Geopolitical IMPACT

UNITED STATES

The strong tech sector makes the US well positioned for the clean energy transition. However, the country will also be hit hard by physical impacts. Loss of snow on the western mountains may exacerbate severe water shortages and wildfires in California. A rise in extreme storms threatens Florida and the entire Chesapeake Bay area. Combined with rising sea levels, these may lead providers to stop insuring homes in the most affected regions, resulting in Dust Bowl-like migrations away from afflicted states.

PHOTOGRAPH: KEVIN VANDIVIER

CLIMATE CHANGE IS REDRAWING THE MAP, not just of the physical world, but the political and economic. Every square inch of the globe faces jeopardy, but look at key risks to particular areas and their likely outcomes can give a glimpse into the extent of the threat. • As the tundra melts, Russia stands to become the most fertile country on the planet, even as Southern Europe is set to lose arable land due to extreme heat. The rising frequency of extreme storms, fueled by warmer oceans and accompanied by dangerous sea-level rise, could make homes on the US East Coast uninsurable. The unpredictable weather patterns of Africa's Lake Chad are putting the 30 million people who depend on its water at risk. • Mass migrations from any of these outcomes are likely to strain the resources of neighboring communities and nations. Meanwhile the transition to renewable energy sources will shift the balance of global energy trade. And all of it together means a very different geopolitical world is on the horizon.

Let's take stock of the risks by region.

RUSSIA'S economy is driven by fossil fuel exports, making a significant transition to renewables difficult. But the physical impacts could also transform the vast, frigid tundra into the world's largest expanse of arable land, critical for a food-stressed world. Already, President Vladimir Putin has made expansion of infrastructure investment in the Arctic a priority; the possibility of new navigable trade routes could add momentum.

INDIA has ambitious transition targets, particularly for wind energy. However, climate change will melt glaciers that feed the Indus, Ganges, Mekong and Yangtze rivers. At first, summer flooding will increase, but late in the 2040s, the major rivers systems will collapse, creating a risk of widespread famine and population displacement, which may threaten the political stability in the region and inflame longstanding tensions.

MIDDLE EAST countries have in place economic transition strategies to move away from their dependence on fossil fuel exports. But the region is already living off a critically low 1,000 cubic meters of fresh water per person per year. River depletion will make traditional farming and grazing next to impossible. The future will depend upon large-scale desalination technologies and the affordable energy to power them.

CHINA has invested heavily in renewables and next-gen nuclear power. However, its river systems will become severely depleted as ice on the Tibetan Plateau and Tanggula Mountains melts. The northern summer monsoons may disappear, and agricultural productivity fall. Heavily populated coastal cities will be affected by sea-level rise and mass internal migration could result.

EUROPE'S solar and wind development will benefit most of its economies, and climate change may benefit agricultural productivity in Nordic countries. But vast stretches of arable land in Southern Europe may be lost to extreme heat. Even with an expected decline in Europe's population, food security and food prices will become a political issue. Rising sea levels may cause populations to retreat from the northern coasts.

CENTRAL AFRICA'S high solar potential may allow a level of energy independence. However, the livelihood of the residents of Lake Chad, a source of water to more than 30 million people, is at risk as unpredictable and severe weather conditions are making the area unliveable. Similar impacts in many parts of Africa could lead to an increase in political instability and conflict, as well as mass migrations across the continent and into Europe.

PHOTOGRAPHS: FLAVIO VELOSO, SEPPFRIEDHUBER, FRANCKREPORTER, YIN WENJIE, THIERRY RANNOU/GAMMA-RAPHO, GERALDINE HOPE GHELLI/BLOOMBERG, ALL VIA GETTY IMAGES

VIEWS on the politics of climate change from Brunswick's Geopolitical Team

The Brunswick 5

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PASCAL LAMY
Brunswick's Chair of Europe, Former Director-General of the World Trade Organization

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ANTHONY GARDNER
Brunswick Senior Advisor, Former US Ambassador to the European Union in the Obama administration.

