

Success factors of Inter-organizational Collaboration with Non-For-Profit organizations: The case of the renewable energy sector

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Résumé :

Développer le secteur des énergies renouvelables représente un défi sociétal majeur pour limiter le changement climatique. Cette étude part du postulat que la collaboration entre entreprises privées et organisations à but non lucratif (ONGs, associations, universités et institutions de recherche publiques, agences gouvernementales etc.) offrent un terrain fertile pour l'implémentation de projets visant à produire de l'énergie renouvelable. Mais la réalité de ces collaborations est mal connue.

Le but de cette étude est double : premièrement, elle vise à explorer empiriquement la collaboration entre entreprises et organisations à but non lucratif, afin de dresser un panorama de ces collaborations au niveau mondial. Deuxièmement, elle pose la question des facteurs de succès de ces collaborations.

Les données empiriques sur lesquelles se base cette recherche sont des données secondaires collectées sur internet. Les rapports d'entreprises et d'organisations évoquant ces collaborations ont été identifiés principalement à travers les organismes de financement et une recherche ouverte. 30 cas ont été identifiés et documentés par des données qualitatives, répondant ainsi au premier objectif de cette recherche. Afin d'adresser le second objectif c'est-à-dire identifier les combinaisons de facteurs menant au succès des collaborations, la méthode QCA (analyse qualitative comparative) a été utilisée.

L'avantage de la méthode QCA réside dans la possibilité de combiner la richesse de données qualitatives avec une comparaison systématique des cas étudiés. De plus, à la différence de l'analyse statistique, la QCA permet l'identification de multiples chaînes causales menant à un résultat. Cette étude montre dans quelle mesure trois conditions (incitations financières à collaborer, le conflit sur les ressources naturelles, et la dimension internationale de la collaboration) influencent le succès de projets dans les énergies renouvelables. L'absence de

conflits sur les ressources naturelles apparaît comme une condition suffisante au succès. La configuration idéale combine la présence d'incitations financières, l'absence de conflits et la dimension internationale de la collaboration.

Mots-clés : Collaboration, Collaboration Inter-Organisationnelle, Organisations à but non lucratif, QCA (Analyse Qualitative Comparée), Secteur des énergies renouvelables

Abstract :

Developing the renewable energy sector is a major societal challenge to limit climate change. This study departs from the postulate that the collaboration between private companies and non-for-profit organizations (non-governmental organizations, associations, public universities and research institutions, governmental agencies etc.) is a fertile ground for the implementation of projects aiming the production of renewable energy. But the reality of these collaborations is poorly known.

The aim of this study is two-folded: firstly, it aims to empirically explore inter-organizational collaboration between companies and non-for-profit organizations in the renewable energy sector, in order to give a panorama of such collaborations worldwide. Secondly, it raises the question of success factors of these collaborations.

The empirical data on which this research is based is secondary data collected on the internet. Company and organizational reports describing such collaborations were identified mainly through funding agencies, but also through open search. Qualitative data on 30 cases has thereby been collected and gives substance to the first objective of this study. To answer the question raised as the second and main objective, concerning success factors of inter-organizational collaboration, the method of Qualitative Comparative Analysis (QCA) was used to study tests a simplified model including three categories of success factors. We aimed to find out what combinations of conditions lead to successful projects.

Advantage of QCA lies the possibility to combine the richness of qualitative data with systematic cross-case comparison. Additionally, unlike statistical analysis, QCA allows the identification of multiple causal pathways which leads to outcome. This study tests whether three conditions (incentives to collaborate, conflict over national resources, international collaboration) influence the success of renewable energy projects. The absence of conflicts over national resources appears as a sufficient condition for success. The ideal configuration for successful collaboration includes the presence of incentives, the absence of conflict, and an international composition of collaborative actors.

Keywords : Collaboration, Inter-organizational Collaboration, Non-For-Profit Organizations, QCA (Qualitative Comparable Analysis), Renewable Energy sector

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INTRODUCTION

Collaboration between organizations from different sectors (business, governments and civil society) has been emerging rapidly on different levels whether as on strategic level or relational level. The main reason behind such collaboration is that those organizations have mutual goals to achieve. It is necessary to have realistic expectations since different types of organizations are involved in the collaboration and without a doubt each organization has its own perspective of the objectives. Scholars have approached these subject with concepts such as strategic fit, collaborative relationships and resource sharing.

In a recent review by Gray and Stites (2013), multi-sector partnerships are defined as including partners from three or more different sectors: business, non-governmental organizations, governments, and civil society or community, with a the collaboration established between two sectors or more. For example, when businesses and governmental agencies join their forces, their venture is called a public–private partnership.

When NGOs team up with civil society members, these partnerships have been called SLENs (Sustainable Local Enterprise Networks) as proposed by Wheeler and colleagues (2005). Businesses also engage directly with communities (as in stakeholder engagement forums), but because building these relationships is often difficult for businesses (due to the lack organizational partners for routine, ongoing and possibly contractual exchanges) (Weber, 2009), NGOs often broker or serve as liaisons between businesses and communities.

Fighting climate change requires all to work together, worldwide. There is no person, organization or country that can create the change alone. Cross-organizational collaboration is paramount to enacting sustainable policies. At the 'Focus on Energy' side event during COP21 in Paris in December 2015, EU Commissioner for International Cooperation and Development, Neven Mimica,, has signed seven joint declarations to reinforce cooperation on sustainable energy and climate change (International Cooperation and Development-EU, 2015). World leader speeches during the UN General Assembly Summit in September 2015 have emphasized that partnerships are key for the implementation of the Sustainable

Development Agenda in the newly adopted 2030 Agenda (Partnerships Key to Implementing New Sustainable Development Agenda, 2015).

Sustainable development or sustainability is a broad discipline that draws on politics, economic, philosophy and other social sciences as well as the hard sciences. However, the essence of this form of sustainable development is a stable relationship between human activities and the natural world a way that the future generation can have the same good quality of life than we have currently. The increase of worldwide population makes sustainable development even more important.

The aim of sustainable development is to balance three dimensions environment, economy and society, by implementing long-term goals in sustaining the main natural resources, encouraging us to enhance these limited resources and changing the ways in which we develop and use technologies. Countries must be allowed to meet their basic needs of employment, food, energy, water and sanitation (Mondal, 2013).

