

## *Chapter 4*

### **Fostering green growth in Kitakyushu through multilevel governance**

*Chapter 4 examines the local, regional and national institutions and governance mechanisms for strengthening green growth in Kitakyushu. It reviews multilevel governance mechanisms, notably with respect to the city's relations with the central government, the opportunities and limitations of decentralisation, the role of citizens in shaping and implementing green growth in Kitakyushu, and opportunities for leveraging international networks and green exports.*

### Key findings

- The local administration has started to increase horizontal co-operation between different city departments, but could do more to reduce their tendency to operate in administrative silos. This could help align environmental and economic policy goals and enhance collaboration with the private sector.
- The central government has a longstanding tradition of leading regional development, and has also been influential in shaping green city policies in Kitakyushu, notably through national designations. A more collaborative approach with the central government could allow Kitakyushu to reduce its dependency on national designations and to embrace more of its local green growth potential. Stronger regional co-operation might enhance Kitakyushu's capacity to move on from the institutional legacy of central government programmes.
- Kitakyushu could better exploit opportunities from decentralisation to foster green growth, as has increasingly been the case in other designated cities and regions in Japan. Deregulation still needs to address key green sectors, like energy, which remains dominated by a few players that tend to block progress towards green growth.
- Overcoming the persistent barriers to greater regional co-operation within the Fukuoka prefecture would strengthen Kitakyushu's position in key green growth sectors as well as within international green city networks. Kitakyushu could also aim for greater leadership within the Japanese green cities movement, notably among designated cities.
- Kitakyushu's tradition of strong citizen engagement in environmental clean-up since the 1960s should be called upon to fully realise Kitakyushu's green growth potential. Decentralised renewable energy exploitation, energy savings through the use of smart grids, and unconventional financing mechanisms offer win-win situations.
- International collaboration for sustainable development in Asia is well established with a number of selected partners, but could be reinforced with a focus on exports of green goods and services. International relations offer untapped potential through which Kitakyushu can promote its progress as a green city and enlarge its sales prospects internationally.

In the past decades, the City of Kitakyushu has built an impressive and internationally recognised green city project. Its efforts began in the 1960s, and were initially aimed at reducing and then rolling back extensive environmental damage from its fossil fuel-fired and steel-centred manufacturing economy. But its initiatives now include advanced applications in recycling, power and water management, renewable energy and several other key areas of urban green growth. The city has worked productively with private and public sector partners, building the institutional capacity to draw on its developmental past as the basis for a new trajectory of economic growth.

Even as Kitakyushu reaps gains from the legacy of previous efforts, new opportunities are rapidly opening up to accelerate and deepen green growth and increase the returns from investing in this area. Driven by multiple crises, the Japanese central government is emphasising a comprehensive “green model” role for its own city-regions, within the Asian countries’ rapid and environmentally unsustainable economic growth. Official policy at present aims for a green economy that contributes JPY 50 trillion and 1.4 million jobs by 2020 (National Policy Unit, 2012). Japan is revising its national

energy and environmental policies, giving greater weight to renewable energy, conservation and efficiency (Box 4.1). It is also further decentralising decision-making on green growth, increasing the incentives for subnational actors to co-operate in regional blocs and press for yet more decentralisation. At the same time, the central government has shown itself, in most respects, institutionally unwieldy in responding adroitly to the various challenges in the wake of the devastating earthquake and tsunami in the Northeast region on 11 March 2011 (Wagner, 2012). In this context, Kitakyushu could take on more of a leadership role. Based on its own experience and awareness of market opportunities, the city could help to refine the large number of policies and programmes that seek to foster green growth within its own confines, its region, and more broadly, the Japanese archipelago as a whole.

#### Box 4.1. Rethinking growth and energy policy at the national level

As a result of the 11 March 2011 Great Northeast Japan earthquake and tsunami, Japan's "Basic Energy Plan" and "New Growth Strategy," both enacted in June of 2010, are being reshaped. The Basic Energy Plan planned for nuclear plants to provide 53% of electric-power generation by 2030, up from roughly 30% in early 2011. This target has been replaced by the three scenarios of zero nuclear, 15% nuclear and 25%-30% nuclear (by the 2030s) in the ongoing effort to rethink energy policy. In addition to the ambitious goals for nuclear power, the 2010 energy plan also sought to make LEDs 100% of Japan's lighting market by 2020 (and 100% of all lights by 2030), increase renewable energy to 21% by 2030, increase numbers of electric and other second-generation cars to 50% of new car sales by 2020 (and 70% by 2030), as well as make all new homes net-zero energy by 2030. While the nuclear goals might be scaled back, the other goals may be accelerated. In addition, Japan's growth strategy aimed at JPY 50 trillion of green growth and 1.4 million new green jobs by 2020. The growth strategy content is becoming increasingly detailed. The country seeks to build up its strong manufacturing skills by making hitherto individuated product categories elements of overall green-city packages. Since the disasters, smart cities, smart grids and other infrastructure have emerged as the key not only for rebuilding the devastated areas but for the new growth strategy itself. The central government's Energy and Environmental Committee announced in May 2012 that it would inaugurate a new "Green Growth Strategy Commission," which aims to expand renewable power, efficiency, conservation and power storage solutions.

For a variety of institutional and political reasons, in 2012 Japan had difficulty restarting more than two of the 50 viable nuclear reactors that, on paper, represent roughly 30% of the country's electrical power generation. The Kyushu region was thus compelled to cut its power consumption by at least 10% between 2 July and 7 September. The uncertainty about power supplies has greatly accelerated public and private sector plans for investments in energy efficiency, conservation, in-house power generation (renewable as well as gas-fired) and other means to bolster local resilience and self-sufficiency. The Roland Berger strategy consultancy argues that for Japan as a whole, emphasising conservation and renewables as its reliance on nuclear power declines can build robust domestic green markets and help Japan gain the lead over competitors in Europe and North America (Hirai and Toyama, 2012).

*Source:* Hirai T. and Toyama K. (2012), "A Green-Business Strategy for Winning in a 350 Trillion Yen Economy", ToyoKeizaihinposha, Tokyo, [www.rolandberger.co.jp/press/publications/green\\_business/2012-01-31-green\\_business.html](http://www.rolandberger.co.jp/press/publications/green_business/2012-01-31-green_business.html), accessed 16 November 2012.

