



INSTITUTIONAL ENTREPRENEURSHIP AND (DYNAMIC)  
CAPABILITIES WITHIN THE ENERGY TRANSITION: A  
MERGED CONCEPT

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## ABSTRACT

In the context of the energy transition, the uptake of alternative, more sustainable business models can be regarded as a critical area of concern. In order to facilitate this uptake, new institutional arrangements are essential. An institutional entrepreneur can be regarded as an important actor to establish these new institutional arrangements. Institutional entrepreneurs have a specific institutional interest and therefore aim to disrupt existing institutional elements. Institutional entrepreneurs are valuable actors that can accelerate the uptake of new business models. By disrupting existing institutions and creating new ones, institutional entrepreneurs can create more favorable conditions for the rollout of their business model, and therefore also for other entrepreneurs that are less active on an institutional level. Business models are shaped by institutions and vice versa. To disrupt existing institutions, particular skills on multiple levels including individual, organizational and institutional, are essential. In fact, we discovered coherence with institutional entrepreneurship and dynamic capabilities. In addition, other capabilities seem to be essential as well. These capabilities include social capability, capability of collaborating, capability of sense making, capability of interpretation and capability of timing.

## INTRODUCTION

It is widely acknowledged that the current fossil-dominant energy system will not give us a sustainable perspective in the long run (York & Bell, 2019). According to many, the current energy system has proven to be unendurable, and fundamental changes in the design of this energy system is critical. Such a fundamental change is also called a transition. (de Haan & Rotmans, 2011). Therefore, in the context of energy, we also speak of the energy transition. The energy sector has long been characterized by stability and continuity regarding stakeholders, business models and customer-relationships (Leisen, et al., 2019). However, the threat of climate change has resulted in a profound push for the development of a renewable energy economy (Bryant, et al., 2019), and therefore the current-fossil dominant energy system becomes gradually destabilized (Rotmans, 2018). This increasing push for the development of renewable energy systems can impact the playing field regarding energy business models. However, most energy related business models are still fossil-dominant (Proka, et al., 2018), and are also being referred to as 'business as usual'. 'Business as usual', also called traditional economic models, is accompanied by business models with an absolute focus on the allocation of efficient resources and thus ignoring societal prosperity and the resilience of biological ecosystems (Romeiro, 2012). These business models are shaped by the 'business as usual' practices that are rooted in the existing fossil-dominant energy system. For this reason, the tenability of 'business as usual' practices can be called into question, and also gives rise to the exploration of alternative, more sustainable business models and the potential role of entrepreneurs.

The need for the development of renewable energy systems might lead to emerging opportunities for entrepreneurs. However, entrepreneurs find it a hard task to change their usual ways of doing business and focus on sustainable business models. In order to do this, they would need to balance three pillars simultaneously, namely social, environmental and economic pillars. (Eikelenboom & de Jong, 2019). Many entrepreneurs fail to address all pillars simultaneously and instead, they tend focus on one single pillar. This is often due to limited resources in terms of financial, human and operational capital (Eikelenboom & de Jong, 2019).

However, according to (Hall, et al., 2010), numerous high-profile thinkers advocate entrepreneurship as a catalyst for many social and environmental changes needed. This implies that entrepreneurs could have an important role to play in accelerating the energy transition, reconfiguring unsustainable systems (Mourik & Bouwknecht, 2019).

Indeed, we do witness new business models emerging, even ones that aim to accelerate the change within the energy system, and also on an institutional level. This type of entrepreneur is also called the institutional entrepreneur; an entrepreneur that manages to influence institutions and socio-technical systems. For this reason, we regard institutional entrepreneurship as an important area of concern within the context of the energy transition. This concept of institutional entrepreneurship has also gained increased attention within the context of the energy transition. If institutional

entrepreneurs are indeed valuable within the energy transition, it is relevant to explore what characterizes them and more importantly, which exact capabilities they utilize in order to have impact on institutional level. Therefore, we aim to dig deeper in the concept of institutional entrepreneurship and attempt to better understand how institutional entrepreneurs interact with the socio-technical system and which capabilities they need to master in order to create disruption in the current energy system. More understanding of relevant capabilities regarding institutional entrepreneurship might contribute to find ways in stimulating institutional entrepreneurship and sustainable business modelling within the energy transition more effectively.

In order to get more insight in these capabilities, we will also discuss the concept of dynamic capabilities, originally introduced by Teece (2007) and also discover the potential link with institutional entrepreneurship. Within the field of entrepreneurship and management studies, particular capabilities deemed essential for successful entrepreneurs. There are many studies focusing on dynamic capabilities and their significance in successful business models. However, the concept of dynamic capabilities has not yet been linked to institutional entrepreneurship within the context of the energy transition.

In this literature study, we aim to answer the following research questions:

What characterizes the institutional entrepreneur and which capabilities are relevant for practicing institutional entrepreneurship?

- How do institutional entrepreneur distinguish their selves from other entrepreneurs?
- Which dynamic capabilities are relevant for institutional entrepreneurship?
- Which other capabilities are relevant for institutional entrepreneurship?

