

## **Sustainability variation in country groupings**

Dr. Justin Bateh

Florida State College at Jacksonville; Jacksonville University

Dr. Gordon W. Arbogast  
Jacksonville University

Dr. Barry Thornton  
Jacksonville University

Dr. Donnie Horner  
Jacksonville University

### **ABSTRACT**

Developing countries place lower priority on ecological sustainability efforts, but higher priority instead on improving work conditions and alleviating poverty levels. The Corporate Knights Global 100 list has been used to suggest strategic actions for companies in developing countries to implement in order to increase their sustainability scores. It is necessary to determine a sustainability baseline by determining the status of various country groupings so that future sustainability initiatives and progress can be adequately measured. Using IMF data on 2013 World GDP by country and by nation groupings to produce the expected number of firms on the Global 100 list, a chi-square goodness-of-fit test was used to compare this list with the percent of firms actually present on the Global 100 list. A disproportionate amount of sustainability activity appears to be taking place in the country groups G7, European Union, Western Europe, and the group labeled as Very High Human Development based on the UN Development Program's Report.

Keywords: organizational sustainability, accountability, transparency, ecological sustainability

## INTRODUCTION

Sustainability has been the focus of an increasing number of studies in business research. Many companies worldwide have embraced the sustainability concept and have integrated sustainability initiatives as a routine part of conducting business. This includes the collection and reporting of sustainability measures, linking CEO pay to successful sustainability program results, assigning members of the executive team to sustainability committees, and including sustainability results as a routine measure in assessing organizational performance (Arbogast & Thornton, 2012). This priority, however, appears to be a luxury only embraced by post-industrial nations, or those with their basic and intermediate societal needs met through the wealth of their citizen consumers.

There lies an opportunity to (a) identify the reasons behind underdeveloped and developing countries' hesitance towards implementing sustainability initiatives and (b) provide reasoning for these countries to pursue sustainability goals. Sustainability is not only for wealthy nations. Less industrialized countries can utilize sustainability efforts to potentially increase public relations, decrease costs within organizations, and consequently have a positive impact on their surrounding ecological systems. Yet, the challenges faced by companies in underdeveloped and developing nations versus those in developed and post-industrial nations differ widely (Waddock, 2008). This may be caused by several factors, including prioritizing growth over socially responsible efforts, or a belief that they must focus on basic societal economic needs of the workforce and general population before having the opportunity to focus on the negative environmental impact caused by business processes.

Even as sustainability becomes a popular strategy in contemporary management thought, developed nations may be more prone to embrace, implement, and report sustainability programs. If this is the case, sustainability then becomes a strategy affordable only for companies within nations where economic development has progressed to the point that cultural norms accept sustainability programs as not frivolous, but as another avenue towards gaining competitive advantage. Business leaders in under-developed nations should be aware of the benefits of sustainability, not only as a supplemental strategy to be embraced once other needs are met, but as a part of a successful cost-reduction strategy. Under-developed nations might potentially utilize sustainability efforts as an opportunity to create positive public perceptions of corporate social responsibility, thus giving their organizations a competitive advantage. However, the question can be raised: has the link been made yet between under-developed countries and meaningful sustainability initiatives? Before underdeveloped countries can be further challenged to respond to meaningful sustainability initiatives, the case needs to be made that they are lacking in participation in the worldwide sustainability movement.

## LITERATURE REVIEW

### The Global 100 List

A popular data repository for the collection of sustainability reports by companies worldwide is the Global 100 list. Corporate Knights Research Group isolated the top 10% of sustainability performers from a list of 3000 developed and emerging market stocks. Only publically traded companies with market capitalization of at least \$2 billion are eligible for consideration for the Global 100 list (Corporate Knights Research Group, 2013). The Corporate

Knights Research Group then winnowed the group down to the top 100 “most sustainable companies” in the world for their 2014 publication (Corporate Knights Research Group, 2013).

This data of top ranked sustainable organizations was assembled across various industry sectors and countries. Ranking is based upon an overall sustainability score, and this score is derived from a percent rank basis against a company’s global industry peers on a list of 12 quantitative key performance indicators. These indicators include various factors within the categories of resource management, financial management, safety performance, employee management, and leadership diversity. A complete listing is provided by the Global Corporate Knights Group that includes overall sustainability score, company name, industry sector, country, and the score for each factor.

