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Master Thesis – Master Sustainable Business and Innovation

“Managing dual business models: Structural separation strategies of incumbents in the energy and automotive sectors.”

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Abstract

Purpose

The incumbents of the energy and automotive sector in Europe are facing discontinuous change. Sustainability transitions have created new markets (renewables and electric vehicles) that require the introduction of new business models (BM) that have the potential to substitute the established ones. This research part from the idea that structural separation, derived from the organizational ambidexterity literature, is an option for organizations to adapt their BM to discontinuous change. Previous studies have provided a framework that suggests strategies for competing with two BMs, however they do not provide specifics regarding what activities or elements need to be separated or integrated between the two BMs. The objective of this study was to provide an understanding of the factors - name, equity, internal organizational environment, value chain, and location - that illustrate the degree of structural separation by building a typology that highlights the structural separation strategies implemented by the studied sectors.

Method

To answer this question a multiple case study was the chosen design. As a result, 4 case studies from energy sector and 4 case studies from automotive sector in Europe were selected. An event chronology for each case was created. The event chronology was analyzed using Qualitative Content Analysis (QCA) in the form of Direct Content Analysis (DCA). Subsequently, the factors were operationalized using a binary codification which allow patterns regarding the structural separation strategies to arise between the case studies.

Findings and Conclusion

The typology, resulting from the analysis, was built by cross-tabulating two dimensions: (1) visible separation and (2) operational separation. Which resulted in four separation strategies, *frontstage separation*, *backstage separation*, *hard separation*, and *soft separation*. Each expresses the level of separation on each dimension the incumbents in the energy and automotive sector chose to implement. The typology revealed that a distinctive view of

incumbents' strategies to implement new business models is needed. The cases analysis showed that energy incumbents prefer a stronger approach to separation than automotive incumbents. Concerns regarding the financial and policy state, the stage of transition and reputation arose as possible reasons behind the preference of implemented separation strategies. The research could be improved by adding interviews or surveys to acquire direct information from the companies and better construct and enrich some of the factors. Moreover, opening the scope of the research to include other sectors dealing with sustainability transitions to prove the patterns exhibit in this research.

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1. Introduction

The uncertainty of what the future holds due to technological advances, socio-technical transitions, or other unforeseeable events (e.g., COVID-19 pandemic) stress the importance of adaptability of organizations. In the business world, adaptability involves a company's ability to sense new opportunities, seize them, and thereby adjust to unsteady economic environments, and avoid falling into a sense of false security inside the market the business competes (Birkinshaw & Gibson, 2004; Liu & Leitner, 2012). A company that is leader in its market may be focused on its competitive advantage today and dealing with uncertainty over its future when the changes in the environment it operates are overlooked (Zich, 1997).

Diverse industry sectors now face discontinuous change that threaten their established ways of working (Markard et al., 2012). The energy and automotive sector have become a focal point in the sustainability agenda. The environmental issues associated with these sectors, like air pollution, peak oil, climate change, and fast depletion of resources have created sustainability challenges that are being tackled (Markard et al., 2016; Richardson, 2013). The European Union aims to be climate neutral come the year 2050, in alignment with the Paris Agreement for global climate action and the European Green Deal commitment (Deloitte, 2020). This path towards green legislation endangers the sectors' ability to maintain their current operations, growth, and rhythm of supply inside their traditional business model (Deloitte, 2020; Safarzyńska et al., 2012). However, sustainability transition, can also create new business opportunities (Markard et al., 2012; Richardson, 2013; Safarzyńska et al., 2012). There is a growing demand for renewable sources, innovative design and manufacture, as well as the creation of new markets that require established organizations in these sectors to reconfigure their business models (Deloitte, 2020).

A theoretical perspective that helps explaining how incumbent organizations adapt their business to discontinuous change is organizational ambidexterity (Birkinshaw et al., 2016; Ossenbrink et al., 2019). Organizational ambidexterity is defined as the ability to simultaneously pursue exploration and exploitation activities within an organization (Posch & Garaus, 2020). Exploration refers to the uncovering of new opportunities outside the boundaries of a company and building new capabilities by research and

experimentation. Exploitation refers to the use of a company's assets and competencies to manage the present business (Sinha, 2015). Literature proposes that organizational ambidexterity can be reached through three modes of adaptation: structural separation, temporal separation, and contextual ambidexterity (Birkinshaw et al., 2016). *Structural separation* physically divides exploration and exploitation activities by separating them into different business units (Markides, 2013; O'Reilly & Tushman, 2013; Ossenbrink et al., 2019). *Temporal separation* suggests a firm separates exploration and exploitation activities by temporarily prioritizing one over the other (Liu & Leitner, 2012; Markides & Charitou, 2004). In *contextual ambidexterity* separation does not exist. The organization establishes an integrative strategy that enables members to distribute their time and resources between exploration and exploitation activities (Birkinshaw & Gibson, 2011; Sinha, 2015).

Exploration and exploitation activities need different managerial structures and processes that place conflicting demands on an organization's resources (Sinha, 2015). Structural separation of the activities in separate organizations has been the offered solution to deal with these trade-offs (Markides, 2013). Nonetheless, there is a new research area to consider in the structural ambidexterity literature that propose to look beyond the question whether to separate or to integrate when dealing with dual business models. Markides (2013) calls for future research on the firm-specific decisions companies need to make regarding the degree of separation they find suitable to implement. Understanding how incumbents implement structural separation is important in the larger context of how they transform their operations and adapt to sustainability transitions. For instance, it can provide a deeper understanding of the pace at which incumbents phase in new business models and phase out existing ones. It can further help to understand how this actor group deals with the fact that their legacy operations become increasingly contested. The ongoing sustainability transition yields many examples of firms that separate their operations as they respond to discontinuous change. In the energy and automotive sector, for instance, we can already observe how companies have begun to separate their "brown" and "green" operations into different business units. Yet, there are also visible differences in the degrees of separation. BMW, for example, created a new product brand, the BMW *i-series* of fully electric vehicles

alongside its regular fleet. In the energy sector, companies such as E.ON have split their conventional and renewable energy business into two separate units. For that, this paper aims to answer the question:

How do incumbents in the energy and automotive sector implement structural separation as an approach to adapt to discontinuous change to achieve a sustainability transition?

The study aims to build a typology that aids to illustrate the degree of structural separation that incumbents in the studied sectors decided to implement. By answering the research question, this paper will provide an overview of the elements firms decide to keep (share) or abandon when dealing with discontinuous change. To investigate this, this thesis uses a framework based on four factors adapted from Markides (2013). The factors describe choices firms need to consider when splitting their operations. A qualitative comparison of 8 companies from the energy and automotive sector is used to investigate the differences and similarities in the separation strategies.

2. Theoretical Background

In this section, the concepts of incumbents, sustainability transition, discontinuous change, business models, and ambidexterity, as well as a more in-depth understanding of structural ambidexterity are introduced. Moreover, this section outlines the current conceptualization of structural separation strategies in a sustainability transition.

2.1. Impact of Sustainability Transitions on Incumbents

The term *incumbent* has many definitions depending on the context which it is used. According to the Oxford Reference (2020), an incumbent is an organization that is already established on the market or a business sector and has substantial control over it. Incumbent organizations possess a strong brand recognition, customer loyalty, market expertise, knowledge of the customer needs, and a competitive price advantage (Black et al., 2009; Robinhood, 2020). An incumbent is usually perceived as an inert actor, the “old dog” of the market, which is locked-in the current system, unresponsive, and an unlikely survivor of a transition (van Mossel et al., 2018). However, recent empirical research establishes that incumbents do respond to transitions. The strategic response of the incumbents may be determined and vary significantly by the nature of

the transition, namely according to changes in the industry settings (e.g., market structure, supply chain), its built-in characteristics (e.g., capabilities, strategy) and type of challenges (e.g., innovation) (Turnheim & Sovacool, 2020). Moreover, the incumbent's response to the transition can also be determined by the incumbent's expectations on the future outcome, and its feeling of dissatisfaction with the current socio-technical system (van Mossel et al., 2018).

A *sustainability transition* is an example of a transition in a socio-technical system (Markard et al., 2012, 2016) and is defined by Grin et al., (2010) as a “radical transformation towards a more sustainable society, as a response to a number of persistent problems confronting contemporary modern societies” (p.1). It is a long-term transformation process where established socio-technical systems shift focus to a more sustainable way of production and consumption (Markard et al., 2012). One particularity of sustainability transition is that they are often prompt by governance organs and policy (Markard et al., 2012, 2016). Current industries' unsustainable consumption patterns and production processes require discontinuous change, since mere technological efficiencies and incremental changes have proven to be futile to achieve a sustainability transition (Augenstein & Palzkill, 2015; Runhaar et al., 2020). However, incumbents in socio-technical systems, like in the energy and automotive sectors, can resist such changes due to the position and power relationship among regime actors, and their vested interests. Likewise, the degree of structuration present in the system, where the incumbent's current business models are deeply anchored in the existing societal regime, contributes to the inertia. Because of these historically grown relationships, a lot of incumbents encounter challenges to effectively adapt to discontinuous change (Bidmon & Knab, 2018; Markard et al., 2012; Turnheim & Sovacool, 2020).

2.2. Discontinuous Change and Business Model Innovation

Discontinuous changes are sporadic, radical, and premeditated transitions in fundamental properties of an environment that have a direct effect on an organization's performance (Birkinshaw et al., 2016; Ramanujam, 2003). These transitions can create new business models or the development of new organizations, that offer new value propositions, products and services, that have the potential to substitute the existing

business models (Markard et al., 2012). Thus, discontinuous change has become a focal part of the business literature. The interest lays in understanding how established players in mature markets adapt their business models and deal with these changes, and reconfigure their resources, in an effort to stay relevant and maintain their market advantage (Birkinshaw et al., 2016; Khanagha et al., 2014).

Scholars have defined *business models* as a way for companies to create, deliver and capture value. A business model consists of a value proposition concerning the intended customer, the key resources, activities, and channels to realize that value proposition, as well as the establishment of profit and costs streams (Khanagha et al., 2014; Winterhalter et al., 2015). A business model innovation can occur when any of the relationships between these elements of the business model is altered or replaced (Hacklin et al., 2018). The concept of business model innovation is relevant in the context of this research due to the firm's need to renew or reformulate its business model because of discontinuous change. However, it is important to point out that business model innovation does not only consist of incremental changes or extensions of the current constitution of the business model of a firm. It also suggests the introduction of a parallel business model that could potentially take over the existing one (Boulton et al., 2000; Khanagha et al., 2014). From an incumbents' perspective, managing dual business models can be burdensome and may lead to lack of focus on either of the businesses (Hacklin et al., 2018; Markides, 2013). The new business model may require distinctive economic and managerial assets from the ones already in place in the traditional business model. Moreover, it could lead to the cannibalization of its market customer base (Markides, 2013; Velu & Stiles, 2013). Therefore, firms are cautious to replace their existing business model too fast, until the new one has proved its viability. Hence, they run the sometimes conflicting business models to diminish the risk and at the same time addressing the new opportunities of the market (Hacklin et al., 2018; Velu & Stiles, 2013). Against this background, there is growing research that addresses how incumbents can manage both business model (Birkinshaw et al., 2016; Khanagha et al., 2014).

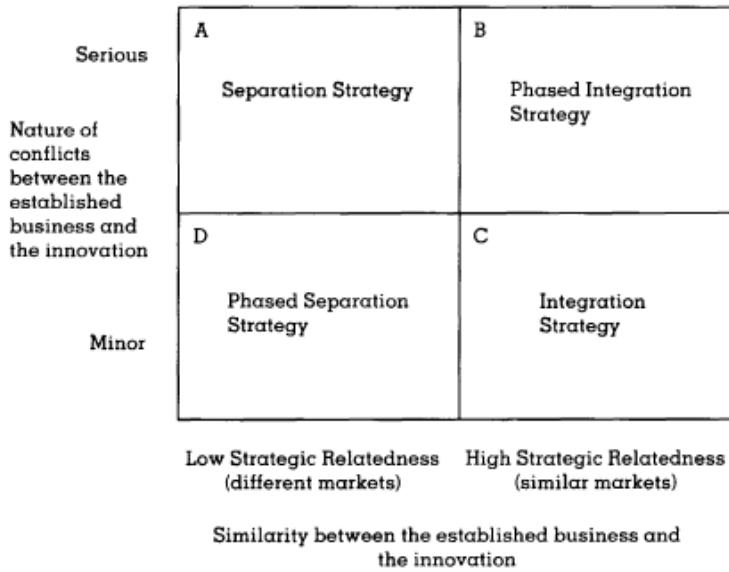
2.3. Structural Separation of Business Models as a Response to Discontinuous Change

Organizational ambidexterity is one highly used theoretical perspective that connects discontinuities and business models and has become quite popular in recent years, due to the uncertainties of the market (Birkinshaw et al., 2016; O'Reilly & Tushman, 2013). On an organizational level, ambidexterity is defined as the capacity an organization possesses to exploit their existing competencies in the market with their available resources (exploitation) while exploring new opportunities in the market (exploration). Managing both activities can be challenging because of their contradictory nature (Sinha, 2015). Ambidexterity is relevant in the study of discontinuous change because it provides insights on the challenges incumbents face to address these conflicting demands of exploring new opportunities brought by sustainability transitions, while continuing to capitalize their market with their current assets and resources (Birkinshaw et al., 2016; Chebbi et al., 2015; Sinha, 2015). As previously mentioned, literature recognizes three different modes for ambidexterity: structural, temporal, and contextual. In this paper, the focal point is on the structural separation of initiatives and activities in the organization. Structural separation refers to the creation of separate business structures for exploration and exploitation, since each encompasses different activities that cannot coexist effectively (Birkinshaw & Gibson, 2011). In structural separation, the core business usually maintains the activities related to the existing value proposition, and the other business unit conducts the inquiring of new markets, developing and handling of the new products, as well as gaining knowledge on the market trends (Birkinshaw & Gibson, 2004; Chebbi et al., 2015). Nestlé, for example, created Nespresso to target a different demographic than Nescafé, its core coffee business. Nespresso was intended to serve a niche group and it was aimed as a premium brand. Both brands were being run under two different business models. The created friction eventually resulted in the managerial and physical split of Nespresso from the core headquarters as a separate business unit. This gave Nespresso the freedom and autonomy to decide how to compete in the market and operate under their own values and attitudes rather than those of Nescafé (Markides & Charitou, 2004). It has been argued that keeping a new business model in an independent business unit that is physically separated, with its own brand name and own activities, can diminish the risk of weakening the company's

conventional business model (Christensen & Raynor, 2003; Govindarajan & Trimble, 2005; Markides, 2013; Porter, 1996). As well as, preventing possible managerial conflicts that can constraint or suffocate the development of the new business model (Markides & Charitou, 2004). The separation of businesses allows the creation of tailored competencies, processes, and cultures on each unit that serve their own needs (Ossenbrink et al., 2019). However, the separation between business models could also lead to isolation and disconnection of the new unit to the core business expertise and resources and defer the parent company of the generated knowledge in the new unit. This can impede the exploration of possible synergies between the units in the future (Markides, 2013; Markides & Charitou, 2004; O'Reilly & Tushman, 2004, 2013).

Current Conceptualization of Structural Separation Strategies

Although ambidexterity is often seen as a desired state for an organization, evidence suggests that firms frequently find it difficult to implement it (Birkinshaw & Gibson, 2004; O'Reilly & Tushman, 2004). An organization has to manage the delicate balance between the optimal degree of separation and the integration of its business models, to be able to overcome possible frictions and at the same time not leave-out the possibility of synergies between them. Markides & Charitou (2004) suggested that a way to determine how an organization should manage two different business models depends on how serious the conflicts between the two businesses are and on how strategically similar is the perceived new market to the existing business. Four possible strategies for competing with two business models arose from their research (*Figure 1*).



*Figure 1. Different strategies for Managing Dual Business Models from Markides & Charitou (2004)
page 24.*

A *separation strategy* is not only preferred when the market of the new business unit is different, but also when the conflicts and trade-offs between the established business and the new business is too serious. The *integration strategy* is preferred when the relatedness of markets is high, and the conflicts between them are minor. Two interesting phased in and phased out strategies are suggested in this matrix. A *phased integration strategy* that suggests that when the conflicts between the established and the new business are serious and the markets are similar, it is better to separate the businesses temporarily and slowly merge them in the future. Conversely, the *phased separation strategy* states that when the market similarities are low (different markets) and the conflicts and trade-offs between the businesses are minor, the new business unit would benefit from staying inside the established business first and only be separated later when it grows. However, Markides & Charitou (2004) point out that when to separate or not is only part of the challenge companies face when managing business models, and a bigger question regarding what activities or elements need to be separated or integrated between the two business models needs to be addressed.

Overall, the current literature remains relatively silent on the choices a firm need to make when implementing structural ambidexterity. Markides (2013) names four factors and questions to be considered:

- 1) name: should the separate unit adopt a name similar with the parent company, or should it be different?
- 2) equity: should the unit be wholly owned by the parent company, or should it own only a certain percentage?
- 3) organizational environment: should the unit be allowed to developed its own culture, values, process, incentives, and people, or should it be shared?
- 4) value chain: which value chain activities should the unit develop on its own, and which should be shared?

This thesis departs in this suggestion. As Markides (2013) does not provide further definitions on these factors, they are now reviewed in greater depth.

Name. The name is the front face and the first contact the business has with the customer. Hence, firms aim to have a recognizable name that helps them build their brand, attract customers, and create sales (Cameron, 2020). An incumbent can choose between sharing a similar or completely different name for the business model. Since incumbents have already established their brand's domain in their chosen market, they could favor establishing a sub-brand with a similar name (with similar elements) for its business model. This with the objective to create exposure for both the parent company and the new venture. The similarity of the name has the potential to engage the existing customer base and attract new ones to the new business by taking advantage of the thrust the incumbent brand has built in the chosen field. Moreover, it allows the new business to expand over different niches while banking on the reputation the latter has created since it is easier to build over an existing identity than create a market image from zero (Fabrik, 2020). However, the use of a differentiated name for the second business model, removed from the parent company, has the potential to attract and target specific audiences. In addition, a completely separated name from the parent company can result in a more focused approach of the new business to the intended market. It also has the

potential to remove the new entity from under the shadow of the parent company and trump the possible liabilities that could come from this association, like a bad reputation (Fabrik, 2020).

