Defining green electricity from a consumer's perspective: A cross-market explorative input for policy makers and marketers

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Ágrip

Markaðssetning rafmagns skiptir nú meira meira máli eftir að rafmagnsmörkuðum hefur verið skipt upp. Sér í lagi hefur áhersla á grænt rafmagn aukist en það er þó svo að hugtakið er fremur óljóst í huga neytenda. Í greininni er sjónum beint að því hvaða þættir skipta þá þátttakendur máli, sem tóku þátt í rannsókninni, við skilgreiningu á grænu rafmagni. Ennfremur er skoðað hvernig nota má skilgreiningunа til að bæta árangur markaðsstarfs orkufyrirtækja og auka skilning þeirra opinberu aðila sem koma að reglugerðum á orkumarkaði. Niðurstöður eru byggðar á rýnihópum sem voru framkvæmdir í fimm Evrópulöndum. Í greininni er komist að þeirri niðurstöðu að þótt það sé fremur flókið að skilgreina grænt rafmagn út frá skynjun viðskiptavina þá eru nokkrir þættir sem skipta lykil máli í því samhengi. Þeir eru meðal annars sjálfbærni/ábyrgð fyrirtækja, framleiðsla í heimabyggð, sjónræn áhrif og orkusparnaður. Skilgreiningin eru undir sterkum áhrifum frá nokkrum öðrum þáttum svo sem tortryggni, markaðssetningu, verði og þeirri staðreynd að burt séð frá því hver framleiðir rafmagnið þá er það alltaf eins þegar það berst til viðskiptavina.

Abstract

The marketing of electricity is an increasingly significant issue following the liberalization of electricity markets. Substantial emphasis has been placed on green electricity, but the concept is vague to many consumers. In this paper, the focus is on defining green electricity from a consumer perspective and using the understanding gained to provide input for public energy policy and to improve the marketing activities of energy companies. The paper draws on findings from a qualitative study of focus groups that gathered consumer insights from five European countries. The authors argue that although defining green electricity from a consumer perspective is a complex process, several constructs, including sustainability/corporate social responsibility, local production, visual impact and saving energy, are key. The definition is strongly affected by other constructs, including scepticism, marketing, price, and the fact it does not matter who provides it as electricity looks the same to the consumer.

JEL flokkun: M30, M38
Lykilorð: Grænt rafmagn, markaðsfræði, reglugerðir á orkumarkaði

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1 Introduction

Research on consumers' green electricity purchases has increased since countries first started to offer green electricity following the liberalization of markets in the 1990s. While some recent studies analyse viable options for companies selling green electricity and their efforts to appeal to energy consumers (Salmela and Varho, 2006; Paladino and Pandit, 2012), relatively few studies focus on the marketing function (Rowlands, Scott and Parker, 2003; Paladino and Pandit, 2012) or on understanding consumer behaviour and attitudes toward green electricity. In this paper, an attempt is made to increase understanding of consumer behaviour by outlining what they perceive green electricity to be. For practical marketing purposes the consumer's perception is important for effective communication, and for academic purposes the research fills the above mentioned a gap in the literature. The research question is thus:

What is the consumer's perception of green electricity?

Qualitative studies such as focus groups can help address these research gaps (e.g. Rowlands, Scott and Parker, 2003; Hartmann and Ibáñez, 2006). Appreciating consumer attitudes toward the concept of green electricity is the key to understanding their purchase intentions and therefore important to policymakers involved in triggering increased demand for green electricity. It is also important to retailers of green electricity who want to preserve or extend their market share in the household electricity markets, as they need to know more about responding to increasing demand. To demonstrate well-perceived corporate social responsibility (CSR), they must decide how best to promote their green efforts as sustainable. Numerous managers now recognize the necessity of achieving sustainability in business practices (Turner and Houston, 2009) and use CSR and sustainability as competitive tools (Mahler, 2007). Many conceptual studies offer frameworks on the role of promotional green messages on marketing issues (Hoeffler and Keller, 2002; Brady, 2003; Godfrey, 2005; Jones, 2005; e.g. Bendixen and Abratt, 2007) and empirical findings demonstrate associations between customer perceptions of retailer sustainability practices and their attitudes toward corporate brand (Hartmann, Ibáñez and Sainz, 2005; e.g. Chen, 2008; Madrigal and Boush, 2008; Godfrey, Merrill and Hansen, 2009; Luo and Bhattacharya, 2009; Virtsonis and Harridge-March, 2009).

It is clear that promotion based on green messages works, but its effectiveness increases when based on reliable data, which is lacking in the case of green electricity. The special characteristics of electricity markets also warrant a research focus on green electricity, above and beyond green energy in general (Larsen, 2014). This paper responds to the research needs and presents results from a qualitative study where consumers' own words provide an in-depth understanding. The empirical evidence sheds light on what green electricity is to consumers, which major forces shape their attitudes and what the implications are for policymakers and for the marketing activities of energy companies. Our cross-market view in analysis shows that green power markets have expanded in different ways, depending on location (Markard and Truffer, 2006) and consumer attitudes, which is why we extend our research to countries that hitherto have not been on the research radar.

Iceland was selected as it is the two author's home country and an accessible starting point for data collection. Norway was selected as a member of the pioneer squad in the

liberalization of electricity markets in Europe and a Nordic parallel to Iceland. Estonia was selected as the latest European country to introduce liberalization, although the industry was still a monopoly when data was collected. The Czech Republic was selected because electricity sales in that country have advanced more than in other Eastern European countries and Poland was chosen as the Czech Republic's referent. Table 1 shows selected background information on the countries selected.

