

POTENTIAL APPROACHES TOWARDS LOW-CARBON FUTURE

Abstract

The devastating earthquake that struck Japan on March 11, 2011 and the ensuing nuclear accident have inflicted enormous damage to Japan's society and economy. In the face of the recent disaster, people are noticing the benefits of decentralized systems. Decentralized power generation systems based on a combination of renewable energy, fuel cells, and smart grids could be a driving force for Japan to promote a low-carbon revolution in Asia and the world. Many developing countries are politically unstable and even more vulnerable than developed countries to a multitude of threats, including terrorism and climate change. What these regions need is decentralized systems that come with lower risks, are more robust, and can help them move along the path toward a low carbon society. A developing country could leapfrog over the high-carbon path taken by developed countries. Civil society could also be empowered by having "ownership" of energy.

Norichika Kanie

Associate Professor, Tokyo Institute of Technology
and Research Fellow, United Nations University Institute
of Advanced Studies

Department of Value and Decision Science,
Graduate School of Decision Science and Technology,
Tokyo Institute of Technology, 2-12-1-W9-43, Ookayama,
Meguro-ku, Tokyo, Japan 152-8552

E-mail: kanie@valdes.titech.ac.jp

Fukushima raises questions about Japan's environmental and energy diplomacy

The devastating earthquake that struck Japan on March 11, 2011 and the ensuing nuclear accident have inflicted enormous damage to Japan's society and economy. But sometimes, something positive can emerge even from a disaster. As 'Fukushima' quickly joins 'Chernobyl' as a word synonymous for "nuclear accident," for the next while, Japan's commentary on energy and environmental matters seems poised to attract the world's attention. A speech by Japan's Prime Minister, Naoto Kan in May 2011 at the opening of the G8 Summit in France is a sign of this tendency. And in 2012, the world will witness the once-per-decade United Nations Conference on Sustainable Development (also referred to as Rio+20, being held 20 years after the Earth Summit in Rio de Janeiro). This time, though, the tone of meeting will not likely be as deferential to the United States as in the past. The world needs a major change of course. In another sense, the world is watching to see if Japan can take the major leap of course. The Conserva-

tives in Japan, after being so quiet immediately after the nuclear accident this year, are beginning to make their voice be heard again. In the midst of all this, can Japan set a course for new environmental and energy policies, articulate them, and act as a leader? Japan's own competencies has suddenly come into the spotlight.

Centralized control to systems that are independent, decentralized, and coordinated

In the process of dealing with issues like radioactive waste, the Japanese are now debating whether or not nuclear power is a form of sustainable energy, but the mainstream view was that nuclear power is an important pillar of strategy against climate change, equivalent to renewable sources of energy like solar and wind power. There is a decisive difference, however, between nuclear and renewable energy. One depends on large-scale, centralized systems, while the other is based on small-scale, decentralized energy systems. It was relatively easy for Japan to adopt nuclear in the past, because modern energy supply systems based on fossil fuels belonged to the former category.

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But after the recent disaster, however, people are again noticing the benefits of decentralized systems. Generally speaking, a decentralized system is inherently more robust. This is because the overall system can continue to function even if part of the system is damaged: other parts of the system compensate for the damaged part. The Internet is often given as a typical example of this characteristic (Brafman and Beckstrom 2006, Aggarwal 1998).

These same approaches can be applied to the energy sector. Had a decentralized system been established and individual households functioning as small-scale power generators, one could say that, at the very least, the large power outages experienced in this disaster would not have occurred. For example, a combination of renewable energy sources such as photovoltaic, together with fuel cells and a 'smart' electrical grid — with each dwelling acting as a small power generator — would be very robust and flexible. In a society that will be facing major carbon constraints in the future, if the aim is for low-risk, robust and flexible systems, there may be no other path than to create systems of this nature.

