

Al-Hussaini, Ahmed Nahar

Article

Carbon Finance : a platform for development of sustainable business in Kuwait

Expert journal of business and management

Provided in Cooperation with:

Expert Journal of Business and Management

Reference: Al-Hussaini, Ahmed Nahar (2016). Carbon Finance : a platform for development of sustainable business in Kuwait. In: Expert journal of business and management 4 (2), S. 87 - 93.

This Version is available at:

<http://hdl.handle.net/11159/1378>

Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/>

Standard-Nutzungsbedingungen:

Dieses Dokument darf zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden. Sie dürfen dieses Dokument nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen. Sofern für das Dokument eine Open-Content-Lizenz verwendet wurde, so gelten abweichend von diesen Nutzungsbedingungen die in der Lizenz gewährten Nutzungsrechte. Alle auf diesem Vorblatt angegebenen Informationen einschließlich der Rechteinformationen (z.B. Nennung einer Creative Commons Lizenz) wurden automatisch generiert und müssen durch Nutzer:innen vor einer Nachnutzung sorgfältig überprüft werden. Die Lizenzangaben stammen aus Publikationsmetadaten und können Fehler oder Ungenauigkeiten enthalten.

<https://savearchive.zbw.eu/termsfuse>

Terms of use:

This document may be saved and copied for your personal and scholarly purposes. You are not to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public. If the document is made available under a Creative Commons Licence you may exercise further usage rights as specified in the licence. All information provided on this publication cover sheet, including copyright details (e.g. indication of a Creative Commons license), was automatically generated and must be carefully reviewed by users prior to reuse. The license information is derived from publication metadata and may contain errors or inaccuracies.

Carbon Finance - A Platform for Development of Sustainable Business in Kuwait

Ahmed Nahar AL-HUSSAINI*

Public Authority for Applied Education and Training, State of Kuwait

Since 1880, the temperature of global has increased by 0.85 degree Celsius. Due to the increase in temperature, the impact of climate change is constantly increasing, which is known as global warming. The increase in temperature is due to emission of greenhouse gases. Carbon dioxide is a major greenhouse gas, which is capable of causing serious hazardous influence to the environment. Carbon emission reduction and low-carbon economy development have become global targets and national policy in both developing and developed countries. Carbon finance is a tool for reducing greenhouse gas (GHG) emissions using a process called capture and storage (CCS). Using this process, the carbon dioxide is captured and stored for further usage as a renewable resource. Carbon finance has a high impact on the growth of sustainable business development. This research analyzes the various possibilities of developing sustainable business through carbon trading in Kuwait and the strategic options offered by both government, as well as private sectors for carbon trading in Kuwait. The central focus of research is to discover the role of carbon finance in developing sustainable business and environmental quality. Since no previous research is conducted on the specific role of carbon finance in developing a sustainable business preferably in Kuwait, the influence of carbon financing in sustainable business development and environmental quality are analyzed in this research.

Keywords: Carbon Financing, Sustainable Development, Kuwait, Greenhouse gases, Global warming, Environment quality

JEL Classification: M10, M14

1. Introduction

A term used to define continuing rise in average temperature of surface of earth and its oceans is known as 'global warming'. Nowadays, various research scholars found that the impact of climate is constantly raising in connection with trace gas level could surpass that of the distended carbon dioxide concentration (Abellera and Short, 2011). In line with the present condition, more than 100 countries have embraced global warming limit of less than 2 degrees Celsius as a foremost part for reducing risk, impact and change according

* Corresponding Author:

Dr. Ahmed Nahar Al-Hussaini, Public Authority for Applied Education and Training, State of Kuwait

Article History:

Received 10 August 2016 | Accepted 31 August 2016 | Available Online 6 September 2016

Cite Reference:

Al-Hussaini, A.N., 2016. Carbon Finance - A Platform for Development of Sustainable Business in Kuwait. *Expert Journal of Business and Management*, 4(2), pp.87-93.

to climate change. Yet, the greenhouse gas emissions related to a predefined maximum warming are inadequately known as inferable from instabilities in the climate response and carbon cycle (Fulton, 2008).