In the following chapters, we will firstly discuss why institutional change is essential in the energy transition. We will start with relevant literature on transitions and institutions, followed by an introduction of different types of entrepreneurship and an introduction of different types of entrepreneurial dynamic capabilities. In the synthesis section we will outline a concept bringing together the concepts of institutional entrepreneurship, dynamic capabilities and other relevant capabilities.

This literature study is based on literature mainly from journal articles, retrieved from Science Direct. The following keywords were used: institutional entrepreneurship, energy transition and dynamic capabilities. In addition, this literature study draws on the work of Mourik & Bouwknecht (2019), where the results of numerous case studies focusing on entrepreneurs operating in the energy transition were analyzed. These results gave rise to further explore the concept of institutional entrepreneurship.

## THE ENTREPRENEURIAL CONTEXT: INSTITUTIONS AND SOCIO-TECHNICAL SYSTEMS

In order to explain how institutions and transitions work and interact we shortly introduce the Multi-Level Perspective model (MLP) from Geels (2002). Geels (2002) suggests with the MLP model that transitions are a result of the interplay between processes at niche, system and landscape levels. “Existing systems such as the energy, agro-food and mobility systems are stabilized by institutions, comprising an integration of technologies, policies, user patterns, infrastructures and cultural dimensions that are created over time (Geels, 2019, p. 189). Actors such as engineers, firms, policy makers and regulators incrementally reproduce, maintain and improve these elements. At the same time, the perceptions and activities of these groups of actors are natured by institutions along with shared rules and social practices (Saren & Haarstad, 2018). Hence, institutions influence perceptions and activities of actors and vice versa, and can thus be regarded as interwoven mechanisms. All these elements mediate and shape technologies, it’s use and user patterns, which leads us to the term ‘socio-technical regimes’ (Geels, 2019). Thus, the emphasis on ‘socio-technical’ is based on the premise that all these social, institutional and systemic elements are intertwined with technology.

A transition characterizes itself by a certain ‘misalignment’ within a socio-technical system and its surroundings, resulting in tensions. Resistance, public discontent and polarization are examples of such tensions (Rotmans, 2018). These tensions become visible and can eventually lead do destabilization of the incumbent socio-technical regime. In addition, crises and calamities may result in an acceleration of a transition. For example, the Dutch earthquakes in Groningen, due to the local exploitation of natural gas, functioned as a catalyst for the Dutch energy transition. However, this transition was already in motion due to deeply rooted ecological, economic and technological drivers on a mondial scale (Rotmans, 2018). Nonetheless, events, calamities and societal tensions can create the opportunity for new structures to emerge and gain importance. These new structures and new ways of doing take places in niches. Niches can be regarded as test environments for radical innovations (Schot & Geels, 2007). “Niches are protected spaces that allow for the experimentation of new social and technological configurations” (Ruggiero, et al., 2018, p. 582). Niches can eventually break through and destroy the existing deep-rooted structure (Rotmans & Loorbach, 2008).

The energy systems constitutes a dominant socio-technical system as described above. Our current energy system is predominantly centralized, market driven, large scale and largely dependent on fossil fuels (Proka, et al., 2018). For example, the energy regime in the Netherlands consists of only a few parties that are responsible for delivering electricity, heating and transport solutions. However, the increase of decentralized renewable energy cooperatives are challenging the incumbent energy regime. At the same time, these powerful parties are trying hard to not give up their dominant position, resulting in a conflicting and contradicting playing field (Proka, et al., 2018).

Even though the energy system consists of only a few dominant parties delivering energy services, the energy system comprises interlinked systems, interdependent actors, perspectives, dimensions, factors and structures at different levels, that all influence each other (Mourik & Bouwknecht, 2019). Hence, a transitioning energy system is a complex process. As institutions, shared rules and social practices shape and mediate technology, its use and user patterns, it is argued that the success of renewable energy technologies is not only defined by technical and economic aspects, but also by the social system it is embedded in. This implies that when the energy system changes, institutions change as well along with culture and lifestyle and vice versa (Sareen & Haarstad, 2018). Due to this complexity, the energy transition is a process that comes along with dynamic, uncertain technological and societal outcomes (Mourik & Bouwknecht, 2019). This complexity is even increasing due to digitalization, decarbonization and decentralization (Madlener, 2019).

Given the premise that the energy transition is a process that comes along with dynamic, uncertain technological and societal outcomes, the operating context of the energy transition might arise insecurity amongst entrepreneurs. Hence, it might not be an easy task for entrepreneurs to roll out a sustainable, economically promising business model when technological and societal outcomes are uncertain. Entrepreneurs are often guided by rules and institutions of the socio-technical regime, and are therefore also provided stability and certainty (Schot & Geels, 2007). However, changing institutions can impact this sense of stability and certainty. At the same time, as mentioned earlier, institutions are shaped by entrepreneurs and other actors. Institutions, also called ‘rules of the game’ can therefore limit and enable entrepreneurs in their range of possibilities (Gölgeci, et al., 2017). The actions of entrepreneurs and institutions are thus intertwined. This implies that institutional change can also be accomplished through uncoordinated and distributed action of a wide range of actors, including entrepreneurs, with different resources, different principles and conflicting world views (Jolly, et al., 2016), (Gölgeci, et al., 2017). These conflicting and divergent interests of a heterogeneous group of actors are key to political negotiation which in turn can lead to new institutional arrangements. This group of actors engaged in institutional transformation have the ability to collaborate, compete and contest with each other (Jolly, et al., 2016). Hence, both collective and contesting actions are significant in institutional contexts. The fact that actors, including entrepreneurs, can establish institutional change, brings us further to the concept of institutional entrepreneurship.

