



CLIMATE “CRUNCH”? SEVERAL SCENARIOS & POSSIBLE OUTLOOKS FOR THE GLOBAL ECONOMIC ENVIRONMENT

Paper: Global Economic Environment

Prof. Bruno Colmant
International Executive MBA
Louvain School of Management

Florence Bindelle
Khadija Nadi
Noé Denis

28/04/2014



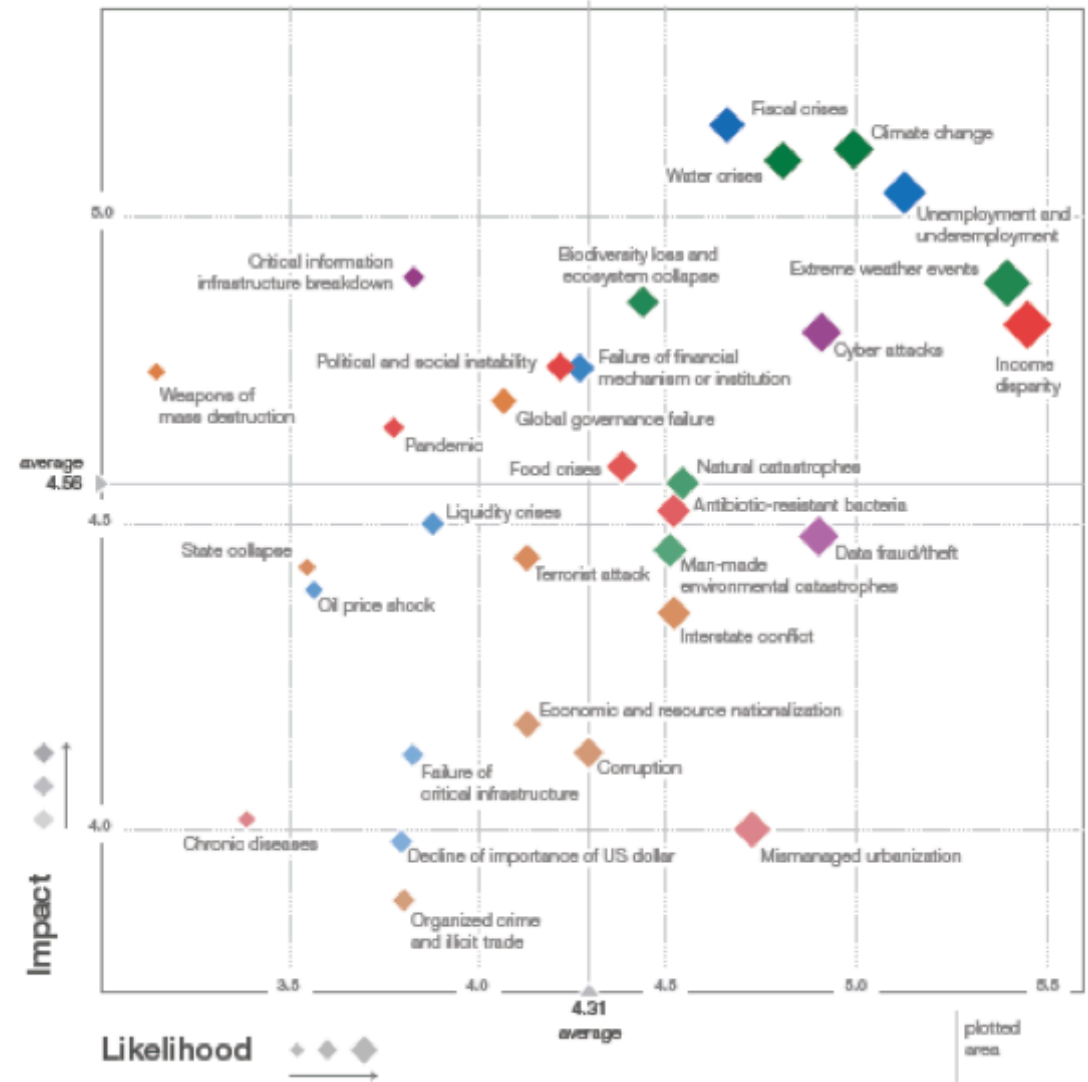
1. Introduction
2. Factors that will shape the future response to climate change
 - a. Uncertainty of the direct impacts
 - b. Public attitudes
 - c. Business community response
 - d. Evolution of the global economic environment
 - e. Availability of natural resources
 - f. Demographic evolution
 - g. Political response, at national and international level
 - h. Technologies development and use
 - i. Gender and X-generation
3. Five scenarios for 2030
 - **Scenario 1** – Innovation based economy – Rapid innovation in energy efficiency and novel technologies has enabled a low-carbon economy with almost no need for changes in lifestyle or business practice.
 - **Scenario 2** - Service based economy - A high price of carbon lead to a revolution in how people's needs are satisfied
 - **Scenario 3** – Well-Being based economy – New priorities of ‘wellbeing’ and ‘quality of life’ are defined across the world as more sustainable forms of living
 - **Scenario 4** - Environmental war economy – Tough measures have been adopted to combat climate change, pushing markets to the limit of what they can deliver
 - **Scenario 5** - Protectionist economy – Globalization has decreased and countries focus on their own access to natural resources
4. From future scenarios to today’s reality
5. Public and private sector cooperation