Kitakyushu is in a favourable position for advancing and developing its green-city objectives. As of December 2011, it was designated one of the spearhead “environmental future cities” of Japan’s redoubled emphasis on green growth. Because of the central government’s overall policy commitment, it can also reasonably anticipate that there will be an increasingly favourable fiscal and regulatory regime for green growth. It has significant opportunity to benefit, especially if it leverages this support as the basis for a much broader base of collaboration and innovation.

The city occupies a niche of multilevel green governance that is structured, as well as constrained, by three key factors.

- First, the city collaborates intensively with its rather concentrated local manufacturing base. The major firms include Nippon Steel (as of October 2012, Nippon Steel and Sumitomo Metal), Yaskawa Electric, TOTO and others that are in the front ranks of Japan’s biggest manufacturing firms.
- Second, the city works closely with the central government’s agencies to maximise its receipt of fiscal and other support within the still highly centralised inter-governmental system.
- Third, Kitakyushu deploys these local and inter-governmental resources in its project to expand its international green business network, especially in the larger and rapidly growing Asian region.

Several reforms could contribute to realising Kitakyushu’s potential:

- i.* Reduce the tendency to operate in administrative silos and enhance institutional capacity. Kitakyushu needs to systematise its own green planning and decision-making in order to take more of a leadership role in Japan’s greening. From a multilevel governance perspective, the city is advised to start at the local level by increasing efforts to overcome sectionalism in its local administration. Hitherto, the city has been quite adept at leveraging its limited resources and options to build a credible model of green growth, while relying to a large extent on its industrial base and the auspices of the central government in crafting industrial and green growth policy. These organisational assets remain valuable. But the city should enhance its own institutional capacity in order to increase its autonomy and thereby maximise its flexibility and inventiveness to act in a rapidly evolving, and global, green growth arena.
- ii.* Increase inter-regional co-ordination. Kitakyushu should build on its recent successes in pursuing co-operation with its regional partners, including the City of Fukuoka, the prefecture of Fukuoka, and the newly (as of April, 2012) “designated city” of Kumamoto. These urban and prefectural governments afford a significant force in seeking to shape and make coherent the numerous national and regional policies directed at green development. Kitakyushu is well placed to reach out further beyond its own borders. The broader network can do much to encourage greater innovation in new materials, advanced energy conservation, efficiency and renewable energies.

Regional co-ordination is particularly important because of the uncertainty in Japanese energy and environmental policy after the 11 March 2011 natural disasters. The earthquake and tsunami were followed by supply shortages and

other problems in the country's power economy, the world's third largest at JPY 16 trillion. The central government has had difficulty in co-ordinating a coherent and effective response to these multiple crises, and many policy areas remain under contentious study. But the general trend of policy change is towards distributed and smart power generation coupled with a greater decentralisation of administrative and planning functions. This background suggests an opportunity for Kitakyushu to reduce its dependence on the central government in favour of a more effective and nimble regional governance.

A more regional focus is already encouraged by a range of policy-making tools, such as METI's policies to foster clusters. It is also favoured by Japan's ongoing devolution of fiscal and administrative powers to prefectural blocs, representing large geographic regions as well as city-regions. Kitakyushu's regional bloc is the island of Kyushu, which is being positioned for a gateway role within rapidly growing Asia. The geography of Kyushu and its proximity to Asia makes it, in the Japanese context, the natural site for the doorway to an expanded interaction.

- iii. Maximise the use of local resources. Local citizens were a catalysing force in fighting against pollution in the 1950s and 1960s. But the green growth initiative and opportunity in the present does not have the immediacy that very visible and destructive pollution did in the past. Green growth can involve lifestyle changes, and at times short-run cost increases, whose overall benefits might not be immediately apparent to many residents. Yet the citizens' role is crucial not only as a local source of demand for green goods but also for the continued reinforcement of the green-city model. Their support for smart grids and energy conservation appears robust at present, especially because of Japan's ongoing power crisis. Yet this should not be taken for granted. Expanding the incentives to encourage a thickening of civil society generally requires many years. A number of goals, such as reducing energy consumption, waste production or increasing decentralised energy production, rely on citizens' active participation in shaping this process. Communication and information campaigns as well as clear incentives to engage with urban green growth in Kitakyushu are essential to generate the necessary level of citizen participation.
- iv. Help leading the legacy interests in the local industrial base. The industries' role in Kitakyushu's green-city design centres on exports of products and services that reflect *status quo* levels of efficiency. But as a result of the continuing disruption in Japan's energy policy and power supply, efficiency and conservation efforts may have to be increased significantly. While this will demand strenuous efforts, the pressure could also encourage smart deregulation, accelerate the deployment of alternative energy and energy-management systems and revitalise the national economy through rapid growth in LED lighting, energy-management systems, storage technologies and related markets. As is evident in the growing support for green-city initiatives, the business community increasingly recognises the productive role of public policy that targets sustainability.

## Reduce the tendency to operate in administrative silos

Deeply embedded “vertical administration” (*tatewari gyousei*) in Japanese intra- and inter-governmental affairs appears ill suited for tackling cross-cutting policy challenges of urban green growth. Over the past two decades, Japan has seen considerable fiscal decentralisation and changes to administrative law. These changes have reformed Japan’s agency delegation and other mechanisms through which central agencies reproduced themselves at the local level, maintaining bureaucratic control. However, this progress on decentralisation was not matched with the direct transfer of authority over regional bureaus of central state agencies. The imprint of these institutions continues to structure the norms and expectations of local policy makers as well as path-dependent flows of personnel and other resources. Japan’s larger local governments are seeking ways to overcome this lingering sectionalism in order to grapple with greening, the ageing society and other policy challenges that cut across established bureaucratic categories.