Table 1 Selected background information
(Eurostat, 2013, National Energy Authority, 2013)

	Czech Rep.	Estonia	Poland	Iceland	Norway	(28 EU countries) European average
Population (2012)	10.5 m	1.3 m	38.5 m	0.3 m	5.0 m	18.1 m (506 m in total)
GDP per capita in PPS. Index (EU28 = 100) (2012) Gross domestic product / Purchasing Power Standards	79	69	66	113	196	100
Market share of the largest generator in the electricity mai % of the total generation (2010)	73%	89%	17,4%	86%	21%	55,9%
Electricity generated from renewable sources % of gross electricity consumption (2011)	10.3%	12.6%	8.3%	95.4%	90%	20.4%
Greenhouse gas emissions intensity of energy consumptic Index (2000 = 100) (2011)	87,2	98,5	91,1	N/A	79,5	91,3
Greenhouse gas emissions Index (base year = 100 ("Kyoto base year" 1990/1995)) (2011)	58,4	51,8	88,1	129,7	108,2	83,1

The participants in these five countries, all at different stages in the liberalization process, display cultural variations that reflect their easterly vs. westerly geographical position on the European continent. No green electricity research is available on the eastern countries and only a few studies discuss the Nordic region. Most European research focuses on individual western countries (Arkesteijn and Oerlemans, 2005) that liberalized policies early on.

The first part of the paper discusses green electricity, its definition and complicated environment. The paper then turns to a description of the qualitative methodology used, followed by the findings of the research. The findings are then discussed and the paper brought to a close in conclusions.

2 Defining green electricity

Electricity differs from other consumables due to the potential impact on the environment during production and, conversely, the political importance of encouraging customers to use green energy. Public energy policy translated into legislation is the most effective tool in increasing the use of green energy sources. Educating consumers through marketing is also important, although by itself not likely to shift large enough numbers toward green sources (Markard and Truffer, 2006). A green brand identity was defined by Hartmann, Ibanez & Sainz (2005) as having attributes and benefits that consumers link with a positive effect of the brand on the environment, and the brand being perceived as environmentally sound.

Ottman et al. (2006) hypothesized that companies have been too focused on the greenness of a product while overlooking the need of convincing the consumer of the product's traditional element first. Indeed, recent research by Rosenbaum & Wong (2015)

showed that green elements have lesser significance than indicators such as brand image or value proposition in marketing material. Renewable sources can, of course, be a way of differentiation and according to Hanimann et al. (2015) branded renewable sources can provide an advantage to retain current customers and attract new ones. Green branding of electricity has been met with some scepticism even by consumers normally concerned with green issues. This can be attributed to the lack of social norms and personal relevance, fear of switching suppliers, absence of relevant information and uncertainty of the quality of green electricity (Ozaki, 2011).

Another reason can be that green-minded users don't receive any self-expressive benefits from green electricity due to its intangible nature and the private nature of the consumption (Hartmann and Apaolaza-Ibanez, 2012). Nevertheless, research shows that consistent marketing stimulates maximum market penetration of green energy sources, and competition in the retail market can stimulate marketing activity (Bird, Wüstenhagen and Aabakken, 2002). For successful marketing and increased adoption of green electricity, it is important to define what green electricity is from a consumer perspective, but only limited research exists that actually defines green electricity from a consumer viewpoint.

The literature is specific on what constitutes a renewable source (e.g. Bird, Holt and Carroll, 2008) but consumer perceptions of what comprises a renewable source are not clear (Bergmann, Hanley and Wright, 2006; Borchers, Duke and Parsons, 2007; Ashley and Leonard, 2009; Larsen, 2013). The term "green electricity" commonly refers to electricity produced by technologies that do not vent damaging emissions into the atmosphere (Paladino and Pandit, 2012) and are generated from environmentally preferable energy sources (Truffer, Markard and Wüstenhagen, 2001). Green energy or green electricity are generic terms used for electricity produced by using pure, ecologically desirable sources, collectively known as renewable energy, including wind, water, sun, and bio-mass (Judith Lipp, 2001). As a result of restricted carbon emission allowances, generating and using renewable energy should lead to actual emission reductions, earning a valid claim to be marketed as an environmental source. If, however, renewable energy does not result in reduced allowances or if emission caps are not lowered, environmental claims cannot be genuine (Bird, Holt and Carroll, 2008).

Defining green energy does not appear to be complex but a closer look reveals complications, since many issues need to be accounted for: which environmental benchmark to choose? How to factor in environmental impacts? Does a green power product need to be totally green to be sold as such to consumers or can it simply be greener than previous offers from the company? Consumers generally have limited knowledge of the various green options since they apply the general heading of green energy or renewable energy without considering technical definitions.

The success of green electricity lies in the efficiency of branding strategies aimed at consumers' perception of its benefits (Roe et al., 2001), and public awareness is the key for the success of renewable energy sources (Reiche & Bechburger, 2004). Due to the intangible nature of electricity it can be difficult to communicate the symbolic benefits of the brand (Holman, 1981), thus the most obvious way of differentiating electricity is through green messages (Coddington, 1993; Meffert & Krichgeorg, 1993). Markard and Truffer (2006) state that environmental advantage is the differentiating factor green offerings have over conventional or standard electricity alternatives. They maintain that environmental characteristics depend on the ecological quality of power generation (power sources and conversion technologies) and the promotional effects of the product design (direct ecological

effects associated with the purchase of the product). They add that green is not an either/or phenomenon but can combine several factors and their relative positioning. This requires educating consumers to learn about all the available sources from which electricity is produced (e.g. biomass, biogas, hydropower, sun, wind etc.) and the technical aspects of available conversion technologies.

Using only mathematical equations to determine the greenness of an energy source might prove fatal when communicating a message to the consumer. There is a need for marketers to fully understand consumer perception and perhaps misconceptions regarding green energy. Although consumers are generally in favour of green energy sources (Ek, 2005; Hansla et al., 2008; Salmela & Varho, 2006) some sources of energy are viewed upon more favourably than others. While combined cycle plants are by definition friendlier to the environment than photovoltaic plants, the latter are viewed more favourably (Truffer et al., 2001). Solar also tops wind and generic green, while energy created from by-products such as biomass and methane are viewed as the least favourable (Borchers et al., 2007). While being hailed for lower emissions, some controversies have risen over the visual impact of wind turbines (Groothuis, Groothuis & Whitedhead, 2008). Though being generally in favour of the turbines, some green-conscious consumers are affected by what was termed by Reiche and Bechberger (2004) as NIMBY-ism (Not In My Back Yard) and has caused concern over visual pollution, noise, price devaluation of land, possible health problems, negative impacts on tourism and so on (Reiche & Bechberger, 2004).