1. Introduction

The recently published Global Risks 2014 report of the World Economic Forum identifies environmental risks as highest in terms of impact and likelihood. Those risks include both natural disasters, such as earthquakes and geomagnetic storms, and man-made risks such as collapsing ecosystems, freshwater shortages, nuclear accidents and failure to mitigate or adapt to climate change. Failure of climate change mitigation and adaptation is the fifth top risk concern according to multi-stakeholders communities (see figure beside).

Climate change is evidence proven and this paper doesn't intend to explore the causes. However, one can state that climate change is a systemic problem – it is one that touches all the others. As such by its systemic nature, it can cause breakdowns of entire systems and not only a component part. (See figure page 4)

Figure 1.1: The Global Risks Landscape 2014



Source: Global Risk 2014 report



Figure 1.4: The Global Risks 2014 Interconnections Map



Source: Global Risk 2014 report

In this paper we tried to assess what our world would look like in twenty years taking into consideration the combined implications and interconnection of the environmental changes with macroeconomic developments, political and social instability. To structure our thoughts we raised the following questions: which are the factors that will shape the future response to climate change? What are the possible scenarios based on those factors? What is the public and private response to climate change?

These questions are impossible to answer definitively, but we can explore possible answers, and discuss what those different answers might depend on.





2. Factors that will shape the future response to climate change

Natural environment is key to economic activity and growth because it provides, not only, its direct support (i.e providing resources and raw material), but also, its indirect support (i.e. services provided by ecosystems).

Natural resources are unquestionably essential to secure economic growth and development not just today but also for future generations.

However, we are sure of one thing: climate change is a scientific certainty and we need to cope with it as soon as possible.

Based on our research we have tried to define below a non-exhaustive list of factors that will influence the future outlooks to climate change.

■ **Uncertainty of the direct impacts**

There are some details about climate change we do not know yet – how quickly it will happen, exactly where different impacts will be felt or if we are nearing a tipping point that irreversibly changes our climate system forever. However, the scientific consensus is clear on the fact that the Earth is getting hotter and the frequency and severity of destructive climatic event will only increase.

■ **Public attitudes**

How climate change is perceived by the public at large will have a profound influence over what governments, businesses and other institutions feel they can do. Human behaviour will play an important role towards climate change.

■ **Business community response**

To what extent will businesses accept and promote the shift to a low-carbon economy? Will climate change be seen as an opportunity for new business as well as a risk to current models? There are a number of pathways for the future of business.

■ **Evolution of the global economic environment**

At the moment, the global economy faces great uncertainty. Climate change will affect the economy at least as much as the 'credit crunch' and the world's response to climate change will depend on how the economy is set up. An economy that is operated on a global level will have a different response to one that is operated on a regional level.



- **Availability of natural resources**

Prices of natural commodities on which companies and societies rely on is consistently increasing and non-renewable resources are becoming scarcer. Therefore, we will have to deal with worsening resource shortages, with the supply of energy a key variable. The availability of water, productive land, timber, marine fisheries and minerals could all falter and affect how the world responds to climate change. In the future, geopolitical tensions over access to strategic water resources could have a much bigger impact, and water shortage coupled with poverty and societal instability could weaken cohesion between countries. Beyond water quantity, water quality is another critical issue¹. Will water become the gold of tomorrow?

- **Demographic evolution**

The global human population is expanding rapidly: another billion-and-a-half people on top of today's 7 billion.