The concept of corporate community partnership has been emerging in the recent years, due to incapacity of companies or governments alone to resolve issues. They need the help of different organizations such as non-profit organizations or grant partners to achieve projects.

The organizations need to be complementary, have clear expectations, willing to invest in the partnerships and commitment for long term relationship, combining strength and resources of these organizations together, with common goals; this will lead to creating “shared value” projects. Collaboration is a prerequisite for sustainable development.

Corporations worldwide employ numerous strategic approaches to ensure the survival and the success of their business. With the rise of Corporate Social Responsibility (CSR), corporations have faced extra responsibilities where they have to deal with governments, civil society and non-for-profit organizations. In more competitive environments, increasingly work with these organizations, which can even become strategic partners for the success of their business.

The aim of this study is two-folded: firstly, it aims to empirically explore inter-organizational collaboration between companies and non-for-profit organizations in the renewable energy sector, in order to give a panorama of such collaborations worldwide. Secondly, it raises the question of success factors of these collaborations. We question the conditions under which such projects have successful outcome.

To do so, we firstly present a literature review that should help to better understand success factors of inter-organizational collaboration between companies and NFP organizations. Secondly, we present the collected empirical data on 30 cases of collaborations and how we analyzed this data with the qualitative comparative analysis (QCA) method. Thirdly, we describe and discuss the results before concluding on contributions, limitations and perspectives of this study

1. INTERORGANIZATIONAL COLLABORATION WITH THE NFP SECTOR IN THE LITERATURE

Questions related to our subject have been widely discussed in the literature with regard to stakeholder theory, inter-organizational learning theory, commitment to CSR, Strategic alliances and exchange of resources between organizations.

1.1 MULTIPLE ACTORS

The process of collaboration involves multiple and diverse actors. In stakeholder theory (Freeman, 1984), top management is in charge of defining and managing the interests of the stakeholders. Collaborating with stakeholders requires a great deal of efforts, space for people, welcoming ideas and creating good atmosphere.

Within the stakeholder approach to strategic management, managers must formulate and implement processes which satisfy all groups who have a stake in the business (Freeman & McVea, 2001). Managing the relationship with and interest of shareholders, employees, customers, suppliers, communities and other groups in a way that ensures the long-term success of the firm is the main task in this process, Freeman and McVea came with distinct characteristics of stakeholder approach which are the following:

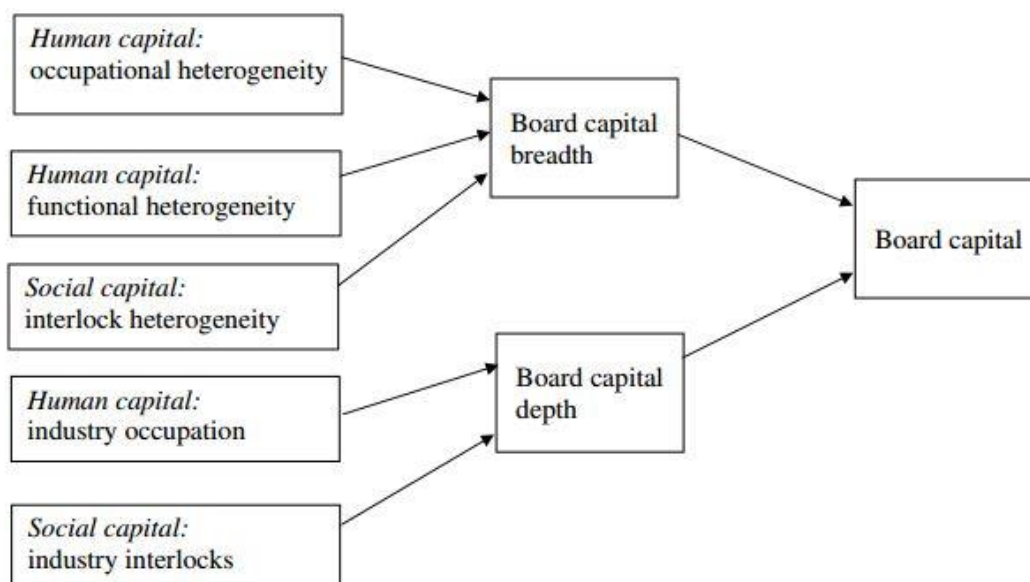
- Stakeholder approach is intended to provide a single strategic framework, flexible enough to deal with environmental shifts without requiring managers to regularly adopt new strategic paradigms.
- Stakeholder approach is a strategic management process rather than a strategic planning process.
- Stakeholder approach rejects the very idea of maximizing a single objective function as a useful way of thinking about management strategy. Rather,

stakeholder management is a never-ending task of balancing and integrating multiple relationships and multiple objectives.

- Stakeholder approach encourages management to develop strategies by looking out from the firm and identifying, and investing in, all the relationships that will ensure long-term success.
- Stakeholder approach is both a prescriptive and descriptive approach, rather than purely empirical and descriptive.
- Stakeholder approach is about concrete “names and faces” for stakeholders rather than merely analyzing particular stakeholder roles.
- Stakeholder management calls for an integrated approach to strategic decision making. Rather than set strategy stakeholder by stakeholder, managers must find ways to satisfy multiple stakeholders simultaneously.

As a matter of fact CSR activities and resources dependency are very important strategic matters for firms on (Haynes & Hillman, 2010) recent research as “The effect of board capital and CEO power on strategic change” shows that CEO power could influence the effect of board capital on firm decisions.

Figure 1: Model of board capital (Haynes & Hillman, 2010)



The stakeholder-focused approach enabled identification of multiple stakeholders from different levels of administrative units and lay community (Ingabire et al, 2016), definition of their role as well as their degree of involvement in planning and implementation of an effective community-based in the business, In addition considering the preferences of stakeholders reflects social preferences (Reed et al., 2009) .

By better representing the diversity of interests of project's actors, where not all stakeholders are looking for profits, such diversity will create balance in the business environment and help in sustainable development.

1.2 INTER-ORGANIZATIONAL LEARNING

The literature on inter-organizational learning in strategic settings is a rapidly expanding and area of study has matured considerably, both theoretically and empirically. Firms may further boost their ability to learn in strategic settings by tapping into the experience of others. Firms could learn by observation of competitors and discussions with peers outside the firm (Barkema & Schijven, 2008). These authors suggested that firms typically learn more from others before they gain significant experience themselves. For firms to be successful, they need to build a variety of strategic capabilities. Firms must learn quickly to execute their strategies more effectively, and learning from others may be an asset.