The Global 100 list has been used to suggest strategic actions for companies to implement in order to increase their sustainability scores. These recommended actions include many areas that will boost organizational performance. Arbogast and Thornton (2012) established a corporate sustainability model using the 2010 dataset that predicts a company’s sustainability score—and thus the likelihood that the organization is a sustainable company—by using the various indicators in the Global 100 list. Arbogast and Thornton found that a significant relationship existed between the total global sustainability firms and six of the variables in the sustainability dataset.

There may be potential for underrepresentation and overrepresentation of specific industries and countries on the list, possibly due to the scoring model. For example, a country that operates in an environment where transparency is not the norm, or companies that operate in a closed and controlled environment, might not be represented on the list. The Global 100 data collection process will eliminate companies that fail to disclose at least 75% of the priority indicators for their respective group. Scarlet and Kelly (2010) used the 100 global firms in the 2008 data set and found that firms tended not to report negative events but rather elaborated on sustainability activities that they have identified as top priorities and sustainability goals that they had attained. These researchers noted that a lack of transparency in reporting should be mitigated by organizations’ understanding of the potential for higher rankings resulting from disclosure of all measures required on the reporting forms (Scarlet & Kelly, 2010).

## **Country Groupings**

The United Nations Department of Economic and Social Affairs (2013) classified countries into regional groups. These grouping include the Asian Tigers, BRICS, European Union, G7, NAFTA, Western Europe, and Very High Human Development countries. While there are other groups, these groupings reflected in Table 1 (Appendix) represent both the developed and developing/under-developed countries in the world. Table 1 also includes country groups predicated upon United Nations membership; that is, if a country is not a member of the United Nations, they are not included in the groupings in Table 1.

## **SUSTAINABILITY MOTIVATIONS IN DEVELOPED POST-INDUSTRIAL COUNTRIES**

Internal sustainability is sometimes framed as internal human resources (HR) management function. In an expanding economy, companies do well to invest in growth initiatives, and these expenditures often pay off and promote a perception of financial stability.

Yet in an arguably contracting economy, many companies contract their focus to sustainability rather than growth. This entails careful use of resources and reduction of waste. For example, the growing energy costs exemplify one of the major problems affecting today's businesses, and organizations need to evaluate and predict future changes in energy costs (Interdonato, 2012). Some companies have chosen to cut costs or help employees cut costs by implementing recycling programs, reducing packaging, using more sustainably-sourced packaging, paperless billing/paychecks and communications, bike-to-work days, showers on site to make biker commutes feasible, providing carpool boards, flex-time allowing employees to avoid rush hour commute, telecommuting, or timer-regulated bathroom lights. These types of changes, though potentially needing initial investment, can save costs in the long term. While internal sustainability is necessarily, the primary concern of for-profit companies is that arguably such efforts should contribute to both internal and external sustainability.

Companies within fully developed and post-industrial nations may be more likely to integrate sustainability programs as a routine organizational strategy, due to pressures from outside stakeholders. Pressure may be exerted through various initiatives that are only afforded to countries of great wealth, that have well-developed infrastructures, and that have the opportunity for challenging the oversight processes through open and free communication. Such initiatives include government watchdog activities, independent organization reports, and access to journals that publish rankings (Waddock, 2008). Additionally, many state and government sector initiatives in post-industrial nations play a role in exerting pressure on companies. The motivations for sustainability implementation in developed nations have been found to differ from those of less developed countries. Hodges, Buzby, and Bennett (2011) found that consumer education campaigns, carefully targeted taxation, and partnerships between private and public sectors share the responsibility for environmental initiatives in developed nations.

In the United States, the Sarbanes-Oxley Act of 2002 was a driving force in assisting with sustainability awareness. Similarly, the United Kingdom has the Operating and Financial Review, which initially included a requirement for disclosure of sustainability issues on an annual corporate disclosure report (Waddock, 2008). Chan and Lee (2009) noted that in Hong Kong, which operates in a high-density development environment, organizations may have an incentive to integrate sustainability and environmental consciousness programs into their development strategies as a way to cope with different economic and populace needs. These authors noted several factors associated with high density developed areas—such as traffic congestions, as well as air and noise pollution issues—are caused by development overloads. When economic growth has met the basic of a population, companies may be afforded the luxury of taking a step back to evaluate their processes and procedures in order to arrive at equilibrium between satisfying societal needs, generating a profit, and creating a smaller footprint on the environment (Chan & Lee, 2009).