- **Political response at national and international level**

The most immediate question in this area is whether there will be a successor to the Kyoto Protocol. What priority will different countries give to climate change policy, and to what extent will other policy priorities conflict with it? Will policies be more market-based or more interventionist? What emphasis will be placed on changing the behavior of the people living on Earth?

- **Technologies development and use**

Technology is an important shaper of the future response to climate change. First, we need to have a clear vision of how climate crunch will affect companies and their ability to reach sustainable growth. Then, to envisage possible futures, we needed to understand what new technologies might be developed and used that would help reduce adverse effect of the climate changes (e.g. reduce greenhouse gas emissions, improve energy production, improve efficiency; low carbon mobility solutions), reduce the impact of climate change and help the world adapt to a climate-changed world.

- **Gender and X-generation**

It is observed in the Global Risks 2014 report that female perceives environmental risks to be more likely and more impactful than males do. So do younger individuals (X-generation) that gave higher scores for the impact of environmental risks. To be noted also that young people look for solutions first among themselves and second in the circle of family and friends.

All of these factors are played out differently in the scenarios described below.

¹Examples of devastating impacts of having too much or too little water: In 2010, floods in Pakistan paralysed large parts of the country for many weeks, killing thousands of people and impacting the rural economy. Thailand's slow-onset flood in 2011 caused fewer deaths but showed how one local event could have an impact across the world: global car production slowed as supplies of components were cut, and hard drive manufacture for the world's computers was slashed. Drought in Russia in 2010 led to restrictions on agricultural exports, causing the price of staple grains to rise across North Africa and the Middle East. The resulting food shortages and price rises aggravated the tensions that led to the Arab Spring. In 2014, Coca cola moved its plant closer to water plant.



3. Five scenarios for 2030

The scenarios are based on our researches, they are obviously not predictions for the future, and we think that some scenarios are more likely than others as described under point 4. We do believe nevertheless that they present elements of the possible future in a plausible and convincing way.

Scenario 1 – Innovation based economy

Rapid innovation in energy efficiency and novel technologies has enabled a low-carbon economy with almost no need for changes in lifestyle or business practice.

The power of innovation has revolutionized the economy that allowed businesses to develop cleaner technologies and provide a more efficient use of natural resources. As a result, businesses achieved decoupling the production from environmental damages on an international scale². Across the world, innovative business solutions appear to sustain the insatiable demands of almost nine billion people to consume more, grow richer and live longer. The result is an increasingly individualistic, consumerist and fast-moving world. But overall levels of growth hide a growing separation between rich and poor people, some call this a golden age of technology.

Examples:

- Massive desalination plants in the Middle East and North Africa capture vast quantities of solar energy and irrigate the desert.
- Supercomputers advise governments on policy and businesses on strategy and even influence personal lifestyle choices – accurately testing ideas against virtual societies.

Scenario 2 - Service based economy

A high price of carbon lead to a revolution in how people's needs are satisfied

Carbon has become one of the most important and expensive commodities in the world, unleashing unprecedented levels of creativity across the global economy. Companies achieved to modify their way to compute ROI to take into account the “natural component” to measure their investment. Companies have rewritten their business models to meet underlying needs, often by selling services instead of products. This is a new type of consumerist world.

Example:

- Individual car ownership is unaffordable and undesirable, but rent-a-bike and rent-a-car are booming and mass public transit is hugely successful.

²To achieve environmental efficiency at the global level the sharing of technology and knowledge from developed countries to developing countries is essential to avoid that manufacturing activities that are heavily damaging the environment would simply shift from advanced to developing countries.



Scenario 3 – Well-Being based economy

New priorities of 'wellbeing' and 'quality of life' are defined across the world as more sustainable forms of living

This is a 'wellbeing economy' that highly values meaningful work, low-impact lifestyles, more time with family and friends, better health outcomes, creative educational experiences and a stronger sense of community. Countries prioritize economic and social resilience over the idea of economic growth. The response to Climate change was first sought through de-linking consumption from growth. Ultimately, the future is shaped by the human aspirations of what a good life really is. This is not a post-capitalist society but citizens give a different value to money.

Examples:

- ICT allows people to monitor their fitness, stress levels and emotional health and share details with friends.
- Slower solutions are status symbols: labels proudly display how long products took to make (for example: in clothing industry).