In a literature review of articles published between 1999 and 2004, Fenwick (2008) examines individual–collective relations in workplace learning, and came up with eight distinct frameworks in which these relations are studied

- Individual knowledge acquisition.
- Sense-making/reflective dialogue.
- Levels of learning.
- Network utility.
- Individual human development.
- Individuals in community.
- Communities of practice.
- Co-participation or co-emergence theme.

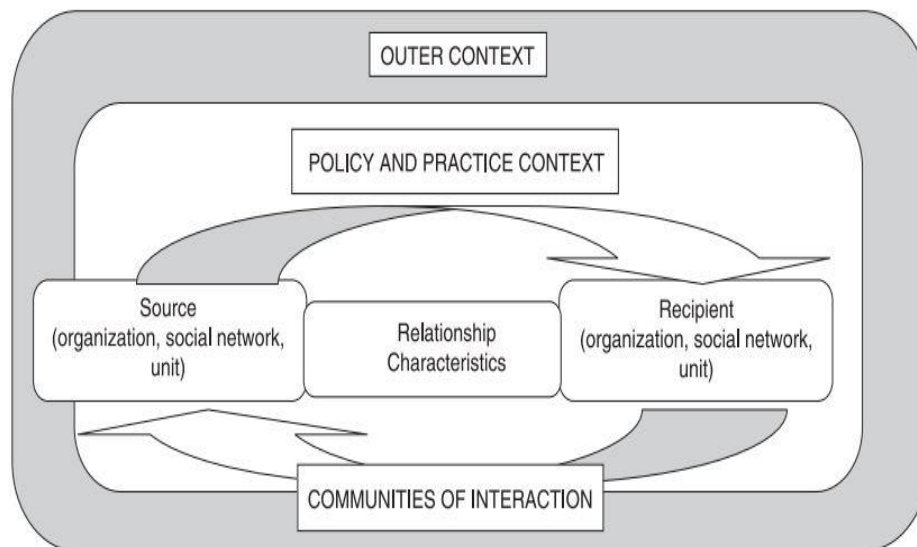
Collective learning is a broad term and includes learning between dyads, teams, organizations, communities, and societies. Garavan and McCarthy (2008) emphasized that

collective learning is important to both human resource development (HRD) researchers and practitioners. Most conceptions of collective learning highlight characteristics such as relationships, shared vision and meanings, mental models and cognitive and behavioral learning.

Considering inter-organizational learning as a process that hinges purely on trust between the partner's neglects the fact that not all boundary spanners are involved in the same way in inter-organizational learning (Janowicz & Panjaitan, 2009). The authors also emphasize that the higher the strategic importance of knowledge for a firm's competitive advantage, the more the firm will have to trust others and share knowledge.

Sharing of knowledge between units within an organization and between organizations depends on four sets of factors (Hartley & Rashman, 2007): features of the source organization, features of the recipient organization, the characteristics of the relationship between organizations and the environmental context.

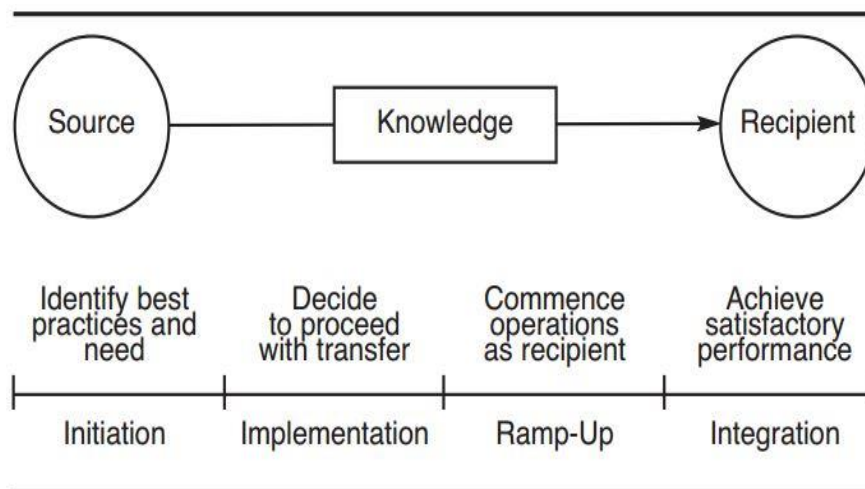
Figure 2: Organizational and inter-organizational learning model (Hartley & Rashman, 2007)



There are constant flows of information to an organization from its environment (McDonald & Madhavaram, 2007). Firms should make this information as its competitive advantage, the organization response to the new information will have a great impact on the environment which is the source of the information, and the impact will depend on the response whether positive or negative.

Knowledge transfer is seen as a sequential process (Szulanski, 2003), each stage has its own nature, knowledge transfer is necessary to firms, where they use the resources they have, In order to ease this process, firms are more and more often engaged in knowledge management strategies in which the transfer of business practices is viewed as a source of competitive advantage. This challenge is even more critical for multinational corporations (MNCs) (Perrin & Nicolas, 2007).

Figure 3: knowledge transfer process (Szulanski, 2003)



Organizational learning and knowledge transfer are the most valuable assets of today's companies and they help in developing morale and motivation of the staff. It is important to distinguish between the concepts of organizational learning and the learning organization: organizational learning is an activity, processes of learning in organizations, whereas a learning organization is a form of organization which requires specific effort (Örtenblad & Anders, 2001).

1.3 COMMITMENT TO CSR

When firms are committed to CSR, they expect to reflect a better brand image in civil society. In addition, CSR strategy is a crucial component of a company's competitiveness where the social, environment, and customers are top priority.