## **SUSTAINABILITY MOTIVATIONS IN DEVELOPING COUNTRIES**

The U.N. Department of Economic and Social Affairs (2013) authored the World Economic and Social Survey, which focused on the challenges that developing countries face in pursuing sustainability programs. This study noted that technology plays a vital role in developing countries' inability to implement sustainability initiatives, noting that changes in consumption patterns could possibly drive the creation of the technology that would foster the adoption of sustainability practices. The United Nations report also found that in developing

countries where basic economic objectives, needs, and goals are not yet met, sustainability development is considered a luxury. Until basic societal needs are met, countries will continue to give priority to human resource and energy developments that are focused solely on decreasing poverty levels (U.N. Department of Economic and Social Affairs, 2013).

Developing markets play a vital role in global economic development (Jensen & Larsen, 2004). Five of the largest countries, called the BRICS nations, include Brazil, Russia, India, China, and South Africa. These countries are considered, at least demographically, to be among the largest countries across the globe (Jensen & Larsen, 2004). Additionally, these five countries are well above the average in economic and financial growth, compared to developing and emerging nations (Jensen & Larsen, 2004). However, when it comes to sustainability success, the BRICS countries have a disadvantage. A study conducted by Tamazian, Chousa, and Vadlamannati (2009) found that both economic and financial development are obstacles in improving the environmental quality among the BRICS nations.

These authors also discovered that the higher the degree of economic and financial development among these developing economies, the lower the environmental quality (Tamazian et al., 2009). Yang and Crowther (2012) found that the business culture in China is another challenge for managerial sustainability considerations. Yang and Crowther pointed out that the Chinese business culture often sets short-term goals related to growth and financial performance. These goals often include increased earnings per share, which forces management to make decisions only based upon generating as much revenue as possible in the shortest amount of time, regardless of environmental considerations. With this emphasis, the business culture as a whole neglects long term goals that would create greater economic and ecological sustainability.

To further illustrate the challenges associated with developing countries and their efforts to motivate businesses to initiate sustainability programs, Visser, Matten, Pohl, and Tolhurst (2007) discovered that in developing nations, sustainability benchmarks are less formalized and institutionalized than in developed nations. They found that managers at companies in developing nations view making an economic profit as their contribution to society, because their business creates job opportunities and generates tax revenue. Furthermore, Visser et al. (2007) noted that developing countries place lower priority on sustainability, but higher priority instead on improving work conditions and alleviating poverty levels. Sustainability programs, to many firms in developing nations, are seen as a trade-off (Visser et al., 2007). That is, companies have to choose whether to trade the growth of their organization for environmental protection, similar to the longer-standing choice of whether to trade job creation for safer labor standards (Visser et al., 2007).

## **HYPOTHESES**

To inform future actions to promote sustainability initiatives, it is necessary to determine the status of the various country groupings. In short, a sustainability baseline is necessary so that future initiatives and progress can be adequately measured. Motivated by this driving need, this study was undertaken. Thus, the following hypotheses have been developed:

Null hypothesis: There is no difference between the observed number of firms on the Corporate Knights Global 100 list and what would be expected, based on the percentage of GDP coming from the specific country or group of interest.

Alternate hypothesis: There is a difference between the observed number of firms on the Corporate Knights Global 100 list and what would be expected, based on the percentage of GDP coming from the specific country or group of interest.

This hypothesis test is performed nine times. The countries and groups under investigation are Canada, United States, Asian Tigers, BRICS, European Union, G7, NAFTA, Very High Human Development, and Western Europe.

## **DATA**

There are two data sources. The first is Corporate Knights Capital, the organization that developed the 2014 Global 100 list. This data is used to produce the observed number of firms on the Global 100 list by country and group of interest. This data can be found in Table 2 (Appendix).

The groups of countries that are analyzed is the Asian Tigers, BRICS, European Union, G7, NAFTA, Very High Human Development based on the United Nations Development Program's Human Development Report (an index number based on attributes such as life expectancy, literacy, education, standards of living, and quality of life), and Western Europe. As previously noted, the member countries of these groups can be found in Table 1 (Appendix).

The second source of data is the International Monetary Fund. This source provides the data used to produce the expected number of firms on the Global 100 list by country and group of interest. It consists of 2013 Gross Domestic Product (GDP) ratings for virtually all of the countries of the world. This information is contained in Table 3 (Appendix). The list of countries not in this list is very small, and accounts for such a small fraction of world GDP that their exclusion should not cause the results to be distorted. Countries not on this list are Cuba, North Korea, Syria, and the microstates of Andorra, Lichtenstein, Nauru, and Monaco. The expected number of firms on the Global 100 list is the fraction of 2013 world output that can be attributed to the country or group of interest.

