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Swedish sustainability through a Zhang and London lens

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Abstract

Purpose – The purpose of this paper is to describe how sustainable development has been initiated in a country (Sweden) in which sustainable development has priority and has produced observable results – essentially, the definition and reshaping of contents (p. 107) referred to in the Zhang and London (ZL) paper, therefore adding some validity to the model.

Design/methodology/approach – The research is both exploratory and qualitative in nature and uses an in-depth case study approach to the Swedish international economy as might be reflected by ZL's modified Porter model. Information drawn from current secondary sources is complemented by personal contemporaneous observations of individuals in the country of interest.

Findings – The task of implementing Sweden's strategy for sustainable development is holistic, and the State has played a major role in its development. That is, sustainability is the responsibility of the Government Offices as a whole, which produces proactive programs in each of the interactions analyzed in the ZL modified model. As an aside, the country has sustained a high level of competitiveness while producing a pleasant environment in which to live.

Research limitations/implications – Limitations in the study follow the same criticisms made of Porter' seminal treatment – (still) lack of a formal model construction (although ZL make a meaningful contribution), (still) lack of clear definitions (although ZL make a meaningful contribution), problematic research methodology (although an attempt has been made at improvement) and lack of empirical testing among others (and it is thought that this paper is a step in the right direction).

Practical implications – Insofar as Sweden might be a model for other countries interested in extending their efforts in sustainable development, observations here provide some insights into possible approaches and results.

Originality/value – The approach basically followed Siggelkow's (2007) definition of the use of cases as illustrations, which is useful when the underlying development depends upon constructs. It follows that the association of real-world observations with theory well serves the underlying foundation and cannot help but build credibility of those concepts and theory.

Keywords Modified porter model, Porter's diamond model, Sustainable development (SD), Swedish competiveness

Paper type Viewpoint

1. Introduction

This paper was motivated initially by the reading of an article in this journal, "Towards an internationalized sustainable industrial competitiveness model", by Mr Peng Zhang, PhD candidate, and Professor Kerry London of RMIT University, Melbourne, Australia (Zhang and London, 2013). In that paper, the authors developed an extensive discussion and critique of Michael Porter's Diamond Model of international competitiveness. To this model, they added the essential element of sustainable development and suggested why and how it could be incorporated into Porter's model. Their general observation

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was "[…] sustainable development should be considered as one of the elements for industrial competitiveness. After inclusion in the system of industrial competitiveness, *the definition and contents can be reshaped* (emphasis added). Due to its importance, sustainable development should be one of the determinants". The treatment went on to expound some detail on the relationship between sustainable development, factors in the Diamond Model and industrial competitiveness, which of course represented a significant contribution to our thoughts on industrial competitiveness. More recently another article appeared in this journal that attached some "real world" reflections on Porter's observations on the evolution of the competitive status of three separate countries (Wilson *et al.*, 2014), thus adding potentially further interest to the Zhang–London (ZL) model.

These observations appear relevant for three reasons:

(1) Porter's models remain a significant foundation for work on competiveness of both a conceptual and applied basis as mentioned above.

(2) One of the countries in the Wilson *et al.* (2014) paper, Sweden, has placed some emphasis on sustainable development. In fact, Sweden has been ranked first in RobecoSAM's country sustainability ranking (RobecoSAM, 2013, pp. 6-7). Based on the RobecoSAM framework, Sweden earned high scores across almost all criteria. Perhaps as a consequence, sustainability has been a topic of funded, academic interest within that country.

(3) Further, as a country, Sweden not only is generally open with its State collected information but also places some priority on collecting it. Thus, substantial secondary information is available to substantiate primary observations.

It might be further noted that the relationship between sustainability and competitiveness has a rich history of being debated in the literature, and some of this discussion has come specifically in Europe. Early on, Den Butter and Verbruggen (1994), for instance, discussed the trade-off between economic growth and a clean environment. It was emphasized that a valuation problem existed; consequently, economists needed to resist providing policy diagnoses with implicit political valuations. Toman (1994), in reflecting on the concept of "sustainability" itself, suggested discussion to that point had been hampered by uncertainty and lack of uniformity in the accepted meaning. Consequently, his paper sought to identify some common ground among economists, ecologists and environmental ethicists. Two issues seemed salient: requirements for intergenerational equity and the definition of "social capital" to be provided to future generations. A concept of "safe minimum standard", which had received at least some recognition in the ecology, philosophy and economics literatures, may provide the beginning of a common ground for debate about sustainability. O'Hara (1997) suggested the necessary elements of a sustaining production theory. In this context, sustaining production referred to a production process that sustains the social and biophysical context within which it takes place. The concept necessarily defines sustaining services that maintain input and output flows. In general, they take place in households, social relations, ecosystems and biophysical processes and are essential to maintaining production itself. More recently, Prezioso and Coronato (2013) reflected upon how the Europe Strategy toward 2020 represents the framework of new regional business in Europe, re-addressing the regional enterprises and regions' goals to valorize the

territorial potential capability to be competitive in sustainability, starting from the increase of co-operation and cohesion. The article illustrates how, looking at the *Europe2020 Strategy* and *Rio+20* perspectives, the conversion of endogenous productive resources in social, economic and territorial development business opportunities require the development of new regional organization patterns of local production.

With specific regard to competitiveness, Porter and Van der Linde (1995, p. 107) have suggested that the environment-competitiveness debate has been framed incorrectly. The notion of an inevitable struggle between ecology and the economy grows out of a static view of environmental regulation, in which technology, products, processes and customer needs are all fixed. In this static world, where firms have already made their cost-minimizing choices, environmental regulation inevitably raises costs and will tend to reduce the market share of domestic companies on global markets. In contrast, the paradigm defining competitiveness has been shifting away from this static model, and the new paradigm of international competitiveness is a dynamic one, based on innovation. Consequently, it is argued that properly designed environmental standards can trigger innovation that may partially or more than fully offset the costs of complying with them.

The combination of these factors – historical interest in the topic, background in Porter's models, national interests, the availability of information, as well as potentially strategic implications – seemed to provide motivation for some effort building on the ZL model. Additionally, although there is clearly an interest in this topic, there seems to be a dearth of papers in which actual observations are related to concepts. As a result, pervading this work is the premise that the association of real-world observations with theory well serves underlying concepts and cannot help but build credibility of those concepts and theory. The purpose of this paper is thus to describe how sustainable development has been initiated in a country (Sweden) in which sustainable development has priority and has produced observable results – essentially, the *definition and reshaping of contents* referred to in the ZL paper, therefore adding some validity to the model. The hope is that fellow academics doing work in competitiveness will be interested in our observations as will policy makers, industrial managers and executives.