In the next section, we briefly describe different types of entrepreneurship to better position the institutional entrepreneur in the field of entrepreneurial types. We will discuss the ‘strategic entrepreneur’ and the ‘grassroots innovations approach’ first and then continue discussing institutional entrepreneurship in more detail. In the next section we will revisit all three types with a focus on their identified capabilities.

### STRATEGIC ENTREPRENEURSHIP

Strategic entrepreneurship is a new field of interest emerging from the collaboration between strategic management and entrepreneurship scholars (Dogan, 2015). This field argues that business environments are rapidly changing and witness an increase in complexity day by day. Characteristics as innovativeness, speed, aggression, adaptability and flexibility are used to define this complex and dynamic environment. Some types of entrepreneurs (organizations and companies) feel urged to more strategically adapt to these changes. This requires new perspectives and new capabilities in order to remain competitive.

Strategic entrepreneurship is about foreseeing changes, and adapting to it. Strategic entrepreneurs are characterized by the capabilities of adaptability and agility and is mostly defined by the environment where they find themselves in.

### GRASSROOT INNOVATIONS

Grassroots innovations are those type of innovations that challenge and often attempt to replace existing and unsustainable sociotechnical systems on the local level (Seyfang & Smith, 2007), (Singh, et al., 2019). “Grassroots innovations are community-led solutions to sustainability problems that encompass social, economic and environmental issues” (Dana, et al., 2019, p. 1). Grassroots innovation follows a bottom-up approach aligning with the context, interest and values of the community (Dana, et al., 2019). Community activists and also increasingly policy makers attempt to find a way to promote their growth and diffusion beyond the local levels, due to, for example, idealistic or political motives. However, many grassroots innovations experience much difficulty in simply surviving (Seyfang & Smith, 2007). Therefore, grassroots innovation remains mainly active on a local and individual level and thus does not reach the organizational and institutional stage. Perhaps more important than the previous reason for not scaling up, the motivations for grassroots innovations come often from idealistic drivers and manifest in serving a community or a small group of people and by definition do not particularly aim to scale. Consequently, having significant influence on the wider unsustainable system is potentially not that relevant to them. Although they do aim to demonstrate that business can be done differently as well.

### INSTITUTIONAL ENTREPRENEURSHIP

Dimaggio (1988) coined the concept of institutional entrepreneurship as part of a study into the role of entrepreneurial agency in institutional changes. Institutional entrepreneurs are described as “individuals or organizations that can create, maintain and disrupt institutions” (Jolly, et al., 2016, p. 104). Institutional entrepreneurs can be both empowered as be restrained by institutions (Battilana, et al., 2017). This leads us also to the



so called ‘paradox of embedded agency’ where institutional entrepreneurs find themselves in. As mentioned earlier, institutions are characterized by stability, continuity and path-dependence, whereas entrepreneurship is characterized by innovation, transformation and futurity (Garud, et al., 2007). In other words, entrepreneurs can be considered socially embedded, and at the same time this specific type of entrepreneur has the agency to create institutional change despite being constrained by them (Mahzouni, 2019). Furthermore, Mahzouni (2019) highlights that institutional entrepreneurs are actors that can put their agency to work to create a specific institutional arrangement of interest to them. This can be an interest that strengthens their business model, or an personal, idealistic interest, depending on the entrepreneur and their drivers. What thus characterizes the institutional entrepreneur is that they seek a way in leveraging resources to create new institutions or to transform existing ones (Mahzouni, 2019).

Institutional entrepreneurs however do not always have a clear vision to mobilize such changes, nor do they always have well specified goals or interests. It is often also unsure whether their work is going to pay off in successful and desirable outcomes. The processes institutional entrepreneurs are going through are furthermore full of setbacks and failures, along with new roadblocks along the way (Jolly, et al., 2016).

To better understand the actions and strategies of Institutional Entrepreneurs, Mahzouni (2019) proposes a multi-level framework where the concept of institutional entrepreneurship is explicated with levels of action and stages of development. Levels of action are distinguished on the individual, organizational and institutional level. The stages of development distinguish between innovation, mobilization and structuration phases. Mahzouni (2019) states that innovation takes place at the individual level, mobilization takes place at the organizational level and structuration takes place at the institutional level.

In the innovation stage (individual level), individuals or group of individuals attempt to introduce new ideas and logics on niche level. These new ideas and logics are also called ‘discourses’. These discourses are important because they are used to gain support and legitimacy for new practices that challenge the existing practices in the regime.

The mobilization stage is characterized by attracting diverse resources as means of legitimation. Local groups and organizations need to interact internally as well as externally with the emerging fields. Thus, resources are collected and mobilized in an organized action to challenge the regime.