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Shifting POWER Balance in a Low-Carbon World

PASCAL LAMY, Brunswick's Chair of Europe and former Director-General of the World Trade Organization, on the global energy dynamics.

For more than a century, the need for energy security has defined geopolitical relations, and the production and trade of fossil fuels has become deeply woven into the fabric of the global economy. The energy sources that power our modern world are undergoing a period of rapid change, and a transition is taking place—away from fossil fuels and toward renewables. As this transition accelerates, it will have significant geopolitical implications. • Ensuring a secure supply of energy is a strategic priority for every country. Not only is energy required for a country's industrial development and economic growth, it underpins the smooth running of national life. Serious disruptions to energy supply have negative economic impacts and can undermine social and political stability. Consequently, energy policy is a matter of national security, and it is fully integrated into foreign policy in most countries. • The global balance of power between nations and regions has therefore been largely, if not only, shaped by energy. The logic is straightforward: Countries that are able to export

PHOTOGRAPH: MIGUEL NAVARRO/GETTY IMAGES

energy resources in the form of fossil fuels have "supplier power"; countries which import those resources have "buyer power"; and countries with control over the transit routes of those resources have an important intermediary power. Much of modern global history can be described as the interplay of these powers.

The transition to renewable energy sources will therefore have major geopolitical impacts. Renewable energy is now the fastest growing source of energy and will become the largest source of power by 2040, according to the BP Statistical Review. To examine the implications of this, the Global Commission on the Geopolitics of Energy Transformation has been established, and I am pleased to be one of its commissioners. Renewables have a couple of key characteristics that are very distinctive and will change the role of energy in international relations.

First, a key characteristic of fossil fuels is that they are concentrated in specific geographic locations and these locations are unevenly distributed across national boundaries. Renewables, on the other hand, are much more evenly distributed. Most countries have either sun or wind (see the maps at right). In theory, this has the potential to equalize the supply of energy, enabling every country the prospect of energy independence.

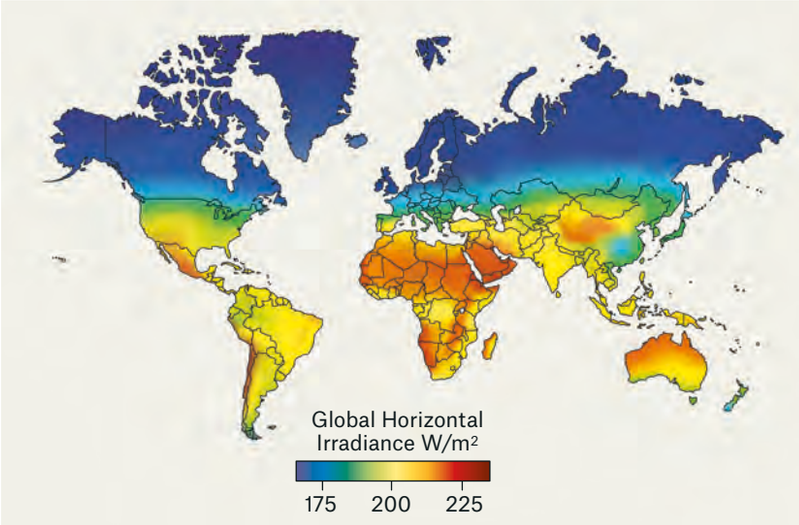
In practice, realizing this potential will require substantial investment. Current patterns suggest that emerging markets may leapfrog developed fossil fuel-based economies: The "Big 3" emerging economies – China, India and Brazil – account for 63 percent of renewable energy investment, and China significantly outstrips all others (see the chart at right).

A second characteristic of fossil fuels is that they are stocks, whereas renewables are flows. Oil, coal and gas have a physical mass that exists at a specific location: They must be sourced, transported and stored. Once used, they are exhausted. Renewables are, as the name suggests, inexhaustible. Thus energy supply is likely to become less easily disrupted and vulnerable to "chokepoints," and the global energy economy will be less susceptible to the volatility caused by oil prices and currency fluctuations.