2. Background

2.1 Porter's diamond – the determinants of national advantage

The basis of the Porter model that relates to a nation's success lies in four broad attributes that shape the environment in which firms compete (Porter, 1990/1994, pp. 71-130). These attributes are generally described as a diamond that suggests the determinants of national advantage. In their original form they are:

- Factor conditions: the nation's position in factors of production, such as skilled labor or infrastructure, necessary to compete in a given industry.
- Demand conditions: the nature of home demand for the industry's product or service.
- Related and supporting industries: the presence or absence in the nation of supplier industries and related industries that are internationally competitive.

- Firm strategy, structure and rivalry: the conditions in the nation governing how companies are created, organized and managed, and the nature of domestic rivalry.

These determinants of national advantage shape the environment for competing in particular industries. In the studies of particular industries, however, two other elements in the environment were suggested to play a role – *chance* and *government*. Their attributes are:

(1) *Chance*: Occurrences that have little to do with circumstances in a nation and are often outside the power of firms and/or government to influence. Examples include acts of pure invention, major technological discontinuities, discontinuities in input costs, shifts in world financial markets, surges in demand, decisions of foreign governments and war.

(2) *Government*: If there were to be a fifth determinant, it would be government (Porter, 1990/1994, p. 126). Within the model for competitiveness, however, the role of government is seen as *affecting* the four determinants of advantage or vice versa.

As Zhang and London (2013, pp. 108-109) aptly note, there have been significant criticism of this model, and a listing has been made of the various types: lack of a formal model construction, lack of clear definitions, problematic research methodology and lack of empirical testing among others. Consequently, readers are referred to the ZL paper for a summary of this literature. Just as Zhang and London judged the Porter model to be credible and moved on with modification, our judgment is that the ZL model is credible and worth further introspection to an actual example.

2.2 Zhang and London's modified Porter model – bringing sustainability to the situation[2]

Zhang and London (2013) argue that sustainable development should be considered as one of the elements for industrial competitiveness. Basically, the argument is that after inclusion in the system of industrial competitiveness, the definition and contents can be reshaped. Due to its importance, sustainable development should be one of the determinants[2]. If this is the case, sustainable development and the factors in the Diamond Model can affect each other and influence industrial competitiveness. The relationship between sustainable development, factors in the Diamond Model and industrial competitiveness can be described in detail:

(1) Government as the policy maker typically determines sustainable development at a high level, such as industry policy, environment policy and new product standard. Sustainable development provides governments with a measurement method for the policies' result.

(2) Sustainable development can affect the factor conditions by reconsidering the demand of human resources, natural resources and capital resources. The efficiency of resources used can determine the success of sustainable development.

(3) Sustainable development requires setting up an ecological model, which includes an ecological production process, the ecological economic operation

mode and the ecological consumption mode. An ecological consumption mode can affect demand conditions. New technology would be needed to develop new products or change production operation process.

(4) Sustainable development typically needs firms to change their strategy (such as the objective from economy to sustainable development perspective), structure (such as new units/departments/suppliers/customers) and rivalry (from competitive mode to competitive-cooperative mode). The firm is the main participator of economic activities. Its degree of involvement in the process of sustainable development can directly affect the achievement of sustainable development in the economic area.

(5) One of the characteristics of sustainable development is systematism. The changes of one unit can lead to the changes of other units. In this sense, sustainable development can influence related and supporting industries. As a consequence, related and supporting industries are also the subsystems for sustainable development. Their development approaches and situations can affect sustainable development as well.

(6) Sustainable development can affect the chance factor in relation to:

- reducing the frequency of disasters and their destructiveness, and war;
- increasing the possibility of innovation in basic science and technology; and
- reducing the possibility of the emergence of disruption in traditional technologies and the sudden increase in production costs.

Figure 1, adapted from Zhang and London (2013) illustrates how the factors in the modified Porter model interact.

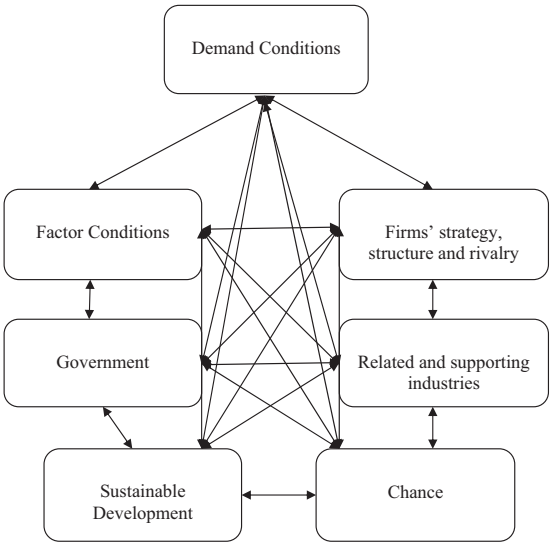

Figure 1.
The modified Porter Model – after Zhang and London, 2013, pp. 107-108

2.3 Sweden and sustainable development

In 1987, Sweden's Commission on Sustainable Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Government Offices of Sweden, 2013). It continued, "The three dimensions of sustainable development - economic, social and environmental - are to be in harmony and mutually reinforcing". Reference was made to the UN World Summit on Sustainable Development in Johannesburg in 2002, chaired by Gro Harlem Brundtland, and the concept of sustainable development was recognized as an overarching principle in the activities of the United Nations. This makes it possible to continue to promote sustainability as a broad and holistic development agenda.

The Swedish national government has been diligent in adopting and supporting these tenets. Its vision of sustainable development is based on the principle that all policy decisions must take into account the longer-term economic, social and environmental implications and has been expressed in *The Swedish Strategy for Sustainable Economic, Social and Environmental Development* (SSSD, 2003). The strategy builds on the 2002 World Summit on Sustainable Development held in Johannesburg, the European Union (EU) strategy for sustainable development and the so-called Lisbon process, and addresses the three dimensions of sustainable development: economic, social and environmental. Government efforts in this sphere are based on eight core areas:

(1) the future environment;
(2) limitation of climate change;
(3) population and public health;
(4) social cohesion, welfare and security;
(5) employment and learning in a knowledge society;
(6) sustainable economic growth and competitiveness;
(7) regional development and regional conditions; and
(8) development of sustainable community planning.

The State has measured its progress against EU standards on an ongoing basis (Statistics Sweden, 2012, pp. 85-86). In terms of socioeconomic development, sustainable consumption and production, social integration, demographic changes, health, climate change and energy, sustainable transports, natural resources, global citizenship and good government as measured by EU criteria, Sweden does well. That is, in nine of the ten categories, Sweden does better than average EU policy and practice (Table I). Only in the area of natural resources does Sweden lag EU progress. Underlying this assessment are the measures of progress, i.e. growth of gross domestic product (GDP), resource productivity, risk of poverty, employment rate of older workers (55 to 64 years), expected number of health years at birth, life expectancy at birth, emission of greenhouse gases, renewable energy sources, energy use for transportation relative to GDP, the presence of common bird species in agricultural landscapes, conservation of fish stock, official development support and infringement cases, which suggest the "hard" measures on which Sweden evaluates itself.

