

# Energy in Flux

## What the Shifting Dynamics of Energy Mean for the International Community

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Tectonic forces are roiling global energy markets. China and India have emerged simultaneously both as mighty consumers and shrewd market players – they represent the new factor of ‘might and market’ in global energy. Russia, meanwhile, is leading a wave of natural-resource nationalism, while asserting itself politically by leveraging its formidable market presence.

The critical mass of human capital is also migrating: as Western expertise ages and fades, the former Soviet states and Asia are filling the gap. For the wide variety of technologies ranging from crude oil to nuclear power to fuel cells, the centres of technology, application, know-how, and human capital are progressively developing outside the West.

But perhaps the most important change is transpiring almost without notice. The *geography* of energy is undergoing a radical shift. Whereas Saudi Arabia remains at the heart of production, the centre of gravity has already begun to stretch north and east – the Saudi-Caspian-Siberia-Canada (SCSC) axis will drive the ‘energy of geopolitics’ in the twenty-first century. The relative importance of oil and gas is also undergoing a quiet revolution: the old ‘oil game’ is becoming an ‘oil and gas game’, and will become more of a ‘gas and oil game’ before the next energy paradigm shift occurs.

In the midst of all these structural changes, the spike in energy prices over the past two years could catalyse a new era of market-driven innovation in alternative energy, conservation, sustainable development, and international cooperation. More than a generation has been lost during which the pursuit of these ideas has not been aggressive enough; we cannot afford to lose another.

Two generations of talent and technology are needed to wean the global economy from oil, gas, and coal. One way or another, alternative and renewable sources eventually will come to reign. The question is whether fossil fuels can be expended wisely as a bridge to this emergent world, or whether the transition will be a tumultuous one – making us nostalgic for the good old days of \$60 oil.

If this opportunity slips away, the consequences could be dire. In the 1970s, the Arab oil embargo subverted price stability and sunk economic growth. That was bad enough. Now, however, by not heeding the hidden messages of \$60+ oil, we place in jeopardy far more than economic growth: global political harmony, the environment, the possibility of catastrophic climate change, and the promise of sustainable development all lie in the balance together – *at the same time*. And our collective ability to meet the basic needs of all the world’s people is at stake.

Complicating the prospects for international energy cooperation are the conflicting perspectives of the major powers on the democratic movement. How far will the push toward democracy, free trade, and globalisation progress given the aggressive competition for energy supplies that lies ahead? China and Russia have cast a wary eye on Wash-

ington’s evangelical pro-democracy agenda. Meanwhile, the concentration of ‘democracy projects’ along the SCSC axis – from the Middle East through Central Asia – hides the potential for more danger. Nor have the now ‘traditional’ troubles in Arabia and Persia gone away: the Iranian nuclear threat, a de facto civil war in Iraq, the darkening shadow of extreme fundamentalism. And if all this were not sufficiently worrisome, Latin America, too, is in the grips of renewed nationalism and local activism.

The overriding challenge going forward is captured by a vastly expanded definition of ‘energy security’. No longer does this simply mean security of supply. Energy security goes beyond this to encompass security in the political, environmental, infrastructure, and even terrorism senses, as well as the new concerns of sustainable development and climate change.

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In the race to arrive at this new energy era with the urgency demanded by the challenges we face – political, environmental, economic, and even social – the West is lagging behind other players who are proactively shaping the twenty-first century energy picture: China and India are roaming the world to secure resources; Japan is the standard-bearer of applying new energy technologies; and nuclear programmes are blossoming on several continents. Meanwhile, the Kyoto Protocol has keyed innovation in smart technologies, solar power, wind turbines, clean coal, biofuel, and other energy frontiers. Distributed energy solutions might soon reach the far corners of the earth, empowering local communities and finally delivering essential services to the billions living on just a few dollars a day.

Certainly Europe – with its emphasis on conservation, carbon trading, and relatively ambitious targets for new and renewable energy sourcing – is more forward-leaning than the United States. However, both need to embark on a far more ambitious course in a race against time: Their meandering stroll towards the new energy era must become a purposeful marathon.