Scenario 4 - Environmental war economy

Tough measures have been adopted to combat climate change, pushing markets to the limit of what they can deliver

This is a world that woke up late to climate change. Governments began to rely on hard policy to change how businesses worked and how people lived their lives. As time went on, the government took a stronger and stronger role, forcing all companies to reduce their climate change impacts. Conditions of insecurity and war imposed high cost on the pursuit of sustainable development and blocked definitively the globalization.

Examples:

- Personal electronic devices are automatically switched off when households exceed their energy quotas.
- The oil price makes shipping and aviation so expensive that international trade became impossible.

Scenario 5 - Protectionist economy

Globalization has decreased and countries focus on their own access to natural resources

The poor global response to climate change combined with scarcity of resources has divided the world into protectionist blocs. This led to conflicts, reduction of global trade and misery for millions of people in some parts of the world. We observe a rise of nationalism; social unrest; insecurity; and conflicts over crucial resources.

Examples:

- Conflicts over water have resulted into wars between nations.
- Cyber-terrorists target several businesses leading to bankruptcies of multinationals.



4. From future scenarios to today's reality

Based on our readings and discussions with experts, we realize that the trends of the futuristic scenarios imagined above have partially already started. Change is on its way and will probably incorporate several elements from the innovation, well-being and protectionist world economy scenarios.

Businesses could invest heavily in new technology that enables them to do what they are currently doing. This approach is partly envisaged by Amory Lovins of the Rocky Mountain Institute: "I think the real drivers here will not be public policy, which will always be trying to catch up with the more dynamic private sector and civil society, rather it will be a combination of innovation in competitive strategy, in technology and design integration that really makes most of the running."

At the same time, in some parts of the world, we could see a world in which materialistic consumer values have changed and business plays a very different role in society to what it does today. The future to such a world may appear longer from today's perspective but some readings show us that some aspects are already in discussion. For example, many professionals agree that the indicator of GDP (gross domestic product) is misleading and fail to capture the full richness of human and environmental development. In March 2008, 40 years after president John F. Kennedy first challenged the indicator, a US Senate Committee held a conference called 'Rethinking the GDP as a measurement of national successes', while France's president Nicolas Sarkozy recently announced that, "we must change the way we measure economic growth". The suggestion is that a new focus on 'wellbeing' could help reverse trends of excessive consumption and waste.

However, even experts who strongly believe in the advancement of globalization were prepared to consider the possibility of a protectionist economy in some parts of the world. Increase of nationalistic political parties across the world is a reality: anti-immigration, xenophobia, nations and citizens are focused on themselves, become more divided. As stated in the Environment & Globalization report: "climate change is the ultimate threat to global security because it can existentially threaten security at every level".



5. Public and private sector cooperation

The world is craving for effective environmental policies in order to protect the provisions and use of environmental resources to continue supporting the world's prosperity and the people's wellbeing, not only for current but also future generation.

Presently, the awareness of imposing urgently new environmental policies on a global scale is everywhere.

At European level, the European Union launched the ECCP (European Climate change programme) advocating for a series of specific actions: consuming less-polluting energy more efficiently, creating cleaner and more balanced transport options, making companies more environmentally responsible without compromising their competitiveness, ensuring environmentally friendly land-use planning and agriculture and creating conditions for R&D.

On an international scale, the secretary General of United Nations made some remarks at the Climate Leaders Summit on 11 April 2014 and stated that "Climate change is the single greatest threat to a sustainable future. [...] First, we need political investment. [...] Public policy must pave the way -- with a financial framework that is conducive for private money to flow at scale into the green space. I have been meeting during the last two or three years many business leaders, including from pension funds and the business community. And all business leaders say they are ready to finance a green economy but they need clear direction and predictable policies from governments. Finance Ministries have an essential catalytic role to play to shape a new financial eco-system that promotes sustainable development and climate-resilience."



Ban Ki-moon pictured

We have noted that different types of policies are implemented in order to improve allocation of environmental assets and achieve sustainable economic growth. Those policies generally combine public and private contributions and their goal is to put back money in the economy to recover and carry on activities or reward efforts made.

- Direct regulation that factor in the undertaking of environmentally-damaging activities
- Public spending programs ensuring that everyone has access to an adequate level and quality of environmental services
- Information provisions to strengthen the awareness of certain actions and behaviors that benefit the environment and the global economy
- Market-based policy that subsidize the activities with wider environmental benefit

In different European countries, some tools already exist such as pools, mandatory insurance schemes or public funds to mutualize the risks and consequences. For instance, the Environmental liability Directive has been adopted and further initiatives are under discussion to echo the "EU strategy on adaptation to climate change". In Africa, due to the lack of liquidity or borrowing capacity, the risk is transferred to insurance markets to avoid drastic disruptions to economic growth due to natural disasters.

