

Sustainable public value reporting of electric utilities

Sustainable
public value
reporting

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Abstract

Purpose – The purpose of this paper is to investigate the status quo of Global Reporting Initiative (GRI)-based sustainable public value (SPV) reporting by electric utilities. Furthermore, the study attempts to find out whether a stock exchange listing and/or a public ownership are positively associated with electric utilities' reporting regarding their contributions to a sustainable development (SD) or not.

Design/methodology/approach – An empirical analysis of sustainability reports published by electric utilities from 28 different countries all over the world is carried out. The investigation is based on a documentary analysis of 83 GRI G4 reports.

Findings – The findings show that electric utilities' coverage of GRI indicators of the electric utilities sector disclosures varies between, as well as within, the different categories of the GRI guidelines and that the coverage of sector-specific indicators is often lacking behind the general coverage rates. Furthermore, the study reveals that a stock exchange listing is positively associated with electric utilities' GRI-based SPV reporting. In contrast, public ownership does not show a significant association.

Originality/value – Electric utilities have a significant influence on SD. They operate in a regulated environment that is targeted at utilizing electric utilities for economic and environmental public policy objectives. Against that background, the study discusses which issues of SPV creation are reported by electric utilities that use the GRI guidelines and therefore brings together the public value (PV) and the sustainability community.

Keywords Global Reporting Initiative, Documentary analysis, Electric utilities, Sustainable public value reporting

Paper type Research paper

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1. Motivation and research questions

As an alternative approach to New Public Management (NPM) for public sector organizations (PSOs), the public value approach (PVA), also referred to as public value (PV) theory, PV paradigm, PV concept or PV management, has emerged in the last decades (Bryson *et al.*, 2014; Moore, 2014; O'Flynn, 2007). Compared to NPM, the PVA follows a post-competitive paradigm and heightens the focus on citizenship, democratic values and collaborative governance. PVs include individual and collective values, whereby mostly governments and to a lesser degree also other regulative bodies acting as guarantors or authorizing authorities (Bryson *et al.*, 2014; Moore, 2014; Moulton, 2009). Recent literature reviews of the PVA show that, after more than two decades of research, PV is still a ubiquitous, multi-faceted term (Hartley *et al.*, 2017; Van der Wal *et al.*, 2015) with the majority of publications on PV creation lacking an explicit PV definition (Van der Wal *et al.*, 2015).

Much of the research on the PVA concentrates on identifying and prioritizing PVs (Bryson *et al.*, 2014). Though PVs are not well-defined, there is a consensus that an unsustainable development constitutes a big danger for PV creation because sustainable development (SD) is of vital importance for mankind and our planet (Swilling, 2011; United Nations, 2015). Linking sustainable development (SD) and PV leads to the concept of sustainable public value (SPV).

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So far, the only attempt to define what SPV is can be found in Farneti and Dumay (2014). These authors suggest a combination of Dumay *et al.*'s (2010) concept of sustainable value, which takes into account that "society is demanding more from both private and public organizations in terms of how they contribute to sustainability" (Farneti and Dumay, 2014, p. 377), and the intergenerational perspective of the Brundtland Report's definition (WCED, 1987), which stresses that organizations need to consider how they will deliver (public) services satisfactorily in future.

Building on this understanding of SPV raises the question how it can be measured. Although various attempts can be found to measure PV, conceptualizing and reporting on SPV has been a neglected area in the PV research and the SD literature alike (Dumay *et al.*, 2010; Farneti and Dumay, 2014; Swilling, 2011). On the accountability side, this calls for an appropriate reporting system which must go beyond a mere managerialistic approach (Dumay *et al.*, 2010; Farneti and Dumay, 2014). In this vein, SPV reporting must not only focus on financial performance but also on the environmental and social dimension.

Organizations, which decided to report on their contribution to SD, can choose from a large variety of sustainability reporting (SR) guidelines. So far, the reporting framework of the Global Reporting Initiative (GRI) is the most established one (KPMG International, 2017). The GRI defines SR as "[...] an organization's practice of reporting publicly on its economic, environmental, and/or social impacts, and hence its contributions – positive or negative – towards the goal of sustainable development" (GRI, 2016, p. 2).

Considering the implementation rates of SR by PSOs and the general perception of its importance for them, a contradiction exists. While reporting on the sustainable performance is regarded as particularly relevant for PSOs due to the central role they should play in the delivery of SD (Birney *et al.*, 2010; Dumay *et al.*, 2010), the implementation rates are lagging behind (Goswami and Lodhia, 2014; Greiling *et al.*, 2015; Guthrie and Farneti, 2008) to those of private stock-listed organizations, where it is a widely institutionalized practice (Cho *et al.*, 2015).

While prior empirical research on the PVA has primarily focused on public administrations, different government levels and selected fields of public enterprises (e.g. public broadcasting companies and cultural organizations), electric utilities have not been addressed. However, under SPV aspects electric utilities are an interesting field to study because private and public electric utilities provide important public infrastructure services in the areas of generation, transmission, distribution and retail of electricity. The contributions of electric utilities to financial and environmental sustainability have been under critique by critical stakeholders for more than three decades. The starting point for a critical debate was NPM that advocated market liberalization for reducing welfare losses caused by potential or real economic inefficiencies of state-owned electric utilities (Pollitt, 2012) in the 1980s. Market liberalization has led to a new layer of public accountability in the form of sector regulators for preventing welfare losses by market failures and for monitoring public interest-driven universal service obligations (Rentsch and Finger, 2015). Electric sector regulation (e.g. on access, availability, affordability for private households, capacities, service quality and tariffs) is an attempt to guarantee the implementation of PV concerns. Additionally, electric utilities face criticism with respect to their environmental performance. This critique is not new if one recalls the disasters in nuclear power plants or the unsolved problems of dealing with nuclear waste. Today, electric utilities are still among the biggest users of fossil fuels and among the biggest greenhouse gas emitters and, therefore, have a large influence on ecological SD. Electric utilities are in many countries more and more under pressure to play an important role to counteract the negative consequences of the climate change and to contribute to the ambitious de-carbonization objectives of national programs after the 2015 Paris Agreement. An additional motivation for focusing on electric utilities in the context of SPV reporting is that the GRI has issued sector disclosures which take into account the specific role electric utilities play for SD.