The structuration stage, where the institutionalization takes place at the level of the regime, is characterized by new practices gaining widespread legitimacy and becoming taken for granted. New practices become the new standard and are thereby ‘standardized’ or institutionalized as new emerging norms and structures.

See table 1 for an overview of the stages, levels and role of entrepreneurs.

<b>levels of action</b>	<b>stage of development</b>	<b>key characteristics</b>	<b>key role of entrepreneurs in driving institutional change</b>
<b>individual</b>	innovation	Informal social networks (family, relatives and friends) highly influenced by personal attitudes, values, knowledge and socio-economic status. They can be converted into organisational form of agency and collective action.	The individuals through informal networks and by drawing on different discourses can gain social acceptance for their innovative ideas.
<b>organisational</b>	mobilisation	Informal networks are converted in formal organisations and networks within defined socio-spatial boundaries e.g., a neighbourhood or rural community to mobilise resources for change.	Formal organisations by drawing on various discourses can establish multiple strategies for situating new practices across existing institutions.
<b>institutional</b>	structuration	Formal organisations and networks at the field level (including established fields and the emerging field). They make policies and laws to enable the legitimacy of new practices in emerging fields.	Organised institutional entrepreneurs through creating links with formal organisations at the regional, national and international levels can create alignment between new practices and existing institutions.

**Table 1: multi-level framework by Mahzouni (2019)**

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## SUMMARISING

We have discussed different types of entrepreneurship and the ways these types interact with their institutional context with the aim to understand what particularly the concept of institutional entrepreneurship entails. Based on the above we can start defining institutional entrepreneurship.

Based on the above it becomes clear that there is no unambiguous definition of institutional entrepreneurship to be found in the literature. There is often referenced to the institutional entrepreneur as a single actor, an organization or a group of actors or a group of organizations. This actor can be a single person with an operating business, but it can also be a university or a governmental organization. Institutional entrepreneurs are described as “individuals that can create, maintain and disrupt institutions” (Jolly, et al., 2016, p. 1) and they operate in the context of embedded agency (Mahzouni, 2019) (Heiskanen, et al., 2019). Institutional entrepreneurs have a particular interest in institutional arrangements (Mahzouni, 2019). The transformation of institutional arrangements is realized through distributed and uncoordinated actions from a wide range of actors with different resources, different principles and conflicting world views (Jolly, et al., 2016). Orchestrating these collective and contesting actions are one strategy operated by institutional entrepreneurship.

Perhaps comparing institutional entrepreneurship with strategic entrepreneurship and grassroots initiatives further clarifies the unique differences. Where institutional entrepreneurs focus on creating and shaping their environment, i.e. the socio-technical institutions the strategic entrepreneur is mainly adapting to their environment. Hence, institutional entrepreneurship goes beyond singly adapting to institutional change and emphasizes the reconfiguration or creation of institutional change itself. For grassroots innovations there is no aim to scale up, they initiate often from idealistic drivers and manifest in serving a local community or a small group of people. It is not their aim, contrary to institutional entrepreneurs, to have significant influence on the wider unsustainable system. As such they differ from the institutional entrepreneur who explicitly aims at changing institutional elements. However, the thing that they have in common is the fact that they attempt to challenge existing sociotechnical systems by demonstrating that business can be done differently as well.

Based on the above, we define institutional entrepreneurs as individuals/organizations or a group of individuals/organizations that have a particular institutional interest and aim to disrupt existing institutional elements and reconfigure or create new institutional elements to further their business.

In the different sections above the concept of capabilities was touched upon. The different types of entrepreneurs have to be equipped with certain capabilities in order to operate in an increasingly complex environment. In the next section we investigate the capabilities that institutional entrepreneurs need to have to master in order to create disruptions and

transformations. It is useful to gain insight in these capabilities because they shed light on how institutional change is realized can also offer practical guidance on how to support entrepreneurs in accelerating the energy transition.

**ENTREPRENEURIAL CAPABILITIES**

We start with a discussion of the basic capabilities common for ‘conventional’ entrepreneurship. Then we elaborate on that with an additional set of important capabilities, called dynamic capabilities, followed by yet another set of capabilities that are prominently pointed out in the literature focusing on institutional entrepreneurship. Lastly, all the capabilities will be aggregated in an introduced framework, building upon the multi-level framework from Mahzouni (2019).

**BASIC AND DYNAMIC ENTREPRENEURIAL CAPABILITIES**

The basic entrepreneurial capabilities are capabilities that entrepreneurs need to be equipped with to successfully run their business, which is traditionally business to customer oriented (business as usual). In the literature, to successfully run a business implies that a business needs to thrive for at least eight years (Hatthakiiphong & Ting, 2019). The definition of these entrepreneurial capabilities, developed by The Organization for Economic Cooperation and development (OECD), is widely accepted and includes technical, business management and personal entrepreneurial capabilities. Hatthakijphong and Ting (2019) have provided the following list:

capabilities	key characteristics
Technical capabilities	communication, environment monitoring, problem solving, technological implementation and use, and interpersonal, and organizational
Business management capabilities	planning and goal setting, decision making, human resource management, marketing, finance, accounting, customer relations, quality control, negotiation, business launch, growth management, and compliance with regulations
Personal entrepreneurial capabilities:	self-control and discipline, risk management, innovation, persistence, leadership, change management, network

	building, and strategic thinking capabilities
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Table 2: Basic entrepreneurial capabilities for successful entrepreneurship (Hatthakkijphong & Ting, 2019, p. 3)