Implementing CSR requires collaboration with different stakeholders. Firms that demonstrate a stronger commitment to CSR will have a greater propensity to collaborate with NGOs than

those with weaker commitment (Den Hond et al. 2012). Firms' commitment to CSR could be a major factor in driving the collaboration into further cooperation. Demonstrating commitment to CSR, a firm is likely to interact with NGOs, either on its own initiative, selecting NGOs whose resources and objectives fit well with those of the firm, or by being selected by NGOs as a partner in some form of collaboration. Collaboration engages NGOs in the company's practices and decision making, and thereby increases the firm's propensity to continue its collaboration with those NGOs whose resources and objectives fit with those of the firm. Hence, for companies that see CSR as an opportunity to develop their business, NGO partnerships are a big challenge. Smart partnering can provide a good way forward. Interactions with external stakeholders can provide a firm with several types of resources (Pfeffer & Salancik, 1978):

- Advice, counsel and know-how.
- Legitimacy and reputation.
- Channels for communicating information between external organizations and the firm.
- Preferential access to commitments or support from important actors outside the firm.

Firms can always show their interest in collaborating with other organization through corporate social responsibility (CSR) initiatives, especially those organizations that have an interest in social commitment.

The general case of more substantial commitment to CSR must be assessed relatively to the specific vulnerabilities and opportunities of a particular organization (Smith, 2003). Many firms have found the business case for greater attention to CSR to be compelling, particularly given reputational risk and other pressures of the contemporary business environment.

New legislations and behavioral developments, such as CSR, the transparency of supply chains or, sustainable development goals, diminish firms' possibilities to achieve everything by their own. They need to collaborate with other organizations and they should have basic principles in their CSR programs.

1.4 COLLABORATION WITH NFP ORGANIZATIONS

The relationship between firms and civil society organizations (especially non-for-profit ones) evolves into three stages: philanthropic, transactional, and integrative (Austin, 2000). In the philanthropic stage the relationship starts slow and simple, with infrequent and weak collaboration. Examples are the relationship between donors and recipients. In the transactional stage, the activities between the organizations increase by exchanging resources within certain limits. In the last stage, the partners' missions, members, and activities begin to merge into more collective action and organizational integration.

Table 1 : Collaboration Continuum (Austin 2000)

<i>Nature of Relationship</i>	<i>Philanthropic</i>	<i>Transactional</i>	<i>Integrative</i>
Level of engagement	Low	→	High
Importance to mission	Peripheral	→	Central
Magnitude of resources	Small	→	Big
Scope of activities	Narrow	→	Broad
Interaction Level	Infrequent	→	Intensive
Managerial complexity	Simple	→	Complex
Strategic Value	Minor	→	Major

Cross-sector collaborations between NFP organizations and businesses is widely practiced these days, collaborating across the sectors is not simply applying standard operating procedures for collaboration with peer organization (Googins & Rochlin, 2000).

Partnership dynamics have a great influence on partnership results. The most innovative partnerships clearly report different patterns of engagement, involving regular interactions, open lines of communication and the nurturing, over time, of a strong cooperative competence building on trust, communication and good coordination (Jamali et al., 2011). Partners that who to take risks and explore new ideas for the partnership also expect input from the other partner, and view the collaboration as an opportunity rather than a threat. Also, importantly, top management who also noted a positive inclination or propensity to respond to and accommodate the changing aims and expectations of the partnerships in question.

Wolf (2008) mentioned that it remains to be established whether firms enter into CSR strategic alliances as a form of implicit or explicit communication with their stakeholders. External pressure emerged from the literature as an important incentive for collaboration. Aspects such as increasing environmental turbulence or crises (Gray, 1985), or political and economic situations (Dütting & Sogge, 2010) confirm in their findings that donor initiatives, in particular the prospect of funding, can serve as a trigger for collaborative efforts, as for strategic importance of the collaboration all nonprofit organization confirmed how crucial it is to them.

Although the arrangement is generally spelled out clearly, the differences between the organizations in how the businesses operate can cause some struggles. Moreover, communication plays a major role in such alliances so there may be a level of distrust within the corresponding leadership.

1.5 EXCHANGING RESOURCES

Some essential source the companies need is legitimacy with and connections to local interests and users. Civil society organizations are well-trusted in the community Therefore, these organizations can facilitate engagement with local communities and non-traditional customers (Austin, 2000). At the same time NFP organizations need some other essential resources such as capacity, by which they rely on business organizations.

Four general types of motivations for involvement in inter-organizational collaboration have been identified (Gray & Stites, 2013):

- Legitimacy-oriented motivations: refer to social acceptance of an organization based on its conformance to societal norms and expectations.
- Competency-oriented motivations: refer to “collective learning in organizations, especially how to coordinate diverse production skills and integrate multiple streams of technologies.
- Resource-oriented motivations: refer to an organization’s assets, including financial and social capital. A major hurdle in addressing social and environmental problems is having “access to the right capital at the right time.

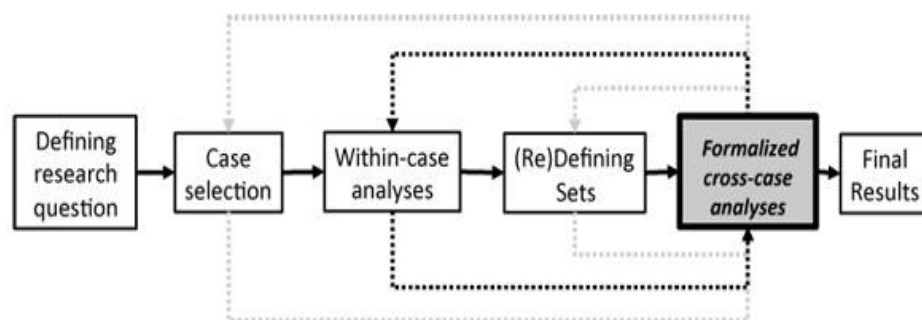
- Society-oriented motivations: both businesses and NGOs may also have broader society-oriented motivations for partnering. These motivations are designed to make changes to how society deals with issues of sustainability.

2. METHOD: AN EXPLORATORY STUDY BASED ON QUALITATIVE COMPARATIVE ANALYSIS (QCA)

2.1 RESEARCH DESIGN

This study uses qualitative comparative analysis, which aims to make comparisons across different cases of sustainable energy projects. QCA involves several rounds of within-case analysis and cross-case comparisons. The formalized cross case analyses will result into redefining the set and further within-case analyses. This process is very important for the quality of the analyses which we will induce based on the combinations or the conditions and outcomes (Legewie, 2013).