Against this background, the paper investigates the status quo of GRI-based SPV reporting by electric utilities. Furthermore, it tries to find out whether stock exchange listing

and/or public ownership, two factors that suggest a higher motivation for a more comprehensive disclosing behavior, is positively associated with electric utilities' SPV reporting practices by answering the following research questions:

- RQ1.* What economic, environmental and social GRI indicators do electric utilities disclose in order to demonstrate their SPV?
- RQ2.* Are electric utilities' stock exchange listing and/or public ownership associated with a higher compliance with the indicators suggested by the GRI?

The remainder of the paper is organized as follows: Section 2 provides a brief overview of approaches toward (sustainable) PV reporting as well as an introduction to the GRI and its guidelines. Furthermore, a brief overview of the literature concerning SR by electric utilities is given. Section 3 presents an integrated theoretical framework addressing micro-, meso- and macro-level motives for SPV reporting. Subsequently the framework is used for developing hypotheses regarding stock exchange listing and public ownership. Section 4 describes the methodology applied and provides information on characteristics of the 83 examined electric utilities. In Section 5, results are presented that are discussed in Section 6. Section 7 draws a conclusion, points out limitations and provides directions of further research.

The paper aims at contributing to the body of research in the following ways. First, it adds to a small body of research by empirically investigating the status quo of SPV reporting in the sector of electric utilities, a sector that is crucial for SD. While prior studies on PV creation have focused on individual organizations or societies, this paper addresses SPV reporting at an industry level. Second, it examines electric utilities' SPV reporting practices according to GRI G4 in combination with the electric utilities sector disclosures, which is to the authors' knowledge absolutely new. Third, it presents a multi-perspective theoretical framework as a model for explaining why electric utilities, which are listed on a stock exchange or are publicly owned, have a higher motivation for more comprehensive SPV reporting practices.

2. SPV reporting by electric utilities

2.1 *Public value reporting and the GRI*

There are at least four different approaches to determine what PV is. In all the approaches, PV goes beyond the mere idea of an efficient delivery of public services to citizens as customers. According to Moore, PV is created by public managers through the activities of PSOs (Hartley *et al.*, 2017). In Moore's (2012) framework, the main addressees of PV creation are the citizens. The decision what is a PV is made by governmental bodies in their role as PV authorizing agencies.

Bozeman puts normative PVs in the center of his approach (Bozeman, 2007; Bozeman and Johnson, 2015). He relates the idea of PVs to democratic and constitutional values as well as public policy objectives as expressions of collective preferences. According to him, PV creation needs a shift in value priorities toward equity, community and a pragmatically determined public interest (Bozeman, 2007).

A psychological approach toward PVs was introduced by Meynhardt. According to Meynhardt, PV is about the subjective experiences how different types of basic needs of individuals are met by private and public organizations (Meynhardt, 2009; Meynhardt *et al.*, 2017).

The broadest PV approach can be found in Benington (2011), who focusses on welfare to the general public by contributions to the public sphere (Benington, 2011; Bryson *et al.*, 2014; Hartley *et al.*, 2017). According to Benington (2011), the public sphere is "[...] a democratic space which includes, but is not coterminous with, the state within which citizens address their collective concerns, and through which individual liberties have to be protected. This leads to a redefinition of public values of [...]" "What does the public most value?" but also in the term "What adds value to the public sphere?" (p. 31).

While there is a rapidly growing body of research on identifying PVs, PV production as a co-creation process as well as PV management (Benington and Moore, 2011; Bozeman, 2007; Hartley *et al.*, 2017; Moore, 2003), much less attention is paid to identifying frameworks how to account for PV creation.

Within the emerging body of research on PV reporting, two different approaches can be distinguished. First, there are PV inventories and PV atlases directed to account for PV creation on a macro-level. Second, approaches exist focusing on the PV creation of an individual public sector entity, ranging from normative suggestions for PV accounts, via normative PV scorecards to normative PV management control systems (Bozeman, 2007; Meynhardt *et al.*, 2014; Moore, 2003, 2013; Spano, 2009, 2014) as well as studies focusing on the sector-specific PV reporting approaches (in particular for museums and public broadcasting companies) (Maggiore, 2011; Scott, 2006, 2009).

So far, no generally accepted comprehensive PV reporting framework exists. Quite contrary, a diverse body of literature with normative suggestions can be found. Common topics are that PV reporting must go beyond the financial bottom line and should also include an evaluation of societal contributions not only on the individual level but also on the level of collective values and used societal resources (in form of authorizing bodies). The included PVs need to be specified individually either on the various levels of governments, public service provision networks or as the micro-level reporting approaches suggest on the level of reporting entities. PV accounting aims at taking stock of the PV created as well as the used assets and the negative outcomes.

In the light of the lack of consensus regarding PV reporting, it is not surprising that despite the growing importance of the contributions of public and private organizations toward sustainability in the sense of the Brundtland Report (WCED, 1987), the Rio Declaration (UNCED, 1992) or the United Nations Sustainability Development Millennium Goals (United Nations, 2015) and the Paris Agreement (UNFCCC, 2015) as well as the vital importance of SD in general (Swilling, 2011; United Nations, 2015), conceptualizing and reporting of SPV creation is at the very beginning. On the conceptional side, there is a need of coming to a transdisciplinary concept of SPV by including the ecosphere in the traditional socio-economic and political dimensions of the PVA in a better way (Swilling, 2011). Furthermore, Swilling calls for a much needed dialogue of the sustainability community and the PV community in order to come to a transdisciplinary understanding of SPV (Swilling, 2011).