Kitakyushu city authorities have reacted to difficulties in policy co-ordination by introducing measures to minimise silo effects in the local administration. In the past, a number of local development initiatives have not met with success, due, at least in part, to the fact that regional development policy was being centrally led in a context of strong vested interests. For example, the city government’s 1980s-era forays into fostering new directions in local development tended to be “subsidiary to large and powerful interests” in the local economy, including the firm Nippon Steel (Shapiro, 1993). In seeking to expand green growth, Kitakyushu has been transferring administrative staff between the bureaus focused on economic development and those centred on environmental affairs. This policy is still at an early stage and its concrete outcomes have yet to be proven. But it is an explicit effort to foster “green growth personnel” who understand inter-sectoral linkages and trade-offs between short-run economic imperatives and long-run sustainability goals. Rotation of staff throughout the various bureaus of urban administration is not unique in Japan, where administrative staff routinely moves every two years. But Kitakyushu may offer a practice worth emulating in structuring the rotation so as to diffuse a common understanding of green growth.

The Overseas Water Infrastructure Public-Private Partnership Council offers an example for the contribution of public-private-partnerships to overcome administrative silos. The City of Kitakyushu was included as a member of the central government’s Overseas Water Infrastructure Public-Private Partnership Council (Box 4.2). This national council was in fact preceded by Kitakyushu’s own initiative at the local level. In 2010, the city set up the Kitakyushu Overseas Water Business Promotion Council, whose members include the heads of the Environment Bureau, the General Affairs and Planning Bureau, the Industry and Economy Bureau and the Water and Sewer Bureau. The Kitakyushu Waterworks Association, consisting of 125 companies, 7 related organisations including JICA and the Japan Bank for International Co-operation (JBIC), academic experts, several Bureaus of the Kitakyushu City government as well as national observers,<sup>1</sup> also sits as a member on the Council. Through its central role in the Kitakyushu Overseas Water Business Promotion Council and its membership in the national Overseas Water Infrastructure Public-Private Partnership Council, the city acts as a window for public-private partnerships, giving local firms access to international networks.

### Box 4.2. Overseas Water Infrastructure Public-Private Partnership Council

Established in 2010, the Overseas Water Infrastructure Council consists of three Ministries: the Ministry of Land, Infrastructure and Transport (MLIT), the Ministry of Health, Labour and Welfare (MHLW), and METI. It was formed to investigate Japan's opportunities to increase its presence in the global water business, with a focus on water infrastructure and management. The water business is expected to expand from JPY 36 trillion in 2007 to JPY 87 trillion in 2025 (City of Kitakyushu, 2012a). Japanese local governments' waterworks departments and their private-sector partners have developed very good water-management technology. But policy makers and analysts believe them to be too balkanised, with insufficient incentives and institutional support for entering this expanding international market.

As for Kitakyushu's own local council, the original corporate membership of 57 firms (27 local, 30 from outside Kitakyushu) expanded to 131 firms by the end of 2012. Three universities in the area are also represented on the council, whose operations are managed by the Kitakyushu Waterworks Association. The Kitakyushu Council is focused on promoting the water business in Cambodia, China, Saudi Arabia, Vietnam, and other overseas venues. Kitakyushu has already secured contracts with Haiphong in Vietnam, the Kingdom of Cambodia and other markets.

Kitakyushu's initiatives caught the attention of the specialist community across Japan. In April 2012, the Ministry of Land Infrastructure, Transport and Tourism presented the city with a certificate of merit as a "Water Environmental Solution Hub" for its organisational approach as well as its skillful deployment of water technologies.

*Source:* Roland Berger (2011), (in Japanese) "Building Strategic Organization for the Global Water Business", Business Perspectives from Roland Berger, Vol. 77, December, [www.rolandberger.co.jp/media/pdf/Roland\\_Berger\\_Shiten77\\_20111219.pdf](http://www.rolandberger.co.jp/media/pdf/Roland_Berger_Shiten77_20111219.pdf); Kitakyushu Bureau of Economy, Trade and Industry (2012), (in Japanese) "Mid-Term Report on Fostering Development of Asia Business", from the proposal of the Board of Strategic Studies for Asia Business, Kyushu Bureau of Economy, Trade and Industry, [www.kyushu.meti.go.jp/seisaku/kokusai/oshirase120326\\_1.pdf](http://www.kyushu.meti.go.jp/seisaku/kokusai/oshirase120326_1.pdf); City of Kitakyushu (2012), "Background Paper on the City of Kitakyushu – OECD Green Cities Programme", internal document, City of Kitakyushu, Japan.

Kitakyushu seeks to institutionalise green growth goals by including an International Office in its Environmental Bureau. This institutional innovation was implemented in 2000 and then followed up, in 2005, with an "Office for a World Capital of Sustainable Development." Kitakyushu has also sought to alleviate the problem of silos at the city's top administrative level by instituting its "Office for Eco-Model City Promotion." Through this agency, the mayor and ranking officials from all city bureaus meet regularly and seek to arrive at planning and programme decisions to further the overall goal of achieving the eco-model city programme. The city administration's various bureaus also hold joint seminars and related events to further mutual understanding of their efforts in encouraging new industries to hold stakes in the city's green growth ambitions. Kitakyushu's innovation of putting an International Office in its Environment Bureau also reflects the city's longstanding endeavour to help overseas partners learn from its developmental know-how as well as build a business model based on these experiences.

However, it is still unclear whether these innovations and initiatives have built enough organisational capacity to overcome the problem of sectionalism and ensure a steady flow of new ideas. It seems doubtful that the closed circle of co-ordination will suffice to innovate, or at least revise strategies to stay abreast of the rapidly evolving

domestic and international contexts. This goes beyond managing the implementation of the green model to its very design and continuing evolution, as Yokohama’s innovative effort to continually draw on local civil society demonstrates (Box 4.3). While it is inevitable that the framing of Kitakyushu’s green model bears the imprint of legacy interests, the city needs institutional mechanisms to alert it to unduly circumscribed perceptions of what is feasible and desirable. Kitakyushu confronts the challenge of growing green services, and has clustered some of the human and other resources essential to that end. Yet if the city staff are generally socialised in a constrained model of green growth, and tend to interact with those of like mind, that can limit the potential benefits from the rotation of personnel and better co-ordination of policies.

