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UBS research focus

Summary

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Climate change: beyond whether

The world warmed roughly 0.7 °C during the 20th century and is now warming at a rate of about 0.2 °C per decade (see Fig. 1). Scientists are now virtually certain that human-induced greenhouse gas emissions are primarily responsible for these higher average global surface temperatures (see Fig. 2), as well as for the follow-on effects of rising sea levels, melting glaciers, and thinning ice and snow cover.

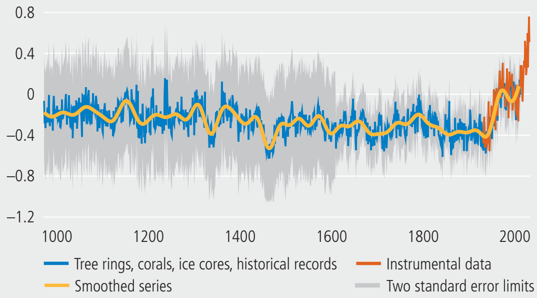
Climate change experts are converging on a consensus that a temperature change of more than 2–3 °C relative to pre-industrial levels will all but ensure irreversible and severe climate change events, such as widespread flooding and loss of habitat. Greenhouse gas emissions are projected to increase steadily during the next quarter century, but would need to decline sharply in order to stabilize atmospheric greenhouse gas concentrations and avoid the more severe outcomes of climate change forecasts.

Ultimately, the risks of climate change are tied to the world's approach to energy use. Burning of fossil fuels is the primary contributor to the increase in atmospheric greenhouse gas concentrations. Energy consumption is projected to increase by more than 50% during the next quarter century, largely because of population growth and economic growth in developing countries. Renewable energy sources, as well as the use of nuclear power, can help to slow the growth in energy-related greenhouse gas emissions. However, emissions will continue to move higher without simultaneous gains in energy efficiency and reduced consumption of fossil fuels.

The impact of climate change will go far beyond simple changes to the weather; and the issue is no longer a question of whether. Although technological solutions to lower emissions are available, global policies to create incentives to reduce emissions where the ability is highest are virtually nonexistent. In our view, the policy framework for combating climate change will both broaden and deepen, but will likely fail to bring about an outright reduction in greenhouse gas emissions. Specifically, we expect the following:

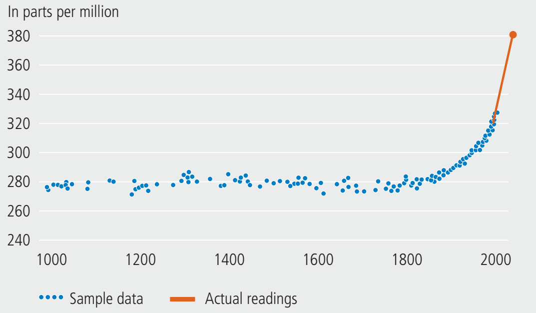
- increased demand for private modes of transportation and energy-using consumer products, but slow growth in the most fuel-efficient options;
- a slower rate of adoption and implementation of available energy-efficiency technologies than is necessary to stabilize and reduce emissions, such as in building and energy delivery;
- limited emission reduction opportunities in primary materials production, such as cement and steel; and
- limited infrastructure enhancements, such as greater availability of inter-modal transport and a more decentralized energy delivery architecture.

Fig. 1: Variations in the earth's surface temperature



Source: Intergovernmental Panel on Climate Change

Fig. 2: Global atmospheric carbon dioxide concentrations



Source: Intergovernmental Panel on Climate Change

UBS Wealth Management

Even though policies to slow the growth of greenhouse gas emissions will likely be insufficient to stabilize atmospheric concentrations, heightened attention on climate change will produce serious ramifications for the world's business and investment climate. Therefore, we provide a blueprint for thinking about the risks and opportunities.

The risk of climate change on companies and industries includes heightened regulation, increased impairment of physical property, loss of revenues, and erosion of reputation (see Fig. 3). Sectors with direct greenhouse gas emissions from large point sources bear the highest regulatory risks; however, effective climate change policies may also need to target the sectors with high indirect emissions and high ability to adapt.

The opportunities related to climate change mitigation fall into two broad categories: products and processes that deliver improved energy efficiency, and development of renewable/low-carbon energy sources (see Fig. 4). The more incentives that emerge to encourage people to limit greenhouse gas emissions, the greater the outlook for investment opportunities related to climate change mitigation. In our view, it is the prospect of individual behavior proliferating on a large scale, combined with more stringent regulation of greenhouse gas emissions, which makes the opportunities related to climate change mitigation a compelling investment case.

Fig. 3: Risks related to climate change

Regulatory risk from high direct emissions	Aluminum	Cement	Chemicals
	Oil and gas	Power utilities	Steel
Regulatory risk from high indirect emissions	Automotive	Aviation	Buildings
	Electronic equipment	Oil and gas	
Physical and operational exposure	Agriculture & fisheries	Forestry	Insurance
	Real estate	Tourism	Water utilities

Source: UBS

Fig. 4: Opportunities related to climate change

Renewable energy sources	Biofuels	Geothermal	Hydro
	Photovoltaic	Solar thermal	Wind
Energy efficiency processes and products	Combined heat and power	Automotive drive trains (hybrid, fuel cell)	Energy efficient appliances
	Heating, ventilation and cooling	Lighting	Lightweighting
	Traffic infra-structure technology	Thermal insulation	White biotechnology

Source: UBS