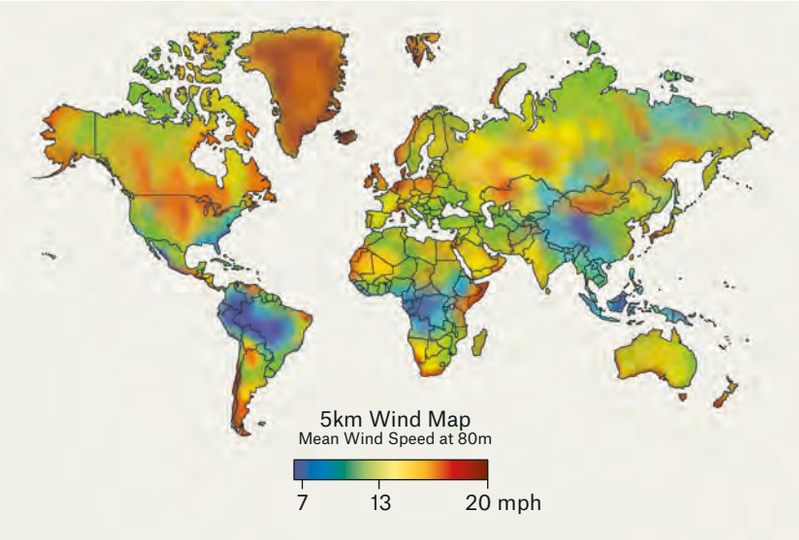
Most countries that depend heavily on the export of fossil fuels are already pursuing strategies to diversify their economies, and many countries that are net importers are already investing in renewables. Instead of competing to secure supplies of fossil fuel resources, nations will find that competitive advantage will come from efficiency in capturing, storing and distributing energy from renewable sources. This contest may redraw the geopolitical map.

World SOLAR Potential

Fossil fuels are unevenly distributed geographically. However, the two maps below show that renewable energy potential is spread across the globe.



World WIND Potential



Renewable Energy INVESTMENTS in 2017

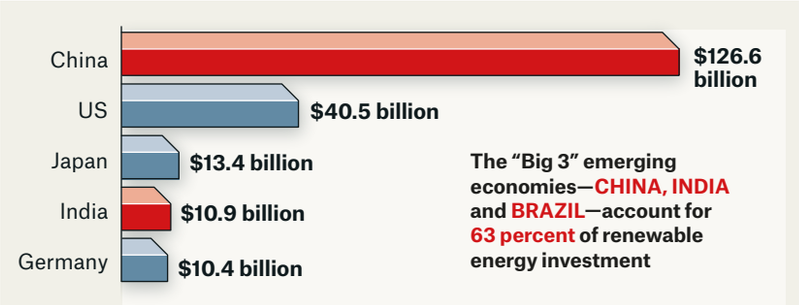


CHART AND MAPS: PETER HOEY

Public pressure and scientific reality will force governments to impose climate regulations, says Brunswick's **ANTHONY GARDNER.**

The Inevitable POLICY Response

ILLUSTRATION: MATT DORFMAN

Currently, government action on climate change is not sufficient to alter the trajectory of global temperature increases (see "The Data"on Page 9). Yet both scientific evidence and overwhelming public opinion demand effective solutions, forcing governments and regulatory bodies into action. Much more decisive action is needed to keep the global average temperature rise close to 2°C, let alone achieve the Paris Agreement ambition of "well below" 2°C.

Already, there are signs that a more robust regulatory policy response to climate change is likely. When it happens, it will force companies to completely rethink their energy use, as well as the "carbon content" of their products and services.

The European Union will be leading the way. The EU is moving toward more ambitious 2030 targets for emissions reduction. The incoming European Commission wants to introduce a kind of WTO-compliant "carbon tariff" on merchandise imported from countries that are not meeting their climate change obligations. It will seek to invest €1 trillion in green technologies over the next seven years and to extend the EU's Emissions Trading System to cover the maritime sector and to reduce the free allowances allocated to airlines over time.

