2006

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Stephanie Ohshita
University of San Francisco, sbohshita@usfca.edu

Recommended Citation
Ohshita, S.B. (2006). Cooperation Mechanisms: A Shift Toward Policy Development Cooperation. In Sugiyama, T. & S. B. Ohshita (Eds.), Cooperation Structure: The Growing Role of Independent Cooperation Networks (pp. 63-78). Winnipeg: IISD.

Chapter 4
Cooperation Mechanisms: A Shift Toward Policy Development Cooperation

By Stephanie Ohshita

As humankind tries to address the climate change problem, we find the need to look upstream—to change the ways in which we use energy—and the need for more programmatic or systems-oriented approaches. To achieve significant energy savings, we need cooperation mechanisms that can spur widespread improvements in energy efficiency and conservation. These mechanisms must address large quantities of energy, have significant impact and induce lasting change. Project-based technology cooperation only gets us so far in that effort; only a limited number of projects can be conducted with public funds. To achieve widespread improvements, we need something more; we need policies that promote investments of private funds in energy efficiency and energy conservation across multiple economic sectors. In international cooperation on energy efficiency, there is an important trend of increasing efforts to support the development of policies that promote the conservation and efficient use of energy. Policy development cooperation is an effective use of limited funds, in that it creates a top-down push and an enabling environment for widespread investments in energy efficiency, all from a relatively small investment of public funds.

This chapter first characterizes different forms of cooperation on energy efficiency occurring in East Asia and offers a definition of policy development cooperation. Lessons from technology cooperation—a dominant form of cooperation in the past and present—are then discussed. Next, an overview of current policy development cooperation on energy efficiency in East Asia is provided, along with analysis of how policy development cooperation works and the key factors contributing to its success.

4.1 Forms of International Cooperation on Energy Efficiency and Conservation

In reviewing existing efforts on energy efficiency and conservation cooperation in East Asia, we identified six main forms of cooperation:

1. **Policy Development Cooperation:** support for the development of goals, laws, standards, implementing regulations and guidance documents; involves expert exchange, joint work and high-level decision-makers.
2. **Market Development Cooperation:** creation of financial incentives for technology investments, information exchange among firms, information

campaigns to raise public awareness and desirability of efficiency products, etc., that directly intervene in the operation of the market.

3. **Technical Assistance:** support for project background studies, feasibility studies and project design; may also include the provision of experts to conduct analysis or provide other support for programs or policies.
4. **Technology Development Cooperation:** technology transfer, technology demonstration, promotion of technology innovation, technology license purchase and technology R&D.
5. **Capacity Building:** information exchange, establishment of a new organization or center, support for staff at existing organizations, and training for managers and technical staff of industrial enterprises.
6. **Public Outreach and Education:** support for public information campaigns, the development and use of databases and Web sites, and training.

Definitions of different forms of cooperation vary among development agencies and other organizations, and often are not explicitly defined. For example, ADB requires a Technical Assistance (TA) activity—typically meaning a feasibility study—before a large project loan will be issued. Other organizations use the term Technical Assistance more broadly, encompassing provision of experts for assistance with technology installation or training as well as for assistance with policy development. There may be some overlap among these forms of cooperation, e.g., policy development cooperation that also builds capacity or creates financial incentives. The definitions offered here reflect the use of terminology at the OECD, the World Bank, ADB, GEF, JBIC and JICA, the Energy Foundation, CLASP and other organizations cooperating on energy efficiency in East Asia.

Out of these forms of cooperation, we want to highlight the increasing utilization and effectiveness of cooperation on policy development for the promotion of energy efficiency. What do we mean by *policy development cooperation*? Is it really new? International *sharing of "best practices"* in policy is not new; it has been occurring for many years in various ways across a variety of policy arenas, from monetary policy and industrial policy to environmental policy. Governments may send analysts on study tours or hold workshops to understand policy design and implementation experiences in other countries. For example, in developing its environmental policies in the 1970s, the Japanese government sent agency staff to the U.S. and Europe to learn about different policy mechanisms being employed to curb pollution.