Verification of change in environmental condition includes increased ocean levels, instrumental temperature record and reduced snow spread in Northern Hemisphere. Sustainable business practice and eco design have become significant nowadays to business process worldwide. As we know, the essential cause is carbon dioxide gas. Industrial production processes and fossil fuel combustion for electricity, heat, and transportation are the source of carbon dioxide emissions. There is no trace for reduction in growth rate of carbon dioxide generation, it is kept on increasing. Numerous United Nations (UN) climate conferences conducted everywhere in the world. To avert climate change, an international agreement envisioned to reduce the greenhouse gas emission is "Kyoto Protocol".

Every independent country has to impel clean generation forms in order to achieve reduced greenhouse gas emission by incorporating "Kyoto Protocol". This protocol consists of two major mechanisms such as Joint Implementation, Emission Trading. These protocols are utilized to help countries to encounter their responsibility in greenhouse gases reduction. Emission reduction target can be achieved by countries using a technique called Emission Trading (ET) at a reduced cost (Bouton, et al., 2010; Dargin, J., 2015). Leading to different business carbon emissions and carbon decrease costs, the industry with more releases rights can offer the plenitude to those commercial ventures having absence of surge rights in order to secure points of interest. Carbon emission rights having market estimation of liquidity and moreover broad items can be traded through the business sector (Zeng and Zhang, 2011). The urban population of Kuwait is steadily increasing over the past two decades. The average increase in total population was 4.1% per year between 1994-2011.

Table 1. Total greenhouse gas emission in Kuwait

GHG Sources and Sinks	eCO ₂	CO ₂	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
Energy	30855	28856	92.69	0.17	113	544	522	320
Industrial Processes	668	668	0.00	0.00	0	0	0	0
Solvent and other product usage	0	0	0.00	0.00	0	0	0	0
Agriculture	66	0	2.70	0.03	0	0	0	0
Land-Use change & forestry	-22	-22	0.00	0.00	0	0	0	0
Waste	784	0	33.80	0.24	0	0	0	0
Total national Emissions	32373	29524	129.19	0.44	113	544	522	320
Net national emissions	32351	29502	129.19	0.44	113	544	522	320

Source: Kuwait's United Nations Framework Convention on Climate Change.

In the future, the average annual temperature will increase to as high as 28.7 degrees Celsius in Kuwait during the time period of 2010-2035, which shows an increase in temperature of 1.6 degree Celsius over the past decades (Environment Public Authority, 2012).