#### Box 4.3. Yokohama’s co-governance approach

On design and implementation of a greener city, Japan’s much larger city of Yokohama (population 3.6 million) has recently evolved a more overarching approach. Like Kitakyushu, it seeks to foster inter-bureau linkages. For example, it includes an Office of International Policy within its generalist Policy Bureau. The purview of this office is cultural exchange and other conventional forms of international co-operation. The city’s Climate Change Policy Headquarters, an independent and high-priority bureau, is also involved in the city’s main initiative, Y-PORT, which is a window project for international technical co-operation. But the Yokohama Policy Bureau’s newly established (from May of 2011) “Centre of Co-Governance and Creation” co-ordinates these programmes. Co-governance has institutionalised consultative channels with the various bureau heads in the city wards as well as local civil society. Co-governance runs regular “co-governance forums” on specific themes to generate new ideas on business and other opportunities. These events include city staff, businesses from within and outside the city, academics and consultants, and entrepreneurs and representatives of non-profit organisations. It also holds regular “open forums,” to get feedback from the broader public. In short, Yokohama has created an innovative coordinating institution that links its greening initiatives together as well as seeks to innovate within them.

*Source:* Co-Governance and Creation Task Force (2011), (in Japanese) “Co-Creation in Yokohama”, City of Yokohama, [www.city.yokohama.lg.jp/seisaku/kyoso/sales-sheet2011-8.pdf](http://www.city.yokohama.lg.jp/seisaku/kyoso/sales-sheet2011-8.pdf).

### Collaborate more with, rather than depend on, central government

A major challenge for Kitakyushu is the extent to which it can graduate from the institutional legacy of an older model of regional development that shapes the city’s green growth. Kitakyushu has been at the head of Japan’s green city movement since 1980, being a pioneer in this kind of urban development. At the same time, its institutional context suggests potential problems of path dependence. They stem from the city’s historical role as a target of national industrial and regional development policies. In 1913, Kitakyushu’s steel mills were producing 80% of the steel that the country was consuming. In the post-World War II years, Kitakyushu was a focus of the central government’s efforts to initiate a productivity-driven revival and rebuild of the economy, one that fostered a virtuous loop between coal and steel production, with each supporting and then expanding the other. The city was one of Japan’s four primary industrial-development zones. Close inter-governmental ties are a natural outcome of this economic history, given the large role of the central government in planning its infrastructure. But more room to manoeuvre would enable Kitakyushu to better take advantage of



institutional innovation that is essential for building a competitive green growing city, particularly one with a more robust service sector.

Among the designated cities, Kitakyushu has a comparatively difficult position within the nexus of Japanese inter-governmental fiscal and administrative relations. Kitakyushu does not possess the size advantage of such megacities as Tokyo, Yokohama or even Osaka, and is not even capital of its home prefecture of Kyushu. It is one of Japan's 20 designated cities, which hold administrative powers roughly equivalent to the prefectural governments, but considerably less fiscal capacity. Kitakyushu's ranking of 974 000 residents placed it at 12<sup>th</sup> among Japan's 19 designated cities (prior to Kumamoto City becoming the 20<sup>th</sup> designated city in April 2012). But its population represents only 19.2% of the immediate prefectural population, lowering the city's rank in this respect a little further to 13<sup>th</sup> among the designated cities. The Kyushu prefectural capital of Fukuoka, meanwhile, has a population of 1.46 million. Adding to the city's constraints, Kitakyushu is now the most aged and rapidly ageing of Japan's designated cities. In 2010, 25.1% of its residents were over the age of 65, compared to 17.5% in nearby Fukuoka City and a national average of 22.8% (City of Kitakyushu, 2012b).

To a significant extent, Kitakyushu remains an example of centrally guided regional development policy, albeit with a green agenda. Among other indicators of this aspect, the city is more dependent on the central government than most of the other designated cities. The city's relatively low fiscal capacity – with only 71% of its expenditures being funded out of taxation, versus an average of 87% for the other designated cities – make it more dependent on fiscal transfers than the average. It funds 33.5% of its expenditures through local taxes, compared to a 44% average for the other designated cities. Also, it receives 24.7% of its revenues from the central government as block transfers and specific grants. The average for designated cities is 18.7%. Moreover, 11.9% of the city's revenues are from the central government's local allocation tax, which is a no-strings block grant that redistributes according to fiscal need. The other designated cities' average dependence on this subsidy is 5%. Though this is a block grant, its prominence as a revenue source is one more indicator of how much Kitakyushu relies on the central government. Working in tandem with Kitakyushu's fiscal dependence is guidance by the centre's initiatives. A striking feature of its green city efforts, such as its recycling and water initiatives, is that most of the component projects are clearly associated with one central agency or another. Most major green city projects are supported or implemented through regional offices of national agencies or set up in the context of national designation programmes (Table 2.1).

Yet there are times when the city appears able to move flexibly in this context. For example, the city used the partial decentralisation of fiscal rules to implement an "Environmental Tax" (Box 4.4). It was also very pro-active in fostering local efforts in the water business, as discussed earlier. Another example of taking action is seen in its development of a smart grid without the involvement of the regional utility. Japan's monopolised utilities have long been averse to the development of smart grids, viewing them as inconsistent with their maintenance of the status quo in market structures and the power mix. Moreover, METI was itself somewhat dismissive of the potential for smart grids within the Japanese political community. In February of 2009, the Vice Minister of the METI suggested that in fact Japan did not need a smart grid because its grid was already robust, with very high reliability. The hesitance about the smart grid within the Japanese context appears to have centred on the concern by the utilities that it would lead to a potential erosion of their monopoly position in the power market by encouraging competitors, as well as renewable energy (Fujii, 2011). Kitakyushu, however, was able to

devise a test of the smart grid within its jurisdiction without the co-operation of the local utility, Kyushu Electric Power. The administrative ruling was a *de facto* relaxation of the electrical monopoly law (Impress R&D, 2011). Kitakyushu's good relations with the central government as well as Nippon Steel's interest in the deregulation of the power market (Nikkei Business, 2012) seem to have facilitated Kitakyushu's more flexible implementation of a smart-grid project. In the continuing political and policy-making instability at the central government level, Kitakyushu can further exploit these assets for its current crop of green technology, as well as in expanding its opportunities for innovation.