In the context of development aid, governments engage in *policy dialogue* in conjunction with technology development projects. For example, policy dialogue (*seisaku taiwa*) is a component of Japan's Green Aid Plan. At annual or bi-annual meetings, counterpart ministries in Japan and the host country meet to discuss the host country's policy priorities and which GAP technology

projects would best fit those priorities (Ohshita, 2003). The GAP policy dialogues were not aimed at modifying existing policies or developing new policies; rather, they involved identifying priorities. Other definitions of policy dialogue emphasize persuasion or coercion—situations where a country or a development bank tries to persuade another country to undertake new policies or policy reform. For example, the World Bank has been promoting energy pricing policy reform in conjunction with its lending, while USAID has added energy efficiency goals as part of its lending criteria. At its most coercive, policy dialogue has been used as a way of forcing aid recipients to adopt certain policies under the rubric of loan *conditionality*—with notable instances of disastrous results.[1]

What distinguishes *policy development cooperation* from the activities above is the following: (a) the nature of the resources provided; (b) the intent to develop new policy; and (c) the relationship among the parties involved (i.e., who is initiating and who is supporting the policy development). With policies developed and adopted under *conditionality*, the aid donor is forcing the policy and the relationship is highly unequal, with the balance of power skewed toward the donor. In *sharing of best practices*, the country developing the policies may be taking the initiative—and paying for the initiative itself. The knowledge of other countries' policy experience is taken back and the country's own staff use the acquired knowledge in their policy development. Under *policy dialogue*, there may or may not be development of new policy. The dialogue may simply involve information sharing with the aim of creating a better understanding among those engaged in the dialogue. Or one party may be pushing another party to take certain policy actions. Parties to the dialogue may or may not take any new policy action as a result.

What we have observed as *policy development cooperation* in examining East Asian energy efficiency and conservation cooperation is: (a) the provision of funds and experts; (b) to a country wanting to promote energy efficiency and conservation; and (c) to engage in joint analysis and formulation of policy, as well as gain assistance with initial implementation. Policy development cooperation goes beyond policy studies. It involves the collaborative work of taking policy experience from elsewhere, bringing knowledge of the domestic situation (in terms of institutions, technology, political economy, etc.), and formulating viable measures to promote energy efficiency and conservation—measures that are actually adopted and implemented.

Perhaps more interesting than the above definition are the achievements obtained through policy development cooperation. Relatively small amounts of funding can lead to substantial energy savings. For example, building

1 The Asian financial crisis in the late 1990s is one example of unintended negative consequences of aid conditionality. For more information on policy dialogue and conditionality in the environmental context, see Fairman and Ross (1996).

efficiency standards enacted in China through Energy Foundation support are estimated to displace the need for 50 large (500 MW) coal-fired power plants by 2020. Appliance standards created through the program are estimated to have a similarly large energy savings, equivalent to 51 large coal-fired power plants during the same time period (Energy Foundation, 2005). Cooperative work on those standards has helped strengthen the institutes and agencies that administer them. It has increased capabilities among appliance manufacturers and retailers. There are also signs of growing awareness of energy efficiency among consumers.

The rest of this chapter analyzes experience with other forms of energy efficiency cooperation—especially technology cooperation—to highlight some of the limitations and illustrate the motivation for policy development cooperation. The chapter then elaborates on current experience with policy development cooperation and discusses the potential for future efforts to promote energy efficiency and conservation in East Asia.

4.2 Lessons Learned from Technology Cooperation and Development Assistance

The 1990s witnessed a downward trend in official development assistance (ODA) with an upturn at the end of the decade. During the same period, private sector financing—including foreign direct investment (FDI), commercial lending and equity investment—increased substantially, eclipsing ODA as the means of technology acquisition by developing countries. Private technology-based investments have been concentrated in the industry, energy supply and transportation sectors of developing East Asian and Latin American countries (Metz *et al.*, 2000).

The use of ODA—especially bilateral assistance—for technology transfer has had decidedly mixed results. Installation of crucial infrastructure with ODA—such as electric power supply, transit systems or water treatment facilities—has helped to enhance economic development. Yet, rarely have technologies been chosen based on energy or resource efficiency. Seldom is know-how transferred along with the equipment. Far too frequently, technologies transferred through ODA efforts do not spur changes beyond the funded project; benefits are typically limited to the scope of the project.

