of temporality (from realized to unrealized). Both attributes reflect the negotiated nature of the concept and the role of agencies. The

stability continuum reflects, more specifically, the precariousness of the import of a product within the regulated framework. It indicates a source of regulatory uncertainty. For instance, risk-organizing processes render regulatory currency precarious, as they redefine the bases of acceptability (Essay 2). The temporality continuum reflects the temporal realization of the value of this import. The orientation of market organization towards future preferences (Essay 1) indicates the competitive potential of innovative products.

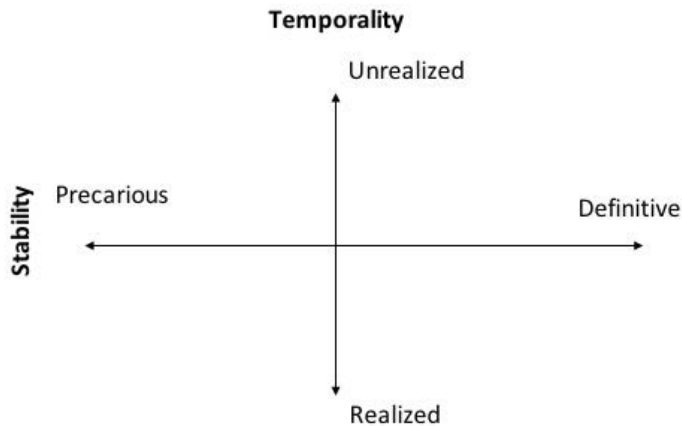


Figure 2. Stability and temporality in regulatory currency.

5.4 Mechanisms of hope in the dynamics of market reforms

Ongoing market reforms persist in the permanent hope that beliefs and practices align. Brunsson (2009) proposed that hope represents “a necessary condition for reform”, i.e. “hope that ideas will be transformed into practice” (Brunsson, 2009c, p. 17). The *Oxford English Dictionary* defines hope as the “expectation of something desired”, or “desire combined with expectation”. The initiation of a reform is an expression of a particular desired expectation. However, once initiated, may we rely on the hope that these market reforms will succeed? Is hope sufficient, as ideals or beliefs are contested and redefined?

Brunsson (2009) suggested that the perils of reform failure lie where hope is confronted with practical experience. The reason is that hope may be lost once reformers realize that, although the desire was legitimate, the expectation was impractical. This dissertation suggests, instead, that the confrontation between hope and practical experience triggers a recursive process of redefinition within the reform. The redefinition process began with contentiousness over practices, followed by contentiousness over content, thereby leading to changes to beliefs and, finally, to change in the content of the ongoing reform. In this view, market reforms are interfaces of interaction of plural actors capable of fundamentally

redefining the reforms in face of contentiousness. The complexity of the corresponding organizing processes is amplified by attempts to tackle that contentiousness. Thus, the emergence of a negotiated order and the regulatory currency hitherto described are testaments to this complexity.

The recursiveness of the process suggests a particular form of preservation of hope: the desired ideal is preserved, but experience disaggregates the expectation to reveal the pluralisms that it contains. Here, hope takes a new meaning through the combined effects of organizing and agencies. Therefore, hope as desired expectation of alignment appears to be insufficient as a mechanism of reform amidst contentiousness.

This negotiated enactment of hope suggests a pragmatist perspective. Akin to the idea that “the hope of agreement is never lost so long as the conversation lasts”, the negotiated enactment of hope requires “an attitude by which interlocutors express both their commitment to certain forms of future interaction and their belief in its possibility” (Rorty 1979: 318, cited in the *Stanford Encyclopedia of Philosophy* (2017)). The pragmatist standpoint that the ideal is an agreement that must be continuously achieved resonates with the moral agency hitherto discussed. Accordingly, in the negotiated enactment of hope, the desired expectation of reconciling market and ecological values is co-constituted by the political, strategic, and moral agencies at play. Among these, moral agencies might be a necessary condition for this negotiated enactment of hope because they appear to be pivotal for the redefinition of beliefs amidst contentiousness. Hope, then, is also an attitude of committed ownership of a desire for future change.

6. Limitations

The limitations of this dissertation include the following: a) the analysis is limited to a particular temporal scope, b) most archival data collected across the studies are extensive and produced in real-time but limited in interpretive depth, c) interview data and access were limited by the contentiousness and strategic sensitivity of the phenomenon, d) the analysis of a complex transnational phenomenon is constrained by selection of the actors included in the analysis, and e) the conceptual framework provides a theoretical background that is adequate and relevant but not extensive. Overall, I addressed these limitations by providing a transparent account of the research strategy and methods, by discussing my research role in framing the phenomenon and the analytical lenses, and by providing justification for the methodological and theoretical choices.

The findings and contributions are temporally-situated and constrained. The analysis of this market reform, still ongoing and bearing historical antecedents, focuses on the period 2003-2015. This delimitation excludes the effect of prior organizing attempts and the ongoing regulatory changes post-2015. These excluded phenomena are acknowledged in the contextualization of the study, but overlooked in the analysis. Nevertheless, the period of analysis is broad enough to include the effect of relevant events.

The emerging, contentious, and ideological nature of the phenomenon shaped the research process and the analytical choices made from the early stage of research. For instance, the contentiousness and strategic sensitivity present in the field constrained access to some data. Access was also restricted by limits on data collected from protected and sensitive knowledge within companies and decisions by some individuals within companies and civil society organizations to decline to give interviews. In order to address these limitations, I turned to alternative forms of data collection that would minimize retrospectivity and reflect multiple viewpoints. Also, I considered the retrospective and real-time implications of the data collection. This explains the choice to use multiple sources of publicly available archival data produced “in real time” and also retrospectively. Documents contain “historical traces” of organizing (March et al., 2000).