#### Box 4.4. The Kitakyushu Environmental Tax

Kitakyushu's "Environmental Tax" is an earmarked local tax, whose revenues are dedicated to uses specified in the enabling law. The tax is not one of the regular local taxes as specified in the local tax law and is therefore deemed "extra-legal". The tax measure was approved by the City Council in March 2002, and received approval from the Ministry of General Affairs, which oversees local fiscal affairs, in September of the same year. The tax was then implemented from October of 2003.

In the first year of its implementation and continuing to 2007, the tax was levied at JPY 500 per tonne of waste. The rate was then doubled from 2008 to JPY 1000 per ton, where it remains. The tax revenue amounted to JPY 1.2 billion in 2010. The tax is levied on the final stage of waste treatment, disposal, leaving mid-stage processes untaxed. The tax therefore acts to increase the incentives for recycling as well as reduction of final waste volumes.

Revenues collected from the tax are used to fund a range of activities. One of these efforts is the various forums in which citizens, NGOs, firms and specialists interact to exchange ideas on enhancing the city's environmental profile. Other activities include seminars on energy efficiency, venues for the citizens' direct participation in environmentally oriented activities, as well as the promotion of environmentally oriented international linkages.

A recent European Union study of the use of economic instruments to improve waste management determined that landfill taxes applied to municipal waste tended to reduce the percentages of waste being sent to landfill. The study found a positive correlation between higher landfill charges and higher rates of recycling, especially with tax levels approaching EUR 100 per tonne.

*Source:* Ministry of Internal Affairs and Communications (2012), (in Japanese) "Current Conditions of Extra-Legal Taxes", [www.soumu.go.jp/main\\_content/000165240.pdf](http://www.soumu.go.jp/main_content/000165240.pdf); European Commission (2012), "Use of Economic Instruments and Waste Management Performances, Final Report," European Commission, DG ENV, [http://ec.europa.eu/environment/waste/pdf/final\\_report\\_10042012.pdf](http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf).

Building stronger regional capacity would help Kitakyushu to become more autonomous from Japan's centre-local institutional context. It would also help bolster its visibility and influence among Japanese green cities and internationally. Kitakyushu finds itself in a national and global context in which green development is no longer an unusual niche but rather an increasingly strategic approach. Central-government-led regional development has been a key driver behind Kitakyushu's green city model. "Graduating" from this model may be a condition for playing a larger role in the international green-city movement. There is plenty of competition. For example, a 2011 survey from the University of Westminster's authoritative International Eco Cities Initiative found "an unprecedented mushrooming of various kinds of eco-city initiatives and projects across the world," with a total of 174 eco-city projects catalogued. Strengthening its regional

capacity would help the City of Kitakyushu to gain yet more authority vis-à-vis central agencies and its own legacy economic base. Important steps in this process would include such institutional changes on the local and regional level as an office for policy co-ordination to overcome sectionalism. In addition, the city should stress more collaboration with regional partners to expand economic opportunities that are more broadly based and thus less dominated by local and central legacy interests.

Potential areas for collaboration are seen in deregulation. Japan's green cities call for deregulation, in particular in the power sector, to foster local power businesses and related opportunities. Local governments are keen on deploying new energy technology in order to further their projects of building resilient sustainable cities. But they often encounter regulatory barriers in the current power company law, for instance when setting up test structures of smart communities and other technologies. Hence they press for deregulation of the power law in order to allow them to turn those tests into "mini-power firm" businesses. Their smart community businesses include solar power generation as well as power management systems that are increasingly core elements of their model communities, aimed at raising levels of efficiency and resilience. One example is Yokohama city's Minato Mirai 21 Area. This project faced difficulties in satisfying the regulatory conditions for building a grid network, and thus requested rule changes. From 2013, an independent power company will be operating in this area. The city of Kyoto is also interested in building a mini-power company from within its Keihan research city initiative, and would like to pursue the option of being a power producer and supplier. However, the power producer and supplier market is limited to large-lot customers, and the mini-power company's overhead and other costs are too great at present to replicate such models at scale. Kitakyushu's experience has been instructive for these smart-city examples, and an exchange of experience has started to be organised over the Japan Smart City Portal. However, the increasing diffusion of smart approaches throughout Japan suggests the need for a broader mechanism for collaboration and exchange.

Japan's power-supply crisis may be protracted, and the need to continue innovating in the face of the crisis will entail further need for rule changes and may imply new opportunities for Kitakyushu. The larger question of what kind of deregulation of the current power monopolies best suits Japan's emerging needs as well as evolving technologies cannot be answered in the abstract. But as Japan moves towards increasing adoption of renewables and smart grids, good governance of the market is likely to be strongly shaped by actors, such as Kitakyushu, with experience in deploying new energy systems. The central government appears responsive on this front. On 26 March 2012, the national political leadership brought out a wide-ranging set of 103 deregulation proposals. The proposals were released through the National Policy Unit, which is headed by the prime minister and explicitly designed to amplify the elected politicians' voice in policy making. Many of the proposals include items being discussed in the central agencies. Of the total, 39 are directed at renewable energy, 38 deal with power systems such as smart grids, and 26 are devoted to facilitating energy conservation. Reports indicate that most of them are fairly simple changes to rules or ordinances. In the context of a power crisis, it would appear that Japanese central government policy making is accelerating. The more pro-active Kitakyushu is in this rapidly evolving context of deregulation and restructuring Japan's JPY 17 trillion per year power economy, the more it enhances its potential benefits from stimulating innovation and attracting innovators.

The context of continuing uncertainty in central government policy making can provide Kitakyushu opportunities to build on its green city leadership. As one avenue in

pressing for deregulation and related green initiatives to enhance the scope for local and regional green growth, Kitakyushu can make use of its chairmanship of the Promotion Council for the “FutureCity” initiative (Box 4.5). The Council is a large organisation, with 204 members, and could help co-ordinate green-city programmes overall with the National Policy Unit, even if only in an advisory capacity. The Promotion Council is not at present a very active central organisation outside policy-making circles. It meets once or twice a year in a full conference. But it is also composed of working groups that study best practices among the eco-model cities, the green economy and other themes related to building low-carbon cities and greenhouse gas reduction mechanisms. Moreover, with its experience and extensive network, Kitakyushu would seem to be ideally situated to help lead the Council towards a more central role in interest aggregation and articulation into the policy process. Against the larger backdrop of rapidly increasing salience of the green city policy in Japan’s strategic growth plans, Kitakyushu could help shape policy coherence.