Considering the relative amount and direction of private investment, and the mixed record on development assistance for technology transfer, ODA would be well directed toward programs seeking to leverage private investment and create supportive policies and institutions for the diffusion of more efficient, less polluting technologies. For those sectors and countries not targeted by private financing, ODA is more crucial for technology acquisition. Even in those sectors and countries, ODA would still be well directed toward the creation of enabling environments (e.g., policy development, institution strengthening,

training programs, etc.) for the spread of cleaner and more efficient technologies (Metz *et al.*, 2000).

The two energy efficiency cooperation efforts described below—Japan's Green Aid Plan in East Asia, and the GEF-World Bank Industrial Boiler Project in China—illustrate strategies and experience with cooperation in the form of technology development. These examples highlight the challenges and limitations of technology cooperation. We want to emphasize that cooperation focused on improving technology is extremely important and very much needed. But to do this effectively, we need more than equipment—we need policies and incentives to create a receptive environment for technological change.

Technology cooperation under the Green Aid Plan (GAP)

Japan's Ministry of Economy, Trade and Industry (METI, formerly MITI) launched its Green Aid Plan (GAP) in 1992 to promote the introduction and dissemination of cleaner energy technology in Asian developing countries. Two main groups of technologies are promoted by GAP: (1) industrial energy-efficient technologies (e.g., heat recovery technologies and coke dry quenching); and (2) cleaner coal technologies or CCT (e.g., circulating fluidized bed boilers with sulfur removal and flue gas desulfurization). Selection of specific technologies and projects is made through policy dialogue between METI and their counterpart government agency in the recipient country. Key criteria in technology choices are consistency with host-country policies and priorities, and the availability of technologies from Japanese industry (Energy Foundation, 2005).

Under the Green Aid Plan, METI provides public funds to Japanese firms to modify and demonstrate their technologies at enterprises in recipient countries. METI also provides funds to Japanese industrial associations and training organizations to conduct feasibility studies and training on the operation of the Japanese technologies. Recipient enterprises are granted ownership of the equipment, but are responsible for necessary on-site modification of their facilities and for ongoing operation and maintenance costs.

The GAP retrofit approach differs from most other international efforts on improved energy technology transfer because of its focus on existing enterprises. Typically, multilateral or bilateral aid is provided for the construction of large, new enterprises, which may include energy-efficient technology or pollution control equipment.[2] The program's focus on the industrial sector, rather than the power sector, also differs from much of the aid and commercial activity in China

2 For a discussion of the lending pressures of bilateral and multilateral institutions, with a focus on East Asia, see, Evans, 1999; and Rix, 1980 and 1993.

and other East Asian countries. Projects involving retrofits at existing industrial enterprises are often too small to attract international aid.[3]

The Green Aid Plan's approach of government dialogue and demonstrating retrofits enjoyed some success during the 1990s. In China, which has hosted roughly 80 per cent of the GAP's projects, 18 energy efficiency demonstration projects and 11 CCT demonstration projects were completed. This effort, representing a few hundred million U.S. dollars during the 1990s, is the world's largest bilateral cooperation effort on industrial energy efficiency to date, and is yielding energy savings of roughly 4,200 TJ/year.[4] Chinese officials suggest that GAP cooperation on cleaner and more efficient industrial technologies served to raise awareness of pollution impacts and of the technologies needed to address them.

However, there have been no direct follow-on orders for cleaner coal technologies demonstrated through the Green Aid Plan. There has been some adoption of flue gas desulfurization technology since 2000, but not the specific equipment showcased in GAP demonstration projects. Energy-efficient technologies are faring slightly better. Technologies demonstrated in China's steel sector—especially coke dry quenching (CDQ) and blast furnace top pressure recovery turbine (TRT)—are beginning to show signs of diffusion. Most notably, a Japanese-Chinese joint venture was established in 2003 and fulfilled five orders for CDQ equipment by the end of 2005.[5]

One reason for the lack of diffusion of GAP technologies is timing; Japan made an early push on energy-efficient technologies and CCT when conditions for diffusion were not so favorable (Ohshita and Ortolano, 2006). Another reason is the GAP's focus on industrial retrofits, which are more difficult to replicate than new facilities. In addition, technology choices in the GAP were not supported by detailed market analysis and market development policies. In comparison with some technology transfer efforts of the World Bank, the Asian Development Bank (ADB) and other bilateral lenders, relatively little economic analysis was conducted for the Green Aid Plan.[6] Without

3 Projects involving retrofits of efficiency-enhancing technologies at existing enterprises might attract other sorts of investment (from the private sector or from domestic government), but projects involving retrofits of pollution control technologies are generally not appealing to investors, as end-of-the-pipe pollution control usually does not generate profit. For example, the 1998 Japanese yen loan package to China provided funding for a large, new thermal power plant with a flue gas desulfurization (FGD) system in Shaanxi province. In contrast, the Green Aid Plan funded the retrofit of FGD equipment at an existing chemical plant in Shandong province.