Furthermore, Eikelenboom and de Jong (2019) describe four dynamic capabilities that are significant for business aligning with their external environment and practicing successful entrepreneurship. However, these dynamic capabilities are coherent with entrepreneurs that are flexible and adaptive to their external environment. We can therefore state that these dynamic capabilities correlate with strategic entrepreneurship, which we mentioned in an earlier section.

dynamic capability	key characteristics
reconfiguration	transforming and recombining assets and resources
leveraging	replicating a process or system operating in one business unit into another;
learning	experimenting and reflecting on failures and successes
integrating	integrating assets and resources, resulting in a new resource configuration

Table 3: dynamic capabilities from Eikelenboom and de Jong (2019)

## DYNAMIC SERVITISATION CAPABILITIES

“The increasing specialization of firms and the interplay between competitive and cooperative business strategies has led to a shift in focus from firm-centric perspectives of value creation and capture (business model concepts) to ‘ecosystem’ perspectives of value co-creation and capture” (Lazarevic, et al., 2019, p. 1). This shift might pave the way for the uptake of servitisation business models. Recently, Mourik and Bouwknegt (2019) investigated how servitisation could contribute to a better uptake of energy services. This study confirmed that the presence of dynamic capabilities focused on servitisation was also correlated with successful entrepreneurs doing business in energy efficiency services. These dynamic capabilities facilitate a move away from the traditional business-to-customer product oriented type business models in the energy sector. Instead, they allow for service innovation and user-centeredness, where the focus lies on offering a

comprehensive service from a customer or user-centric perspective to provide the appropriate combination of products and services that meet customer needs. Service innovation, also called ‘the integrated solution concept’ (Lazarevic, et al., 2019) demands for systemic or architectural innovation to create new ways for integrating design, finance, maintenance, operation and technologies that cofunction and hence, enhance the customer value (Lazarevic, et al., 2019).

Janssen and Castaldi (2018) introduced the following dynamic capabilities for service innovation: sensing, conceptualizing, orchestrating and stretching/scaling. See table 4.

<b>dynamic capability</b>	<b>key characteristics</b>
sensing	the ability to constantly gain insights from the end user and other stakeholders
conceptualising	the ability to translate these insights into suitable propositions
orchestrating	the ability to provide a proper service, offering value towards the end-user in the orientation, purchase and use phase.
stretching / scaling	incorporating new niches and anticipating on new developments

Table 4: dynamic capabilities identified by Jansssen and Castaldi (2018)

In the above text we have identified a set of capabilities that are needed to not only run a successful business and simultaneously adapting to the external environment, but also do so in a service oriented manner, being user centered. See table 5 for a merge of all these capabilities.

<b>capability</b>	<b>key characteristics</b>
technical capabilities	communication, environment monitoring, problem solving, technological implementation and use, and interpersonal, and organizational
business management capabilities	planning and goal setting, decision making, human resource management, marketing, finance, accounting, customer relations, quality

	control, negotiation, business launch, growth management, and compliance with regulations
personal entrepreneurial capabilities:	self-control and discipline, risk management, innovation, persistence, leadership, change management, network building, and strategic thinking capabilities
dynamic capability	<b>key characteristics</b>
reconfiguration	transforming and recombining assets and resources
leveraging	replicating a process or system operating in one business unit into another;
learning	experimenting and reflecting on failures and successes
integrating	integrating assets and resources, resulting in a new resource configuration
<b>Dynamic capability for service innovation</b>	<b>key characteristics</b>
sensing	the ability to constantly gain insights from the end user and other stakeholders
conceptualising	the ability to translate these insights into suitable propositions
orchestrating	the ability to provide a proper service, offering value towards the end-user in the orientation, purchase and use phase.
stretching / scaling	incorporating new niches and anticipating on new developments

Table 5: aggregated identified (dynamic) capabilities for entrepreneurs (Janssen & Castaldi, 2018) (Eikelenboom & de Jong, 2019) (Hatthakkijphong & Ting, 2019)

However, the concept of dynamic capabilities has often been studied without taking into account institutional environments and their underlying nature and structure and how they influence capabilities or how capabilities can also shape these institutions (Gölgeci, et al., 2017).

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## DYNAMIC CAPABILITIES FOR INSTITUTIONAL ENTREPRENEURSHIP

As mentioned earlier, institutional entrepreneurship focuses on the effort to adapt to and at the same time disrupt the institutional order. This implies that institutional entrepreneurs must be equipped with knowledge and capabilities in a wide range of fields. Therefore, it becomes likely that institutional entrepreneurs have unique resources or capabilities, reaching beyond basic or servitisation dynamic capabilities only.