Figure 4: QCA process of data analysis (Legewie, 2013)



QCA involves iterative process of data collection, model specification, case selection and re-formulation of the conditions and the outcomes, it is a well-known strategy in traditional qualitative comparative research to add or remove cases from the analysis during the research process. QCA technique we try to find empirical patterns in the data through “Boolean minimization” which resembles quantitative, variable-oriented techniques of data analysis (Wagemann, 2007).

2.2 DATA COLLECTION PROCESS

We are interested in sustainable energy projects; therefore we collected different cases of renewable energy projects around the world, we collected secondary data, mostly online sources, we tried to make these cases similar but at the same time we insured some heterogeneity since the analysis depends on the differences, the projects are of different types of renewable energy types which includes Wind power, Hydropower, Solar energy, Geothermal energy and Energy efficiency.

For each case we searched extensively to gather as much information as possible to have in-depth knowledge about it. To identify these cases, we drew information from funding institutions, International Renewable Energy Agencies, governments reports and projects' reports, moreover for all cases we collected the following : the actors involved in the project such as Association, NGO, Firms, Public institution /intergovernmental organization, Research Center/ consultancy, Funding Program, Financial institution, we also collected information about the Location of the project. Partners origins, Type of energy/innovation System, Cost of the project, Energy produced/ expected from the project, Number of people working in the project construction, Starting date of the construction, Duration of the project construction and Local Opinion of the project, table below presents very basic information about the cases.

Table 2: Basic description of the case studies

	<i>Project title</i>	<i>Technology</i>	<i>Project location</i>
1	Solar farm in ASYV	Solar	Rwanda
2	Hydro power in Intibucá	Hydro	Honduras
3	Hydropower Nepal	Hydro	Nepal
4	Solar Lantern Rental System Laos	Solar	Laos
5	Salkhit wind farm	Wind	Mongolia
6	Sapphire wind farm	Wind	Pakistan
7	The Lesedi and Letsatsi projects	PV	South Africa
8	Hami project	CPV	China
9	Wind farm in Singida	Wind	Tanzania
10	Karadzhhalovo solar park	Solar	Bulgaria
11	Wind farm in Madhya Pradesh, Andhra Pradesh	Wind	India
12	Energy efficiency in china	EnergyEfficiency	China
13	IVANPAH	Solar Thermal	US
14	Ouarzazate Solar Power Station"Phase one"	Solar PV	Morocco
15	Bugoye Hydro Power	Hydro	Uganda
16	The Lake Turkana Wind Power Project (LTWP)	Wind	Kenya
17	Palo Viejo Hydroelectric Plant	Hydro	Guatemala
18	San Jacinto-Tizate Geothermal Project	Geothermal	Nicaragua
19	Jasper Solar Photovoltaic Power Plant	Solar PV	South Africa
20	Amanecer Solar CAP Power Plant	Solar PV	Chile
21	Chaglla Hydroelectric Power Plant	Hydro	Peru
22	Ulubelu II Geothermal Power Plant	Geothermal	Indonesia
23	Dai Ninh Hydro Plant	Hydro	Vietnam
24	Burgos Wind Project	Wind	Philippines
25	Rampur Hydro Electric Power Project	Hydro	India
26	Agua Prieta II	ISCC	Mexico
27	Augustin Fresnel 1 in Targassonne	Solar	France
28	Hassi R'mel	ISCC	Algeria
29	Khi Solar One	CSP	South Africa
30	Manchasol 1	Solar Thermal	Spain

2.3 QCA SYNTHESIS

According to Rihoux and Ragin (2009), there are six stages in QCA that we can resume in four phases as follows:

1. Building the data table: qualitative data is collected from the online sources based on different aspects, the most important aspects are the actors and the social relation,
2. Constructing a ‘truth table’: quantifying the qualitative data into binary variables with ones and zeros (1 / 0),
3. Analyzing the quantitative data, including three steps: Resolving contradictory configurations, Boolean minimization, consideration of the ‘logical remainders’ cases,

2.3.1 Data table and truth table

The International Renewable Energy Agency (IRENA) is an intergovernmental organization that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation. In their 2014 publication entitled “Evaluating Renewable Energy Policy: A Review of Criteria and Indicators for Assessment”, they specify effectiveness in terms of power generation capacity and diversity of the market. For the efficiency aspects they highlight the importance of support to generation and the cost of generation. Based on this review we have assessed success of renewable energy projects with the following criteria:

1. Significance: how significant is the produced power to the country’s generation capacity.
2. Opinion: For this criterion we considered three elements:
 - Diversification in power generation: generally, most countries rely on one main particular power generation type, therefore a bonus is given to the projects in which the diversification of power generation is met,
 - Impact of the project in terms of environmental protection and reduction of CO² emissions,
 - Demand for the power: sometime the significance of the power produced to the national capacity is small however the demand for the power in certain areas is high specially areas near the project.

3. Duration of the project: one important criteria is the completion of the project in a shorter than average time frame. Because the cases include different types of energy, we categorized the projects based on their energy types, and then we calculated the average building time per Megawatt of each type and compared each project to this average.

The combination of these three elements determined our evaluation of success (1) or failure (0) of projects. “Success” means a positive evaluation of at least two of the three criteria. It has to be noted that this measure of success is very severe because even “failing” projects have been terminated and correspond to functioning power plants. In other terms, there are no true failures and unsuccessful projects in our sample. Success and failure are to be interpreted as relative.

We retained three main success factors (causes of success) of the projects. As mentioned earlier, we relied on IRENA’s (2014) criteria such as fiscal incentives and public finance; identifying obstacles and the participation of stakeholders.

1. Incentives. We assessed whether the country where the project was located offered incentives encouraging renewable energy, including encouraging companies for innovation and improving technologies, attracting companies through facilitating legislation (minimizing some taxes and tariffs) or funding. Some countries have strict rules regarding CSR requiring that companies participate in sustainable development. Furthermore, some companies are concerned with their brand image.

2. Conflict over natural resources. Some renewable energy projects face conflict over natural resources such as water management or land disputes.

3. International actors. All projects are developed in collaboration between different actors, the third factor studied is international diversity or not of these actors.

Table 3 summarizes conditions of success, and success as an outcome, of the 30 projects.