Table I. Sweden's performance in the thematic areas of the EU sustainable development indicators (from Statistics Sweden, 2012, pp. 85-86[a])

Theme	Key indicator	Development in Sweden	Compared to EU
Socioeconomic development	Growth of gross domestic product	Clearly positive	Better than EU
Sustainable consumption and production	Resource productivity	Little or no positive development	Better than EU
Social integration	Risk of poverty	Slight negative development	Better than EU
Demographic changes	Employment rate of older workers (55 to 64 years)	Clearly positive	Better than EU
Health	Expected number of health years at birth	Clearly positive	Better than EU
	Life expectancy at birth	Clearly positive	Better than EU
Climate change and energy	Emission of greenhouse gases	Little or no positive development	Equal to EU
	Renewable energy sources	Clearly positive	Better than EU
Sustainable transports	Energy use in transportation relative to GDP	Clearly positive	Better than EU
Natural resources[b]	The presence of common bird species in agricultural landscapes	Clearly negative development	Worse than EU
	Conservation of fish stock	Data are only available for the EU level	Data are only available for the EU level
Global citizenship	Official development support	Clearly positive	Better than EU
Good government	Infringement cases	Difficult to assess	Better than EU

Notes: [a]Note that this table is reproduced largely as appearing in the original report except that the smiley faces in the "compared to EU" column are replaced by the verbal descriptions associated with the faces; [b]of the measures cited in assessment of progress, these two as natural resource metrics appear to be the strangest

To put these developments in perspective, Figure 2 has been drawn that illustrates the general chronology and process by which the Swedish approach has gone. The addition of two extra boxes in the figure are included to suggest that the development is one in flux and additional areas may be anticipated in the future. That is, the movement started in 1987 has grown as shown and may be expected to grow further.

3. Method

The research was both exploratory and qualitative in nature and used an in-depth case study approach to the Swedish international economy. The approach basically followed Siggelkow's (2007) definition of the use of cases as illustrations. That is, the selection of a country was not random, but very special in the "sense of allowing one to gain certain insights that other organizations would not be able to provide". Examples of activity were selected that provided association and thus foundation for analysis provided by Zhang and London's (2013) modified Porter model. The criteria for selection were:

- The illustration had to be clearly Swedish and directly applicable to the ZL description of the sustainability – other factor interaction.
- A secondary source had to be available describing the example, preferably in English.
- The example had to be directly associated with the ZL sustainability – other factor interaction. For instance, the presence of common bird species in agricultural landscapes was used as a metric in the EU assessment of natural resource protection (Table I). In comparison, the work in Sweden relating to the natural resource interaction associated with developments in mining (Regeringen, 2013a; Table III).

Information was drawn from current secondary sources (Government Offices of Sweden, 2013; MISTRA Final Research Report, 2012; Regeringen reports for various years and topics; SIRP, 2012; SSSD, 2003; Statistics Sweden, 2012; available World Bank data) and have been complemented by personal contemporaneous observations of individuals in the country of interest, which have been documented in the *Wall Street*

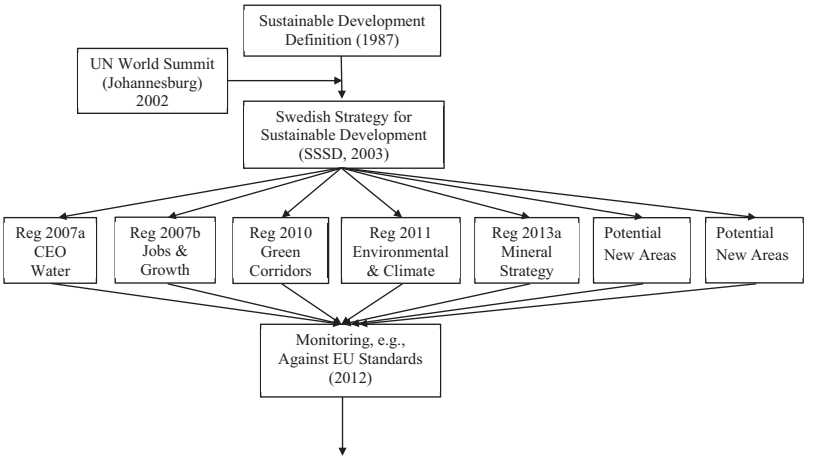

Figure 2.
Sequential nature of Swedish SD development

Journal (Curran, 2013; Duxbury, 2012a, b) and *The Economist* (Schumpeter, 2013). The process started with reviewing the nature of the ZL interactions and then selecting examples by an iterative approach with the above criteria for selection. Table II illustrates the six-fold process followed in making selections that supported this study.

Further, in the spirit of the EU approach (and also as suggested by one of the reviewers of this paper), the analysis provides a qualitative judgment that was made indicating how the country was performing in that particular matter. As a general observation, the Swedish strategy for sustainable development report (SSSD, 2003) laid out the general intent in the various sectors. Subsequently, these general intents were made specific in Regeringens as identified in Regeringen (2013a), *Sweden's Minerals Strategy for Sustainable Use of Sweden's Mineral Resources that Creates Growth throughout the Country*, Regeringen (2011), *Policy for Environmental and Climate Issues 2010-2014*, Regeringen (2010), *Green Corridors*, Regeringen (2007b), *The CEO Water Mandate – An Initiative by Business Leaders in Partnership*.

4. Framework analysis

4.1 Observations associated with a Zhang and London foundation

Although Table I and its ten indicators reflect EU standards, they do not correspond directly with the factors involved in the modified Porter model suggested by Zhang and London (2013). Consequently, Table III was prepared to make a more direct comparison with the ZL model. The first two columns comply with the descriptions given in ZL. Column 3 gives our reflections on present Swedish practice and examples of note. For instance, in the interaction of sustainability with government, the task of implementing Sweden's strategy for sustainable development is noted as the responsibility of the Government Offices *as a whole* (SSSD, 2003, p. 5). Nevertheless, Sweden appears to be doing this through cooperation with industry. In fact, it is leading the world in allowing private companies to run public institutions (Schumpeter, 2013).