Equity. The terms equity, along with share and stock, are often used interchangeably. But they all refer to the ownership of a public company or an asset (Frankel, 2020; Mitchel, 2020). When referring to equity as a factor, Markides (2013) makes the distinction between complete or partial ownership of the new separate unit by the parent company. The parent company can establish ownership either by creating the new entity or owning the majority of equity. By having the majority of voting shares, the parent company has the power to influence and make major decisions regarding the other business unit operations and management (Kirshenbaum, 2014; Sherman, 2019). The level of ownership is not static, it can change at any given moment if the parent company decides to purchase more shares or sell them partially or completely. The parent company is said to have control of the majority of the equity if it owns 51% or more of the voting stock. The new business can still be considered an independent legal entity with responsibilities, its own directors and management team, and make decisions based on its own interests. Nonetheless, the parent company still has the power to change the board of directors if it does not agree with the management decisions made (LaMarco, 2019; Sherman, 2019). Contrary to this, when the parent company has a minority share of stock (50% or less of voting stock), although still holding partial ownership, it has less control. Companies might choose this level of ownership to break into new markets and still profit from it, and at the same time protecting the parent company in case of failure or when this has a bad reputation make the linkage less obvious (Kirshenbaum, 2014).

Organizational Environment. Markides (2013) establishes the factor of the organizational environment as the culture, values, people, incentives of an organization. However, for this research, the term expands to emphasize other elements that exist within the boundaries of the organization, alongside organizational culture. The reason is that organizational culture is not straightforward visible, since it manifests through symbols, stories, rituals from the past and present, as well as the workforce belief system and

resources available at that moment (Tharp, 2009). Hence, in an attempt to try to grasp some of the elements that form the culture, the *internal organizational environment* concept by Halmaghi (2017) was used. The term *internal organizational environment* will be used from this point on for this research to refer to this factor, since it is broader than the original factor described by Markides (2013). As well as to make clear that it refers to elements inside the organizations and not the external environment. Halmaghi (2017) emphasizes elements that companies use to create and deliver their value proposition. These elements are (1) owners and shareholders, (2) managers and leadership team, (3) employees, (4) material resources, and (5) organizational culture. Similar to equity, the owners and shareholders are the ones that possess the property rights over the firm and have considerable influence on the rest of the components of the organization (Halmaghi et al., 2017). The management team can influence the evolution of the company, through their decisions and responses to the external environment. At the same time, they have power over the employees' behavior and performance (Halmaghi et al., 2017). The employees perform the job assigned by the managers. It is through them, the dynamic created between them and their determination to pursue and attain the organization's strategic goals, that the success or failure of the organization is determined. The resources of an organization can be physical, human, financial, information, and technological. These aid any of the other elements to achieve and deliver the strategy of the company (Halmaghi et al., 2017). Lastly, the organizational culture is considered an organizational asset that can be used to make an organization more efficient and stronger (Tharp, 2009). Each organization has its own culture, and it could have a positive or negative impact on the performance of an organization (Halmaghi et al., 2017). The *internal organization culture* helps built the identity of the new business model, since a stable and aligned managerial structure is needed. Likewise, the identity is anchored on the company's values and mission (Templafy, 2021). The first four elements create conditions of the environment where the organizational culture will take place and are somewhat more visible to identify. Hence it can be inferred that if these ones are shared or the same as the parent company, the organizational culture would remain under the same symbols, beliefs, and ways of working. If there are no cannibalization threats or channel conflicts between one business and the other, these could be shared between

both businesses. However, if that is not the case, the new unit needs to develop its own *internal organizational culture* without interference from the parent company to avoid being suffocated by the managerial structure of the established company (Markides & Charitou, 2004).

Value chain. Described and popularized by Porter (1985), the concept of the *value chain* is defined as a chain of activities operated by a firm in a specific industry. The structure of an organization should be dictated by the logical configuration of its value chain since the way its activities are executed directly affect the costs and profit streams (Dzikowska, 2019; Porter, 1985). Hence, it is important to determine if the activities that compose the value chain of the new business model, were developed exclusively to serve, and deliver the new value proposition of the business model or are shared with the parent company, and in some way dependent on it. The value chain is composed of *primary activities* and *support activities*. The primary activities encompass all the activities related to the creation of the product. Primary activities include inbound logistics, operations, outbound logistics, marketing and sales, and service. All these activities relate to the supply of materials, storage, transformation operations, distribution, commerce and retail activities, and after-sale services (Porter, 1985; Rasheed & Priem, 1995). The support activities, as the name establishes, are the in-between activities that assist the primary activities. The support activities are not exclusive to one part of the sequenced process as they could serve different primary activities at the same time. Support activities cover procurement, human resource management, technological development and infrastructure. The last one does not refer to location, it assists the organization's requirements by performing different functions that bind its different activities together (e.g., legal or finance) (Porter, 1985; Rasheed & Priem, 1995) . A firm has to decide how to split these activities when establishing a new unit. For instance, it could choose to separate primary activities due to the incompatibility of materials, the operational transformation of the materials, and the requirements for storage and distribution of the materials or the final product, among others. But decide to keep secondary activities integrated into one headquarter since the processes are similar. The firm can also decide adapt the primary activities to integrate the new processes due to economic constraints.

The decision of separating the value chain activities or not lie in the level of incompatibility of the necessary processes to deliver the value proposition.

A fifth factor added to this research was *location*. The location of the headquarters or manufacturing (or assembly) facilities was a factor not included in the Markides (2013) framework. The location was added to determine if the new unit was physically separated from the established business, and if new plants were built or completely adapted to execute the new activities, or just partially adapted to accommodate the new activities alongside regular activities. Moreover, locations can create an organizational context (Egelhoff, 2010; Stendahl, 2018). If the new business is kept inside the headquarters, it could have an impact on the creation and performance of the new value proposition (Stendahl, 2018) because it facilitates real-time learning, the development of managerial practices, combination of resources and centralization of activities, and this possibly translates into a better support of the new business initiatives (Ambos & Mahnke, 2010; Stendahl, 2018). There could also be other reasons behind deciding to choose a different location for a new unit, which could be related to financial restrictions (e.g. tax laws, technology affordability), legal restrictions (e.g. liabilities) or local restrictions (Stendahl, 2018; Wolters Kluwer, 2020).

It is important to note that the current literature focuses on running dual business models over a prolonged time (Markides, 2013; Birkinshaw et. al, 2016; Markides & Charitou, 2004). Even though the phased integration and phased separation strategies Markides & Charitou (2004) propose are meant to keep both business in parallel, it is not always possible to maintain the business units separated in the long run when there is a natural progression of one business model replacing the existing one (Khanagha et al., 2014). Incumbents dealing with discontinuous change to achieve a sustainability transition, however, are challenged with the necessity to slowly phase-out their existing business model while introducing a new business model (Khanagha et al., 2014).

3. Empirical Setting

In the following section, a more in-depth dive on why discontinuous change leads to incompatible business models within an incumbent system for the energy and automotive sector is explained, to better support the decision on the chosen case context.

Sustainability transitions needs discontinuous change (Carrillo-Hermosilla et al., 2010; Hanelt et al., 2015). As mentioned in the introduction, discontinuous change relates to changes in a set environment that can create new business models that can substitute the existing market dynamics (Birkinshaw & Gibson, 2004; Ramanujam, 2003). Climate change, environmental degradation, the depletion of reserves, rising costs, energy security and the quest for sustainability are introducing important challenges in today's patterns of consumption and production (Hanelt et al., 2015; Richter, 2013). These events have urged policy makers to change the current state of the collective systems. This change has been carried out by improving or creating regulatory frameworks and market instruments to abate carbon emissions, supporting the adoption of more sustainable technologies, or prohibiting practices that damage the environment (Dijk et al., 2013; Hanelt et al., 2015; Noke et al., 2008). Some examples of regulatory frameworks are the most recently issued 2030 Climate and Energy Framework, The European Green Deal, Paris Climate Agreement, Euro 7 emission standard, among others (Tagliapietra, 2018). Consequently, it has prompt companies to change their assets and operations to adapt to this transition. Hence, the changes can be characterized as discontinuous change since they threaten to dissolve the competitive position of incumbents when they fail to adapt or reorient their ongoing profitable business model to the new circumstances (Hanelt et al., 2015; Noke et al., 2008; Richter, 2013).

Renewables for the Energy Sector

The approach for a stable power supply has remain the same throughout the history of power plants: a centralized, traditional grid system where the production follows the demand, since storage of electricity is expensive (Bhatti & Danilovic, 2018; Schleicher-Tappeser, 2012). During the last decades, the main changes in the sector had been directed toward the development of technologies that allows a more efficient usage of resources (coal, nuclear, oil, gas) and lessen the emission of gases (Schleicher-Tappeser,

2012). However, the evolution of the energy sector towards renewable forms of energy production is a key and an imminent step to combat resource depletion and climate change (Ari & Aydinalp Koksal, 2011; Richter, 2013). The use of renewable sources (e.g. wind power, biomass, solar energy) for electricity generation will require incumbents in the industry to adopt new core technologies, skills, social networks, and services (Bhatti & Danilovic, 2018; Richter, 2013). The power generation based on the renewable energy business depends on natural conditions, which leads to variability in the supply of energy. Nonetheless, this could be managed through operational practices, forecasting and infrastructure for reserves. In addition, decentralized energy systems and small smart grids closer to end users, are necessary to add flexibility and manage the additional variability, which is opposite to the established dynamics of the sector (Alanne & Saari, 2006; Bhatti & Danilovic, 2018; Richardson, 2013; Richter, 2013; Schleicher-Tappeser, 2012; Tierney & Bird, 2020; Verbong & Geels, 2010). This transition to renewables has the ability to disrupt the structure of the sector and change how electricity is produced, distributed, marketed, consumed and its demand. For example, Germany's programs changed their focus from nuclear energy generation towards the development of household energy networks, with the installation of photovoltaics that create a peer-to-peer local grid (SIA, 2018). Thus, the renewable power generation supply needs of its own business model (Bhatti & Danilovic, 2018; Fattouh et al., 2019; Richter, 2013; Schleicher-Tappeser, 2012). The incumbents of the altered environment will be able to benefit from this transition by continuing their conventional business as long as possible, and simultaneously develop assets and knowledge for renewables (Richter, 2013; Taylor & Helfat, 2009).

Electric Vehicles for the Automotive Sector

The automotive sector has been dominated by internal combustion engines (ICE), which have been proven to have environmental impacts and whose primary source of energy have a limited natural supply (Chaouachi, Felix Corig, et al., 2016; Steinhilber et al., 2013). In 2018, according to the European Environment Agency (EEA), transport in Europe accounted for 27% of the carbon emissions, and one third of that total came from road transportation (Transport & Environment, 2018). Thus, electrification of the

transport sector has become one of the technological solutions to achieve a more sustainable mean of transportation, due to its potential to offset carbon emissions and diminish the oil-based fuel dependency (Chaouachi, Bompard, et al., 2016; Dijk et al., 2013; Hanelt et al., 2015; Speidel & Bräunl, 2014; Steinhilber et al., 2013). Electric mobility is not something new, yet recent policy and regulation have built an environment that has allowed this segment to grow (Deloitte, 2019; Dijk et al., 2013). Consequently, electronic mobility has introduced new business possibilities to the existing mobility system with two needed elements for the development of the electric vehicle (EV) market: (1) battery cells and (2) charging infrastructure (Campatelli et al., 2015). The use of *battery cells* presents to incumbents the possibility to decide between two revenue streams. One possibility being establishing a renting model for batteries or offering complete ownership to customers when purchasing the vehicle. Certainly, this decision would depend on the battery life cycle and the degree of control the manufacturer wish to maintain over its disposal, as well as the service and maintenance activities they are willing to offer (Campatelli et al., 2015; Deloitte, 2019; Dijk et al., 2013; McKinsey&Company, 2017). If incumbents make the decision to fully venture on the production of EVs, they need to heavily invest in new factories or rearrange existing ones, new tools, and high-skilled workers, to be able to meet their expected demand. One of the advantages is that EVs are less complex to manufacture, which means a reduction over the manufacturing costs, since it requires less workers for the manufacturing process. However, this in turn translate in a significant reduction of jobs and a shift to high-skilled workers from Internal Combustion Engines to Electric Vehicle production (Tagliapietra, 2018). Moreover, if the incumbent does not have the platform and technology to produce its own battery cells, it will require a strong partnership with battery cell manufacturers to successfully produce their intended EV portfolio (Deloitte, 2019; McKinsey&Company, 2017). The *charging infrastructure* element goes beyond the transformation and expansion of the automotive companies' portfolio. Car manufacturers need to provide or create the additional services and products that cover power supply concerns (e.g., residential charging stations and renewable battery charging sources), which do not exist in the traditional business model based on ICE, to uphold the transition to EVs. Consequently, non -traditional collaborations with other

energy companies, software companies and mobility services, might arise to deliver the additional services needed (Jus & Dobson, 2021; McKinsey&Company, 2017).

4. Methodology

4.1. Research Design

The research was based on a comparative case study approach. A case study research approach is appropriate when the research question is of “how-nature” and there is a need to observe the progression of contemporary events (Du & Chen, 2018; Rainer, 2011; Shakir, 2002). The case study is a research strategy that can involve one or multiple cases, as well as multiple levels of analysis in a single study (Eisenhardt, 1989). A case could be an organization, a community, or even a country (Schoch, 2020) A comparative case study was the chosen approach for this paper, since studies of more than one case can produce a more generalized knowledge (Shakir, 2002). Additionally, a multiple case studies involve the analysis and construction of similarities, differences, and patterns of events over cases that share a common intent (Campbell & Martin, 2010; Knight, 2001). This allowed the research to follow, observe and compare how decisions, issues and situations regarding structural ambidexterity unfold in the organizations over time. To observe the different strategies of structural ambidexterity from the incumbents that respond to discontinuous change, case studies from the energy and automotive sector were chosen.

Incumbents in the energy and automotive sector in Europe were chosen for this research due to the following reasons. First, the energy generation and transportation together account for 60 percent of the primary energy demand worldwide (Richardson, 2013) Additionally, emissions from the energy and transport (including automotive) sector accounts for almost three-quarters of the total global emissions (Ritchie, 2020). Second, it was stated that sustainable transitions are often influenced by policy and government agencies. The EU wants to become the front-runner in climate friendly industries and clean technologies in an effort to reach carbon neutrality by 2050. The European Commission plans to achieve this through the implementation and revision of EU law, regulation, and standards to align them to the climate goals (Simon, 2019). Both circumstances placed both the energy and automotive sectors on a priority standpoint in the EU sustainability transition plan. Hence, incumbents from the energy and

automotive sector have been under constant policy modification and urged to change their traditional ways of working. It can already be observed that a number of incumbents in these sectors have seemingly split their “brown” (traditional business model) and “green” (sustainable business model) activities into separate product lines and/or entities, which provided the opportunity to investigate the decisions made to undertake their new businesses.

4.2. Data Collection

The first step in the data collection, was sampling the incumbents in the energy and automotive sector to be studied. A preliminary list obtained of the largest providers of the energy sector in Europe was created based on the list of “European Power Companies by Carbon Intensity”. The list had information of 18 energy companies in Europe based on their carbon emissions. Likewise, a preliminary list of the largest cars manufacturers in the automotive sector in Europe was obtained based on the “Car Manufacturers European Union CO2 targets in 2020”. This listed the car manufacturers who were on track to meet the CO2 targets after the first half of the year 2020. The list included a combination of 13 car manufacturers from Europe and foreign car manufacturers with market in Europe. The foreign car manufacturers were eliminated from the preliminary list since they did not fit the scope of this research because they may fall under different regulatory requirements. The second step on this research was to determine if the firms were incumbents of their sector. They had to have a strong position in their corresponding markets with their traditional business models. As a third step, for each company in the preliminary list, it was then verified through a quick but thorough investigation over the company’s history, if there was a clear differentiation of “brown” and “green” ventures. Renewables in the case of energy incumbents, and electric vehicles in the case of automotive incumbents. As a result, 8 case studies (4 from energy sector and 4 from automotive sector) were identified and are shown in *Table 1*. Typically, a multiple case study has between three to four distinct cases for comparison for them to be representative of the unit to be studied and can be realistically handled (Schoch, 2020). Thus, the number of cases selected per sector provided a reasonable understanding of the studied phenomenon for each sector and allowed a subsequent contrast process.

Table 1. List of incumbent European energy suppliers and car manufacturers.

Case	Company	New Operations	Country	Created	Details
Incumbents Energy Sector					
No.1	E.ON	E.ON (formerly Innogy) ¹	Germany	2014-2020	E.ON (formerly Innogy) split the renewables and service business of RWE Renewables into a separate unit
No. 2	Electricité de France (EDF)	EDF Renouvelables (EDFR)	France	2004	EDPR is the renewable business of EDF into a different business.
No. 3	Energias de Portugal (EDP)	EDP Renovaveis (EDPR)	Portugal	2007	EDPR is a separate business of EDP focus on renewables
No.4	Iberdrola	Iberdrola Renewables	Spain	2007-2011	Iberdrola Renewables was created to separate the renewable business of Iberdrola.
Incumbents Automotive Sector					
No.5	BMW	BMW i-series	Germany	2011	The i-series was created for the full electric vehicles manufactured by BMW.
No.6	Volkswagen	I.D. series (Intelligent Design)	Germany	2016	ID is an all-electric battery powered vehicle series manufactured by Volkswagen
No.7	Renault	Z.E. (Zero Emissions)	France	2008	Z.E. series of electric vehicles by Renault
No.8	Mercedes-Benz	EQ series	Germany	2016	The EQ series of battery electric vehicles manufactured by Mercedes-Benz

To examine the strategies of structural separation of the selected incumbent companies partaking in the renewables and EV markets, an event chronology for each case was created. The arrangement of events in a chronological form serves as a descriptive rendition of events, that allows to cover many types of variables and be more insightful

¹ The separation strategy of E.ON. started in 2014 with the split of its conventional energy generation business into a different unit, called *Uniper*, which finalized in 2016. In 2018, E.ON acquire the majority of shares of Innogy, which at the time was the renewable business of *RWE*. E.ON decided to keep its name after the acquisition and transfer all its renewable business (including Innogy's) to the renamed *RWE Renewables*. The new and current E.ON is in charge of network infrastructure and customer solutions.