In fact, these kinds of systems are already appearing. With further technical development, the technology will spread and costs gradually decline, promoting their greater popularity. An important factor in all of this is the need for the enabling function of policy. 'Energy farms' that are beginning to appear in Japan consist of fuel cells that can generate electricity at each household, and technically, can operate even during major power outages. It was heard, however, that these could not be used during the recent power outages. One cannot but feel a disconnection when a fully-usable technology cannot be used simply because of human factors. Besides subsidies and grants, many ways are available for policy to support the technology.

Domestic policy to environmental and energy diplomacy

Decentralized power generation systems based on a combination of renewable energy, fuel cells, and smart grids

could also be a driving force for Japan to promote a low-carbon revolution in Asia and the world. Many developing (or less developed) countries are politically unstable and even more vulnerable than developed countries to a multitude of threats, including terrorism and climate change. What these regions need is not high-risk nuclear power generation, but rather, decentralized systems that come with lower risks, are more robust, and can help them move along the path toward a low carbon society. A developing country could leapfrog over the high-carbon path taken by developed countries and still achieve its development targets. As a side effect, civil society could also be empowered by having 'ownership' of energy. Meanwhile, Japan could support the standardization of its competitive technologies and promote expansion of its markets.

If Japan were to promote a bundle of strategic policies by linking policy relating to domestic affairs, foreign affairs, international cooperation, and development assistance, the recovery from the country's recent disaster could also provide the impetus for development of an emerging norm. For a developed country that has promoted environmental diplomacy, this kind of approach is especially necessary now, in the face of limited available resources (Kanie 2001).

Another important point in the creation of an international model is that energy should not be seen as an isolated issue; a broader view is needed that considers environmental constraints, and even more specifically, carbon constraints. The world cannot mitigate climate change without addressing the issue of energy. It seems quite obvious that to usher in a low-carbon era, both issues must be addressed in an integrated way. Already some countries and regions are establishing institutional arrangements in which environmental authorities are responsible for energy issues.

There is already much evidence that authorities responsible for the environment are typically much weaker in government power structures, and even in cases where international consensus has

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been reached on an environmental topic, when officials return to their home countries, implementation is often inadequate due to the lack of financial and human resources (Biermann 2001, Dodds 2000, Downie and Levy 2000). In addition, because environmental issues permeate all sectors of society, multiple government ministries and agencies end up dealing with them, and from a variety of angles. Meanwhile, although government authorities responsible for the environment are expected to coordinate matters relating to environmental policy, they are not able to coordinate adequately, due to their lack of influence. This is the situation in many countries. To overcome these shortcomings, one authority could be given the power to deal with both environmental and energy issues. This structure could then ensure that the handling of energy issues is based upon the recognition of environmental constraints, and meanwhile, also give greater influence to environmental authorities.

Rio+20 agenda "institutional frameworks for sustainable development" as an opportunity

The limitations of bureaucratic structures responsible for the environment described above were already identified some time ago in debates about environmental governance at the international level (Charnovits 2002, Ansell and Weber 1999, Haas, Kanie and Murphy 2004). Since 1972, the international environmental regime has tried to treat the symptoms each time a problem arose, but with the finances, staffing, and authority attributed to it, the United Nations Environment Programme (UNEP) — though charged with a coordination function within the UN system — has

been unable to coordinate affairs with the comprehensiveness needed for environmental policies, compared to international economic and social organizations. Currently, coordination is not being done adequately even *within* the environmental category. Coordination among more than 200 multilateral environmental agreements (MEAs) is inadequate.

To deal with these issues, two major topics are being proposed for the Rio+20 conference in 2012: institutional framework for sustainable development, and green economy. Discussions in the UN context about sustainable development are generally based on three pillars — the environment, sustainable social development, and sustainable economic development. In the author's view, there are actually only two, not three pillars. The environment provides the foundations (constraints) for the two pillars, and if the foundation is not sound, the pillars will not stand solidly. At any rate, the environment is another crucial factor in the structure of sustainable development, and institutional frameworks relating to the environment are one of the important topics of the Rio+20 conference. The timing of this international conference presents an opportunity for Japan to let the world know about the changes occurring in Japan, and an opportunity to help lead the world in a new direction.