## **METHODOLOGY**

The chi-square goodness-of-fit test is used to analyze the data. This procedure is based on a comparison of the observed or actual number of firms from a country or group of interest (e.g., the Capital Knights Corporation's Global 100 list) and the expected number of firms on that list. The expected number of firms was calculated as the proportion of world GDP associated with the country or group of interest multiplied by 100. For example, a country producing 10% of world GDP would be expected to have 10% of the firms on the Global 100 list. Since the list contains 100 firms, the expected number of firms would be 10 for this country.

## **RESULTS**

The results of the chi-square goodness-of-fit test for the nine hypothesis tests can be found in Table 4 (Appendix). Using a 5% level of significance, the null hypothesis is rejected for any chi-square statistic with a corresponding *p*-value less than 0.05. In these cases, we can conclude that there is an over or under representation of this country or group on the Global 100 list.

It is important to note that the validity of a chi-square goodness-of-fit test with two categories (for example, G7 or not G7) is suspect if the expected number of observations is less than 5. In these cases, the outcome of the test should be viewed with caution. Two of the hypothesis tests have expected frequencies less than 5, Canada and Asian Tigers.

The null hypothesis is rejected in seven of the nine tests. The evidence from the sample suggests that there is over representation of Global 100 firms for Canada, Asian Tigers, European Union, G7, Very High Human Development, and Western Europe. There is significant under representation for BRICS. In the case of the United States and NAFTA, the actual representation on the Global 100 list and the expected number, based on contribution to world GDP, are not significantly different and the null hypothesis is not rejected. It should be noted that NAFTA is close to having a significant difference between the observed and expected number of firms on the list, owing to the significant over representation of Canada.

## CONCLUSIONS

The primary conclusion is that the list is characterized by over representation of developed countries and groups. The country groups G7, European Union, Very High Human Development, and Western Europe consist primarily of developed countries. It is here that a disproportionate amount of sustainability activity appears to be taking place. This could be explained as follows: The countries in the Very High Human Development group may have achieved a standard of living that allows them to divert resources to sustainable activity. These countries have reached a point in their development where most basic and higher level needs are being met and therefore can turn more readily to sustainability initiatives. In contrast, it would appear plausible that the BRICS countries are still working towards fulfilling their basic and higher level needs, and therefore cannot afford to devote resources to sustainability activities.

Another factor keeping the firms of less developed countries off the Global 100 list is the size requirement that firms must meet to be considered for inclusion on the list. The minimum required firm size is what is characterized as mid-cap for the U.S. stock market. It may be difficult for the less developed countries to achieve critical mass in the mid-cap size of business.

## RECOMMENDATIONS

This study needs to be repeated within the next 5 years to determine if there is any significant movement in the various country groupings. Sustainability is a recent initiative and is quite dynamic in terms of its integration into the various countries where it is being introduced. It is possible that as more countries come to understand the benefits of sustainability that they will be more prone to adopt new initiatives, especially those that have been proven to be sound and cost effective by more developed countries.

Also, research is necessary to determine, for particular nations based on their resource types, exactly what should be recommended as the most cost effective and productive sustainability initiatives. As more information is gleaned as to these initiatives, it will assist the less developed countries in their adoption of more sustainability goals and applications.