Moreover, it will enshrine into law a commitment to achieve net zero carbon emissions target by 2050 and to establish rules of global application to determine when banks and funds can claim to launch "green" products or investments. EU Finance Ministers have announced that the bloc's multi-billion-euro financing of fossil fuel projects should be phased out.

Meanwhile in Osaka, the G20 struck a deal that steps toward a net-zero commitment. "Climate change will determine the destiny of mankind, so it is imperative that our generation makes the right choices," said Chinese Foreign Minister Wang Yi.

Political progress will of course not be easy. The G20 agreement itself is described as a "19+1" deal, since the US has reiterated its decision to withdraw from the Paris Agreement. In Europe, the

Czech Republic, Hungary and Poland are resisting more ambitious targets.

Overcoming these barriers will be tough—but many are convinced that it's only a matter of time. Even in the US, where the Trump administration has withdrawn from the Paris Agreement and is rolling back key regulations designed to limit the use of fossil fuels, many major cities and states are taking steps on their own, determined to move ahead. Importantly, that includes California, which ranks as the fifth largest economy in the world.

The Principles for Responsible Investment, an investor initiative associated with the United Nations, speaks about the "inevitable policy response" and estimates that the peak of regulatory action will come around 2023 to 2025—when the Paris Agreement's "ratchet mechanism" really kicks in, starting with the "global stocktake" in 2023 and a third round of climate pledges in 2025.

Some likely areas of regulatory action are becoming clear:

CARBON PRICING: Emissions trading schemes or carbon taxes are in place in 40 countries, and border tariffs on the carbon content of merchandise are being discussed.

CARS: The Netherlands has banned the sale of new internal combustion engine cars by 2030; several other countries and a number of major cities have announced similar plans. Some countries are scaling up subsidies and regulatory support for electric vehicles.

ENERGY EFFICIENCY: Minimum energy efficiency standards already exist for private and commercial buildings, as well as manufactured goods, and these may increase.

ENERGY POLICY: Public funding, subsidies and tax incentives for zero-carbon power will grow, including for renewables, nuclear and bioenergy production.

COAL: The UK is already on track to phase out coal power generation by 2025, and other countries are likely to follow suit.

BIOSEQUESTRATION: Carbon capture efforts through natural land-based solutions such as reforestation are set to expand.

These policy actions will have major implications for businesses across sectors and stakeholder groups. Investors will inevitably re-evaluate asset allocation in light of these expected policy shifts and engage with investee companies on their plans to mitigate losses and exploit new opportunities. ◆

ANTHONY GARDNER, a Brunswick Senior Advisor and a former US Ambassador to the European Union in the Obama administration, is based in Brussels.

Opportunities in the Policy Portfolio Model

By Brunswick Geopolitical Principal **ROBERT B. ZOELLICK**, former President of the World Bank and former head of US climate policy negotiations.

THE RIO CLIMATE CHANGE FRAMEWORK TREATY of 1992 designed a global approach built upon national action plans. This encouraged specific steps and the tracking of results, which nation states review at periodic United Nations Framework Convention on Climate Change conferences. These reviews update scientific assessments and analyses of the combined effects of the nations' plans.

In essence, the Rio approach combines local and national customized initiatives—commitments with worldwide evaluations based upon ongoing scientific input. The process builds in feedback loops. This model encourages a menu of diverse policy responses, through which countries, cities, companies and civil society groups can innovate, experiment, combine, act and evaluate.

This policy portfolio model includes tools that address both sources and sinks of carbon dioxide and other greenhouse gases, and energy conservation and efficiency, especially in transmission lines; forestation and avoided deforestation (including biodiversity practices); soil carbon that could enrich agriculture; resilience and adaptation measures; carbon pricing and markets; non-carbon energy sources; technology innovation and diffusion for countries at various stages of development; and financial support, including from multilateral financial institutions as well as the private sector.