4.1.1 Government. Government tends to be an active partner in any sustainability considerations – in any of the Porter attributes. Put another way, it is the government that initiates, promulgates and implements programs. The ZL assessment on government's importance is, "As a policy maker, government typically determines sustainable development (SD) at a high level". This importance is reflected in the RobecoSAM (2013) sustainability index referred to earlier. That is, 60 per cent of that index came from its governance metric. Sweden earned the top score in this dimension

Table II.
Phases in selection of examples

Steps	Phases	Description of steps in the selection process
1	Reviewing interactions	Refocusing on ZL interactions in terms of likely Swedish information through informal interviews and discussions
2	Familiarizing with data	Browsing of Government of Sweden, MISTRA, Regeringen, SIRP, SSSD, Statistic Sweden, World Bank sources
3	Iterative data collection	Re-readings, familiarization with the data and development of initial ideas
4	Refinement of ideas	Ongoing analysis to refine the specifics of each episode
5	Example selection	Selection of compelling extract examples and final analysis of selected extracts
6	Production of report	Relating analysis back to the research focus and literature

Attribute	Reflection	SE performance/Assessment	Competitive comments
Government	As policy maker, government typically determines sustainable development (SD) at a high level	The task of implementing Sweden's strategy for SD is the responsibility of the Government Offices as a whole (SSSD, 2003, p. 5). Strength indicated by RobecoSAM recognition as Number 1 in 2013	Government has chosen to focus strategic investments on three key areas: medicine and bioscience, technology, and climate (Sweden, 2014) Sweden is leading the world in allowing private cos. to run public institutions (Schumpeter, 2013)
Factor conditions	Demand of human resources, natural resources and capital resources	Policy is based on international conventions and guidelines on human rights, core labor stds, SD and corruption (SSSD, 2003, p. 17). Mixed observations–development of human resources a core concept; natural resources progress clearly negative compared to EU	Implementation includes: capital for small enterprises, funding for environmental tech and commercialization, promotion of effective competition Follows EU's strategy by investing, improving and implementing the internal market Natural resource program modeled in mining
Demand	Model includes ecological production, operations and consumption	Sustainable development cannot be achieved without reference to social and environmental concerns (SSSD, 2003, p. 16). Little or no positive development	Provides and promotes transportation passages and corridors called Green Corridors Has initiated CEO Water Mandate Note Number 2 on OECD's Better Life Index (Curran, 2013)

(*continued*)

Table III.
A ZL assessment applied to Sweden

Table III.

Attribute	Reflection	SE performance/Assessment	Competitive comments
Firms' strategy, structure and rivalry	Shift from economy to SD, structure new units, departments, suppliers, customers and rivalry to competitive-cooperative	Many studies find that SD practices add economic value to assets (MISTRA, 2012, p. 3). State-owned businesses urged to be models–evaluation in 2014 (Sustainable businesses, 2013). Both voluntary adoption of SD and public compliance have produced early activity	There is a key first-mover advantage: investing early carries a premium (MISTRA, 2012, p. 3). State-owned companies were urged in 2012 to take a lead with regard to developing their business model into a long-term sustainable business model by taking into account aspects such as equality, diversity, environment, human rights, working conditions, anti-corruption and business ethics
Related and supporting industries	Systematism: changes in one organization leads to changes in others	Dialog and voluntary agreements–17 agreement reached in 1990s [. . .] involved entire sectors as well as individual cos. (SSSD, 2003, p. 21). As goes primary firm's practices, so goes the support. Both are positive	The Swedish program for sustainable development was initiated with dialogue and voluntary agreements with industry. The agreements involved entire sectors as well as individual companies. Partnerships were entered into with clearly defined objectives and follow-up procedures, jointly undertaken by the participants (SSSD, 2003, p. 21)

(*continued*)

Attribute	Reflection	SE performance/Assessment	Competitive comments
Chance	Reduced disasters, increased basic innovation, reduced disruption in traditional technologies	History of neutrality, i.e. First World War and Second World War. Significant support of universities spurs innovation. Active government response. Underlying appreciation of need and opportunities for direct involvement drive adherence to sustainability	Stability lends to global competitive positioning. The report *Sweden in a World of Growing Uncertainties* lays out the basic rationale for a Swedish transformation into a twenty-first century green economy (Regeringen, 2013b). Note Sweden was one of the three countries to stay out of Euro zone and has benefitted relative to recent problems (Duxbury, 2012b)

Table III.

for its institutional framework (RobecoSAM, 2013, pp. 3-4, p. 7). This "institutional" parameter derived from a broad range of data that took into account the country's regulatory quality, central bank independence and political conflicts and corruption among other factors normally associated with "government". It is instructive to note that the task of implementing Sweden's strategy for SD is intimately associated with the State, i.e the responsibility of the Government Offices as a whole (SSSD, 2003, p. 5). A special body, Co-ordination Unit for Sustainable Development, has been set up in the Prime Minister's Office to co-ordinate international and national efforts in this field and strengthen strategic initiatives.

Most importantly, this strategy uses privatization and private initiatives. At the policy level, fundamental principles have been set out for the government's general position regarding environmental and climate issues within development cooperation (Regeringen, 2011). The overarching objective for its environmental and climate support within development cooperation is a better environment, sustainable use of natural resources, stronger resilience to environmental impact and climate change in developing countries and limited climate impact. The formal document covering these areas suggests focus on the following areas in particular:

- strengthened institutional capacity in public administration;
- improved food security and sustainable use of ecosystem services;
- improved water resources management;
- greater access to safe water and basic sanitation;
- increased access to sustainable energy sources; and
- sustainable urban development.

The present situation in this area is that the Government recognizes that there is plenty of room for improvement and is striving to ensure that the next generation can take over a society where the major environmental problems have been solved. The "generational goal" involves 16 environmental quality objectives to be achieved by 2020. For 2013-2016, Sweden will allocate approximately SEK 22 billion to environmental measures (Sweden, 2015). Further, as covered in Section 4.1.4 by policy (Sustainable Business, 2013), State-owned companies (e.g. Svenska Spel, Systembolaget and Vattenfall) have been encouraged to lead the way in sustainable business with a view to acting exemplary.

4.1.2 Factor conditions. From Porter's original treatment, "factor[3] conditions refer to the production performance of a country's certain industry (Zhang and London, 2013, p. 98). Production performance relies upon human resources, natural resources, knowledge resources, capital resources and infrastructure". In the Swedish Strategy for Sustained Development (SSSD, 2003), recognition is given to each of these elements. The development of human resources along the lines of integration and diversity, gender equality and lifelong learning, for instance, might be considered to be core values of the country (SSSD, 2003, pp 14-16). Within the context of natural resources, likewise, the aim is to hand the next generation a system with problems solved (SSSD, 2003, p. 12, p. 18). In this sector, mining presents a strategic problem (see below). Sweden has opted to continue mining, but the mining of minerals must fulfill the same environmental requirements as other industrial activities (Regeringen, 2013a). The treatment of the five factor conditions of production are covered in some detail in Table IV.

