



AN EXPLORATION OF EFFECTIVE STRATEGIC MARKETING MODELS TO MINIMISE CLIMATE CHANGE IMPACTS AND HOW TO INFLUENCE CONSUMER BEHAVIOURS TOWARDS CLIMATE CHANGE

Ali Aldhamiri

The University of Newcastle, Australia.

ABSTRACT

This paper aims to explore effective strategic marketing models to minimise climate change impacts; and understand how to influence consumer behaviours towards climate change (in developing countries). Causes and solutions of climate change in this paper will be investigated from a marketing perspective because business companies are one part of the climate change issue and consumers are the second part. This study used qualitative research method to explore this phenomenon. Results show that from a marketing point of view, the main causes of climate change are: 1) products or services (e.g. Vehicles; Air travel and the excessive use of fighter aircraft; power stations; refrigerators; air conditioners; water heaters. 2) Farming (e.g. methane emissions from animals; agriculture such as cattle, rice paddies; and agricultural insecticides). Additionally, results show that Ansoff Growth Matrix theory, SMART objective A-T-A-R Model, the use of the low price strategy and the use of taxes are the most effective strategic marketing tools to minimise climate change impacts. This paper guides involved brands and marketing managers; and it provides some models, pricing strategies, promotional ideas in order to minimise climate change impacts.

KEY WORDS: Marketing models, marketing strategies, minimising climate change impacts, influencing consumer behaviours towards climate change.

1. INTRODUCTION:

Climate change is the increase in the planet's temperature due to industrial activities (Roger, 2004). The current effects of climate change are evident in the world around us. In 1988 The United Nations warned industrialised countries and polluted companies about the future risks of climate change, in an attempt to reduce the impact of emissions from vehicles, aircraft, power stations and factories (William, 2011 & Leggett, 1990). According to the World Nuclear Association (2009), there have been some positive steps from the developed countries, such as the use of nuclear energy in the production of electricity, such as France. There have also been positive to use of electricity and nature gas in and transport systems, for examples, Canada, the USA and Australia. These measures have helped to reduce emissions. Additionally, many companies in different countries used effective marketing strategies models to minimise climate change impacts such as Airbus Group.

2. LITERATURE REVIEW:

The role of developed countries has been more negative. For example, the number of vehicles and aircraft factories has risen dramatically in developed countries since 1988, especially in Japan, the United States and Germany. Factories cause a risk to the environment because they emit large quantities of toxic gases, which affect the ozone layer (Leggett 1990). Furthermore, over the past years, there has been tremendous development in the world of tourism, especially in some countries, such as the UK, Canada and Italy, bringing excellent income to companies involved in tourism. Many companies rely mainly on flights, and this has led to an increase in the number of aircraft, traveling worldwide. In military terms, hundreds of companies in the U.S., the UK and Russia work day and night, for the production and development of military aircraft. This has led to an increase in the rate of global warming because of the excessive use of aircraft (Egelhofer et al., 2007).

Unfortunately, according to the Pew Center on Global Climate Change (n.d.), the results indicate that the individuals or customers did not do what is needed to reduce climate change. However, individuals may contribute to the reduction of global warming following the simple steps. For example, by reducing air travel by purchasing of vehicles with less impact on the environment, or by using public transport, cycling or walking. Eating less meat and more vegetables also helps reduce global warming. In addition, the reduction of heating and cooling in the home reduces the phenomenon of global warming (Schlesinger, 2011).

As the number of developing countries with growing economies increases, there is an increase in the number of factories, cars and airports, and thus an increase in the temperature of the earth. So, the steps are more negative. For example, in China, there are over 100,000 factories; in India there are more than 80,000, and these numbers are growing every day. Moreover, Brazil has plans to become one of the largest developing countries in the next several years (Legget, 1990; Penner et al., 1999). Scientific evidence suggests that as developing countries continue to grow, with more factories and increasing populations, climate change is likely to increase (William, 2011).

In terms of the environment, people have sufficient evidence of the seriousness of the effects of climate change and global warming. For example, Tisdell (2008) states that the Maldives have lost several islands due to the rise in sea level, and Bangladesh and Florida have also lost land. McKie (2009) adds that dozens of

small islands in the oceans have been obliterated. In addition, the rate of flooding has increased in many countries, such as the USA and Indonesia.