The challenge is not only to educate the consumer as often common misconceptions are in the mind of policymakers and energy-marketers, one being that environmental concerns are lower in poorer countries when in reality their concerns are similar to more affluent countries (Diekmann and Franzena, 1999). It is known that consumers are likely to consider a greener alternative if it has been promoted and made visible (J. Lipp, 2001; Paladino & Pandit, 2012).

In the past, green-energy was marketed to a small segment of price insensitive consumers already highly concerned about the environment (Wüstenhagen, Markard and Truffer, 2003) and who are, in general, not concerned about the quantity of energy used but rather its green quality (Rowlands etal., 2003). The greatest hurdle for the average consumer to select greener offerings has been the inconvenience combined with the amount of time and effort consumers have often linked with greener alternatives (Cornelissen et al., 2008). While understanding the consumer is imperative (Reiche & Bechberger, 2004; Roe et al., 2001), the focus of research in green-energy marketing has been on segmentation; willingness to pay (e.g. Farhar, 1999; Ferguson et al., 1999; Batley et al., 2001; Roe et al., 2001), preferences of both residential and business customers (Holt, 1997; Wiser et al., 2001), the ingredients of success for green energy marketing (Holt, 1997; Wiser et al., 2001; Wüstenhagen et al., 2003) and significance of eco-labelling (Roe et al., 2001; Truffer et al., 2001).

Another cause of misconception or distrust towards green offerings can be greenwashing. While the production of green electricity is not all produced the same way, it has been repeatedly promoted in a generic way (Borchers et al., 2007) making greenwashing easy for producers of other sources of energy.

Such a task is overwhelming for the mainstream consumer, and it is hard to get marketing messages across, based on such a complicated foundation. When green electricity is promoted, it is generally based on an objective assessment of the environmental quality of the product. For consumers, the message must respond to their subjective perception of power systems. The ‘correct’ way to promote and disseminate information on green

electricity, and encourage its use, should employ a middle ground combining academic definitions, scientific calculations and lay perception. We believe the type of qualitative study this research describes uncovers the details of lay perceptions. The method used is explained in the next section.

3 Method

Most consumers do not view electricity purchases the same way they do petrol or gas purchases. Research focusing specifically on how consumers define green electricity (as opposed to green energy as a general category) to be is non-existent. An inductive research methodology was therefore justifiable and our research is inspired by grounded theory, a methodology suitable for seldom-explored phenomena where existing theory is not appropriate. Grounded theory focuses on understanding and goes deeper than, for example, statistical analysis. This approach is more suitable for revealing innovative and precise information than a reliance on either past research or field experiments (Glaser and Strauss, 1967).

The authors gathered data from focus groups, which are especially valuable for researchers in a novel field and to engender propositions based on assembled insights (Krueger and Casey, 2000). Furthermore, researchers who have contributed to the field suggest that focus groups are valuable to add insight into consumer behaviour in the energy market (e.g. Rowlands, Scott and Parker, 2003; Hartmann and Ibáñez, 2006). It was, therefore, deemed appropriate to make use of focus groups for the purpose of this paper. Focus groups have geminate value, which makes them an efficient and intuitive technique. Morgan (1988, p. 25) writes that "focus groups are useful when it comes to investigating what participants think but they excel at uncovering why participants think as they do" in providing a platform for expression and inspiring diversity and communication among participants in the group.

3.1 Sample

The selection criteria for participants required that they: a) were paying customers of electricity companies; b) belonged to various age and income groups; c) represented different household sizes and; d) were fairly articulate in English. Since all the focus groups were conducted in English a local interpreter was available in case the participants wanted to answer in their native language, avoiding the potential language handicap in cross-cultural research (Marschan-Piekkari and Welch, 2004). For the most part, however, English was used and translation was rarely needed. It is possible that the contextual understanding which adds richness to the process (Bryman and Bell, 2007) may have been lost, as English was not the native language of the participants. The precondition that participants be fairly articulate in English may have skewed the sample.

The authors asked colleagues in their academic network in the selected countries to access and screen participants who met the selection criteria, as well as to translate in the groups when needed. No pecuniary incentives were offered, but refreshments were offered during the discussion. IRB approval was not required and not applied for. As can be seen in Table 2, the questions were aimed at discovering how consumers define green electricity and possible reasons why they would be willing to consider consuming it.

Table 2 Examples of questions used

How many types of electricity can consumers purchase and what are the different types?
-How is green electricity defined? How is that different from the definition of regular electricity?
- How and why is it important how electricity is produced?
- How is it possible to define electricity in more detail than green / not green?
- What is the hardest task for energy companies in regard to differentiating electricity and why?
- How can energy companies be most efficient in emphasizing green factors in their communication?
-To what extent should green factors be a part of companies' brand strategy why?
-If consumers are willing to pay more for green, why is that and how much more?
-How is it possible to get past the price discussion when selling a) conventional electricity and b) green electricity?

It has been suggested that ethnocentrism may affect researchers studying foreign cultures since their own cultural characteristics influence them (Triandis, 1994). Ethnocentrism may make researchers less likely to perceive and construe data from other cultures accurately (Hickson and McMillan, 1981) as they filter the information through their own culture. To lessen the bias, Ricks (1993) advises cross-cultural research collaboration. Local colleagues read and approved the questions and advised on country specific matters to be kept in mind before the focus groups began. One of the authors conducted all the focus groups in the research to ensure coherence among the groups in various countries and accurate probing (including thorough why/why not questions), minimizing the effects of secular trends due to the length of time the research spans, as well as ensuring confidentiality of the participants. All the same, one cannot overlook culture as an influential force that shapes people's perceptions and behaviours (Markus and Kitayama, 1991; Triandis, 2000) and a key decision in cross-cultural studies is the choice of suitable cultures to research (Lytle et al., 1995). Traditionally, most studies (65%) focus on the difference between two nations and their cultures, but only 11 percent include five or more nations (Engelen and Brettel, 2011). Cross-cultural research focusing only on two cultures has limitations since differences between countries are normally identified on more than a single cultural dimension (Tan, 2002). By researching more than two countries, this bias is ruled out and it is simpler to detect outlier dimensions. This was the case in this research since we found two constructs that were clear outliers from the rest of the researched countries. Additionally, reliability was increased by comparing the results across countries as findings were generally similar between cultures. Table 3 shows a breakdown of participants.