4 From METI and NEDO brochures and internal documents, 2004.

5 Based on interviews with NSC in Tokyo and Beijing, 2004 and 2005. The joint venture was formed between Nippon Steel Corporation and Shougang Group and is named the Beijing JC Energy & Environment Engineering Co., Ltd. (BJCEEE). For more information about this and other NSC joint ventures in China, see http://www.nsc.co.jp/

6 Individual Japanese firms participating in the GAP did some internal economic analysis, but there was little done programmatically under the GAP.

assessment of enterprise preferences and trends in prices of energy and coal-related equipment in China, it is difficult to target specific industrial sectors and select the technologies that are most likely to diffuse. And while GAP cooperation is designed to carry out technology demonstration, it needs new mechanisms to promote wider technology diffusion.

Based on a decade of experience with the Green Aid Plan, METI has been considering how to engage in policy collaboration with East Asian countries to create more incentives and promote the diffusion of energy efficiency technologies. There has been ongoing discussion within the ministry about placing greater emphasis on "soft" cooperation (training and management programs, policy cooperation) and less emphasis on "hard" cooperation (equipment).[7] METI has also been exploring the use of the Green Aid Plan in conjunction with CDM under the Kyoto Protocol. While some East Asian countries are open to the idea, the GAP in China has halted over the CDM issue. Further dialogue is needed to develop cooperation mechanisms that address the interests and priorities of stakeholders in both countries.

Technology cooperation with China: GEF-World Bank Industrial Boiler Project

The Industrial Boiler Project of the Global Environment Facility (GEF) was launched in 1996 and administered by the World Bank. The project took the rather unusual approach of funding the acquisition of licenses from foreign boiler manufacturers so that Chinese enterprises could produce more efficient boilers domestically. The logic behind this approach was that the transfer of manufacturing licenses would be more economically efficient than the transfer of equipment, since manufacturing costs would be lower in China. The project was also unusual in that the GEF typically does not fund coal-related projects; the boiler project qualified as a climate change mitigation project based on the CO_2 emission reductions it could achieve through improving boiler energy efficiency. The GEF pledged US$33 million for the project, and an additional US$68.3 million was to come from local bank loans, working capital loans and enterprise funds.[8]

The GEF project was based on fairly detailed economic, financial and market analysis, as well as technical and environmental analysis. The study team for the project considered trends in demand for specific types of boilers, coal prices, boiler prices, manufacturer capabilities, etc., and specified project benefits in terms of efficiency improvements, energy saved, emission reductions and the cost of CO_2 reductions. The project team consulted with stakeholders early and utilized an open and competitive process for the selection of

7 Based on interviews with METI and NEDO officials by S.B. Ohshita, 1999, 2004 and 2005, Tokyo.

8 Details on the GEF industrial boiler project in China can be found in World Bank, 1996. See also Nautilus Institute, 1999; and Birner and Martinot, 2005.

manufacturers to participate in the project. Despite all these efforts, it ran into implementation delays and serious problems with license acquisitions from foreign boiler manufacturers (Ohshita, 2003: 238-246).

The concerns of foreign boiler manufacturers over intellectual property and competitive advantage were a major stumbling block for the GEF boiler project. In general, China's rather weak record on patent protection, and difficulty in establishing trust between Chinese and foreign manufacturers, made foreign firms leery to participate. These general concerns, coupled with a demand by the former Chinese Ministry of Machinery Industries for blanket license agreements to cover all Chinese boiler manufacturers in all of China, caused many prominent foreign boiler manufacturers to distance themselves from the project. The project had to engage in several rounds of license bidding as foreign suppliers were unwilling to transfer technical know-how. The foreign firms that did participate were relatively small and less established (Evans, 1999; Watson *et al*,. 2000).