Jolly et al., (2016) and Heiskanen et al., (2019) argue that institutional entrepreneurs are engaged in political, cultural or technical work, a framework that was originally also proposed by Perkmann and Spicer (2008). Engagement in these types of work can be done separately or simultaneously. Institutional entrepreneurs that engage in political work attempt to influence the developments of rules and regulations. Political work also focuses on advocating new practices, developing new alliances and coalitions and on aligning other actors towards common interests. Institutional entrepreneurs that engage in cultural work tend to focus on the diffusion of institutions and promoting legitimacy by creating new institutional arrangements that are appealing to the larger audience and that represent cultural values. It also focuses on aligning institutional arrangements with broader social beliefs. Lastly, institutional entrepreneurs that engage in technical work attempt to stimulate the development of new mental models, standards, benchmarking principles and shared world views (Jolly, et al., 2016).

Mahzouni (2019), in line with the above, argues that institutional entrepreneurs should be able to build on ongoing dialogues and stories in order to gain widespread support for their actions for change. Institutional entrepreneurs therefore aim to bridge diverse stakeholders and to access dispersed sets of resources (Mahzouni, 2019). For bridging dispersed stakeholders, it is favorable to create a setting with different professional backgrounds and capabilities in order to spread ideas and to articulate a clear vision. For spreading these ideas, 'sense making' is regarded a key capability in order to, for example, legitimize wide sustainability discourses and vocabularies in order to reach a certain group of people (Mahzouni, 2019).

Jolly et al. (2016) also highlight institutional capabilities such as the ability of "cultivating and maintaining relationships with decision makers, lobbying to secure resources and political support, providing information during regulatory hearings and using media to politically highlight individual concerns" (Jolly, et al., 2016, p. 103).

Another key capability according to Fligstein (1997) is the social capability needed due to the fact that actors need to be able to motivate other actors to cooperate by identifying and



offer them common meanings and identities. The social capability is also profoundly emphasized by Heiskanen et al., (2019). In table 6 below, we elaborate on the capabilities that are identified by Heiskanen et al., (2019) with the capabilities that are identified by Jolly et al.,(2016) and Mahzouni, (2019). We here attempted to structure the identified capabilities and characteristics to overarching capabilities.

<b>Capability</b>	<b>Key characteristics</b>
<b>social capability</b>	<p>using empathy in order to select the most appropriate strategy and tactic to mobilize allies, being able to read people and environments</p> <p>cultivating and maintaining relationships with decision makers and other important actors in the field</p>
<b>capability of interpretation</b>	<p>interpret opportunity structures of institutional environments and interpret actions of others in the field</p>
<b>capability of timing</b>	<p>follows up on the capability of interpretation; recognize favorable conditions coming together and ultimately taking actions where a window of opportunity arises that makes disruption of an old institution favorable</p> <p>We regard timing as taking action in response to the interpretation of opportunity structures and the actions of others, and therefore goes hand in hand with the capability of interpretation</p>
<b>capability of collaborating</b>	<p>bridging dispersed stakeholders, establishing trust amongst different professional backgrounds</p>
<b>capability of sense making</b>	<p>legitimizing discourses and vocabularies in order to reach a certain group of people</p> <p>identifying and offer common meanings and identities.</p>

Table 6: identified capabilities for practicing institutional entrepreneurship

## DYNAMIC TRANSITION CAPABILITIES

In addition to the basic, servitisation and institutional capabilities, the specific environment of the energy system in transition, with its increasing complexity and emerging tensions (Rotmans, 2018) might also require a different set of specific capabilities to keep or get a business running successfully. Wiek et al. (2011) identified transition capabilities by emphasizing characteristics that are highly valuable in a work environment that is characterized by a transitional context towards sustainability. By defining these capabilities, Wiek et al., (2011) started with the main contributions in sustainability research and complemented these contributions with specific problem solving capabilities.

These capabilities include:

- “System thinking
  - o Systems-thinking competence is the ability to collectively analyze complex systems across different domains (society, environment, economy, etc.) and across different scales (local to global), thereby considering cascading effects, inertia, feedback loops and other systemic features related to sustainability issues and sustainability problem-solving frameworks.
- Anticipatory competence
  - o Anticipatory competence is the ability to collectively analyze, evaluate, and craft rich ‘pictures’ of the future related to sustainability issues and sustainability problem-solving frameworks.
- Normative competence
  - o Normative competence is the ability to collectively map, specify, apply, reconcile, and negotiate sustainability values, principles, goals, and targets
- Strategic competence
  - o Strategic competence is the ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability
- Interpersonal competence
  - o Interpersonal competence is the ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem solving” (Wiek, et al., 2011)

Mourik and Bouwknecht (2019) used these transition capabilities to characterize 21 types of entrepreneurs active in the energy sector, aiming to accelerate the energy transition. Entrepreneurial stakeholders that make business out of ‘symptoms’ of the energy transition have the following characteristics:

- “Instead of fighting the complexity they embrace and unravel the system. They are able to establish valuable relations with relevant individual actors within the

system. They conceptualize valuable propositions that support the uptake of their business;

- They initiate processes of business and service development that make use of negotiation, multi-stakeholder cocreation, visioning, and flexible iterative outcomes. Collaboratively paving the way and conceptualizing propositions built on this uncertainty, legitimizing new ways of doing.
- They take leadership, orchestrating roles, filling intermediary roles.
- They acknowledge the diversity and contestation of knowledge and conceptualize propositions that mediate across, or span across multiple interests, negotiating multiple values” (Mourik & Bouwknecht, 2019, p. 7)

The above mentioned capabilities and characteristics complement the capabilities and characteristics pointed out by Mahzouni (2019) and Heiskanen et al. (2019). Bridging dispersed stakeholders, aggregating different sets of resources, building on ongoing dialogues and discourses and grasping windows of opportunity are capabilities that go hand in hand with the above mentioned characteristics.