(Rainer, 2011). Robson (1993) states that “when the main interest is in describing or assessing the change or development over time, some form of longitudinal research is the method of choice.” The event timeline allowed this research to recreate the moves in the incumbents’ strategies. The time frame was not the same for each case since the research was event oriented, i.e. each case had different start times. The research took as a first milestone the year on which the incumbent made the official announcement of the implementation of structural separation. After that the timeframe moved prior the announcement to be able to observe and account the decisions and discussions that started before the split. Once these were settled for each organization, the events regarding the next steps the organization took to manage both business models were accounted for. Data for case studies usually comes from archives, interviews, surveys, observations, newspaper articles, administrative documents, among others. The data can be found as text (qualitative) or numbers (quantitative) (Eisenhardt, 1989; Schoch, 2020). The search for events was made by accessing the company’s websites, annual reports, media rooms, as well as external online news outlets, online journals (e.g. Actu-Environment – independent press company), and online magazines (e.g. Car and Driver). The time unit for the event chronology was based in the rate of the reporting cycles within the organization (e.g. annual reports, media announcements) and the reporting cycle of external publications (e.g. online news outlets) to cross check the event information (Street & Ward, 2012). Moreover, the time boundary (Street & Ward, 2012) of the event chronology was determined by two situations: the moment when the new business unit operated completely on their own and no other reference about its separation was made and if the timeline reached the present time and no more information was available . The research resulted in 45 pages of events and around 20 to 71 events per case study. *Appendix A* shows the event chronology per case.

4.3. Data Analysis

Step 1: As mentioned in the *data collection*, data for each company was collected in the form of events. The events were analyzed using qualitative content analysis (QCA) in the form of Direct Content Analysis (DCA), referred also as deductive analysis (Hsieh & Shannon, 2005; Mayring, 2000). A DCA objective is to validate or extent a theoretical framework or theory (Hsieh & Shannon, 2005). Hence this approach was used to code

and analyze the collected event chronology, since pre-determined factors representing the degree of structural separation were used to interpret the data (Hsieh & Shannon, 2005). The concepts of name, equity, organizational culture (and its elements), value chain (and its elements), and location were emphasized while coding and categorizing, so that the company's strategic decisions on them could be drawn out. This type of coding and categorization allowed to quickly identify relevant data (Crosley & Jansen, 2020). Excel was used to codes and categorize the events. During the coding, first broad action-based codes such as "establishing a renewable branch" or "transferring employees to new unit", were given to the events since these are used to indicate a movement or procedure. Then, line by line coding and additional codes were assigned, and then categorized to identify themes (Crosley & Jansen, 2020). This process was carried out for each case individually, without filtering or changing the chronology nor mixing the data.

Step 2: The analysis of the data then proceeded as follow. The adapted factors companies need to decide upon when realizing the separation were operationalized. It was then tried to establish the level of separation for each factor by using a binary codification. The binary codification was intended to be able to established patterns between all the case studies. The value "Yes" was assigned if the factor is being shared or is the same in the business model with that of the parent company. The value "No" was assigned if the factor is different in the new venture with that of the parent company. "Yes" or "No" was chosen as answer to the questions Markides (2013) asks per factor introduced in section 2. For example, for equity the value "No" was assigned if the parent company did not own shares, meaning the new business was independent, or if it had a minority share capital of the new business. The value "Yes" was assigned if the parent company totally owned or had the majority of shares in the new business. The previous coding made it easier to identify the factors for the binary codification. However, a cross-comparison of codes and categories was made when the information on the factor was not straightforward enough to get a rough interpretation of the reality. The elements of organizational culture, employees and resources in the internal organizational environment factor were the most difficult to determine. Hence, statements that refer to "same values as the parent company in the new business unit", "integration", "strategy

alignment with parent company” helped to roughly establish if the organizational culture in the new unit was the same or shared with the parent company. For the employees statements referring to “training of personnel”, “transfer of employees,” among others helped to construct the status of the element. Finally, for resources, statements referring to “allocation of investment” and “performance report to allocate investment” alluding to the parent company being in charge to allocate financial resources into the new business based on performance, among others, assisted to determine the situation regarding that element. These types of statements helped to construct over those elements and determine if they were the same or shared between both businesses. It is important to clarify that even though the data was presented in a chronological setting, the *time* as a factor was not considered in this research since the research did not account for changes in the strategies over time. *Table 2* defines the factors under evaluation and its assessment criteria for the operationalization.

Table 2. Operationalization of the adapted Markides (2013) factors

Factors	Classification	Assessment criteria
Name	Yes: Same or similar business name as the parent company (sub-brand) No: Different business name as the parent company (self-brand)	For the measure to be “No”, the name of the new business unit is completely different as the one from the name of the parent company. It does not relate in anyway, nor hint to the parent company (typography, colors, logo)
Equity	Yes: Unit completely or mainly owned by the parent company No: Unit partially owned by the parent company or independent from the parent company.	For the measure to be “No”, the parent company owns less than 50% of the shares of the new business unit.

Internal Organizational environment	Yes: Same/shared internal organizational environment as the parent company. No: Different internal organizational environment.	The elements of the internal organizational environment are: (1) owners and shareholders, (2) board of directors, (3) employees, (4) resources and (5) organizational culture. For the measure to be “Yes”, the new business unit shares most of these elements (three or more) with the parent company.
Value chain	Yes: Same/shared value chain activities as the parent company. No: Different value chain activities as the parent company	For the measure to be “No”, the primary value chain activities (inbound and outbound logistics, operations, marketing & sales, service) of the new business units are not shared and are different from the parent company. Some support activities (procurement, human resources, R&D, infrastructure) of the new business unit can be shared.
Location	Yes: Same/Shared location as the parent company No: Different location as the parent company.	For the measure to be “No”, the headquarters or the manufacturing/assembly plant of the new business units are outside of the parent company headquarters. Conversely, the headquarters or the manufacturing/assembly plant of the new business units are in a different geographical location as the parent company.

Table 3 presents a summary of the information gathered and digested from the data collection. This table assists to observe each of the factors to study in a more organized, detailed and one-glance matter.

Table 3. Summary table of case studies gathered information.

Company	Name	Equity	Internal Organizational Environment	Value Chain	Location
Incumbents Energy Sector					
E.ON	E.ON+Innogy Sub-brand for services	Majority shareholder 76% of shares	Owners and shareholders: Not shared/Different Board of directors: Shared/Same Employees: Not shared/Different Organizational culture: Shared/same Resources: Shared/same	Primary activities: Not shared/Different Support activities: Shared/Same	Same location Essen, Germany (headquarters)
	RWE Renewables Self-brand for renewables	Minority shareholder 16% shares	Owners and shareholders: Not shared/different Board of directors: Not shared/different Employees: Not shared/Different Organizational culture: Not shared/different Resources: Shared/Same	Primary activities: Not shared/different Support activities: Not shared/different	Same location Essen, Germany (headquarters)
	Uniper Self-brand conventional energy	Minority shareholder 46% shares	Owners and shareholders: Not shared/Different Board of directors: Not shared/Different Employees: Not shared/Different Organizational culture: Not shared/different Resources: Not shared/Different	Primary activities: Not shared/Different Support activities: Not shared/different	Different location Dusseldorf, Germany (headquarters)
EDF	EDF Renewables Sub-brand for renewables	Owner	Owners and shareholders: Shared/Same Board of directors: Not shared/Different Employees: Shared/Same Organizational culture: Shared/same Resources: Shared/Same	Primary activities: Not shared/Different Support activities: Shared/Same	Same location Paris, France (headquarters)
EDP	EDP Renováveis Sub-brand for renewables	Majority shareholder 86% shares	Owners and shareholders: Shared/Same Board of directors: Not shared/Different Employees: Shared/Same Organizational culture: Shared/Same Resources: Shared/Same	Primary activities: Not shared/Different Support activities: Shared/Same	Different location Madrid, Spain (headquarters)
Iberdrola	Iberdrola Renovables Energía	Owner	Owners and shareholders: Shared/Same	Primary activities: Shared/Same	Same location

	Sub-brand for renewables		Board of directors: Shared/Same Employees: Not shared/Different Organizational culture: Shared/Same Resources: Shared/Same	Support activities: Shared/Same	Madrid, Spain (headquarters)
Incumbents Automotive Sector					
BMW	BMW i-series Sub-brand for EV	Owner	Owners and shareholders: Shared/Same Board of directors: Not shared/Different Employees: Shared/ Same Organizational culture: Shared/Same Resources: shared/same	Primary activities: Shared/Same Support activities: Shared/Same	Same location Plant in Leipzig (Adapted for EV)
Volkswagen	VW I.D. Series Sub-brand for EV	Owner	Owners and shareholders: Shared/Same Board of directors: Not shared/Different Employees: Shared/Same Organizational culture: Shared/Same Resources: Not shared/different	Primary activities: Not shared/Different Secondary activities: Shared/Same	Different location Plants in Zwickau, Dresden, Eden and Hanover in Germany (Exclusive for EV)
Renault	ZOE Z.E. Sub-brand for EV	Owner	Owners and shareholders: Shared/Same Board of directors: Not shared/Different. Employees: Shared/Same Organizational culture: Shared/Same Resources: Shared/Same	Primary activities: Shared/Same Secondary activities: Shared/Same	Same location Plants in Flins, France (Adapted for EV)
Mercedes-Benz	EQ Series Sub-brand for EV	Owner	Owners and shareholders: Shared/Same Board of directors: Shared/Same Employees: Shared/Same Organizational culture: Shared/Same Resources: Shared/Same	Primary activities: Shared/Same Secondary activities: Shared/Same	Same location Plants in Bremen and Sindelfingen. (Adapted for EV)

Moreover *Table 4* shows the results of the operationalization in a condensed form which help to observe and identify patterns between the incumbents of the energy and automotive sector more easily.

Table 4. Operationalized factors per case study. (No=Not shared/Different, Yes=Shared/Same)

Company	New operations	Name	Equity	Internal Organizational Environment	Value Chain	Location
E.ON	E.ON (Innogy)	Yes	Yes	Yes	No	Yes
	RWE Renewables	No	No	No	No	Yes
	Uniper	No	No	No	No	No
EDF	EDFR	Yes	Yes	Yes	No	Yes
EDP	EDPR	Yes	Yes	Yes	No	No
Iberdrola	Iberdrola Renovables	Yes	Yes	Yes	Yes	Yes
BMW	i-series	Yes	Yes	Yes	Yes	Yes
VW	I.D. series	Yes	Yes	Yes	No	No
Renault	Z.E. ZOE	Yes	Yes	Yes	Yes	Yes
Mercedes	E.Q. series	Yes	Yes	Yes	Yes	Yes

We can observe in the studied incumbents that the predominant pattern is to share or keep the same factors in both business models. The *value chain* factor was the only one that the majority decided to separate, especially the energy sector incumbents, with only one exception from the cases of the automotive sector (Volkswagen). Moreover, only two new businesses are greatly or completely separated from the parent company (Uniper and RWE Renewables). The next sections will present the findings from the interpretation of the data analysis.

5. Findings

5.1. Typology of Structural Separation Strategies

The objective of the research was to investigate the structural separation strategies of incumbents for their ‘green’ and ‘brown’ operations in the energy and automotive sector in Europe. As a result of this investigation, the typology in *Figure 2* is suggested. This typology differentiates structural separation strategies based on the factors defined in previous sections. It aims to provide a better understanding how established companies go about integrating new business models in sustainable transitions; and the way they position them alongside their existing operations. In the figure below, incumbents’ strategies are mapped between two dimensions. One dimension is focused on the

identity and managerial elements of the new business model, which are visible. The second dimension is focused on the operational side of the new business model.

		Frontstage Separation	Hard Separation
		Soft Separation	Backstage Separation
Visible separation	High	Key aspects: Identity and managerial elements disconnected from parent company. However, operational elements are shared or similar to parent company. Examples: NA	Key aspects: Identity and managerial elements disconnected from parent company. Moreover, the operational elements are different than parent company. Examples: RWE Renewables and Uniper
	Low	Key aspects: Identity and managerial elements are shared or similar to parent company. Moreover, operational elements are shared or similar to parent company. Examples: BMW i series, Renault ZOE Z.E., Iberdrola Renovables, Mercedes EQ series	Key aspects: Identity is similar to parent company. Some elements of the managerial elements are similar to parent company, but have their own management team. Moreover, operational elements are different than parent company. Examples: E.ON, EDFR, EDPR and VW ID series
		Low	High
Operational separation			

Figure 2. Structural separation typology. Source: own data; see Section 4.

The first dimension “visible separation” distinguishes the level of separation (high or low) of the new business model from the parent company with regards to its corporate identity. The aim of this dimension is to call attention to how the new business is perceived by the external environment based on factors the parent company decide to keep linked to- or managed by- their traditional business. Thus, this dimension aggregates the factors name, equity, and organizational culture. The *name* assists the customers to recognize the business and, in some cases, the products the new business model offers. The name is the most visible factor to associate or disconnect the new business model to the incumbent business model, and it is directly tied to the identity envisioned for the new business model. *Equity* reflects the ownership level of the parent company in the new business model, and how much power it has over the managerial structure and decisions. Identity, in turn, is determined by the *organizational culture* (see section 2). According to the definition of organizational culture in this thesis, this factor

is reflected by a combination of elements, one of which is tied to the equity factor (owners and shareholders). Hence, the decision to aggregate these factors in the dimension “visible separation” is based on the impact they have on the establishment of the managerial structure and the way the new business model is presented to and recognized by its intended market.

The second dimension “operational separation” corresponds to the level of separation (high or low) of the new business from the parent company regarding the operational activities. This dimension reflects how different the activities needed to deliver the value proposition of the new business model are from traditional operations. The *value chain* factor was placed under this dimension since it encompasses the activities (primary and support) that a firm performs to create and deliver value with the new business model. This was considered the most important factor inside this dimension since a complete incompatibility of primary activities bestowed a higher level of separation of operations between the new business model and parent company (e.g., energy generation from renewables). As well to tend to investment more heavily to acquire or developed the needed assets. In contrast, the incorporation of the new activities within the existing operational structure and space implies an alteration or adaptation of the current resources, and less investment in comparison. The location factor was placed here since it relates to the physical space where value chain activities take place, as well as to where the managerial team and employees are stationed. The creation of a new location for the ‘green’ business model also implies an investment. Thus, the reason for aggregating these two factors inside the dimension “operational separation” is based on the effect the differences and possible incompatibility between the new and traditional business model have on the established operations and assets.

Cross-tabulating the two dimensions resulted in *Figure 2* which classifies and briefly describes the structural separation strategies. Four structural separation strategies were identified and named, whereby each name seeks to express the degree of separation the analyzed incumbent firms choose to adopt. An overall pattern becoming apparent is that the ‘green’ business models studied show the predominant strategies used were backstage separation (mostly energy sector companies) and a soft separation (mostly

automotive sector companies). Also identified and named, although less common in this study, are the hard separation and the frontstage separation. In the following segments, a more detailed explanation of the characteristics of each separation strategy are given before being illustrated with empirical evidence from the cases.

Types of separation strategies

Frontstage separation. A frontstage separation strategy is characterized by ranking high on “visible separation” and low on “operational separation”. The companies in this quadrant present their new business models to the market as an independent business unit, separated from the parent company. The factors underlying the dimension “visible separation” are different as the ones currently present in the parent company. The name of the new business unit is disconnected and does not allude to the parent company. Moreover, the parent company either has a minority stake or no equity in the new business model, which decreases or eliminates its decision-making influence over the management structure. The elements that are part of the organizational culture – owners, management teams, culture, employees, and resources – are also not shared. To all visible appearances, the new business unit is an autonomous business. However, on the operational side, factors connected to the value chain and location are either shared or very similar between both business models. That is, despite visible separation on the ‘front stage’, operations in the back use shared procedures and are similar in regard to the primary and support activities in the value chain.

Hard separation. The hard separation strategy is characterized by both a high “visible separation” and “operation separation”. For business models placed in this category, the name of the new business model does not make any reference to the parent company. The equity the parent company owns is either minor or none, thus there is no or little leverage over the management structure of the new business model. Likewise, the new business model has its own managerial structure, on organizational culture, own resources, and own employees. This enables the new business model to build its own identity in the market where they are placed. Moreover, a hard separation strategy exhibits separate value chain activities. The primary activities are completely split or different from the parent company, and the new unit has developed also its own,

secondary support activities. In addition, said activities take place in a different and physically separated location from the parent company. The companies in this quadrant are fully autonomous.

Soft separation. A soft separation strategy is defined by both a low “visible separation” and “operational separation”. For companies in this quadrant, the factors under the “visible separation” dimension are the same or shared for the new business model and the parent company. Frequently, the name of the new business model directly relates to the parent company. The new business is presented as more of an extension to the current business of the parent company (e.g., sub-brand), and not as an independent entity. The new business is completely dependent on the parent company, as the equity is totally owned, and governance overseen by the incumbent. Elements such as managerial structure, employees, resources, and culture of the new business are also tightly linked to the parent company. Regarding the “operational separation” dimension, the activities (primary and support) and assets from the value chain are shared or similar. In some instances, the parent company’s existing assets endure several modifications to fit the activities of the new business model. These modifications are performed in already owned and running locations which are, for instance, partially refurbished. Hence, the delivery of the value proposition of the new business model is completely dependent on the parent company.

Backstage separation. A backstage separation strategy is characterized by ranking low on the dimension “visible separation” and high on the dimension “operational separation”. The name of the new business is linked or is very similar to that of the parent company. It makes the connection to the parent company visible and indisputable. The equity of the new business is in majority or completely owned by the parent company. Regarding organizational culture, the new business model has its own managerial team to make strategic decisions. However, the decision-making is centralized which means that, although the new business model has its own management, this management still reports to the parent company, which is in charge of taking decisions regarding the allocation of resources (e.g., investment) and the general strategy to follow as a group. In contrast, for the operational side, the primary value chain activities of the new business are

completely different and autonomous from the parent company. Operations and processes are physically separate from those of the parent company. In some cases, the new business may make use of some of the available support activities to serve its own operations (e.g., human resources) but this is negligible. Moreover, in this quadrant the location of where the primary activities take place, as well as where the managerial team and employees are stationed, is different from those of the parent company.

5.2. Empirical Evidence from the Case Studies

5.2.1. Hard Separation Strategy

The case study of *E.ON* and *Uniper* is a good example to illustrate a *hard separation* strategy. *E.ON* was an especially peculiar case in this research because in the lapse of 6 years it implemented different separation strategies that resulted in three business models (see *Appendix B* for a short summary of *E.ON* timeline). *Uniper* was the first separation strategy that *E.ON* took on its established business and the one where the *hard separation* strategy description fits, hence was the chosen study to illustrate it.