Interviews by U.K. and Chinese researchers identified another concern of foreign boiler manufacturers about the GEF project: excessive risks in making guarantees based on vague fuel specifications (Watson *et al*., 2000). While boiler specifications for the project were quite detailed, the vague coal specifications (due to high variability in the quality of Chinese coal) made it difficult for foreign boiler manufacturers to provide the guarantees of their designs demanded by local project management office (PMO) staff. At least two firms pulled their proposals over this issue as well as concerns about intellectual property. Finally, turnover in PMO staff in China led to implementation delays, and other problems resulted from the PMO staff's limited project management experience (Birner and Martinot, 2005).

On the positive side, the industrial boiler project assisted a subset of Chinese industrial boiler manufacturers in acquiring foreign technology and improving the energy efficiency of their products (Birner and Martinot, 2005). The project provided mainly technical assistance and technology development and accelerated the improvement of industrial boilers in China; at the time of the project's initiation, Chinese boiler technology lagged behind international levels. Without the project, the process might otherwise have taken 10 years.[9] On the negative side, there were long delays in license procurement for the nine participating boiler manufacturers. An additional factor that may limit the impact of the project is the rapid changes in the boiler market after the project started. This was due to higher coal prices which increased demand for more efficient boilers. The demand side of the market was not addressed in the project.

9 Interview with China GEF office, Beijing June 27, 2005.

Both the GEF Industrial Boiler Project and Japan's Green Aid Plan point to the need for cooperation on policies and implementation to create incentives for the adoption of cleaner, more efficient technologies. Technology transfer efforts must be accompanied by the pursuit of conditions favorable to wider technology diffusion. The rest of this chapter examines how policy development cooperation works, highlights examples and summarizes key criteria for successful cooperation.

4.3 How Policy Development Cooperation Works

Experience from technology cooperation, as well as broader lessons from development aid, point to the limitations of project-based cooperation and government-chosen technology transfer. Recent activity on collaborative development of policy incentives for investment in energy-efficient technologies shows that policy development cooperation can be highly effective in leveraging private funds and achieving large energy savings. Changing circumstances in East Asia are creating a fertile environment for this form of cooperation. Industrialization and economic modernization are causing severe pollution and resource constraints in the region. At the same time, countries in the region have acquired more advanced technologies and technical expertise. They have been developing the capabilities of their environmental and energy agencies and gaining experience in different forms of cooperation. There is a greater openness toward policy development cooperation done in a truly collaborative manner, and participants emphasize that there is need for even more of it.

Appliance energy efficiency standards in China are an illustration of successful policy development cooperation. China now produces more consumer appliances than any other country. Energy consumption by these appliances is growing at a rapid rate. Thus there is tremendous energy savings potential that can be realized through minimum energy performance standards (MEPS) and labeling criteria for appliances. By developing standards and labels for these products, China can ensure cleaner, more sustainable development of the consumer appliance market. These energy savings in turn can enhance economic efficiency, enhance consumer welfare and strengthen competitive markets, while mitigating local and regional pollution and climate change.

In the late 1980s, energy efficiency experts from the U.S. and China began a dialogue on appliance efficiency policy that flowered into many cooperation efforts. The dialogue was strengthened with the establishment of the China Energy Group at the Lawrence Berkeley National Laboratory (LBNL), which focused organizational attention on Chinese energy efficiency matters in the U.S.[10] LBNL then joined the Pacific Northwest National Laboratory (PNNL)

10 For more information about the China Energy Group at LBNL, see: http://china.lbl.gov/china.html

and their counterparts in China's Energy Research Institute (ERI) to form the Beijing Energy Efficiency Center (BECon) in the early 1990s.[11] BECon is a non-profit organization housed within ERI and approved by China's National Development and Reform Commission (NDRC, formerly SPC).[12]

With this institutional framework, LBNL and BECon gained initial support from USAID and the U.S. Environmental Protection Agency in the mid-1990s to work cooperatively on the design of more efficient Chinese refrigerators and on the establishment of refrigerator efficiency standards and labels. Encouraged by the success of the collaboration, other institutes in China became involved, as well as other U.S.-based organizations, including the Alliance to Save Energy and the International Institute for Energy Conservation (IIEC).

