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Surveys

The lack of strategic sustainability orientation in German water companies

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ABSTRACT

Water-supply and distribution companies (WSC) are dealing with one of the most crucial natural resources. That is why the German national sustainability strategy highlights water as one of the priority fields of action. In Germany, WSC show characteristics of natural monopoly. The distinct separation between public institutions and the private sector as well as municipal operators being responsible for practicing special functions is characteristic for the German water economy. From an evolutionary perspective it is of interest how German WSC implement sustainability strategically. Therefore, strategic concepts and tools facing sustainability (e.g. ISO 14001, Reporting, and Balanced Scorecard etc.) were analysed and evaluated in the context of the water industry. Using literature studies and web analysis the relevant data of 110 German WSC was put together. A cross-sectional design was used in order to find patterns. Possible gaps are highlighted and ongoing steps to foster sustainability are stressed. This study points out a sustainable management is just marginally implemented. The results obviously show that there are differences between large companies and SMEs facing sustainability requirements. WSC having own regenerative power generation and an integrative thinking of farming and water supply, are part of good practice.

1. Introduction

Water-supply and distribution companies (WSC) are companies dealing with one of the most crucial natural resources. That is why the German national sustainability strategy highlights water as one of the priority fields of action. Yet, the German water sector and the implementation of corporate sustainability with management tools have not been in the focus of research so far. The central research question is how water companies implement sustainability requirements in their management. Therefore, a first analysis is made by a cross-sectional design imposing data for further research in this field. In the sustainability context corporate governance and ethical business leadership require the explicit integration of environmental and social challenges in the corporate sustainability management of water utilities. The challenges of a sustainable development are aimed at the development and implementation of intelligent sustainability-oriented infrastructure, energy and management systems (Arnell et al., 2011; ATT et al., 2011). In order to be able to meet the requirements of a sustainable development WSC should develop strategic options and integrate sustainability instruments continuously (Arnold, 2011; Arnold and Hockerts, 2011).

From an evolutionary perspective, the special challenge can be seen in the high path dependency of the infrastructure of sanitary environmental engineering (Brisco, 1995; Kundzewicz et al., 2007). The system is built on mass throughput and consumption growth, and therefore it is only partly adaptable to changed conditions. Against this background, the ongoing changing situations and conditions cause high instability. The central task has to be seen in the necessary conformity to the changed facts, like a strategy for resource conservation and an efficient resource use (Hanjra and Qureshi, 2010). In the last two decades, considerable innovations were developed in the fields of alternative water-supply technologies in Germany. However, they were mainly realised in some small-scale pilot projects and often not institutionalised in management principles. WSC often react with cost efficiency strategies to sustainability challenges (Hontelez, 2002) and use less sustainability management tools in order to implement sustainability. How do WSC institutionalise their sustainability understanding and activities within management practices and tools? In this study 110 representative German WSC are analysed concerning their sustainability management tools in use. Active integration of sustainable development requirements will be evaluated e.g. by sustainability reports, balanced scorecard, EMAS III, ISO 9001, ISO 14001.

The article is structured like following: in chapter 2 the characteristics of the water industry will be described, chapter 3 highlights evolutionary theory as an appropriate framework for sustainability issues. Chapter 4 deals with sustainable water management. In the 5th chapter the empirical design is presented. Chapter 6 shows the results of the study followed by the discussion in chapter 7. The final conclusions are drawn in chapter 8.

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2. Characteristics of the WSC

Using water sustainably is a great social challenge with regard to economic and demographic changes in society. WSC show the characteristics of natural monopoly (Camdessus and Winpenny, 2003). Because of the economies of scale and density as well as subadditive cost functions a company can provide the market more economically than every greater number of companies (Hontelez, 2002). Technical-economic structures are subtly differentiated regarding the liberalisation and privatisation of networks (Milly et al., 2005; Hontelez, 2002). The guidelines within the WSC partly change dramatically and will have an influence on the future conceptions of the infrastructure more or less directly (Vörösmarty et al., 2000; OECD, 2011). The clear separation between public institutions obtaining general, overall responsibility for water protection and management and the private sector and municipal operators that are responsible for practicing special functions, in particular the direct services to citizens, such as drinking water supply and waste water disposal, are characteristic for the German water economy (Kahlenborn and Kraemer, 1999).