During 2013, the ramifications of policy decisions in Germany regarding renewables (Renewable Energy Act) and the related insufficient market prices for conventional energy created a negative impact on *E.ON*'s generation portfolio. Hence, *E.ON* made the decision to further intensify its efforts to systematically adapt the business to the rapidly changing market situation. Later, in 2014, the 2030 Climate and Energy Framework adopted by the European Union, which sets a target to increase the share of renewable energy to 27% and improve energy efficiency to 27% by 2030, placed extra pressure on the traditional business of *E.ON*. By the end of 2014, *E.ON* made the announcement of its strategic plan to spin-off its conventional business of power production and distribution into a new, separate business. The new business unit, as was referred as in the announcement made in the annual report, would have a portfolio of conventional assets focused on operationally flexible gas-fired power plants and global energy trading. In contrast, *E.ON* itself planned to retain the focus on its renewables branch, distribution networks and customer solutions. This new business would operate independently from the current structure. The headquarters of the new business would be situated in Dusseldorf in Germany, and away from the current *E.ON* headquarters in Essen, Germany. The name decided for the new business was *Uniper*.

When, the change in the German policy to phase out nuclear energy by 2022 announced in 2015, E.ON had already decided to move its nuclear plants to Uniper, and to transfer the dismantling responsibility and financial liabilities to the new unit in charge of the conventional business. However, this was not possible since waiting on the definition and implementation of the policy could have meant a delay in the separation, so the remaining nuclear power business in Germany was managed by a separate unit of the company. The unit was not integrated to E.ON's management structure and was not marketed by them either. After this setback in the negotiations, the separation went on according to schedule.

"This liberates us from continually having to make compromises. Our ambition is for both companies, which soon will be legally independent of one another, to become leading players in their respective energy worlds." (CEO Johannes Teyssen, 2015)

By the end of 2015, the managerial teams and employees were determined, and the changes communicated. Each business unit had its own team of managers and employees.

"E.ON's and Uniper's leadership teams are ready, and our employees know where they will be working. We reached agreement with employee representatives on a Reconciliation of Interests. The separation of our company into two operationally independent entities is entering the final phase."

(Johannes Teyssen, CEO, 2015)

There was a transfer of 14,000 employees out of the 43,000 employees E.ON had at the time to Uniper. The transferred employees were previously in charge of the conventional assets. The two companies had to undertake the task to create its own organizational culture based on the dynamics between the new managerial structures built and their own employees in charge of their own specific tasks per market focus.

"Each of the two companies will be able to develop a consistent corporate culture and establish a clear brand positioning. In addition, we expect that both companies will have more specific capital costs and improved access to capital markets" (E.ON 2015 Annual Report, p. 13).

By 2016, the separation was officially confirmed and Uniper was launched. In September that year, it was listed on the stock market. The separation of the business

had the intent to aid each business into developing its own tailored value chain operations and processes targeting their respective market. E.ON kept on investing in acquiring renewable assets. Their renewables net investment in 2016 went above €10 billion, more than any other German company. In comparison, Uniper kept attending to the conventional power generation assets and operations.

“Dividing the Group into two smaller, more dynamic companies will make E.ON and Uniper better able to differentiate their business operations according to customers, technologies, risks, and markets and to take a more focused approach to developing the necessary capabilities and processes”
(Johannes Teyssen, CEO, 2015)

The creation of Uniper provided additional options to E.ON shareholders. Every E.ON shareholder remained a co-owner of E.ON, but also received one Uniper share for each ten shares of E.ON. The shareholders had the opportunity to choose whether to retain their appointed shares on both companies or modify their portfolio. At the beginning of the separation, E.ON retained 53.5 percent of Uniper shares. However, by 2018 E.ON had 46.65 percent of the shares. E.ON’s equity status thus changed from being the majority shareholder to being a minority shareholder. This gave E.ON and Uniper a greater room to maneuver their different strategies and to focus entirely on their corresponding markets. Almost at the end of 2018, E.ON decided to take up the voluntary public takeover offer of Uniper by another energy company named Fortum from Finland. E.ON sold their existing stake in Uniper to Fortum .

The *name* of both companies is different and neither one alludes to the other, impeding any association for outsiders. The parent company’s influence over managerial decisions is low since it had minority of the shares (*equity*). The *internal organizational environment* of each business is developed separately by an own managerial team, employees, available resources and focus on the respective market. Moreover, both companies have their own *value chain* operations and processes that serve each of their market’s targets. Each business unit is in charge of a different energy stream generation. E.ON is focused on renewables and Uniper on conventional energy generation. In addition, the *location* of their headquarters is different, creating an independent space for each.

5.2.2. Soft Separation Strategy

The case of Mercedes-Benz and EQ-series case is a good example to illustrate a *soft separation* strategy. In 2016, Mercedes-Benz presented its new product brand concept for electric mobility named EQ. The EQ represents a completely new, fully electric drive platform for Mercedes-Benz. The EQ is a Mercedes-Benz sub-brand, totally owned, marketed and sold by them.

“As Mercedes continues to expand its electric lineup, it now considers EQ as a dedicated sub-brand [...] , signifying the German automaker’s ambition to become one of the world’s leading electric car manufacturers” (Christoph Starzynski, VP Electric Vehicle Architecture, 2021).

After its world premiere at the Paris Auto Show that year, Matthias Lührs, president of sales and product management of Mercedes-Benz, said in an interview that *“while EQ will offer a different user experience, the vehicles themselves are seen as a natural extension of Mercedes-Benz’s electrification strategy.”* (2016)

The EQ brand, alongside the production of its electric vehicle, plans to offer a comprehensive electric mobility ecosystem that embodies products, services, technologies, and other innovations. The spectrum will range from wall boxes to charging services for home energy storage units. Mercedes-Benz strategy aims to have around 10 electrified vehicles in the Mercedes-Benz portfolio by 2025, reiterating the company’s commitment towards sustainability as a core component of the brand philosophy and corporate strategy. It was announced in October 2016, that the first model of the EQ series will be produced in the plant of Bremen in Germany. That is, the primary value chain activities are placed within the existing network production. Bremen is a long existing factory that thus far was the lead producer of the C-Class model, and the plant that produces the most variants (12 models) within the Mercedes-Benz production network. The new generation of electric vehicles will be based on an architecture specifically developed for battery-electric models, which will be applicable across the model range. In 2017, Mercedes-Benz announced that, due to the flexibility of their assembly plants, the future EQ models are to be integrated into the series production of other existing Mercedes-Benz plants. Additional to the plant in Bremen,

the plants in Rastatt and Sindelfingen in Germany, as well as the smart plant in Halbach, France, will become competence centers for the production of the electric vehicles.

“Thanks to highly flexible structures, we are able to integrate electric vehicles in the regular series production in our plants. At the same time, we are increasing our competitiveness with the efficient integration of Industry 4.0 applications. This allows us to benefit from the opportunities of electric mobility, while considerably reducing the required investment.” (Markus Schäfer, Head of Production and Supply, 2017).

In 2019, the first model of the EQ-series, the EQC made its debut. In 2020, the EQS was introduced as part of the luxury segment of the EQ series, that still benefits from the all-electric strategy and will be produced in the same manufacturing locations previously mentioned. As a first approach, the EQ models will be produced according to market demand. Thus, a pull-based supply chain will be followed, where the product will be developed until the customer demand justify it. The EQ models although maintaining its dealership contracts, Mercedes-Benz will not sell any stock to dealers. Mercedes-Benz will retain ownership of stock and sell the EQ models directly to buyers, merely providing dealers with demos for test drives and displays. However, Mercedes-Benz does not have plans to abruptly phase out the production and sale of their internal combustion engine vehicles, since they provide the financing of new projects, including the adapted space within their plants for the EQ series production.

“[Mercedes Benz] would not prematurely phase out combustion engine sales because these models are a "cash machine" needed to fund future electric models.” (Ola Kallenius, CEO, 2021)

The Mercedes-Benz EQ-series falls into the soft separation strategy quadrant, since the *name* of the brand and the handling of the product as an extension of the parent company strengthens its association. The EQ- series is completely *owned* by the parent company. Moreover, the brand is constructed in line with the parent company's strategy and under the same managerial structure, values, and philosophy (*organizational culture*). The primary activities of the *value chain* were incorporated within the traditional activities due to the flexibility of their processes that allowed the integration. The latter was adjusted to incorporate the production of electric vehicles alongside the regular internal

combustion engines. The *location* of the assembly plants and headquarters remain the same and are shared with the sub-brand.

5.2.3. Backstage Separation Strategy

For the backstage separation strategy, a case from the automotive sector and the energy sector is illustrated. Both cases are well suited to highlight the characteristics of this strategy. The case of Volkswagen (VW) I.D. series will illustrate a backstage separation strategy in the automotive sector. The case of Energias de Portugal (EDP) and Energias de Portugal Renovaveis (EDPR) will illustrate a backstage separation strategy in the energy sector.

Volkswagen I.D. series

The VW I.D. series became the first of the VW fleet of electric cars. The concept made its world premiere in September 2016. The I.D. series is completely owned by VW and initiated as part of the VW strategic change and push towards electric mobility, which had been fueled by changes in policies for the automobile industry as well as changes of the industry brought by increasing digitalization and connectivity. Announced at the end of 2016, the VW board of management build the “Transform 2025+” program. The program describes the reconstruction of the brand’s core business and the complete transformation along the entire value chain stream and development of new competences towards electric mobility and new mobility services.

“[...] We want to benefit from change and to take Volkswagen into the lead in the new automobile industry with determination. Over the next few years, Volkswagen will change radically. Very few things will stay as they are. In the final resort, the new strategy is a major transformation program.”

(Dr. Herbert Diess, CEO, 2016)

The I.D. is the first series vehicle produced based on the modular electric drive toolkit (MEB). The MEB is a technology platform developed and produced by VW specifically for electric vehicles. The platform is a unique VW’s selling propositions and the key to the electrification of the fleet and incompatible to the traditional combustion engines. It allows for bigger batteries to be installed which enhances the range and provides a more powerful battery system.

“The MEB bundles Volkswagen’s entire production knowledge: it is not a platform for vehicles with combustion engines that has been retroactively modified, but has from the outset been designed to be 100 percent, uncompromisingly electric.” (VW, 2018)

Four of VW's assembly plants - Zwickau, Dresden, Emden, and Hanover - will be converted to build exclusively electric vehicles. It will become Europe's largest electric mobility production network. The transformation started in 2018 and will be completed in 2021, starting with the Zwickau plant. The employees of those plants will receive specialized training for their future tasks. Additionally, VW launched a comprehensive electric mobility competence program “Future Electronic Engineer Program” to train its own engineers as top production experts in electric mobility.

“In order to safeguard its future viability, Volkswagen is developing new skills – especially in the fields of digitalization and e-mobility. All in all, 9,000 new jobs in future-oriented areas are to be created over the next few years.” (VW, 2017).

Due to the new challenges that electric mobility brought, and the undergoing transformation project VW is facing, VW created a separate board of management division in 2018 specific for Mobility. The new board oversees the electric mobility business and all the activities that go from the marketing of the series and production of the electric vehicles. This is different from the board of management of Passenger Cars which oversee the portfolio of ICE vehicles of VW. In August 2019, as a step of its “Transform 2025+” program, VW presented a new corporate logo and brand design under the motto “New Volkswagen”. The new corporate image is being presented with the debut of the ID series. The I.D. series represents the new full electric, connected and carbon neutral path of VW. Hence, the corporate image transformation is reoriented to content and sustainable products. The new brand design will be visible in the design of the vehicles, customer contact and corporate presentation. Moreover, this will bring a shift in the company's communication with its customers. The transition from a car manufacturer to a provider of mobility services is the ultimate goal.

“For the fundamental transformation of Volkswagen towards e-mobility that we are currently accomplishing, we need and entirely new marketing approach, [...]. We are concern [VW] with

communicating a new movement. Volkswagen is now making e-mobility fit for the masses [...]"
(Jochen Sengpiel, Chief Marketing Officer, 2018).

In 2020, VW implemented a new sale model for the I.D. family. The I.D. family would be the first to operate under this new sales model, it was not clear from the research when or if the rest of the existing portfolio would also apply this sales model. This new sales model integrates online business and the traditional dealership business. The model allows the customers to order vehicles from the I.D. series directly from VW. At the same time, the customers have the opportunity to choose its preferred dealership for personalized customer care and local services (e.g., sales consultation, vehicle handover). The dealer's commission and bonus remain the same, even if the purchase was made online directly with VW and not in the showroom's dealership. All current retail partners of VW agreed and sign on this sales model.

"Volkswagen is being transformed from a pure automaker into a provider of mobility services going beyond the customer's own car. For this purpose, the sales structure of the brand is being fundamentally transformed together with the dealers and marketing is being realigned." (VW, 2019)

The VW case stands out from the other car manufacturers in this research due to the early steps the group is taking with its electrification initiative across the fleet, and not just a series model. VW plans to electrify its entire model portfolio using its MEB kit by 2030. This means, that by that year, at least one version of each of the 300 models under the group will be electrified. This makes VW the first car manufacturer to set an electrification date for its entire fleet.

The VW I.D. series case study fits the quadrant characteristics. The *name* 'Volkswagen I.D.'

references the parent company (VW) and keeps the linkage to the brand. Moreover, the new brand model is completely *owned* by the group. Hence, the *organizational culture* factor over which the new value proposition is built is inherently shared. The owners, culture, resources, and employees remain shared. However, the only element on organizational culture where they differ is over the management structure since it has its own team focused on electric mobility. The primary activities of the I.D. series *value chain* activities were completely changed to fit the use of the self-designed MEB kit.

Additionally, the sales and marketing model are different than the conventional sales model. The support activities remain the same since there is no evidence that suggests VW split human resources or financial activities. The transformation of the assembly plants to be completely focused on the manufacturing of electric vehicles and separated from the conventional assembly plants, further indicates a split regarding the factor *location*.

Energias de Portugal Renovaveis

EDP started to acquire renewable assets in 1996. The company used its financial power to purchase capacity for wind generation and invested in wind turbine projects in Spain and Portugal over the next 10 years. However, at the end of 2007, the group made the decision to separate its conventional energy generation and renewable business and incorporate “Energias de Portugal Renovaveis” to the group. The main objective of EDPR was to engage in activities related to the generating of electricity but use exclusively renewable sources of energy. The activities of EDPR range from the planning, construction, operation, and maintenance of power plants run by renewable energy, especially wind and solar power. In 2008, EDPR was converted into a separate company incorporated by shares and started trading on Euronext’s Lisbon market under the ticker symbol “EDPR” following its successful split from EDP. EDP owned the majority of the shared capital and voting rights with an equity of 83 percent. The headquarters of EDPR were located in Madrid, Spain. The EDP headquarters remained listed in Lisbon, Portugal. The new company’s organizational model was established and arranged with the EDP Group’s strategy and business as a foundation.

“During 2008, we [EDPR] have been working on the details of the organization model, oriented and aligned with the company’s [EDP] strategy and business. The most adequate processes have been developed as the backbone of the company, also aiming at harmonizing practices across business platforms, thus enabling significant efficiency improvements to support future growth.”
(Annual report 2008).

EDPR is considered an ‘early mover’ on the growing market of renewables with a high potential of growth. EDPR is a purely renewable energy company, and all its revenue streams come from the renewable energy activity. EDPR has its own management team,

with an appointed CEO for EDPR, different from the one in EDP. Moreover, it holds 100 percent stake on all its renewable assets and other renewable companies. However, EDPR is obligated to report back to the EDP group. Based on these reports, the performance of each segment in the EDP group is being evaluated and decisions regarding resource allocation are made. In 2008, EDP decided to allocate more than half of their financial resources into EDPR, as part of their 2009-2012 strategic plan.

“[...] the announcement by EDP Group of its 2009-2012 Strategic Plan last November, where EDP Renováveis represents roughly two thirds of the investment for the next 4 years, are clear signs of their commitment to maintain our leadership position.” (Antonio Mexia, EDP CEO, 2008).

Moreover, a Project Management Office (PMO) was created in 2008 to ensure the best implementation of related processes within the EDP group. The PMO is in charge of consolidate the processes of the different areas in an efficient and effective way while keeping in mind business differences between platforms and respective roles in the EDP group.

At the beginning of 2009, EDP decreased its qualified position in EDPR to 77.5%. However, the aim of EDP remained to manage and coordinate the energy interest of subsidiaries dependent of EDP. Among those subsidiaries is EDPR. These subsidiaries are organized through managing and monitoring structures, to ensure the maximum synergy and value creation in the operations and activities. In 2009, 50% of the revenue stream of EDP came from its renewable business EDPR. During the next 9 years, EDPR appointed a new CEO and continued to invest and expand its wind and solar energy capacity in Portugal, Spain, and abroad. Likewise, EDP kept an interest in the generation, distribution and supply of electricity and gas.

By 2018, EDP successfully positioned itself with two profitable low-carbon business models. The first one - and the one being described here - is EDPR, with a large renewable energy generation portfolio, which accounts for 66% of the company's electricity generation and 65% of its earnings. The second one, EDP Distribution, connects customers to an intelligent distribution network. In the first quarter of 2019, EDP held 83% of share capital and voting rights of EDPR. 17% of the share capital is free floating in the Euronext Lisbon.

“EDP- Energias de Portugal SA engages in the provision of electricity generation, supply and distribution. It operates through the following three segments: Renewables, Networks and Customer Solutions and Energy Management.” (Forbes, 2020)

The case of EDPR helped to illustrate one of the cases in the energy sector for a *backstage separation* strategy. EDP decided to keep its *name* strongly linked to that of the new business, by only making the distinction over which energy market it covers. Additionally, EDP *owns* more than half of the share capital and voting rights of EDP, having a strong decision power over the executive decisions of EDPR. Regarding *organizational culture*, EDP has its own managerial structure, but it is part of a centralized management since it is required to report back to the parent company. At the same time, EDP has mechanisms that allow for synergies and monitoring between all its subsidiaries, including EDPR. Moreover, EDP provides the strategy and financial resources to EDPR, over which the business builds its internal strategy, aligned with the parent company. The *value chain* primary activities are completely separated and different from those of the parent company. EDPR is focused in developing energy through renewables and has total control over its renewable assets. Moreover, the *location* of the headquarters is kept separated.

5.3. Cross-case Comparison: What Drives the Choice of Separation Strategies?
The analysis showed that a more nuanced view on incumbents’ strategies to implement new business models than ‘integration’ vs. ‘separation’ is needed. The typology offered here based on the investigation of contemporary examples from the energy and automotive sector can provide a starting point for this. While the analysis did not set out to investigate the potential drivers that make an incumbent choose a particular separation strategy, the data collected allows for some preliminary insights here. First and foremost, the case findings show that energy incumbents go for a stronger approach to separation than automobile manufacturers. Three out of the four cases studied in the energy sector chose a backstage separation strategy, meaning they kept their operations separate from the parent company, but decided to keep a visible connection to the exterior (customers). Additionally, three out of the four cases for the automotive sectors chose a soft separation strategy. The incumbents decided to kept their operations within the confines and oversight of their current activities and adapting them when necessary.

