

Strategic global marketing of Nordic cleantech clusters and competencies

Lighthouse project: *Communicating Nordic green solutions and competencies*



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Report for the Nordic Council of Minister's lighthouse project on "Communicating Nordic green solutions and competencies".

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Table of contents

Steering Committee	5
Table of contents	7
Table of figures	8
Preface & acknowledgments	9
Executive summary	10
1. Introduction - Is there a case for joint global marketing of Nordic cleantech?	15
1.1 Purpose of report.....	16
1.2 Structure of report.....	17
2. Methodology, definitions and limitations	18
2.1 Definitions	18
2.2 Methodology and limitations	19
3. Cleantech competencies – mapping the Nordic cleantech sector	22
3.1 Mapping the Nordic cleantech sector.....	22
3.2 Specific sub-sector strengths in the Nordic countries	28
4. Nordic cleantech clusters and their marketing	33
4.1 About cluster branding and marketing – challenges and opportunities	33
4.2 The marketing of Nordic cleantech clusters.....	34
4.2.1 <i>Social media and cleantech cluster promotion</i>	39
5. Nation Branding, cleantech and clusters in the Nordic countries	42
5.1 The global brand image of the Nordic countries.....	46
5.2 Investment and export promotion and cleantech	51
5.2.1 <i>Prioritised markets for Nordic export and investment promotion</i>	54
6. Nordic cleantech marketing efforts	58
7. Towards a platform for strategic global marketing of Nordic cleantech	60
7.1 Challenges and opportunities for supra-national place branding	60
7.2 The rationale for joint Nordic marketing	61
7.3 Towards a joint Nordic marketing model for cleantech.....	63
7.4 Final recommendations	64
Interviewees	68
Appendix: Nordic Cleantech cluster organisations and their marketing	71

Table of figures

Figure 1: General weights of cleantech sub-categories globally and in the Nordic countries (in %).

Figure 2: Applications by Cleantech Sub-Category, Nordic Cleantech Open 2011 and 2012 (in %)

Figure 3: Weights of cleantech sub-categories in the Nordic countries (in %)

Figure 4: Examples of opportunities for coordination of communication resources between strong sectors and large corporations in each country

Figure 5: Ranking of strongest cleantech sub-sectors according to interviewees of study

Figure 6: Brand architecture of the Finnish Cleantech Cluster

Figure 7: The Nation Brands Index 2008

Figure 8: The Country Brands Index 2011-2012

Figure 9: Top green reputations in the Global Green Economy Index 2011

Figure 10: Assessment of vitality and investment opportunity in 27 cleantech markets in terms of perception and performance in the Global Green Economy Index 2011

Figure 11: Evaluation of the leading national investment and export promotion bodies in the Nordic region

Figure 12: Nordic cleantech companies in the Global Cleantech 100 list

Figure 13: Target markets of the main Nordic export and investment agencies

Preface & acknowledgments

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Executive summary

In the period 2011–2013, the Nordic trade ministers will assume responsibility for six lighthouse projects that will help to set the new innovation agenda in the Region. One of the six projects is the *Global Marketing and Communication of Innovative Nordic Cleantech Companies* as presented below, along with a brief description of their content, milestones for 2011–2013, and the country responsible for launching the project and overseeing its progress.

A joint Nordic marketing initiative has been launched to promote green technologies. If small and medium sized enterprises in the region are to attract greater foreign investment, there is a need for joint Nordic marketing to forge contacts and open up access to foreign investors. Efforts may include building on the experiences from EXPO 2010 Shanghai and www.nordicenergysolutions.org

- Milestones: A needs assessment will be conducted in 2011.
- Specific activities and funding will be organized in 2012.
- Activities are to be initiated by 2013 at latest.
- Responsibility: Sweden
- Secretariat: Nordic Innovation

This report is work related to the first milestone of making a needs-assessment.

The report has identified several conclusions and recommendations:

- The purpose of this report is to map how cleantech sectors and cleantech clusters in the Nordic countries are marketed today, and develop and suggest methods for and approaches to joint marketing of Nordic cleantech globally in the future.
- No doubt, the Nordic countries are among world leaders in clean technologies. This study indicates cleantech sub-sectors in which the Nordic countries exhibit strong global marketing readiness.
- The global community perceives the Nordic countries as sustainability and cleantech frontrunners, and there is a general perception that Nordic countries are environmentally friendly.
- However, there are indications that the Nordic countries are punching below their weight – that is, that they are not as recognised as they could

be for their cleantech competencies, calling for intensified marketing efforts to close this gap.

- In addition, the Nordic countries are too small, and have too limited resources for marketing to be recognised in and have an impact on some global markets. For example, the Nordic countries are relatively unknown in important emerging economies such as China, India and Brazil, calling for joint Nordic efforts.
- Joint global marketing and branding of Nordic cleantech can offer a range of benefits: among them more resources for marketing, image and awareness benefits, especially on distant markets, and a more attractive “product” in terms of a broader portfolio of different products and solutions.
- Clusters may have the potential to act as intermediaries in marketing of cleantech, especially as many cleantech firms are small and medium sized companies. Cluster organisations can open doors to decision makers in international markets, offer reputational spillover to cluster firms and provide cost-effectiveness in marketing, among other things.
- Many clusters, however, need to increase their strategic marketing capacity in order to be able to reach global markets. If cluster organisations are to assume a leading role in promoting Nordic cleantech globally, their marketing and strategic communication capacity needs to be increased considerably.
- Social media channels can offer a cost-effective and powerful medium for cleantech clusters and actors to share information, connect with interested parties and firms, and brand themselves in the global market. Cleantech Finland is one of the first movers in this space.
- To date, both Denmark and Finland have developed comprehensive nation-branding efforts in which promotion of cleantech and green credentials play a prominent role, and that also integrate regional cleantech clusters. At present, cleantech does not play as prominent a role in the other Nordic countries’ nation branding efforts.
- Lack of political will has in some cases hampered previous attempts to collaborate in global marketing of cleantech on a Nordic basis.
- Two distinct models for joint marketing could be suitable for the Nordic countries: a *promotion model* or a *branding model*. The promotion approach aims to establish a joint promotion mechanism, whereas the branding model tries to build a unified Nordic cleantech brand, backed by thematic sub-brands.

Recommendations of this study include the following:

- There is a need to combine a top-down and a bottom-up approach, meaning that policy support for joint Nordic marketing must be combined with strong involvement of organisations from the Nordic countries that work hands-on to promote cleantech.
- Collaboration efforts should focus on areas in which the Nordic countries exhibit truly globally competitive strengths. This study indicates in which areas of the cleantech field that the Nordic countries exhibit particular strongholds and where overlaps and synergies may exist.
- Create a common communication or branding platform. This should be done in an inclusive, stakeholder-driven process and include workshops, interviews and surveys in order to collect as many views as possible and create legitimacy and stakeholder buy-in for the platform.
- At the same time as a marketing collaboration is being developed and intensified, it is important to take steps to live up to marketing and branding claims with a common Nordic product offering. Joint business development and innovation projects are crucial for nurturing Nordic cleantech sectors and creating new, cross-border value chains.
- Implement a training programme to improve cleantech cluster's strategic marketing and communication capacity.
- There is a need to determine the extent to which cleantech clusters and the cleantech sector can be integrated into national branding and investment/export promotion bodies, especially in Sweden, Norway and Denmark.
- As for target markets, it has in this study become clear that joint marketing targeting the BRIC markets (and perhaps, with time, the Next-11 markets) would be a most viable and logical choice, and add most value, as all Nordic countries prioritise these markets.

As for concrete marketing activities, the following would be viable:

- Establish Nordic cleantech showrooms in (at least) all five capital airports in order to showcase unique Nordic solutions and technology.
- Establish a Nordic cleantech portal. Choose only one or two cleantech sub-sectors to begin with in a pilot project, and evaluate and draw lessons learned after a period of time.
- Establish a joint Nordic social media presence, at first perhaps only for internal dialogue and information sharing, then after some time expand the focus to be more international as the channels mature and consolidate.

- Run a pilot project on a market, which all countries prioritise and have strong marketing presence and evaluate and draw lessons learned after a period of time, which be used when new activities are planned. The Chinese market would be a strong candidate for such a pilot project.
- Organise Nordic high-level business delegations to key markets, including high-level political representatives of the Nordic countries, not only in order to achieve maximum impact on target markets, but also show that collaboration is prioritised and has backing at the highest political levels.

1. Introduction – is there a case for joint global marketing of Nordic cleantech?

”@Tatinho @AlexStubb @jensstoltenberg @Exportradet @DenmarkinUSA
NORDIC countries as one unit, not 4 [sic], might better develop BR relationship”.

Tweet made by “Brazilian Voice” suggesting that joint Nordic representation can develop the relationship with Brazil; one of the key emerging economic powerhouses globally – and a growing market for cleantech solutions. The tweet was made on the occasion of the visit of Finnish Prime Minister Jyrki Katainen and Minister for European Affairs and Foreign Trade Alexander Stubb to Brasília, Rio de Janeiro and São Paulo in February 2012. The ministers were accompanied by a business delegation promoting Finnish exports, representing around 60 Finnish companies, many operating in the cleantech sector. The tweet was directed to, among others, Alexander Stubb, the Norwegian Prime Minister, the Swedish Trade Council and the Danish Embassy in the US.

There is no doubt there are areas in which the Nordic countries stand to gain from increased co-operation. Specifically, these areas may be joint global marketing and branding to promote Nordic cleantech and sustainable practices.

The Nordic Council of Ministers recently announced the ambition to make the Nordic region a global frontrunner in green growth. For when it comes to sustainable practices and cleantech industries, it is clear that the Nordic countries are among world leaders. For example, a recent index of global cleantech innovation¹ put Denmark at the top, Sweden and Finland at third and fourth places respectively and Norway at 11th place, out of a total of 38 countries ranked².

However, there are indications that the Nordic countries are not fully recognised

¹ Cleantech Group and WWF; Coming Clean: The Global Cleantech Innovation Index 2012

² Iceland was not ranked.

for their expertise and knowledge in the field. Another index, the “Global Green Economy Index 2011”, measuring national green reputations and performance, reached the conclusion that the Nordic countries are top achievers in terms of performance in and investments into the green sectors, but lag behind several other nations in terms of reputation as attractive investment destinations – i.e. there is a negative image-reality gap between performance and perception.

As a result, investments made into making Nordic cleantech attractive to target markets do not achieve maximum return on investment, as these opportunities are not as well-known as they could be: one could say that the Nordic countries are punching below their weight. The Nordic countries, thus, have an opportunity to invest more in marketing to raise awareness worldwide about the investment and business opportunities in Nordic cleantech. This holds especially true for emerging markets; studies show that the cleantech industry has even greater potential to market its competencies to secure business exchanges in emerging markets.³ There are also indications that the Nordic countries, albeit being cleantech innovation leaders, face difficulties in scaling-up emerging, entrepreneurial cleantech companies to wider commercial successes,⁴ making a case for supporting cleantech firms in seeking new markets to ensure sustainable growth and in activities to attract later-stage investment such as private equity or project finance.

Hence, there are compelling reasons to take concrete steps to raise the profile of the Nordic countries’ achievements and competencies in cleantech industries. There is also a strong rationale for joint efforts in this field, as this report will show.

1.1 Purpose of report

Against the background detailed above, the purpose of this report is to map how cleantech sectors and cleantech clusters in the Nordic countries are marketed today, and develop and suggest methods for and approaches to joint marketing of Nordic cleantech globally, paving the way for the long-term goal of developing a joint Nordic marketing model.

Special attention is given to clusters in the cleantech field, assuming that these can constitute important intermediaries and channels between global markets and individual cleantech firms, especially smaller and medium sized ones (SMEs).

In terms of target markets for cleantech from the Nordic region, special emphasis is on emerging economies, especially the larger ones: Brazil, Russia, India and China (“BRIC”).

³ Nordic Innovation; <http://www.nordicinnovation.org/sv/projekt/lighthouse-projects/branding-the-nordic-region/>

⁴ Cleantech Group and WWF; Coming Clean: The Global Cleantech Innovation Index 2012

1.2 Structure of report

The second chapter will go over methodology, definitions and limitations. Chapter three contains an attempt to quantify the relative weight and strength of cleantech sub-categories in the Nordic countries in comparison with the rest of the world and relative to each other, with the ultimate aim of forming an indicative basis for how a distinct Nordic cleantech position and profile could be marketed. An attempt is also made to point out specific sub-segments and solutions where the Nordic countries can demonstrate a globally competitive advantage and where their readiness for global marketing is high (or potentially high). The overview also tries to give examples of leading firms in terms of exports and/or supply of competency. The purpose is to – in a brief and comprehensive manner – give examples of where Nordic countries share common features and where complementarities and potential synergies exist or can arise, and, thus, to demonstrate areas where a joint Nordic marketing platform could have most impact.

Chapter four is devoted to an analysis of Nordic cleantech clusters and their marketing. The purpose is to illustrate how clusters can work with marketing, and two distinct models are presented. The first sub-section of this chapter addresses why clusters aim for an improved reputation and challenges and opportunities that come with cluster branding and marketing, and the second contains an analysis of some of the current marketing efforts of Nordic cleantech clusters. One sub-section is also dedicated to how social media channels are used by the Nordic clusters.

Chapter five moves to the national level, where the different nation-branding efforts of the Nordic countries are described and analysed from the point of view of cleantech marketing. The analysis focuses on the integration between nation branding and cleantech clusters in particular. One sub-section illustrates how the Nordic countries are perceived in the world, from both a general and from a “green”/cleantech point of view. Another sub-section describes the different export and investment promotion agencies of the Nordic region and looks in more depth at how they work with the cleantech field and what their target markets are.

In chapter six, previous and on-going joint Nordic marketing and communication efforts are described. The purpose is to emphasise that experiences from earlier efforts need to be drawn on, and that synergies can perhaps be found between different efforts, so as not to duplicate work.

Finally, chapter seven begins by outlining potential challenges, but also opportunities, in supra-national marketing, which Nordic marketing is a case of, and continues by addressing the rationale for joint Nordic marketing. The next sub-section describes two distinctively different marketing models: one being a promotion approach and the other being a branding approach, which can both be viable avenues for future marketing collaboration. Last but not least, the final section describes the recommendations made by this report.

2. Methodology, definitions and limitations

2.1 Definitions

Many different definitions of the term “cleantech” exist, and to date no commonly accepted standard definition that describes the field and what it encompasses has emerged. That said, the working definition employed here is that “[c]lean technology (cleantech) is a general term used to describe economically competitive and productive products, processes or services that that use less material and/or energy, generates less waste, and causes less environmental damage than the alternatives.”⁵ Cleantech spans many industries, and many different sector segmentations are used. The one used here divides the cleantech sector into seven sub-categories:⁶

1. Transport
2. Recycling & Waste
3. Materials
4. Buildings & Energy Efficiency
5. Renewable Energy
6. Air, Water & Environment
7. Agriculture, Food

Each of these categories in turn contains a wide range of sub-segments, which will not be further elaborated upon here. However, those sub-categories that represent considerable strongholds across the Nordic region will be addressed in chapter 3.2. For an exhaustive list of sub-segments, please refer to: <http://research.cleantech.com/browse-taxonomy/>.

⁵ This is based on a combination of two definitions:

<http://www.businessdictionary.com/definition/clean-technology.html> and the one used by Clean Technology Trade Alliance, a global initiative to drive the expansion of cleantech.

⁶ This segmentation has been developed by Bearing Consulting for the purpose of this report, drawing on established sources such as www.cleantech.com and www.cleantechofsweden.se.