In terms of health, medical experts say that many diseases have increased over the few past years, and will continue to increase with climate change. There are a number of health risks caused by climate change, such as malaria, which has increased in industrialized countries, especially in Australia and the UK. Other examples of diseases are cholera, allergies and skin cancers which are spreading as a consequence of climate change and global warming (May & Caron 2009).

Most the scientific data indicates that there will be more destruction in the future as a result of climate change. According to May and Caron (2009), research confirms that climate change or global warming will reduce the marine life such as fish, and will cause the extinction of animals, such as the polar bear, and some types of birds and insects. Furthermore, hundreds of plants will be wiped out. In terms of geography, McKie (2009) adds that the Maldives Islands will be completely submerged; so too will many pacific islands, and some parts of Bangladesh and Egypt. By 2105, the Arctic will be ice free and there will be no snow in the Alps due to global warming. It is also predicted that the earth will have more hurricanes due to an increase in sea temperature and wind speed. It is predicted that climate change will continue to have negative effects on the environment. Climate change is the main reason for the melting of ice in the ocean water. As a result of melting ice in large quantities, there will be increased a global increase in sea level. And if the sea levels rise, there will be negative impacts on the environment and humans.

3. THE RESEARCH QUESTION:

As the population and industrial activities are increasing, it is likely that the level of pollution will increase as well. For this reason, it is vital to create or develop models for strategic marketing management to minimise climate change impacts, and these strategies could be used and applied by any polluting companies. This requires further study and investigation because using marketing policies could create positive changes toward climate change. Therefore, this study will try to answer this question:

Q1: What are the most effective strategic marketing management models to minimise climate change impacts (in developing countries)?

Q2: How to influence consumers towards climate change (in developing countries)?

4. METHODOLOGY:

Qualitative study was employed to explore the most effective strategic marketing management models to minimise climate change impacts. Qualitative study allows for a more discovery-focused approach compared with quantitative methods, can be particularly useful in exploring phenomena where little understanding exists like the case in this study. This is study for which I reviewed the paper mostly from 1950 to 2019 related to the concept of marketing and climate change. I selected the papers from the renowned and high indexed journal like Journal of Marketing Management, Journal of Marketing, Journal of Psychology and Marketing, Journal of Consumer Research, Journal of Product and Brand Management, Journal of Marketing Research, Journal of Brand Management and others.

5. THEORETICAL FRAMEWORK, ANALYSIS & FINDINGS:

In order to investigate the research problem by specifically addressing the research question through theoretical qualitative study approach, this section will analyse human causes of climate change from a marketing perspective. It also will suggest solutions and the most effective and relevant model for use (for each cause). Products or/and services which cause climate change:

5.1 Vehicles:

Investing in new technologies or energy in vehicles which contribute to environmental protection, such as TATA or NANO projects, can create a successful market in the long term. According to the Ansoff Growth matrix theory in Table (1), investing in new technologies or the type of energy in new markets could create a chance to succeed and this will increase profits. Developing new eco-friendly products or energy in vehicles could open effective new markets in the future (Solomon et al., 2009). For example, as vehicles are polluting products, Nissan built four types of environmentally friendly vehicles: fuel cell vehicle, hybrid vehicle, low emission vehicles, and compressed natural gas vehicles. Nissan builds and sells more than 90,000 eco-friendly vehicles each year (Nissan, 2012).

Table 1: Ansoff Growth Matrix theory

	Existing Products	New Products
Existing Markets	Market Penetration	Product Development
New Markets	Market Development	Diversification

Sources: Aaker; D (2005) & Solomon et al., (2009).

5.1.1 Effective and relevant model for use:

Based on above discussion, Ansoff Growth matrix theory is a suitable model to use in developing countries regarding vehicle industries. Investing in new technologies or energy in vehicles which contribute to environmental protection could meet government environmental policies, which is important to create differentiation and brand positioning.

Additionally, marketers could encourage customers towards effective behaviour such as: implementing efficiency improvements in engines and transmissions, as well as aerodynamics; replacing older cars and limiting each person to one car purchase in 10 years; using public transport; using electric vehicles; using motorbikes, inline skates, and bicycles; and factories should only build cars on request from customers in order to minimise the number of cars produced.