Beyond these different structures of the companies like pure WSC and multi-utility/public services or private-law or municipal companies, mixed legal forms can be found in the water industry (Jenerette and Larsen, 2006). There have been operating private-law and municipal companies in the German water industry for decades (ATT et al., 2011). For instance, in contrast to UK, where water companies are operating in the single digits, approx. 6.211 German WSC are operating according to ATT et al. (2011). Most of them are small- and medium-sized enterprises (SMEs). Municipal and private-law companies have different values referring to the number of companies and the volume of water. With a view to the number of companies regarding the legal form there are 56% municipal institutions and 44% private-law ones. Referring to the volume of water private-law companies have a 64% share and the municipal ones a 36% share. The German water sector is characterised by wide, far-reaching and partly interwoven shares. In tendency, smaller companies supply a relatively small number of people in rural areas in contrast to urban ones where usually a small number of companies supply a big number of inhabitants with water. According to ATT et al. (2011) half of the water output is provided by around 100 companies (less than 2% of the companies). Thus, the corporate structure and the structure of urban development are closely interwoven in Germany. In addition, there is still a difference between the Eastern part and the rest of Germany regarding the establishment of the appropriate conditions of supply, investments, return on investments, the structure of urban development, etc. as long-term development after the German reunification (Henn et al, 2012).

The successful infrastructure model achieved social and distributional objectives as well as environmental and hygienic standards, but is faced with the following central challenges:

- Decreasing population numbers and falling specific need of water of households and businesses (Hummel, 2008)
- Different regional water prices and investments as well as a lack of transparency (Henn et al., 2012)
- New requirements of resource regulation, especially matters of cost coverage and economic efficiency (EU Water Framework Directive; Allan, 2012)
- Regional shortage of resources and the rise in prices for energy and raw materials (Arnell et al., 2011)
- Climate change with its global and regional consequences for the water economy as well as cost of adaptation to the climate change (Howard et al., 2010; Charlton and Arnell, 2011)
- A changed energy policy framework due to objectives and legal developments at European and national levels — the network-related infrastructure and sectors of supply systems, like power, gas, oil, and water, are in transition (Hanjra and Qureshi, 2010).

The sustainability and quality of freshwater resources are influenced by various factors (Ercin and Hoekstra, 2014; Gallopín, 2012; WHO, 2005). Water, land and energy are strongly interlinked (Tingey-Holyoak, 2014). Water governance refers to the range of political, social, economic and administrative systems that are provided to ensure the responsible usage and management of water and water-related services for all ranks (Grambow, 2013, p. 381). It is thus clear that only functioning governance is the foundation for a successful land and water management and has to be considered entirely in all planning and management levels (Grambow, 2013, p. 380).

There are several indications of existing systems based on centralized network structures with inadequate sustainability (de Graf and van de Ven, 2005; Palme, 2005). Especially the necessity of using innovative, system-orientated approaches of the resource economy like material flow management, eco-accounting, and sustainable supply management was taken up insufficiently (Grambow, 2013). This goes hand in hand with the water quality discussion. The implementation of a nationwide multi-barrier system such as the extension of the existing filtration systems on ultra-and nanofiltration should be intended because organic micropollutants (pharmaceutical residues, X-ray contrast agent) can be more efficiently eliminated from the surface waters. Griebler et al. (2014: 159) highlight that there is "an urgent need to integrate evolutionary and ecological research for developing a holistic perspective of the functional roles of biodiversity and ecosystem services and predicting global changes under alternative groundwater resource use scenarios."

3. Evolutionary Theories as a Key Concept for the Conceptualisation of Sustainability

Sustainability is an intertemporal concept, and thus, should be reflected by approaches highlighting development and time as well. Diversity, variation, selection, retention, competition for resources, bounded rationality, path dependence and lock-in, group selection and co-evolutionary dynamics are the central components of evolutionary theory (Safarzynskaa et al., 2012; Evans, 2011). "The *evolutionary* perspective emphasizes *selection* as a mechanism of change as fields and firms transition from one "regime" to another" (Garud and Gehman, 2012: 980). Evolutionary theory can be used to examine organisational change at multiple levels as well as strategic processes (Safarzynskaa et al., 2012; Smith and Raven, 2012; Katila et al., 2012; Evans, 2011; Foxon, 2011). This is also based on the argument of Carroll and Harrison (1994) highlighting that strategic thinking is mainly founded on historical contexts and knowledge. However, strategic management processes should not be used for modelling variation in forecasting strategies (Barnett and Burgelman, 2007) "because of the emphasis on predicting and selecting a singular course of action" (Evans, 2011: 461).

In general, changes to routines, like formal or informal modifications of programmes or tools, are part of variation. The selection process is focused on the choice or refusal of variations. Retention is commonly characterised as the perpetuation of variations having a positive corporate impact. "In evolutionary theory, components for effective variation include blind variation, equiprobability, unrestrainedness, statistical independence, and the need for failure or the possibility of failure" (Evans, 2011: 463). This shows for example, how variation occurs from strategic planning and processes, influences the sustainable development and sustainability-related organisational learning on organisational and population level, and, how companies use different management tools, integrate and combine multiple perspectives within their management activities can provide better concepts to adaptation and organisational/population change in the light of sustainability. Yet, according to Levinthal and Posen (2007) there can be a mismatch of the best choice of high variance strategy between organisational and population level. Schrettle et al. (2014: 81) highlight that the "extent to which firms engage in sustainability initiatives is influenced by available resources needed for the implementation of new manufacturing