By 1999, the three U.S. organizations mentioned above—LBNL, the Alliance to Save Energy and IIEC—formed a partnership dedicated to appliance efficiency: the Collaborative Labeling and Appliance Standards Program, or CLASP (see Chapter 3 for more about CLASP). By 1999, other collaborative policy development activities were underway, including China Green Lights and Green Buildings, involving more organizations and funders. CLASP continued cooperating with CNIS to develop efficiency standards and labels for other appliances, including air conditioners and televisions. Also by 1999, the U.S.-based Energy Foundation established its China Sustainable Energy Program or CSEP (see Chapter 3 for more about CSEP) to support more policy development activities aimed at energy efficiency in China.

The year 1999 also saw the launch of the GEF-UNDP-China project on the commercialization of energy-efficient refrigerators. Using multiple cooperation mechanisms, the GEF project was incredibly successful in transforming the Chinese refrigerator market with more efficient products. The GEF refrigerator project emerged from the ongoing policy cooperation between U.S. and Chinese efficiency experts. LBNL staff crafted the proposal to the GEF, which resulted in a five-year effort (1999–2004) with roughly US$40 million in total funding. On the Chinese side, the GEF-UNDP project involved China's State Environmental Protection Agency (SEPA); the China Household Electrical Appliances Association (CHEAA); the China Household Electronic Appliances Research Institute (CHEARI); and the Chinese National Institute for Standardization (CNIS). CNIS led the standard and label development, while CHEARI and CHEAA led survey and outreach activities. Activities

11 The Advanced International Studies Unit (AISU) of the Pacific Northwest National Laboratory (PNNL) also created energy efficiency centers in other countries with economies in transition, including Russia and Ukraine. For further information about the energy efficiency centers, see: http://www.pnl.gov/aisu/centers.htm

12 For further information about the Beijing Energy Efficiency Center (BECon), see: http://www.beconchina.org/

included study tours and technical workshops for manufacturers; media campaigns and product labels to reach consumers; and training for product retailers. The S&L portion of the project was conducted with Energy Foundation funding and the involvement of LBNL and CLASP. If the project is successful in creating energy savings of 20 per cent per year over 15 years, it will save 120 billion kWh, equivalent to saving nearly 72 million tons of coal and reducing carbon dioxide emissions by 143 million tons.[13]

Through cooperative policy development, China has now implemented 11 MEPS for nine products and endorsement labels for 11 products, including refrigerators, air conditioners, televisions, printers, computers, monitors, fax machines, copiers, DVD/VCD players, external power supplies, gas water heaters and television set-top boxes (under development). These measures are expected to save 85 TWh annually by their 10th year of implementation. By 2020, China's S&L program is estimated to save 11 per cent of residential energy use and reduce CO_2 emissions by 34 million tons annually. Through these energy savings, China can avoid nearly $20 billion in investments for power plant construction, the equivalent of 50 large (500 MW) coal-fired power plants.[14] These are significant energy savings, but more are needed as use of residential and office appliances continues to increase.

The essence of the collaborative policy work with China by CLASP and others is knowledge transfer—sharing with China the last 20 years of experience and toolkits that have been developed around the world to support S&L programs. The success of S&L policy development in China has come from cooperation with an international network of energy experts from a wide range of organizations and groups. Training of Chinese counterparts has been crucial. LBNL and CLASP have provided 196 person-weeks of training for 90 officials from five agencies, split roughly evenly between training at LBNL and training inside China.

As China's capacity for S&L implementation has grown, the nature of CLASP's support has shifted from technical training and capacity building for the domestic program to assistance in extending market transformation effects internationally through harmonization of efficiency specifications. Most notably, in 2005, China, Australia and the U.S. adopted a harmonized set of efficiency specifications for external power supplies, based on a single testing standard. Current efforts support both the application of China's S&L programs into new market transformation programs domestically—such as government procurement—as well as the expansion of China's international outreach in additional harmonization efforts.

13 For more information on the GEF-UNDP-China refrigerator project, see http://www.gefchina.org.cn/news/index.htm; Birner and Martinot, 2005.

14 Analysis by David Fridley, LBNL, 2006; personal communication.

4.4 A Shift Toward Policy Development Cooperation

Recognizing the power of policies that promote energy efficiency, more organizations have been engaging in policy development cooperation. Many East Asian cooperation efforts on policy development have gained momentum since the beginning of the new millennium, with a few just launched in the past year or two. Governments involved in bilateral cooperation have realized the need for supplementing technology cooperation with the development of policies that support the diffusion of more efficient technologies. Multilateral organizations have given more emphasis to collaborative policy development, providing funds to bring energy efficiency experts and policy-makers together. Energy efficiency has been gaining greater attention at the regional level, especially with policy cooperation on appliance efficiency standards. Most active in policy development cooperation are independent international organizations composed of networks of experts committed to energy efficiency and conservation. Activities by different kinds of organizations are highlighted below, showing the trend toward more cooperation in the area of policy development.