The visible factors of the new businesses were also kept, and the value proposition was treated as a sub-brand not a stand-alone product. An underlying reason for this might lie in the differences between the energy and automotive sector when it comes to the degree of incompatibility of their “brown” and “green” businesses. Where the renewables business needs a complete separation of activities due to the nature of the system’s operation (centralized for conventional vs decentralized for renewables) and the regional variability of renewable sources which needs its adequate assets. In contrast, the EVs market has more room to adapt their existing operations (depending on their strategy and financial resources) to introduce the EV production without a drastic and complete change on their traditional operations.

Some connotations and words arose in the events chronology, regarding policy changes, investment, acquisition of assets, corporate image, commitment to sustainability, infrastructure, among others. These observations can provide first insights into the reasons behind the decision of the parent company to keep an identity connection or not with the new business model, as well as maintain or not the new business under its operational umbrella. Against this background, the analysis will close by commenting on the influence of circumstances that might explain reasons for choosing one separation strategy over the other. Three circumstances will be commented on: financial and policy concerns, the stage of the transition process, and concerns about reputation.

5.3.1. Financial and policy concerns

Companies in the energy and automotive sector might decide to pursue opportunities in renewables and electric vehicles, respectively, by providing financial or equity investment, and keeping them inside their business models to increase earnings. There is a potential return of their investment in the form of incremental revenues, certificates, subsidies, and diversification benefits. Incumbents that keep their new business models integrated can obtain all the financial benefits mentioned, without depriving themselves of the generated knowledge of the growing market where the new business interplays. However, the global and local regulatory frameworks play an important role on the financial concerns of companies when deciding on the level of separation. The complete separation of the new business model entails a high investment to create or acquire the necessary assets and resources for its correct operation. Hence, companies at the mercy

of changing environmental policies, can be expected to be cautious to not move too quickly in order to avoid costly investment failures. However, in the automotive sector, specifically, the regulatory forces are pushing for a faster decarbonization, where the alternatives are narrowed to pay penalties or absorb the costs of lowering the emissions of their fleet. For example, the Mercedes-Benz EQ-series incorporation in the traditional supply chain is a first step into a complete changeover of the Mercedes-Benz operations since the transition to electric vehicles in the sector is closer due to changes in policies regarding emission standards. “[...] *the speed of the transition will be shaped by the upcoming Euro 7 emissions standard, [...] up to a scenario that makes it almost impossible to register internal combustion vehicles after 2025*” (Markus Schäfer, Head of Production and Supply, 2021). Hence, the observed strategy in these companies is the fast-adoption approach of electric mobility technology into their existing operations to start mitigating these penalties, without incurring higher investments and starting the phase out of their existing business model. Companies that see the future of their business in jeopardy due to the policy environment and have the possibility to adapt their existing assets are more likely to choose a *soft separation strategy* to start slowly phasing-out their business model.

5.3.2. Stage of the transition

It is important to consider the ecosystem where the incumbent of the energy and automotive sectors must operate. For the EV market there is a lack of adequate public charging infrastructure, parking facilities, repair facilities and lagger government plans to address these. According to LeasePlan’s 2021 EV Readiness Index published in March, the lack of charging infrastructure is the major obstacle to an EV transition. The document provides an overview of 22 European countries over three key factors for the implementation of electric mobility: the size of the market, the maturity of the charging infrastructure and operating costs of EV. The charging has the weakest performance of the three indicators. In total, there is only 260,000 charging stations (Lease Plan, 2021). The public charging infrastructure relative to population places 3,53 charging stations per 1,000 inhabitants in the best rated country (Netherlands) versus 0,47 charging stations per 1,000 inhabitants in the worst rated country (United Kingdom). In turn, this shows the large differences in maturity between the countries and stresses the need for a faster development of charging stations since time challenges regarding electric grid and

policy changes may arise (Lease Plan, 2021). Hence, the external situation regarding the stage they are in, could represent a financial risk that could become a sunk investment for the automotive sector and create a bottleneck if the production and push to EVs and creation of the infrastructure do not go at the same pace. For example, Mercedes Benz is detaining the decision to adapt other facilities based on the market demand. Regarding the energy sector transition stage, since 2005 the renewables market has growth at an accelerated pace thanks to support policies at regional and EU levels, costs reductions. Plenty of European households have now the chance to buy electricity produced from renewable sources. In 2019, 19.7 percent of the energy mix in Europe came of renewables sources, a little more than doble increase versus 2005 (EEA, 2017; Eurostat, 2020). Companies that do not see clearly how fast the transition of the necessary infrastructure to growth the market may prefer a *soft separation* strategy to not fall into a dead-end market. Moreover, companies in the energy and automotive sector face a dilemma, since making decisions over an abrupt and absolute business model adaptation and investment requires this final information to potentially succeed. There are two possible scenarios for companies in these sectors. The first one being, if they postpone its transition strategy until the environment is less uncertain, it opens the market to possible competitors to take on a bigger share of the market. The other scenario, early investment in its business development and consequent structural separation could limit their future options and increase the risk of its technology becoming obsolete at the end of the transition.

"Today, no one knows for sure which drivetrain mix will best serve our customers' needs 20 years from now. That is why we encourage policy makers to pave the way for tech neutrality: Let's fix the target, but not the means to achieve it." (Ola Kallenius, CEO Mercedes Benz, 2021)

However, companies where the incompatibility of value chain activities is greater and where there is evidently more support for the transition, rather than punish policies, might prefer a *backstage separation* to grow their business.

5.3.3. Reputation

The New York Reputation Institute revealed that 60 percent of people's purchase decision is based on brand awareness and reputation. Moreover, it could have a positive

impact over the acquisition of possible new clients and retaining the existing customer base (Flagship, 2021). With the gained collective interest in sustainability and concerns over climate change, there is an added pressure and trend of organizations making commitments to change or improve their operations. The energy and automotive sector, and the environmental challenges linked to their operations are in the middle of this transition. Maintaining the new business model identity connected to parent company, presents an opportunity to reposition the company into the sustainable transition. Organizations that do not act on sustainability early on, risks earning a bad reputation and being considered laggards, and can lose market base. The company's reputation is a valuable asset, that could become a competitive advantage if communicated and executed right. As stated in previous sections, there are a lot of environmental problems related to the normal activity of companies in the energy and automotive sector. Both sectors are responsible for more than 75 percent of the carbon emissions. In 2016, after the separation of the traditional and renewable business of E.ON, Uniper was considered one of the worst power plant polluters in Europe (EBC, 2017). The separation saved the reputation of E.ON. Hence, incumbents might go for a *hard separation* approach because of their existing stigma their conventional operations carry. Mercedes-Benz, Volkswagen and BMW, all studied in this thesis, became involved in the so-called “Dieselgate” scandal. The European Commission accused these companies of illegal and wrong-reporting of emissions reduction technology, which ended in the recall of millions of vehicles (Amelang, 2021). Moreover, companies like Mercedes-Benz have been affiliated in the past with trade-groups that actively lobbied against stricter carbon emissions rules for vehicles in Europe (Amelang, 2021) However, their new ‘greener’ strategies are helping these companies to change the perception of the public about their past and current operations and have placed them in positive lists praising its initiatives and increasing the value of the brand. Cars are a consumer product with an emotional value for customers, not a commodity. Hence, incumbents in the automotive sector might go for a *soft separation* or *backstage separation* strategies.

6. Discussion

6.1. Theoretical and Practical Contributions

Through the findings, this research has been able to lay the groundwork for an understanding of how incumbents in the energy and automotive sector go about implementing structural separation as an approach to adapt to discontinuous change. The incumbent firms of the energy and automotive sector in this research take part on different markets and use different technology. Despite these differences, the analysis highlights that these companies can have similar approaches when addressing structural separation since all of them provided information over the studied factors. The four structural separation strategies presented in the typology and the dimensions on which these strategies were built substantiate the previous work of Markides & Charitou (2004) and Markides (2013). They called for a more in-depth study of the degree of structural separation companies choose to follow based on additional examination of what activities or elements needed to be separated and what are needed to be kept integrated with the new business. Markides & Charitou (2004) proposed four strategies for managing dual business models that were based in external circumstances (difference in market) and integral circumstances (internal conflict the new business cause). These strategies helped to illustrate when to separate and when to keep the new business integrated. However, it did not give any insight on which elements or activities within the businesses should be separated or integrated. The presented typology added on these strategies by bringing to light patterns of structural separations strategies build on the degree of separation of the new business unit's regarding internal factors dependent on its identity and operational dimensions. The mentioned dimensions were constructed and derived from the factors listed by Markides (2013), and further explored by mapping the progression of stand-alone strategies of the incumbents of the energy and automotive sector. The quadrants of hard separation and soft separation can complement the separation and integration strategy stated by Markides & Charitou (2004) since the dynamics of the strategies are similar, it supplements more specifics around the elements that are kept integrated and separated for each.

The separation strategy states that the more serious the conflicts between the two business models are, and the more different the markets for both are, it would impede

the possibility of future synergies. Hence, separation is the appropriate strategy to follow by the established business model. The *hard separation strategy* supplement over this by stating that the name should then be different between the two business models to eliminate any connection. The established business model should not have any interference in the managerial structure of the new business model by diminishing its decision-making power determined by the equity. Hence, the parent company should possess the minority or none of the shares in the new business model. At the same time, the elements of the internal organizational environment should be established by the new business model to serve its strategy and purpose. The value chain activities should be different from those of the parent company, to eliminate the conflict of incompatibility and scope, and not compromise the development and growth of the different value propositions. The different location can add on the value chain factor by putting space between the activities and its possible influence.

The integration strategy is preferred when the new business models does not create friction with the established business models, even when both play in similar markets. The soft strategy adds on this strategy by being specifying what elements are kept between the new and established business model. The name of the business models is connected, and the consumers have complete knowledge that the new business model is part of the established business model, or that the new value proposition is just an extension of the other (sub-brand). The parent company completely owns or holds the majority of the shares from the new business model. Moreover, the internal organizational culture is the same and the same elements are in charge for the growth and development of both value propositions. The value chains, although can have some incompatibilities, are flexible enough to grasp the needed modifications and there is no need to build a new location or headquarter. Here is where most of the incumbent automotive cases where placed. It could be argued that it is the correct strategy for these companies since the EVs and ICE products are designed for similar markets.

The biggest contribution comes from the two quadrants that stand out and were introduced in the typology resulting of this research, the frontstage and backstage separation strategies. These could also complement the hybrid strategies of Markides &

Charitou (2004). The work of Markides & Charitou (2004) establishes that sometimes some degree of separation and integration could be possible. However, it does not elaborate on what can or should be integrated or separated.

The frontstage strategy of this research could add to the phased integration strategy. A phased integration strategy suggests that companies should be kept separated for a period of time to eliminate the created friction over the similar markets and merge the businesses in the future. The frontstage strategy builds on the premise that the new business is presented as to be different from the parent company, with a different name, a minority of equity and a seemingly different internal organizational environment configuration. However, the activities of the new business value chain are similar or somewhat shared with the parent company since both operate in the same market base. This could be seen as deception scheme for the consumers and in this regard add a negative connotation to the strategy.

Conversely, the backstage separation strategy adds to the phased separation strategy. The phased separation strategy suggests that companies should be kept integrated even though they do not share the same market, since there are no internal conflicts to deal with. The new business model can thrive by using the existing assets and resources and once it is mature enough, the separation can occur. The backstage separation establishes that the name can be shared with that of the parent company and take advantage of the benefits the association brings into the new business development. Additionally, the parent company can keep the majority of the shares or completely own the new business giving the parent company decision-power over managerial resolutions. The new business model can benefit from the experience of the parent company and follow established strategy. However, the parent company should give the new business model some managerial and decision room, in the form of its own leadership structure. This does not mean that the new business model cannot dispose other resources or assets, more that it has the power to decide how to use them. The value chain primary activities of the new business model are kept separated and independent from those of the parent company, due to incompatibilities or differences, or simply out of an interest of complete focus on the intended market. In this quadrant, most of the incumbents of the energy

sector were placed. The reason could be the necessities regarding the value chain activities to provide energy through renewables clashed with the conventional energy generation. Moreover, companies could favor their image over the association with a renewable approach, as well as gain and benefit on the generated knowledge for the future phase out of its traditional activities.

This research does not provide practical recommendations for incumbents regarding when they should separate or when to integrate their new business models. Rather it focused on how these strategies are carried out and contributes to a better understanding of the degree of separation they decide on when adapting to sustainability transitions where their traditional business model is contended, and the adaptation is born out of necessity to comply with policy changes, incompatibility of activities or conflicts of business environment.

There is a lack of language to describe the strategies we recognize in practice; hence this typology would add on the literature of incumbent transformation of the energy and automotive sectors by providing a suited terminology. Moreover, it would provide a better comprehension of the strategies they use, the dilemmas related to substantial investment of time and resources needed, how the change is initiated and carried out – meaning, if the established business model leave their brand and change the structure, or if the new business model is split and developed and integrated again later one once it's developed.

6.2. Limitations and Future Research

Despite the contributions of this paper to a better understanding of incumbent structural separation strategies there are some limitations on this research that need to be address. First, the analysis of incumbents' internal organizational environment with its elements, and the value chain with its elements, was only done at a one-dimensional level. The level of analysis was done only with public records and accessible information published by the company and complemented with some external outlets of information. Thus, some of these elements, especially the internal organizational environment was difficult to understand and codify. It is important to notice that even though there was an exhaustive mapping and analysis of events to try to construct these factors, the proxy of

information does not capture everything. The involvement and direct input of information from these companies regarding these factors could enrich and elucidate further the results of this research. Second, the number of cases for this research was limited and restricted in scope, where the only sector studied were the energy and automotive sectors in Europe. Third, the research holds some limitation in the methodological application. The data analysis method applied in this research was Qualitative Content Analysis (QCA) in the form of Direct Content Analysis (DCA). By using a DCA approach, the data was analyzed with an informed but strong bias towards the adapted factors of Markides (2013). Furthermore, with this type of approach there could be a possibility that other important insights or not considered factors in the data were left out of or concealed inside the main results (Hsieh & Shannon, 2005).

Given these limitations, future research should analyze these companies at a more direct and first-hand information level to provide details that would stand to reinforce and broaden the findings of this research. Thus, future research should include interviews or surveys with incumbent companies to extract more detailed information that may not have been capture by the analysis of their organizational documents. Finally, considering the scope limitation, future research should assess how and if other sectors like agriculture, fashion industry, food retail, who are also major pollutants and are pressured to make a sustainability transition, exhibit the same structural separation strategy patterns elucidated in this research.

7. Conclusion

In conclusion, with a multiple case study and direct content analysis approach over an event chronology, a typology of structural separation strategies was developed to help answer the research question regarding how incumbents of the energy and automotive sectors deal with discontinuous change. The developed typology adds on the existing literature regarding the strategies that companies should follow when the companies encounter challenges in the management of two business models. It provides specific information on which the degree of separation per factor referring to (1) *name*, (2) *equity*, (3) *internal organizational environment*, (4) *value chain* and (5) *location* is important to consider when dealing with those challenges and the appropriate strategy to undertake

them. It is important to understand that these only provide a better understanding of the observed current situations in the real-world. It does not state this should be the followed steps to integrate or separate the new business and established business but does go over the possible scenarios and the current implementation of these. In addition, they provide a picture of how incumbents of the energy and automotive sector, who are under constant pressure due to the environmental implications their everyday operations cause and thus their business models are contested, deal to adapt. This is important to understand in the largest context of how incumbents transform their operations to deal and adapt to sustainability transitions, and deal with the impeding threat of discontinuous change in their markets.

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10. Appendix A – Event Chronology

E.ON Chronology

Year	Month	Description of the Event
2013	May	E.ON's earnings found affected by contradictory regulatory requirements and the explosive growth of government-subsidized power production, while the energy demand fell across Europe.
2013	May	E.ON Connecting Energies was created to strategically expand E.ON business , with the combined expertise and international experience in distributed energy solutions, energy efficiency and renewables.
2013	September	E.ON SE sell Helmstedt coalfield (wholly owned subsidiary)
2013	November	E.ON's renewable business inaugurated wind farm in the Baltic Sea, and work on Amrumbank West offshore wind farm has begun.
2014	March	The ramifications of policy decisions in Germany and the related insufficient market prices for conventional energy continue to have a negative impact on E.ON's generation portfolio, which is the backbone of its business. Hence, in 2013, E.ON further intensified its efforts to systematically adapt the business to the rapidly changing market situation, as stated by CEO Johannes Teyssen.
2014	March	E.ON continually analyze the profitability of its conventional generation assets and if necessary makes changes temporarily or permanently. As a result, the company has decided to shut down nearly 13 gigawatts of capacity.
2014	April	E.ON started the process of combining its conventional generation and renewable business. The new entity will have a leaner organization and processes, which will enhance the competitiveness of the generation business and present new commercial opportunities.
2014	November	E.ON will focus on renewables, distribution networks, and customer solutions as part of the new corporate strategy. On the other hand, it would spin off the majority of a new, publicly listed company specializing in conventional power generation, global energy trading, and exploration and production.
2015	March	E.ON will retain management of the remaining operation and dismantling of its generation capacity in Germany. It would no be transfer to Uniper, the spin-off.
2015	March	E.ON's nuclear power business in Germany will be managed by a separate operating unit of the company. The unit will not be integrated in the E.ON's management structure and it would not be marketed by E.ON.
2015	September	E.ON is planning to spin off a majority of Uniper with its conventional business power generation in and outside Europe and global energy trading.
2015	n.a.	The separation process of E.ON's operations into two independent companies has begun. Uniper will have a portfolio of conventional assets with a strong focus on operationally flexible gas-fired power plants and global energy trading.
2015	November	E.ON's transformation is on schedule. CEO Johannes Teyssen stated: "E.ON's and Uniper's leadership teams are ready, and our employees know where they will be working. We reached agreement with employee representatives on a Reconciliation of Interests. The separation of our company into two operationally independent entities is entering the final phase."
2015	n.a.	Klaus Schäfer (former CEO of E.ON) is Chairman of the Uniper Management Board and Chief Executive Officer
2015	n.a.	Significant slow down in development of renewables after 2015 due to significant decrease in the feed-in tariffs in many EU member states, plus abolishment of support mechanisms and even adoption of additional charges on social energy in others.
2015	n.a.	The number of jobs in the PV industry fell 70% in Germany.
2016	January	Separation of E.ON business operations completed. Uniper was launched on schedule.
2016	January	The new E.ON, located in Essen, the company will focus on renewables, energy networks, and customer solutions. Uniper will operate independently from its headquarters in Düsseldorf.
2016	January	E.ON strengthens financial profile and gains flexibility to implement the new strategy and repositioning of the Group by selling 100 percent of its shares in UK E&P Subsidiaries to Premier Oil.
2016	January	Rampion, a 400 megawatt projects, supports E.ON's strategy to concentrate on renewable energy, customer solutions and energy grids. The development is expected to supply the equivalent of 300K homes and to reduce carbon emissions by up to 600K tons a year.
2016	February	E.ON's net investment in renewables are above 10 billion euros, which is more than any other Germany energy company.
2016	June	Each E.ON shareholder will remain co-owner of E.ON but will also receive one Uniper share for each ten E.ON shares. Shareholders can then decide whether to retain their shares on both companies or modify their portfolio. This would allow E.ON and Uniper greater room for maneuver and they will be able to focus in their respective different market.
2016	June	Dr Johannes Teyssen, chairman of E.ON's board of management, and Dr Bernhard Reutersberg and Mr. Michael Sen, both members of E.ON board of management, were elected to Uniper's supervisory board as shareholder representatives.
2016	June	Innogy is the new brand of the RWE subsidiary, which pools the German and International Renewables, Grid and Infrastructure and Retail business. They will minting the temporary name RWE International, until the rebranding.
2016	September	Uniper is successfully listed on the stock exchange. The spin-off was completed on schedule.
2016	September	E.ON shareholders were allocated 53.5 percent of Uniper shares.