Table 3 Breakdown of participants

	Gender:		*Age:*			*Size of household:*		
	Male	***Female***	***20-29***	***30-44***	***45-65***	***1-2***	***3-4***	***5-6***
Iceland	9	9	1	13	4	10	6	2
Poland	10	9	13	6	0	8	10	1
Estonia	8	5	5	3	5	9	3	1
Norway	12	4	2	9	5	7	5	4
Czech Republic	6	11	5	11	1	12	4	1
Total	*45*	*38*	*26*	*42*	*15*	*46*	*28*	*9*

The 83 participants were divided into two focus groups in each of the five selected countries, except in Poland where there were three groups. Two focus groups were composed of students, one in Poland and one in Estonia. Approximately one third of the participants were administrative staff at local universities. The qualitative method permits researchers to centre on persons with qualities they consider critical for their research objectives (Malhotra and Birks, 2006), so we ensured that participants represented a cross-section of the countries studied. By using QDA software, running a comparison was relatively simple and we could verify whether age, gender and number of household members affected responses. No notable differences were found, except that males were more willing to express their opinions on the subject (males comprised 54% of the sample, but accounted for 62% of the discussion).

Each focus group discussion ranged from 60 to 70 minutes and all were recorded and typed. Data was collected from August 2009 to November 2012, as Table 4 shows.

Table 4 Chronological order of data collection.

Country	***Date***
Iceland	August 2009
Norway	March 2011 (1st group)
Poland	May 2012
Norway	April 2012 (2nd group)
Czech Republic	May 2012
Estonia	November 2012

3.2 Analysis

A four phase analysis was conducted. The main steps in each phase are identified in Table 5 and described in the following text.

Table 5 Four phases of analysis

Phase	***Main steps in phase***
One	Primary analysis, initial identification of codes, integration of field notes
Two	Continued analysis, combination of codes, initial theory development, identification of constructs
Three	Mental mapping and construct confirmation
Four	Construct validation

Phase 1. In the first phase, the initial set of transcribed data was open-coded to uncover insights and engender conceptual categories. Primary analytical comments were added to the transcripts (Creswell, 2003) including the nuances (Marschan-Piekkari and Welch, 2004) of how participants expressed particular statements (e.g. serious, laughing etc.). The data was broken down by analysing the text line-by-line, paragraph-by-paragraph, and document-by-document. While coding, no restraints were placed on the number of codes; they were continuously added as new ones appeared. The analysis approach is based on grounded theory and defined by Glaser and Strauss (1967) as the technique of uncovering a theory from qualitative data, or generating a theory grounded in data. We added notes to the transcripts at this phase, including any comments or activities worth mentioning after each focus group. Morgan (1988, p. 63) refers to this technique as 'field notes' and suggests that they should be an indispensable element of focus groups as they contribute to the data collection and serve as an initial system of analysis.

Phase 2. In the second phase, the data were imported to the qualitative data analysis software (QDA) NVivo. A more selective coding was conducted to identify associations that existed between previously identified codes in order to build a theory with theoretical statements. Similar codes were combined and general codes were assigned (Creswell, 2003). Additional codes were also added, as the data were finely combed through in search of new insights. New codes were based on similarities between countries, a search for connecting factors between individual existing codes, and any major deviations. Throughout the research, the literature was often revisited in search of contextual material to link to findings from primary data collected by the researcher. Thus, a working understanding of the research topic was attained, and theoretical sensitivity enriched. This procedure is consistent with the constant comparative method identified by Glaser and Strauss (1967) and Lincoln and Guba (1985), which entails breaking the data into distinct 'incidents' or 'units' and coding them into categories. At this phase, constructs emerged which later became the building blocks of the consumer-centric definition framework for identifying green electricity. See Figure 5.

Phase 3. In the third phase, relevant codes were devolved into final constructs and their impact was determined by systematically re-reading on a construct-by-construct basis and maps drawn for each country individually. An example of such a mapping is shown in the following three figures from the Polish data. Figure 1 shows all the identified constructs, and the high impact ones are marked with a plus (+) sign. Figure 2 shows how each construct was analysed further, assigning direct quotes from participants.

Figure 1 An example of construct development

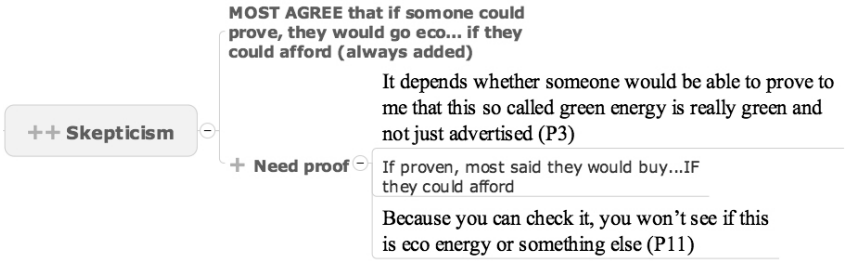

Figure 2 An example of the continued analysis of a construct

Using direct quotes from participants is justifiable (Maykut and Morehouse, 1994). The qualitative researcher's task involves finding patterns within those words and presenting those patterns for others to inspect. As part of the construct development, we added comments to the maps to ensure connectedness to the data. An example of such comments can be seen in Figure 3.

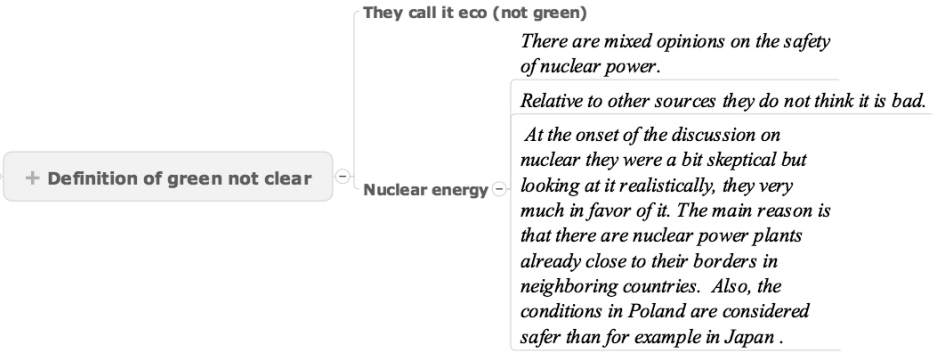

Figure 3 An example of researcher's comments (RC) while analysing a construct

Lastly, assessing the impact strength of the constructs was in part carried out by calculating the number of times the participants mentioned the construct in question and the intensity of the discussion investigated how the individuals addressed it (e.g. strong choice of words, raised voice, body language gestures and strong emotional responses) and by the group's response (e.g. a general consensus by nodding heads and agreeing in other ways without necessarily articulating responses).