Bilateral policy development cooperation

Bilateral (government-to-government) cooperation tends to focus on technical assistance and technology cooperation more than policy development cooperation. For example, Japanese development assistance related to energy and environment—including ODA and other efforts such as the Green Aid Plan—has typically been directed toward technical assistance or technology development, not to bilateral policy development cooperation. This emphasis in the form of cooperation is due to the economic interests of Japan and neighboring countries; political sensitivities and history; and differences in the policy-making process. Japan is more engaged in policy dialogues at the multilateral level, such as appliance efficiency standards or automobile fuel economy standards.

Nevertheless, there are a few examples of Japan involved in bilateral policy development cooperation on energy efficiency. One example of bilateral policy development cooperation is a Japan-Thailand effort on the development and implementation of an energy manager system—a system that includes legal requirements for certified energy managers and energy audits, as well as a training institute and exam procedures for certification. This cooperation grew out of ongoing relationships among Japanese and Thai agencies that had worked together on other GAP and ODA projects. The decision to engage in policy cooperation was also based on Japan's experience with GAP and the limitations of project-based technology demonstration. The Japanese International Cooperation Agency (JICA) worked with METI and their Thai counterpart, the Department of Alternative Energy Development and Efficiency (DEDE), from 2002 to 2005 to establish a national training and

examination system for certified Energy Management Administrators.[15] Japanese funds were used to train Thai instructors who could, in turn, offer energy management training courses and administer the energy exam to Thai enterprise staff. Funds were also used to support the development of Thai policies that require energy-intensive enterprises to have an Energy Management Administrator on their staff and to carry out energy audits and conservation measures.[16]

Multilateral policy development cooperation

On a multilateral level, GEF projects have utilized complementary cooperation mechanisms: technical assistance to promote technology development; and capacity building and public information campaigns to promote the development of markets for energy-efficient technologies. For example, multiple cooperation mechanisms were utilized in the GEF-World Bank projects in Thailand on demand-side management and building chillers (refer to Table 3.2). A number of multilateral activities have incorporated a policy development component as well. The GEF-UNDP-China effort to commercialize energy-efficient refrigerators is one example where the development of standards and labels was integrated with technology cooperation, market development and consumer outreach.

The GEF-UNDP-China End-Use Energy Efficiency Programme (EUEEP) is another example of policy development cooperation integrated with other forms of cooperation; EUEEP is discussed under multilateral cooperation in Chapter 3. The Efficient Lighting Initiative (ELI) is a prominent example where cooperative policy development was a primary focus of multilateral activity; ELI is discussed in Chapter 5 as a successful example of cooperation in the lighting appliance sector.

Regional policy development cooperation

At the regional level, countries are engaged in policy dialogue on energy efficiency under the auspices of ASEAN, ASEAN+3 and APEC (refer to Table 3.3). Much policy cooperation at this level is in the form of information sharing (IS) and joint commitments to develop national policies that support regional goals. Collaborative policy development has been undertaken in a few notable instances, especially development of a regional energy efficiency label under ASEAN, and coordination of standards development and energy efficiency test procedures under APEC. These regional efforts are discussed in Chapter 3.

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15 For more information on the Japan-Thailand project for energy managers and other energy efficiency cooperation efforts involving the Energy Conservation Center, Japan, see: http://www.eccj.or.jp/overview/int-coop06.pdf and http://www.eccj.or.jp/index_e.html

16 Based on discussions with METI Technical Cooperation Division, July 2004.

Independent organizations in policy development cooperation

Independent organizations have been particularly active in policy development cooperation, targeting several sectors, including industry, appliances, autos and buildings (refer to Table 3.4 for a list of activities).