**REFERENCES**

- Arbogast, G. W., & Thornton, B. J. (2012). Global corporate sustainability model. *Journal of Sustainability and Green Business*, 1. Retrieved from <http://www.aabri.com/manuscripts/10732.pdf>
- Chan, E. H., & Lee, G. K. (2009). Design considerations for environmental sustainability in high density development: A case study of Hong Kong. *Environment, development and sustainability*, 11(2), 359-374.
- Corney, G. (2006). Education for sustainable development: An empirical study of the tensions and challenges faced by geography student teachers. *International Research in Geographical and Environmental Education*, 15, 224-240. doi:10.2167/irgee194.0
- Corporate Knights Research Group. (2013). *Global 100 most sustainable corporations in the world*. Retrieved from <http://global100.org/>
- Hodges, R. J., Buzby, J. C., & Bennett, B. (2011). Postharvest losses and waste in developed and less developed countries: Opportunities to improve resource use. *Journal of Agricultural Science*, 149(S1), 37-45.
- Jensen, T. H., & Larsen, J. A. K. (2004). The BRIC countries. *Danmarks Nationalbank Monetary Review 4th Quarter*, 39. Available from <http://www.nationalbanken.dk/>
- Raatzsch, R. (2012). On the notion of sustainability. *Inquiry*, 55(4), 361-385.
- Scarlet, S., & Kelly, T. F. (2010). CSR rating agencies: What is their global impact? *Journal of Business Ethics*, 94(1), 69-88.
- Tamazian, A., Chousa, J. P., & Vadlamannati, C. (2009). Does higher economic and financial development lead to environmental degradation: Evidence from the BRIC countries. *Energy Policy*, 37, 246-253.
- U.N. Department of Economic and Social Affairs. (2013). *World economic and social survey: Sustainable development challenges*. Retrieved from <http://sustainabledevelopment.un.org/content/documents/2843WESS2013.pdf>
- Visser, W., Matten, D., Pohl, M., & Tolhurst, N. (2007). *The A to Z of corporate social responsibility*. New York, NY: John Wiley & Sons.
- Waddock, S. (2008). Building a new institutional infrastructure for corporate responsibility. *Academy of Management Perspectives*, 22(3), 87-108.
- Yang, Q., & Crowther, D. (2012). The relationship between CSR, profitability, and sustainability in China. *Business Strategy and Sustainability*, 3, 155.

**APPENDIX**

Table 1: Groups of Interest and Their Member Countries

Group	Member countries
Asian Tigers	Hong Kong, Singapore, South Korea, and Taiwan
BRICS	Brazil, Russia, India, China, and South Africa
European Union	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom
G7	Canada, France, Germany, Italy, Japan, United Kingdom, and United States
NAFTA	Canada, Mexico, and United States
Very High Human Development	Norway, Australia, United States, Netherlands, Germany, New Zealand, Ireland, Sweden, Switzerland, Japan, Canada, South Korea, Honk Kong, Iceland, Denmark, Israel, Belgium, Austria, Singapore, France, Finland, Slovenia, Spain, Liechtenstein, Italy, Luxembourg, United Kingdom, Czech Republic, Greece, Brunei Darussalam, Cyprus, Malta, Andorra, Estonia, Slovakia, Qatar, Hungary, Barbados, Poland, Chile, Lithuania, United Arab Emirates, Portugal, Latvia, Argentina, Seychelles, and Croatia
Western Europe	Austria, Belgium, France, Germany, Luxembourg, Netherlands, and Switzerland

Table 2: Number of Firms in 2014 Global 100 by Country and Group of Interest

Country or group	Number of firms	Country or group	Number of firms
Australia	5	Portugal	2
Belgium	2	Singapore	4
Brazil	2	South Korea	3
Britain (UK)	8	Spain	1
Canada	13	Sweden	5
Denmark	1	Switzerland	5
Finland	3	United States	18
France	8	Asian Tigers	8
Germany	7	BRICS	2
Hong Kong	1	European Union	42
Italy	1	G7	60
Japan	5	NAFTA	31
Netherlands	4	Very High Human Development	98
Norway	2	Western Europe	26

(Source: Corporate Knights Capital Global 100 Index)

Table 3: Percent of 2013 World GDP by Country and Group of Interest

Country or group	Percent of world GDP	Country or group	Percent of world GDP
Australia	1.15	Portugal	0.28
Belgium	0.49	Singapore	0.40
Brazil	2.79	South Korea	1.92
Britain (UK)	2.75	Spain	1.60
Canada	1.75	Sweden	0.46
Denmark	0.24	Switzerland	0.43
Finland	0.22	United States	19.31
France	2.62	Asian Tigers	3.82
Germany	3.72	BRICS	27.63
Hong Kong	0.44	European Union	18.69
Italy	2.08	G7	37.63
Japan	5.40	NAFTA	23.18
Netherlands	0.81	Very High Human Development	51.71
Norway	0.32	Western Europe	8.52

(Source: International Monetary Fund)

Table 4: Chi-Square Results

Country or Group	Observed	Expected	Chi-square	p-value
Canada	13	1.75	73.61	0.000
United States	18	19.31	0.11	0.740
Asian Tigers	8	3.82	4.76	0.030
BRICS	2	27.63	32.85	0.000
European Union	42	18.69	35.75	0.000
G7	60	37.63	21.32	0.000
NAFTA	31	23.18	3.43	0.064
Very High Human Development	98	51.71	85.81	0.000
Western Europe	26	8.52	39.2	0.000