Phase 4. The last step in the analysis was conducted through the QDA software. We read the transcripts again to verify that the construct in question actually had an impact, after identifying high impact codes. For the same purpose, various word frequency and matrix coding queries were run before writing this paper.

A quantification of the sort that is presented in this paper is not part of traditional grounded theory. In that we follow Bazeley (2009) who encourages researchers to use more than just participants' quotes but also such things as tables and matrices or other methods that might prompt a deeper thinking. Due to the large number of participants, quantifications of the sort that is found in the paper were considered to deepen the understanding.

4 Findings

Promoting energy precedes its successful adoption (Bird, Wüstenhagen and Aabakken, 2002) but in the case of green electricity it is not always obvious which aspects should be promoted. Defining green electricity for consumers is the first step in effective marketing, as consumer perceptions need to be aligned with promotional activities (Larsen, 2013). Policy decisions are likely to be more effective when implemented in relative harmony with trends of popular opinion. An incorrectly defined product is unlikely to appeal to consumers, since any kind of promotional campaign will be wasted if consumers think the message does not apply to them.

Policymakers and marketers need to familiarize themselves with consumer viewpoints. Our findings provide insight into participants' minds since the research method allows for both examining what participants think and also why participants think as they do (Morgan, 1988).

Figure 4 shows constructs identified in the five countries researched as having either a high impact or a strong impact on what the participants perceived as green electricity. At the top are elements that have a high impact factor in all the countries, while at the bottom are constructs that were confined to a few or only one country.

	Czech Rep.	Estonia	Poland	Iceland	Norway
[+] Price	■	■	■	■	■
[+] Scepticism	■	■	■	■	■
Electricity is always identical	■	■	■	■	■
Trust	□	■	□		■
Politics	■	□	□		■
Artificial		■	■		
Hypocrisy		■			■
A concern of western countries		■	■		
Information			■		
Green is marketing	□	■	■	□	■
Sustainability / CSR	□	■	■	□	■
Technologically advanced product	■	■			■
Limited reliance on fossil fuels	□		□	■	■
Visual impact	■	■		■	■
Saving energy	■		■	□	□ / [AR]
Local production	□	■	□ [AR]	□	■
Nuclear energy	■	□	■		
Air quality	■	□		□	
Uneconomical	■				
Powerlessness			■		

■ high impact; □ moderate impact; [AR] adverse relationship

Figure 4 High impact constructs in defining green electricity

Figure 4 shows that price, scepticism, marketing and sustainability/CSR were identified in all the countries as integral elements of consumer perception of green electricity. Visual impact, energy savings, local production and nuclear energy also have a high or moderate impact in most countries, along with several other constructs. Although not pervasive among the participants in all the countries, some of the constructs had a very strong impact in the countries where they were identified. For example, powerlessness was dominant among the Polish participants and as a single variable its relationship to the other elements played a major part and cannot be overlooked.

Table 6 and Table 7 show participants' quotations in support of the constructs. The quotations are divided into impacting and defining constructs.

Table 2 Participants' quotations – Impacting constructs

	Scepticism **Trust; Politics, Hypocrisy**	**Identical**	**Marketing**	**Price**
CR	How you know that it's green energy why should you trust them if they are really producing only the green energy from sources or are you able to check? I'm skeptical to this or and I also think that if you cannot check then you cannot be sure (C7). You know, I am getting more and more skeptical about all the green stuff because many times all the green technologies turn out to be even worse than the traditional technologies (C3).	There is no difference. The product is the same (C10) You buy energy from CEZ or from other, but in reality the energy was produced in the same power plant. No difference (C5).	They just care about buying and selling and making profit, nothing else. Doing it in a trendy, fashionable way, in a green way (C8)	For me price is important (C11). In the Czech Republic it is only about price because all sorts of energy is safe. No problem in the Czech Republic (C15). I think it's not true because the structure of the price is the same, so you pay for distribution for some green energy it is same and only you have to compare the price for the pure energy (C5).
ES	I started think about all those new electric cars, I was a very big campaign about this we bought from Mitsubishi. There was a rule that you must charge those cars from green, but what is this really the green power. So, it's quite not understandable (E10).	You don't have the sense when buying if you use green clean electricity because the electrons are all the same (E5).	I think the physical nature of electricity is the same. But, from this question starts marketing. If you produced from wind then the price is like this and its nuclear or coal. I mean it's more a marketing question. (E10)	I think that 50% of the population will decide according to the price, no matter what [...] but, I don't know if you are rich or something like that (E5) If price difference is too much then of course you would chose the cheaper one (E3). Well actually I am connected with green energy but I would buy the cheapest power (E4).
PO	Yeah because it's the situation in Poland is special and people are not aware of things like ecology (P2). If they can afford and if it was proven that it was green (P3). For example, if I will have to decide what kind of provider of electricity to choose. I don't know if I will have such information, who is the provider of the eco because I don't have knowledge about it that is why I'm so skeptic about this (P4). Because you cannot check it, you won't see if this is eco energy or something else (P11) You won't get green elecricity (P6).	They tell that they are using the same infrastructure as other Polish providers, so it's like the same stuff in the new package a bit (P5) It's all the same but the price could be higher (P13). It doesn't matter which provider provides you with the electricity because it´s all in the same lines (P1). You get the same stuff (P19).	It depends whether someone would be able to prove to me that this so called green energy is really green and not just advertise because as far as I read about it, in the end as a result whether it's called water or even wind, the damage is the same (P3).	If it won't be advertised and if it wont be proven, even if it was proven really, who has time just to sit and now and reading offers; this is eco, this isn't eco. It is price. It always comes down to price actually because we hurry (P13) It's all connected with income because if someone has enough money he will care what if it's green or it's not green. But for me for now, the most important thing is just, if it's cheap or not (P9). We have to remember a lot of people in Poland don't earn a lot of money and environmental friendly energy is more expensive [...] so people would go for the cheaper option (P19)
IS	Trust is so important for us. You would have to think about what could happen if something goes wrong. This thing cannot go wrong (I11). You can also trick people to trust you (I18)	The same product irrespective of who is selling it. That it, it is exactly in that way. Electricity is electricity. No matter what you do with it (I8). You get the same (I12) In homes it is the same. Electricity cannot be good or bad (I15).	Intermediaries are trying to make money [with marketing tactics] (I18)	Presumable so if it is only the price, not the producs as such (I10). So, it matters not only what we say, but I think that the price factor would have a significant input (I3). Price matters most. I´m just not that green. I need to learn it (I16).
NO	It is a bit irritatating because [...] I see through that. It is politics (N5). How could I know where my energy come from. I have no idea. So, I'm willing to live in that little bubble to think that all my energy is good (N16) I think I could pay a little more if I knew, if I had insurance, for clean energy. But I don't think I would risks very much when it comes to price from a more dirty energy (N8).	The basic is all the same (N1). It's the same grids, the same networks. You don't really know (N9) You cannot compare it […] there is no quality as such (N10). And so it's basically the same (N12).	*The problem is that, it's very easy to make a very beautiful green commercial (N7)*	I don't know – that the biggest issue is the price (N5) I agree with previoius participant, it [green] is about the price (N15). Like here [in Norway] most of electricity from magazines and most people agreeing on, that's a good way to produce electricity. So, green doesn't matter who you buy from, as long as you getting cheap (N2).