For the world to arrive at this new era the USA and Europe will have to take the lead together in each going further than they have today. At the moment, mostly lip service is being paid to reshaping energy demand through regulation and conservation, and spurring innovation in supply by offering incentives to the market. In the USA, meanwhile, a dozen states are the vanguard of creative policymaking; but rather than being a boon, this tangle of energy regulations has complicated corporate investment and development. Without delay, Washington needs to establish the ‘authorising force’ to define a brave new world of energy innovation.

A similar patchwork quality is evident in the European Union, which needs to provide a better energy framework

in which each country can develop its own solutions. At the moment, Member States pursue individual strategies to secure the resources they need, but fail to leverage the Union's full market power. The European picture is further muddled by the divergent political postures that EU Member States have toward Russia, the continent's dominant supplier of natural gas. Nonetheless, several areas of real progress exist: Europe, for instance, has provided market pull to make it more likely that solar and wind will have a long-term future; it is at the vanguard of nuclear technology; and it is committed to implementing innovative market solutions such as carbon trading.

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Any effective solution in both the United States and Europe will have to push on the supply side while pulling from the demand side. For too long in the USA, new energy technologies and calls for increased efficiency have been dismissed as having too little potential, requiring too much time to implement, and costing too much. In effect, we were 'pushing on a string'.

To create the needed realignment, consensus must first be forged that new technologies are needed – not just in the developing world, but also in the wealthiest of countries. In addition, nations must acknowledge that tensions exist

amongst them; they must then create some form of international cooperation around these crucial issues and establish the policies necessary to 'pull on the string' and move forward. The question Washington and the world's capitals should be asking is: What can we do to lessen the world's dependence on hydrocarbons while striving to realise these transformations?

On the new energy playing field, policy will set the boundaries, regulation will create the rules, government authorities will serve as the referees, and the market will determine prices, as well as the winners and losers in the game. In other words, we must allow a game to develop in which the markets will have the maximum play to determine which technologies succeed. The playing field must be set up in a way that allows carbon pricing to be a market force, thereby working toward carbon limitation and stabilisation. And a fundamental dynamic in all this is that while the rules will change over time, it is essential to forge agreement among the referees and the players regarding the game itself.

Put simply, failure to act will place both the developed and developing world at great risk of serious economic, political, environmental, and social crises as conventional energy supplies become more scarce and competition for them turns fierce. The world cannot afford to wait another thirty years.

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## US Environmental Policy in states vs. the States

### David Fridley describes California's 'Global Warming Solutions Act' of 2006

On 27 September 2006, California Governor Arnold Schwarzenegger signed into law the first binding programme limiting greenhouse gas emissions in the United States. The law – Assembly Bill (AB) 32 – grew out of a multi-year effort of legislators, environmental groups, state businesses and the environmental justice community and establishes a framework for the creation of a comprehensive programme to limit state emissions of greenhouse gases across all sectors of the economy. The goal of the programme is to limit emissions in 2020 to the level they were in 1990, or about a 25 percent reduction from current levels. In this law, 'greenhouse gases' are defined to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons,

perfluorocarbons, and sulphur hexafluoride, the same six gases as defined in the Kyoto Protocol.

Implementation will take place over several years through several stages, with full implementation starting in 2012. Detailed rule-making for the law will be the responsibility of the California Air Resources Board (CARB). Starting in 2006, AB32 set 31 December as the cut-off date for companies voluntarily reporting their emissions to the California Climate Action Registry to be grandfathered under that programme, making them exempt from any future substantial changes to their emissions reduction programmes as a result of new regulations from CARB. In addition, participating companies will get credit for their 'early action' under the Registry programme when specific emissions targets are set.

In 2007, CARB will publish a list of 'early action' measures for the reduction of greenhouse gases that can be implemented before 2010. These measures in turn will be formalised

into regulations by 2010 and become enforceable on 1 January of that year. CARB is also required to incorporate the reporting standards protocols of the Climate Action Registry to the extent feasible and to issue their own set at the beginning of 2008. At the same time, the Board is required to report the level of emissions in 1990 and to approve it as the formal 2020 target.

By 1 January 2009, CARB is directed to develop a statewide 'scoping plan' indicating the maximum amount of emissions reductions that are technologically and economically feasible from specific sources or types of sources. This process will involve consultation with all other agencies with authority over greenhouse gas emissions (such as the Public Utilities Commission), public hearings, along with calculation of economic and non-economic costs and benefits from various measures. AB32 also establishes an Environmental Justice Advisory Committee and Economic and Technology Advancement