Discussions about institutional frameworks could be described as having two levels. One level is a discussion about institutional design within the United Nations. Here, the issue is how to strengthen the environmental 'pillar' within the United Nations' bureaucratic structure. Five reform proposals are currently being discussed in the Rio+20 preparatory processes:¹

- Strengthen the United Nations Environment Programme (UNEP);
- Create a new organization for sustainable development;
- Establish a specialized institution (e.g., a World Environment Organization);

- Reform the UN Economic and Social Council and the UN Commission on Sustainable Development (CSD); and
- Rationalize and enhance institutional reforms in the current structure.

Even though Rio+20 will be held in less than a year (June 2012), there has been no rise in political interest in discussions about types of structural reforms, and unfortunately, no clear direction has yet emerged. In fact, the May 2011 meeting of the CSD ended without reaching any consensus. Differences among countries are wide, and it is still difficult to see if any of the above reforms will prevail within the next year. In fact, there appears to be greater interest in discussions about the green economy than about institutional reforms.

To be on the leading edge of modern international institutional reforms, as is already happening in some countries, Japan could promote appropriate debate about institutional reforms in the context of contemporary issues. One proposal to create a breakthrough from the current situation would be to promote the institutional integration of environment and energy. The bias created by monopolistic control of Japan's energy policy being given to the Ministry of Economy, Trade and Industry (METI) — which became clearer for all to see during the Fukushima accident — has already been a target of criticism from international institutions like the International Atomic Energy Agency (IAEA). Institutional reforms are needed and Japan may now have a good opportunity to carry out institutional reforms toward the strengthening of environmental management in the country. If it can do this, Japan could also bring this kind of debate up to the world stage. Perhaps Japan can also organically link the two Rio+20 topics of green economy and institutional reforms, which until now have been considered separately, and promote international debate. By so doing, if the issues of environment and energy can be integrated, it may be possible to expand the discussion using the levers of social norms and institutional

reforms. Promoting norms is an important function of international institutions.

International institutional reforms and Japan

Another level in the debate about institutional frameworks is the issue of how to deal with overarching governance for sustainable development, over and above the framework of UN institutional reforms. Indeed, one could say that this issue is really the essence of the debate about institutional frameworks. If the whole debate focuses simply on the forms of structures, we can already see, there is a risk of losing sight of the essential issues of governance at the core of contemporary society. The result may be to fall into superficial discussions about the technical aspects of institutional theory. Instead, what is really needed is a dynamic analysis of modern society, and the development of suitable next-generation structures based on that analysis. The world now needs institutional frameworks for a low carbon society in the twenty-first century. Can we achieve these based on institutional designs actually created more than 50 years ago? Or do we really need more fundamental changes?

In discussions about Rio+20, one flow of debate focuses on these functional aspects of governance. But because political outcomes are difficult to see, discussions centering on functions have attracted scant attention.

The issue of globalization is one important characteristic of modern international politics. Whether perceived as good or bad, globalization is accelerating the international movement of people, goods, and money. A feature of international politics is the rise of influence of a diverse group of actors, and the power diffusion. Besides national governments, these days, international institutions, businesses, industries, NGOs, and scientists are networking internationally, and their political presence is growing. Not only is power at the national level being redistributed from superpowers to middle powers, smaller states, and emerging economies, but also the elements of the structure of

¹ UNEP/GCIEG.2/2/3

power are transforming now in various ways, including a shift from 'hard' power to 'soft' power. As a result, as one could see with the Copenhagen COP15 conference on climate change and CSD 19, international structures are in the process of changing dramatically — so much so that conventional consensus-building systems have stopped functioning adequately. In contrast to this, we are witnessing an increase in policy formulation and implementation being conducted in partnership with non-state actors.