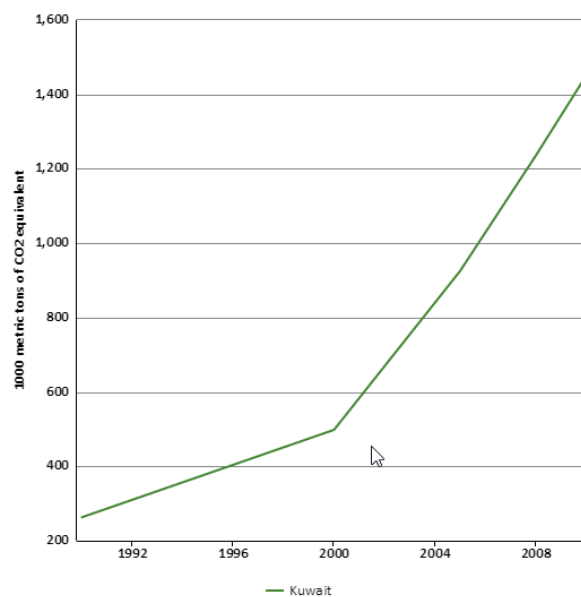


Figure 1. GHG emission in Kuwait

Source: World Development Indicators (WDI), February 2015

Reduction of carbon emissions plays an important role in business through carbon finance, which becomes a cost-effective and blooming investment opportunity for every business seeker. The role of government and private sectors towards climate change through carbon finance has become extremely dynamic and essential. Kuwait is a place where government and private banks are capable of financing companies, projects and individuals. Banks have excessive roles to play both in producing low-carbon opportunities and in assisting consumers better recognize the choices and implications related with climate change. Bank provides insurance coverage for managing and understanding problems, risks, opportunities and modification requirements with respect to climate changes. Along these lines they can play a significant role for developing expertise, products and administrations that their customers and accomplices require from them to address these global challenges. Further they should also pro-actively minimize their own operational greenhouse gas emissions. The carbon finance effectively promotes business. The mechanisms of Kyoto Protocol promote sustainable development of business. The expense of carbon-based energy production is expanding day by day. When costs associated with energy are reduced, there is higher chance of business development. This paper will focus mainly on the availability of strategic options in Kuwait with respect to carbon finance for developing sustainable business (Datey, and Tiwari, 2015; Stiglitz and Uy, 1996; Dargin, 2015; Wong et al., 2008).

2. Effect of Climate Change with respect to the Business Sector

The essential motto of the research is to categorize the complications of global warming and the effect of climate change with respect to the business sector. The main instrument for attaining reduction in carbon dioxide emission is carbon finance, which in turn shifts into an excellent platform for developing a sustainable business, and improves environmental quality.

2.1. Impact of Greenhouse Gases on Environment

Regardless of the way that Kuwait is a small Arab nation situated in the Middle East, Kuwait possesses a region of 17818 km² at the northern shore of the Arabian Gulf in the middle of Iraq and Saudi Arabia (The World Factbook, 2010). The number of inhabitants in Kuwait is growing quickly, having expanded by 450 percent at regular intervals of 25 years (Stewart et al., 2009). As a result of a high rate of populace development in Kuwait, an observable increment in the rate of water usage or utilization has been brought on by the boundless advancement of building development, modern, and rural exercises. This forces weight on new water sources, making water shortage, which has driven Kuwait to depend altogether on eccentric sources, for example, saltwater desalination plants to take care of its demand for water (Waddock et al., 2002).

A huge measure of fossil fuels is combusted for electricity generation. This is the purpose for the outflow of huge measure of carbon dioxide. Another reason is that inaccessibility of the best source for mitigating carbon emissions. The carbon lessening procedure can be affected by new innovation shift and fuel decision. The emanations can be lessened by fuel switch or executing vitality effective technique that will give changeless arrangement. Greenhouse gas emanation lessening in both developed and developing needs more noteworthy association and consideration regarding the rising subject of carbon finance (Bowen, 2013; Caulton and Keddle, 1989).

The present situation of greenhouse gas outflows furthermore the future discharge patterns will results in higher emission levels (Stewart et al., 2009). The evaluation of International Energy Agency expresses that the worldwide surface temperature will increment up to 40% in the year of 2100, if any further alleviation move is not made (Waddock et al., 2002). The worldwide surface temperature will increment up to 3.5-5 degree Celsius in the year 2100 as indicated by the present ecological conditions (updated United Nations Environment Program (UNEP) Emissions Gap Report) (Chomitz, 2002). If we do not take mitigation step for the greenhouse gas emission, the chance for increase in temperature of 4 degree Celsius is 40% and for 5 degree Celsius is 10% in 2100 (Meltzer et al., 2014).

2.2. Carbon Finance

Carbon finance is an effective and dynamic finance tool and finest income-generating stream for moderating greenhouse gas outflows. Atmosphere advantages can be actualized through carbon finance. Decrease in carbon emissions will bring about human advancement and co-advantages for biodiversity (Lacis et al., 1981).

The carbon finance gives ample opportunities for creating nations to change to low-carbon development by incorporating ecologically neighborly methodologies. Carbon finance contributes to sustainable business advancement regardless of its inclusion to worldwide natural endeavors. Carbon account

permits us to diminish the environmental change and helps us to develop business (Labatt, S. and White, 2011).