Table 3: Truth table

	<i>Case</i>	<i>Incentives</i>	<i>Conflict</i>	<i>Internat.l</i>	<i>Success</i>
1	Solar farm in ASYV	1	0	1	1
2	Hydro power in Intibucá	0	1	1	0
3	Hydropower Nepal	1	0	0	1
4	Solar Lantern Rental System Laos	0	0	0	1
5	Salkhit wind farm	1	0	1	1
6	Sapphire wind farm	0	0	1	1
7	The Lesedi and Letsatsi projects	1	0	1	1
8	Hami project	1	0	1	0
9	Wind farm in Singida	0	0	1	1
10	Karadzhalovo solar park	1	0	1	1
11	Wind farm in Madhya Pradesh	1	0	0	1
12	Energy efficiency in china	1	0	0	0
13	IVANPAH	1	0	0	1
14	Ouarzazate Solar Power Station "Phase 1"	1	0	1	1
15	Bugoye Hydro Power	0	0	1	1
16	The Lake Turkana Wind Power Project	1	1	1	1
17	Palo Viejo Hydroelectric Plant	1	1	1	0
18	San Jacinto-Tizate Geothermal Project	1	0	1	1
19	Jasper Solar Photovoltaic Power Plant	1	0	1	1
20	Amanecer Solar CAP Power Plant	1	0	1	1
21	Chaglla Hydroelectric Power Plant	0	0	1	1
22	Ulubelu II Geothermal Power Plant	1	1	1	0
23	Dai Ninh Hydro Plant	0	1	1	0
24	Burgos Wind Project	1	0	1	1
25	Rampur Hydro Electric Power Project	1	1	0	0
26	Agua Prieta II	1	0	1	0
27	Augustin Fresnel 1 in Targassonne	1	0	0	0
28	Hassi R'mel	1	0	1	1
29	Khi Solar One	1	0	1	0
30	Manchasol 1	1	1	1	0

2.3.2 Contradictory configurations and Boolean minimization

For k conditions, there are 2^k different combinations of conditions which are called configurations. This study includes three conditions (as shown in table 4 below) can be combined in eight different configurations, that means the 30 case could be splitted into 8 different groups based on the combination of the condition. As explained above, the truth table permits to categorize the cases into the 8 different configurations.

There are four possible kinds of results for each configuration (Thomas, O'Mara-Eves & Brunton, 2014), three of them are applicable to our dataset:

1. Positive cases: All cases within a set had a positive outcome.
2. Negative cases: All cases within a set had a negative outcome.
3. Contradictions: Some of the cases had a positive, some had a negative outcome.

Table 4: Distribution of cases in collaboration configurations

<i>Configura- tion Nb</i>	<i>Incentive</i>	<i>Conflict</i>	<i>International</i>	<i>No of cases</i>	<i>Configuration classification</i>	<i>Cases</i>
1	0	0	0	1	Positive	4
2	1	0	0	5	Contradiction	3,11,12,13,27
3	0	1	0	0	-	-
4	1	1	0	1	Negative	25
5	0	0	1	5	Contradiction	6,8,9,21,15
6	1	0	1	12	Contradiction	1,5,7,10,14,18,19, 20,24,26,28,29
7	0	1	1	2	Negative	2,23
8	1	1	1	4	Contradiction	16,17,22,30

Contradictory configurations, where different outcomes can be found in the same configuration, are to be resolved. Several techniques can be used to do so (Thomas, O'Mara-Eves & Brunton, 2014), such as reconsidering the conceptualization and operationalization of the outcome (success) as well as undertaking more qualitative analysis of the studies to see whether explanatory differences emerge. We used both techniques for the contradictory configurations.

The cases 8, 12, 16, 26 and 27 have caused contradictions. The Hami project (case nb 8, an unsuccessful project) is in configuration 5: hence it contradicts the other four cases in the

configuration which are successful. The Hami project is considered as unsuccessful because it was built over a long period of time: 1.7 MW per month while the average time for solar projects is 4 MW per month. In addition, total electricity production in China is 1223 GW and the project produces only 20.5 MW, so it is considered as insignificant. In China, around 67% of the power source is fossil fuel, and 20% is hydroelectric. Therefore the project which is solar power increases diversification of sources in times when the country is facing two severe challenges, energy shortage and increased need for environment protection. The Hami project has been considered as unsuccessful because it secured only one criterion out of three. Given the size of China and amount of energy production which lower significance of the project, we reconsidered the project as a successful one, resolving thereby the contradiction of the configuration.

Energy efficiency in China and Augustin Fresnel in Targassonne (cases nb 12 and 27) are in configuration 2 where they are contradicting three successful cases. For case 12, in 2005, the Chinese government began an aggressive five-year plan to improve the energy efficiency of the country's top 1,000 energy-consuming enterprises. These companies, which together account for one-third of China's energy use, each emit more than 450,000 tons of carbon dioxide per year. However, few companies had taken advantage of government incentives for energy-efficiency improvements, and many companies experienced significant challenges in meeting the targets (lack of data analysis and reporting capacity; Business for Social Responsibility, 2010). Case 27, Augustin Fresnel 1 in Targassonne in France, is a prototype which is designed for the reduction of environmental impacts. Solar Euromed has developed this project with French laboratories PROMES-CNRS and CEA-LITEN are implementing. Solar Euromed's solar thermal boiler technology is intended for research purposes in a full scale power plant.

The Lake Turkana Wind Power Project (LTWP, case nb 16) is in configuration 8. It is successful project that contradicts the other four cases in the configuration, which are unsuccessful. It tops average time for solar projects with 8MW/month which, and it has a huge significance because it will generate around 18% of Kenya's national capacity. Moreover it will minimize fuel importations.

Agua Prieta II and Khi Solar One (cases nb 26 and 29), are in configuration 6 where they are contradicting ten successful cases. In case 26, the project was built over long period of time, with only 0.3MW per month while average time for solar projects is 4MW per month. The total Electricity Capacity is 63GW in Mexico and the project produces only 14MW so it is

insignificant. Furthermore, around 73% of the power source is fossil fuel, therefore the project increases power source diversification. The plant is estimated to offset approximately 391270 tons of CO₂ emissions over an anticipated 25-year lifespan. Khi Solar One (case 29) was also built over long period of time (1.3 MW per month) and delivers insignificant contribution (50MW) to the total electricity capacity of South Africa (46GW) but covers the demand of 45000 South African households. Around 88% of the power source is fossil fuel, therefore the project which is solar power brings good sources diversification.