Both public and private sectors can benefit from learning about the full mix of these climate-carbon options and recognizing how they might best plug in. ◆

PHOTOGRAPH: FLAVIO VELOSO/GETTY IMAGES. ILLUSTRATION: BRIAN STAUFFER

TRADE Can Catalyze Climate Action

Trade and climate talks need to come together, argues Brunswick's KATE FALL.

Many of those who lead the charge to put climate change front and foremost of global politics are among the first to critique globalization, seeing the two as competing goals. But they may be mistaken—dangerously so.

The world knows no boundaries when it comes to huge global issues like climate change but also other critical issues such as the decline in biodiversity, cybercrime, the threat of pandemics and the rise of antibiotic resistant superbugs. It's a sobering list. All this requires global political will. In other words, if we're going to solve these problems, we need the world to come together as an international community, not fragment into competing economic blocs.

Hence the power of trade. Relationships driven by trade promote peace, prosperity and trust, all of which helps underpin international collaboration. The view that there is a trade-off between economic growth through trade and progress on climate change is becoming outdated: for example, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership contains provisions on carbon emissions and cooperation on energy efficiency. But we need to do more to bring the two together.

The frustration, however, is that trade and climate change talks operate on parallel tracks.

For example, the delegates to the United Nations Convention on Climate Change annual meetings tend to come from foreign ministries and departments dealing with energy and environment; whereas trade negotiations are led by ministries of finance, trade, infrastructure, development and technology.

Finding ways to bring together these parallel conversations may help to spur on global action on climate change. For examples, tariffs deployed against those countries that are not reducing emissions; or a border-adjustment tax based on the carbon content of imported merchandise; or other measures like reduction of tariffs on "green goods," such as clean energy technologies. And, perhaps most significantly of all, the linkages between trade and fossil fuels subsidies could be re-examined.

We have seen how the global trade system can aid international cooperation on issues such as poverty alleviation and stimulating growth in developing economies. Now, a conversation needs to begin about how to integrate the economics of trade and development with the economics of climate change. The more that businesses step up to the plate, as drivers of innovation and change, the more we can harness their creativity as part of the solution to climate change. ◆

KATE FALL is a Brunswick Partner. She is a member of the House of Lords and a former Deputy Chief of Staff to UK Prime Minister David Cameron.

The CLIMATE LEADERS of the FUTURE

FEW PEOPLE WOULD NAME MARGARET THATCHER as one of history's green heroes but, in the late '80s, the British Prime Minister helped put climate change on the global agenda. In a speech to the UN General Assembly, she set out emerging evidence on "global warming," saying: "It is mankind and his activities that are changing the environment of our planet in damaging and dangerous ways."