Carbon trading is preferably designed for risk management. The producing units have to estimate the risks involved in carbon price and carbon reduction. The fact is that present market is unable to recognize the risk premium associated with carbon trading. Determination of future price mechanism of carbon is not only a problem. But also excess allocation of carbon credit also creates numerous problems for finance market. Discrepancy in distribution of carbon allowances to market players will provide burden to general consumer and market volatility. This is due to the unavailability of verified emission data and projection of carbon finance according to these data (International Monetary Fund, 2012).

The main motto of carbon finance is to develop business sector and mitigate greenhouse gas emissions.

- Carbon finance carefully looks at the financial eventual outcomes of living and working in a carbon discerning society, where release of greenhouse gas (basically carbon dioxide) drive a cost.

- Carbon finance analyzes and explores the financial related threats and open entryways for carbon mitigation procedures.

- Carbon finance implies specific subfield of environmental finance.

- Carbon finance outlines natural change and carbon dioxide releases as a noteworthy part of key organization decision making.

- Carbon finance predicts the availability and utilization of business segment based instruments to for all intents and purposes dissipate natural threats and accomplish environmental goals.

Carbon finance powers associations and purchasers to identify the carbon yield of the things they deliver or purchase. Given the overall action to ease outflows of greenhouse gas, it is unavoidable that carbon emissions will be masked on the worldwide business area (Labatt and White, 2011).

2.3. Role of Industries

Successful moderation of ecological issues may enhance the productive utilization of assets and have financial effect on firms. Moreover, there are noteworthy social and financial advantages to be picked up. While a few organizations are among the greatest emitters of carbon or greenhouse gasses, organizations over all segments are required to decrease their carbon outflow levels. Organizations may need to react to administrative methodologies, for example, carbon pricing by trading or tax assessment that are started to stimulate industries to diminish their emissions. These measures will at first expand the expenses for working together (Environment Public Authority, 2012). The more corporations are required to drive down their carbon emissions. Significantly firm's carbon exposure is converted into severe management problem. Then the corporate managers have to align sustainable activities with respect to their own primary corporate strategies, decisions and objectives to generate shareholder value.

The more partnerships are required to drive down their carbon discharges, the more critical an association's carbon presentation turns into a management issue. Subsequently, corporate directors ought to adjust maintainable exercises to their essential corporate targets, procedures and choices to make shareholder value (Waddock et al., 2002). Nowadays, every industry has started planning strategies to expand or merge with companies having less pollution to evade national/international legislative restrictions or to get benefit from undertaking with clean energy technologies (International Monetary Fund, 2012).

3. Kuwait and the Status of Sustainable Business

3.1. Kuwait Government

On March 2005, the Kuwaiti government signed the Kyoto protocol in order to mitigate environmental difficulties and to decrease greenhouse gas outflows. In 1995, the government established the Environmental Public Authority (EPA). Again a Kuwait Institute for Scientific Research (KISR) was established by the government in 1967. The main motto of KISR establishment is to conduct scientific research based on industry, energy, agriculture and national economy. While the EPA plays a dynamic part in accomplishing sustainable developments by focusing on the part of society in changing negative practices in managing in terms of the environment and reducing greenhouse gas emissions (Waddock et al., 2002). The major steps taken by Kuwait government to reduce carbon dioxide emission are fuel switching, district cooling, green buildings, and solar and wind power generation. The above action will result in significant amount of reduction in carbon dioxide emission in the year of 2020. The mitigation technologies were majorly concentrated with respect to energy sector including energy supply/demand side, due to the prominence production and consumption of energy. With the assistance of World Bank, Kuwait government has developed a project for

GHG mitigation called Kuwait Environment Public Authority (KEPA). The short term activity is clean development mechanism. By utilizing mitigation option, amount of carbon dioxide emission can be reduced to 10284 Gg. The impact of greenhouse mitigation techniques is explained in figure 2.