Looking for concepts for assessing (sustainable) PV creation, Moulton (2009) points at various PV institutions, including regulatory institutions (e.g. governments and sector regulators) and normative-associative institutions, which articulate PV expectations and formulate evaluation standards for measuring the value creation. In the area of voluntary accountability arrangement governance codices, accreditation standards or sustainability guidelines are examples for such evaluation standards capturing PV creation. Based on the sociological institutionalism and resource dependency theory, Moulton (2009) identified different sources of PV: first, PVs originate from regulative institutions (laws and regulations like the Universal Declaration of Human Rights, Constitutions, Government policies and regulations from other public authority institutions). The second source of PVs includes cultural cognitive institutions that create a shared framing or understanding of social reality (Moulton, 2009). The third source includes normative institutions such as professional bodies (accreditation agencies and standard setters) and associative networks. These normative institutions formulate expectations that introduce a prescriptive, evaluative and (to a varying degree) obligatory dimension into social life (Moulton, 2009, based on Scott, 2003). In the context of social and environmental accounting, Bebbington *et al.* (2009) and Shabana *et al.* (2017) classify SR standards as a normative pressure providing a voluntary regulation which is considered as a proper organizational behavior. For this study, the third source is the most relevant one.

SR guidelines have an overlap with PV classifications, which embrace a much broader set of PVs at the macro-level. SR standards like the guidelines of the GRI articulate disclosing expectations regarding an organization's governance practices and triple bottom line performance. Therefore, GRI standards provide organizations an opportunity to demonstrate its contribution to SD. The GRI describes itself as "[...] an international, independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues such as climate change, human rights, corruption and many others" (GRI, n.d.a). Already in this mandate PV aspects are obvious. To facilitate organizations' SR, the GRI provides standard disclosures and reporting principles that offer guidance throughout the reporting process (GRI, n.d.b).

Even though GRI claims that its guidelines are sector neutral, it additionally provides sector-specific guidelines for certain sectors which cover specific sector-relevant aspects. Such sector-specific guidelines aims at bridging the gap between concepts which focus on PV creation on the macro-level and approaches which consider PV creation on the micro-level or in other words at the organizational level. The GRI sector disclosures for electric utilities are targeted to "[...] cover key aspects of sustainability performance that are meaningful and relevant to the Electric Utility sector and which are not sufficiently covered in the [...]" sector neutral guidelines (GRI, 2013b, p. 3).

Concerning SPV, the sector disclosures for electric utilities refer to the particular role of electric utilities for sustainability: "Electric utilities provide essential and vital services to society and users. The services provided are crucial to the development and security of economies in all countries. Economic development must be achieved in a sustainable manner in order to protect key resource systems and to provide for future generations" (GRI, 2013b, p. 9).

The most recent sector disclosures are based on the G4 guidelines, containing general and specific standard disclosures. General standard disclosures – which cover seven categories, namely, strategy and analysis, organizational profile, identified material aspects and boundaries, stakeholder engagement, report profile, governance as well as ethics and integrity – describe an organization and the reporting process itself. Specific standard disclosures provide information regarding the management and performance of various aspects of sustainability (see Table I for an overview) (GRI, 2013b).

2.2 SR by electric utilities

While there is a substantial body of literature on the quality and extent of SR across industries as well as on specific industries, the research on how electric utilities perform with respect to this voluntary accountability practice is in its infancy.

Alrazi *et al.* (2010) investigated the quality and determinants of environmental reporting, especially the disclosure of CO₂ emissions and the overall environmental information disclosed. Thereby, the authors performed a content analysis of 51 reports published by electric utilities of different countries. The analysis is based on the GRI framework. The study revealed that, in general, reporting quality was relatively high, but the disclosure of performance indicators lacks behind. Furthermore, they found out that companies located in code law countries published higher quality environmental information compared to companies located in common law countries. Law enforcement as wells as the size of the company was positively associated with disclosing CO₂ emissions.

Haro de Rosario *et al.* (2011) investigated the SR practices of 40 electric utilities. The authors found out that the disclosures on the environmental dimension are more comprehensive than the economic and social one. Two years later, Chang (2013) investigated drivers of environmental reporting by examining 25 listed Chinese electric utilities. The author revealed that state ownership, ownership concentration, financial leverage and long-term debts positively influence environmental reporting. In the same year, Mosene *et al.* (2013) performed a longitudinal content analysis of seven Spanish wind energy companies' GRI reports.

Table I.
Specific standard disclosures of the electric utilities sector disclosures^a

Economic (EC)				Environmental (EN)			
Aspect		Indicator		Aspect		Indicator	
Economic performance		EC1, EC2, EC3, EC4		Materials		EN1, EN2	
Market presence		EC5, EC6		Energy		EN3, EN4, EN5, EN6, EN7	
Indirect economic impacts		EC7, EC8		Water		EN8, EN9 EN10	
Procurement practices		EC9		Biodiversity		EN11, EN12, EN13, EN14, EU13	
Availability and reliability		EU10		Emissions		EN15, EN16, EN17, EN18, EN19, EN20, EN21	
Demand-side management		No indicator		Effluents and waste		EN22, EN23, EN24, EN25, EN26	
Research and development		No indicator		Products and services		EN27, EN28	
Plant decommissioning		No Indicator		Compliance		EN29	
System efficiency		EU11, EU12		Transport		EN30	
				Overall		EN31	
				Supplier environmental assessment		EN32, EN33	
				Environmental grievance mechanisms		EN34	
Labor practices and decent work (LA)		Human rights (HR)		Society (SO)		Product responsibility (PR)	
Aspect	Indicator	Aspect	Indicator	Aspect	Indicator	Aspect	Indicator
Employment	LA1, LA2, LA3, EU15, EU17, EU18	Investment	HR1, HR2	Local communities	SO1, SO2, EU22	Customer health and safety	PR1, PR2, EU25
Labor/Management relations	LA4	Non-discrimination	HR3	Anti-corruption	SO3, SO4, SO5	Product and service labeling	PR3, PR4, PR5
Occupational health and safety	LA5, LA6, LA7, LA8	Freedom of association and collective bargaining	HR4	Public policy	SO6	Marketing communications	PR6, PR7
Training and education	LA9, LA10, LA11	Child labor	HR5	Anti-competitive behavior	SO7	Customer privacy	PR8
Diversity and equal opportunity	LA12	Forced or compulsory labor	HR6	Compliance	SO8	Compliance	PR9
Equal remuneration for women and men	LA13	Security practices	HR7	Supplier assessment for impacts on society	SO9, SO10	Access	EU26, EU27, EU28, EU29, EU30
Supplier assessment for labor practices	LA14, LA15	Indigenous rights	HR8	Grievance mechanisms for impacts on society	SO11	Provision of information	No Indicator