Requirement	Response	Observations	Citations
Human resources	Integration and Diversity (ID), Gender Equality (GE) Lifelong Learning (LL)	Might be considered to be core values in the country. ID by law; GE and LL by practice	SSSD (2003, pp. 14-16)
Natural resources	Forests as resource, agriculture, fishing and reindeer husbandry, nature conservation and biological diversity, The sea. Mining as special consideration	Sustainable development cannot be achieved without reference to environmental concerns. Aim: hand next generation major problems solved. 15 objectives. Same requirements for mining. Note Table I–"clearly negative" in this factor	SSSD (2003, p. 12, p. 18). Regeringen, (2013a). Statistics Sweden (2012, p. 85)
Knowledge resources	Development and participation of children and young people, Research and development	Overall goal–leading knowledge society. Porter: competitive advantages of Sweden universally high educational level of its population	SSSD (2003, p. 16). Porter (1990, p. 343)
Capital resources	Capital provisions for small enterprises, funding for environmental technology and commercialization	Economic policy instruments have been/are applied to encourage sustainable patterns	SSSD (2003, pp. 16-17)
Infrastructure	Energy, Transportation systems and infrastructure, Green corridors (see Section 4.1.3)	Government has instituted reforms for stable and efficient economy. Changes include housing, transportation, communications and energy	SSSD (2003, pp. 18-20), (Regeringen, 2010)

Table IV. Response to factor requirements

With regard to human resources, the following is reported (Regeringen, 2007a):

> The EU Strategy for Growth and Jobs, the Lisbon strategy, lays the basis for EU's joint work to meet shared challenges. It is about the creation of macroeconomic stability and the enhancement of the EU's competitiveness by investing in research and education, improving the business climate and implementing the internal market. It is also about reforms to improve the functioning of the labour market in Europe and strengthen social cohesion as well as to safeguard environmentally sustainable growth. Under the strategy, the Member States are to draw up national reform programmes showing how the strategy is being implemented at the national level. The Swedish Reform Programme for Growth and Jobs 2006 to 2008, presented the Government's policy, which is to lay the basis for long-term sustainable economic development, create scope for the provision of increased welfare and meet future challenges. This progress report for 2007 gives an account of the next stage in the Government's policy with its focus on making it worthwhile to work and run a business.

Another area of interest is mining, which is rather extensive in the country. There is not a country in the world that does not have a problem in this sector – the soil cannot be disturbed without consequences. At a national level, a safe solution is to shut down mines and import necessary minerals, but that just beggars the problem. Sweden has opted to continue mining, but the mining of minerals must fulfill the same environmental requirements as other industrial activities (Regeringen, 2013a). This minerals strategy is planned to:

> […] increase the competitiveness of the Swedish mining and minerals industry so that Sweden maintains and strengthens its position as the EU's leading mining nation. Sweden's mineral assets are to be exploited in a long-term sustainable way, with consideration shown for ecological, social and cultural dimensions, so that natural and cultural environments are preserved and developed.

Prior to the extraction of ore and minerals, the planned activities must be tested against the provisions laid down in the Swedish Environmental Code and the Swedish Planning and Building Act (2010, p. 900). Mineral exploitation concessions are governed pursuant to provisions in the Swedish Minerals Act. If the exploration work done indicates there are deposits of such quality that they would be economically profitable to extract and that their geographical location is suitable with regard to the principles of natural resource management, the Chief Mining Inspector may grant an exploitation concession. An exploitation concession is normally granted for 25 years. The Chief Mining Inspector also establishes the level of compensation that the mining enterprise must pay to the landowner and to the State, the "minerals fee". The minerals fee was introduced in 2005 and means that the landowner is entitled to 0.15 per cent of the value of the minerals and the State is entitled to 0.05 per cent.

The Swedish development in this area is mixed and must be considered modest (Table IV). On the one hand, development of human resources is a core value of the culture. On the other, although the aim for the natural resource element is to solve these problems for the next generation, progress within this element is "clearly negative" (Table I). Improvement in this general area occurs by spreading. For instance, voluntary compliance in industry is governed by ISO 14,001 that pulls together all environmental issues, be they water, air, climate and soil, and requires organizations to think about them all in a holistic manner (Lazarte, 2015). It does not state requirements for environmental performance but maps out a framework that a company or organization

can follow to set up an effective Environmental Management System (EMS). Initially, compliance was industry oriented. As policies and practices were adapted in that sector, however, other organizations followed, for example – universities.

4.1.3 Demand conditions. The ZL model calls for ecological production, operations and consumption. The consumption side could prove to be difficult because it involves changing individual behavior (SSSD, 2003, p. 16). In a text devoted to a sustainable culture, forecasts tended to focus on the year 2050 (World Scientific, 2014). The Swedish policy recognizes that negative impact of consumption patterns on people and the environment should/must be kept to a minimum. Consequently, a committee of inquiry was established, and an ongoing effort developed to show the connection to sustainable development. Both these considerations "should/must be kept to a minimum" and "committee of inquiry" suggest a slow, modest approach. Note that the assessment in the comparison with the EU for Sweden (Table I) suggested "little or no positive development".

Two particular items relating at least indirectly to demand, however, deserve some emphasis because of their uniqueness and relative success – green corridors and a water partnership. Put another way, there is a challenge for the logistics sector and the society to achieve long-term sustainability, as transports are not only a part of the problem but also a part of the solution (Regeringen, 2010). One way of accepting the challenge is to develop transnational transportation corridors stretching from the Nordic Region to the Continent. These transportation passages and projects are called Green Corridors. Such corridors are presumed to increase competitiveness and contribute to a sustainable Europe. Projects strengthen the competitiveness of the logistics sector and create sustainable solutions working in collaboration with business, community and research. The CEO Water Mandate partnership is an initiative developed in partnership between the United Nations Global Compact, the Government of Sweden and a group of committed companies and specialized organizations dealing with the problems of water scarcity and sanitation (Regeringen, 2007b). The CEO Water Mandate seeks to engage a critical mass of companies from around the world, willing to undertake serious efforts, in partnership with other stakeholders, to address this challenge. Whenever possible, this initiative will coordinate efforts and work with existing water programs – both global and local – to maximize impact. It is designed as a private–public initiative with a focus on developing strategies and solutions to contribute positively to the emerging global water crisis.

4.1.4 Firms' strategy, structure and rivalry. Zhang and London (2013, p. 105) come down on the side of suggesting that:

> […] contrary to the disadvantage of cost, firms can gain sustainable competitive advantages and experience considerable benefits by considering sustainable development at the strategic level and taking action in all areas of business.

Ancillary studies suggest that a significant proportion of firms worldwide has taken steps to make their operations more sustainable (CDP, 2014). Further, the ZL conclusion finds support in the Swedish MISTRA (2012, pp. 2-3) report – "sustainable business practices appear to add economic value to assets and there is a 'first mover advantage'. Over time, this value is likely to be mainstreamed". Thus, investing early carries a premium. Recall also that Porter and Van der Linde (1995) argued that properly designed environmental standards can trigger innovation that may partially or more

than fully offset the costs of complying with them, so perhaps some of this is being seen coming to fruition.

As noted in Section 4.1.2, development in this area is implemented when a company or organization sets up an effective EMS, which presently is occurring within the cooperation of industry with the State (SSSD, 2003, p. 21). Further, by policy (Sustainable Business, 2013), State-owned companies have been encouraged to lead the way in sustainable business with a view to acting exemplary. Emphasis is asserting that sustainable business is about more than following laws and rules. It is suggested that:

- employers with good values will attract and retain the best employees;
- companies that develop products and services that help customers reduce energy consumption and carbon emissions will likely to continue to make money; and
- sustainable businesses conduct their activities in such a way that it satisfies current needs without compromising the ability of future generations to satisfy their needs.

