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Hot topics Global warming and climate change



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Water, food, energy and the green economy

Global warming and other factors have resulted in a strong movement towards a sustainable or 'green' economy across all sectors of the world economy. The United Nations Environment Programme defines a green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. A green economy can be thought of as one which is low carbon, resource efficient and socially inclusive.

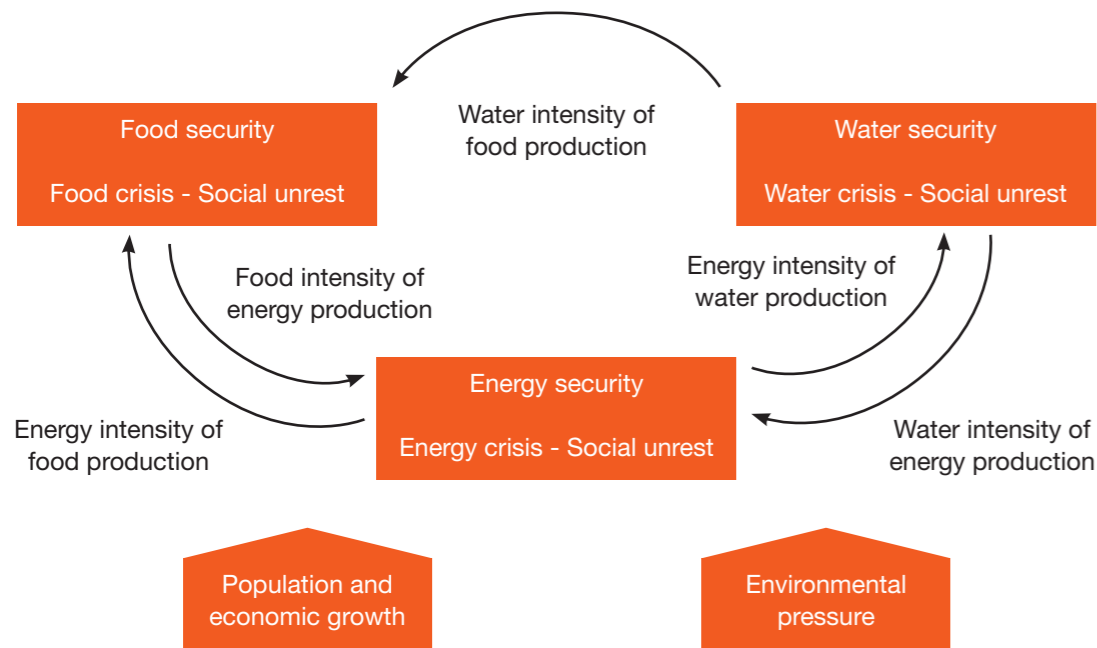
In a green economy, economic growth is based on sustainable development, with the current focus being on the following six main sectors:

- Clean transportation utilising alternative fuels, hybrid and electric vehicles;
 - Water management, including water demand management and conservation, water reclamation, purification and recycling such as industrial and domestic effluent (grey water);
 - Waste management, including recycling, municipal solid waste salvage, brownfield remediation and sustainable packaging; and
 - Land management, including organic agriculture, habitat conservation and restoration, urban forestry and parks, reforestation and afforestation and soil stabilisation.
- Renewable energy;
 - Green buildings, including green retrofits for energy and water efficiency;

The water-food-energy nexus

Climate change will inevitably impact almost every economic sector, but none more so than those reliant on increasing water and energy resource utilisation. The interlinked and complex relationship between water, food and energy is depicted below:

The water-food-energy nexus



Source: World Economic Forum (adapted)

Water, energy and food are inextricably linked

Both water and energy are essential to every aspect of life – social equity, ecosystem integrity and economic sustainability. Water is used to generate energy, and energy is used to provide water. Both water and energy are used to produce crops and crops can in turn be used to generate energy through biofuels.

Global water, energy and food demand are increasing

Water, energy and food demand varies proportionately to changes in income and lifestyle (socio-economic development). At low income levels, energy and water are used for basic needs such as drinking, cooking and heating, and in rural areas also for watering vegetable gardens. But as income increases, people use more energy and water to meet their new lifestyle and dietary needs. In an increasing spiral, growing demand for more energy drives demand for more water, and demand for water drives demand for more energy, while demand for more food drives demand both for more water and energy.

Based on this spiral of cause and effect, the following increases in demand are projected for the year 2030:

- Food: 50% (UN Food and Agriculture Organisation);
- Energy: 40% (International Energy Agency); and
- Water: 30-40% (International Food Policy Research Institute).