2017	March	E.ON appoints Anja Dotzenrath to become new CEO of E.ON Climate & Renewables
2017	March	E.ON invests in independent company based in Munich, Elcore GmbH. The company produces energy-efficient heating systems for single family homes and duplexes.
2017	March	E.ON one of the first company that will stabilize the German electricity grid with wind power. With this, E.ON is succeeding in anchoring renewable energy as a supporting pillar of grid stabilization.
2017	May	E.ON and Google are launching partnership to expand solar energy
2017	May	E.ON core business serves as platform for future growth in new energy would by offering technical synergies: modern regional energy networks, innovative and individually tailored customers solutions, and efficient renewables assets.
2017	July	E.ON establishes its own procurement and marketing function for the German, British and Swedish markets. They will primarily be tasked with purchasing power and gas for customers and marketing the production from renewable sources for the E.ON companies.
2017	September	Johannes Teyssen will continue to lead the new E. ON in the coming years, until December 31, 2021
2017	September	Leonhard Birnbaum's contract as a member of the Management Board and Chief Operating Officer for the grids and renewable energies by five years until June 30, 2023.
2017	October	E.ON invests in wind turbines for business customers
2018	January	E.ON decides to accept Fortum's voluntary public takeover offer for Uniper stock. Following the settlement of the offer, E.ON will sell its 46.65 percent stake in Uniper to Fortum.
2018	March	E.ON decides to make a takeover offer for Innogy.
2018	March	E.ON will be transformed into a highly focused provider of European energy networks and customer solutions.
2018	March	RWE will become a leading European electricity producer by renewables with attractive growth potential, optimally combined with security of supply through its conventional power plants and energy trading.
2018	March	E.ON to acquire RWE's 76.8 percent stake in Innogy. Via an asset exchange, RWE will receive all of E.ON's renewable activities, Innogy's renewable business and keep a minority stake of 16.7 percent in the new and enlarged E.ON. The transaction will create two stronger European energy companies, whose headquarters are in Essen, Germany.
2018	May	<p>Basic collective bargaining declaration: First steps towards security for employees. Innogy believes that in particular the following three things must be assured:</p> <p>First, all jobs must be open to all employees in a fair appointment process – irrespective of whether the respective employees are from E.ON or Innogy ("best person for the job").</p> <p>Second, the strengths of both companies should be respected, the better business model should be applied in each case and the existing competitive advantages of Innogy should be taken into account in the integration process. This includes retaining Innogy as a brand("best of both worlds").</p> <p>Third, adherence to the commitments should be monitored by an independent third party.</p> <p>At Innogy's initiative, several talks were held with E.ON and RWE to agree on legally binding commitments for the integration process but these talks have not yet led to an agreement.</p>
2018	July	Innogy agrees with E.ON and RWE integration process and supports the planned transaction. The agreement called for the planned transaction to be implemented in a transparent process. In addition, the integration shall take into account the strengths of the respective companies. Essen will remain the registered office and headquarters of the new E.ON.
2018	November	E.ON and Innogy have made the first major decisions regarding the plans for E.ON's future brand, organizational setup, and innovation activities. These decisions are to be implemented after the closing of the transaction, which is subject to the approval of the relevant antitrust and regulatory authorities.
2018	November	The new company will retain the name E.ON and benefit form the strengths of Innogy's corporate culture. A detail brand architecture is being elaborated, in order to further enhance E.ON's corporate and employer brand.
2018	November	The structure of E.ON's German regional suppliers and Innogy's German regional companies are to be retained.
2018	n.a.	Decreasing costs of renewables and increasing levels of carbon pricing
2018	n.a.	EU's adoption of more ambitious targets (share renewables 32% and energy efficiency 32%) based on an assessment of reduced costs from the original framework in 2014.
2019	January	RWE files acquisition of renewables business of E.ON and Innogy with European Commission
2019	n.a.	E.ON will concentrate on grid operation and end-use services of all RWE's existing power lines and grid holdings, customers and EV chargers
2019	n.a.	E.ON will assume 76.8% of RWE's stake in Innogy focusing on energy networks, retail businesses and customer operations.
2019	n.a.	RWE will take on 16.67 percent in the new E.ON, including minority shares of gas storage business from Innogy. RWE expects renewables to become its main profit generator
2019	n.a.	European Green Deal (EGD), set of 50 actions for the next five years across all sectors to prepare the EU economy for climate neutrality goal by 2050.

2019	May	Collective bargaining agreement reached on the planned transaction E.ON/RWE. High level of protection agreed for the employees of E.ON and Innogy.
2019	September	The European Commission stated it needed commitments from E.ON that the company would exit certain businesses in order to support the deal. E.ON has to step away from Innogy's electricity and gas retail business in Czech Republic and Hungary.
2019	September	Against the background of the change of the major shareholder at Innogy, from RWE to E.ON all shareholders representatives of Innogy had decided to resign office.
2019	September	RWE clear focus on growing renewable energy. The renewable energy portfolio of E.ON and Innogy, combined to form RWE Renewables.
2019	October	Innogy Supervisory Board elects E.ON CEO Johannes Teyssen as Chairman of the Supervisory Board and appoints new Executive Board with E.ON Board member Leonhard Birnbaum as Chief Executive Producer.
2019	October	CEO Uwe Tigges resigns from Executive Board of Innogy SE
2019	November	E.ON and RWE Renewable have announced a two-year agreement on purchasing the output of more than 20 British wind farms and supporting E.ON's commitment to provide 100% renewable power to its UK customer base.
2020	June	The takeover of German energy company Innogy has been completed by E.ON
2020	July	E.ON announced that around 2,700 employees will move from Innogy to RWE
2020	n.a.	RWE and E.ON headquarters are both in Essen, Germany a few blocks from each other
2020	n.a.	E.ON is now focused entirely on network infrastructure and customer solutions

EDF events

Year	Month	Description of the event
1990	n.a.	The company "SIIIF" was created and it initially developed thermal and hydroelectric power station, before moving towards the renewable energy market and in particular wind power.
1990	n.a.	EDF Energies Nouvelles becomes an international player in the green electricity production market.
2000	n.a.	EDP acquires 35% stake in SIIIF.
2001	n.a.	EDF publishes its Agenda 21 policy, which interprets the commitments signed by more than 150 nations at the 1992 Rio Earth Summit, and joins the UN Global Compact, which encourages companies to embrace universal principles on human rights, environmental protection and anticorruption.
2002	n.a.	Francois Roussel, president of EDF group, states that the "new, decentralized organization with teams responsible for their results and close to their customers, will greatly help us to develop our profitability and reduce our debt."
2002	n.a.	The EDF Group decentralizes decisions as much as possible: the branches, endowed with their own support functions, managing their own results and their assets. They participate in the development of the strategic plan, from which the Group allocates the resources required for each branch to achieve its goals.
2002	September	Just created, the Group Human Resources Department is responsible for the development of the Group social dynamic based on: Group social policy, internal dialogue, quality policy, development and implementation of the Group's ethics charter.
2002	n.a.	The "Mobility Service" group supports employees wish to join another company within the group, giving the possibility for everyone to evolve within the Group is a guarantee of development staff and overall performance.
2002	n.a.	EDF acquire a 50% stake in SIIIF.
2004	n.a.	SIIIF becomes "EDG Energies Nouvelles."
2006	November	EDF Energies Nouvelles, a subsidiary held at 50% by the EDF Group launches its own IPO. This transaction involved the issuance of 18,946,854 new EDF Energies Nouvelles shares, which 25% were reserved to the EDF Group.
2006	n.a.	EDF Energies Nouvelles, is an EDF subsidiary specializing in renewable energies (wind, hydro, biomass, solar), will enter the Eurolist market of Euronext.
2006	n.a.	EDF Energies Nouvelles is in charge of: development, construction and operation of power production assets from renewable energy sources, sales to third parties of electricity production assets from renewable energy sources, and the operation and maintenance of wind farms on behalf of third parties or its own.
2010	n.a.	The Group, through its subsidiary EDF Energies Nouvelles Reparties, offer solutions to the European markets for managing energy consumption and developing innovative energy solutions, as well as encouraging the development of building-integrated energy systems (solar, heat pump, etc.)
2010	n.a.	EDF Energy, through EDF Energy Renewables (EDF-ER) a joint venture between EDF Energy and EDF Energies Nouvelles, is developing its own assets. Example, it includes the management of four wind farms owned by EDF Energies Nouvelles for which the output is not contracted to EDF Energy.

2010	n.a.	The main vehicle for the development of the onshore wind power is EDF Energies Nouvelles, which can rely on the EDF R&D department for technical monitoring expertise.
2011	June	EDF EN capital belonged 50% to EDF, 25.1% to the family group of Paris Mouratoglou and 24.9% was listed on the Paris stock exchange (floating capital)
2011	August	EDF acquired 100% of EDF Energies Nouvelles.
2017	February	The Group has developed a diversified product mix based on nuclear energy, hydraulics, new renewable energies and thermal. It is considered one of the major players in the energy sector and its present in all businesses: production, transport, distribution, trading, sale of energy and energy services. It has a customer base of 36.7 million customers, the grand majority in France.
2017	February	EDF Energies Nouvelles expands its cumulative installed capacity of wind energy in the United States, which contributes to the EDF Group strategy, CAP 2030, aimed at doubling its renewable capacities by 2030.
2018	n.a.	In 2018, EDF Energies Nouvelles rebranded to become EDF Renewables to boost international appeal
2018	April	France's EDF Energies Nouvelles is rebranding its international subsidiaries to EDF Renewables to support the company's expansion in the international renewable energy market
2018	n.a.	EDF Renováveis is currently studying projects in Germany where there is a potential of wind turbines to be renewed by the end of 2020.

EDP Events

Year	Month	Description of the event
1996	n.a.	EDP, then a state-owned utility, builds first wind farms in Portugal.
1998	n.a.	EDP sold 16.8% of share capital to Iberdrola
1999	n.a.	EDP Group and Caja Madrid become equity partners of Genesa (Generaciones Especiales), a company dedicated exclusively to renewables in Spain
2001	n.a.	EDP acquires controlling shares of Hidrocatebrico's operations
2003	n.a.	Strategic plan focusing on profitable growth in high-priority and ambitions targets for wind.
2004	n.a.	EDP acquires the Ortiga and Safra Spanish wind farms, and three wind farms from Nuon in Brittany
2006	n.a.	Eolicas de Portugal, plan to invest in new wind projects. EDP owned 40% of the company. Acquisition of renewables assets from Agrupación Eolica and Ceasa.
2006	n.a.	Growth in Iberian renewables driven by wind capacity increase and higher average wind tariffs.
2007	n.a.	EDP energy generation mix (wind and hydro) is rapidly reducing its exposure to coal and CO2 in merchant operations
2007	n.a.	Purchasing of Horizon Wind Energy LLC. EDP becomes the 4th largest wind power company in the world.
2007	December	EDP Renováveis was consolidated to hold and operate EDP European and North American renewable energy assets and activities. The company's headquarters are in Madrid, Spain and it has more than 44 offices around the world.
2007	December	EDP Renováveis was incorporated in Spain, and its main corporate objective is to engage in activities related to the electricity sector, namely the planning, construction, operation and maintenance of electricity generating power stations, using renewable sources, mainly wind and solar.
2007	December	The major challenge for EDP Renováveis, inside EDP, has been to consolidate itself as a Group.
2008	March	EDP Renováveis is converted into a company incorporated by shares.
2008	March	Keeping up with the challenge to consolidate EDP Renováveis, the management team has been working on the details of the organization model, oriented and aligned with the company's strategy and business.
2008	March	A "Project Management Office" has been created to ensure the best implementation of related processes, consolidation of these areas in an effective and efficient way while keeping in mind business differences between platforms and respective local roles in the EDP Group.
2008	June	EDP Renováveis, starts trading on NYSE EuronextOs Lisbon market under the name EDPR, following its successful spin-off from EDP Group.
2008	June	EDP Renováveis represents two thirds of the investments announced by EDP Group on its 2009-2012 Strategic Plan.
2008	June	EDP Renováveis is a leading renewable energy company, having derived all of its revenue from renewable energy activity, where it has the 'early mover' advantage in the growing market, and continues to analyze new markets and new opportunities within.
2008	June	EDP Group decreased its qualified position in EDP Renováveis to 77.5%

2008	March	Ana Maria Fernandes is named Vice-chairman and CEO of EDP Renovaveis, and Antonio Mexia continues to be CEO and Chairman of EDP Group.
2009	March	The aim of EDP in Spain is to manage and coordinate the energy interests of subsidiaries depending from EDP Group in Spain, organized through managing and monitoring structures, to ensure the maximum synergy and value creation in the operations and activities in Spain. On this basis, the majority interest in EDP Renovaveis are directly allocated to the assets of EDP Sucursal.
2009	March	The Group has developed a set of activities in the energy sector in Portugal and abroad, with special emphasis in generation, distribution and supply of electricity, as well as distribution and supply of gas.
2009	March	The Group's internal reporting system reports by business segments organized by geography and responsibility area for each member of the Board Directors. Based on these reports, the performance of the various segments is evaluated and the resource allocation is decided to each identified segment of the group. The EDP Group makes a separate analysis of the electricity generation business through renewable power sources, which is achieved by EDP Renovaveis.
2009	March	EDP Renovaveis, who just entered the Italian market, generates 50% of electricity through renewables.
2009	March	EDP Renovaveis, subsidiary of EDP Group for the renewables energy sectors, holds share capital in Nuevas Energias de Occidente (NEO) and Horizon Wind Energy, operating in Europe and USA respectively.
2010	March	EDP Renovaveis commits to solar projects and offshore capacity in the UK, through the turbine procurement contract with Vestas.
2011	March	EDP Renovaveis keeps expanding its renewable assets by getting full control of GENESA in Spain. Moreover, it signed a contract with Repsol to develop off shore capacity in UK, and strategic partnership agreement with China Three Gorges.
2012	March	New CEO - Jaoe Manuel Manso Neto previous director of EDPR board and member of company's executive committee since 2008. (Antonio Mexia continues as company's CEO)
2018	March	EDP has successfully positioned itself with two profitable low-carbon business models. The first one is a large renewable energy generation portfolio, which accounts for 66% of the company's electricity generation and 65% of earnings. Moreover, through its distribution subsidiary, EDP Distribution, it connects customers to an intelligent distribution network.
2019	March	EDP Renovaveis belongs to the EDP Group, of which the ultimate parent company is EDP Energias de Portugal, with registered offices in Lisbon. EDP held a qualified shareholder of 82.6% of share capital and voting rights of EDP Renovaveis and 17.44% of the share capital is free floating in the Euronext Lisbon.
2020	March	EDP Renovaveis holds a 100% stake in the share capital of its branches in Europe, North America, Canada, Brazil, Vietnam.
2020	March	EDP engages in the provision of electricity generation, supply and distribution. It operates through the following three sectors: Renewables, Networks and Customer Solutions and Energy Management.

Iberdrola Events

Year	Month	Paraphrasing
2001	n.a.	Iberdrola launches its Strategic Internationalization Plan and announces its corporate vision of a world whose increasing energy needs will require cleaner and more sustainable sources.
2001	n.a.	With the appointment of Ignacio Galan as chairman, Iberdrola announces its commitment to become a world leader in the development of clean energies. It would invest in the generation of energy and building of networks in Spain, Mexico and Brazil. It was also decided to invest heavily in wind energy, a project that was about to take off, driven by the Kyoto Protocol and European directives.
2005	n.a.	Start of operations at the Maranchón windfarm, the largest in Spain at that time
2006	n.a.	Iberdrola 2001-2006 Strategic Plan is to become a global company with the integration of ScottishPower and Energy East.
2007	n.a.	Iberdrola announces a 42.5 MW installed capacity of clean energy, 39.9% more than the previous year. Moreover electricity production increased by 34.2%. All of the previously mentioned is due to Iberdrola's bet on cleaner generation technologies.
2007	n.a.	Iberdrola Renovables Energia, is a business of the Iberdrola Group with registered office in Spain, which carries the activities of electricity generation and commercialization of electricity through renewable energy sources and which, consequently, aims to carry all type of activities, works and services related to the business of production and commercialization of electricity through facilities that use renewable energy sources.
2007	n.a.	Ignacio Galan, chairman and CEO of Iberdrola, is named Chairman of Iberdrola Renovables.
2007	n.a.	Iberdrola Renovables is listed on the stock exchange.
2007	n.a.	Iberdrola is the world leader in wind energy, with its subsidiary Iberdrola Renovables, from which they own 80% of the capital and the remainder 20% is floating capital in the Stock Exchange.
2007	December	Iberdrola Renovables shares, formed from the renewable energy business of Spanish utility Iberdrola, started trading on the Spanish stock. Iberdrola raised 4.5 billion euros through floating 20% of stake in Iberdrola Renovables.
2007	December	The internationalization process started in 2006, is finally consolidated with the integration of ScottishPower and the agreement to acquire Energy East.