5.2 Air travel and the excessive use of fighter aircraft:

Over the past years, there has been tremendous development in the world of tourism, especially in countries such as the UK, Canada, and Italy, bringing excellent income to companies involved in tourism (NASA, 2009). Many companies rely mainly on flights, and this has led to an increase in the number of aircraft travelling worldwide. In military terms, hundreds of companies in the U.S., France, the U.K., and Russia work day and night in the production and development of jet and military aircrafts such as the Tornado and F-16. These types of jets consume large amounts of fuel and it is generally agreed that they negatively affect the ozone layer. This has led to an increase in the rate of climate change because of the excessive use of fighter aircraft (Penner et al., 2007).

5.2.1 Effective and relevant model for use:

Based on above discussion, using the SMART is a suitable model to use in developing countries in regards to air travel. Aircraft engine manufacturers such as Rolls-Royce, General Motors, Boeing, and Airbus should support new technologies which could protect the air from pollution. Additionally, large airline companies such as Delta Air Lines, United Airlines, Southwest Airlines, American Airlines, Emirates, Singapore Airlines, and Etihad Airways should replace and use new engines, because old engines have more impact on the environment. Boeing 787 is an effective solution as it consumes 20% less fuel (Boeing, 2012). Using the SMART objective is required for airline companies.

Specific: Airline companies need clear, concise, and specific objectives to protect the environment. This is important because it provides direction. Measurable: Airline companies need one or more defined standards (criteria) by which companies gauge effective performance (in evaluating performance). Achievable: Airline companies need to set achievable, realistic objectives; for example, replacing older engines frequently and supporting new R&D projects. Reasonable: Airline companies need to define the desired performance outcome clearly. For example, each airline company cannot own more than 150 airplanes or should not be allowed to increase the number of flights. The maximum limit can be 200 flights each day. Time-bound: Airline companies need to set specific timeframe objectives, for example, reducing CO₂ emissions from aircraft by 40% by the end of 2030.

5.3 Electricity power stations (electricity):

Marketers (in developing countries) should focus more on introducing new eco-friendly technologies and new technologies, and the United Nations News Centre (2011) outlines several of these effective technologies. For example, power stations should use more renewable energy such as: biomass, biodiesel, hydrogen, geothermal, solar power, tidal, wind and wave power. Companies need to

invest more in this renewable energy, because it has a positive future as strategy for growth markets as Figure 1 shows.

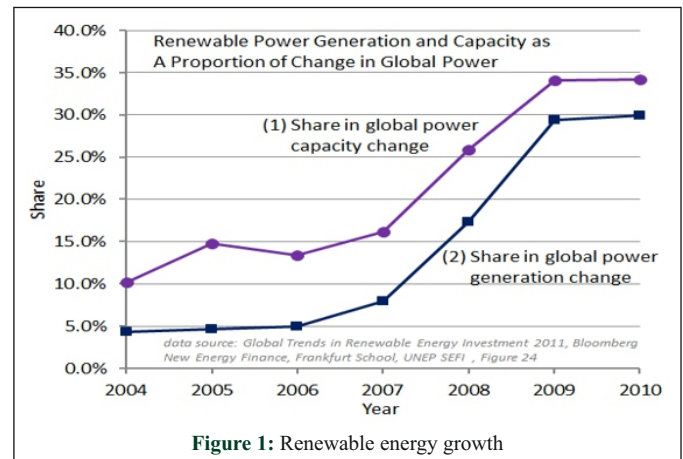


Figure 1: Renewable energy growth

Source: UNEP, 2011

5.4 Refrigerators, air conditioners, and water heaters:

Companies need to support and invest more in research and development (R&D) and in eco-friendly innovations to promote more environmentally friendly refrigerators, air conditioners, and water heaters. This can be achieved by supporting and adopting new inventions and research such as improving solar water heaters. In addition, marketers should increase awareness of labels and stickers on products that help to protect the environment (Table 2)

Table 2: Encouraging customers to check labels

Most older refrigerators gave out chloro fluoro carbons (CFCs) but now there are refrigerators in the markets which are environmentally friendly and bear the label "NO CFC". Customers should check the Star Rating on a fridge. All appliances display an energy rating in terms of stars. Fewer stars mean less efficiency.	Customers should check labels on air conditioners, because some air conditioners do not have CFCs.	Customers should check the Star Rating on heaters.	

5.5 Farming: methane emissions from animals, agriculture such as cattle and rice paddies and agricultural insecticides:

According to the Food and Agricultural Organization of the U.N. (2007), reducing the use of chemical-spraying-agriculture and eating more vegetables and seafood could reduce the high demand for beef. Additionally, lowering the cost of seafood and vegetables and increasing the cost of beef products could minimise the high demand for meat (Figure 5). Using effective strategies such as replacing existing products is significant to minimise the high demand for meat (Figure 5.1).

