

ENERGY

by Paul J. Scalise

Rethinking Hatoyama's Energy Policy

Out of gas

Paul J. Scalise is a former Tokyo-based energy consultant and equity analyst, and current adjunct fellow at the Institute of Contemporary Asian Studies, Temple University, Japan Campus. His doctoral dissertation at the University of Oxford on Japan's electric power deregulation is being revised for publication by an academic press.

Seven months ago, Japan's newly elected Prime Minister Yukio Hatoyama stood before the United Nations (UN) Summit on Climate Change in New York to pledge a 25% reduction in greenhouse gas (GHG) emissions by 2020 from 1990 levels and 32% below 2008 levels. In so doing, Hatoyama's pledge surpassed the Liberal Democratic Party's (LDP) conservative 8% reduction target (see figure on pg. 10).

While the UN Secretary-General and environmentalists applauded the pledge, many in the Japanese business community, bureaucracy and third-world leadership expressed reservations about the new target, labeling it "preposterous," "unfair" to the business community, and even a heavy financial burden for the developing world to bear if they were asked to follow suit.

The successes and failures of Japan's national energy policy throughout the post-war era lead us to ask the obvious question: Should it be taken seriously? Assuming a 1.5% rate of GDP growth between now and 2020, achieving the target would mean 40% less emissions for each yen of GDP.

The two views

The optimistic view considers the "Hatoyama Initiative" to be part of a much larger "revolution" in government-electorate relations in Japan; one in which the landslide victory of the Democratic Party of Japan (DPJ) in the August 2009 election reflected a mandate to realize long-term radical change in the decision-making, transparency, and ability to tackle meaningful reform.

The more pessimistic view places the pledge in line with short-term shifts in public opinion: symbolism over substance. In polls these days, fewer respondents prioritize lower energy prices and deregulatory

action over increased emphasis on renewable energy development, energy security and reduced GHG emissions. Consequently, Hatoyama's rhetoric is designed to capture short-term political gain with little long-term accountability. Hatoyama will certainly not be the premier in 2020, and no one knows what parties will be in power by that time. Creating practical blueprints to achieve the Hatoyama Cabinet's long-term goals would be unnecessary, in this view.

Where one chooses to side on this question depends on one's reading of Japan's energy development record and how decisions are made. To be sure, a consensus-based approach already permeates the process—one in which the Ministry of Economy, Trade and Industry (METI) and Ministry of the Environment (MOE) attempt to harmonize the competing interests of consumers, suppliers, and politicians. The key for a successful reduction in GHG emissions, however, will be minimizing uncertainty while looking abroad for workable "roadmaps" to success—not an easy task.

A bit of history

Because Japan lacks indigenous fossil fuels such as oil, coal, and natural gas, it has long felt itself vulnerable on the energy front. Long before the rise of the DPJ, METI (then MITI) intervened under the banner of the three "E"s: energy security, environmental protection, and economic growth. With 98% of its oil imported (and 87% from the politically volatile Middle East), the 1973 oil shock reinforced the growing need for a national energy strategy that promoted energy diversification, demand management, and subsidization.

When oil prices quickly increased four-fold putting upward pressure on electricity

rates per kilowatt-hour (kWh) and gasoline prices per liter, Japan, like France, advocated a costly expansion into nuclear energy. Facilities were proposed and erected around the country with the stated intention of lowering Japan's dependence on oil, decreasing carbon emissions, and protecting the environment from pollution. Further, the government slowly guided industry away from energy-intensive sectors (e.g., basic materials) to high-technology sectors (e.g., assembly and processing).

Despite the drop in oil prices after 1986, average electricity rates remained high. Not-in-my-backyard became the mantra of fishing cooperatives, local political elites, youth, and women who were unwilling to bear the increased risk of hosting nuclear power facilities without added compensation. As a result, METI used low interest loans, tax credits, indirect subsidies and other persuasion techniques—the cost of which was mainly passed on to the end-user in the form of a higher electricity rates—in order to achieve its stated goals.

Ironically, the unintended consequence of these security measures meant (and still mean) inefficiency and declining performance in Japan's energy sector. By the time that market liberalization was underway in 2000, Japan's electricity rates and gas prices were among the highest in the world (see figures on pg. 11).