The definition of clusters used in this study is the one developed by Michael Porter, which without doubt is the most widely accepted: “Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region.”⁷

A cluster organisation can be defined as the legal entity engineering, steering and managing the clusters, usually including participation and access to the cluster’s premises, facilities and activities.⁸

2.2 Methodology and limitations

The study is based on a combination of two main research methods. First, interviews have been carried out with 53 persons, mainly representing clusters in the field of cleantech and national investment and export promotion agencies, but also business networks and international projects, in the Nordic countries. The interviews took place between January and March 2012. This method was chosen in order to understand how Nordic cleantech is marketed today and to collect the experiences of and attitudes towards Nordic collaboration in the field. Because of the project’s limited scope, no interviews were made directly with businesses, which are certainly central actors in the field of marketing of cleantech. In a possible follow up to this study or operationalisation and implementation phase based on the recommendations on it, close dialog should be maintained with cleantech firms. The second method was desk research, in the form of gathering information from research, investment and policy reports and indices, annual reports, websites, social media channels and discussion forums, etc. This was done especially to collect material used to qualitatively identify and quantitatively evaluate cleantech competencies and sub-sectors that are particularly strong or promising in the Nordic countries.

The distinction between cleantech clusters and cleantech sectors more broadly is hard to quantify exactly. As a general assumption, the cleantech clusters in each Nordic nation represent about 50 % of the total cleantech market domestically (in the case of Finland, 60 % of cleantech firms are said to be within the four main cleantech regions, according to the national Finnish Cleantech Cluster organisation). Many of the cleantech businesses not linked to clusters are part of larger, diversified companies, not necessarily “pure play” cleantech firms. As a result, it is fair to assume that cleantech clusters represent one significant organisational unit for coordinating and communicating Nordic cleantech competences and investment opportunities to the global marketplace.

Consequently, it has in this study been assumed that cluster organisations (defined below), gathering firms and other cluster stakeholders are – and can increasingly become – important actors in the global marketing of cleantech firms and solutions,

⁷ Harvard Business School; <http://www.isc.hbs.edu/econ-clusters.htm>

⁸ European Commission; http://ec.europa.eu/enterprise/policies/innovation/files/clusters-working-document-sec-2008-2635_en.pdf

for a number of additional reasons. First, as many cleantech firms are small and/or newly started with limited access to export or investment markets, cluster organisations can constitute an important intermediary between these companies and international markets, offering, among other things, contacts and linkages with international clients, reputational spill-over effects to cluster firms and access to cost-effective joint marketing mechanisms. Cluster organisations can also substitute for lack of marketing capacity on the part of cleantech firms. One characteristic of many cleantech firms globally is a lack of polish and sophistication with branding and strategic communications. Often the core competency of cleantech firms is either technical or scientific in nature and not necessarily focused on the external presentation and brand image of the firm. Second, many cleantech solutions are systems-based, involving multiple, often geographically proximate, suppliers organised in consortia and/or in value chains. It is assumed here that the cluster level is a relevant organisational unit comprising many of the firms in a value-chain or consortium of systems suppliers.

The clusters studied have been identified based on qualitative indicators, with an organised, systematic cluster initiative in a given region being the main indicator for identification. Thus, cluster organisations are here used as a proxy for the existence of a cluster. One reason for this choice of method is that available statistical data (e.g. European Cluster Observatory) does not include cleantech as an industry category. Another reason is of course that cluster organisations, as organisational entities, can constitute important actors in the marketing of cleantech, as argued above.

Admittedly, this focus has potential flaws. It could be argued that cluster organisations can exist even though there is no “real” cluster in terms of critical mass of firms and other institutions and no substantial cluster dynamics at play; by some termed as “wishful thinking” clusters or policy-driven clusters⁹. What is more, it has in this study become clear that many organisations label themselves cluster organisations, even though the appropriate label would be “business networks” or “trade associations”.

Conversely, there may be cases where there are cluster formations in terms of critical mass of firms and a particular source of advantage in a location, but no organised cluster effort to represent the formation, and these may have been overlooked in this study. However, given how common the initiation of cluster initiatives have been in regions and cities in Europe in the last decade, especially in the cleantech field, this flaw is probably less severe than the first one.

Time and resource constraints also influenced the choice of cluster organisations to study closer. To capture clusters with a high degree of cleantech firms and activity, a choice was made to primarily study clusters that explicitly defined themselves as “cleantech clusters” or that organise core cleantech firms and sectors (for example

⁹ Enright and Hung Kai, 2000, Survey on the Characterisation of Regional Clusters: Initial Results, Working paper.

clusters in renewable energy, such as hydropower and wind power, energy efficiency and water treatment). In some cases we also analysed cases of other cluster organisations that demonstrate a high degree of cleantech elements, such as clusters in nanotech, but these clusters have not been prioritised. Thus, clusters in sectors such as forestry, food, ICT, logistics and automotive, that admittedly comprise many firms focusing on clean technologies, solutions and services, have not been included in the focus, which represent a weakness.

Another limitation is that global demand for cleantech will not be addressed in detail in this study; the assumption will be made that global demand is high for most cleantech sub-sectors, especially in emerging countries. As an indication, various reports show that global demand is growing every year. For example, the WWF and Roland Berger's 2011 Clean Economy, Living Planet report found that the global clean energy technology market has grown 31 % annual between 2008 and 2010. Clean energy investments also weathered the 2008-09 financial crisis storm relatively well, with investment only dropping 6.6 %, which can be favourably compared to the 19 % decline for the oil and gas industry¹⁰. To illustrate the rising demand of emerging markets, such as China, it should be mentioned that, according to the Swedish Government,¹¹ exports of Swedish cleantech to China increased by 50 % between 2008 and 2009; the market is now the second largest market for Swedish cleantech after Germany.

¹⁰ The Pew Charitable Trusts; Who's Winning the Clean Energy Race?, 2010.

¹¹ Strategi för utveckling och export av miljöteknik 2011-2014.

3. Cleantech competencies – mapping the Nordic cleantech sector

3.1 Mapping the Nordic cleantech sector

The purpose of this section is to try to quantify the relative weight and strength of cleantech sub-categories in the Nordic countries in comparison with the rest of the world, on the one hand, and, on the other hand, relative to each other, with the ultimate aim of forming an indicative basis for how a distinct Nordic cleantech position and profile could be marketed.

Quantifying and segmenting the Nordic cleantech sector is inherently difficult. First, the sector is not tracked in a comprehensive manner, a fact that often marginalises the Nordic region from investment consideration because outsiders do not have one go-to source for industry data. International firms specialising in cleantech company tracking and investment data, including Bloomberg New Energy Finance and Cleantech Group, tend to focus on the G-20 in their public reporting, further marginalising the Nordic cleantech sector from inclusion in global news coverage and other media.

Furthermore, the cleantech sector is fragmented and comprised of a wide range of companies and activities. As indicated above, there is still no global consensus on what actually defines “cleantech” as an industry, meaning that one cannot easily compare one data source to another for fear that the categorisations and underlying assumptions are inconsistent. Also, cleantech business activities can be linked to start-ups, public companies, spin-offs of larger firms, clusters or fully owned units of diversified firms, adding to the difficulty of pinpointing the size and activities of the sector.

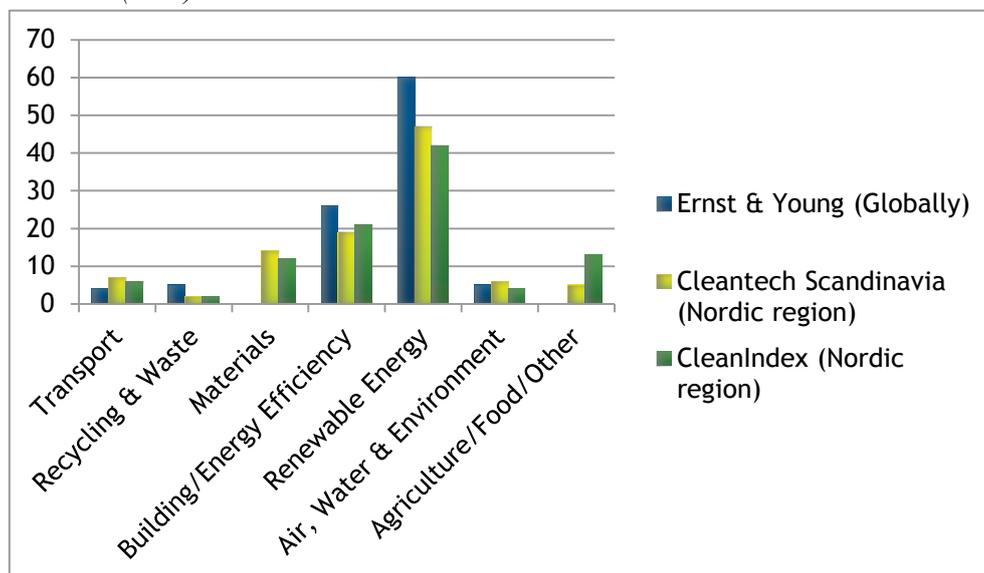
That being said, one can generate an approximate mapping of the Nordic cleantech sector by considering three different dimensions: cleantech activities within large, established firms in each Nordic country; investment flows into sub-categories within the cleantech sector; and cleantech start-ups or “pure play” firms in each sub-category, segmented by Nordic country. For the purpose of this analysis, we

will consider (where feasible) the seven sub-categories within cleantech described above.

The relative “weight” or “size” of each sub-category will be expressed as a percentage rather than as investment volumes or business turnover. This is because like the challenges in defining the activities of this sector, definitions of “cleantech investment” are also notoriously inconsistent: many sources (including Cleantech Scandinavia) define investment primarily as “deals” via venture capital or private equity based capital (VC/PE). However, cleantech investment globally is often categorised more broadly, encompassing government investment, capital raised via public market IPO,¹² asset finance, debt finance and of course VC/PE. It is important to note that VC/PE is only a developed investment practice in certain parts of the world and can be almost non-existent in others. Thus, it is important to state explicitly the underlying working definitions of both “cleantech” and “cleantech investment” in this type of analysis.

Looking at the global cleantech market (via Ernst &Young List of 2010 “Pure Play” Public Global Cleantech Firms¹³) and the Nordic region (via Cleantech Scandinavia’s 2010 Nordic Investment Data by Sub-Category and Clean Index’ Tracking of Nordic Cleantech “Start-ups” by Sub-Category) reveals the following general weights of the seven cleantech sub-categories¹⁴ under consideration:

Figure 1: General weights of cleantech sub-categories globally and in the Nordic countries (in %).



Source: Ernst & Young (2011), Cleantech Scandinavia (2010), CleanIndex, authors’ calculations.

¹² Initial public offering, i.e. the first sale of stock by a private company to the public.

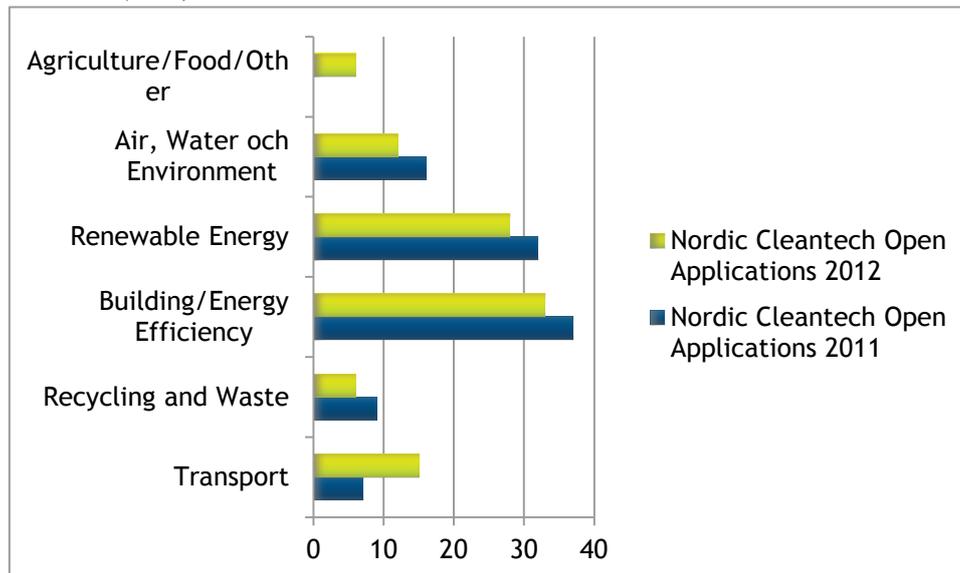
¹³ Cleantech matters: Seizing transformational opportunities, Global cleantech insights and trends report 2011

¹⁴ Categories “Materials” and “Agriculture/Food/Other” were not categorised in Ernst & Young’s Index.

Global investment in renewable energy and biofuels consistently ranks highest of the seven cleantech sub-categories being considered. The listing of “pure play” public global cleantech firms developed by Ernst & Young based on data from Bloomberg New Energy Finance confirms this trend, although renewable energy firms may be more mature than companies in some other sub-categories, skewing the global results in their report to favour renewable energy as a sub-category, as few start-ups pursue IPOs in their infancy.

Looking at the Nordic region, both the investment dimension (via Cleantech Scandinavia) and the company tracking (via CleanIndex) reveal similar mappings of the “pure play” Nordic cleantech sector. Mirroring the global trend, renewable energy and building/energy efficiency are the two largest cleantech sub-categories in the Nordic region. The other five sub-categories appear to be smaller shares of the Nordic cleantech market. However, the downside to depending upon current investment or start-up data is that they do not capture forward-looking innovations and other long-term sector developments. Anecdotally, recent applications to the Nordic Cleantech Open (sponsored by Cleantech Scandinavia) reveal slightly greater representation of these other six sub-categories¹⁵ as compared to present day investment flows and start-up counts, questioning whether the more established sub-categories of energy efficiency, building and renewable energy may diminish their share of the Nordic cleantech market in the longer term:

Figure 2: Applications by Cleantech Sub-Category, Nordic Cleantech Open 2011 and 2012 (in %)

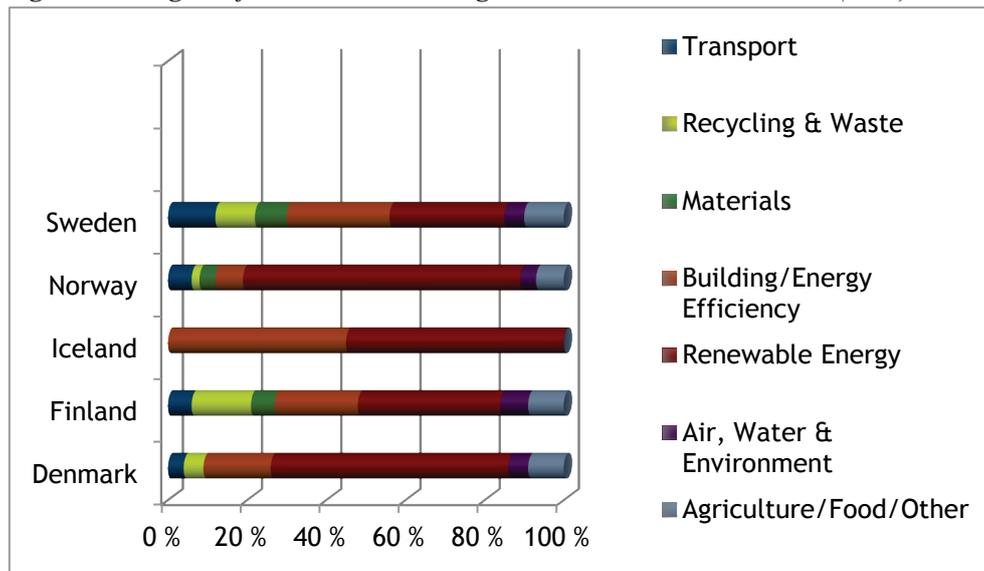


Source: Cleantech Scandinavia

¹⁵ “Materials” were not categorised and “Agriculture/Food/Other” was only categorised for 2012.

While comparing the Nordic region to the rest of the world reveals a slightly more diversified cleantech sector with less focus on renewable energy and energy efficiency/buildings, a closer look at each Nordic nation illustrates nuances in Nordic cleantech that are key factors to consider when formulating branding and strategic communications plans for the region:

Figure 3: Weights of cleantech sub-categories in the Nordic countries (in %)



Note: Data derived from analysis of CleanIndex start-up database. CleanIndex covers cleantech start-ups in the Nordic region with the goal of providing investors with data and insight on investment opportunities in the Nordic region. Their website is www.cleanindex.net.