2007	December	Iberdrola Renewables Strategic Plan is aligned with the 2008-2010 Strategic plan of the Iberdrola Group.
2011	March	Iberdrola and Iberdrola Renewables approve merger plan. Through the merger Iberdrola would be able to directly manage the development of the renewables sector, an activity closely identified with its corporate mission. Moreover, Iberdrola would be able to undertake projects that Iberdrola Renewables would not be able to take on by itself due to limitations on financial or human resources.
2011	March	In order to maximize the exchange of best practices and to obtain synergies, the Group reorganized into Global Business Areas: Liberalized business, Renewables business, Regulated Engineering and construction and Other.
2012	March	Spain Royal Decree Law, to proceed with the suspension of pre-allocation payment procedures and the abolition of economic incentives for new installations that produce electricity through co-generation, renewable energy sources and waste.
2012	March	Law 15/2012 in Spain, establishes fiscal measures for energy sustainability. This creates an electricity generation tax with the same burden for all technologies, disregarding sustainability. Conventional technologies can transfer this tax on the market, while most renewables will see a negative impact on its profit streams.
2005-2012	March	External report by NGO, states that 85% of Iberdrola production, both in Spain and abroad, between the years 2005-2012 was centered in conventional technologies, while the rest 15% was renewable generation (wind power).
2013	March	The external report by NGO, states that Iberdrola became the main detractor of renewable energies, while at the same time promoting and defending its new energy model, which exposed its serious contradictions in its discourse.
2013-2021	March	Iberdrola Renewables continues to operate under the umbrella of Iberdrola Group.

BMW Events

Year	Month	Description of the event
2011	n.a.	BMW Group has responded to the radical environmental, economic and social changes with the creation of a sub-brand which meets the changing needs of customers: BMW i.
2011	n.a.	BMW i Ventures was established to pursue cooperation with partner companies as well to obtain strategic capital investments with providers of mobility services. The company aims to expand the product portfolio of BMW i with innovative service providers, such as MyCityWay and ParkatmyHouse.
	n.a.	For BMW i, sustainability is of vital importance throughout the entire value chain, from purchasing, development and production to sales and marketing. Hence, sustainability targets were set for the BMW i vehicles.
2011	n.a.	Leipzig plant will be the production plant for the BMW i vehicles, compared with the already highly efficient BMW Group production network.
2011	n.a.	BMW is building on the existing high standards of the BMW Group, and systematically reinforce its commitment to its employees, ethical standards in the supply chain and social responsibility.
2011	n.a.	The DriveNow joint venture between the BMW Group and Sixt AG offers state of the art mobility service, whose key feature include high-efficiency premium vehicles and other services.
2011	n.a.	BMW i Ventures is providing backing for new, promising start-up companies, ensuring that development of high-potential innovations continues and are put to use.
2012	n.a.	BWM Group presents its first BMW i Store in London, offering a completely new brand experience focused on sustainable mobility. The store opens officially in July.
2012	n.a.	BMW i will support customers with a four-pillar package: 1) Assistance Services 2) Public charging, 3) Flexible mobility solutions.
2013	n.a.	Thorsten Mattig, it is the managing director for BMW i Ventures
2013	n.a.	BMW i Ventures is based in New York City and it is part of the brand BMW i. It aims for strategic long-term partnership especially in the areas of e-mobility, navigation, parking, car sharing and intermodal mobility solutions.
2013	July	BMW i announces investment in UK's leading provider of electric vehicle charging infrastructure. Five-year cooperation with Chargemaster forms important step in, announces BMW for i-network
2013	July	At its Dingolding and Landshut plants in Lower Bavaria, the BMW Group has created a "competence network" for electric mobility. The first plant produces the battery, transmission and the aluminum model structure, while the second one plant produces components for the Life module, plastic exterior parts, casting and the cockpit of the BMW i3.
2013	July	All the electricity used to produce the BMW i models at the Leipzig plant is wind-generated and therefore 100 per cent renewable. This is the first time an automobile manufacturing plant in Germany has installed wind turbines on site to directly power production.
2013	July	BMW i electric vehicles lead the way in alternative drive, lightweight design and aerodynamic. It offers sustainable, customer-oriented mobility solutions.
2013	September	World premier for the BMW i8, the second model from new brand BMW-i. It's world's most forward-looking sport car.
2013	November	Market launch of BMW i series.

2013	November	BMW i products and services will be marketed through a multi-channel sales model, comprising authorized retail partners (BMW i agents), a multimedia Customer Interaction Centre and an online sales platform. All sales channels will be fully integrated. BMW i Partners will be the backbone of the BMW i sales network and the main contact point for the customer.
2013	November	ISO 14040/14044 certified that BMW i3 complies entirely with the demanding targets during the development for the environmental impacts generated during sourcing, production, usage and subsequent recycling.
2013	November	Energy for the production of the BWM i3 (since September 2013) and BMWi8 (starting 2014) will be provided by four purpose-built wind turbines on site.
2014	July	The BMW i production network comprises a plant in Moses, Washington State and a plant in Wackersdorf. Both facilities are operated by SGL Automotive Carbon Fibers, a joint venture set up by the BWM Group and the SGL Group.
2014	August	Sussane Wüs, Product Manager for Original BMW i Accessories, states that the brand designs and produce their range according to cradle-to-cradle process.
2016	August	By establishing the BMW i brand and opting to develop a separate vehicle architecture and BMW eDrive technology for electric power, the BMW Group became a pioneer in the field of individual, sustainable mobility
2021	August	A glimpse of the first ever all-electric BMW i4 at the BMW Group Annual Conference.

Volkswagen Events

Year	Month	Description of the event
2016	September	World premier of the ID. The ID is the first Volkswagen of a new fleet of electric cars.
2016	November	Strategy 2025+ of Volkswagen state the restructuring of the brand core business and completing a transformation along the entire value stream and development of new competences. Volkswagen plans to take the lead in e-mobility and create a boarder earning base through new mobility services.
2016	November	By 2020, Volkswagen will be launching a major e-mobility offensive. They are not aiming for niche products but for changing the automobile market. The new electric cars will be the new trademark of Volkswagen.
2016	November	Volkswagen makes public, for the first time, its sustainability report.
2016	December	Volkswagen its realigning their management culture towards digitalization, connectivity and e-mobility, which is the future of the industry. This was stated by Dr Karlheinz Blessing, Member of the Board of Management of Volkswagen responsible for Human Resources.
2016	December	The Volkswagen Group is joining the eRoaming platform Hubject GmhB as shareholder. With this, the group will push ahead the digital interconnection of charging stations for electric vehicles starting in early 2017.
2016	December	Volkswagen presents another model of the ID. family in Detroit
2017	February	Volkswagen has already successfully retrofitted around 3.4 million diesel vehicles to date, following its diesel scandal.
2017	March	The ID. Buzz concept car from Volkswagen celebrates its European premier at the Geneva International Motor Show. The new electric MPV is the second model of the ID range.
2017	March	According to the Strategy 2025, the strong push for e-mobility will put more than 30 purely battery-powered vehicles by 2025.
2017	May	The Group Sustainability Advisory Board, which was appointed last autumn, has begun work and is currently developing its first few projects
2017	May	With Think Blue. Factory., Volkswagen launched the first program for environmentally sustainable production. 5,300 measures to reduce emissions and use resources more efficiently have been implemented
2017	September	Volkswagen group is launching the most extensive electrification initiative in the global automotive industry with its "Roadmap E". Under this initiative, Volkswagen will have electrified its entire model portfolio by 2030 at the latest. This means that by then, there will be at least one electrified version of each of the 300 models across all brands and markets.
2017	September	Three vehicles are part of the starting line-up for Volkswagen's electric offensive which production will start in 2020: the ID (compact car), ID. Crozz (SUV model) and ID Buzz.
2017	September	Volkswagen Group raises its environmental targets: 45 percent reduction in environmental impact by 2025
2017	November	According to the outcome of the Group's planning round for 2018-2012, and expenditure of 34 Billion euros will go into the electrification and hybridization of all the Group.
2017	November	Volkswagen is developing new skills. 9,000 new jobs will be created in future-oriented areas such as digitalization and e-mobility.
2017	November	The Zwickau plant in Germany will be transformed into a pure e-mobility facility. In the first stage, Volkswagen will be concentrating the series production of its future electric vehicles based on the new modular electric drive kit (MEB) in that plant.
2017	November	With the MEB technology, Volkswagen is consistently oriented towards the zero-emission mobility of the future. The created technology will allow the group to offer electric vehicles with rapid charging capabilities, they would feature innovations previously only available on cars in the premium segment, operating ranges from 400 to 600 kilometers and other benefits at the price of a comparable diesel car.

2017	December	The first car to use the MEB technology will be the compact all electric Volkswagen ID.
2017	December	From January 1, 2018, the new Head of Group Sustainability is to be Ralf Pfitzner
2017	December	The Volkswagen brand is strengthening the area of mobility and creating a separate Board of Management division for e-mobility. The responsibility for the division includes the e-mobility series and production of vehicles, is to be assured by Thomas Ulbrich, previously Board of Management member of the Volkswagen brand responsible for production and logistics.
2018	January	Thomas Ulbrich is to be succeeded, as Board member for production by Dr Andras Tostmann, previously Executive Vice-president for Production at the SEAT brand.
2018	February	The model ID VIZZION, with its electric drive system and automatic driving control, support the Volkswagen claim for future mobility strategy. It was presented in the Geneva International Motor Show. The full electric sed will be the future top model of the ID family and its planned to reach the roads by 2022.
2018	June	Volkswagen brand launches a comprehensive e-mobility competence program. Within the framework of the Future Electronic Engineers Program (FEEP), 100 young engineers and skilled workers will be trained as top production experts. They will occupy future-oriented positions in planning, the pilot hall, the e-mobility model group, the pre-series center and electronics development. The first participants will support the run-up phase of the ID family in Zwickau.
2018	July	Volkswagen to offer "zero-emission" car sharing services in future
2018	September	As part of the ELECTRIC FOR ALL campaign, launched by Volkswagen, the brand will be putting attractive models at affordable prices on the road, driving the transition to e-mobility.
2018	October	Volkswagen Group China builds first factory specifically designed for MEB production
2018	November	The Supervisory Board of Volkswagen Aktiengesellschaft approved the new plant assignment plans. The plants in Emden and Hanover will be converted to build electric vehicles: models from the ID family will be rolling off the assembly lines from 2022. The Group will continue to expand its production capacity post-2022 with an additional plant in Eastern Europe.
2018	November	The Group's largest and highest-performance electric cars plants is currently being created in Zwickau. As the first high-volume automaker, Volkswagen is converting an entire plant from the internal combustion engine to e-mobility. Currently the Golf and Golf Estate is produced in Zwickau. The production of the ID is due to start here by the end of 2019. In the final stage of development, six electric models of three Group brands are to be produced at the plant from 2021 onwards.
2018	December	The first mobile quick charging stations will be set up in the first half od 2019, as part of a pilot project.
2018	December	The number of fully-electric cars in the brand program will increase to around 20 by 2025. Zwickau, Emden and Hanover plants will become the Europe's largest e-production network. Two plants are also taking shape in Anting and Foshan in China.
2019	January	The Volkswagen Group is establishing a Group company for energy offerings and charging solutions. Elli Group GmbH is to develop products and services connected with energy and charging for the brands of the group.
2019	January	By the end of 2019, Volkswagen will have qualified thousands of employees to perform their future tasks, in the newly transformed Zwickau facility. Along with the organizational and structural changes, this is an enormous endeavor for the company and the workforce.
2019	January	The Volkswagen brand announces its first production location in North America. Chattanooga plant in Tennessee is to produce vehicles based on MEB, a new generation of electric cars, by 2022. For this Volkswagen is investing about 700 million euros in the expansion of the plant, that would create up to 1,000 new jobs plus additional jobs at suppliers.
2019	February	Volkswagen is committed to the Paris Climate Agreement with the new ID that foes into production at the end of the year. The model will be its first electric car which is carbon neutral throughout the entire life cycle if the customer consistently charges with green power. In addition, the group is working in a comprehensive decarbonization program that includes measures for other models.
2019	March	The Volkswagen group is opening its MEB development to other manufacturers. The purpose is to achieve a significant reduction in the cost of e-mobility through a wide deployment of the MEB and the associated economies of scale, thus enabling broad access to individual mobility to continue in the future.
2019	May	A totally new marketing approach is needed for the fundamental transformation of Volkswagen towards e-mobility, as stated by Jochen Sengpiel, Chief Marketing Officer of the Volkswagen brand - "This is why we have not adopted a conventional market launch strategy for our ID. We are starting much earlier than usual and not only talking about the project. We are concerned with communicating a new movement. Volkswagen is now making e-mobility fit for the masses. This will be signaled by the claim of our campaign: "Now you can."
2019	May	Volkswagen is starting the pre-booking in Europe for the first model of the ID family.
2019	May	The conversion of the vehicle factory in Zwickau as production site for electric mobility in Europe is right on schedule.
2019	May	The Volkswagen is officially announcing the name of the first model of the new ID family. It will be ID 3. The number 3 is significant in two ways, it indicates the ID belongs to the compact segment, and it introduce the third major chapter of strategic importance for the history of the brand, after the Beetle and the Golf.
2019	June	The Group will be installing a total of 36,000 charging points by 2025; and 11,000 of these are to be developed by the Volkswagen brand.

2019	July	The series pre-production of the ID.3 has already begun at the Volkswagen plant in Zwickau. The core components are developed and produced at the Volkswagen Group Components plants, the electric drive comes from Kassel, the Salzgitter plant supplies its colleagues in Hessen with rotors and stators. The Brunswick plant develops and produces the battery system, and further sites deliver castings and other parts.
2019	July	Thomas Schmall, Chardmand of the board of management of Volkswagen Group Components, states they use cross-brand hubs for the configuration of their plants and for production, which creates the freedom and flexibility needed for the transformation to electric mobility.
2019	August	ID will celebrate its first world premier at the Frankfurt Motor Show.
2019	August	As part of the second stage of Volkswagen strategy of Transform 2025+ adopted in 2015, the group is being transformed from an automaker into a provider of mobility services going beyond the customer's own cars. For this, the sales structure of the brand is being fundamentally transformed with its dealers and marketing is being realigned.
2019	August	Volkswagen brand inaugurate the first charging center for employees with 60 charging points.
2019	August	ID.3 gets its own YouTube series
2019	September	Production of ID.3 at Zwickau plant to start in November
2019	October	Volkswagen brand has launched its new global website. In the future, this website will present all content and offering with respect to models, services, configuration, test drives, financing, used cars and other items on a single platform. It will be the central point of call for all customers of the brands.
2019	October	Volkswagen will offer its customers electricity from renewable sources for battery charging.
2019	November	Official start of the series production of the ID.3. The first car in the new generation of electric vehicles (EVs). Federal Chancellor Dr. Angela Merkel and Group CEO Dr Herbert Diess watch the first car ID3 rolled off the assembly line.
2019	November	The ID.3 will be also assembled at the Gläserne Manufaktur in Dresden in addition to the Zwickau plant.
2020	March	The current business performance turns complicated and uncertain with the coronavirus crisis. It is no longer possible to continually provide factories with a stable supply, due to the increasingly challenging and dynamic situation for suppliers.
2020	March	The basic version of the ID.3 will be less expensive in Germany, in terms of acquisitions and operation when compared with internal combustion models. ID.3 drivers in Germany will save around 840 euros per year.
2020	April	Zwickau plant is gradually restarting production of electric cars with reduced capacity and slower cycle times. Numerous additional measures to protect the health of the workforce are being implemented.
2020	May	All Volkswagen retail partners have signed the agreement for the new sales model for vehicles from the ID family. The sales launch marks the start of the agency model for private customer and small commercial enterprises, the benefit for the customers being that they can switch between online and offline channels and order direct from Volkswagen, while their preferred dealer remains their local contact. The dealer assumes the role of agent under the new model.
2020	June	The last model with combustion engine left the assembly line at the Zwickau car factory. From today on, only electric models of Volkswagen and in the future also of the brands Audi and Seat will be produced there.
2020	June	In the final expansion stage from 2021, in the Zwickau plant, six MEB models will be built for three Group brands. All 8,000 employees will be preferred for production of electric cars and for handling high-voltage systems as part of various training measures.
2020	June	The ID.3 will also be produced by 2021 in the Dresden factory. The bodies for the Lamborghini and Bentley luxury SUVs will continue to be produced in Zwickau.
2020	July	The conversion of the Emden plant has already started and the first electric cars are to roll off the production line from 2022.
2020	July	Volkswagen is opening the ordering system to the public for the ID.3. Customers in many European countries will be able to choose between seven pre-configured models at dealerships. All seven ID.3 models will be eligible for the maximum state subsidy of 9,480 euros granted as an environmental bonus in Germany.
2020	August	Series production of the brand's first all-electric SUV, the ID.4, gets underway in Zwickau.
2020	September	ID.4 celebrates its digital world premier. It will be launching into the world's largest market segment, the compact SUV class.
2020	September	Volkswagen enters a strategic partnership with RCS Global, to ensure greater transparency and responsibility in its raw material supply chain for batteries. The agency specialize in supply chain analysis, by auditing suppliers for conformance with human rights, safe working conditions and environmental protection along the supply chain.
2020	October	From 2022, the ID.4 is to be produced at Chattanooga (USA) and Emden, while the model known under the show car name of ID. BUZZ is to roll off the production line at Hanover.
2020	December	The last vehicle of the e.Golf rolls off the production line at the Dresden plant. At the start of 2021, the production area of the Dresden factory will be reconstructed before the ID.3 series vehicles are produced at the end of January 2021.
2021	January	ID.3 starts series production in Dresden, new home of the Volkswagen ID.
2021	March	Volkswagen will reduce complexity, leverage economies of scale and create synergies between brands, by standardized technical foundations in four elements: hardware, software, batteries and charging, as well as mobility services.
2021	March	Volkswagen delivers first ID.4 in Germany