Energy challenges and obstacles

Following the industrialized world's lead, Tokyo has flirted with deregulation of its energy markets since the late 1980s. Revisions to the laws, ordinances and regulations surrounding the petroleum sector (beginning in 1986), the electric power sector (1995-2003), and the gas distribution sector (1995-2003) were intended to provide incentives for corporate efficiencies, increased transparency, consumer welfare gains and greater shareholder value.

Unfortunately, this 24-year experiment has not produced the anticipated outcomes. The petroleum sector remains a highly fragmented, inefficient industry with hundreds of companies. Imports constitute less than 2% of total petroleum sales with inflation-adjusted pump prices almost 52% higher than the mid-1990s. Electric power and gas restructuring are equally disappointing. With market entry and new construction by newcomers limited by both direct barriers (e.g., high prices that the new producers must pay

to access incumbent transmission and distribution networks, as well as stringent zoning regulations) and indirect barriers (e.g., incumbent suppliers' refusal to divest uneconomical assets), competition is tepid. New entrants constitute less than 4% of total electric power generation per kWh; electricity and gas prices have not converged with international levels; and corporate restructuring efforts fail to produce greater returns for investors. In all three sectors, the inability to convince customers to switch suppliers quickly and force companies to compete against each other for greater market share limits the incentive to lower retail prices and cut costs.

Today, the negative press in the wake of the California crisis, the Enron bankruptcy, and rising energy prices worldwide has made much of the Japanese public wary of unfettered competition in energy markets. The DPJ, once a proponent of electricity deregulation, has adopted a more pro-nuclear, pro-renewables campaign platform in the new millennium to reflect these trends.

Can the DPJ get the job done?

The DPJ clearly made the environment part of its campaign during the 2009 Lower House elections. According to its manifesto, it wished to establish an emissions trading market, possibly introduce global warming taxes, as well as subsidize solar panels, "green" vehicles, and energy-saving appliances. But if Japan was already the "interventionist state" before the rise of Hatoyama's DPJ, what are the chances of successfully achieving such aggressive GHG emissions targets when the bureaucracy under an LDP-led government proposed something much less ambitious?

Several factors will ultimately determine if the DPJ can deliver on its promises, each with its own tradeoffs.

The first is institutional. Despite the DPJ's campaign promise to transfer the institutions of decision-making power from the bureaucracy to the cabinet, energy policy continues to be formulated in advisory councils within the ministries. These councils, or *shingikai*, balance the competing interests of labor unions, energy suppliers, industry, consumer groups and other market participants. One sign that fundamental change could be met is the circumvention of these *shingikai* in favor of more cabinet-centric committees in which politicians (not

bureaucrats) are the final arbiters and negotiators of the transparent information flow amongst market participants. That has not happened yet.

The dual-nature of the DPJ's political initiatives—advancing environmentally friendly energy technologies while simultaneously trying to transfer institutional power in the cabinet—could create sufficient regulatory uncertainty in the coming years that investment in renewable energy technologies and cap-and-trade measures could be delayed. Until now, the focus of the Hatoyama cabinet and its promised details in the fight to lower GHG emissions is vague at best. No details have been provided as the cabinet struggles with other priorities.

The challenge is formidable. According to MOE data, Japan is the world's fourth largest emitter of GHG emissions. A breakdown of these emissions indicates that almost 90% emanate from carbon dioxide (CO₂), with the power sector accounting for almost 30% of the total. Over the past 10 years, there was a noticeable increase in GHG emissions from inexpensive coal-fired conventional power plants, which utilities brought online in an effort to remain competitive in Japan's liberalized power market. That is the principal cause of the increase. If the DPJ wishes to achieve its goals, it will need to rethink the country's priorities: does it favor lower energy prices via competitive markets or lower GHG emissions via subsidized renewable energy technologies?

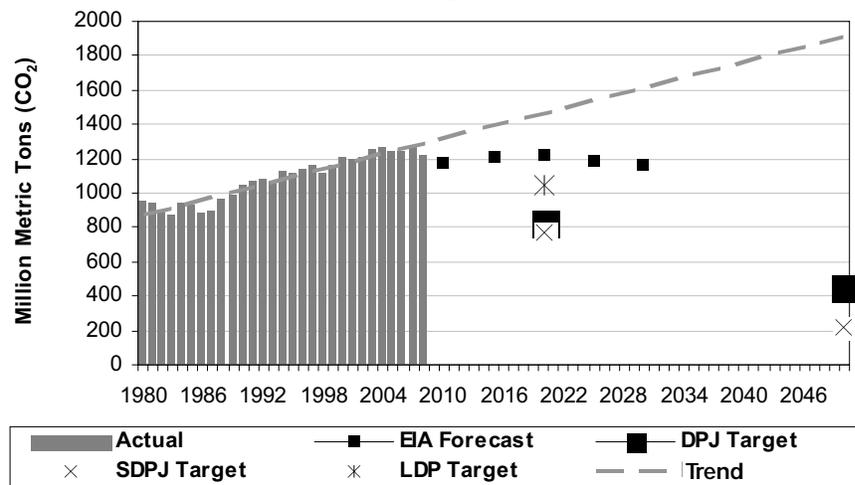
"Capture-ready" technologies could retrofit existing and new coal-fired plants, but it will inevitably add cost to demonstrate