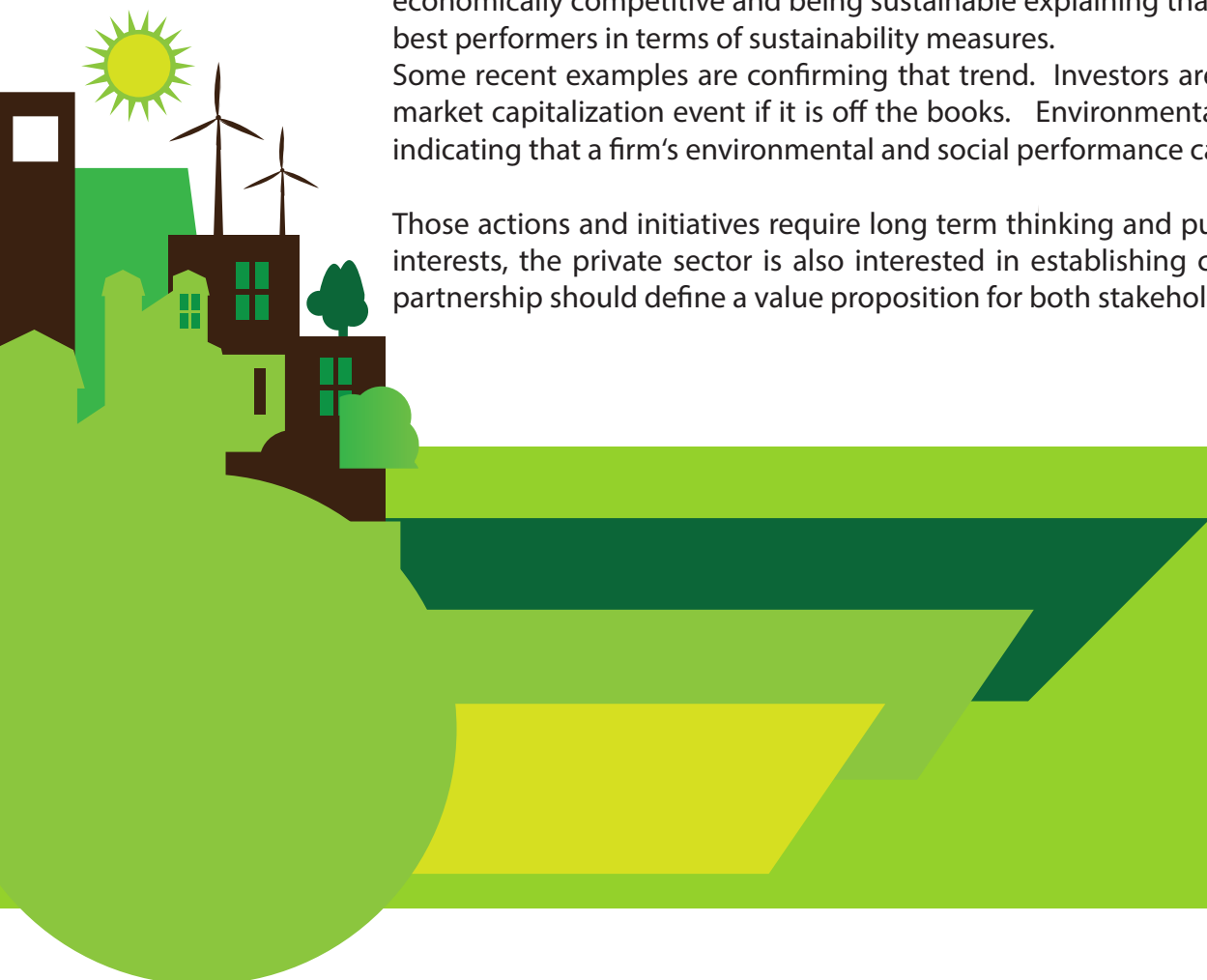


As the economic environment is different in all countries, to reach a consensus on a global solution is a long process. The governments alone won't be able to achieve the necessary steps and the buy-in of the private sectors will be necessary. In addition, we need to confront the short-term mindset of the current way to do business with a long-term strategy: innovation and adaptation as long-term activities.