#### Box 4.5. The Promotion Council for the Low-Carbon Cities

The Promotion Council for the Low-Carbon Cities was given its official launch on 14 December 2008, at the Kitakyushu International Convention Centre, and became the Promotion Council for the “Future City” initiative in 2012. The organisation is aimed at accelerating innovation and learning within the eco-model cities. The administrative backup is provided by the Cabinet Office’s Local Revitalisation Section. The initial membership of the Council totalled 130 organisations. Of these organisations, 70 were “highly motivated municipalities” along with 39 prefectures, 12 related government ministries and 19 quasi-governmental organisations. The Initiative has a working group for “best practices”, which was established at the general meeting on May 28, 2010. It is designed to diffuse best practices that can be applied in other cities.

As of 9 November 2011, the Council’s membership had increased to 89 cities, 46 prefectures, 12 governmental offices, 29 public organisations, and 28 organisations from the private sector, a total of 204 organisations. The private sector members include some of Japan’s major business firms, such as Osaka Gas, Japan IBM, Mitsubishi Automobiles, Pacific Consulting and Nikkei BP. The quasi-governmental organisations include the Urban Energy Association, the Urban Environmental Energy Association, the Heat Pump and Battery and Storage Center and other organisations.

*Source:* Eco-Model City Project (2011), (in Japanese) “An Introduction to the Low-Carbon City Promotion Council”, Eco-Model City Project website, <http://ecomodelproject.go.jp/pclcc/>, accessed 16 November 2012.

### Make decentralisation work for green growth

Japanese regions are increasingly pressing for decentralisation in the still highly centralised Japanese state. While only 40% of general-budget public sector revenues are collected locally, 60% of Japan’s programme spending is done at the subnational level. This fiscal gap affords numerous avenues of central interference in local affairs. Japanese regional initiatives on decentralisation are aimed at forging a new dynamism in Japan’s political economy, which could also give regions the institutional and political tools for more autonomous green development (Box 4.6). The influence of particularly active cities on Japan’s regional governance as well as its energy and environmental policy, gives an important signal to Kitakyushu and its regional partners towards more co-operation.

#### Box 4.6. Japan’s “designated cities” and decentralisation

Regional reform has long been an item in Japan’s debate over inter-governmental reform. The high rate of ageing, hollowing out of manufacturing, efforts to grow green and other challenges are placing a premium on co-ordinating action at the local level. Problems include the reliance of smaller communities on the fiscal and administrative arms of the central government, even as the big cities and regions need more autonomy to shape their green-economy models. There are issues within the regions as well. One of these is the overlap of responsibilities between the “designated cities” and their respective prefectural governments. An October 2012 survey of designated cities conducted by Nikkei Shimbun found that 12 among the 20 designated cities want administrative powers and resources from their respective prefectures in order to enhance their autonomy through the construction of “special autonomous cities”. These cities include Kitakyushu as well as Kyoto and Yokohama. The cities seek the decentralisation of fiscal and administrative resources in order to bolster their capacity to deal with the challenge of natural disasters, as well as economic policy making and other functions that require swift responses. Yokohama city published a proposal for the special autonomous city in June of 2012. Gaining momentum on these initiatives will require further co-ordination and collaboration among the cities and prefectures.

*Source:* Nikkei Shimbun (2012), (in Japanese) “The Special Autonomous City: Survey Finds Support of 12 Designated Cities for Expansion of Fiscal and Administrative Powers”, October 7.

One of the major avenues in decentralisation initiatives is focused on the regional bureaus of the METI and other agencies. The regional bureaus of central agencies dominate regional planning and infrastructure and are therefore key agencies in forging a regional green project.<sup>2</sup> Pro-active initiatives towards decentralisation in the Kansai region have encouraged the Kyushu region to do likewise (as is also true of the region of Shikoku). Parliamentarians in the Fukuoka Prefectural legislature grouped in September 2011 to formally inaugurate the “Consider Autonomy for Kyushu.” This organisation is an expanding movement of lawmakers that also draws on representatives of regional businesses, business associations and non-profit organisations. Together with the Kyushu Governors’ Association, the autonomy movement is preparing the Kyushu region for regional devolution. The two regions of Kansai and Kyushu have been co-operating in the effort to secure decentralisation of these central agency functions (Keidanren Times, 2012). In order to exploit synergies and avoid overlap, they and the other regions will need to develop vehicles and mechanisms for negotiation and collaboration.

Kitakyushu could also play a role in fostering a more equitable green devolution by highlighting the road to opportunities for smaller local communities. Japan’s current movements towards decentralisation are historic. They are proceeding rapidly and on a scale that has elicited a backlash from smaller local communities. Thus on 3 March 2012, over one-quarter of Japan’s 1 719 cities (as of 1 April 2012), towns and villages formally met to protest the pressure for devolution. Their concern is that the negotiations on decentralisation are taking place between the central government and powerful players at the regional level, including prefectures and designated cities. They evidently worry that decentralisation would leave them even harder-pressed to amalgamate<sup>3</sup> and otherwise surrender their local autonomy in addition to fiscal redistribution and other benefits.

Kitakyushu could be helpful in promoting equity and assuaging these concerns. One of Japan's policy streams seeks a "green decentralisation" to balance the role of urban and rural areas and to provide increased opportunities for the latter. This green decentralisation initiative was inaugurated in December 2009, under the stewardship of the Ministry of Internal Affairs and Communications, whose jurisdiction encompasses local finance. In tandem with the increasing importance of the bio-economy, which is largely rural, the ministry's vision of an equitable green decentralisation could be made part of the regional bloc initiative. That effort could help make rural areas more cognisant of the connection between decentralisation and the opportunities afforded by the shift to more distributed energy and greater local reliance. The more they see a profitable role for themselves and their communities inside the regional bloc, the more likely they are to be persuaded of the initiative's merits. The Mayor of Kitakyushu sits on the "Local Sovereignty Strategy Council" that is working up the legislative agenda for decentralisation, and the city itself has multiple channels into regional policy. These institutional channels afford the potential to advocate its own green-growth initiatives in recycling and other readily adopted businesses as examples for diffusing local growth. The increasing green-growth orientation of the region *per se* also affords rural areas opportunities to provide bio-material inputs, giving them a stakeholder rather than largely bystander role.