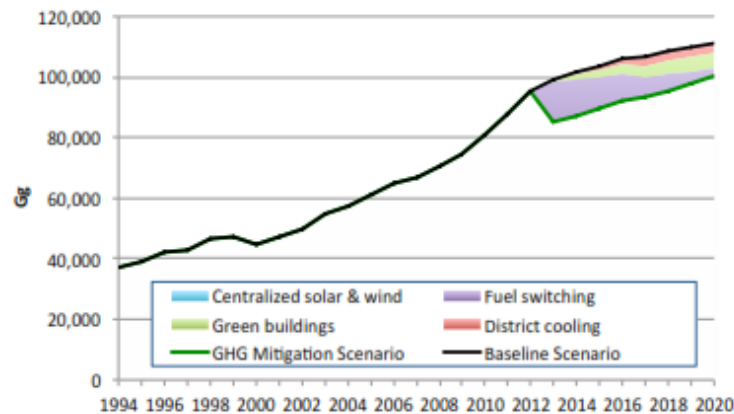


Figure 2. Impact of GHG mitigation techniques.
Source: Environment Public Authority, 2012

Carbon capture and storage technology prevents 90% or less carbon dioxide emissions associated with power generation. Government has introduced incentives to shift behavioral change among consumers (International Monetary Fund, 2012).

A sovereign wealth fund consists of funds such as stabilization funds and Intergenerational savings fund. The Intergenerational savings fund has long-term wealth creation and policy objective that enables entrepreneurs to take larger risks. This fund mainly focuses on social/economic development (Chapple and Gold, 2010).

Clean Development Mechanism: At the solicitation of environment protection agency (EPA), bank has Bank has given assistance regarding improvement in national clean development mechanism (CDM) Strategy. The bank provides a CDM portfolio and outline of options for Kuwait to take part in an international post-Kyoto regime. This process is also intended to assist EPA to increase awareness and employ both private and government sector stakeholders in an exceedingly manner with respect to carbon finance in common and CDM more preferably, and also to provide training to prospective project proponents and support assimilation of CDM project events and other emerging schemes of carbon trading (International Monetary Fund, 2012).

Environmental Compliance Fund (ECF): This movement reacts to a solicitation from the Kuwait Incomparable Council for the Environment, and accordingly from the Ministry of Finance, for World Bank support in advancing enhanced environmental execution from point-source and industrial polluters in Kuwait through the foundation of an ECF. Bank support involves aiding EPA to plan environment consistence system to help the polluting ventures diminish pollution to the level required by the national principles and rules. That particular system consists of following exercises:

- (i) Compliance Action Plan (CAP) – CAP has to be set up by each of the polluting industries to lessen pollution.
- (ii) Financing Window – It has to be set up in business banks to provide both grants and loans to the polluting industries to implement activities in CAP.

Project cycle: The World bank conducts a review based on project cycle of Kuwait government.

The technology is aimed to identify the methods to shorten project cycle and improve management practices of present project in Kuwait. The Bank team effectively reviews and analyzes projects of government entities in three different stages: Concept, Implementation, Evaluation.

This process assists to identify obstacles and areas which need amendments in procedures and legislation/regulation. The Bank also provides recommendations to reinforce capability of Government agencies to device projects through sufficient training (Sovereign Wealth Fund Institute, 2012).

3.2. Role of Private Sector

Fundamental aide for carbon finance is set up by Ashden Awards and Global Village Energy Partnership (GVEP). This fundamental aide empowers business entrepreneurs to comprehend carbon money in a superior way, and gives thoughts and recommendations to step as per their potential. In developing nations, extension of energy-related projects is troublesome because of finance. These days, carbon finance gives various chances to entrepreneurs. The carbon markets give income sources to business by producing

commercial value for reducing greenhouse gas emission. In this way increment in commercial possibility of business, carbon finance plays a noteworthy part in sustainable development in business. In developing nations, the carbon credits are ideally used by industrial firms to accomplish their emission reduction responsibility lawfully. The interest and supply of carbon credits varies as indicated by economic drift (Labatt and White, 2011).