Solutions and the most effective and relevant model for use (for both discussion above: 4.3; 5.4 & 5.5)

Based on above discussion, using the A-T-A-R Model is a suitable model to use in developing countries in regards to (4.3; 5.4 & 5.5). The awareness of labels and stickers on products which help to protect the environment could play an effective role in protecting the ozone layer. This means that using effective strategies such as the A-T-A-R Model or opportunities selection strategies (Table 3) are important strategies, because they provide guidelines to customers and investors.

Table 3: The A-T-A-R Model- Source: Crawford, C. & Anthony, D (2008).

Awareness	Level of awareness of green products	Has heard about the new eco-friendly product with characteristics that differentiate it.
Trial	How many will trial	A purchase or consumption of eco-friendly products.

Available	Level/ease of availability	If the buyer wants to try eco-friendly products, the effort to find it will be successful (express as %)
Repeat	How many repeat purchases	Frequency of consumption/purchase or recommended to others.

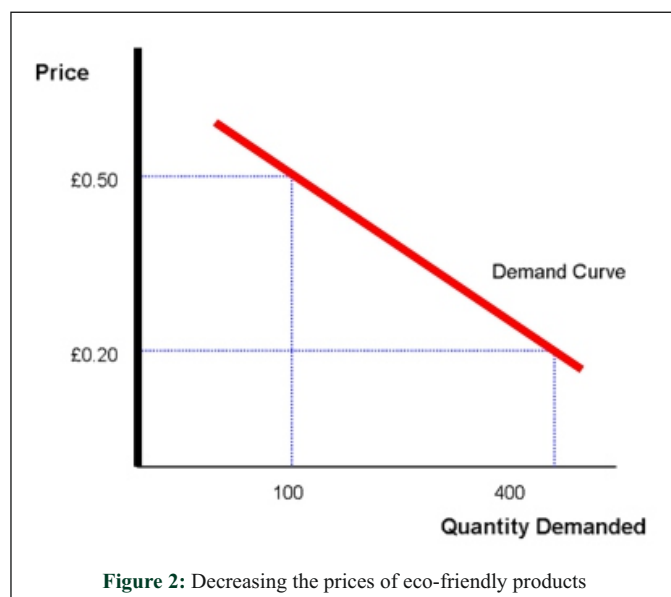
5.6 The role of pricing strategy which causes climate change:

There is a link between pricing levels and eco-friendly buying behaviour. Research studies such as Morris & Sweet (2007) show that low prices of eco-friendly products could attract customers even with lower quality. For example, some customers use recycled plastic and glass materials at home, which is lower quality and not as bright as normal plastic and glass. This is because of the use of the low price strategy.

5.6.1 Effective and relevant model for use:

A. Decreasing the prices of eco-friendly products:

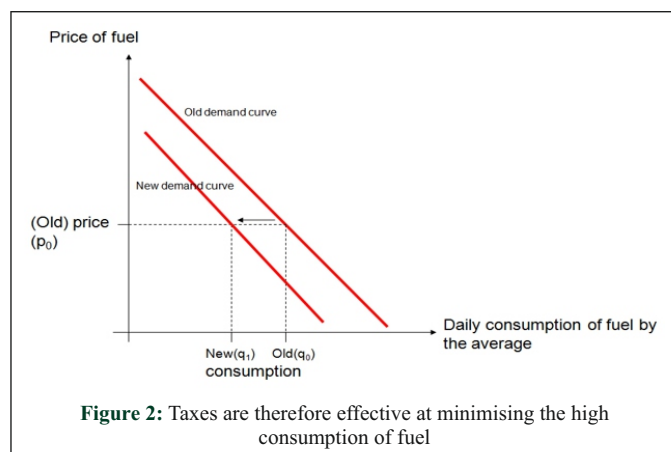
On the other hand, some customers use environmentally unfriendly products because of the high cost of eco-friendly products such as solar panels or hybrid electric vehicles. From an economic perspective, Bullock (1993) agrees that any increase in price leads to decreases in quantity, and vice versa (see Figure 2).