(continued)

Table I.

Labor practices grievance mechanisms	LA16	Assessment	HR9	<i>Disaster/ Emergency planning and response</i>	No indicator
		Supplier human rights assessment	HR10, HR11		
		Human rights grievance mechanisms	HR12		

Note: ^aAspects and indicators that are exclusively covered by the electric utilities sector disclosures are written in italic

The authors focused on the environmental dimension of SR. The study revealed that differences in reporting quantity and quality are reduced over time. Also, Rosa *et al.* (2013) looked at the implementation of SR in electric utilities in the period from 1999 to 2010. The study provides an insight into the GRI reporting practices and the assurance levels of 81 Brazilian, 78 US and 47 Spanish companies. In the following year, Camargos *et al.* (2014) investigated sustainability reports of 12 Brazilian electric utilities to ascertain how these firms are using the GRI guidelines for their reporting practices. The authors concluded “[...] that the adopted sustainability concept, the adequacy to the GRI principles, the choice of indicators and the quality of the information reported are quite variable among different companies” (p. 127).

Bahari *et al.* (2016) analyzed the reporting of greenhouse gas emissions of electric generating companies in China, India and Japan. Thereby, the authors investigated information from annual reports, sustainability reports and websites. The study revealed that only 45 of 90 electric utilities published information about greenhouse gas emission. Moreover, Bahari *et al.* (2016) found out that the reporting electric utilities provided little information.

One year later, Sartori *et al.* (2017) assessed the sustainability performance of 17 Brazilian electric utilities based on the GRI guidelines. The authors concluded that the electric utilities “[...] systematically disclose an incomplete picture of how their activities affect society” (p. 49).

Talbot and Boiral (2018) investigated the reporting performance regarding two chosen environmental indicators of the GRI guidelines of 21 energy sector companies over five years. The authors concluded “[...] that it will be difficult or impossible for stakeholders to reasonably assess, monitor and compare companies’ climate performance on the basis of these reports” (p. 367).

Summing up, this brief literature review has shown that most of the studies have focused on the environmental dimension of SR. Furthermore, they have some significant limitations. They either have a single country focus, are rather descriptive, do not provide a theoretical framework or do not take into account the GRI electric utilities sector disclosures.

3. Theoretical framework and hypotheses

3.1 Theoretical framework

The theoretical framework applied in this paper combines the lenses of economic institutionalism – agency theory – as well as sociological institutionalism – stakeholder theory and legitimacy theory – to address motives and variations in the reporting behavior of electric utilities on the micro-, meso- and macro-level. More than one theoretical lens is used because theoretical pluralism on the motives for SPV reporting is very useful, since it provides accumulating insights and it is more likely able to map a wider range of social reality (Parker, 2005; Spence *et al.*, 2010).

As displayed in Figure 1, electric utilities are constituted by different internal stakeholder groups such as employees or managers and surrounded by various external ones such as customers, non-governmental organizations (NGO), citizens or regulatory agencies.

However, the reputation on SPV creation of electric utilities is at best a mixed one. As addressed in the introduction, electric utilities are confronted with criticism of external stakeholders concerning negative welfare effects. While at first state-owned electric utilities were confronted with such a critique, this was extended to private electric utilities when cases of regulatory capture and the emergence of mixed oligopolies in liberalized EU energy markets became apparent. So far, market liberalization has not kept the promise of cheaper energy prices for the end-consumer (Pollitt, 2012). Moreover, nuclear power plant disasters in the past decades also had negative effects on the sector's reputation toward SPV creation.

Agency theory focusses on information asymmetries between a principal and an agent (Hill and Jones, 1992; Jensen and Meckling, 1976); in the analyzed case between the electric utilities and its stakeholders regarding their organizational contribution to SD. To reduce those information asymmetries and for enabling stakeholders a screening about the SPV created, an electric utility can decide to signal its contributions to a SD by publishing information on its sustainability performance. By providing information about an organization's triple bottom line performance, its commitment toward sustainability and its activities as a good citizen, the reporting entity aims at positively influencing its reputation as a sustainable enterprise (Comyns and Figge, 2015).

Strategic stakeholder theory focuses on interactions between an organization and its internal and external stakeholders. However, not all stakeholder groups have the same stakeholder power. It depends on how much they can make an impact on the electric utility. Hence, active stakeholders (e.g. managers or customers) and passive stakeholders (e.g. taxpayers or citizens who are not customers) exist. Especially the former ones are of importance for strategic stakeholder theory. Good stakeholder relationships are of major relevance for ongoing success. Organizations that take the interests or information expectation of its stakeholders into account ensure a constant availability of resources and exploit a strategic positioning advantage. Satisfying needs and demands of strategically relevant stakeholders is seen as a win-win situation which unlocks an additional potential for value creation (Freeman *et al.*, 2004, 2010; Freeman, 2010).