Table 3 Participants' quotations – Defining constructs

	Sustainability / CSR	Local production	Visual impact	Saving energy	Nuclear energy	Air quality
CR	Behaving in a sustainable way, behaving reasonable in controlling consumption (C3).	Let's say stop nuclear energy. There will be more wind, biomass, coal power and gas power and the gas is a problem because it's from Russia (C5).	Windmills cause devastation of the landscape (C13) and horrible destruction of agriculture land (C11).	If you decrease your consumption, it means you will save the environment (C12)	For me nuclear energy is green energy because no pollution and nice air (C15).	I was born in Tranve where they built the first nuclear power station in Czech Republic and that is the best air in the Czech Republic (C13).
ES	Producing electricity wisely [is sustainable and expresses CSR] (E5).	If you are producing local it means that money is staying in the country and the people have work and income. If you are buying from Russia then money go out and people are without work (E2).	Windmills are really noisy and you can't live there anymore and you just need to move away but you have to live there (E12).		Nuclear power yes. It's very serious question for Estonia, we must build that (E11).	I don't know if we meet some kind of plans how much the tree are consuming of CO2 and how much we produce. I don't know maybe we were in the plus side because we have so much forest [i.e. better air](E5).
PO	The green thing is somehow included in a very broadly understood idea of social responsibility, if the company makes us believe they do something for the society (P18).			It is better to just turn TV off sometimes, save lights or whatever (P11).	Nuclear power is very environmentally friendly (P7).	
IS	Acting responsibly matters but we forgett about it in a week...like I stopped buying Doyle for a week to protest apartheid. (I3).	It is our company and it is company we know. It is company that has serviced the country and I would still do business with that although a new player would come in (I9).	I started to think about how this affected the environment when I saw Hellisheiðarvirkjun [a new geothermal plant close to Reykjavík] (I12).	At the same time one is environmentally friendly and saves energy (I13) I would call and ask them to come to help me to save. These are things that I do not know anything about (I15)		
NO	There is so much coal in the rest of the world, we should be using our profits and our energy to actually find a way of providing clean coal power, which they can do to get the extra carbon out of the gases that come from coal plants (N4).	He is a patriot. He would go for local supplier (N7); I am a patriot and want local. (N3); Then I know that that money goes to local community (N10).	Visual effect on the environment matter (N1). Diesel engines that produce electricity make a noise and there is smoke and everything. People care about that (N7).	CN9: So, something that helps me to save energy (N9)		

5 Discussion

Defining green electricity is a complex task for several reasons. One is that attitude toward green differ among countries. Applying a universal definition and expecting consumers of different nationalities to interpret it in the same way is unrealistic. Identifying country-specific differences is important as some countries achieve better results in selling green energy despite using promotion methods similar to less successful countries (Reiche and Bechberger, 2004).

The interviews shed light on the participants' perception of green energy. The findings include high impact constructs related to green electricity and identification of the constructs reflects the participants' perception and serves in answering the research question. However, it is important to break those down further, to assess their interconnectedness. Some of the constructs affect the definition of green electricity, whilst others may be regarded as part of that definition. Those have been identified and merged into a consumer-centric framework of defining green electricity, as Figure 5 shows.