Business, in cooperation with civil society, needs to continue to improve its water conservation and efficiency, as well as its energy and food production efficiency to enable sustainable growth.

The dynamic interaction between society and its energy needs, as well as the constraints of nature, specifically the quantity and quality of water resources, has resulted in the relationship between energy and water use getting more attention from policymakers. Worldwide, they must grapple with measures to transition from heavy dependence on fossil fuels and to aggressively address global climate change by capping carbon emissions.

Climate change and water

In its report on climate change and water, the UN's Intergovernmental Panel on Climate Change (IPCC) describes climate change as an 'additional burden' to providing water services. This would appear to be a gross understatement in relation to the accompanying catalogue of potential impacts, which range from 'salinisation of coastal aquifers' to 'different kinds of pollutants' introduced by floods. The IPCC report recognises that developing countries cannot possibly afford expensive adaptation strategies and may have to resort to 'unsustainable practices such as increasing groundwater over-exploitation'.

Climate change could fundamentally alter the delicate ecology of the water cycle, with devastating impact on freshwater dependence. Climate change will most likely:

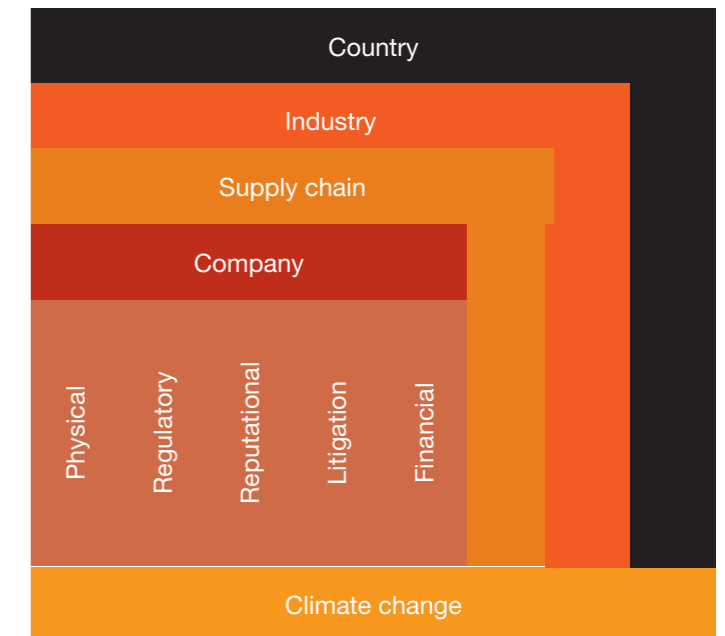
- Increase water demand for agriculture due to prolonged dry periods and severe drought;
- Increase water demand for hydration needs for billions of farm animals due to higher atmospheric temperatures;
- Increase quantities of water needed for industrial cooling due to increased atmospheric and water temperatures;
- Contaminate coastal surface and groundwater resources due to rising sea levels, resulting in saltwater intrusion into rivers, deltas and aquifers;
- Increase water temperatures, leading to more algal and bacterial blooms that will further contaminate water supplies;
- Increase extreme precipitation and flooding, which will increase erosion rates and wash soil-based pollutants and toxins into waterways; and
- Contribute to environmental health risks associated with water – for instance, changes in precipitation patterns are likely to increase flooding, and as a result mobilise more pathogens and contaminants.

Adaptation and mitigation strategies

Climate change will have an effect on all spheres of life. Businesses across all industries will face various new risks and constraints due to these effects, necessitating organisations to adopt a new type of risk matrix as well as innovative adaptation and mitigation strategies.

In a recent global PwC survey on climate change, Appetite for change: Global business perspectives on tax and regulations for a low carbon economy, the majority of businesses that participated in the survey indicated that:

- Government action on climate change will increase the importance of regulatory compliance, reputation management and stakeholder relations;
- Corporate climate change strategies will affect operations, key performance indicators and innovations around new products and services; and
- A growing number of businesses are developing strategies to manage the uncertainty surrounding climate change, but they remain hopeful that government and business can work together to create consistent policies that will halt global warming.



http://www.pwc.co.uk/eng/publications/appetite_for_change_publication.html

In order to adapt to climate change and the demands of a green economy, businesses will have to mitigate the risks associated to climate change. These risk mitigation strategies will not only have to deal with the physical attributes of climate change, but will also have to comply with green economy regulations that include aspects such as meaningful emission targets, carbon and environmental taxes, investment and other incentives, as well as the formulation of direction, policies and regulations.