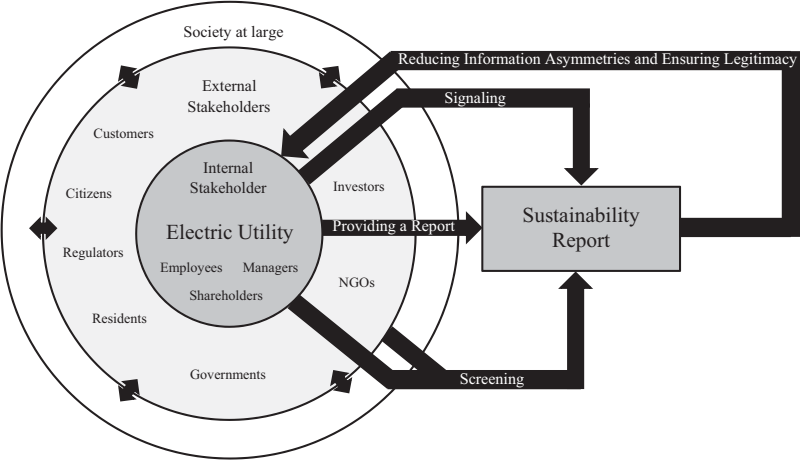


Figure 1.
Theoretical framework

Legitimacy theory broadens the perspective by focusing on interactions between an organization and the society at large (Gray *et al.*, 1995). Legitimacy theory is based on the view that organizations are social systems that are acting within the society by a social contract (Shocker and Sethi, 1973). Organizations have to demonstrate that their actions are in line with prevailing social norms, beliefs and (public) values. Legitimacy is seen as an essential resource for the survival of an organization (Deegan, 2014; Dowling and Pfeffer, 1975). If there is a substantial incongruence between the societal expectations and the organizational actions, organizational legitimacy is threatened (Dowling and Pfeffer, 1975; Suchman, 1995). A substantial legitimacy gap can endanger an organization's permission to exist (Cho *et al.*, 2015; Dowling and Pfeffer, 1975). Today public and private electric utilities have to prove how they create SPV in order to legitimize themselves, since customers, supervisory bodies, including sector regulators, and critical NGOs have societal expectations regarding the sustainability performance. In this vein, SPV reporting is an instrument for electric utilities which helps organizations to demonstrate their contributions to SD and the congruence between society's expectations and organizational actions (Comyns and Figge, 2015; Guthrie and Parker, 1989).

3.2 Hypotheses

H1: stock exchange listing. In their study, da Silva Monteiro and Aibar-Guzmán (2010) suggest that a stock exchange listing affects the extents of SR. Listed companies are characterized by a dispersed ownership structure. A dispersed ownership leads to huge information asymmetries between a firm and its shareholders, and thus increases, in line with agency theory, the incentive to reduce those asymmetries by disclosing additional information (Brammer and Pavelin, 2008; Hahn and Kühnen, 2013). In the view of stakeholder prioritization, investors represent a powerful stakeholder group, on which listed companies depend. Thus, corporations have to take their interests into account (Mitchell *et al.*, 1997; Neu *et al.*, 1998). Since investors are becoming more and more interested in companies' contributions to a SD, incentives in providing a comprehensive SPV reporting have increased (da Silva Monteiro and Aibar-Guzmán, 2010). In addition, signaling a company's sustainability performance lowers investors' screening costs (Albers and Günther, 2011). Furthermore, specialized sustainability rating agencies are offering their services to institutional investors by evaluating the sustainability performance of enterprises. Taking into account that electric utilities operate in an area where environmental risks exist is an additional motive to disclose to shareholders and sustainability rating agencies as part of their risk management. So far, this argumentation refers to arguments which concentrate on financial capital providers and, therefore, on private value motives.

In the view of strategic stakeholder theory and legitimacy theory, listed companies are exposed to more public attention and transparency pressure exerted by a broad range of stakeholders and institutional actors such as legislation, banks or stock exchange supervisory authorities. Those expectations and regulations increase the legitimation needs to maintain the license to operate (da Silva Monteiro and Aibar-Guzmán, 2010; Gallo and Jones Christensen, 2011). In this vein, stock-listed electric utilities are under higher information disclosure pressures than their non-stock-listed counterparts. Additionally, reporting on sustainability aspects is an institutionalized practice in large stock-listed corporations, a fact that increases the pressure to report comprehensively on the contribution to SD for all listed companies:

H1. A stock exchange listing is positively associated with electric utilities' SPV reporting practices.

H2: public ownership. PSOs have to implement ambitious and ambiguous public benefit-oriented mandates, as evidenced in the PVA. They are therefore under higher

stakeholder pressures to demonstrate how they perform with respect to their public missions. Under legitimation aspects, the existence of PSOs is dependent on how they are performing with respect to PV objectives. PSOs have to disclose not only information about the financial performance but also about their contribution to politically determined PV objectives. Today a wide range of public sector-specific public accountability obligations exist, ranging from specific information requirements by courts of audits, competition regulators, to those by parliaments, parliamentary committees and public owner representatives in governance boards. In comparison to private for-profit companies, PSOs are facing higher political legitimation needs and are accountable to a much wider range of stakeholders (Cormier and Gordon, 2001). Electric utilities offer services that are under monitoring by a sector regulator. Sector regulation was introduced under NPM where state-owned electric utilities were regarded as inefficient. From the beginning of sector regulations, state-owned electric utilities were under particular scrutiny. Unlike their private counterparts, state-owned electric utilities since then have been obliged to defend themselves against the accusations of being inefficient. More than the private counterparts, state-owned public utilities are seen as an instrument to implement ambitious climate change objectives by their owners. Summing up, state-owned electric utilities are under a higher level of public scrutiny with respect to the value they add to the public sphere, and therefore have to provide more information on the creation:

H2. A public ownership is positively associated with electric utilities' SPV reporting practices.