Grasping the full complexity and repercussions of the transnational EU biofuels market would be an impossible and overwhelming task for a doctoral dissertation. Hence, the contributions are necessarily bounded by the choices of key aspects and angles. These choices were necessary, as the EU market reform engaged numerous actors, including governments, industry organizations, expert

organizations, civil society organizations, and firms. For instance, the selected organizations represent particular interests and not others.

The conceptual framework is adequate and relevant but not extensive. Phenomenon-based approaches are valuable albeit challenging. Their promise lies in the ability to address multifaceted phenomena, the bridging of rigour and relevance, and the substantial relevance for practice. As this research strategy is firmly grounded on empirical puzzles, it is likely to produce theoretical contributions with practical currency. Part of the challenge, however, is that complex problems may “fall outside the scope of available theories” and research that “bridges epistemological and disciplinary divides” (von Krogh et al., 2012, p. 277). The dissertation’s contributions are limited by the heterogeneous choice of theoretical frameworks combined with different levels of analysis. Thus, the analysis of the range of conceptual themes examined within this market reform is limited in depth.

7. Implications for future research, policy, and managerial practice

7.1 Future research

Market and organization have been conceptualized as distinct and incompatible until recently. Organization is one among three elements, including mutual adaptation and institutions, which explain market changes. This dissertation contributes to advancing knowledge on the organization of markets as mechanisms of market reform. However, further research is needed to identify the limits of organization in achieving the ideals of sustainability or, more broadly, other societal ideals. Such research is relevant in light of the recent “revival” of the interest in organization (Ahrne et al., 2016; Holt and den Hond, 2013), in particular the burgeoning research on standardization and the growing interest in partial organization and meta-organizations.

The concept of regulatory currency emerged from the analysis of a state-driven market reform, but it may not be peculiar to this kind of reform. Sustainability-oriented transnational market reforms occur not only through public but also private regulation. In private regulation, the presence of market fragmentation and inconsistent shared meanings is also plausible. Moreover, regulatory currency appears to have fundamental implications for regulatory uncertainty that are still unclear. Hence, future research that explores other instances and contexts is needed to advance the characterization of the features, attributes, and dynamics of regulatory currency.

The interweaving of political, strategic, and moral agencies highlights the role of actorhood in such reforms, which merits further scrutiny. For instance, future research may explore the related concept of responsibility, which is integral to organization and to moralized markets (e.g., Shamir, 2008). A related dimension is the role of power relations, struggles, and tensions in the negotiated arenas of reform amidst sustainability’s contentiousness. Although the empirical studies suggest that each market organizer or market actor mobilizes more than one of these agencies, they overlook the conditions under which these organizations are able to mobilize power. This is a promising area for future research.

Although the dissertation uses market organization as an analytical lens to study sustainability transitions, this framework is largely overlooked in the sustainability literature. Nonetheless, a great deal of organizing effort towards pursuing the sustainability ideal occurs in the interstices of formal organizations

and in the interorganizational space. Following recent calls for more systemic approaches in sustainability research, the conceptual apparatus of *organization* offers interesting and important conceptual tools that merit further development. For instance, further research on the organizational underpinnings and dynamics of market reforms may support their effectiveness, thereby providing also empirical relevance.

7.2 Implications for policy

Simple and flexible regulation is useful because it allows space for innovation and for new interpretations outside the scope of policy. However, the lack of agreement about pivotal definitional issues (what should be traded, what is harmful) is problematic. In the contemporary context of sustainability transitions, sustainability is contested, problems are defined in broader scopes (e.g. planetary boundaries), and solutions engage more systemic thinking. The focus on the pursuit of win-win solutions may dismiss or discourage the co-construction and negotiation of agreements and common understandings. Hence, it seems necessary to revisit the policy assumptions of the use of flexible regulation.

The emerging notion of regulatory currency may contribute to policy analysis and the design of policy instruments. It may be used, for instance, to analyse the portfolios of policy options typical of energy and climate policies (e.g. biofuels vs. hydrogen vs. solar). Even as recent sustainability transitions are expected to be technology-neutral, the use of certain policy instruments influences the import of different options. Regulatory currency may be useful for evaluating the weight and value of different policy solutions in apparently technology-neutral decision settings. There are broader implications, though. Policy outcomes may benefit from a better understanding of the capacities of some actors to shape regulatory currency and the factors leading their inability to do so. In systemic approaches to sustainability transitions, these definitional matters take on great importance, as a multiplicity and plurality of actors interact to shape the market reform.

7.3 Implications for management practice

The growing attention to diverse environmental impacts of business and the complexity of transnational value chains leads to the emergence of new uncertainties. In this context, firms need to take a broad view on the losses or harms that are largely outside the strict scope of profit-seeking action. As sustainability is ambiguous and contested, firms need to find alternative forms of engagement in policy and stakeholder circles to understand the plurality of views that influence the regulatory currency of different strategic alternatives. Moreover, regulatory currency may also be a useful tool for analyzing the implications of a variety of strategic options for regulatory compliance.

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Sustainability as an ideal seems difficult to achieve, and its urgency has invited new approaches. Market reforms have gained traction as organization-based solutions to the societal pursuit of sustainability in industrialized economies. The effectiveness of these reforms—as promised mechanisms of societal change—is premised on the nexus between marketization and environmentalism. In this dissertation, I study the EU biofuels market reform, a case of transnational organizing for sustainability, in the period 2003-2015. Taking a kaleidoscopic approach, I offer a view of sustainability-oriented market reforms as negotiated orders. The dissertation contributes to a better understanding of the organizing instruments and repertoires of action that societal actors may employ to tackle sustainability problems in reforms.



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