In 2000, the Carbon Disclosure Project (CDP) was started in London in order to give information to potential investors. The Carbon Disclosure Project is individual non-profit organization having highest database for corporate climate change in the world. Numerous industries across the world measure and disclose their own climate change strategies through CDP. CDP will provide essential tools and know-how, and support your strategy development. Other institutions were collaborated with CDP for utilization of supply chain to measure, analyze and manage especially under the Kyoto Protocol higher phases.

4. Conclusion

4.1. Discussion

In this study, the role of carbon finance for developing a sustainable business platform in Kuwait is analyzed. This paper aimed to analyze the reason for development of sustainable business in Kuwait and to find the role of both government and private sector in reference to the development of sustainable business in Kuwait. The findings of the research show that the services, regulatory compliance and strategies provided by the Kuwait government as well as private sector have a greater influence in developing a sustainable business in Kuwait. Kuwait government and private sector are the essential points in developing sustainable business through carbon finance. Based on the findings of the study the effectiveness of sustainable business development in Kuwait will improve by controlling all the above variables.

The private sector provides advisory services for the corporate decision makers in order to evaluate the environmental risks associated with the business. When carbon sustainable business is developed through carbon finance with the help of Kuwait government and private sector, the ultimate output is going to be reduction in carbon emission. Adoption of continual environmental-oriented business practices results in overall effective business performance in terms of profitability, sustainability and firm's value. The inability to measure the value of carbon footprint is fueled by private sectors. In order to provide useful and timely information to the market and consumer, the Kuwait government effectively provides environmental innovation activates and knowledge. The government regulations provide lots of opportunities that help industries to facilitate their own financing projects and carbon trading for developing a sustainable business. Since there is a positive correlation between the environment and financial performance, everybody can recognize that effect of environmental change will be huge into business and that will result in emission-free environment.

4.2. Recommendations

In the present scenario, both business and environmental sustainability has ended up imperative for worldwide industries, in order to guarantee its survival and to stay focused. In this way, industries ought to endeavor to become green to avoid future regulatory actions. Since environmental business stability is in direct correlation with decision making process, the Kuwait government has to arrange more seminars, workshops and awareness programs for people those who are unaware about risk mitigation techniques and favorable strategies in carbon trading, such that industries can have an idea about future opportunities in carbon trading. Green revolution is capable of affecting every business activity. Lack in resources e.g. IT systems, tools, regulation, standards, etc. has to be addressed by the Kuwait government. Kuwait government has to focus also on more new trading schemes for carbon emission/carbon trading.

References

- Abellera, C. and Short, C., 2011. *The costs of CCS and other low-carbon technologies*. Global CCS Institute 2 [online] Available at: <http://decarboni.se/sites/default/files/publications/24202/costs-ccs-and-other-low-carbon-technologies.pdf> [Accessed 10 March 2016].
- Benamor, A. and Aroussi, A., 2013. Towards a Technology Roadmap for Carbon Capture and Management for Qatar. *International Journal of Biological, Ecological and Environmental Sciences*, 2(3), pp.52-56.