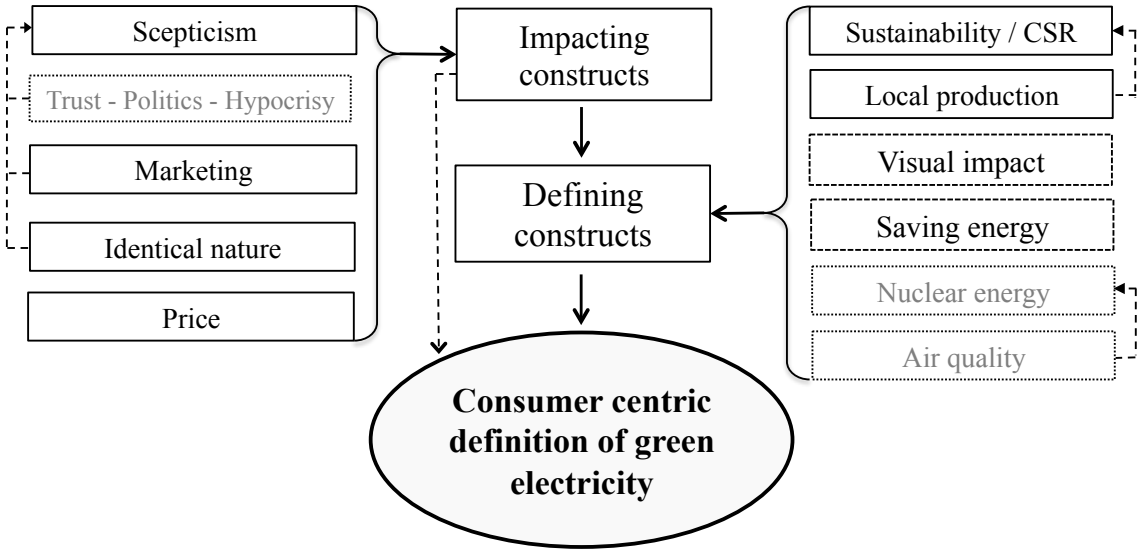

Figure 5 Consumer centric framework of defining green electricity

Constructs in a solid box indicate high impact in all the countries researched, a dotted box with black text indicates moderate to high impact in four countries and an outlined box with grey text indicates moderate to high impact in three countries. Each of the two categories will be discussed separately, starting with impacting constructs. Dotted lines signify a relationship between constructs. Impacting constructs have both a direct and indirect effect on the consumer-centric definition of green electricity.

5.1 Impacting constructs

Scepticism and price were by far the single strongest impacting constructs, followed by marketing and the identical nature of electricity when delivered. The latter two are components of scepticism, as the figure shows. Electricity is a commodity product and such products are generally sold on a price basis (Michell, King and Reast, 2001; McQuiston, 2004). Price does hinder average consumers from buying green energy (Paladino and Pandit, 2012) (Rowlands et al., 2003) and any discussion must include pricing. Most researchers focus on consumer attitudes toward, and willingness to pay for, green electricity (Ek, 2005; e.g. Bergmann, Hanley and Wright, 2006; Salmela and Varho, 2006; Borchers, Duke and Parsons, 2007; Rex and Baumann, 2007; Hansla et al., 2008). The other strong impacting construct, scepticism, we will discuss at more length.

The green literature shows consumer scepticism toward green products at some length and how this negatively affects green purchase behaviour (Obermiller, Spangenberg and MacLachlan, 2005; Mostafa, 2006; e.g. Albayrak et al., 2011). The participants distrusted both the product itself and the companies providing it. The concept was further affected by several other sub-constructs, including marketing, as Figure 5 shows. Certain commercial advertising regulations allow for exaggeration of a product's features (Albayrak et al., 2011), which increases people's scepticism (Obermiller, Spangenberg and MacLachlan, 2005). They are likely to believe that environmental claims are embellished to lure them into making wrong decisions (Albayrak et al., 2011). All green electricity is not produced in the same way, but it is generically promoted (Borchers, Duke and Parsons, 2007). Because of this generic approach, "green washing" can occur, whose purpose is to manipulate popular opinion to make a product, or a company, appear more environmentally friendly than it really is. As a

result, producers and green electricity marketing practices may be regarded with suspicion (Hartmann and Ibáñez, 2006). The participants' scepticism in this study was heightened by the fact that many of them were not persuaded that the electricity received would in fact be green. Trust is therefore of paramount importance and it has previously been shown that credibility is an important prerequisite for consumers when making green purchasing decisions (Peattie, 2001).

Moreover, as there are many shades of green, it is easy to misguide consumers. In the literature, there are references stating that a company is green if it is merely greener than it was before (J. Lipp, 2001). This can be achieved by, for example, selling electricity made from newer and more efficient machinery or by planting trees, making it relatively easy to endorse green to consumers. The current research refers to electricity not having to be totally green. It would be considered somewhat green if the electricity supplier engaged in sustainable actions, (e.g. technologically advanced production methods or reduced reliance on fossil fuels) or exhibited corporate social responsibility (i.e. cleaning up the local environment, treating workers well, giving back to the community and creating jobs within the area/country).

From a practical standpoint, defining what green electricity is and proving to consumers that the green electricity in question is actually what it is said to be, are two different things. Promotional messages from policymakers and companies alike must communicate to consumers that the product on offer is what it is said to be because consumers perceive that, whether green or not, the same electricity arrives. For efficient marketing, this should be addressed and the process of electricity sales explained in layman's terms. Previous research shows that consumer scepticism about environmental claims downgrades their positive effect on consumer behaviour. When consumers are sceptical about advertisements, the marketing messages fail to have the desired effect on purchase intentions (Obermiller, Spangenberg and MacLachlan, 2005) or they may even have a negative impact (Mostafa, 2006). Environmental claims, therefore, need to be validated by public policymakers to minimize the negative effect of scepticism on consumer purchases.

5.2 Defining constructs

Sustainability/CSR, and local production had the strongest impact in the researched countries, followed by visual impact, saving energy, nuclear energy and air quality, as Figure 5 shows. Consumers consider some green sources preferable to others. Energy produced from solar power is, for example, perceived as more environmentally friendly than energy produced from combined cycle plants, although this is not the case (Truffer, Markard and Wüstenhagen, 2001) when measured in carbon footprints. Whether the constructs identified in this research are true in absolute terms is irrelevant as the findings reflect the participants' perceptions, which is their truth. Aligning their truth to a more technical definition is a matter of communication for energy companies and policymakers alike.

Fossil fuels, oil and natural gas in particular, will be depleted by the end of the century at the present rate of consumption, according to some predictions. Nuclear energy and renewables are the only known ways to fulfil the demand for energy. The only real alternatives for reduced CO2 emissions are renewable sources since nuclear energy can hardly be considered a desirable energy solution, (Meyer, 2003).

The majority of participants considered nuclear energy an important source of green electricity, a view dominant in the Eastern European countries researched. Participants from Poland and the Czech Republic believed the use of nuclear energy contributed to less

pollution and air quality and was an important construct of the participants' definition of green electricity sources.

Negative visual impact was identified as a construct in relation to windmills, which many participants strongly opposed. This confirms research showing that controversies have arisen over the visual impact of wind turbines (Groothuis, Groothuis and Whitehead, 2008) but the findings are not conclusive because some countries traditionally have a favourable attitude to wind power (Hansla et al., 2008). Participant attitudes are affected by what Reiche and Bechberger (2004) term the NIMBY (''Not-In-My-Back-Yard'') component. That is, individuals may favour environmentalism in general as long as it does not affect their immediate environment. Our research shows negative attitudes toward visual pollution and the devastation of farmland associated with wind turbines.