Another way of addressing the question of internationally competitive cleantech areas may be to look more broadly at large, diversified firms in these Nordic nations and attempt to identify synergies or overlaps where established companies and newer start-ups can reinforce one another. This type of co-ordination can potentially focus both investment and communications resources. On the investment side, linking start-ups with complementary units within larger firms may refine their business functions and highlight where and how capital can best be directed. On the communications side, this type of co-ordination takes advantage of already established economic activity, allowing newer communications channels to work in tandem with established ones, potentially amplifying their impact.

While it remains difficult to quantify the investment volume and business turnover of cleantech activities within larger, diversified Nordic firms, the table below illustrates some examples of established Nordic firms whose cleantech activities could be co-ordinated with smaller firms operating independently or within clusters:

Figure 4: Examples of opportunities for coordination of communication resources between strong sectors and large corporations in each country

	Denmark	Sweden	Norway	Finland	Iceland
<i>Sector Examples</i>	Wind	Transport	Hydropower	Pulp, Paper	Geothermal
<i>Large Firms w/ Cleantech Overlap</i>	Vestas	SAS Group	StatOil Hydro, Haflund	Stora Enso, UPM/Kymmene	Landsvirkjun

**This analysis considered the top 75 Nordic firms defined by annual turnover and researched where, if at all, cleantech activity existed in their business portfolio.*

In this study, one way to approach the issue of strengths of sub-sectors and competencies has also been to ask respondents of this study about their perceptions. Respondents were asked to name the strongest cleantech sub-sectors and competencies in their own country and in the other Nordic countries in an international perspective. An attempt to quantify these responses in order to better understand where the Nordic countries have their main (perceived) strengths in cleantech gave the following ranking of the four strongest sub-sectors and competencies in each country:

Figure 5: Ranking of strongest cleantech sub-sectors according to interviewees of study

Country	Sub-category / cleantech competency
Denmark	<ol style="list-style-type: none"> 1. Wind 2. Bio energy 3. Water 4. Energy efficiency, esp. smart grid
Finland	<ol style="list-style-type: none"> 1. Energy efficiency 2. Bio energy 3. Environmental monitoring and measurement 4. ICT in cleantech
Iceland	<ol style="list-style-type: none"> 1. Geothermal 2. Hydro power 3. Energy efficiency
Norway	<ol style="list-style-type: none"> 1. Hydro power 2. Solar 3. Wind, esp. offshore 4. Bio energy
Sweden	<ol style="list-style-type: none"> 1. Bio energy 2. Bio fuels 3. Waste, esp. waste to energy 4. Energy efficiency

In sum, looking at country-level cleantech markets illuminates opportunities to position each Nordic nation more clearly according to their strengths within sub-categories of cleantech and based on what the Nordic countries think they are internationally good at.

Norway and Iceland are strongly identified with renewable energy, although for different reasons. In Iceland, most renewable energy start-ups appear to relate to the nation's core industries of geothermal energy production and hydropower. While Norway's long association with hydropower appears to reinforce some start-ups, the country's renewable energy sector is far more diversified, encompassing solar, wind, hydro and bio energy in addition to firms focused on components and processes in these areas. Renewable Energy Corporation, the Norwegian solar-energy giant, confirms that Norwegian cleantech extends beyond spin-offs from the hydropower sector. Interestingly, in the interview process solar, wind (especially offshore wind), hydro and bio energy were specifically singled out as the strongest sectors in Norway from an international perspective. However, the hydropower sector was seen as punching below its weight in international comparisons.

Denmark also appears to be heavily weighted towards the renewable energy sector, although this can be deceptive as wind giant Vestas, while not included in the list of "start-ups" in the above statistics, could skew the data by fostering innovation and new companies linked to wind power generation. In the interview process, wind energy was highlighted as Denmark's prime strengths, but respondents frequently also pinpointed energy efficiency (especially smart grids), bio energy, water treatment and purification and waste to energy solutions as strong Danish sectors.

In Sweden and Finland, cleantech start-ups are more evenly distributed across the seven sub-categories and it seems less clear how, if at all, one would intelligently "market" a sub-category with the goal of differentiating the country's cleantech sector. This picture could be confirmed in the interview process, where both Finland and Sweden were said to be fairly strong in all cleantech sub-segments, but lacking a distinct international profile. The latter observation holds especially true for Finland: respondents in other countries had difficulties pointing out strong Finnish cleantech sectors. In the case of Sweden, it was claimed that its main strength is precisely the broad cleantech focus and the ability to combine different cleantech areas in holistic system solutions. One Swedish system solution that has sparked international interest is the "SymbioCity" marketing concept (described in case one below).

CASE 1**SymbioCity – Sustainability by Sweden: a marketing platform for Swedish system solutions**

The concept “SymbioCity – Sustainability by Sweden” is used in the marketing of the Swedish model of sustainable city development around the world. It was introduced ten years ago as an initiative of the Swedish Government and Swedish Industry and is administrated by the Swedish Trade Council, with offices in over 60 countries. In 2011 alone, the concept was presented at more than 30 international fairs, seminars and business delegation meetings.

The concept focuses on the synergies between the urban functions in the development of city sustainability. Using a systems thinking approach and having resource efficiency as a guiding principle, SymbioCity focuses on all parts present in the development of city sustainability. It is a holistic concept: every part of the city, from architecture, to transportation, to waste management and water supply is included.

The SymbioCity concept also offers practical solutions and has already been put into place in areas in several Swedish cities. Perhaps the most known project is Hammarby Sjöstad, an eco-friendly district in Stockholm.

Swedish firms within the SymbioCity network operate in countries such as China, Canada and South Africa. Based on an open-source logic, all Swedish firms working with sustainable urban development and cleantech are free to use the concept in their marketing activities

3.2 Specific sub-sector strengths in the Nordic countries

In an attempt to fine-tune the picture further and point out specific sub-segments and solutions where the Nordic countries can demonstrate a globally competitive advantage and where the readiness for global marketing is high (or potentially high), a qualitative analysis has been done, based on desk research, interviews and statistical data. The overview also tries to give examples of leading firms in terms of exports and/or competence supply. This analysis makes no claims of being completely exhaustive or statistically objective – it is rather an attempt to give examples of where the Nordic countries share common features, where complementarities and potential synergies exist or could arise, and, thus, to demonstrate areas where a joint Nordic marketing platform could have most impact.

Using the sub-categorisation above, a few particular sub-segments that offer high potential for global marketing can be singled out¹⁶.

¹⁶ This overview is based on a report produced by Bearing Consulting, tailor-made for the purpose of this study. The report can be received from this report’s lead author.

1. Biofuels

Biofuels include fuels derived from biomass conversion, as well as solid biomass, liquid fuels and various biogases. The world market for biofuels was 70 billion Euros in 2011, according to UPM, and an annual growth of 8 to 18 % is predicted.

Based on the historic tradition of utilising wood as a resource for producing energy, the Nordic countries have built a strong competency base, which has been further strengthened by advances resulting from several technologies. To give an example, BioDME is made from black liquor, a by-product of the pulp and paper industry. The result is a fuel that is energy efficient, non-toxic and renewable and with low exhaust and greenhouse gas emissions. For example, the plant at the Smurfit Kappa paper Mill in Piteå, built by Sweden-based Chemrec and Danish Haldor Topsøe, produces 4 tons of so called BioDME per day.

Leading companies in the bio fuels segment can be found in all Nordic countries: Novozymes and Borregaard in Denmark, Neste Oil, Pöyry and Metso in Finland and Sekab and Swedish BioFuels in Sweden, to name a few. According to the interviewees of the study, all the Nordic countries occupy advanced positions in this segment, and Sweden in particular is seen as a world leader in the production and use of bio-fuels.

2. Wind power

A renewable energy segment, wind power is Denmark's leading cleantech export and today almost half of the wind turbines around the world are produced by Danish manufacturers such as Vestas and Siemens Wind Power along with many component suppliers.

As a consequence, a Nordic component industry has developed. One such example is SKF in Sweden, which designs and develops bearings, sealing and lubrication systems, enabling more cost-effective energy generation. Vestas (DK), SKF (SE), Aker Verdal AS (NO), ABB (SE), WinwinD (FI) and Mannvit (IS) are all examples of major Nordic actors in the competence supply chain in wind power. In addition, innovative offshore wind energy projects are under way in both Denmark and Norway. In the case of Norway and to some extent Denmark, offshore competencies from the offshore gas and oil industry and the countries' maritime traditions form a competency basis for advances in this field. Among the respondents of this study, Denmark is without doubt seen as a world leader in wind energy, and many acknowledge the increasingly prominent position of Norway and, in providing components, Finland and Sweden.

There is also growing co-operation in the Nordic region on a research level, as well as within the windmill manufacturing industry. Unfortunately, some Nordic cross-border co-operation has been unsuccessful in the manufacturing field.

There is international awareness that the Nordic market represents one of the most interesting areas for windmill penetration. There are at least four factors that

contribute to this: a) a huge geographical area; b) positive wind performance, especially along the coastlines; c) low population density allowing for windmills to be erected; d) a well-established distribution grid system.

3. Geothermal generation

Iceland is famous for its geysers and has developed skills and techniques to extract heat and energy from the ground. Icelandic geothermal energy is primarily used for heating and increasingly for electricity generation.

In 2005, 24 countries had installed geothermal power capacity, generating 55,709 GWh per year of green power, according to the International Geothermal Association (IGA). The use of geothermal power increased by 20 % between 2005 and 2010. Geothermal energy now produces enough electricity to meet the needs of 60 million people. It is considered possible to meet up to 8.3% of the world's total electricity consumption with geothermal resources, serving 17% of the world population, according to IGA.

Geothermal development appears to be increasingly supported by a global financial market. A growing number of countries, including Australia, China, Germany, Iceland, Italy, Japan, and the US, are facilitating geothermal development projects around the world. Forms of support other than financing, including technology sharing, training, and geological surveys are also being endorsed by outside governments. Often considered the model of geothermal development, Iceland continues to grow its geothermal portfolio. With a small population, the country is currently generating 72 % of its power from renewable sources, deriving 25% of its electricity and 90% of its heating from geothermal resources. One of the leading export companies and competence suppliers is Mannvit, the largest engineering firm in Iceland. This company has been a key player in Iceland's geothermal development and has also been involved in numerous geothermal projects worldwide.

In contrast, Denmark is not well suited for geothermal power production at all, but it still excels in geothermal heat production, with plants currently exploiting geothermal heat energy and more in the works. Geothermal use in Norway has skyrocketed with the installation of 26,000 ground source heat pumps over the past few years.

Iceland's strong position in this segment was acknowledged across the board in the interview process.

4. Smart grids

A "smart grid" is a strategic part of most cleantech activities. It is therefore necessary, when discussing cleantech support in the Nordic context, to elaborate the potentials and market values of the smart grid. Smart Grids are digitally enabled electrical grids that gather, distribute, and act on information about the behaviour of all participants (suppliers and consumers) in order to improve the

efficiency, importance, reliability, economy, and sustainability of electricity services.

Many market actors perceive a huge market value for smart grids. Most modern industries are influenced, even though the traditional power industries are in the forefront. The strong international position of the Nordic power industry is an argument in favour of increased interest in this part of the cleantech industry.

Most electric utility companies in the Nordic market are influenced by various smart grid initiatives. Competency is often based on the elaboration of showcases or demo sites where the new smart grid solutions are verified in their full practical operations. An important step towards a better supply of competence for smart grids in the Nordic market was recently taken in connection to the EU initiative to establish its European Institute of Technology (EIT) energy hub in the Nordic market. A hub, called KIC InnoEnergy (KIC means “Knowledge and Innovation Community”), has been established in Stockholm with a clear focus on developing a “European Smart Electric Grid and Electric Storage”. Their ultimate aim is to create a sustainable, safe and low carbon energy supply for Europe. KIC InnoEnergy comprises 28 top European players in industry, research institutes, universities and business schools.

Large, diversified corporations such as Siemens, General Electric and ABB are all active in developing smart grid solutions, and all have a strong presence in the Nordic countries. The smart grid segment also includes construction and real estate developers as well as ICT companies and software providers.

In all the Nordic countries there are platforms available which will enable the development of smart grids in the years to come.

For example, “Smart Grid Norway” is a Norwegian platform for smart grids in the country with companies such as EB, Nera, Teamcom, Teamnett, Phitec Solutions and Scandinavian Electric. The ICT dimension is obvious here. The Icelandic platform is called “Iceland Smart Grid Network”. The aim here is (also) to accelerate the pace of smart grid deployment. The same type of platform is also available in Finland. The Danish company DONG Energy ranks among world leaders when it comes to wind farms. It has more than 15 years of experience designing, building, and operating wind farms and has been involved in 5 of the world's 10 largest wind farms. By 2020, it will triple its production of renewable energy, and offshore wind will play an important role. As a result, DONG is deeply involved in smart grid projects throughout the country.

Denmark has also taken on the idea in the development of demo sites. With over 20% of all the EU's smart grid development projects, Denmark has been singled out as the perfect springboard for Europe's estimated \$80 billion marketplace for smart grid solutions by 2020 (Pike Research). An interesting and updated catalogue on smart grid projects has been gathered in the EU report “Smart Grid projects in Europe – Lesson learned and current developments” (EU, JCR-IE Institute for Energy, 2011). The most frequent projects fall in the category of smart meters and integrated systems. An impressive number of Danish projects are described here.

Demo sites for smart grids have also recently been formed in the other Nordic countries. One of the most ambitious projects is in Stockholm within a new city district called “Royal Sea Port” (Norra Djurgårdsstaden). This is a joint initiative between Fortum, ABB and Royal Institute of Technology. The Island of Gotland is home to another innovative project. In Finland ABB, Helsingin Energia, a public utility in the Finnish capital Helsinki, and Nokia Siemens Networks, are designing and installing a large-scale smart grid in the new Kalasatama district of Helsinki. The R&D project will test the concept of a flexible, low-emission power network in the district as part of a larger initiative to lift Helsinki's environmental profile with a focus on the sustainable and efficient distribution of power.

There is clear international awareness that the Nordic market has many advantages for a positive smart grid development in the years to come, but it remains to be resolved how this market potential can materialise into concrete and widespread investment opportunities and export projects. Among interviewees, all the Nordic countries were perceived as frontrunners in smart grid development, boding well for synergies in marketing of Nordic know-how in the field.

4. Nordic cleantech clusters and their marketing

This chapter addresses why clusters attempt to improve their reputations and the challenges and opportunities that come with cluster branding and marketing.

4.1 About cluster branding and marketing – challenges and opportunities

Generally speaking, clusters aim for an improved cluster brand image for several reasons. According to previous studies, these reasons are the most commonly cited:

- Promote internationalisation, sales and export;
- Attract investments and venture capital;
- Attract skilled professionals;
- Attract new firms;
- Gain national or international recognition in order to showcase the importance of the cluster's main sector vis-à-vis national policymakers for reasons of opinion forming and/or in relation to EU officials in charge of funding programmes.

One of the most important effects of cluster reputation is that it reduces risk and has a legitimising effect, especially when it comes to SMEs, as cluster reputation can act as a surrogate for corporate reputation, substituting for SMEs' own lack of corporate reputation. As such, it can make investors perceive investments into an unknown SME as being less risky. Export buyers also perceive buying from cluster firms established within a cluster as being less risky, as the cluster helps guarantee that the SMEs meet the minimum requirements to be in a particular field, reducing legitimisation costs, such as costly marketing, for SMEs wanting to sell in foreign markets or look for foreign collaborators. It has also been established that cluster reputation can help cluster actors diversify into new areas as it produces image-related economies of scale, i.e. the reputation is an externality that can be used by cluster actors when entering new areas of business activity.

In addition, cluster members can benefit from sales- and export-oriented marketing complementarities and joint marketing mechanisms such as company referrals,

trade fairs, trade magazines and marketing delegations.