an integrated system of capture, transportation, and storage of CO₂ at scale.

The distributional effects of Japanese political economy (suppliers vs. consumers) will largely determine the success of the Hatoyama Initiative. Indeed, the fear of "peak oil" and the rising price of oil per barrel will continue to play a crucial role in the speed at which Japan invests in non-hydroelectric renewables (currently only 2.2% of total electricity generation). With oil still accounting for over half of the country's primary energy supply, any increase will put upward pressure on conventional power sources, inflate transportation costs, and hamper the competitiveness of export-led industries. And since the price of coal and natural gas tends to track the price of oil with a lag, today's relatively inexpensive fuel sources could be tomorrow's incentive to increase the country's consumption of nuclear power and renewables.

However, until that happens, the cost-prohibitive nature of energy alternatives discourages incumbent utility suppliers like Tokyo Electric Power Corp. (TEPCO), from eagerly following in the footsteps of Denmark (wind), France (nuclear), Germany (solar), and Iceland (geo-thermal). Topography prevents wind (¥14/kWh) and geo-thermal (¥10/kWh) from becoming the prevailing energy sources in Japan. Solar-powered generation continues to cost in the range of ¥45 per kWh (versus ¥6-10 per kWh for conventional sources). And nuclear power, though environmentally friendly and relatively cost-competitive (¥6.5/kWh), continues to face strong local opposition since

Seek 25% reduction in greenhouse emissions



Source: Paul Scallise from Energy Information Agency data and party forecasts

Three Mile Island (1979), Chernobyl (1986), and a series of minor Japanese accidents and cover-up scandals in the 1990s. Thus, lead-times in the siting of controversial nuclear power plants are significantly longer than for conventional power plants.

The sad truth of renewable energy development is that while generation technology is slowly becoming cost-competitive worldwide, its transmission and distribution costs are not. Transmission lines in Japan, for example, are balkanized, with two different herz systems (50Hz and 60Hz) spanning nine different power companies over hundreds of thousands of kilometers. Improvements to the grid—getting wind, solar and tidal power from remote areas to the urban areas where people live—would entail major investments, involving many local governments, countless permits, and the inevitably unforeseen fights with property owners along the way.

To counter such obstacles and promote energy efficient technologies, the Japanese government commits approximately ¥850 billion (1% plus of the national budget or about 0.2% of GDP) into subsidizing research, development, risk amortization, and open support. However, two further obstacles call into question the sustainability of these programs and the success of the DPJ.

Japan's looming fiscal constraints place "wasteful spending" at the near top of the agenda for both the party and the Ministry of Finance. As long as expenditures continue to outpace national tax revenues, pressure to make the "right" investments will exist in Japan. The DPJ has already frozen—quite ironically—the subsidization of solar panel installation in the agricultural and fishery businesses in the fiscal 2010 budget, as well as the utilization of biomass energy resources to the tune of ¥19.3 billion, or \$205 million. If fiscal imbalance continues to deteriorate over the next decade it is quite possible that any government (DPJ-led or otherwise) will face some difficult decisions in where to invest. Declining energy-related expenditures in the national budget over the past decade already suggest the problem is here to stay.