### Enhance inter-regional co-ordination

Historical inter-regional rivalry between Kitakyushu and Fukuoka and jurisdictional overlaps can explain some of the barriers to inter-regional co-ordination. Into the 1960s, Kitakyushu was the Fukuoka Prefecture's largest centre of employment and population, a legacy of its role as Japan's premier steel-making centre. Both cities have promoted many of their own green initiatives independently. They do not appear to duplicate one another's developmental efforts, however, due to the divergent evolution in their industrial bases as well as the overall financing and co-ordinating role of the central government. A limiting factor for co-operation among the cities and the prefecture is the overlapping of jurisdictions in tax collection. In a number of administrative areas, all three actors – Fukuoka Prefecture and City and Kitakyushu City – are roughly equivalent, even though they are differentiated overall as prefectures and designated cities. This overlap may have led to frictions among the cities and prefecture.

Kitakyushu and Fukuoka also have a history of co-operation, which has become more focused and deliberate since the natural and nuclear disasters of 11 March 2011. Regional-scale initiatives in tourism promotion, research on common environmental problems, deploying charging stations for electric cars, and other initiatives have proven to be effective projects of co-operation. There is also a considerable history of business and other actors seeking to build on transportation and energy (e.g. gas pipelines) infrastructures for the so-called "Fukuhoku" region, a term that combines initial Japanese characters of Fukuoka and Kitakyushu. Co-operation between the two cities is also fostered to some extent by initiatives from Fukuoka prefecture as well as the central government agencies, especially the Kyushu Bureau of Economy, Trade and Industry, a regional agency of the METI. In mid-2011, the prefecture of Fukuoka as well as the City of Fukuoka and the City of Kitakyushu co-operated by jointly applying for the national government's special comprehensive deregulation zone (Box 4.7). The comprehensive zones stress tax breaks and deregulation and are limited to seven nationwide. That means the hurdles to acceptance are quite high.

#### Box 4.7. Japan’s flagship comprehensive special zone law

Japan’s flagship comprehensive special zone law was passed on 22 June 2011. The zone initiative was billed as a means to “concentrate resources of central and local government in areas of high pioneering potential.” It is not simply a relaxation of rules but also an overall package of support that includes regulatory exemptions, tax breaks, financial aid and loans and other mechanisms aimed at innovation.

The major types of comprehensive special zones are the international strategic zones and the regional revitalisation zones. The strategic zones are aimed at clustering industry and related intellectual and other resources so as to increase growth opportunities in the environment, next-generation energy, bio-life science and other areas. These zones include the “Green Asia International Strategy Comprehensive Special Zone” that groups Fukuoka City and Prefecture with Kitakyushu City in an initiative to position their region in western Japan as the gateway to Asia.

There were seven special zones as of February 2012. In total, they comprise budgetary requests of JPY 153.9 billion, which are expected to lead to JPY 6.97 trillion in new economic activity and 298 000 new jobs.

At present there are 26 regional revitalisation zones. The ambit of this zone programme includes disaster prevention and mitigation, environment and next-generation industry, tourism and culture, agriculture, biomass, finance and social business, health care and nursing. The total fiscal scale of the zones is JPY 63 billion, which is expected to lead to JPY 2.15 trillion in new business activity and 67 000 new jobs.

The tax exemptions in the international strategy zones are focused on lowering the corporate tax in order to foster competitiveness in international markets, while those in the regional revitalisation zones centre on deductions for individual investment in enterprises that are part of the strategy.

*Source:* Fukuda, A. (2012), (in Japanese), “Promotion of Japan’s Revival and Recovery via use of Comprehensive Zones and Related Measures”, presentation by General Affairs Vice-Minister, Cabinet Office, Government of Japan, 27 February, [www5.cao.go.jp/keizai1/keizaitaisaku/2012/0227\\_2-3\\_soumu.pdf](http://www5.cao.go.jp/keizai1/keizaitaisaku/2012/0227_2-3_soumu.pdf).

Competition between international city regions can be another important driver for more inter-regional co-operation. Reflecting their previous “go it alone” tendencies, the Fukuoka prefecture and cities had designed their own individual comprehensive special zone approaches in 2010. Kitakyushu’s plan stressed the fostering and clustering of environmental businesses; the City of Fukuoka focused on attracting more tourists from Asia, while Fukuoka Prefecture emphasised the development of the electronics industry. But anxiety concerning the prospect of failing in their individual bids pushed them towards co-operation. The prefecture and the two designated cities openly express their concern about being left behind in the competition of increasingly competitive global city regions. In September 2011, the mayors and prefectural governor met to discuss how to bolster environmental industries, and they announced that they would jointly appeal for a “Green Asian International Strategy Comprehensive Special Zone.” They asked for special tax measures as well as deregulation to accelerate co-operation among themselves on developing water and sewage technology exports as well as next-generation fuel cells and other products. Hence, Kitakyushu’s environmental approach went on to frame the co-operative application for the special zone, which was granted in December of 2011 (Nikkei Net, 2012).

Achieving a comprehensive packaging of green technologies and related services into green city models requires co-ordination from the regional governments acting together. This is not only because of the efficiencies gained from clustering and collaboration. It is also because the Japanese national government is marked by sectionalism as well as impeded by political instability and limited capacity to achieve co-ordination of the very ambitious and wide-ranging new growth strategy. The national government is also being forced to rethink much of its energy and growth policy regime, along with its regulatory and fiscal policies relevant to these areas, even as powerful beneficiaries of the status quo fight to preserve it (Wagner: 2012). Regional government are the politico-administrative actors whose fortunes depend most directly on success of the green-growth policy measures. They therefore have potentially the most powerful incentives to act. But at present they possess inadequate tools, such as co-ordinating the demand for and supply of green jobs,<sup>4</sup> to act successfully on their own. Working in concert, they can iron out their differences and avoid impeding their initiatives through overlap and other potential detractions from co-ordinated political action.