4.1.5 Related and supporting industries. Zhang and London (2013, p. 105) continue:

> One of the characteristics of sustainable development is systematism. The changes of one unit can lead to the changes of other units. In this sense, sustainable development can influence related and supporting industries. As a consequence, related and supporting industries are also the subsystems for sustainable development. Their development approaches and situations can affect sustainable development as well.

The Swedish program for sustainable development was initiated with dialogue and voluntary agreements with industry and apparently has gone well. Seventeen agreements between the government and the enterprise sector were reached in the 1990s (SSSD, 2003, p. 21). They covered areas such as paper recycling, the phase-out of leaded petrol and voluntary assumption of producer responsibility in the construction industry. The agreements involved entire sectors as well as individual companies. Partnerships were entered into with clearly defined objectives and follow-up procedures, jointly undertaken by the participants. An important aim of these partnerships was the integration of the enterprise sector and sustainable development work. As a consequence of these partnerships (SSSD, 2003, p. 21), when the primary firm in a supply chain within an industry comes into ISO 14,001 compliance, affiliated organizations tend to follow.

4.1.6 Chance. In rounding out their comments, Zhang and London (2013, p. 105) have this to say this about chance, "Sustainable development can affect the chance factor in relation to:

- reducing the frequency of disasters and their destructiveness, and war;
- increasing the possibility of innovation in basic science and technology; and
- reducing the possibility of the emergence of disruption in traditional technologies and the sudden increase in production costs".

Sweden has tended to make its own luck in this area. The country depends upon exports to significantly support its economy (CIA, 2013). Consequently, its various administrations have consistently maintained a neutral international position, which to

a certain extent has led to an advantageous competitive global position (Porter, 1990/1996, p. 569). Additionally, it also might be noted that Sweden was one of the three countries to stay out of euro zone and has benefitted relative to recent problems (Duxbury, 2012b). Finally, the development of the internet has been a major contributor to the evolution of its knowledge-related industries.

Formally, with regard to chance, the report *Sweden in a World of Growing Uncertainties* lays out the basic rationale for a Swedish transformation into a twenty-first century green economy (Regeringen, 2013b):

> The notion of a green economy has gained a significant foothold in the scientific and public debate, especially in the last few years. Most basically, it signifies new thinking designed to tackle an accumulated set of problems. It proceeds from the growing realisation that a damaged environment has direct economic and social consequences, and goes beyond the narrow ecological agenda of recent decades, or debates over sustainability. In policy terms, it involves the systematic incorporation of environmental considerations into the heart of economic decision-making – and, by extension, into the heart of modern society.

The report continues:

> The implications of carrying out such a transformation are potentially major. A green economy can be a prime means of strengthening Sweden's economic, political and social fabric against a future likely to be defined by growing uncertainties, possibly punctuated by severe crises, and almost certainly shadowed by insecurity.

Of course, occasions of opportunisms arise. For instance, in situations such as response to natural disasters, the government can impose conditions of sustainability in subsequent activities such as construction. These conditions tend to be the standards used in any case thereafter.

4.2 Sweden's competitive position

It is interesting that Sweden was one of the countries featured in Michael Porter's (1990/1996) *Competitive Advantage of Nations*, who positioned it in the innovation-driven stage in his map of evolution. He suggested that the country came out of Second World War with the ability to:

> […] enjoy a rapidly rising standard of living as firms extended competitive positions beyond resource industries into transportation equipment, machinery, and other advanced industries linked to established clusters. Sophisticated home demand, unusual interchange within clusters, and high and rising human resource quality supported upgrading.

A slowing rate of improvement, however, could be associated with:

- periodic currency devaluations;
- low level of individual incentives and slow rate of new business formation; and
- the large State sector that tends to affect the allocation of human capital (Porter, 1990/1996, p. 569).

Presently, Sweden is likewise classified as an innovation driven economy by the *World Economic Forum* (WEF) and is ranked as the tenth most competitive country in the world (World Economic Forum, 2014). It ranks particularly well in health and primary education, technological readiness and macroeconomic environment. As a point of particular interest, in 2013, WEF ranked its firm-level technology absorption and patent

applications per capita as world best (Schwab, 2013, pp. 356-357). It also fared well (second best in world) in availability of latest technology and willingness to delegate authority.

Sweden today has a diverse, highly competitive and successful economy (Sweden, 2014). The CIA (2013) summary report describes the country in the following manner:

> Sweden has achieved an enviable standard of living under a mixed system of high-tech capitalism and extensive welfare benefits. It has a modern distribution system, excellent internal and external communications, and a highly skilled labor force.

It continues:

> Timber, hydropower, and iron ore constitute the resource base of an economy heavily oriented toward foreign trade. Privately owned firms account for a vast majority of industrial output, of which the engineering sector accounts for about 50 per cent of output and exports […] Growth in modern service sectors such as information and communication technology has been strong in Sweden. Internet calling service Skype and online music streaming service Spotify are two examples, but Swedes haven't stopped there. Since 2008 the ICT sector has grown by 16 per cent and now employs over 4 per cent of the Swedish workforce. The sector is characterized by its many new and small businesses, and Stockholm has become known as one of Europe's hottest start-up cities for ICT companies (Sweden, 2014).

In reflecting upon the leadership position the country has in technology and its utilization, the Swedish homepage has this to say:

> The Swedish government has chosen to focus strategic investments on three key areas: medicine and bioscience, technology, and climate. Sweden is particularly strong in biotechnology. Pharmaceuticals are a key export, and Swedish medical innovations include the asthma medicines Bricanyl and Pulmicort; the growth hormone Genotropin; and the stomach ulcer drug Losec, one of the world's best-selling drugs. Research is not confined to giants such as AstraZeneca and Pfizer-Pharmacia; many small biotechnology companies conduct their own research. A key area of interest is healthcare. Rapidly growing markets include medical devices such as imaging equipment, orthopedic implants, dialysis equipment, heart-lung machines, and ECG equipment, as well as laboratory studies of medicines. Microelectronics is another growth market. Sweden is at the forefront of research into silicon-based components, high-speed electronics, organic electronics, photonics and systems design (Sweden, 2014).

One note of caution in making too much of these favorable images of the country and its economy is that five years ago, its competitive position was second in the world. In subsequent years, it was third, then fourth, then sixth and now tenth[4]. A rationale for these observations is not straightforward. Generally speaking, innovation economies tend to go through a cycle that depends upon continued innovation to sustain competitive positions, which is difficult. The decline in rankings may a slippage in innovation. On the other hand, initial spending on sustainability may also come into play.

5. Discussion

The world, or at least some of the countries in the world, is/are going down a path in which sustainability is a consideration at the national and/or international level. It follows that changes in present practices are inevitable if sustainability policies are implemented. Zhang and London (2013) have proposed a model in which sustainability

is included as an influence of the factors determining country competitiveness. Although general statements of interactive consequences have been made – both by Zhang and London (2013) and others (Prezioso and Coronato, 2013; O'Hara, 1997; Den Butter and Verbruggen, 1994; Toman, 1994, p. 107), this paper focuses on actual changes initiated where sustainability is a priority.