## SYNTHESIS

In the previous sections we identified several dynamic capabilities that are relevant to run a successful business, and that are of particular importance to those entrepreneurs that aim to reconfigure (part) of the energy system. It is important to mention that all the identified capabilities are not stand-alone capabilities that coexist side by side, accounting for the ultimate ingredients for an institutional entrepreneur. The different capabilities often are intertwined and shaping one another or overlapping in many ways. For example; the transition capabilities are also, among other elements, derived from ‘social capabilities’ and ‘from the capability to bridge dispersed stakeholders’.

In this synthesis we attempt at creating a coherent and contextualized set of key capabilities, defining the actions of institutional entrepreneurs. Hereby we introduce a framework which draws on upon the framework from Mahzouni (2019). This framework uses a multi-level perspective in approaching and mapping capabilities for institutional entrepreneurship. At every level that Mahzouni (2019) describes, we map corresponding dynamic capabilities. In the framework, the levels of action are described, along with the stages of development, key characteristics and key roles.

It is important to point out here that the utilization of the dynamic capabilities not necessarily occurs in a linear way; utilizing dynamic capabilities is a constant process that iteratively returns at all stages.

## Transition capabilities

The early mentioned transition capabilities by Mourik & Bouwknecht (2019) explicitly highlight the characteristics of an entrepreneur interacting with a system that is shifting and therefore shows deficiencies. We also regard them as overarching capabilities since they are a multi-set of capabilities, partly derived from other capabilities and therefore intertwined to all the capabilities that are mentioned in this synthesis.

In table 7 below, we again introduce the framework from Mahzouni (2019) to illustrate the different levels of action, stages of development, key characteristics and the key role of entrepreneurs. In the next table, table 8, we link the capabilities and the characteristics that we found in the literature to the three levels of actions and stages.

level of action	stage of development	key characteristics	key role of entrepreneurs
<b>individual</b>	innovation	personal attitudes influence informal social networks, such as family, relatives and friends	gaining social acceptance for their novel ideas
<b>organizational</b>	mobilization	informal networks result in formal organizations and networks with socio-spatial boundaries	developing strategies to establish new practices across existing institutions
<b>institutional</b>	structuration	formal organization and network mobilize at field level. New practices are legitimized by new policies and laws	connect with formal organizations at regional, national and international level

Table 7: Multi-Level Framework from Mahzouni (2019)

level of action / stage	dynamic capabilities	additional capabilities
<b>individual (innovation)</b>	<p><b>sensing</b></p> <p>We regard sensing as the most prominent dynamic capability here, since the key role is gaining social acceptance. Thus, gaining insights from end-users and stakeholders is crucial. Therefore, it is also important to build on ongoing dialogues,</p> <p><b>conceptualising</b></p> <p>At this stage, insights from end-users and stakeholders (still informal and relatively personal) are translated into conceptual business propositions. These business propositions are innovative and far-sighted</p> <p><b>orchestrating</b></p> <p>Creating acceptance for the concept and negotiating with potential partners takes place here. At the same time, the business proposition can be tested amongst the informal network.</p> <p><b>stretching / scaling</b></p> <p>Informal networks are influenced with personal attitudes, which means that in a sense, stretching</p>	<p><b>social capability</b></p> <p>Being able to interact with a wide arrange of stakeholders, to be persuasive and being able to constantly pass on their view, profoundly requires social skill. On an individual level this capability is important to gain social acceptance from potential stakeholders, build on ongoing dialogues, create understanding and create a common vision, which can eventually lead to a window of opportunity.</p> <p><b>capability of collaborating</b></p> <p>Bridging informal stakeholders from different background, to partner up with them and to create a sense of trust is a key element on an individual level</p> <p><b>capability of sense making</b></p> <p>At an individual level, it becomes important to identify and offer common meaning and identities to informal stakeholders</p>

	<p>takes places. However, stretching and scaling remains limited.</p>	
<p><b>organizational (mobilization)</b></p>	<p><b>sensing</b></p> <p>Sensing iteratively comes back here, but rather at a formal, organizational level. Gained insights are translated into strategies, simultaneously gaining social acceptance from relevant stakeholders.</p> <p><b>conceptualising</b></p> <p>At a formal, organisational level, new insights are constantly gained and therefore, propositions revolve around these gained insights and can be (re)adjusted. Adaptability and agility is therefore essential.</p> <p><b>orchestrating</b></p> <p>Negotiation with the ‘right’ formal people on an organizational levels, creating favorable conditions for the business proposition. The entrepreneur can roll out a new service here, across existing institutions.</p> <p><b>scaling / stretching</b></p> <p>Constructing formal networks, building up on niches can create a</p>	<p><b>social capability</b></p> <p>During the whole process of practicing institutional entrepreneurship, the social capability remains essential due to the fact that social acceptance amongst a larger audience needs to be gained, along with building on ongoing dialogues that represent these larger audiences</p> <p><b>capability of collaborating</b></p> <p>Bridging stakeholders from a larger audience at a more formal level and create trust also returns during the mobilization stage</p> <p><b>capability of sense making</b></p> <p>Taking into account the needs and the commons from the larger, more formal audience. Also, the larger the audience equals more stakeholders and also equals more dispersed interest.</p> <p><b>capability of interpretation</b></p> <p>At the mobilization stages, it becomes important to</p>