As for the branding and marketing of clusters, previous projects and research have identified a number of characteristics and challenges for clusters' attempts to build brands:¹⁷

1. There is a strong reliance on corporate communication and marketing techniques in cluster branding efforts. However, concepts of bottom-up branding, stakeholder inclusion and co-creation of the brand used in the general field of place branding could potentially improve the sense of ownership and commitment by cluster stakeholders.
2. Cluster branding is often seen as a pure communication challenge, and the capacity to use strategic marketing and brand building is often low. As a result, branding as a cluster development tool might be underused and underestimated, and there is scope for more strategic alignment of communication and activities and other development efforts of the cluster.
3. Clusters face challenges in expressing distinctiveness and differentiating themselves from one another, and, frequently, conformity is preferred to differentiation.
4. There is a large scope for many clusters to use their surrounding place(s) and their image more in their branding and marketing communications.
5. There is a strong reliance on "facts and figures" and tangibles and less of a focus on soft factors and intangibles – making it challenging to cater to target groups' social and cultural needs. Areas that can communicate and develop an attractive physical and social environment will be more able to encourage cluster members' commitment and involvement.

4.2 The marketing of Nordic cleantech clusters

This chapter contains an analysis of some of the current marketing efforts of Nordic cleantech clusters.

When it comes to effects of cluster reputation and marketing, the respondents of this study assert that the largest marketing effect associated with cluster organisations in the cleantech realm is that they help to open doors to high-level decision makers. This effect is said to be especially useful in relation to policymakers and civil servants, as many buyers of cleantech solutions and systems are city and regional governments and other public institutions. The public element of cluster organisations is an important component in this regard, where public ownership or membership in the organisation makes it possible for the cluster organisation to act as a representative of their regional, city or country government.

¹⁷ E.g. Andersson and Ekman, 2012, the function and characteristics of cluster branding, conference paper presented at the International Place Branding Conference 2012

Several respondents state that this effect is absolutely essential in order to get access to decision makers in countries such as China and Russia, and that individual companies suffer from major roadblocks to direct access to decision makers in these and other countries.

In addition, cost-efficiency is cited as an argument for joint cluster marketing. For example, attending international trade fairs and exhibitions and organising marketing events overseas are costly ventures, out of reach for many smaller companies. Organising delegations and events under the auspices of the cluster and sharing costs is therefore attractive for many firms.

The study could also confirm earlier observations that the cluster and its reputation help reduce risk for investors and potential export buyers. The cluster can also make the firm more attractive in the eyes of investors as they see the value of a firm having access to a network and an ecosystem of other firms and supporting institutions, considered important for collaboration and innovation activities, some respondents claimed. Respondents also said that the cluster can put individual companies in a broader context, thereby creating opportunities that otherwise would not have arisen – for example that individual firms, especially smaller start-ups, get a chance to meet investors or export buyers that they would have had difficulties to get in touch with on their own.

Nordic cleantech clusters at present have mixed results in the realm of promoting themselves and their members. The absolute majority of the 34 Nordic cleantech clusters identified and analysed in this study do have websites where they outline basic information about membership, cleantech focus areas and services provided. Most clusters provide websites in English, and some also in other languages, with Chinese being dominant. In the realm of communications, the majority of efforts appear to be focused on less visible “behind the scenes” functions such as attending trade shows and conferences, organising seminars and lectures, providing guidance to research facilities and other institutions, matching core competencies and providing knowledge about the cluster region’s labour and business environment. Receiving incoming and organising outgoing business delegations and technical visits are also fairly common activities. Here collaboration with embassies and trade councils is common, both in host countries and with foreign missions in the Nordic countries.

These functions are undoubtedly useful and the face-to-face, localised support they provide surely facilitates networking and connections that result in concrete value being delivered to the cleantech cluster companies. However, for Nordic cleantech clusters to assume a leading role in promoting cleantech in these five countries, their approach to strategic communications and branding will need to be developed further. At present, few of the studied clusters are geared towards global marketing and lack capacity for strategic marketing. For example, few cluster organisations have singled out strategic plans and priorities for communication and marketing, clearly defined target markets and/or overall themes for positioning the cluster. Many cluster organisations also have a quite narrow view of what marketing entails; many spontaneously refer to advertising when addressing marketing

efforts. Several recently founded cluster organisations are in the midst of creating strategic marketing and branding plans, though.

As for target groups, most clusters primarily target export buyers (both public and private), followed by investors. Skilled professionals were quite rarely targeted, but several respondents acknowledged that this target groups may increase in importance for cluster firms. When it comes to target markets, it is difficult to see any general patterns. See appendix one of the report for a comprehensive overview of all interviewed cluster organisations and their marketing focus and activities.

It is important to underline that not all cluster organisations have external communication and marketing as a key activity; some of them focus solely on internal matters such as networking and capacity building of cluster stakeholders.

By looking more closely at the five Nordic nations, an interesting trend emerges where two distinct forms of cluster network organisation and associated communications appears to be emerging.

The first, observed in Sweden and Norway, features a larger quantity of clusters or cluster networks operating relatively independently from one another and defined by a combination of geography or sector focus within cleantech, but lacking a strong, branded national body integrating the clusters and communicating their merits to a global audience. The 11 cleantech clusters or networks in Sweden, representing a variety of regions (e.g. Stockholm Cleantech, Malmö Cleantech Cluster, Cleantech Östergötland), lack a unifying body tasked with representing and “branding” Swedish cleantech as a whole to the global market. However, a step towards more co-ordination between the Swedish clusters have been taken recently in form of a collaboration between the Swedish Trade Council and the Association of Swedish Environmental Technology Industries (ASSET), which has many cluster organisations as members, aimed at creating a national programme for technical visits. The overall aim is to strategically optimise this tool by creating a package of several destinations to visit and forming a common overall idea of what to promote and communicate to the incoming delegations.

Similarly in Norway, where at least seven cleantech clusters exist, focused on water treatment (Clean Water Norway), smart grids (NCE Smart Energy Markets), waste and renewable energy/environment (e.g. Oslo Renewable Energy & Environment Cluster and Norwegian Offshore Wind), there is a similar lack of cohesion in the external presentation of these different clusters. INTPOW and Green Business Norway are a public-private partnership with national coverage with a possible mandate to unify this diverse sector within Norwegian cleantech clusters, but their roles are not completely clearly understood at present. Iceland has two cleantech clusters, the Iceland Ocean Cluster and the Icelandic Geothermal Cluster, and while these two organisations increasingly serve critical co-ordination roles, they do not yet appear to have a well-developed branding and communications function internationally, nor are they organisationally or perceptually linked to a branded national body promoting cleantech. That being said, the Icelandic Geothermal Cluster has recently embarked on an ambitious cluster development effort, which includes many components of global marketing

to be developed over the course of next few years (e.g. an Iceland Geothermal 2013 conference, having global ambitions). Read more about Iceland's global image as a renewable energy nation in case two.

CASE 2

Public diplomacy shaping Iceland's global image as a geothermal energy nation

The Geothermal Training Programme of the United Nations University (UNU-GTP) is a postgraduate training programme, aiming at assisting developing countries in capacity building within geothermal exploration and development. Based on a collaboration between the United Nations University and the Government of Iceland, the programme is an integral part of Iceland's development assistance policy. It has operated in Iceland since 1979 and 400 students have gone through the six-months training programme.

Students enrolled in the programme work closely with Icelandic firms in the sector during their training, and relationships are formed between the students and the. Once back in their home countries, many students take up or continue their career in the geothermal industry, and turn to Icelandic companies when seeking expertise, services and technology.

By some described as the "flagship of the Icelandic geothermal energy sector", the university programme not only creates direct, productive linkages to global markets but also helps to build Iceland's image as a leading renewable energy nation.

As a consequence, the newly founded cluster organisation Icelandic Geothermal Cluster has singled out education and attraction of students as important elements in the overall strategy for creating an attractive and globally leading energy cluster.

The second trend, observed clearly in both Finland and Denmark, features an increasingly coordinated organisation between cleantech clusters and international communications. In the case of Finland, four originally disparate cluster branches (i.e. Kuopio, Oulu, Lahti, Uusimaa) are more tightly managed through the Finnish Cleantech Cluster. The core function of Cleantech Finland is to employ strategic communications to "brand" the Finnish cleantech sector as a whole to the outside world. In Denmark, the Copenhagen Cleantech Cluster operates in a similar fashion, providing the co-ordination and networking services of the smaller clusters in Norway and Sweden, but also providing a broader brand-building function for Danish cleantech more generally. Much like Cleantech Finland, the Copenhagen Cleantech Cluster illustrates Denmark's broader dedication to the cleantech sector, providing advanced communications and programming to support this role.

As a result, the global investment community is beginning to recognise the more advanced organisation and co-ordination of the Copenhagen Cleantech Cluster and Cleantech Finland/Finnish Cleantech Cluster, and two case studies illustrate the ability of these integrated, communications-focused bodies to better position and promote their national cleantech sectors.

In terms of recognition and press coverage, these two clusters consistently appear in rankings and lists of the world's top cleantech cluster organisations. While rankings and recognition like this can be somewhat fleeting and perhaps superficial, global audiences, casual observers and the international press do take note, increasing the appeal of the cluster to potential partners and investors. Both organisations rank as one of the top 10 global cleantech clusters according to Shawn Lesser, a founder of the Global Cleantech Cluster Association (GCCA). As members of the GCCA, these clusters benefit from linkages to other leading cleantech networks.

More specifically, these two cluster organisations exhibit the ability to conceive, produce and capitalise upon larger scale international outreach and events as compared to their smaller, more fragmented peers in Norway, Sweden and Iceland. In the past two years, the Finnish Cleantech Cluster started to operate in a truly global manner, forging links with Cleantech San Diego (in 2011) and new China clusters (planned for 2012) in order to connect corporate investment from their member firms with targeted start-ups outside of the Finnish Cleantech Cluster. This is a notable case study because it represents an instance where a cluster organisation can reach beyond its national borders, connecting domestic capital sources with international markets. Further, it emphasises the potential of cluster organisations to internationalise member firms and integrate emerging global supply chains.

Open Smart City 2012, scheduled for March 2012 and organised by the Copenhagen Cleantech Cluster, demonstrates the superior organisational capabilities of this cluster network. The one-week event will bring ten of the largest cleantech clusters from around the world together to interact first hand with different sub-categories of the Danish cleantech sector. Including smart grid, green buildings, water, and waste management, the event is designed to fuse networking, company showcasing and a broader "branding" of Copenhagen and Denmark to important global stakeholders in the green economy. To emphasise this point, the event includes both traditional presentations and networking sessions and more interactive walking tours of Danish cities and associated companies, elevating the cluster organisation's role even further. Read more about Copenhagen Cleantech Cluster's global outlook and ambitions in case three.

CASE 3**Copenhagen Cleantech Cluster – a born global cluster**

Based on a consortium of energy companies, research institutions, and governmental and non-governmental organisations, the Copenhagen Cleantech Cluster (CCC) has been in operation less than two years, but has already positioned itself as one of the leading global cleantech clusters. A global outlook and exploiting global opportunities have been part of the CCC's ambitions since its inception – just as some companies, the “born globals”, act on a global scale from day one of their existence.

Integral to the global marketing strategy of the CCC has been a vision to be a highly connected international cluster, which is put into action by forging collaboration with leading international cleantech clusters. For example, CCC and its host organisation, Copenhagen Capacity, are initiators of the International Cleantech Network (ICN), gathering ten leading cleantech clusters worldwide. In 2012, CCC and City of Copenhagen will host a major ICN event, “Open Smart City 2012”, where ICN members and other international cleantech players will meet to discuss the smart city of the future. Interesting to note is that the addition of “open” to the already established “smart city” concept is well in line with City of Copenhagen's overall “Open Copenhagen” branding theme.

CCC is also, together with the Finnish Cleantech Cluster and Oslo Renewable and Environment Cluster, the only Nordic members in the Global Cleantech Cluster Association (GCCA) of 38 leading cleantech clusters.

Not surprisingly, these two distinct models of cleantech cluster organisation also illuminate differences in how nation-branding efforts in each nation are defined and structured. They also reflect an ongoing reorganisation of investment and export promotion agencies in some Nordic nations. This interplay between cleantech clusters, the sector more broadly, and nation-branding efforts will be discussed in more detail in chapter 5.

In addition, the presence of cleantech clusters in social media channels like Facebook, Twitter and LinkedIn, and how these efforts can further activate Nordic cleantech clusters in the global marketplace, will be discussed below.

4.2.1 Social media and cleantech cluster promotion

2011 witnessed a marked evolution of social media from the personal to the professional realm. In parallel to the initial public offering of the professional networking site LinkedIn, both Facebook and Twitter expanded the tools available to companies, brands, organizations and governments (Google+ was not analyzed here as it is a newer service with limited history to analyse). As a result, these channels now offer a cost-effective and powerful medium for cleantech clusters to share information, connect with interested parties and firms, and brand themselves in the global market.

At present, Nordic cleantech clusters have a relatively muted presence in social media, with the exception of Copenhagen Cleantech Cluster and Cleantech Finland who, somewhat predictably, have been the first to move into this space:

facebook	Copenhagen Cleantech Cluster	Cleantech Finland	Sustainable Business Hub
<i>Likes</i>	142	8,782	79
<i>Engagement</i>	1	82	0
<i>Posts/Week</i>	0	15	1
<i>Photos</i>	2	62	21
<i>Videos</i>	0	1	0

Likes # of page followers

Engagement Comments or Forwards

Posts/Week # of Weekly Status Updates

Photos and Videos Count this visual content

- Cleantech Finland is the leading resource on Facebook for general information about Finnish cleantech companies, government sector policies, Finnish innovation and other relevant information.
- Cleantech Finland supplements most postings with visual content including photos and videos enhancing the appeal and interaction with their page.
- Copenhagen Cleantech Cluster and Sustainable Business Hub have started Facebook pages but do not frequently update them.

twitter	Cleantech Finland
<i>Followers</i>	762
<i>Tweets/Week</i>	38
<i>@Mentions/Week</i>	10

Followers # of feed subscribers

Tweets/Week Frequency of weekly posts

@Mentions/Week How many times @handle is mentioned weekly by others

- Cleantech Finland is the only Nordic cleantech cluster representative currently active on Twitter; many cleantech clusters outside of the Nordic region are already present in this medium.
- Much like their Facebook page, Cleantech Finland employs most of the Twitter tools currently available to enrich their posts, engage similar @handles, and interact with the broader cleantech community.

	Copenhagen Cleantech Cluster	Cleantech Finland	Cleantech Scandinavia
<i>Members</i>	855	999	288
<i>Discussions/Month</i>	6	11	3
<i>Engagements/Month</i>	11	25	2

Members # of group members

Discussions/Month # of member-generated monthly discussions

Engagements/Month Member comments or other interactions

- Cleantech Finland and the Copenhagen Cleantech Cluster employ LinkedIn both as a tool for networking and a platform for educating the broader public about their respective missions.
- Many international investors can connect with cluster representatives through LinkedIn, personalising the research process.

Even though not analysed here, several of the cluster organisations interviewed for this study have recently established a presence in social media, but it is too early to assess their activity level in this medium.

In summary, social media channels can offer cost-effective ways of sharing information, networking with interested parties and firms, and marketing to a global market place. Copenhagen Cleantech Cluster, Cleantech Finland and, to some extent, Sustainable Business Hub in Sweden are early adopters of social media.