Renault Events

Year	Month	Description of the Event
2008	January	Renault-Nissan alliance with Project Better Place will commercialize electric vehicles in Israel.
2008		Renault is already preparing to mass-market electric vehicles, and a department specializing in electric powertrains has been set up. This new generation of vehicles is still based in the existing architecture of combustion vehicles. Through its partnership with Project Better Place, has already discussed on organizing and deploying a recharging infrastructure and developing a new business model. The Z.E. concept was unveiled at the Paris Motor Show
2008		Renault organized the first Eco-Driving Day on the Paris Motor show, where they demonstrate that by following a few simple driving rules, drivers can reduce their fuel consumption by 20% on average. The event was designed to raise public awareness about a way to curb fuel consumption.
2008		The agreements the Renault-Nissan alliance has signed with numerous countries will pave the way for the EVs to be sold from 2011 onwards. These arrangements of implementation will enable users to recharge their vehicles through distribution networks established either by Renault partners.
2009	December	Renault Foundation and ParisTech together to form the Sustainable Mobility Institute.
2009		Renault announced the ambitious and unprecedented strategy to offer a full range of affordable all electric vehicles by 2012.
2009		Renault released a line-up of electric vehicles addressing a broad customer spectrum: ZOE, Kangoo ZE and Twizy, plus Master E later in the year in Europe, and the RSM SM3 ZE in Korea.
2012	March	At the Geneva Motor show, during a press conference held by Renault CEO, Carlos Ghosn, ZOE, the 100% electric car, was revealed. It completes the Renault Z.E. range, already made up of Kangoo Z.E., Fluence Z.E. and Twizy.
2012	March	ZOE is presented as Renault's solution to Zero Emission mobility for all. It is also the first pure-electric car to be designed from the group as such.
2012	September	Twizy Way by Renault, the car-sharing service, is now officially open in the urban community of Saint-Quentin-en-Yvelines (France). Its the all-new electric car-sharing service.
2012	November	Renault inaugurated 40 ha of PV panels at six of its French production sites. The initiative was made to confirm Renault's environmental commitment to protect the carbon footprint of new vehicles before they leave the plant.
2012	December	Arnaud Montebourg, Minister of Industrial Recovery, was presented today with the keys to the first ZOE in the Cour d'Honneur of the Bercy Finance Ministry by Carlos Tavares, Chief Operating Officer of the Renault group.
2012	December	The ZOE will be mass-marketed in 2013 in Renault dealerships. The launch will be accompanied by the development of public and private charging stations.
2013	February	Vienna R20 conference is closing its doors this evening. Organized by the Regions of climate action (R20), founded by Arnold Schwarzenegger, it focused on implementing the sustainable energy future. Among the many key speakers, the Alliance Renault-Nissan was represented by Philippe Schulz (Renault) and Olivier Paturet (Nissan), who discussed tomorrow's energy mix and technologies for a smart future. The Alliance also brought electric vehicles that attendees had the chance to test-drive
2013	March	ZOE Renaults 100% electric manufactured in Flins makes its debut. It is assembled on the same lines as the Clio Collection.
2013	April	Renault ZOE was a car conceived and designed to be 100% electric.
2013	July	The Renault-Nissan Alliance brings zero-emissions mobility to TEDGlobal 2014.
2014	April	Norway welcomes Renault ZOE.
2015	June	Renault-Nissan alliance reaches the 250,000 milestone of electrical vehicles sold. The demand for the electric vehicles continues to grow due to government incentives and expanding charging infrastructure.
2015	October	Renault has a Global Sales and Marketing Director for Electric Cars, the post is led by Guillaume Berthier.
2015	November	Renault will deliver 240 Kangoo Z.E. to the Norwegian postal service. It is considered one of the world's biggest electric vehicle purchases so far.
2015	November	Renault and The Mobility House allow their drivers to take advantage of a dynamic electric tariff by automatically charging vehicles at lowest electricity costs.
2016	March	The ZOE Swiss Editions, latest addition to the ZOE line-up, was unveiled at the Geneva Motor Show. It's a top-end version of ZOE, set for release towards the end of the year.
2016	May	Renault ZOE is Europe's best-selling electric hatchback, three years after its launch.
2016	September	Renault introduces a new battery for ZOE Z.E. 40. Order books for the new ZOE line up are open. They are assembled at the Flins plant in France, and would be available for delivery before the end of the year.
2016	October	Group Renault shows an entirely new product range, a 100% increase in travel range for the ZOE electric city car in the Paris Motor Show.
2017	January	With Renault Pro+ brand, Renault is presenting an extended custom offering in its zero-emission range at the Brussels Motor Show, with world premiere appearances for Master ZE and New Kangoo. A unique line-up of electric light commercial vehicles.
2017	March	Renault launches its new electric concept car ZOE e-Sport, starring at Geneva Motor Show.
2017	March	The vehicle batteries of the Renault electric vehicles are rented to customers, and have been since the first vehicle release. This allows Renault to have a full control over the whole battery lifecycle.
2017	April	Renault handed Transoceanic Wind Transport (TOWT) the keys to its second electric vehicle, a new Renault ZOE Z.E. 40.

2017	June	Renault electric vehicle batteries are given a second-life application in Powervault domestic energy storage systems.
2018	October	The "Drive the Future" 2017-2022 plan, Renault's vision of the future mobility is founded on four pillars: electric mobility, connected mobility, autonomous mobility and shared mobility. All these, with the aim to deliver sustainable mobility to everyone.
2018	February	With Master Z.E., will cover the main needs of business customers in terms of cargo volume and payload enabling them to make emissions-free last-mile deliveries in the city centers. This is aligned with the "Drive the Future" strategic plan, in which 100% of vans will be electrified.
2018	March	The latest all-electric motor R110, that took 2 years to develop, will power the 2018 model-year ZOE. This power boost makes ZOE more responsive and versatile. The motor is produced at the Cléon plant in Normandy, close to the Flins factory where the ZOE is produced.
2018	June	The Renault Group intends to continue the modernization and digitalization of its French industrial network. Renault plants are adapting to meet the demands and adapt to the new challenges of the automotive sector. It plans to recruit 5,000 employees and spend 235 million euros on training.
2018	July	Group Renault, along side the City of Paris, unveiled its plan to develop new electric mobility offerings in the city.
2018	July	The Renault Group, through its "Drive the Future" strategic plan, intends to invest for the development and production of electric vehicles in France. They will enable the Clén plant to triple its production of electric motors and introduce new generation electric motors from 2021.
2019	July	Renault present another new model of ZOE, still 100% electric, and from 2020 the new CAPTURE E-TECH a plug-in hybrid version and the Clio E-TECH, also with a hybrid engine.
2019	November	The new ZOE model 2020, used 100% recycled materials on its fabric.
2019	November	The Renault plan in Flins sur Seine reached the assembly of its 200,000 electric vehicle.
2020	March	Renault is intensifying its electric transition with the creation of a range of hybrid vehicles, the Clio E-TECH and New Captur E-TECH Plug-in.

Mercedes-Benz Events

Year	Month	Description of the Event
2016	September	Mercedes-Benz unveils new product brand for electric mobility: EQ. It will offer a comprehensive electric mobility ecosystem of products, services, technologies and innovations.
2016	October	The new EQ product brand is to be produced in Bremen.
2016	October	Mercedes-Benz announces plan to have over ten all-electric vehicles in its portfolio by 2025. The new electric vehicles will be built within the existing global production network.
2016	November	EQ to become a full-time brand in the future. Right now, it's categorized as an entire new sub-brand. Mercedes-Benz is committing to electric vehicles for the long haul.
2017	February	The plant Sindelfingen will produce electric vehicles of the new product brand EQ.
2017	February	Future EQ models are being integrated into the series production of the existing Mercedes-Benz plants. The plants in Bremen, Rastatt and Sindelfingen as well as the plant in Hambach, France will become four competence centers for the production of electric vehicles.
2017	May	The Mercedes-Benz Rastatt plant will produce compact class EQ models in the future. Due to the flexibility of the plants, that would allow them to benefit from the opportunities of electric mobility, while reducing the required investment.
2018	May	EQ fortwo coupé and the smart EQ are produced in Hambach plant in France.
2018	September	World premier of the new fully-electric EQC.
2019	May	The new Mercedes-Benz EQC is the first Mercedes-Benz under the product and technology brand EQ.
2019	December	Mercedes-Benz will retain ownership of the dealership stocks and sell directly to buyers. It would provide dealers with demos for test drives and displays. The sales commission to delivery agents will come from Benz, not from sales contracts with the buyer.
2020	July	Mercedes-Benz will offer a line-up plug-in-hybrid technology as part of its decarbonization strategy. Plug-in hybrid vehicles will offer the option of running on electricity only. EQ power models are parallel hybrids.
2020	October	The EQS is part of the luxury segment to fully benefit from the all-electric architecture. It would be produced in the same production lines.
2020	October	Ambition 2039 target, Mercedes-Benz is announcing a clear commitment to the full electrification of the product portfolio and is determined to ensure the business is fully carbon-neutral.
2021	March	In the past, Daimler only offered electric cars as a modification of models originally developed for combustion engines. The group based the EQC in VW dedicated vehicle architecture.
2021	March	Daimler is preparing for an earlier changeover. The speed of the transition will be shaped by the upcoming Euro 7 emission standard, a scenario that will make almost impossible to register internal combustion vehicles after 2025.
2021	March	Climate advocacy groups criticize the company's continuing affiliations with trade groups that actively lobby against stricter car emissions rules Germany and the US.

11. Appendix B – Overview of Structural Separation per Company

Company	Overview of structural separation
E.ON	<p>In 2015 E.ON decides to spin-off its conventional business power generation into a different company that would operate independently from its headquarters based in Dusseldorf. <i>Uniper</i> will have a portfolio of conventional assets focused on operationally flexible gas-fired power plants and global energy trading. In contrast, the new E.ON, based in Essen, will focus in renewables, energy networks and customer solutions. The spatial, managerial and operational separation will allow each company to focus on their respective market. E.ON had the intention to transfer the nuclear business so that Uniper could deal with the financial liabilities of phasing out nuclear energy, however it was not possible. The separation was completed in 2016, however E.ON remained as co-owner with 46.6% of shares. In 2018, E.ON decided to accept Fortum's voluntary public takeover offer for Uniper stock.</p> <p>E.ON decided to make a takeover offer for <i>Innogy</i> in 2018. Innogy was created in 2016 as a subsidiary of RWE in charge of the German and International renewables, grid and infrastructure and retail business. E.ON acquired 76.8 % stake in Innogy. Essen remained the registered office and headquarters. Moreover, the new company will retain the name E.ON. The structure of the yet again new E.ON will benefit from the strengths of both companies' corporate culture. The regional suppliers of both companies were retained. The shareholder representatives of Innogy decided to resign office, due to the major shareholder change. In 2020, the takeover of Innogy was completed by E.ON. The company announced an official migration of 2,700 employees from Innogy to RWE. E.ON is now entirely focused on network infrastructure and customer solutions.</p> <p>During the Innogy takeover between the years 2018-2020, <i>RWE</i> received all of E.ON's renewable activities as well as Innogy's renewable business and combined them to create RWE Renewables. Moreover, RWE kept a minority stake of 16.7% in the new E.ON. Renewables became the main profit generator for RWE Renewables. The headquarters are a few blocks away from E.ON in Essen. Both companies took on a two-year agreement to provide 100% renewable power to its UK customers in 2019.</p>
EDF	<p>In 2000, EDF acquire a 35% stake in SIFF, a company in charge of thermal and hydroelectric power stations and moving towards the renewable's energy market. Shortly after that, EDF published its Agenda 21 policy, where they commit to embrace universal principles on human rights, labor standards, environmental protection, and anticorruption. In 2004, SIFF became "EDF Energie Nouvelles", after the acquisition of 50% of the stakes in 2002. EDF Energie Nouvelles, conducts the construction, development, and operation of power production assets from renewable energy sources. In 2006, EDF NE launched its own IPO. EDF group has a</p>

	<p>decentralized structure, where each branch is endowed with their own support functions, manage their results and assets. However, the group is in charge to fix the allocation resources required for each branch in the group to reach its goals. Moreover, the HR department is a shared activity, where everyone has the possibility to evolve within another company in the group, based on performance. Additionally, EDF NE can rely on the EDF R&D department for technical monitoring and expertise. In 2011, EDF acquire 100% of EDF NE. EDF NE is part of the group strategy, CAP 2030, aimed to double its renewable capacities by 2030. In 2018, EDF NE was rebranded to EDF Renewables to boost international appeal and support the company's expansion in the international renewable energy market. Both headquarters are situated in Paris, France.</p>
EDP	<p>EDP since 1996 started to build its renewable assets with the purchase, investment, or construction of wind farms. In 2007 EDP Renovaveis was created inside the group to administer and operate the renewable assets. Its main activities and objectives were to engage in activities related to the electricity sector, namely, the planning, construction, operation, and maintenance of electricity using renewable sources, especially wind and solar. The company's revenue stream comes only from renewable energy activities. The headquarters are situated in Madrid, Spain. The EDP Group headquarter remained in Lisbon, Portugal. In 2008, EDP Renovaveis was converted into a company incorporated by shares, where EDP Group holds the majority with 77.5% of shares. The group created a Project Management Office to ensure the best implementation of related processes within the group segments, as well as consolidate these areas in an effective and efficient way. These business segments, although with own board of management, they have an internal reporting system. Based on these reports, the group evaluate its performance and decide on resource allocation. In 2008, the group announced a 4-year strategic plan were EDPR roughly represented two thirds of the investment. In 2018, EDP position itself with two low-carbon business models. The first one being EDPR, which accounts for 66% of energy generation and the second based in distribution. In 2020, EDPR continues operating in the EDP renewables segment.</p>
Iberdrola	<p>In 2001, Iberdrola launches its Strategic Internationalization Plan and announces its corporate vision based on cleaner and sustainable sources of energy generation. In consequence the company decides to invest heavily in wind energy. In 2007, Iberdrola Renewables with headquarters in Spain, is in charge of the activities related to energy generation and energy distribution from renewable sources. Ignacio Galán, remains the CEO of Iberdrola and, it is named Chairman of Iberdrola Renewables. By the end 2007, Iberdrola floated 20% of the Iberdrola Renewables capital on the stock market. However, shortly after, in 2010 Iberdrola and Iberdrola Renewables merge plan is accepted. The reason behind the merge, as communicated by the company, being the significant change, the renewables sector has undergone. With this merger, Iberdrola will be able to manage directly all the activities of Iberdrola Renewables. Moreover,</p>

	Iberdrola will provide the financial and manpower necessary to promote Iberdrola Renewables projects.
BMW	In 2011, BMW Group announces the creation of its sub-brand: BMW i-series. It was created to try to balance the environmental demands (climate change, availability of resources and increasing urbanization) and the individual desires of its customers for sustainable mobility. Moreover, ambitious sustainability targets were set for the i-series production. The production will take place in the Leipzig plant, alongside BMW series 1 and 2. This plant energy feed is provided by wind turbines on site to power the production. BMW i-Venture was established to pursue cooperation with partner companies as well as strategic investment with mobility services. In 2012, BMW presents its first BMW i-store in London, a showroom that offers a completely new brand experience focused on sustainable mobility. In 2013, BMW created what they call a “competence network” between their plants in Dingolfing and Landshut that oversee building the electric motor and battery. The announcement of i8, the second model of the i-series, was made. By the end of the year, BMW i3 got ISO certification proving that the model complies entirely the demanding targets defined during development.
Volkswagen (VW)	Announced in 2016, the I.D. is the first VW part of a new fleet of electric cars. TOGETHER + strategy 2025, announced in 2016, will push e-mobility in different stages. The plan's aim being become the new trademark for electric mobility by 2025. By the end of 2016, VW release its first Sustainability report, and in 2017 a Sustainability Advisor board was created and started developing its first projects. VW announce with its electrification initiative Roadmap E, that they will have electrified its entire model portfolio by 2030 at the latest. There will be an electrified version of each of the 300 models across all brands and markets. This initiative makes VW the first big mobility group to have put a date on the electrification on its entire fleet. Three models are planned to be rolling out of the VW plants in 2020: the I.D. (compact car), the I.D. crozz (SUV), and I.D. Buzz. The Zwickau plant will be transformed into a pure e-mobility facility. In 2018, VW is strengthening the area of e-mobility and creating a separate Board of Management division for e-mobility. The division responsibilities will include the e-mobility series and production of vehicles on the new MEB platform at the future e-mobility plants of the brand. By the end of the year the strategic plant reassignment was approved, where the plants in Dresden, Emden and Hanover will be converted to build electric vehicles by 2022. Moreover, a pilot program of charging stations will be developed in VW's hometown. In March 2019, VW announced they will open its MEB technology to other manufacturers, to achieve a significant reduction in the cost of e-mobility through the possible deployment of the technology and associated economies of scale. 2020, premier of the ID.4 brand's first all-electric SUV. January 2021, the ID.3 start series production.
Renault	In 2008, a Renault-Nissan alliance with Project Better was announced, where they will commercialize electric vehicles in Israel. Renault was preparing to mass-market electric vehicles, and a department specializing in electric mobility was set up. The Z.E.

	<p>concept was unveiled at the Paris Motor Show. In 2009, Renault announces the strategy to offer full range of affordable electric vehicles by 2012. By March 2012, ZOE, 100% electric car was revealed at the Geneva Motor Show. Completing the Z.E. range already made up by Kangoo Z.E., Fluence Z.E. and Twizy. It is the first pure-electric car to be design from the group. In November 2012, Renault inaugurated 40 ha of PV panels, this was made to confirm its commitment to protect the carbon footprint of new vehicles. The ZOE will me marked in Renault dealerships by 2013. The ZOE was manufactured in Flins, France, and is assemble in the same lines as the Clio Collection. In 2015, Renault creates the Global Sales and Marketing Director for Electric Cars post, led by Guillaume Berthier. 2017, the vehicle batteries of the Renault electric vehicles are rented to customers, allowing Renault to have full control over the battery whole life cycle. The “Drive to the future” 2017-2022 plan, states Renault’s vision of the future mobility founded in four pillars: electric mobility, connected mobility, autonomous mobility, and shared mobility, aimed to deliver sustainable mobility to everyone. In 2019, Renault presents another new model of the ZOE, still 100% electric, which also uses 100% recycled materials on its fabrics.</p>
Mercedes Benz	<p>In 2016, Mercedes Benz unveils new product sub-brand for electric mobility: EQ. It would offer a comprehensive electric mobility ecosystem of products, services, technologies, and innovations. The new EQ product is to be produced in the Bremen plant. Mercedes Benz announces plan to have over ten all-electric vehicles in its portfolio by 2025. Which would be built within the existing production network. In 2017 it was announced that due to the flexibility of their assembly plants and in addition to the Bremen plant, the Sindelfingen, Rastatt in Germany, as well as the plant in Hambach, France will become competence centers for the production of electric vehicles. This will allow Mercedes Benz to benefit from the opportunities of electric mobility, while reducing the required investment. In 2018, it was the world debut of the EQC, the first Mercedes Benz under the product and technology brand EQ. In 2019, Mercedes Benz announced that they will retain the ownership of the dealership EQ's stocks and sell directly to buyers. During 2020, EQS made its debut. This model is part of the luxury segment that still benefits from the all-electric strategy and will be produced in the same production lines. The group based the EQC in VW dedicated vehicle architecture. Mercedes Benz is preparing for the changeover. The speed of the transition will be shaped by the Euro 7 standard that have the potential to make almost impossible to register internal combustion vehicles after 2025.</p>