4. Methodology and sample

4.1 Methodology

In order to investigate the research questions, an analysis of sustainability reports was performed. The reports were obtained from the publicly available GRI database. The investigation includes every report uploaded until 31 December 2016 by an electric utility located anywhere according to the G4 guidelines of the GRI in English or German. In case that an electric utility has already published more than one G4 report, only the most current one was chosen, to avoid overrepresentation of a single corporation. This approach leads to a sample of 83 GRI reports.

The reports themselves were assessed regarding the 105 specific standard disclosures of the GRI G4 electric utilities sector disclosures displayed in Table I. The assessment is based on a binary scale: 0 if an organization does not report on an indicator or 1 if an organization does. Subsequently, a total compliance rate (TCR), which served as dependent variable for the *t*-tests, was calculated as follows:

$$TCR = \frac{\sum \text{Indicators disclosed}}{105}.$$

4.2 Sample

The 83 electric utilities investigated are involved in generation, transmission and/or distribution of energy and headquartered in 28 different countries all over the world. Regarding size, in terms of number of employees, most of the electric utilities can be classified as very large organizations (see Figure 2). The companies can be distinguished by their ownership structure. Of the 83, 50 electric utilities are listed on the stock exchange. Furthermore, it can be noted that 38 companies are publicly owned or have at least a majority shareholding of the state.

Country	Number	Country	Number
USA	12	Indonesia	2
South Korea	6	The Netherlands	2
Germany	5	Poland	2
Italy	5	Qatar	2
Canada	5	Thailand	2
Switzerland	5	Colombia	1
Australia	4	Latvia	1
Brazil	4	New Zealand	1
India	4	The Philippines	1
Russia	4	Portugal	1
Austria	3	Saudi Arabia	1
Spain	3	Sweden	1
Finland	2	Singapore	1
Hong Kong	2	Turkey	1

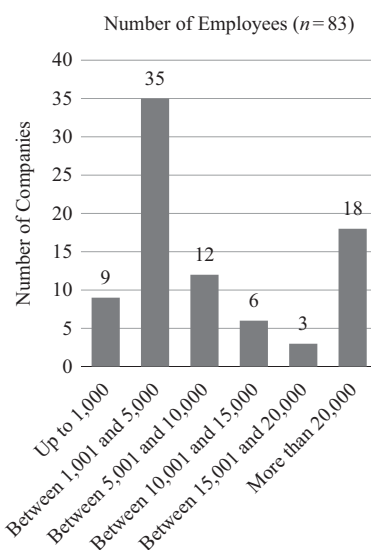


Figure 2.
Electric utilities'
characteristics

5. Results

5.1 GRI indicators disclosed

Considering the results of the six different categories – economic, environmental, labor practices and decent work, human rights, society and product responsibility (the social dimension of sustainability consists of the latter four categories) – of the GRI G4 guidelines, substantial differences between and within the categories can be found. In the category of the economic indicators, the most frequently disclosed indicators – EC1 and EC2 – are dealing with the direct economic value generated and distributed as well as with financial implications and other risks and opportunities for the organization's activities due to climate change. Taillight in the economic category is the indicator – EC5 – that demands information about the ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operations. Not even two-thirds of the electric utilities report on the sector-specific indicators: EU10, EU11 and EU12 (see Figure 3) (GRI, 2013a).

High variations can be found in the environmental category. The most often disclosed environmental indicators – EN3, EN8, EN15 and EN23 – cover the issues energy consumption

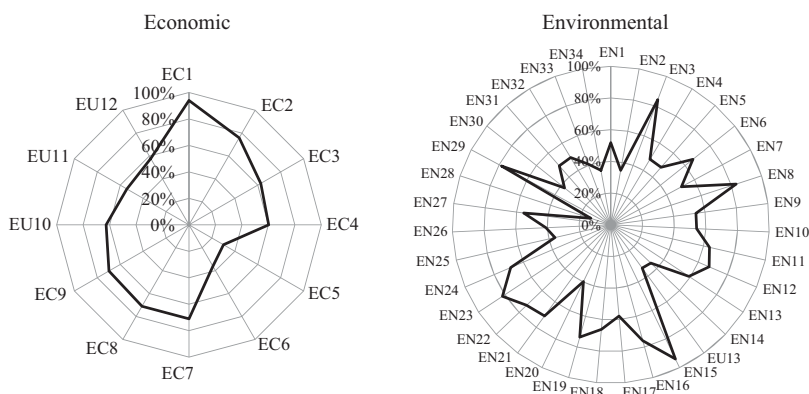


Figure 3.
Economic and
environmental category

within the organization, total water withdrawal by source, direct greenhouse gas emissions and total weight of waste by type and disposal method. Only one-third of the electric utilities take the sector-specific indicator, EU13, into account (see Figure 3) (GRI, 2013a).

Figures 4 and 5 present the findings regarding the social bottom line. Like in the other two dimensions, the sector disclosures include modifications which are the results of an instrumentalization of electric utilities in the public interest. In the category of labor practices and decent work, electric utilities most frequently disclose the indicators LA1, LA6 and LA12. These indicators cover the following issues: total number and rates of new employee hired and employee turnover by age group, gender and region; type of injury and rates of injury, occupational diseases, lost days and absenteeism; and total number of work-related fatalities by region and by gender as well as composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership and other indicators of diversity. The sector-specific indicators, EU15, EU17 and EU18, have not reached particularly high compliance rates (CRs) again (see Figure 4). Concerning human rights, electric utilities most often report on the indicators, HR3 and HR4, which deal with the total number of incidents of discrimination and corrective actions taken as well as the operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights (see Figure 4) (GRI, 2013a).