5. Nation Branding, cleantech and clusters in the Nordic countries

The precise scope of nation branding remains difficult to pinpoint in the Nordic region despite the fact that this function is relatively sophisticated in Denmark, Sweden, Norway, Finland and Iceland as compared to the rest of the world. Generally speaking, resources and responsibility for nation branding, whether formally or informally articulated, resides within the Ministries of Foreign Affairs and Ministries of Tourism, with exceptions. Bodies like Innovation Norway or the interministerial Branding Denmark Task Force have started to link nation branding activities more directly to business sectors and industries, coupling efforts to advance a certain “brand” position of the country with measurable economic growth. Public agencies like the Swedish Institute – tasked with promoting interest and confidence in Sweden around the world – operate more in the realm of public diplomacy with an emphasis on Swedish culture, education and science. A highly publicised Finnish study looking at Brand Finland resulted in a lengthy call to action for Finns to employ their “know-how” and “can-do” attitude to global problem solving, but the tangible results from this effort are only starting to show up within official Finnish government ministries. In Iceland, nation-branding activities have thus far primarily reached more sophisticated stages in the branding of Iceland as a tourist destination.

As nation branding has become more mainstreamed in the Nordic region, the practice has become more sector-specific, and defined increasingly by links to the cleantech sector and green growth in some countries.

Denmark provides the strongest example of this linkage, where the national branding strategy is organised around green growth and supporting investment, exports, talent, and cultural initiatives to advance Denmark’s association with this theme. State of Green, the official green branding platform for Denmark, illustrates this linkage both through its mission and partnerships. Unlike many nation-branding bodies, which are more organised around traditional public diplomacy, State of Green focuses on highlighting the “solutions and competencies of Danish business and industry within energy, climate and environment.” This sector focus

mirrors the sponsors and partners associated with State of Green, which range from cleantech giant Danfoss, majority government owned DONG Energy, the Branding Denmark Fund and other government confederations and renewable energy associations. In addition, State of Green has close linkages with the Copenhagen Cleantech Cluster, taking advantage of the natural synergies between their respective missions and enabling co-ordination between the broader nation branding activities of State of Green and the direct stakeholder engagement characterising much of the activities of the Copenhagen Cleantech Cluster.



COPENHAGEN
CLEANTECH CLUSTER

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**The co-ordination between a nascent national “green brand” and a well articulated, centralised cleantech cluster illustrates a deliberate strategy to embed cleantech and cleantech clusters into the Danish national branding platform.*

The overall responsibility for the co-ordination of the marketing of Denmark lies with a cross-ministerial task force comprised of the Ministry of Business and Growth (chairman), the Ministry of Foreign Affairs, the Ministry of Education and the Ministry of Culture. At the centre of the nation branding is the Action Plan for the Global Marketing of Denmark, for which the ministerial task force is responsible to implement. The Action Plan calls for spending DKK 622 million between 2007-2012 and, from the outset, the Action Plan has specifically focused on increasing awareness of Denmark’s know-how in clean technology and renewable energy, and before the State of Green was launched in 2011, the most intense communication activities were carried out during the COP 15 Climate Conference in Copenhagen in 2009.

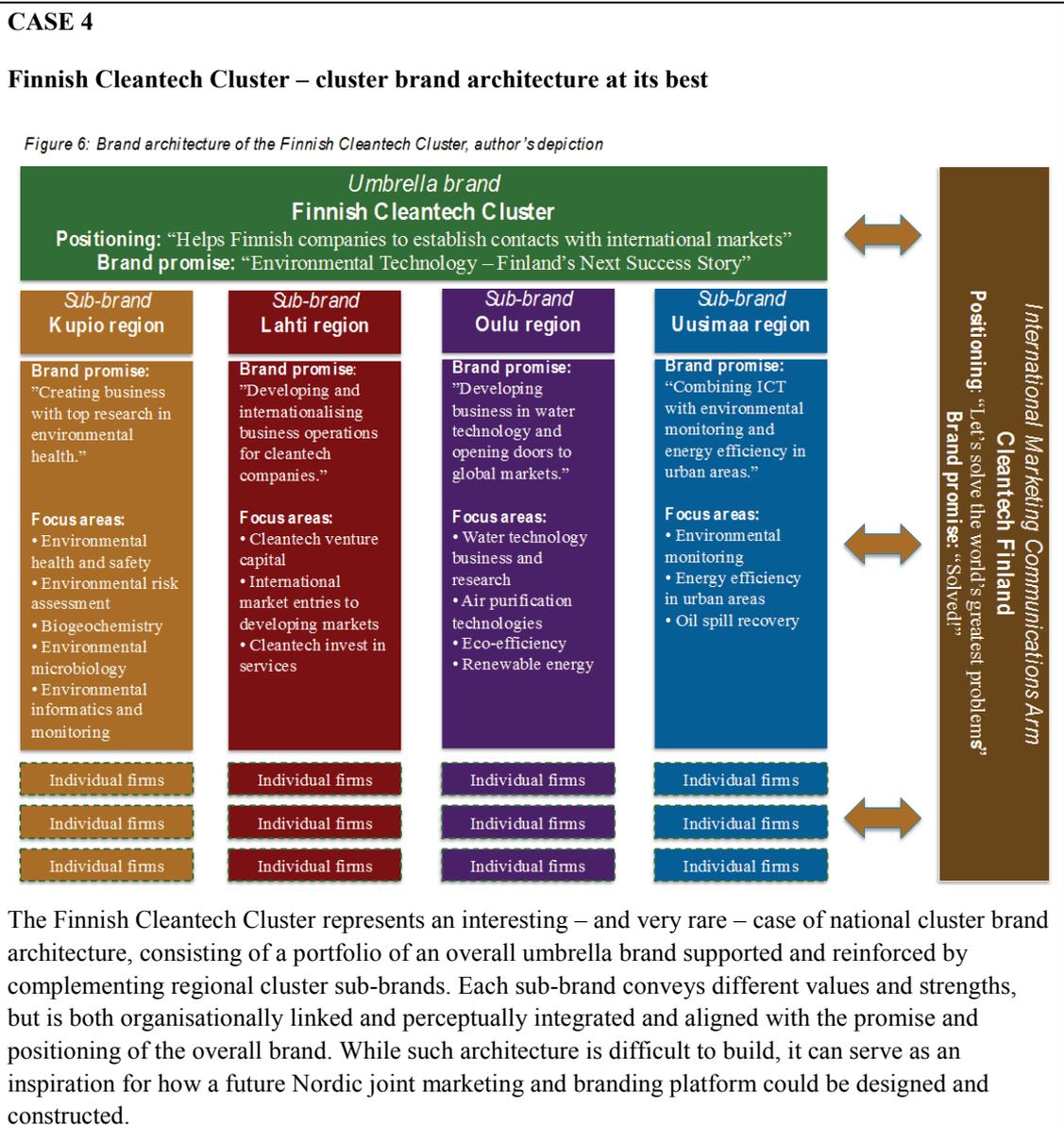
While Denmark offers the best practice case of setting up the structural foundation for the future integration of national branding and the domestic cleantech cluster and competencies, Finland provides an equally compelling window into how this relationship can be organised. Ironically, while the findings and recommendations from the Brand Finland study released in late 2010 have yet to be implemented more formally within government bureaucracy, the founding of Cleantech Finland represents one of the sharpest examples of how the spirit of this report can be manifest on a sector-specific basis. Cleantech Finland, officially a part of the FinPro trade network, operates as the quasi-official communications arm of the Finnish Cleantech Cluster, a fact noted explicitly by both entities. In addition to operating an international network of offices, Cleantech Finland functions primarily as an information and communications portal, providing news and reports related to the sector and a staff with direct experience in marketing and communications. But Cleantech Finland is also designed to be an interactive cleantech community, connecting foreigners with over 100 Finnish cleantech experts affiliated with the site and enabling discussion, interaction and hopefully investment or other forms of business development.

The overarching theme and “branding” of the portal is directly tied to the Brand Finland recommendation to project a nation of “problem-solvers,” overlaying this theme on the cleantech sector in creative and substantive ways. Users are asked to “Search Cleantech Finland for a Solution” and when these connections result in concrete learning, it is noted that a problem has been “Solved!” Backed by a wide range of governmental and private sector actors including Invest in Finland and Tekes – the Finnish Funding Agency for Technology and Innovation, Cleantech Finland offers a vivid example of how to prioritise communications of cleantech clusters in imaginative ways, while at the same time implementing a broader national branding platform that, unlike the case in Denmark, has yet to be fully absorbed by the Finnish government itself.



**Lacking the underlying integration of nation branding and green growth observed in Denmark, the case of Cleantech Finland reveals opportunities for how sectors like cleantech can advance nation-branding values relatively autonomously from the national government.*

Nevertheless, the Finnish Cleantech Cluster case is a compelling example of brand architecture employing the strategy of an overall umbrella brand supported by a portfolio of complementing sub-brands. Case four illustrates the brand architecture of the Finnish Cleantech Cluster.



Unlike Denmark and Finland, Sweden and Norway present a more unresolved relationship between the marketing of cleantech clusters and competencies and nation branding. Much like the more fragmented cleantech cluster organisation in each country, green growth and cleantech as a sector appear somewhat randomly throughout country promotion and there does not appear to be a clear plan yet as to if and how these nations will integrate the two. While Iceland's tourism promotion body has delivered some breakthrough campaigns lately, particularly in social media, Icelandic nation branding efforts tend to express sustainability more

through natural imagery and tourist destinations than through an integrated approach linked to national green growth and Icelandic cleantech businesses.

Looking at the institutional setup in Sweden, Norway and Iceland reveals three different approaches to nation branding. In Norway, the overall responsibility for the management of the country's reputation abroad lies with the Ministry of Foreign Affairs and the Public Diplomacy Forum. Established by the government in 2007, the Forum is chaired by the Minister of Foreign Affairs and comprises experts and professional capacities from government, culture, trade and industry. The forum strives to contribute to increased debate and dialogue between the authorities, trade, industry, academia and others on how and in what areas the government can co-ordinate strategies for Norway's reputation.

One priority in the public diplomacy work has been to strengthen Norway's position as an international peace broker. Elements of "green" credentials in general and the cleantech sector in particular have not been explicit parts of the overall national branding effort. However, elements that have been used in Norway's overall public diplomacy effort and tourism branding, focusing on branding the country as resourceful and "powered by nature", are being used in the marketing of Norwegian cleantech internationally. The government agency Innovation Norway is in charge of this marketing, as both the trade promotion organisation and investment agency functions reside within the organisation. Read more about Innovation Norway in chapter 5.2.

In Sweden, the organised nation branding effort takes place under the auspices of the Council for the Promotion of Sweden Abroad (NSU), which includes the Ministry for Foreign Affairs, the Swedish Institute, the Swedish Trade Council, Invest Sweden, the Ministry of Enterprise, Energy and Communications and VisitSweden. Formed in 1995, the NSU is a forum for dialogue, consultation and collaboration for the long-term profiling of the country abroad. One of the driving institutions in the branding of Sweden is the Swedish Institute, working with four thematic priorities. These are supposed to reflect areas in which Sweden has a comparative advantage or experience to share in an international perspective, of which "environment and sustainability" is one area, alongside "innovation", "governance and society" and "culture and creative industries". Recent concrete activities in this realm include the Innovative Sweden Exhibition, an international tour showcasing 20 promising Swedish growth companies, among others in the Cleantech sectors.

5.1 The global brand image of the Nordic countries

In the Anholt-GfK Roper Nation Brands Index (NBI), ranking 50 nation brands, the Nordic nations enjoy overall positive images globally, and even stronger images as exporting nations. These figures are from 2008, which is the last year that Norway and Iceland were included in the survey (it should be noted that the relative positions tend to remain fairly stable over time; as an illustration, Sweden has occupied the 10th place in all four annual surveys 2008-2011).

Figure 7: The Nation Brands Index 2008

Overall rank order	Exports rank order
1. Germany	1. Japan
2. France	2. United States
3. United Kingdom	3. Germany
4. Canada	4. United Kingdom
5. Japan	5. France
6. Italy	6. Canada
7. United States	7. Switzerland
8. Switzerland	8. Sweden
9. Australia	9. Italy
10. Sweden	10. Australia
11. Spain	11. Netherlands
12. Netherlands	12. Spain
13. Norway	13. Norway
14. Austria	14. Denmark
15. Denmark	15. Finland
18. Finland	28. Iceland
23. Iceland	

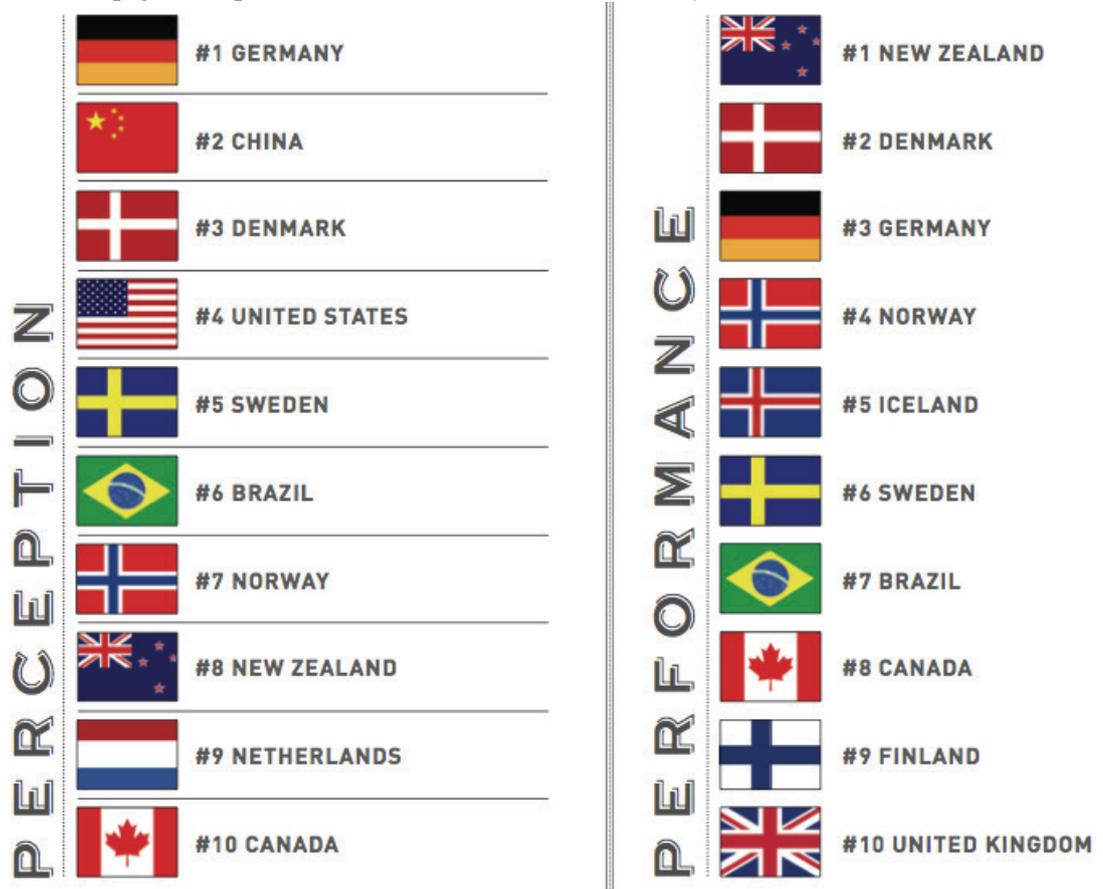
Another index, the Country Brands Index (CBI) ranks "value systems" as one category, of which, in turn, one category is "Environmental friendliness". Here the Nordic dominance is firmly established. If one compares rankings in this category with the overall country brand ranking in the index, it is clear that environmental friendliness in relative terms stands out as a powerful core value associated with the Nordic countries.

Figure 8: The Country Brands Index 2011-2012

Environmental friendliness	Overall country brand rank
1. Sweden	# 7
2. Finland	# 8
3. Norway	# 12
4. Denmark	# 15
5. Switzerland	# 2
6. New Zealand	# 3
7. Canada	# 1
8. Iceland	# 19
9. Germany	# 11
10. Austria	# 17

Narrowing in even more on green credentials, the Global Green Economy Index (GGEI) 2011, which measures national green reputations and performance, ranks the Nordic countries highly on both perception and performance. Looking at overall green reputation, all the five countries are top achievers in terms of performance, whereas perceptions are lagging slightly behind, indicating a negative image-reality gap (except in the case of Sweden, where the "image is better than reality").