	<p>fundament which can result in mobilization</p>	<p>interpret actions of others in the field, along interpreting with opportunity structures</p> <p><b>capability of timing</b></p> <p>During the mobilization stage, windows of opportunity might emerge, which demands for action in order to mobilize the relevant stakeholders</p>
<p><b>institutional (structuration)</b></p>	<p><b>sensing</b></p> <p>Sensing at an institutional and political level takes place here. Gaining insights and legitimacy from stakeholders at regional, national at international level. The entrepreneur again builds on ongoing dialogues, creates acceptance towards new practices on a institutional level. Engagement in political / cultural / technical work is important on an institutional level</p> <p><b>conceptualising</b></p> <p>Conceptualized propositions align with (potential) new policies and laws, and are legitimized. The right circumstances are created that correspond with the interests of the</p>	<p><b>social capability</b></p> <p>Being able to gain social acceptance and legitimacy from political stakeholders, read them, to build and maintain relationships with them</p> <p><b>capability of collaborating</b></p> <p>Collaborate and engage with political stakeholders, gain their trust returns at an institutional level</p> <p><b>capability of sense making</b></p> <p>Create a common vision and create common meanings with political stakeholders and legitimize discourses that align with (potential) institutions</p> <p><b>capability of interpretation</b></p>

	<p>entrepreneur. Again, the business proposition revolves around constantly new-gained insight on an institutional and political level.</p> <p><b>orchestrating</b></p> <p>Engagement in political work and political negotiation are important here. It has to be demonstrated that the business proposition is effective and that its uptake should be stimulated by news laws and/or policies</p> <p><b>scaling / stretching</b></p> <p>New business models become ‘the new common’ and also picked up by other businesses</p>	<p>Interpreting actions of political stakeholders and institutional opportunity structures</p> <p><b>capability of timing</b></p> <p>Institutional opportunity structures demand for direct action of the institutional entrepreneur in order to disrupt old institutions and to establish new ones</p>
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Table 8: Multi-Level Framework from Mahzouni (2019) complemented with additional (dynamic) capabilities

## SUMMARY AND CONCLUSIONS

In this paper, we aimed to further explicate the actions of an institutional entrepreneur and to discover which capabilities they master in order to create institutional change. As we have described, the current energy system, embedded in institutions, is characterized by a few centralized, fossil-dominant large players. But in order to accelerate the energy transition, discovering alternative ways of delivering energy services is essential. Therefore, institutional change can be regarded critical in order to facilitate the uptake of alternative, more sustainable business models. For this reason, we further explored the concept of entrepreneurship by identifying their characteristics and capabilities which deemed necessary for establishing institutional change



As mentioned earlier in the synthesis, an entrepreneur has to master a wide arrange of capabilities in order to disrupt existing institutions and thus be granted the title of ‘institutional entrepreneur’. Based on all the collected information about actions and capabilities relevant to institutional entrepreneurs we now conclude with a final definition: an institutional entrepreneurs is an individual/organization or a group of individuals/organizations that have a particular institutional interest and aim to disrupt existing institutional elements and reconfigure or create new institutional elements to further their business.

With regard to the energy transition, we can conclude that institutional entrepreneurs are valuable actors that can accelerate the uptake of new business models. By disrupting existing institutions and creating new ones, institutional entrepreneurs can create more favorable conditions for the rollout of their business model, and therefore also for other entrepreneurs that are less active on an institutional level. Business models are shaped by institutions and vice versa. The uptake of new business models therefore depends on (new) institutional arrangements. To disrupt existing institutions, particular skills on multiple levels (individual, organizational, institutional) are essential:

- **Dynamic capabilities**
  - o Sensing
  - o Conceptualizing
  - o Orchestrating
  - o Stretching / scaling
- **Social capability**
- **Capability of collaborating**
- **Capability of sense making**
- **Capability of interpretation**
- **Capability of timing**

In addition, we also regard the transition capabilities (Mourik & Bouwknecht, 2019), (Wiek, et al., 2011) as critical elements since they highlight certain characteristics that are explicitly significant in sustainable transitions.

There is no specific empirical work that comprehensively demonstrates the impact of institutional entrepreneurship in the context of the energy transition. We attempted to complement the multi-level framework from Mahzouni (2019) with dynamic capabilities and other relevant capabilities that can help to identify institutional entrepreneurs in future work.

For future work, we therefore highly recommend a comprehensive case study that looks into institutional entrepreneurship operating in the context of the energy transition. In addition, we refer to the case studies that were conducted on behalf of the International Energy Agency for practical examples of entrepreneurs making business out of the ‘symptoms’ of the energy transition.

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