In the Boolean minimization stage of data analysis, we need to find solutions which encircle as many cases as possible. We need to minimize these configurations so that we can decide if there is a single combination of conditions that leads to a positive outcome. Therefore we should try to find a correlation between these configurations that helps us in minimizing the configurations. As it is highlighted in table 5, we can notice that in all of the four configuration that have led to positive and contradictory outcomes, the condition of “conflict” is always 0 which means there was no conflict over natural resources. For the other two conditions, “incentives” and “international” they were both present in one configuration (6), and both absent in another configuration (1). They were presented separately in two remaining configuration (2, 5).

2.3.3 Consideration of the ‘logical remainders’

The presence of remainders is known as ‘limited diversity’. We have one remainder without concerned cases in the dataset which is configuration 3. In general practice, qualitative research contributes nearly as significantly as quantitative research. However, qualitative research as a whole has been unceasingly criticized by the lack of consensus for assessing its quality and robustness. Limited diversity is virtually omnipresent in sociological research and poses a problem for small-N as well as for large-N data sets. However, addressing the problem of limited diversity is a major strength of QCA as an analytic technique (Carsten & Schneider, 2012).

We could narrow the solution to two configurations, configurations 5 and 6 since they cover 14 cases out of 18 and the other configurations 1 and 2 cover only 4 cases out of 18, configuration 6 (incentives, No conflicts, international) is the ideal solution which covers 10 cases out of 18 cases, hence we have identified our solution as configuration number 6.

3. RESULTS AND DISCUSSION

Based on the number of cases in each configuration, it is obvious that the most frequently observed configuration is number 6 with 12 cases. Conditions are (Incentives, No conflicts, International). Second come configurations number 2 and 5 (Incentives, NO conflicts, NO International), (NO incentives, NO conflicts, International) which cover 5 cases each, and configuration number 1 (NO incentives, NO conflicts, NO International) which covers 1 case.

Table 5: Combinations of the conditions leading to successful collaboration

<i>Configuration No</i>	<i>Incentives</i>	<i>Conflicts</i>	<i>International</i>
1	0	0	0
2	1	0	0
5	0	0	1
6	1	0	1

We used QCA to have a logical conclusion on the data set which was carefully chosen to cover as much as possible of the sustainable energy technologies. At the same time we tried as much as possible to group the cases in homogeneous categories in order to be able to draw some conclusions.

The majority of the cases are using solar technology. Solar technology is subdivided into sub-technologies which are PV, CPV, ISCC, CSP and solar thermal technology. Most people have an intuitive appreciation for what success is, but defining it and measuring it is a bit tougher, as the aim of our study is to elaborate the collaboration between firms and other organizations. We tried to choose three conditions that relate to the collaboration between these organizations, which are availability of incentives, existence of conflict over natural resources and quick implementation of the project.

Incentives could be in different forms such as government policies or legislations which encourage corporates to run renewable energy project, different practices might attract companies through the minimization taxes tariffs, access to environmental grants and loans. For example, Singapore is well-known as a clean and green city. In order to encourage investment in renewable energy, water and green building solutions, Singapore has invested

more than 570 million US dollars since 2011 in incentives, especially in solar energy solutions (Asean Briefing, 2015).

Conflicts in sustainable energy are very sensitive issue. Companies generally try to avoid projects with high probability of facing conflicts, because some disputes might take years to be resolved while the companies are engaged through contracts. Examples for these conflicts are water management where some local community might be opposed to the project or demand some compensations. This is most likely to happen in hydro power technology during building dams. Another type of conflicts is land disputes, especially for solar and wind technology. This shows the importance of collaboration between civil society organizations and private companies which makes it easier to resolve conflicts related to natural resources.

The third condition is the international dimension of the project, adding to differences between the involved organizations. As a consequence, goals and visions of the project will differ more.

As a result of our study, we found that there are four pathways to successful sustainable energy projects, which are configuration 1 (NO incentives, NO conflicts, NO International), configuration 2 (incentives, NO conflicts, NO International), configuration 5 (NO incentives, NO conflicts, International) and configuration 6 (incentives, NO conflicts, International). In the Boolean minimization stage, we noticed that among the four pathways that have led to positive outcomes, there is always one common condition: NO conflicts. This highlights the importance of this condition for the success of the project. Analysis shows that as long as there is the condition “NO conflicts”, the project should meet a positive outcome. In other words, NO conflicts is a sufficient condition for a positive outcome.

Furthermore, in the Boolean minimization stage (stage 4), we minimized these pathways into two pathways, which are configuration 5 and configuration 6, which include the majority of the positive cases, around 73%. We further minimized the solution to choose configuration 6 (incentives, No conflicts, International) as the ideal solution. Out of the 23 cases where incentives were available, 9 cases were unsuccessful. For the 23 cases where no conflicts existed in the data set, 18 cases were successful. Out of the 23 projects with actors from various countries, 8 were unsuccessful. Data tables helped us to create a clear idea about each case separately, which we later used to compare these cases to each other. We then grouped the cases that use same pathways together for easier analysis. We have 8 possible combinations of conditions that the cases might fit in these configurations.

As it is shown on the combination of the conditions, we noticed that in all of the four configuration that have led to positive outcomes, the condition of “No conflict” is always present. We observed that as long as there is no conflict, the project is most likely to have a positive outcome. The other two conditions, incentives and duration, could be present or absent. Therefore, only “no conflict” is a sufficient condition for the project to be successful.

The result of Boolean minimization is configuration number 6, which the ideal configuration and it represents almost 56% of the successful cases, the issue of limited diversity is inevitable in sociological research.

Companies face big challenges in maintaining the success of their business. The society is becoming very demanding and the pressure from governments and NGOs (nongovernmental organizations) or non-for-profit organizations is increasing. Therefore, companies need to establish a good strategic approach to these challenges. We believe that strategic partnerships would be an interesting choice that would help in exchanging resources and adapting to work with these organizations. Companies can improve their social and environmental performance and find new market opportunities through partnerships with civil society organizations, especially when they share common goals and motivations. Exchanging resources, knowledge and expertise will help in achieving more than what they could alone. These partnerships or relationships are complicated and challenging, but once it is evolved thoughtfully and established it will benefit all partners.