High prices of some eco-friendly products drive customers to buy unfriendly products or non-recyclable products (Morris & Sweet, 2007). Companies can reduce the prices of environmentally friendly products and increase the prices of unfriendly products. Pricing strategy is best way to control any buying behaviour.

B. Taxes:

Economic experts such as Frijters, Dulleck and Torgler (2009) believe that the effect of a tax is that the price increases. For example, Figure (3) shows that the new price p_1 is greater than the old price p_0 (the tax would be the difference of $p_1 - p_0$), hence less is demanded ($q_1 < q_0$). In the diagram, that is a move along the demand curve. Taxes are therefore effective at minimising the high consumption of fuel, electricity, carbon emissions, and burning fossil fuel.



Mankiw (2007) suggests that prices and taxes can be used successfully to manage and control climate change risks. For example, a high price strategy can be

applied for the main causes of climate change such as: air travel, carbon emission taxes, burning fossil fuel taxes, fuel, electricity, vehicles and cows and cattle farms.

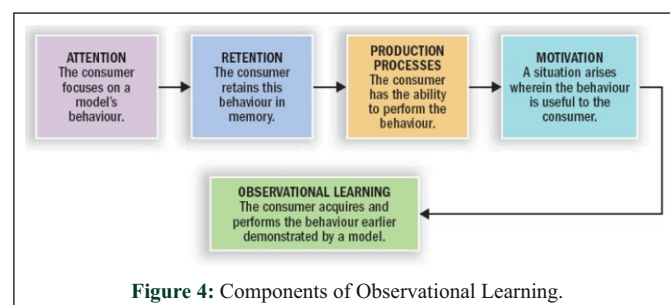
5.7 The role of promotion to influence consumer behaviour towards climate change:

Additionally, Choi & Oh (2010) mention that using modern media such as YouTube and Facebook to promote green products such as hybrid electric vehicles has positive results (Figure 9). Marketers can focus on promoting electrical vehicles, motorbikes, inline skates, and bicycles. Companies could support researches to improve these eco products, and this might drive customers to use the green products. In addition, using promotion to clarify the significance of purchasing behaviour towards green products is important. The promotion of participation in new invention competitions could help to formulate ideas, creating effective solutions for climate change risks.

Marketers can promote the adoption of useful and simple behaviours; for example, The Union of Concerned Scientists (2009) explains simple and effective solutions such as:

- Changing a light frequently
- Driving less
- Recycling more
- Checking your tyres
- Using less hot water
- Planting trees
- Eating less meat
- Using public transport
- Making sure that refrigerators are not set too cold
- Emptying and turning off refrigerators if people go on long vacations

6. HOW TO INFLUENCE CONSUMERS TOWARDS CLIMATE CHANGE?:



Source: Solomon, Russell-Bennett, Prevt, 2010.

Components of observational learning can be useful with climate change; for example, marketers should use the nest strategy which was explained above in the theory, to achieve their goals (Solomon, 2010). Firstly, marketers should draw attention by producing advertisements using different media such as YouTube and Facebook (Solomon, 2010). These 'ads' can include short and real-life stories about global warming such as the negative impact of global warming on African people and children. Secondly, they should be repeated over time and this should lead to retention, which will affect different generations' attitudes (Solomon, 2010). Then, controlling production processes can reduce climate change: for example, producing other eco-friendly products such as using electric vehicles, motorbikes, inline skates, and bicycles. Another example can be supporting eco-friendly companies to invest in green products instead of polluting products. These steps may require hard work and more time. In the long term, this will give consumers the ability to limit their use of polluting products. Fourthly, these 'ads' could show the negative effects of pollution, because a sender should use a motive message to send effective messages to receivers; for instance using real and short stories about the damage of global warming impacts on the environment (Solomon, 2010). Finally, observational learning: if famous companies such as Airbus or Toyota change their negative behaviour towards the environment, this can encourage other companies to take the same step and this can create a systematic solution in the long term (Solomon, 2010).

7. CONCLUSION AND FUTURE RESEARCH:

According to the Pew Center on Global Climate Change (n.d.), results indicate that customers do not do what is needed to reduce global warming. However, customers may contribute to the reduction of global warming following simple steps. For example, by: reducing air travel by purchasing vehicles with less impact on the environment; using public transport, cycling, and walking; and eating less meat and more vegetables. In addition, the reduction of heating and cooling in the home reduces the phenomenon of global warming.