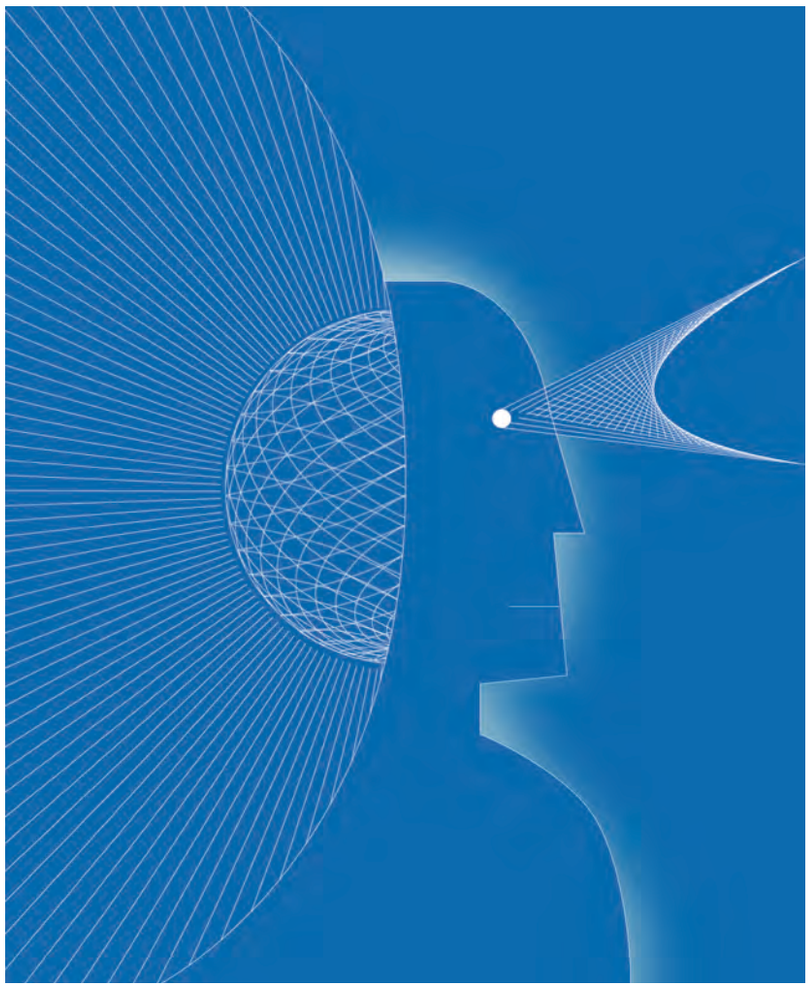
More than half of all industrial CO2 emissions have occurred in the three decades since then. The speech's themes, which I helped draft in my role as the Prime Minister's Private Secretary, are more relevant than ever. "The environmental challenge that confronts the whole world demands an equivalent response from the whole world," she said. "Every country will be affected and no one can opt out."

That speech is a stark reminder of the importance of leadership. To many, it doesn't look as though today's politicians are confronting climate change with the seriousness it requires, leaving leadership to come from some unconventional constituencies—three, in particular: cities, citizens and corporations.

First, cities. They are the lifeblood of the global economy, generating more than 80 percent of global GDP. They use around two-thirds of generated energy and produce 70 percent of the world's carbon emissions. And they are on the frontline of climate impacts: Many of the world's largest cities are susceptible to coastal flooding and to extreme heat.

In the US, over 400 municipalities signed on to the Climate Mayors' initiative, following President Trump's decision to withdraw from the Paris agreement. Global networks are also forming, such as the C40 or the Global Covenant of Mayors, aimed at lowering emissions and building resilience to impacts.

Second, citizens. As the costs of renewable energy generation continue to fall, consumers of electricity can become producers—either for their own use or to sell on through the grid. Hundreds of millions of micro-producers could generate energy and share it peer-to-peer, without the need for traditional energy utilities. In regions of the world without power supply, distributed renewables are a potential solution. In developed economies, the domestic renewables market is fragmented and a coherent consumer proposition is yet to emerge, but there are indications that consumer uptake will be strong. In Germany, a 2016 study showed that private citizens owned 31.5 percent of installed renewable power capacity. Continued innovation in technology and markets will give citizens a leading role in the energy transition.



Cities, citizens and corporations are stepping into a climate leadership void, says Brunswick Geopolitical Principal **LORD CHARLES POWELL**, former Private Secretary and Advisor to two UK prime ministers.

Third, corporates. In her speech, Thatcher criticized "the simplistic tendency" to blame big business for global warming: "Far from being the villains, it is on them that we rely to do the research and find the solutions," she said. Corporate leadership on climate change must go beyond the reduction of a company's own emissions to help enable policy and provide space for politicians to make tough decisions.

Leadership from these parts of society might help us meet the challenge laid down by Margaret Thatcher over 30 years ago. As she told the UN—sounding as much like an Extinction Rebellion activist as a world leader: "It is life itself—human life, the innumerable species of our planet—that we wantonly destroy. It is life itself that we must battle to preserve." ◆

ILLUSTRATION: JOHN HERSEY