Figure 9: Top green reputations in the Global Green Economy Index 2011



Looking at investment opportunities in cleantech, the image-reality gap widens further. The GGEI assesses the vitality of and investment opportunity in 27 cleantech markets and reaches the conclusion that four of the Nordic countries reach top ten in terms of performance (Denmark no. 1, Sweden no. 3, Norway no. 8 and Finland no. 9), whereas only two countries make it to the bottom of the top ten list in terms of perception (Denmark no. 9 and Sweden no. 10), behind larger countries such as China, the US and Japan.

Figure 10: Assessment of vitality and investment opportunity in 27 cleantech markets in terms of perception and performance in the Global Green Economy Index 2011



Therefore, one valid conclusion is that investing into making Nordic cleantech investment (and possibly export) opportunities attractive do not achieve maximum returns, as these opportunities are not as known and positively valued as they could be. Thus, the Nordic countries have an opportunity to invest more in marketing to make the investment and business opportunities in cleantech more known worldwide.

Hence, there should be compelling reasons to take concrete steps to raise the profile of the Nordic countries' achievements and competencies in cleantech industries. Here the marketing of Nordic centres of excellence and clusters can be a valuable tool, spearheading the branding of the Nordic nations as green and sustainable. The overall strong and widely shared perception of the Nordic countries are environmentally friendly, indicated by the CBI, could form a strong basis on which to promote the Nordic countries' green credentials and cleantech competencies.

Another conclusion is that size seems to be a decisive factor here; all the countries that beat the Nordic countries in terms of perception are larger ones, making a strong case for collaboration between the Nordic countries to achieve critical mass and impact in this area.

Summing this section up, the Nordic countries enjoy overall positive images globally, especially as exporting nations, and even more so as environmentally conscious and as “green”. However, there is a gap between performance and perception, calling for more efforts to promote Nordic cleantech globally, especially through joint efforts.

5.2 Investment and export promotion and cleantech

This chapter gives an overview of the institutional setup for export and investment promotion in the Nordic countries, and also strives to evaluate how well integrated cleantech is in the agencies that were evaluated.

Unlike the complex and non-uniform manner in which nation branding activities are organised in the Nordic nations, investment and export promotion follow a more consistent pattern. In Denmark, Sweden, Norway, Finland and Iceland, public agencies exist to facilitate foreign investment and promote national exports.

A general observation valid for all five countries is that cleantech promotion is both more advanced and more prioritised in the export promotion realm as compared to the investment promotion area.

In Denmark, the Trade Council carries out trade promotion, and investment promotion is a responsibility of the Invest in Denmark organisation, which is formally a part of the Trade Council, which, in turn, belongs to the Ministry of Foreign Affairs. The Trade Council has approximately 300 employees abroad, located at more than 100 embassies, consulates general and trade commissions. The Invest in Denmark organisation has 10 overseas offices; in London, Paris, Munich, New York, Silicon Valley, Toronto, Bangalore, Shanghai, Taipei and Tokyo. Invest in Denmark has four overall priority areas, of which cleantech is one. The internal investment agency of the greater Copenhagen region also merits mention, as it plays a prominent role in the international marketing of Danish cleantech, especially through its engagement in CCC (read more in chapter 4.2). The State of Green consortium, described above, is also a key player, adding an overall branding theme to all Danish cleantech marketing efforts.

In Finland, Invest in Finland is responsible for investment promotion. Invest in Finland maintains foreign offices in Copenhagen, Stockholm, Munich, Shanghai, Stamford (Connecticut) and Silicon Valley. Cleantech is one of Invest in Finland’s focus areas. The Finnish government is at the time of the writing of this report, assessing the investment promotion function of Finland, and it remains unclear how the function will be organised in the future. Finland has no governmental export promotion organisation, but the Ministry of Foreign Affairs has an extensive mandate to facilitate export promotion and internationalisation of Finnish firms. However, a public-private, members-based association, FinPro, to a large extent fulfils the role of a national trade council: it is up to 60 % financed by the

government, and reports to the Ministry of Employment and the Economy. The organisation comprises more than 370 experts, working at 66 offices in nearly 50 countries. FinPro works with seven key industry clusters of which energy and environment is one. FinPro runs Cleantech Finland in collaboration with a range of other national and regional partners.

In Sweden, trade promotion is the task of the Swedish Trade Council. It has a network of offices in 68 locations abroad. The Trade Council is a semi-public organisation, owned by a joint venture between the Swedish government and the business community, and funded through both government grants and consultancy fees. The Trade Council currently has five prioritised business areas of which cleantech is one (overseas office may have other priority areas). Invest Sweden is in charge of investment promotion, and it has offices in six locations abroad: Sao Paolo, New York, New Delhi, Shanghai and Tokyo. Invest Sweden has singled out five areas in which it has special expertise, and energy and cleantech, automotive industries and material science are among these. Both agencies report to the Ministry of Foreign Affairs. An official government committee report published in 2011 proposed that the two agencies be merged into one, and selected bodies are currently examining the proposal, pending a government decision later in 2012.

In Norway, both the trade and investment promotion functions are the responsibility of the multi-functional government agency Innovation Norway (alongside functions of tourism promotion, regional development and innovation policy). It is represented with offices in more than 30 countries worldwide and works closely affiliated with the Norwegian embassies and consulates in other countries. It reports to the Ministry of Trade and Industry (which owns 51 % together with the counties of Norway (Fylkeskommunerna), which own 49 %). Energy and environment is a prioritised focus area of Innovation Norway.

Finally, in Iceland a multifunctional agency, Promote Iceland, is in charge of both trade and investment promotion. The organisation Invest in Iceland functions as a department residing within Promote Iceland. Untapped renewable energy sources of geothermal and hydroelectric power are focus areas that are prioritised in Icelandic investment promotion. According to interviewees of this report, the Icelandic government prioritises know-how and solutions in the geothermal area, but it remains to be seen to what extent these competencies will receive full and comprehensive attention in future export promotion activities.

The cleantech sector in general, and cleantech clusters in particular, receive uneven levels of emphasis within Nordic promotion agencies. The 2011 Global Green Economy Index conducted a qualitative evaluation of these institutions, revealing differing levels of agency commitments to cleantech across the five countries:

Figure 11: Evaluation of the leading national investment and export promotion bodies in the Nordic region

	Denmark	Sweden	Norway	Finland	Iceland
<i>Weighed Score</i>	8/10	5/10	3/10	5/10	5/10
<i>Agencies Evaluated</i>	Danish Trade Council/Invest in Denmark, Copenhagen Capacity	Invest Sweden, Swedish Trade Council	Innovation Norway	FinPro, Invest Finland	Invest Iceland, Promote Iceland

Note: The 2011 Global Green Economy Index performed a qualitative ranking of the leading national investment & export promotion bodies in the 27 countries being measured. Rankings from 1 (lowest) to 10 (highest) reflect the presence or prominence of cleantech as a sector focus, level of staff or other resources dedicated to the sector, sophistication of communications tools and the extent to which the sector is promoted abroad.

Again, Denmark offers an example where the links with cleantech are the strongest. At present, there is discussion about the exact relationship moving forward between Invest Denmark (Ministry of Foreign Affairs) and Copenhagen Capacity, with the former likely losing some responsibility to the latter. Despite the current lack of clarity about exactly how these two agencies will relate to one another, they both already exhibit a strong commitment to Danish cleantech. Invest Denmark is the only investment promotion body to prominently display links to clusters on its home page, with cleantech clusters prioritised and highlighted. Copenhagen Capacity goes even further, offering cluster development consultants as a service to potential investors and staffing this role with some individuals from the Copenhagen Cleantech Cluster. Mirroring the case with nation branding and cleantech clusters, the investment and export promotion functions in Denmark are well integrated, probably partly explained by the fact that the two functions are part of the same government entity, the Ministry of Foreign Affairs.

The other Nordic nations exhibit lower levels of integration with more limited emphasis on cleantech as a priority investment and export sector, even though many countries, especially Finland, have taken considerable steps in recent years to co-ordinate export and investment promotion functions around the cleantech theme. In Sweden, the government's newly developed "Strategy for development and export of cleantech 2011-2014" appoints the Trade Council as co-ordinator of exporting activities, and of co-ordinating incoming delegations (together with a range of Swedish cleantech cluster organisations). There are, however, no outspoken ambitions to elevate cleantech to the same level of prominence and priority that it has within the Danish and Finnish government apparatuses.

Nevertheless, despite Denmark's strength in this realm, all five Nordic nations focus insufficiently on promoting specific cleantech companies in their external communications. As already touched upon in this report, one characteristic of

many cleantech firms globally is a lack of polish and sophistication with branding and strategic communications. Often the core competency of cleantech firms is either technical or scientific in nature and not necessarily focused on the external presentation and brand image of the firm. This reality presents an opportunity moving forward for investment and export promotion bodies to better promote national success stories to the global marketplace. As an example, six Nordic cleantech companies were recognised in the widely referenced Cleantech 100 list and provide one example of companies suited to this type of agency promotion:

Figure 12: Nordic cleantech companies in the Global Cleantech 100 list

	Denmark	Sweden	Norway	Finland
<i>2011 Cleantech 100 Winners</i>	2	2	1	1
<i>Companies</i>	Amminex, Stirling DK	Chemrec, ClimateWell	Kebony	Canatu

Note: The annual Global 100 published by San Francisco-based Cleantech Group aggregates expert opinion and original research to list the 100 global cleantech firms exhibiting the greatest potential for growth in the 5-10 year timeframe.

This example just serves as an inspiration, and there are other ways of identifying firms, solutions and technologies that are suitable for more intense agency promotion.

Also, as assumed in chapter two, clusters can form essential intermediaries between the individual firms and global markets. It is therefore logical that national promotion agencies also forge stronger linkages to cluster organisations in their respective country. This will be elaborated on more in chapter 7.

5.2.1 Prioritised markets for Nordic export and investment promotion

Looking at specific markets for export and investment promotion, the interview process made it clear that there is a strong focus on European, North American and Asian markets. The BRIC countries are seen as especially important markets, either at present or potentially in the future. Admittedly, market focus can differ with respect to sector focus and type of activity, but an attempt is made here to single out the most prioritised markets for each Nordic country in general. The main aim of this is to showcase markets where there are potential synergies in joint marketing for Nordic cleantech.

The Finnish agencies specifically prioritise China and Russia, whereas India is an up-and-coming market for cleantech marketing efforts. In the interviews, other countries' representatives point out that Finland has a particularly strong presence in the Russian cleantech market and could act as a bridgehead for Nordic countries.

The Danish agencies emphasise all of the BRIC countries somewhat evenly for export promotion and China and India for investment promotion, and also stress

that they see strong potential in the “Next-11” (N-11) of emerging countries, including South Africa, Turkey, Indonesia and Vietnam.

The Swedish trade promotion efforts prioritise USA and the BRICs, especially China, and increasingly India, Russia and Brazil, and see growing potential in the markets in N-11 countries such as Vietnam, Indonesia, South Korea and South Africa. In the government’s cleantech strategy for 2011-2014, it is stated that China and India are suitable for a “broad” marketing effort, whereas in the Brazilian market, it might be relevant to focus on bio-energy and sustainable cities. As for investment promotion, the strongest focus is on attracting cleantech investors from Japan, India and North America, and increasingly China, Brazil and South Korea. The Icelandic cleantech promotional efforts are less focused and have yet to be strategically defined and prioritised. That said, markets for export of geothermal technology and competency can be found in Central Europe, the US and some African countries, and in China for hydropower know-how. Promote Iceland is also part of the Nordic Cleantech Alliance and have been active participants in marketing efforts carried out on this platform,

In the case of Innovation Norway, who at present explicitly prioritises cleantech export promotion over investment promotion, target markets are prioritised based on technology. The strongest and prioritised export markets for hydropower outside Europe are in South America, India and Nepal. The markets for offshore wind power technology are primarily located in the North Sea Basin, but there is growing potential for exporting deep-sea offshore wind power solutions to Japan and South Korea. Singapore and China and some African countries are seen as large markets for solar power. Intense cleantech marketing activities are also carried out in Turkey and South Africa.

The focus markets of the promotion agencies are reflected in the existence of direct marketing efforts aimed at specific markets, especially China. One such case is the Norwegian Energy and Environment Consortium in China (NEEC), whose mission it is to use Norway's energy and environmental legacy to promote a sustainable future for China. Case five describes this effort in more detail.

CASE 5

Norwegian Energy and Environment Consortium in China – a focused, public-private marketing effort towards a key market

Many of the Nordic countries prioritise the Chinese market and several have established a particularly strong institutionalised presence in order to help cleantech companies to enter the Chinese market. For example, the Swedish effort, Center for Environmental Technology (CENTECH), part of the Swedish Embassy in Beijing, was set up in 2007, and the concept is now being extended to other BRIC countries: India and Russia. The Finnish equivalent, the Finnish Environmental Cluster for China (FECC), located in Shanghai, began its operations in 2006. It is funded and run by a consortium of Finnish government agencies and regional development agencies.

The Norwegian Energy and Environment Consortium (NEEC) was set up in 2005 and is run through Innovation Norway's Beijing office, and it is the only one of the Nordic efforts that operates as a public-private partnership. A members-based organisation, the consortium is managed by Innovation Norway on behalf of its corporate, public and academic members, which are about 50 in total.

The aim of NEEC is to promote successful advancement energy and environmental business partnerships between Norway and China, to the benefit of both countries, by promoting existing Norwegian technologies and competency. It organises workshops, seminars and matchmaking events, both in China and Norway, provides business development support and helps Norwegian companies find partners and business opportunities.

Figure 13 attempts to give an overview of the Nordic countries' main promotion agencies and prioritised target markets according to the interviewees of the study:

Figure 13: Target markets of the main Nordic export and investment agencies

Country	Promotion agencies	Prioritised markets for cleantech promotion (outside Europe)
Denmark	<ul style="list-style-type: none"> • Danish Trade Council • Invest in Denmark • State of Green • Copenhagen Capacity 	<ul style="list-style-type: none"> • All BRICs • Some "Next-11"
Finland	<ul style="list-style-type: none"> • FinPro • Cleantech Finland • Invest in Finland 	<ul style="list-style-type: none"> • China • Russia • India
Iceland	<ul style="list-style-type: none"> • Promote Iceland • Invest in Iceland 	<ul style="list-style-type: none"> • China • North America • Some African countries
Norway	<ul style="list-style-type: none"> • Innovation Norway 	<ul style="list-style-type: none"> • China • India • South America • Some "Next-11" • Some African countries
Sweden	<ul style="list-style-type: none"> • Swedish Trade Council • Invest Sweden 	<ul style="list-style-type: none"> • All BRICs • Japan • North America • Some "Next-11"

In concluding this chapter, it is obvious that all the Nordic countries share target markets, especially among the BRICs and Next-11 countries, forming a foundation for synergies in joint marketing.

6. Nordic cleantech marketing efforts

A range of projects and events aimed at promoting Nordic cleantech internationally have been undertaken or are currently active. As it is important that future activities draw on experiences of earlier Nordic marketing efforts, and try to find synergies with ongoing projects and efforts, an overview of some of the earlier ongoing efforts is deemed useful:

- The project Nordic Energy Expo, initiated by the Nordic Council of Ministers (NCM) and aimed at profiling the region internationally as a forerunner in new environmental and energy technology, was active in 2008-09. Concretely, this Expo used the Web portal “Nordic Energy Solutions”, and presented the physical exhibition, “Nordic Climate Solutions” (NCS).
- Nordic Energy Solutions is the official Nordic showcase for sustainable energy solutions. Managed by the NCM, it is a web portal showcasing renewable energy, energy efficiency and district heating solutions.
- A recent, concrete activity of the NCM was an exhibition of the Nordic Council of Ministers at COP17 climate summit, taking place in December 2011 in Durban in South Africa, which highlighted the 14 leading sustainable energy and climate related solutions on a local scale in the Nordic region.
- Nordic Green events have been held in different places in the world, such as the US and Japan. The last event took place in Tokyo in November 2011. Sponsored by Nordic Innovation, it involved a range of Nordic embassies, trade and investment promotion agencies and companies alongside Japanese organisations. Besides creating a platform for co-operation and exchange, the purpose of the event was to enhance the reputation of the Nordic countries as being at the forefront of green technologies and policies, facilitate business development for Nordic companies in Japan, and also help Japanese companies enter the European green tech market using the Nordic region as a gateway.
- Nordic Cleantech Alliance (NCA) is a marketing project with 11 partners from the cleantech field in the Nordic countries. NCA is a collaboration between independent organisations and Nordic Innovation. It is financed in part by its partners, and in part by grants from Nordic Innovation. Its main aim is to foster business opportunities by bringing solutions and options from Nordic suppliers to the global market. One type of activity has been participation in international trade fairs, such as “POLEKO –

International Trade Fair of Environmental Protection”. It will be decided in 2012 if NCA will continue operations in its current form.