In conclusion, this paper has provided a robust and comprehensive theory-based model and targeted research questions. It has explored effective strategic marketing management models to minimise climate change impacts in developing countries. The models and strategies were: Ansoff Growth Matrix theory; The

SMART model; decreasing the prices of eco-friendly products (supply and demand model); Taxes strategy; Using effective tools of promotion. Using observational learning theory can be effective method to influence consumer behaviours towards climate change in developing countries.

The fact that the United Nations agrees that global warming requires action should help to reduce the negative effects on the planet. When profit-oriented companies and countries take positive action to reduce global warming, people can look forward to a bright future for all living things. Future studies and research need to focus on companies and governments and how they use effective strategies to minimise climate change impacts and global warming. These strategies should be developed carefully for use by any company or governments in any field worldwide. For deeper understanding, future research should use quantitative or mixed research approach. Finally, future research need to focus on one particular countries.

REFERENCES:

1. Aaker, D. (2005). *Strategic Market Management*. (7th ed.). New York: John Wiley and Sons.
2. Bajzek, N. (2007). ProBuilder product report: Green products. *Professional Builder*, 72(9), 109-109.
3. Bullock, David S (1993). Welfare implications of equilibrium supply and demand curves in an open economy. *American Journal of Agricultural Economics*, 75(1), 52.
4. Choi, H., & Oh, I. (2010). Analysis of product efficiency of hybrid vehicles and promotion policies. *Energy Policy*, 38(5), 2262-2271.
5. Crawford, C. & Anthony, D (2008). *New products management*. New York: McGraw-Hill.
6. Egelhofer, R., Marizy, C., & Cros, C. (2007). Climate impact of aircraft technology and design changes. *Journal of Air Transportation*, 12(2), 72-97.
7. Food and Agricultural Organization of the U.N. (2007). No Title. Retrieved from http://www.fao.org/index_en.htm
8. Frijters, P., Dulleck, U. & Torgler, B. (2009), *Introductory Economics for Decision Makers*, 2nd edition, South Melbourne: Cengage.
9. Leggett, J. (1990). *Global warming: The Greenpeace report*. New York: Glays Ltd.
10. McKie, R. (2009, Mar 8). Scientists to issue stark warning over dramatic new sea level figures. *Guardian*, p. 19.
11. May, E. and Z. Caron. (2009). *Global warming for dummies*. Mississauga (Canada): John Wiley and Sons Ltd.
12. Mankiw, N. G. (2007). *Principles of Economics*. (4th ed.). South Western Cengage: Learning.
13. McDonnell, J., & Bartlett, J. (2009). Marketing to change public opinion on climate change: a case study. *The International Journal of Climate Change: Impacts and Responses*, 1(3), 64-73.
14. Morris, M. R., & Sweet, J. (2007). The quest for green. *Professional Remodeler*, 11, 20-20. Retrieved from <http://search.proquest.com/docview/195891913?accountid=13380>
15. Pew Center on Global Climate Change. n. d. <http://www.pewclimate.org/global-warming-basics/kidspage.cfm> (accessed May 12, 2009).
16. Roger, A. P. (2004). What is climate change? *Issues in Science and Technology*, 20(4), 31-34. Schlesinger, W. H. (2011). Climate change. *Interpretation*, 65(4), 378-390,340.
17. Solomon, M., A. W. Chitty, G. Fripp, G.W. Marshall, & E.W. Stuart, (2009). *Marketing: Real People, Real Choices* Sydney: Pearson Education.
18. Tan, B. C., & Lau, T. C. (2010). Attitude towards the environment and green products: Consumers' perspective. *Management Science and Engineering*, 4(2), 27-39.
19. Tisdell, C. (2008). Global warming and the future of pacific island countries. *International Journal of Social Economics*, 35(12), 889.
20. United Nations News Centre. (2011). Renewable sources can meet most global energy demands – UN-backed report. Retrieved from <http://www.un.org/apps/news/story.asp?NewsID=38318&Cr=climate+change&Cr1=#.UIIzw29tirg>
21. Walker, Gountas, Mavondo & Mullins (2012) *Marketing Strategy: A Decision-Focused Approach*. New York: McGraw Hill.
22. William, H. S. (2011). Climate change. *Interpretation*, 65(4), 378-390,340.
23. World Nuclear Association. (2009). *The Communications Network for Nuclear Energy and Ionising Radiation*. Retrieved from <http://www.worldnuclear.org/info/info.html#countries>