Companies can communicate their improved environmental performance without becoming totally green (Roe et al., 2001), as the participants indicated with the construct sustainability/CSR. Consumers monitor the environmental activities of their energy providers (Hartmann and Ibáñez, 2006), as this research showed, and they were influenced by responsible behaviour toward employees and other stakeholders. The construct was strongly connected with buying locally-produced electricity, as participants believed local energy companies had a greener image than their competitors. They saw themselves as acting green when buying electricity generated from a local source, regardless of how it was generated.

6 Conclusion

This paper offers insights into consumer attitudes towards green electricity. Constructs were developed based on what participants consider green electricity to be. Some of the constructs fit within a broad definition of the qualities of green electricity (e.g. improved air quality and sustainability) and some do not (e.g. nuclear energy) and some are related to green electricity but are not considered a direct part of it (e.g. visual impact, local production and CSR). However, overall the participants rejected conventional views of green electricity. Viewing the constructs in isolation is challenging because of how interrelated they are but the most basic model is offered in Figure 6.

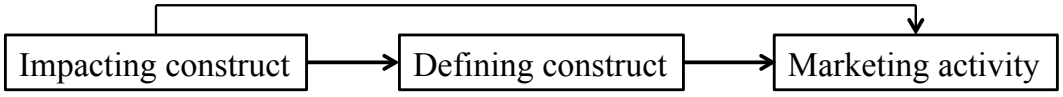

Figure 6 Model of the effect of impacting and defining constructs on marketing activity

The model demonstrates how the constructs affect marketing activities, either directly or through the defining constructs. The type of data collected for this research do not allow for quantification, but future academic research can measure and quantify the strength and relationship of the various impacting and defining constructs.

From a managerial perspective, defining consumer relationships to a particular product is important for promotion. For products that traditionally have not been commercially marketed, like electricity, marketers might first need to understand consumer perceptions. Since conventional electricity is considered a homogenous and low involvement product, it

is difficult to find a promotional differentiator (Watson, Viney and Schomaker, 2002; Walsh, Groth and Wiedmann, 2005) and consumers feel limited commitment (Kwon, Lee and Kwon, 2008). Renewable electricity, however, has a higher differentiation factor and is considered a high involvement product (Claudy, Michelsen and O'Driscoll, 2011) since consumers can have personal values connected to green electricity and an increased engagement to the product as a brand (Ashley and Leonard, 2009).

In this research, however, the participants showed very limited engagement with green energy, not least to the impacting factors identified. Consequently, marketing activities would need to take this into account and, to a certain extent, they would have to respond by counteracting the impacting construct and emphasizing a defining construct. For example, marketers could communicate the trustworthiness of a company and counteract scepticism (impacting construct) and at the same time emphasize a company's sustainable behaviour (defining construct). The most appropriate is both country- and company-specific.

There is considerable ambiguity on what green electricity really is, and it is hard for many consumers to understand the concept. Policymakers and energy companies need to be careful in emphasizing green factors in their marketing messages and they must realize how the population interprets the concept of green energy. The negative association needs to be addressed by communicating trustworthy information in order to avoid misconceptions.

A strictly information-based approach in marketing, explaining how the company exhibits sustainability or its socially responsible behavior can be more effective than using images of unspoiled nature that take for granted consumer understanding. Firms can emphasize their credibility and honesty and their commitment toward using the most advanced environmentally friendly technology. They need to counteract the fact that consumers are sceptical towards many electricity retailers on the basis of constructs identified in this research. This can also be due to other special characteristics of the electricity markets such as effects of recent liberalization on consumers attitudes and the commodity-like qualities of electricity (Larsen, 2014).

Selecting which benefits to stress requires a short-term vs. long-term marketing perspective. A greener long-term future might mean a reduced quality of life in the short-term for the consumer. When producing energy, the impacts on the environment are difficult to compare because they might have diverse time scales effects and local respects and those choices are hard for the consumer to compare. The participants in this research took the short-term view for the most part. They defined the greenness of electricity by how much visual effect the production had on the immediate environment, as well as how clean the production made the air in their area.

There are considerable social benefits to be gained by persuading non-users of green electricity to switch to electricity generated from green sources. However, any kind of energy policy or electricity marketing will be less effective if it goes against public perception. Companies need to realize that the majority of electricity consumers might not care about green electricity, but they might care about companies conducting themselves in a responsible manner and being educated enough to make informed decisions. Marketing actions should take note of that to successfully promote green electricity and reach consumers on their perceptual level in a way that fits their frame of reference.

7 Limitations

Similar to other qualitative research studies, the research may suffer from problems with generalizability. However, the research was not intended to investigate across the population, but provide insights and advance theory. Further research is needed to test the framework generated here and compare other European countries to the relatively peripheral areas studied in this research. The following limitations should be recognized, although they are not thought to constitute a threat to the main research objectives.

A large portion of the participants in this research had ties to a university. This might have affected the findings, although the university groups did not yield results differing from those of others. By utilizing QDA software, running such a comparison was relatively simple. Furthermore, it was checked whether age, gender and number of household members affected responses. In this regard no notable differences were found, except that males were more willing to express their opinions on the subject (males comprised 54% of the sample, but accounted for 62% of the discussion). For the most part during interviews, English was used and translation was rarely needed. It is, noted, nevertheless, that some of the merit of a qualitative approach; that is, the contextual understanding which adds richness to the process (Bryman and Bell, 2007), may have been lost as English was not the native language of the participants. The precondition that participants should be fairly articulate in English may have skewed the sample, assuming that their point of view might differ from that of the general population.

Although the sample size in this research can be considered sufficient (Creswell, 2007; Kvale and Brinkmann, 2009), sample could be regarded as a limitation. Lunt and Livingstone (1996) suggest that new focus groups should be added until the additional groups start repeating what the previous ones have said. For the major identified constructs, the numbers of groups were sufficient, judging by reoccurrences in all the countries. However, as this was a cross-market research, some themes emerged that were specific to individual countries. If the study had only been done in one country, those themes would have been further investigated in an attempt to present those specific research findings with utmost confidence, or to reach theoretical saturation. This was, however, difficult because of the way this research was orchestrated.

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