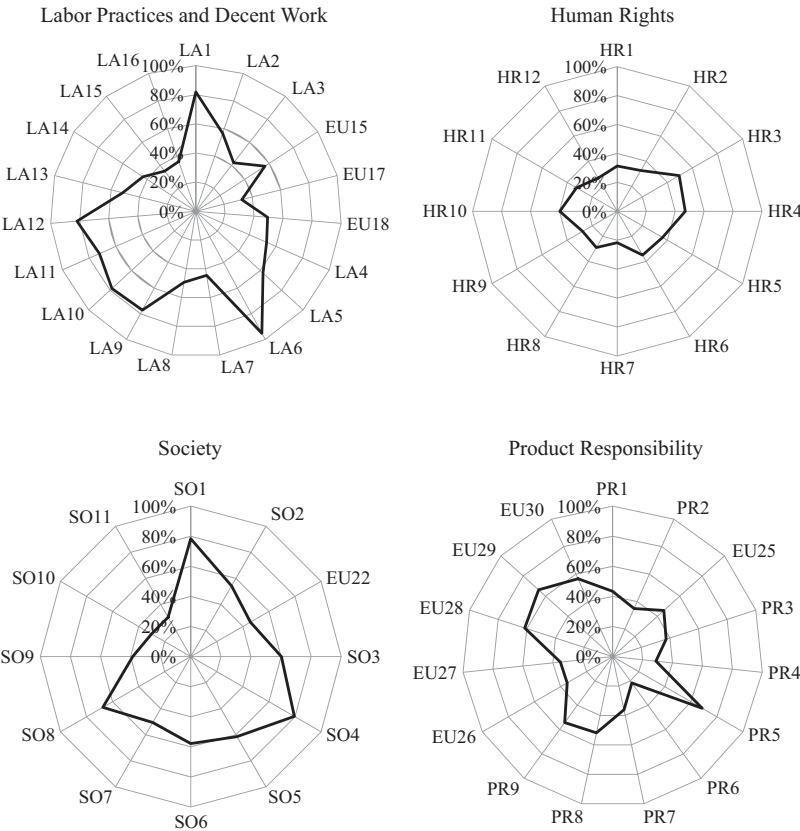


Figure 4.
Labor practices and
decent work, and
human rights category

Figure 5.
Society and product
responsibility category

The category society also shows high variations. The most often disclosed indicators are SO1 and SO4. These indicators demand the percentage of operations with implemented local community engagement, impact assessments, and development programs as well as the communication and training on anti-corruption policies and procedures. In comparison, the indicators SO10 and SO11, which deal with the significant actual and potential negative impacts on society in the supply chain and actions taken and the number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms, are seldom taken into account. Not even the half of the electric utilities respond to the sector-specific indicator EU22 (see Figure 5) (GRI, 2013a).

The indicators of the category product responsibility were considered to varying degrees. Electric utilities most frequently report on the indicators PR5 and EU29. These indicators deal with the results of surveys measuring customer satisfaction and the average power outage duration. In contrast, only few public utilities disclose the indicators PR4 and PR6, which demand the total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes as well as the sale of banned or disputed products. One to two-thirds of the electric utilities disclosed information on the sector-specific indicators, EU25, EU26, EU27, EU28, EU29 and EU30, which address the highly relevant aspect of access (see Figure 5) (GRI, 2013a).

In order to investigate the attention an electric utility gives to each category – economic, environmental, labor practices and decent work, human rights, society and product responsibility – a CR for every category was calculated as follows:

$$CR = \frac{\sum \text{Indicators disclosed within the category}}{\text{Number of Indicators within the category}}.$$

On average the economic category reached the highest CR (ECCR = 62.1 percent) followed by labor practices and decent work (LACR = 57.9 percent), environmental (ENCR = 56.4 percent), society (SOCR = 54.5 percent), product responsibility (PRCR = 45.1 percent) and human rights (HRCR = 34.0 percent).

5.2 Determining factors of the coverage of GRI indicators

On average, the investigated electric utilities reached a TCR of 52.9 percent. About one-quarter of the companies (20 of 83) achieved a TCR between 75 and 100 percent, and hence reported on a large number of GRI indicators. Slightly less than a third reached a TCR between 50 till below 75 percent (26 of 83) or between 25 till below 50 percent (24 of 83). The remaining 13 companies attained a TCR below 25 percent (see Figure 6):

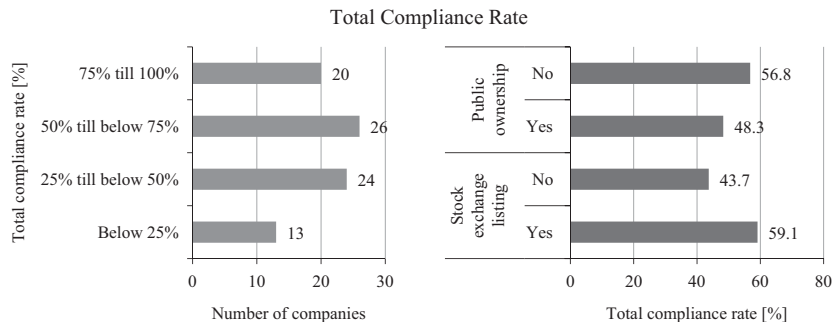
- H1. A stock exchange listing is positively associated with electric utilities' SPV reporting practices.
- H2. A public ownership is positively associated with electric utilities' SPV reporting practices.

Considering the ownership structure, only the stock exchange listing is positively associated with the coverage of GRI indicators. Electric utilities which are listed on the stock exchange reached a higher TCR than companies without a listing ($t(81) = 2.838, p = 0.006$). Therefore, H1 is confirmed. In contrast, a public ownership is not positively associated with the coverage of GRI indicators ($t(81) = 1.547, p = 0.126$). This leads to the rejection of H2 (see Figure 6).