- Cleantech Scandinavia is a Nordic network of investors active in cleantech. A members-based organisation, it primarily targets investors and venture capital firms interested in early-stage and growth companies but is also suitable for the networking needs of affiliated cleantech professionals such as law firms, public agencies and business incubators. It offers its members consultancy services and screening of investment opportunities, among other things. Other activities include arranging Nordic Cleantech Showcases, targeting investors, and the Nordic Cleantech Open contest.
- Communicating Nordic Green Solutions is a newly started project coordinated by Nordic Innovation. Running until 2014, the purpose is to make a visible and coherent presentation of Nordic environmental technology skills, thereby strengthening the global competitiveness of Nordic environmental technology. It strives to create Nordic valued-added by exploiting synergies between the five countries.
- Newly launched Nordic Cleantech Review is a joint Nordic initiative, produced in close strategic collaboration with the Nordic industry organisations within the cleantech sector. A business magazine, it centres on the notion that the Nordic countries possesses one of the strongest cleantech sectors in the world and that “the collaborations between the Nordic countries are very strong as well as the will to market the whole region as a strong centre of cleantech and sustainable development”. Its overall theme is “Five countries – One powerful region.”

7. Towards a platform for strategic global marketing of Nordic cleantech

7.1 Challenges and opportunities for supra-national place branding

A common branding and marketing of the Nordic countries in the cleantech realm would be an example of supra-national place branding. It is important to acknowledge and be realistic about the challenges facing supra-national branding ventures – as well as the opportunities that come with them. Therefore, a brief overview of this particular form of marketing will be made here.

A general challenge for supra-national branding is that there is usually a lack of a single, central decision-making authority that can execute a branding effort. Apart from perhaps the European Union, few supra-national regions have central institutions with the budgets or clout to implement and run long-term branding efforts. In many cases, there is also a lack of a common identity, resulting in a lack of unity of purpose between the multiple branding stakeholders in a region, making joint branding difficult. This hurdle is easiest to overcome in the Nordic context, where countries have historical ties and are linguistically, politically and culturally similar. National rivalry and competition between national governments also contribute to making supra-national place-branding efforts difficult endeavours.

That said, there are several motivating factors that push national actors towards supra-national place branding. First of all, economies of scale can be achieved when several countries pool resources, allowing for larger-scale and more efficient marketing campaigns. Thus, it is likely that national promotion agencies that struggle for political attention and/or public funding may try to team up with partners from other countries that seem more resourceful. Secondly, there are benefits relating to the image transfer that can take place, from places with stronger images to places with weaker images. Therefore, the perceived image attractiveness of other partners in a supra-national marketing effort may have an impact on the choice of whether to join an effort or not. Thirdly, the possibility of

transnational product development that makes resources of other places available, e.g. “packaging” an alliance of clusters or investment destinations in several countries for joint marketing, should be an advantage considered by national and other branding organisations when deciding on joining supra-national branding efforts. Finally, supra-national branding is seen as having most impact for countries that are relatively small, unknown or undifferentiated in the eyes of the target market, or quite far from the target market.¹⁸ It is argued here that in times of intense globalisation, small nations like the Nordic ones need to join forces to a larger extent, both in product and development at home and in marketing abroad, in order to be able to pool resources to compete with larger and more resourceful countries. All these drivers for supra-national marketing were encountered in the interview study. The next chapter will address these.

7.2 The rationale for joint Nordic marketing

Of the 53 respondents in this study, about one third had direct experience of any kind of joint Nordic activities in the cleantech field. About one third had knowledge about some activities, and one third had never heard of any activities. The majority of respondents are positive towards Nordic co-operation in global marketing, and see clear benefits.

In the study, two arguments for Nordic co-operation in global marketing of cleantech stand out. The first one is that the Nordic countries are simply too small to make any considerable impact on large markets, such as the BRIC markets. China and India receive special attention in this regard. In this context, one respondent made the comparison that the Swedish government spend 100 MSEK annually in supporting national cleantech strategy, which, in one of the Chinese regions that the respondent’s organisation cooperates with, is the same sum spent annually on demo sites by the board of building and planning alone. Nordic pooling of resources would be a way to increase impact in global marketing.

The second, most frequently mentioned argument is that the Nordic countries individually are unknown in distant countries, such as China, India and Brazil, and that joint marketing under a Nordic or Scandinavian umbrella would be beneficial. Several respondents say that, as we are seen as a single unit by the rest of the world in any case, we might as well join forces.

Many also mentioned, that as the Nordic countries are so similar, joint branding and marketing makes sense in a global perspective, and that “Nordic” and “Scandinavia” stands for many positive things in the world. Our similar societal models (including environmental responsibility, “clean” and stable countries with low corruption) were mentioned here as an opportunity for common profiling.

¹⁸ Andersson and Paajanen (2012); Common or competing products? Towards supra-national branding in BaltMet Promo, Journal of Place Management and Development Vol. 5 No. 1, 2012; Therkelsen, A. and Gram, M. (2010), “Branding Europe – between nations, regions and continents”, Scandinavian Journal of Hospitality and Tourism, Vol. 10 No. 2.

Several said that all Nordic countries have specific competency in systems thinking and systems solution, which has its origins in our societal models. One respondent said that we in the Nordic countries have achieved something remarkable – that is to make “dirty” industries such as cars, housing, transportation, and others clean, which is a powerful narrative for world audiences. That all countries score high on innovation was another feature that makes joint marketing credible and sensible, according to respondents. In general, the extent to which respondents agreed on how the Nordic countries are seen in the outside world was quite remarkable; most respondents mentioned associations such as: clean, low corruption, stable, trustworthy, innovative, high-tech oriented. From a branding point of view, this bodes well for the prospects of agreeing on a common branding platform and what core values to promote and communicate.

Another benefit and opportunity of joint marketing would be that we could offer a more attractive product. By combining different strengths and competencies, we could package a broader portfolio of different products and solutions, which would be a more attractive offer to market to the rest of the world. However, one respondent cautioned that today individual countries and cities have a stronger cleantech brand compared to the Nordic brand (although several said the exact opposite).

Challenges to joint Nordic marketing that were mentioned are that we are too different in terms of competencies and which cleantech sub-sectors that are strong to find synergies in joint marketing (whereas some saw this as an opportunity: by combining the different strengths, we could package a more attractive offer to market to the rest of the world).

Conversely, others claimed that in those sectors that we share strengths (perhaps biofuels, energy efficiency / smart grids and waste management could be such sectors), we would engender too much competition to effectively collaborate in foreign markets.

Also, the fact that national funding schemes are different in the five countries was mentioned as an obstacle to collaboration. Several Swedish interviewees said that the Swedish national funding scheme for cleantech firms and clusters was ill-suited and too insignificant to truly support international marketing ventures (a feature that was noted by some respondents from other countries too), and that Finland and Denmark, in particular, had other financial muscles to promote cleantech. Some respondents also said that we need to raise our marketing know-how in terms of packaging and selling opportunities globally. This is a competency that the Nordic countries have not needed to the same extent before – up to now we have relied on high levels of innovation, which have been sufficient to compete internationally. That said, several (mostly Swedish) respondents acknowledge that Danish and increasingly Finnish organisations have acquired substantial know-how in international marketing and have had a real impact in terms of securing market share in world markets.

Among those who have direct experience with joint Nordic efforts, a major challenge hampering co-operation is the fact the governmental promotion agencies are so differently organised throughout different countries in the region. It was also said that the incentive systems of many branches of government do not favour collaboration, and only track the direct amount of exports or investments they have helped facilitate in their country. This would, a few respondents indicated, be especially true for the Danish and the Swedish governments. Several interviewees also said that several of the ad-hoc events and projects that have been undertaken up until now have been more or less unsuccessful because there has been a lack of political will backing the participating government agencies.

7.3 *Towards a joint Nordic marketing model for cleantech*

In principle, two distinct models for joint marketing could be suitable for the Nordic countries: a *promotion model* and a *branding model*.

The *promotion approach* aims at establishing a joint promotion mechanism, where the countries' promotion agencies and cluster join forces in communicating opportunities in cleantech in the Nordic countries. The primary focus here is on promoting each country, cluster, firm or solution individually, but via a common communication platform and set of common channels or via some shared resources. Such channels could, for example, be Internet portals for Nordic cleantech, visiting international trade fairs, joint social media presence or co-ordinating incoming delegations and linking up demo sites in all countries. Sharing resources could be to share leads or market research between government officials in foreign markets.

The *branding model* would entail trying to build a unified Nordic cleantech brand, which would necessitate both agreeing on what core values and conceptual ideas to fill a common brand with, and establishing a more permanent organisational structure that would go beyond the two to three years' project perspective. Such a platform would, however, de-couple from a specific sector and instead focus on shared values and systems solutions that all Nordic countries exhibit strengths in, thereby minimizing rivalry and sub-optimisation. As an illustration, a range of thematic sub-brands could support an overall Nordic cleantech brand, such as, off the top of the head, "Sustainable Nordic Cities" (see case six below), "Renewables by Nordics" (which, in turn, could encompass all the renewable energy sub-sectors that are strong in the five countries) or "Nordic Smart Grid". The brand architecture of the Finnish Cleantech Cluster described and analysed above can serve as inspiration for a Nordic cleantech brand architecture.

It may be needless to say it, but the long-term benefits would most probably be far greater if the Nordic countries went down the branding avenue: just as "Scandinavia design" became a globally recognised concept and a brand in the 20th century, Nordic/Scandinavian cleantech could become a globally known and appreciated brand in the 21st century. Admittedly, the challenges would also be far greater than if the Nordic countries aimed instead for more of a promotion model, and the time frame would need to be much longer.

7.4 *Final recommendations*

Regardless of which marketing model the Nordic countries choose, there are several recommendations that can be put forward based on this study:

- Combine a top-down and a bottom-up approach, meaning that policy support for joint Nordic marketing must be combined with a strong involvement of organisations that work hands-on with promoting cleantech from the Nordic countries.
- Hence, one important step is to gather both policy makers from the Nordic countries (for example state secretaries from concerned ministries¹⁹) in a steering committee/high-level group to in an attempt to ensure policy support, and, at the same time, form working groups with representatives of export and investment promotion agencies and cluster organisations where practical collaboration efforts can be planned, in order to set collaboration in motion. At the same time, it is important that close links to progressive cleantech companies are maintained in this process.
- Another effort to forge collaboration could be to implement a training program according to the “train the trainer” principle, where representatives of national promotion agencies and cluster managers can get an opportunity to learn about approaches to and opportunities in joint marketing efforts, and who can pass this knowledge on to other organisations and firms in the cleantech ecosystem of the Nordic countries.
- A common communication or branding platform (depending on whether there is a focus on the promotion or branding model described above) needs to be created. This should be done in an inclusive, stakeholder-driven process and include workshops, interviews and surveys in order to collect as many views as possible and create legitimacy and stakeholder buy-in for the platform.
- At the same time as a marketing collaborations are being developed and intensified, it is important to take steps to live up to marketing and branding claims with a common Nordic product offering. Joint business development and innovation projects are crucial for nurturing Nordic cleantech sectors and creating new, cross-border value chains.
- Focus collaboration efforts on areas in which the Nordic countries exhibit truly globally competitive strengths, and where linkages can be established between sectors in the region. This study indicates in which areas of the cleantech field that the Nordic countries exhibit particular strongholds and where overlaps and synergies may exist. Such areas may be, but not

¹⁹ As an example, in Sweden the implementation of the national cleantech strategy is co-ordinated and overseen by the state secretaries of the Ministry of Enterprise, Energy and Communications, Ministry of Environment and Ministry of Foreign Affairs.

limited to, biofuel/bio-energy, renewable energies and energy efficiency / smart grids.

- Even so, there is a need to further map cleantech sectors and existing cleantech clusters in each country with the goal of understanding their geographic and category overlaps with one another and how these clusters interact with the broader cleantech sector. A clear, comprehensive mapping is critical to devising a smart plan for strategic communications that reflects the shape of the domestic market.
- As described above, internationally established company and investment tracking sources often only focus on the G20s, marginalising the Nordic cleantech sector from inclusion in global news coverage and other media. A recommendation is to try to position the Nordic countries as one unity in relation to providers of these data, or that the Nordic countries establish a credible Nordic tracking mechanism on their own.
- If cluster organisations are to assume a leading role in promoting Nordic cleantech globally, their marketing and strategic communication capacity needs to be raised considerably. There is a need to evaluate existing capacity within cleantech clusters for strategic communications including dedicated staff, current responsibilities and, if possible, polling cluster management figures about how to best improve communications in the future. There is also scope for gathering more case studies from other cleantech clusters globally where strategic communications has successfully served cluster growth and development, which can serve as inspiration for Nordic clusters.
- Also, there is a need to implement a training programme to improve cleantech clusters' strategic marketing and communication capacity.
- There is a need to determine the extent to which cleantech clusters and the cleantech sector can be integrated into national branding and investment/export promotion bodies. For example, the Swedish government is actively considering this question in their current strategic planning.
- As for target markets, it has in this study become clear that joint marketing targeting the BRIC markets (and perhaps, with time, Next-11 markets) would be a most viable and logical choice as all Nordic countries prioritise these markets, and as the added value of joint efforts would be the greatest in these markets.

As for concrete marketing activities, the following ones are a few examples of viable ones:

- Establish Nordic cleantech showrooms in (at least) all five capital airports in order to showcase unique Nordic solutions and technology. Some airport stakeholders are already discussing initiatives of this type.

- Establish a Nordic cleantech portal. Begin with only one or two cleantech sub-sectors as a pilot project, and evaluate and draw lessons learned after a period of time. Here it could be logical to choose one of the more complementary cleantech sectors within the Nordic market, which, for instance, could be smart grids.
- Establish a joint Nordic social media presence, perhaps only for internal dialogue and information sharing to begin with, and open up for more international focus with time, as the channels matures and consolidates.
- Before a Nordic platform for joint marketing has been established, run a pilot project on a market that all countries prioritise and have strong marketing presence and evaluate and draw lessons learned after a period of time, to be used when new activities are planned. The Chinese market could be the most viable choice here, as it is highly prioritised by the Nordic countries and most of them have elaborate institutional marketing mechanisms (some of which are described in case five) in place in this market that collaboration could be forged between.
- Another way is to way forward it to establish or reinforce Nordic multi-national cleantech “champion projects”. Prime candidates are projects focusing on, for example, smart grids, renewable energy and transport (as it is cross-border in nature).
- Organise Nordic high-level business delegations to key markets, including high-level political representatives of the Nordic countries, not only in order to achieve maximum impact on target markets, but also show that Nordic collaboration is prioritised and has backing at the highest political levels.

CASE 6

The Nordic capitals as sustainable cities

There is no doubt that the Nordic capitals have earned a reputation as frontrunners when it comes to sustainable urban planning and use of cleantech.