Independent network-based organizations also play an important role in facilitating collaboration between individual countries, among multiple countries and within regional organizations. Activities involving bilateral, multilateral and regional organizations have all served to foster information sharing on energy efficiency policies. The ability of these governmental organizations to directly engage in joint development of national policies can be constrained, however, by other aspects of their relationships (political, economic, etc.). In contrast, independent (non-governmental) organizations have greater flexibility to engage in policy development cooperation. They are not required to represent the political stance of any particular country, nor does their involvement oblige any country to make any political concessions. Nor are they beholden to narrow corporate interests or obliged to promote particular technologies from particular corporations (provided their funding does not have strings attached). Rather, independent organizations are motivated by a committed network of experts who recognize the need for energy efficiency and conservation on a global scale—and the importance of policy tools to achieve results.

4.5 Conclusion: Policy Development Cooperation that Builds Capacity, Creates Incentives and Transforms Markets for Energy Efficiency

Experience, thus far, on policy development cooperation suggests five key criteria for successfully promoting energy efficiency and conservation. Significant achievements in this form of cooperation:

- have a core group with a mission dedicated to energy efficiency and conservation;
- are composed of committed individuals with substantial expertise;
- are focused on policy development cooperation;
- are sustained by consistent and sufficient funding; and
- are enabled by high-level governmental support.

In cooperation between independent organizations and governments, the "core group" may be a program or office within a foundation (e.g., the Energy Foundation's China Sustainable Energy Program), or a secretariat (e.g., the CLASP secretariat). On the side of the collaborating government, the core group may be an office within an agency or an entire institute (e.g., China National Institute for Standardization). Even if the government structure

shifts, a dedicated group of individuals can maintain the collaboration. Independent organizations have had to work hard to maintain funding for their efforts; with stable funding they are better able to sustain collaboration over longer periods of time—and achieve greater energy savings as a result. The collaborative development of policy and its actual implementation are only possible with high-level support from the government wanting to enhance energy efficiency in its country. The commitment by China's top leaders to promote energy efficiency and energy conservation—and their willingness to engage in policy collaboration—are the keys to China's successes.

In regional cooperation, the above criteria are exemplified by APEC cooperation on appliance efficiency policies. The Expert Group on Energy Efficiency and Conservation (EGEE&C), which is a core group formed by APEC's Energy Working Group (EWG), had a clear mission embodied in their name and a focus on policy development. Even though APEC is a large organization, the creation of EGEE&C directed organizational attention and resources to the efficiency group. Wiel and Lebot (2006) observe that a few individuals within the group were especially important in motivating activity, and those individuals were fortunate to work with a larger group of experts from the APEC member countries. The group's activities were sustained by ample funds from APEC on an ongoing annual basis. The group is also sustained by high-level support from APEC Energy Ministers who gave the group its initial mandate and have stayed committed to enhancing energy efficiency and conservation in the region.

In light of these criteria for success, there are several implications for further policy development cooperation in the East Asian region. To share its considerable experience in energy efficiency, Japan would do well to address some institutional challenges in its cooperative activities. One challenge is the personnel rotation system in Japanese government agencies and in many large private companies; the frequent rotation of staff can make it difficult to keep dedicated experts working on energy efficiency cooperation. The system does have the benefit of rotating expertise in, especially when industry staff are on loan to government agencies, facilitating information exchange and understanding of actual market conditions. The rotation system can also bring in new perspectives from government officials working in other policy arenas. For example, an official who has been working on East Asian trade issues may have new ideas for cooperation on energy efficiency improvement vis-à-vis trade. However, the rotation system can bring cooperation efforts to a standstill if an official assigned to lead cooperation efforts has an adverse stance toward partners. Based on the successful experience of policy development cooperation with independent and regional organizations, as well as Japan's past experience in other forms of cooperation, the implication for Japan is that the commitment of funds and dedicated experts to a separate organization could yield successful cooperation results. This approach would work well for the involvement of other governments and businesses as well.

In conclusion, examination of existing cooperation on energy efficiency in East Asia shows a movement from government-sponsored technology transfer toward policy development cooperation. Policy development cooperation yields widespread results and large energy savings because it emphasizes policies and programs rather than isolated projects. This form of cooperation can make limited funds from governments or NGOs go a long way by leveraging private investment and promoting change among energy end users. Policy development cooperation also fosters continued work on energy efficiency by strengthening institutions in developing countries. Cooperation experience shows that integrating forms of cooperation, e.g., policy development combined with capacity building and technical cooperation, yields the strongest results.