CONCLUSION

QCA provides an interesting method for a better understanding than it is possible using conventional quantitative methods. It compares cases as multiple configurations and examines the diversity and heterogeneity of these cases with regard to their different causally relevant conditions and contexts. It provides the possibility to combine classic in-depth qualitative analysis with systematic cross-case comparisons; in addition QCA can develop a logic explanation of social phenomena by associating cases' particularities and the combination of different conditions, unlike statistical analysis. QCA offers qualitative analysis during the analytical process for each case and when presenting the findings the researcher needs to grasp the data of all the cases. We recommend that in-depth qualitative studies analyzing collaboration process, the start of the collaboration and how it evolves, what keeps the collaboration established and what causes the irruption of the collaboration. QCA can be

usefully applied to research designs involving small and intermediate-size. It is a powerful tool for the analysis of causal complexity which involves different combinations of causal conditions, capable of generating the same outcome. Moreover, QCA also facilitates a form of counterfactual analysis that is grounded in case-oriented research practices. QCA allows the identification of multiple causal pathways which lead to the same outcome. We concluded that the condition “NO conflicts” leads to a positive outcome. In other words, no conflict is sufficient for a positive outcome. One limitation of this study is inherent to QCA. The number of configurations increases exponentially with the addition of more conditions. Therefore we could not include more conditions. A recommendation for further studies is that to add more conditions such as inter-organizational diversity, in other word the origin or the actors. Another prospective for the future work would be comparing multi-actor collaboration with inter-firms collaboration in order to question the differences between these different types of collaboration.

REFERENCES

- ASEAN Briefing (2015) Incentives for Renewable Energy Investment In ASEAN. Singapore: N.p., 2015. Web. 22 May 2016.
- Barkema, H. G., & Schijven, M. (2008). How do firms learn to make acquisitions? A review of past research and an agenda for the future. *Journal of Management*, 34 (3), 594-634.
- Business for Social Responsibility (2016). Building the South China Energy Conservation. China: N.p., 2010. Web. 18 Apr. 2016.
- Den Hond, F., de Bakker, F. G., & Doh, J. (2015). What prompts companies to collaboration with NGOs? Recent evidence from the Netherlands. *Business & Society*, 54 (2), 187-228.
- European Commission (2016). EU Strengthens Collaboration On Sustainable Energy And Climate Change With Six African Countries And The Indian Ocean Commission. 2015. Web. 20 Apr. 2016.
- Freeman, R. E. (2010). Implementing and Monitoring Stakeholder Strategies. In *Strategic Management: A Stakeholder Approach* (pp. 154–192) Cambridge University Press, Cambridge
- Freeman, R. E. & McVea, J. (2001). A stakeholder approach to strategic management. Working Paper No. 01-02
- Gray, B. & Stites, J. (2013) Sustainability through Partnerships: Capitalizing on Collaboration. London, Ontario: Network for Business Sustainability
- Gray, B. (1989). Developing a Theory for Collaboration. *Collaborating: Finding common ground for multiparty problems* (pp. 226–245) New Jersey, Jossey-Bass.
- Haynes, K. T., & Hillman, A. (2010). The effect of board capital and CEO power on strategic change. *Strategic Management Journal*, 31(11), 1145-1163.
- Ingabire, C. M., Kateera, F., Hakizimana, E., Rulisa, A., Van Den Borne, B., Muvunyi, C., & Alaii, J. (2016). Stakeholder engagement in community-based malaria studies in a defined setting in the eastern province, Rwanda. *Mediterranean Journal of Social Sciences*, 7 (2), 188-196.
- International Renewable Energy Agency, 2014, Evaluating Renewable Energy Policy: A Review of Criteria and Indicators for Assessment, IRENA, Abu Dhabi, United Arab Emirates.
- Janowicz-Panjaitan, M., & Noorderhaven, N. G. (2009). Trust, calculation, and interorganizational learning of tacit knowledge: An organizational roles perspective. *Organization Studies*, 30 (10), 1021-1044.
- Legewie, N. (2013). An introduction to applied data analysis with qualitative comparative analysis. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 14 (3), 1-45.
- McDonald, R. E., & Madhavaram, S. (2007). What firms learn depends on what firms know: the implications of prior knowledge for market orientation. *Marketing Management Journal*, 17 (1), 171-183.
- Mondal, P. (2013). What is the Importance of Sustainable Development? Web. 22 Apr. 2016.
- Örtenblad, A. (2001). On differences between organizational learning and learning organization. *The learning organization*, 8 (3), 125-133.
- Perrin, A., & Rolland, N. (2007). Mechanisms of Intra-Organisational Knowledge Transfer: The Case of a Global Technology Firm. *M@n@gement*, 10 (2), 25-47.
- Pfeffer, J. & Salancik, G. (1978). *The External Control of Organizations: A Resource Dependence Perspective*, Stanford, Stanford Business Classics.
- Pfeffer, J. (1992). Understanding power in organizations. *California management review*, 34 (2), 29-50.

- Rashman, L., Withers, E., & Hartley, J. (2009). Organizational learning and knowledge in public service organizations: A systematic review of the literature. *International Journal of Management Reviews*, 11 (4), 463-494.
- Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J. & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of environmental management*, 90 (5), 1933-1949.
- Rihoux, Benoît, & C. Ragin. (2009) *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. New York, Sage.
- Schneider, C. Q., & Wagemann, C. (2010). Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. *Comparative Sociology*, 9 (3), 397-418.
- Schneider, C. Q., & Wagemann, C. (2012). *Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press.
- Smith, N. C. (2003). Corporate social responsibility: Whether or how? *California Management Review*, 45 (4), 52-76.
- Szulanski, G. (2003). *Sticky knowledge: Barriers to knowing in the firm*. New York, Sage.
- Thomas, J., O'Mara-Eves, A., & Brunton, G. (2014). Using qualitative comparative analysis (QCA) in systematic reviews of complex interventions: a worked example. *Systematic reviews*, 3 (1), 679-706.
- United Nations (2016). *Partnerships Key to Implementing New Sustainable Development Agenda*. New York: N.p., 2015. Web. 10 May 2016.
- Wolf, K. D. Scherer, A.G. Palazzo, G. (Eds.) (2008). *Emerging patterns of global governance: the new interplay between the state, business and civil society. Handbook of research on global corporate citizenship*, (pp. 225-248), Camberley Edward Elgar Publishing.