Copenhagen has positioned itself as a testing ground for green city projects, aiming to set new global standards in cleantech technology and working to achieve the vision of becoming the world’s first CO₂-neutral capital by 2025. One ranking listed both Copenhagen and Oslo as among the top five most sustainable cities in the world, leading the way when it comes to implementing sustainable initiatives²⁰. In Siemens and Economist Intelligence Unit’s European Green City Index²¹, measuring the environmental performance of 30 leading cities from 30 European

²⁰ Ecoimagination/General Electric, <http://www.ecomagination.com/top-five-most-sustainable-cities-in-the-world>

²¹ <http://www.siemens.com/entry/cc/en/greencityindex.htm>

countries, Nordic cities dominate the index' top tier. Copenhagen leads the index overall, coming in marginally ahead of Stockholm, while third-place Oslo rounds out a trio of Scandinavian cities on the medal podium, with Helsinki following in seventh place. Another ranking²² listed Reykjavik as the number one green city in the world. Stockholm was the first city to receive the European Green Capital award from the EU Commission in 2010, owing to a series of pioneering efforts, the most important and internationally recognised being the sustainable city district Hammarby Sjöstad. In addition, the City of Malmö continuously scores high in global green and sustainable city rankings.

The fact that the Nordic capitals all are rated as sustainability leaders should open up the possibility of establishing a joint marketing concept revolving around these cities being attractive test beds and showcases for cleantech solutions and sustainable cities of the future.

²² Global post, <http://blogs.reuters.com/environment/2010/03/01/top-5-greenest-cities-in-the-world/>

Interviewees

All interviews were telephone interviews, conducted between January and March 2012 by Jenny Parliden and Marcus Andersson at Tendensor.

Cluster organisations	Person interviewed	Date of interview
Sweden		
Cleantech Inn Sweden	Mikael Molin, Business Developer	30/01/2012
	Jonas Velandar, Business Developer	15/02/2012
Sustainable Sweden Southeast AB	Ann-Christin Bayard, CEO	03/02/2012
Sustainable Småland	Johan Thorsell, Business Developer	01/02/2012
Cleantech Östergötland	Gert Kindgren, CEO	24/02/2012
	Sara Glaas, Head of Communication and Marketing	27/01/2012
Malmö Cleantech Cluster	Magdalena Kuchcinska, Project Manager	02/02/2012
Stockholm Cleantech	Hanna Eriksson Lagerberg, Coordinator	30/01/2012
Sustainable Business Hub	Håkan Knutsson, CEO	16/02/2012
	Heidi Olsson, Head of Communications	02/02/2012
Cleantech Region	Lars Ling, CEO	03/02/2012
Ecoex	Bernt Svensén, Project Manager	22/02/2012
Teknikdalen	Sture Ericsson, CEO	23/02/2012
Sustainable Business Mälardalen	Svante Sundquist, Project Manager	21/02/2012
Danmark		
Copenhagen Cleantech Cluster	Rune Rasmussen, Head of Secretariat	02/02/2012
The innovation networkVE-net	Grete Bech Nielsen, Consultant, Networking and Strategic Planning	09/02/2012
Agro Business Park	Jacob Mogensen, Project Manager	15/02/2012
	Henning Lyngsø Foged, Project Manager	06/02/2012
Innovation Network for Environmental	Rosa Klitgaard, Head of Secretariat	16/02/2012

Technology		
LORC - Lindoe Offshore Renewables Center	Ove Poulsen, Chief Executive Officer	28/02/2012
Bio Refining Alliance	Anne Grete Holmsgard, Director	07/03/2012
Norway		
OREEC - Oslo Renewable Energy and Environment Cluster	Eva Næss Karlsen, Director	03/02/2012
	Per-Olav Lauvstad, Project Manager	10/02/2012
Green Business Norway	Thor Sverre, CEO	31/01/2012
	Terje Klausen, Chief Information Officer	
INTPOW	Geir Elsebutangen, Managing director	17/02/2012
Arena NOW – Norwegian Offshore Wind	Asle Lygre, Project Manager	28/02/2012
Arena Wind Energy	Viggo Iversen, Project Manager	27/02/2012
NCE Smart Energy Markets	Per Bakseter, Project Manager	07/03/2012
Clean Water Norway (Vannklyngen)	Bård Haug, CEO	27/02/2012
Finland		
Finish Cleantech Cluster	Nina Harjula, Development Manager	02/02/2012
Kuopio Innovation Ltd.	Anneli Tuomainen, Development Director	10/02/2012
Business Oulu	Pasi Keinänen, Programme Director	27/02/2012
Green Net Finland	Suvi Häkämies, Energy Expert	02/02/2012
OSKE - Energy Technology Programme	Robert Olander, Project Manager	05/03/2012
OSKE - Nanotech Programme	Dr. Eeva Viinikka, Programme Director	02/02/2012
CLEEN - Cluster for Energy and Environment	Tommy Jacobson, CEO	16/02/2012
Iceland		
The Island Ocean Cluster	Vilhjálmur Jens Árnason, Project Manager	02/02/2012
Geothermal Cluster	Thora Margret Thorgeirsdottir, Partner and Consultant	28/02/2012
	Rosbjorg Jonsdottir, Partner and Consultant	28/02/2012

National agencies		
Denmark		
Danish Trade Council	Jakob Linulf, Chief Adviser	
Invest in Denmark	Peter Johan Plesner, Team Leader Cleantech	22/02/2012
State of Green Denmark	Marius Sylvestersen, Brand Director	09/03/2012
Finland		
Cleantech Finland	Santtu Hulkkonen, Executive Director	22/02/2012
Invest in Finland	Mari Kankaanranta, Director, Business Development	23/02/2012
Iceland		
Promote Iceland	Andri Marteinnsson, Project Manager Trade Representation	24/02/2012
Norway		
Innovation Norway	Bergny Irene Dahl, Sector Responsible, Energy and Environment	21/02/2012
Innovation Norway	Ole Jakob Sjørdalen, Sector Head for Energy and Environment	21/02/2012
Norwegian Energy and Environment Consortium in China (NEEC)	Pål Arne Kastmann, Sector Manager Energy & Environment	29/02/2012
Sweden		
Invest Sweden	Sten Engström, Head of Cleantech	20/02/2012
Swedish Trade Council/SymbioCity	Cecilia Shartau, Project Manager, Cleantech/SymbioCity	23/02/2012
Nordic organisations		
Cleantech Scandinavia	Alexander Lidgren, Founder and Chairman	06/02/2012
Nordic Cleantech Alliance	Stig Hirsbak, Project Manager	24/02/2012

Appendix: Nordic Cleantech cluster organisations and their marketing

Cluster	Number of firms (members / total in region)	Sub-sectors / competences	Coverage	USPs promoted / main message	Main channels	Target groups	Target markets
						E = export buyers, I = investors, T = talents / skilled professionals	
Sweden							
Cleantech Inn Sweden	50 members	Energy efficiency, bio gas, new materials and chemistry, transportation	Sweden	Innovations which will significantly contribute to a more sustainable society	International fairs and conferences, some social media activities (LinkedIn, Twitter), word-of-mouth	I, T	Denmark, Germany, UK, USA
Sustainable Sweden Southeast	22 members	Water, waste, sustainable society / urban planning, energy	Southeast of Sweden	ICT + cleantech	Newsletter, social media (FB), projects, delegations (in/out)	E, T	Nordic countries, BSR, Poland, China

Sustainable Småland	9 members/>100 firms in region	Bio-energy, water management, energy efficiency, building	County of Kronoberg, south of Sweden	Bio energy, building - <i>Trästad 2012</i>	Arrange visits, fairs, direct promotion via email	Public sector - decision makers	Russia, India, China, Asia in general
Cleantech Östergötland	100 members/>250 firms in the region	Waste to energy, bio-gas, water	Östergötland, South East of Sweden	The eco-industrial symbiosis.	Workshops, newsletters, technical visits	Official agencies in Sweden	China, Germany
Malmö Cleantech Cluster	57 members	Waste, wind, sun, water, water cleansing, energy efficiency, sustainable building, bio-energy, district heating, transportation, soil remediation	Malmö	Meetings and contacts should always create business opportunities	Meetings, conferences, match-making activities	E, I, T	Germany, China
Stockholm Cleantech	100 members	Air, water, waste, renewable energy, sustainable city development, transportation	Stockholm with surroundings	Large network	Seminars, events, brochures	E	China, India, Nordic countries and some in Europe

Sustainable Business Hub	130 members / 200 firms	Sustainable city development, energy efficiency, bio-gas, sustainable health care.	South of Sweden, some national activities	Can provide complete value chains	Arrange technical events, collaboration with embassies	E	Poland, UK, China, Russia, Canada
Cleantech Region	N/A	Renewable energy, bio energy, sustainable building, waste energy, water, sustainable food and tourism	North of Sweden, some national activities	Marketing through good examples	Magazine, world tour, conferences, lectures	E	EU, USA, India, China, Singapore, Southeast Asia, Australia, Brazil, Vietnam, Africa (Kenya)
Ecoex	No members, are working with about 300 firms, over 1000 firms in the region	Waste, bio-energy, building, materials, district heating/cooling, green IT, chemistry, air/ventilation transportation, soil remediation	Västra Götaland, south west of Sweden	Sustainable transportation and energy systems	World exhibition, delegations, newsletter	E	Norway, UK, France, Italy, Poland, Germany, South Korea, Canada, China, California

Teknikdalen	40 members	Energy efficiency, wind, waste, water cleansing	Dalarna, north of Sweden	Sustainable business development	Match-making travels to China, newsletter, delegations (in)	E	China, EU
Sustainable Business Mälardalen	70 members	Renewable energy, soil remediation and water treatment	Västra Mälardalen, Västmanland, Sörmland, Örebro	Sustainable village	Co-operation with the Swedish export council, delegations (in/out), newsletter	E	BSR, developing countries
Denmark							
Copenhagen Cleantech Cluster	27 partners/ 522 total	Wind, water, smart cities, energy efficiency (smart grid)	Copenhagen region, Zealand region, some national activities	Internationally connected cluster, global outlook, one stop shop	Newsletters, delegations, social media (LinkedIn, FB), international conferences	E	Not specified
The Innovation Network VE-Net	650 SMEs, organisations, universities	Waste as resource, energy efficiency, smart grid, solar energy	Denmark	Technology systems approach	Newsletter, conferences, workshops, net-match (networking forum)	E	Germany, USA, Nordic countries, EU, Asia (in the future)
Agro Business Park	>300 members	Biomass, food production	Denmark, some international contacts	Food – biomass - energy	Word-of-mouth	E	EU, China

Innovation Network for Environmental Technology	73 members	Water, waste, air, soil	Denmark	Networking/match-making and technology	International match-making	E	Austria, Singapore
LORC – Lindoe Offshore Renewables Center	5 co-founding firms, <10 additional firms	Offshore wind energy	Denmark	Profitable green solutions	Arrange and take part in seminars, conferences, have two major test facilities	E	Denmark, Germany, USA, China
Bio Refining Alliance	4 founding members	Bio refining	Denmark	Complete bio refining value chain	Conferences, co-operation with the Danish Foreign Ministry	E	Latin America, North America, Asia, Europe
Norway							
OREEC - Oslo Renewable Energy and Environmental Cluster	Members 32 / 720 I region	Wind, wave, bio-energy, energy systems, waste to energy	Oslo region, some national	Networking organisation	Conferences, fairs, newsletters	T	Everyone in cleantech
Green Business Norway	32 members	Waste, energy production, transportation, logistics	Norway	Personal relations	Personal relations, fairs, conferences, newsletter, website, meetings	The members	Norway, Poland

Clean Water Norway	17 members/ ≈ 80 total	Water treatment	Counties Vestfold, Oslo, Akershus and Telemark in southern Norway	New technology e.g. nano and micro tech, co-operation between SMEs	Personal relations, webpage, recruitment fairs	E, T, I	Baltic countries, Germany, Egypt
INTPOW	34 partners	Hydro power, offshore wind, solar photovoltaic	Norway		Meetings, conferences, newsletters, embassies	E	Europe, Russia, India, China
Arena NOW – Norwegian Offshore Wind	40 members	Offshore wind. Structural design, installation and maintenance of offshore wind components	The Norwegian coast line, from Bergen to Stavanger	Whole package solutions	Meetings, organise conferences, match-making activities	E, T	Germany, UK
Arena Wind Energy	61 members	Wind	Mainly the middle part of Norway, also Norway and some firms from England.	Powering solutions, knowledge and ability to work in tough environments	International conferences, close co-operation with the English firms that are part of the cluster	Clients	UK, Germany, Sweden
NCE Smart Energy Markets	20 members	Smart energy	Halden, south of Norway	IT and energy efficiency. Smart solutions within energy efficiency	Workshops, co-arrange conferences, create international meeting sports	E	Europe, North America

Finland							
Finish Cleantech Cluster	>300 firms	Cover all cleantech. Strong area: monitoring and measuring	Finland	ICT and cleantech	Seminars, projects, networks, social media, specialised trade fares	E, I	Russia, China, India, EU, North America
Kuopio Innovation Ltd.	20 members/30 active firms/150 firms in the region	Environmental security, air and water quality, measurement and monitoring systems for measuring air quality	Eastern Finland	Synergy between the health and wellbeing sector and cleantech	Articles, conferences, brochures, LinkedIn	E, T	EU, Nordic countries and developing countries (mainly in the environmental safety sector)
Lahti Science and Business Park	N/A	Waste management, bio fuel, energy efficiency	Lahti region	“Leading Clenteach centre of the Nordic countries”	Conferences, social media, delegations and trade fairs	E, I	China, Russia, India
Business Oulu	>300 firms	Water and air purification, ICT, water monitoring, bio-energy and energy efficiency	Northern Finland	ICT and cleantech	Organise, visits, meetings, seminars. Collaborate with embassies.	E, I	EU, US, Asia, Latin Am (Brazil mainly)

Green Net Finland	60 members	Environmental monitoring, energy efficiency in the urban environment, sustainable buildings and traffic solutions	Uusimma region (Helsinki)	The competences within the sectors	Brochures, networking, newsletter, mailing lists, conferences, exhibitions	E, T	EU, BSR
OSKE - Energy Technology Programme	120 members	Generation and distribution of electricity	Vasa region	Renewable energy production	Co-operation with other clusters, go to and arrange national/international conferences, seminars, networking events	E, T, national decision makers in Finland	Europe
OSKE - Nanotechnology Programme	460 nanotech firms	Nanotechnology	Finland	Commercialisation of the technology	Seminars, exhibitions, brochures, tailored match-making, LinkedIn	E	EU, Russia, China
CLEEN - Cluster for Energy and Environment	28 members	Smart grids, environmental measurements and impact assessment, engine power plants	Nordic region	ICT combined with traditional solutions	LinkedIn, seminars, fairs, contacts with embassies in Finland and the trade council in Germany.	E	China, USA, future: Latin America, Canada, India

Iceland							
The Iceland Ocean Cluster	6 founding members.	Fishery, logistics and transports	Iceland	The ocean/marine sector	Active in the media, through the internet	Companies	Norway, Denmark, Canada, Ireland, Scotland, The Faeroe Islands, Greenland.
Icelandic Geothermal Cluster	70 member / \approx 120	Geothermal knowledge and services	Iceland	Icelandic know-how, leading university nation in fields of geosciences and geothermal energy	Webpage, global conference on geothermal energy	E, I, T	No specific target markets

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Strategic global marketing of Nordic cleantech clusters and competencies

Report for the Nordic Council of Minister's lighthouse project on "Communicating Nordic green solutions and competencies".

Abstract

A tweet made by "Brazilian Voice" suggested that a joint Nordic representation can develop the relationship with Brazil; one of the key emerging economic powerhouses globally – and a growing market for cleantech solutions. The tweet was made on the occasion of the visit of Finnish Prime Minister Jyrki Katainen and Minister for European Affairs and Foreign Trade Alexander Stubb to Brasília, Rio de Janeiro and São Paulo in February 2012.

The purpose of this report is to map how cleantech sectors and cleantech clusters in the Nordic countries are marketed today, and develop and suggest methods for and approaches to joint marketing of Nordic cleantech globally, paving the way for the long-term goal of developing a joint Nordic marketing model.

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