- Bouton, S., Creyts, J., Kiely, Livingston, J. and Naucler, T., 2010. *Energy Efficiency: A Compelling Global Resource*. [online] McKinsey&Company. Available at: <http://mckinseysociety.com/energy-efficiency-a-compelling-global-resource/> [Accessed 1 April 2016].
- Bowen, A., 2013. The Case for Carbon Pricing. Policy Brief for the Grantham Research Institute on Climate Change and the Environment and the Centre for Climate Change Economics and Policy. *BP - Statistical Review of World Energy*. [online] Available at: <http://www.bp.com/en/global/corporate/about-bp/energy-economics/statisticalreview-of-world-energy-2013.html> [Accessed 10 March 2016].
- Caulton, E., and Keddle, D., 1989. Environmental conservation problems in Kuwait. *Environmentalist*, 9(3), pp.219-228.
- Chapple, L. and Gold, D., 2010. *The Cost of Carbon: Capital Market Effects of the Proposed Emission Trading Scheme (ETS)*. Honors' Thesis. UQ Business School at The University of Queensland, Australia.
- Chomitz, K.M., 2002. Baseline, leakage and measurement issues: how do forestry and energy projects compare?. *Climate Policy*, 2(1), pp.35-49.
- Dargin, J., 2015. *The emerging Gulf carbon market*. [online] Available at: http://www.justindargin.com/uploads/5/1/5/3/5153441/carbon_energy_gulf_pet_econ.pdf [Accessed 12 April 2016].
- Datey, R. and Tiwari, K., 2015. Realizing the Twin Goals of Growth and Sustainability - the Preliminary Lessons for Effective Green Finance in India. *Altius Shodh Journal of Management & Commerce*. 2(1), pp.91-95.
- Environment Public Authority, 2012. *Kuwait's Initial National Communications under the United Nations Framework Convention on Climate Change*. [online] Available at: <https://unfccc.int/resource/docs/natc/kwtnc1.pdf> [Accessed 10 March 2016].
- Fulton, M., 2008. *Indicates investing in climate change can help stimulate economies*, vol. 16, Deutsche Bank Asset Management [online]. Available at: http://www.db.com/presse/en/content/press_releases_2008_4143.htm [Accessed 10 April 2016].
- International Monetary Fund, 2012. *IMF Country Report No. 12/150 – Kuwait 2012 Article IV Consultation* [online] Available at: <https://www.imf.org/external/pubs/ft/scr/2012/cr12150.pdf> [Accessed 10 March 2016].
- Labatt, S. and White, R.R., 2011. *Carbon finance: the financial implications of climate change*. vol. 362, Hoboken: John Wiley and Sons.
- Lacis, A., Hansen, J., Lee, P., Mitchell, T. and Lebedeff, S., 1981. Greenhouse effect of trace gases, 1970-1980. *Geophysical Research Letters*, 8(10), pp.1035-1038.
- Meltzer, J., Hultman, N.E., and Langley, C., 2014. Low-Carbon Energy Transitions in Qatar and the Gulf Cooperation Council Region. *Brookings Papers on Economic Activity*. [online] Available at: <https://www.brookings.edu/research/low-carbon-energy-transitions-in-qatar-and-the-gulf-cooperation-council-region/> [Accessed 21 March 2016].
- Sovereign Wealth Fund Institute, 2012. *SWF Asset Allocation Report 2012* [online]. Available at: http://www.swfinstitute.org/wp-content/uploads/2012/04/SWF-asset-allocation-2012sample_1.pdf [Accessed 4 May 2016].
- Stewart, R.B., Kingsbury, B. and Rudyk, B., 2009. *Climate finance: Regulatory and funding strategies for climate change and global development*. NY: New York University Press.
- Stiglitz, J.E. and Marilou Uy, M., 1996. Financial markets, public policy, and the East Asian miracle. *The World Bank Research Observer*, 11(2), pp.249-276.
- The World Factbook, 2010. *CIA-The World Factbook*. [online]. Available at: <https://www.cia.gov/library/publications/download/download-2010> [Accessed 12 April 2016].
- Waddock, S.A., Bodwell, C., and Graves, S.B., 2002. Responsibility: The new business imperative. *The Academy of Management Executive*, 16(2), pp.132-148.
- Wong, K., White, A., Pamlin, D. and Reinvang, R., 2008. *Fund Management in the 21st Century: The role of sovereign wealth funds in contributing to a low carbon future*. [online] Available at: <http://www.wwf.se/source.php/1215663/Fund%20Management%20in%20the%2021st%20Century.pdf> [Accessed 10 March 2016].
- Zeng, S. and Zhang, S., 2011. Literature review of carbon finance and low carbon economy for constructing low carbon society in China. *Low Carbon Economy*, 2, pp.15-19.