The purpose of this paper was to describe how sustainable development had been initiated in a country (Sweden) in which sustainable development has priority and has produced observable results – essentially, the *definition and reshaping of contents* referred to in the ZL paper, therefore adding some validity to the model. Basically, it represents an application of Siggelkow's (2007) definition of the use of cases as illustrations, especially when underlying factors may be constructs. In doing so, no attempt has been made to aggrandize the state of Swedish progress or to criticize the Zhang and London (2013) model. Rather, the contribution made by these two co-authors is recognized in reflecting upon the present need to add sustainability to any model of international competitiveness and think it would be useful to have some evidence added to substantiate their observations. Information out of Sweden tends to accommodate this purpose. The country got an early start in the area (Government Offices of Sweden, 2013) and, as Table I shows, has tended to do well in comparison with the rest of the EU and undoubtedly the world as well in sustainable development. Additionally, until the European recession of 2011, Sweden's economy (Duxbury, 2012a):

> […] bolstered by solid exports and healthy consumer spending, had been doing well – picking up considerable steam even as many of its European neighbors gasp for breath amid the struggle to contain the euro-zone debt crisis (Duxbury, 2012b).

Further, it is ranked as the sixth most competitive country in the world by the WEF. Thus, it would appear that sustainability *can be pursued* without deleterious effects on the economy.

With regard to these observations, in his original treatise, Porter (1990/1994, p. 126) suggested that if there was to be a fifth determinant, it would be government. That particularly seems to be the case with regard to sustainability. ZL's assessment on government's importance was, "As a policy maker, government typically determines sustainable development (SD) at a high level". In this case, the task of implementing Sweden's strategy for SD was intimately associated with the State, i.e the responsibility of the Government Offices as a whole (SSSD, 2003, p. 5). A special Co-ordination Unit for Sustainable Development has been set up in the Prime Minister's Office to co-ordinate international and national efforts in this field and strengthen strategic initiatives. Notably, this strategy was pursued regardless of the political party in power and used privatization and private initiatives – Sweden has been leading the world in allowing private companies to run public institutions (Schumpeter, 2013).

It also might be noted that in constructing Figure 1, "chance" has also been inserted as a determinant – as opposed to Zhang and London's (2013, pp. 108-109) Internationalized Sustainable Industrial Competitiveness Model (ISIC) model in which chance is pictured as an external element. Clearly, there is room for discussion. If, for instance, chance is primarily associated with luck, then it gets an external definition. On the other hand, if developments follow from significant decisions such as neutrality or focused research, then it follows that chance is brought into the loop.

Getting back to the topic of Swedish practice, there appeared to be a certain amount of flexibility in the approach that has been taken. That is, within the tools identified for sustainable development (SSSD, 2003, p. 21), it is noted:

> Sustainable development requires a holistic approach; measures, efforts and development in different policy areas, including legislation, economic policy levers, technological development, information and voluntary commitments, should be mutually reinforcing. Important tools in this connection include: sectoral integration, environmental impact and sustainability assessments, dialogue and voluntary agreements, partnerships, sustainability reports and local investment programmes and climate investment programmes.

It would seem practice to be along the lines of more "what" than "how". Put another way, consider the specific example of environmental and climate issues cited in this paper. At the policy level, fundamental principles were set out for the government's general position within development cooperation (Regeringen, 2011). The "how" thus was development cooperation. The "what" contained in the formal document covering these areas suggested focus (and work) in:

- s*trengthened* institutional capacity in public administration;
- *improved* food security and sustainable use of ecosystem services;
- i*mproved* water resources management;
- *greater* access to safe water and basic sanitation; and
- i*ncreased* access to sustainable energy sources, which clearly are more specific than the "how" of development cooperation.

Sooner or later, the topic of the benefit in pursuing sustainability must be considered. Put another way, one wonders if Sweden's industry suffers from government activities involved in supporting sustainability. This consideration is not unimportant because Sweden is a net exporter of goods and services, i.e. 45.8 per cent of GDP comes from exports (CIA, 2013). In the case of the mineral industry, for instance, the State is entitled to 0.05 per cent of the value of minerals mined (Regeringen, 2013a). Zhang and London (2013, p. 105) come down on the side of suggesting that:

> […] contrary to the disadvantage of cost, firms can gain sustainable competitive advantages and experience considerable benefits by considering sustainable development at the strategic level and taking action in all areas of business.

In this regard, the ZL conclusion finds support in the Swedish MISTRA (2012, pp. 2-3) report – "sustainable business practices appear to add economic value to assets and there is a 'first mover advantage'. Over time, this value is likely to be mainstreamed". Thus, investing early carries a premium. Also, see below with regard to getting early industry support for a SD program. There is also the indirect evidence that suggests that sustainability has not hurt national competitiveness – number six in the world by Global Competitiveness standards (Schwab, 2013). It is our conservative nature to conclude that it is premature at this time to say the two may reinforce one another. To paraphrase an *Economist* article on US observations (Schumpeter, 2014, p. 74), however, "This does not prove that greenery causes good

performance – more likely, well-run firms pay attention to both – but at least they are not in conflict". In our opinion, "That goes for countries also".

Finally, at this point, it is customary to comment on future studies and the weakness of the present research. In this instance, both are possible to discuss. First, diligence should be pursued in the monitoring of Swedish progress along the lines of a longitudinal case study. The award by RobecoSAM (2013) undoubtedly was affected by the fact that Sweden had things started. The process in attaining an acceptable level of sustainability is likely comparable to an iron man competition rather than a sprint. That is, there has to be lot of long, hard things done before acceptability is reached; it is unlikely to be a quick fix. In a book projecting the future for sustainability development (World Scientific, 2014), the "future" was 2050. Although those projections were not particularly applicable to this study, they realistically capture the timeframe for sustainability development and therefore the timeframe over which a longitudinal study might progress. Such a study would be facilitated by the country's practice of measuring progress, e.g. Statistics Sweden has been assigned by the Ministry of Environment to review and evaluate the thematic areas of the EU sustainable development indicators. Thus, at least the part of this study captured in Table I is doable. Second, cross-sectional studies would be interesting. Availability of data becomes a consideration here and Sweden became feasible to follow in this instance because of information availability in four or five centralized, available data bases. It is not clear, for instance, that the same study could be made in the USA because of lack of centralized information in convenient, meaningful form. In other words, until national governments dedicate themselves to following the phenomenon and making measures, it will be difficult to make comparisons. Finally, weaknesses in the study are also possible to delineate. They follow the same criticisms made of Porter' seminal treatment – (still) lack of a formal model construction (although ZL make a meaningful contribution), (still) lack of clear definitions (although ZL make a meaningful contribution), problematic research methodology (although an attempt has been made at improvement) and lack of empirical testing among others (and it is thought that this paper is a step in the right direction).