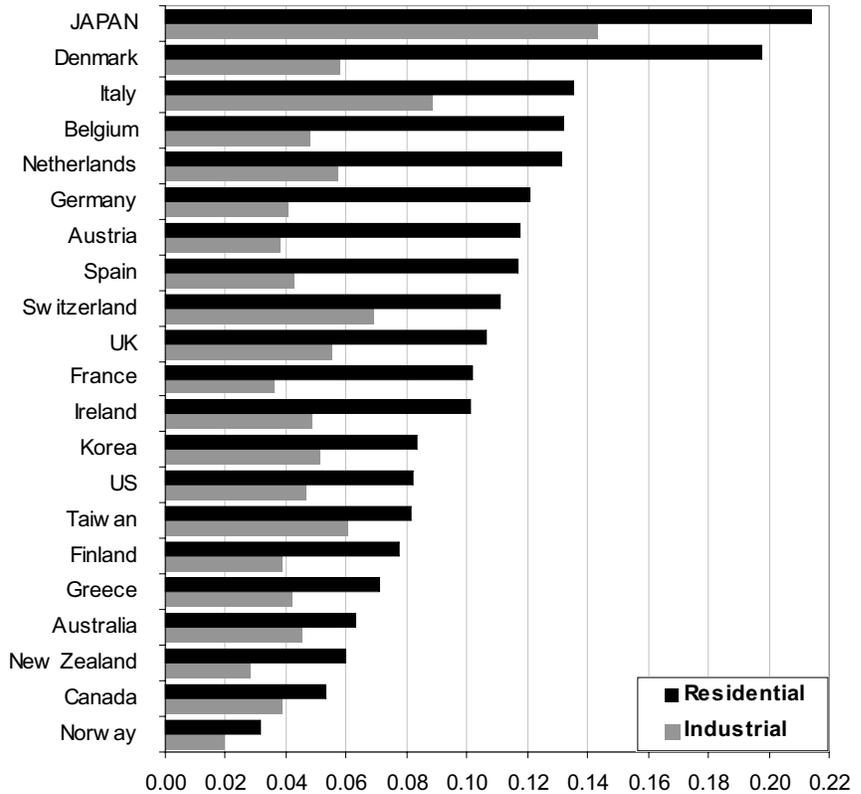
Indeed, with fiscal constraints and mounting technological costs to meet carbon capture, the success of capping CO2 emissions ultimately depends upon adherence to policies by large developed and developing economies. Hatoyama had made

it clear that Japan cannot and will not go it alone—a "get-out-of-jail-free" card was issued in the event the rest of the world fails to meet its obligations.

In the end, Japan's ability to become the leader in GHG emission reductions will require a permanent shift in public opinion

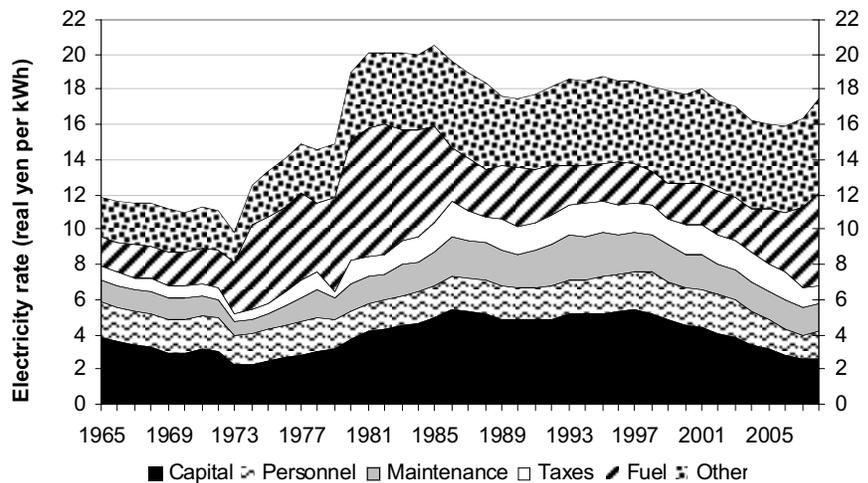
on the "environment versus cost-effectiveness" debate. Should increased regulatory uncertainty and opposition to the distributional effects continue, the commitment of the DPJ (and by extension succeeding governments) to a newly revised energy strategy could easily waver once again.

Japan has among the highest electricity rates



Source: US Energy Information Agency
 Note: Comparisons are in current US dollars; in 2000, the yen was relatively strong, which may have made Japanese rates look higher in international comparisons

Electricity rates stay high



Source: Paul Scalise from Electric Power Industry Handbook
 Note: Biggest reason for failure of electricity rates to decline is not higher costs for fossil fuels, but rise in "other" costs. In trying to track this down, Scalise reported rather amorphous answers from utilities, including one interviewee who blamed local citizen interest groups who "stalled [our company] from building these nuclear power plants for several decades."