6. Discussion

Regarding RQ1, the finding showed that CRs vary between 62 percent in the economic dimension and 34 percent in human rights, which is a sub-category within the social dimension. These results are in contrast to the study of Haro de Rosario *et al.* (2011), who

Figure 6.
Total compliance rate



found out that disclosing on the environmental dimension is superior to the other ones, but in line with the findings of Sartori *et al.* (2017), who also identified a predominance of the economic dimension. Additionally, the study revealed high variations between the different categories of the GRI guidelines, but also within the categories, a finding that is consistent with the analysis of Camargos *et al.* (2014).

Most of the categories have CRs between 55 and 62 percent. Electric utilities are on the way to a comprehensive SPV reporting, although there is quite some potential for improvement with 45 percent of the electric utilities having a TCR below 50 percent.

The finding that economic indicators have the lead within the CRs is not surprising because they can look back on a long tradition of being reported and some of the required information is annually disclosed in the financial statements. On the other hand, the reporting of human rights issues is a relatively new development. Furthermore, the category might involve sensitive information. Across sectors, SPV reporting often goes along with a low transparency on reputation damaging aspects. This leads to an unbalanced reporting practice. In critical accounting research, this is addressed under the slogans of impression management, greenwashing or organizational hypocrisy. Recalling the critique electric utilities are confronted within the area of their environmental performance, a CR of 56 percent in that dimension is problematic. For addressing critical stakeholder concerns and the specific governmental expectations electric utilities should play in contributing to ecological aspects, a higher CR in the environmental dimension would have been better. A greater transparency of environmental impacts or in other words a more comprehensive signaling of them could help to reduce prevailing information asymmetries and to increase electric utilities' legitimacy.

If one looks at the sector-specific indicators from the sector disclosures, the following can be stated. On average, they often have a lower CR than other indicators in the same dimension or sub-category. This is problematic because these indicators include areas that are under the specific attention of sector regulators. Here a higher CR would have been a signal that electric utilities address proactively public interest concerns and thus helps to demonstrate the SPV created.

With respect to *RQ2*, only stock listing is positively associated with the TCR (*H1*). This is in line with agency theory, strategic stakeholder theory and legitimacy theory, which suggest that stock-listed electric utilities have great incentives to signal voluntary information to shareholders or investors in order to receive their support.

Across the sectors, also other empirical studies confirm that stock-listed companies perform better in their compliance with SR or SPV reporting standards. For stock-listed companies SR is an institutionalized taken for granted practice and to a rising degree mandatory. A non-compliance results in negative evaluations by sustainability rating agencies which are under financing aspects critically taking the rising market share for green bonds and ethical investments into account. Furthermore, the comprehensive

signaling of SPV could also be seen as a proactive legitimation strategy in order to avoid a stricter legal regulation, which mostly affects listed companies at first.

The fact that a stock exchange listing is positively associated with electric utilities' TCRs (*H1*) and a public ownership is not (*H2*) is especially problematic under SPV aspects. The expectation for *H2* was that state-owned electric utilities have more incentives to signal their contributions to a SD due to rather heterogeneous stakeholder information needs caused by the democratic line of public accountability and their ambitious public benefit-oriented mandates. However, state-owned electric utilities are missing the chance to demonstrate their (sustainable) PV created. They do not use SPV reporting as an element for proactively addressing legitimacy expectations by a critical public and are not dealing proactively to the specific criticism they are confronted with by other public entities (audit commissions, sector regulator, parliamentary committees, etc.). The critical concerns outlined above are more dangerous for state-owned electric utilities than for the privatized ones because state-owned electric utilities have a public mission. In general, reputational and legitimation risks are higher in state-owned electric utilities due to higher expectations with respect to their contribution to PV creation. Therefore, electric utilities with a public ownership should pay more attention to the opportunities SPV reporting offers them for a proactive reputation and legitimation management. A good performance in the field of environmental indicators would put them in the front seat with respect to contributing to ambitious nation state aims in the area of climate change. In the 1970s and 1980s, there has been a discussion in Europe that state-owned electric utilities should be a role model in advising their (household) customers about energy efficiency (Greiling, 1996). NPM with its focus on market efficiency has put a stop to such ideas that are now 40 years later revived again. The low performance in the social dimension is also more critical for state-owned electric utilities due to their public benefit objectives.

A potential explanation for the lower TCRs on a descriptive level of state-owned electric utilities in comparison to their private counterparts is that they are entangled in an extensive web of public accountability obligations. Therefore, a high level of compliance with SPV reporting is something that might not be high on the priority list of state-owned electric utilities because they have to comply with lots of other mandatory public accountability obligations along the democratic line of control.

7. Conclusion, limitations and directions for further research

The study follows Swilling's (2011) call to facilitate the dialogue between the sustainability and the PV community by investigating the implementation of the most widely used SR framework by electric utilities, a sector which is of vital importance for SD. Furthermore, it contributes to bridging the gap between PV reporting concepts on the macro- and micro-level, since it involves the sector-specific disclosures.

Based on the findings, one can conclude that electric utilities are on the way toward a comprehensive SPV reporting, but there is still room for improvement. The fact that state-owned enterprises perform worse than private ones is particularly problematic if one considers that their legitimation depends to a higher degree on the PV created by them. From the beginning, PV creation was something produced by public entities and only after more than a decade extended to private entities.

Naturally, the study has its limitations (e.g. sample size, time period and so on). One major limitation is the static research approach. A longitudinal analysis could reveal whether and how SPV reporting practices of electric utilities change over time, which in turn suggests an issue which should be subject to further research. Future research, for example, should also consider the reasons for the differences in coverage of reporting in more detail. Furthermore, the study did not consider the quality of the reported information. The authors examined

sustainability reports, the outcome of the process of SPV reporting. Interviews with the reporting electric utilities could help to improve the understanding of the detected SPV reporting patterns and might reveal the motives for an engagement in SPV reporting.

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