6. Conclusions

An in-depth case study of the Swedish international economy has been used to surmise how it might be reflected by ZL's modified Porter model. A compendium of sustainable performance metrics for the six elements in the ZL model has been developed. Among these elements, the role of government, especially strength of institutions, appears most important. Growth of GDP, low risk of poverty, good employment rate of older workers and excellent health statistics suggest that short-term competitive situation has not been hurt by its approach to sustainable development. Insofar as Sweden might be a model for other countries interested in extending their efforts in sustainable development, observations here provide some insights into possible results. Regardless of practical applications, the association of real-world observations with theory well serves underlying concepts and cannot help but build credibility of those concepts and theory.

Notes

1. Note that ZL actually describe two models – one descriptively on page 207 and another by diagram on page 208. This section and our use relates to the one described on page 207.
2. Subsequent material is taken verbatim from Zhang and London, 2013. The one difference is the comment on government's impact, which is seen as a major factor in our study. For emphasis, it is moved to the fore in this listing.
3. It is a little confusing in reading Porter that the basis of his diamond are four factors. One of these factors is the factors of production.
4. Seven years of results reported in Global Competitiveness Report – Wikipedia http://en.wikipedia.org/wiki/Global_Competitiveness_Report (downloaded 2014-11-24).

References

CDP (2014), "The a list – the cdp climate performance leadership index", available at: www.cdp.net/CDPResults/CDP-climate-performance-leadership-index-2014.pdf (accessed 25 November 2014).

CIA (2013), "The world Factbook: Sweden", available at: www.cia.gov/library/publications/the-world-factbook/geos/sw.html (accessed 10 May 2014).

Curran, E. (2013), "Australia tops list of happiest countries", *Wall Street Journal*, Vol. 28, p. A11.

Den Butter, F.A.G. and Verbruggen, H. (1994), "Measuring the trade-off between economic growth and a clean environment", *Environmental and Resource Economics*, Vol. 4 No. 2, pp. 187-208.

Duxbury, C. (2012a), "Swedish economy losing steam", *Wall Street Journal*, available at: http://online.wsj.com/article/SB10000872396390444023704577651320532960102.html (accessed 30 September 2012).

Duxbury, C. (2012b), "In crisis, a rare Swede spot", *Wall Street Journal*, available at: http://online.wsj.com/article/SB10000872396390444226904577558523805864552.html (accessed 30 September 2012).

Government Offices of Sweden (2013), "Sustainable development", available at: www.government.se/sb/d/2164Cachad (accessed 6 April 2013).

Lazarte, M. (2015), "ISO 14001 revision proceeds to final stage", *ISO 14000 – Environmental Management*, ISO, available at: www.iso.org/iso/home/standards/management-standards/iso14000

MISTRA (2012), "SIRP final research report", *Do sustainable investments Add Value?*, Umeå School of Business and Economics, Umeå University.

O'Hara, S.U. (1997), "Toward a sustaining production theory", *Ecological Economics*, Vol. 20 No. 2, pp. 141-154.

Porter, M.E. (1990), /1994), *The Competitive Advantage of Nations*, Free Press, New York, NY.

Porter, M.E. and Van der Linde, C. (1995), "Toward a new conception of the environment-competitiveness relationship", *Journal of Economic Perspectives*, Vol. 9 No. 4, pp. 97-118.

Prezioso, M. and Coronato, M. (2013), "Sustainability in business practice: how competitiveness is changing Europe", *Journal of Multidisciplinary Research*, Vol. 5 No. 1, pp. 57-71.

Regeringen (2007a), "The Swedish reform programme for growth and jobs", available at: www.regeringen.se/sb/d/108/a/97587 (accessed 8 May 2014).

Regeringen (2007b), "The CEO water mandate – an initiative by business leaders in partnership", available at: www.regeringen.se/sb/d/108/a/85473 (accessed 8 May 2014).

Regeringen (2010), "Green corridors", available at: www.regeringen.se/sb/d/108/a/148077 (accessed 8 May 2014).

Regeringen (2011), "Policy for environmental and climate issues 2010-2014", available at: www.regeringen.se/sb/d/107/a/136/action/search/type/simple?x=-1256&y=-109&query=sustainable (accessed 8 May 2014).

Regeringen (2013a), Sweden's Minerals Strategy for Sustainable Use of Sweden's Mineral Resources that Creates Growth throughout the Country.

Regeringen (2013b), "Sweden in a world of growing uncertainties", available at: www.regeringen.se/sb/d/108/a/219135 (accessed 8 May 2014).

RobecoSAM (2013), "Measuring country intangibles: RobecoSAM's country sustainability", available at: www.robecosam.com (accessed 8 May 2014).

Schumpeter (2013), "A hospital case", *The Economist*, 18 May, p. 75.

Schumpeter (2014), "A green light", *The Economist*, 20 March, p. 74.

Schwab, K. (2013), "The global competitiveness report 2013-2014", available at: www.webforum.org/gcr (accessed 8 May 2014).

Siggelkow, N. (2007), "Persuasion with case studies", *Academy of Management Journal*, Vol. 50 No. 1, pp. 20-24.

SIRP (2012), *Sustainable Investment Research Platform: Annual Report 2011*, Göteborgstryckeriet, Gothenburg, SE.

SSSD (2003), "A Swedish strategy for sustainable development – economic, social and environmental", Regeringskansliet, available at: www.regeringen.se/content/1/c6/02/54/57/86c2efb7.pdf (accessed 6 April 2013).

Statistics Sweden (2012), "Evaluation of Sweden's status by EU sustainable development indicators", available at: URN:NBN:SE:SCB-2012-MIFT1202_pdf (accessed 6 April 2013).

Sustainable Businesses (2013), "Hållbart företagande" available at: www.regeringen.se/sb/d/17698 in Swedish (accessed 29 May 2013).

Sweden (2014), "Sweden Sverige – the official site", available at: http://sweden.se/business/how-sweden-created-a-model-economy/#start (accessed 10 May 2014).

Sweden (2015), "Sweden Sverige – the official site: Sweden's environmental policy", available at: https://sweden.se/nature/environmental-policy (accessed 6 February 2014).

Toman, M.A. (1994), "Economics and sustainability: balancing trade-offs and imperatives", *Land Economics*, Vol. 70 No. 4, pp. 399-413.

Wilson, T.L., Lindbergh, L. and Graff, J. (2014), The "Competitive advantage of nations twenty years later: the cases of Sweden, South Korea and the USA", *Competitiveness Review*, Vol. 24 No. 4, pp. 306-331.

World Scientific (2014), "Creating a sustainable and desirable future: insights from 45 global thought leaders", in Costanza, R. and Kubiszewski, I. (Eds), World Scientific Publishing, Singapore.

Zhang, P. and London, K. (2013), "Towards an internationalized sustainable industrial competiveness model", *Competitiveness Review*, Vol. 23 No. 2, pp. 95-113.

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