In many reports it is questioned whether companies should include ecological and social goals in their constitutions and report annually. The World Economic Forum is working on a sustainability-adjusted Global Competitiveness Index (GCI) that captures the extent to which environmental and social sustainability contributes to prosperity. Their finding is that there is no necessary trade-off between being economically competitive and being sustainable explaining that many countries at the top of the competitiveness ranking are also the best performers in terms of sustainability measures.

Some recent examples are confirming that trend. Investors are now looking at environmental performances of companies to assess market capitalization event if it is off the books. Environmental reports separated from the financial statements are being published indicating that a firm's environmental and social performance can enhance or diminish its assets.

Those actions and initiatives require long term thinking and public and private interests not always converge. While they share many interests, the private sector is also interested in establishing competitive advantages. Therefore, the parameters of a public-private partnership should define a value proposition for both stakeholders where they gain mutual benefit.





Conclusion:

We have seen throughout the paper that the level of uncertainty in environmental changes is high. If we do not react now to change the way we allocate our natural resources, the impact on our global economy has on the environment and the consequences will be severe. The world in which we will have to live with will be the remains of the Earth we once knew.

To tackle this we believe that we first needed to better understand how the climate change will affect our economy and we tried in that respect to list a number of factors that will have - to a certain degree - an impact.

Based on these factors - keeping in mind our goal to better understand how climate change will affect us to propose the better possible answer to it - we projected ourselves in various scenarios that would be created by the factors we described. The realization of each different scenario will depend on the intensity and predominance of the factors described. Then we realized that the scenarios were simplistic and that our future in 2030 will most certainly be a combination of several extreme scenarios which we explained. Those assumptions allowed us to understand that we needed to move from a short-term vision to a long-term one to tackle in a most effective way the "inevitable" Climate change.

Given the magnitude of the Climate change it is one mission that cannot be achieved by one single stakeholder. Large-scale solutions are beyond the capabilities of one company. A collaborative approach through partnerships that encompasses the three major stakeholders is key: Governments through effective environmental policies, companies through a renewed vision of business and development of technologies and the people/customers through a redefinition of their well-being and brand new respects towards Mother Earth. At the end of the day, human behaviour will shape the response towards climate change.



Sources:

- Climate Change and International Security, March 2008. 6 'A Climate of Conflict: The links between climate change, peace and war, International Alert, November 2007.
- Article Harvard Business Review ; Edition April 2014: The resilient company, how to drive in a warmer world.
- «Economic Growth and the Environment», Tim Everett, Malika Ishwara, Gian Paolo Ansaloni and Alex Rubin, Defra Evidence and Analysis series (Paper 2), Mars 2010.
- «Environmental and Globalization - Five Propositions», Adil Najam, David Runnalls and Mark Halle, International Institute for Sustainable Development, 2007.
- «Climate change and Energy Security - global challenges and implications», Chartered Insurance Institute, Century Future Risk series : Report 3, 2012.
- «How technology could make or break our World», Chartered Insurance Institute, Century Future Risk series : Report 4, 2012.
- «Une société post-croissance pour le 21ème siècle», Damien Demailly, Lucas Chancel, Henri Waisman and Céline Guivarch, IDDRI, www.iddri.org, in Nouvelle prospérité n°08/13 Novembre 2013.
- Secretary-General's remarks at Climate Leaders Summit, <http://www.un.org/sg/statements/index.asp?nid=7592>
- Climate change conference, United Nations, http://en.wikipedia.org/wiki/United_Nations_Climate_Change_Conference
- United Nations Development programme, http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/strategic_themes/climate_change.html Washington
- Green paper on Natural and Man-Made disasters, European Commission, DG Internal Market and Services http://ec.europa.eu/internal_market/insurance/consumer/natural
- 2030 framework for climate and energy policies, European commission, http://ec.europa.eu/clima/policies/2030/index_en.htm
- Environmental Liability Directive, European Commission, DG Environment, <http://ec.europa.eu/environment/legal/liability/index.htm>
- Global Risks 2014-Ninth Edition report, World Economic Forum, <http://www.weforum.org/reports/global-risks-2014-report> <http://reports.weforum.org/global-risks-2014/>
- An economic reality check, Tim Jackson, Ted talks, http://www.ted.com/talks/tim_jackson_s_economic_reality_check
- Interview Jean Marie Wauthier expert in environment 7 April 2014