In other words, what is needed today in international governance for sustainable development is the creation of independent, decentralized systems. It is important to recognize the large difference between the meaning of 'decentralized' and 'fragmented'. Decentralization without the proper institutional design will lead to fragmentation, but if conducted properly, it will result in healthy competition between systems, and will facilitate institutional innovation. If decentralization is done right, transparency is enhanced and more channels of participation are available for a diversity of actors (Aggarwal 1998, Ostrom 2001, Ansell and Weber 1999, Haas, Kanie and Murphy 2004). To make these kinds of institutional designs succeed, there is a need to create proper networks among the various decentralized actors, and it is also important to ensure that frameworks are flexible.

Japan's recent devastating earthquake and the Fukushima disaster threw new light on the robustness and flexibility of decentralized systems.

These lessons are helpful to illuminate the path toward a low carbon society. That path is a common one for many countries. This is a direction that includes the characteristics and trends of a globalizing world. Japan has suffered enormous damage. But just as with its reconstruction after the Second World War, Japan's recovery from this damage has now captured the world's attention, and this gives the country another chance to lead. A public opinion poll by the Japan Association for Public Opinion Research (June 11 and 12, 2011) asked people which forms of energy deserve attention now. Among respondents, 83.6 per cent selected renewable energy, 7.2 per cent nuclear power and only 3.9 per cent coal and petroleum. The contrast is striking. Decentralized but coordinated system designs are now supported by public opinion, offering the key to transform opportunities into reality.

References

Aggarwal, Vinod K. (1998). *Institutional Designs for a Complex World*, Cornell University Press.

Ansell, Christopher K. and Steven Weber (1999). "Organizing International Politics", *International Political Science Review*, January 1999, Vol. 20, Issue 1, pp. 73–94.

Biermann, Frank (2001). "The Emerging Debate on the Need for a World Environment Organization" *Global Environmental Politics*, February, pp. 45–55.

Brafman, Ori and Rod A Beckstrom (2006). *The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations*, New York: Portfolio.

Charnovitz, Steve (2002). "A World Environment Organization" *Columbia Journal of Environmental Law*, Vol 27, No. 2, pp. 323–362.

Dodds, Felix (2000). "Reforming the International Institutions" in Felix Dodds ed. (2000), *Earth Summit 2002*, London: Earthscan.

Downie, David L. and Marc A. Levy (2000). "The United Nations Environment Programme at a Turning Point" pp. 355–375 in Pam Chasek ed. (2000), *The Global Environment in the Twenty-First Century*, Tokyo: UNU Press.

Haas, Peter M., Norichika Kanie and Craig N. Murphy (2004). "Conclusion: Institutional design and institutional reform for sustainable development", in Norichika Kanie and Peter M. Haas eds. *Emerging Forces in Environmental Governance*: UNU Press.

Kanie, Norichika (2001). *Global Environmental Diplomacy and Japanese National Policy: The Netherlands Diplomacy and Policies Relating to the Kyoto Protocol*, Keio University Press (in Japanese).

Ostrom, Elinor (2001). "Decentralization and Development: The New Panacea", in Keith Dowding et al. (2001), *Challenges to Democracy: Ideas, Involvement and Institution*, Palgrave Publishers, pp. 237–256. □

Clean Development and Climate Program

The USAID Environmental Cooperation-Asia Clean Development and Climate Program (ECO-Asia CDCP) builds partnerships to help put in place those clean energy technologies and practices that would most immediately help to address Asia's energy challenges and reduce greenhouse gas emissions. Key partners for the program include national policy institutions, utilities, energy ministries, state-level governments, banks, investors, and clean energy project developers. Active in six countries – China, India, Indonesia, the Philippines, Thailand, and Vietnam – ECO-Asia CDCP works with these partners to catalyze policy and finance solutions for clean energy through targeted assistance, training, regional cooperation, and knowledge-sharing.

ECO-Asia CDCP works with financial institutions operating in Asia to facilitate an increase in debt financing for clean energy projects and companies. The program provides banks with an integrated set of capacity-building tools and resources that can be customized for individual institutions or countries. These materials are designed to help financial institutions take advantage of the opportunities offered by renewable energy and energy-efficiency business models and projects.

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