Private sector co-operation offers an opportunity for the city administration to overcome sectionalism. The public-private-partnership council promotes business initiatives in the overseas water business and at the same time encourages co-operation among divisions of the city administration to promote the local water business. But this is neither a context nor an outcome where there is an unambiguous standard of performance. The contracts won appear largely to be aid projects financed by such agencies as the Japan-ASEAN Integration Fund and the Japan International Co-operation Agency (Japan FS, 2012). The use of aid funds is perhaps unavoidable given the novelty of the water-business market to Japanese firms and the income level of many of the recipient countries. But it may not be fostering an economically sustainable route into the business. This is because Japanese firms' costs are relatively high, and there is no mechanism evident for encouraging cost reductions. In this case, the institutions designed to overcome the problems of silos and various barriers to entry may encourage an environment in which there is insufficient incentive to reduce costs because the sale is subsidised. METI is planning on introducing qualification assessments for projects in order to strengthen their cost competitiveness (METI, n.d.), but it is not clear when and in what fashion. It will therefore be crucial to ensure, for the time being, that the institutions do not themselves turn into a silo through becoming selective, opaque and dependent on subsidisation.

### **Enable local citizens to take a greater part in the green economy**

Environmental governance in Kitakyushu has a strong tradition of citizen participation. Citizen movements, notably women's associations, were at the forefront of pushing for environmental improvements in the 1960s to 1980s. Also more recently, citizens played an important role in conceiving sustainability plans and documents such as the Grand Design and the Green Frontier plan, via participation in a large number of town-hall style meetings (City of Kitakyushu, 2012a). An important recent initiative is the Kitakyushu Clean-up Union, organised by a community-based "sanitation and environment association" with over 70% over Kitakyushu's households participating. This association includes a large number of elderly people who aim to pass on their experience and know-how to younger generations (City of Kitakyushu, 2012a).



Yet green growth governance would gain from more consistently drawing on local residents and broaden the scope of participation to focus on environmental activities that contribute to growth. Descriptions of citizens' involvement in the environmental model city programme tend to centre on relatively passive roles, such as their purchases of energy-efficient appliances as well as participation in reforestation. Residents earned eco-points through the Kitakyushu citizens "environmental passport" and the Kitakyushu green fund. Through these involvements, the citizens are deemed to directly experience environmental activities, making them visible and tangible. The city also seeks to raise their environmental consciousness through environmental learning activities. The emphasis on raising awareness has been a constant theme in Kitakyushu's green-city approaches. Its Eco-Town project came with the stipulation that the recycling businesses would have to be open to public view. To be sure, these are important elements of the green city, and offer some tendrils of green service growth. However, a broader role for urban residents as stakeholders appears possible and necessary.

The ongoing effort to increase the level of power supplied by renewable energy may offer an important means of more deeply involving and organising the public. Kyushu has Japan's best level of solar insulation, and is thus a primary focus of investment activity, especially because the 1 July 2012 expansion of Japan's feed-in tariff will see large-scale solar subsidised at JPY 42 Kilowatt/hour for a period of 20 years. The city already works with local small business to facilitate the deployment of solar panels on the roofs of warehouses along its shoreline. To this end, in January 2012 Kitakyushu set up an agency called the "Kitakyushu Solar Power Deployment Promotion Committee." The committee groups Kyushu Institute of Technology with 22 other firms and organisations. The Kyushu Electric Power Corporation and the Kyushu Bureau of Economy, Trade and Industry (the regional office of the Ministry of Economy Trade and Industry) are participating as observers. The Council is aimed at maximising opportunity from the new feed-in tariff. Estimates indicate that the roofs of factories and warehouses along Kitakyushu's shoreline could generate as much as 323 million KWh of electric power, which is roughly the consumption of 90 000 to 100 000 households.

Unconventional financing could help the city to better leverage its investment opportunities in green technologies. Fostering solar power opportunities for SMEs and households still represents a large potential. Other Japanese cities, such as Iida City in Nagano Prefecture (population 104 575) have worked with credit unions and local civil society to foster a wider distribution of pecuniary benefits and local organisation through the feed-in tariff (Box 4.8). Innovative credit unions within Japan, especially Jonan Shinkin Bank in Tokyo, the country's largest, have shown great enthusiasm for lending into the rapidly expanding energy efficiency and renewable energy-oriented consumer and business markets. While transaction costs involved in getting smaller projects under way increase with a growing number of organisations and individuals, a significant market share of distributed power supply is linked to a growing number of energy consumers who become producers. Expanding the scale of this market and its equity opportunities require new financing models, which credit unions, regional banks and larger banks have begun to address.

#### Box 4.8. Iida City

Working with local financial institutions, Iida City – another of Japan’s eco-model cities – has formulated a more diverse and equitable approach, in an effort to maximise local residents’ opportunity to invest in renewable energy. Iida city is a mid-sized city in Nagano Prefecture, and has gained a strong reputation in Japan for its renewable energy and energy-efficiency initiatives. The city developed a “new energy vision” in 1996, and set about encouraging a variety of renewable and energy-efficiency businesses through the use of subsidies and other measures. As a result, it was selected in 2009 as one of the 12 eco-model cities. In its action plan for becoming a model city, it committed itself to reducing greenhouse gases from the household sector by 40% to 50% by 2030 relative to 2005 emission levels. To achieve these objectives, the city institutionalised itself as a co-ordinator between the citizens and the local businesses. The city leadership views the public sector role as being one of aggregating information and expertise concerning renewable energy and disseminating it to citizens and businesses. They also see the city as a key agency for encouraging citizens and businesses to deploy and use renewable energy.

One of the important elements in achieving these objectives was to get finance flowing into projects. To this end, the city implemented a variety of programmes between 1997 and 2010, raising the diffusion of solar in the household sector from the 1997 level of 0.17% to 3.61% as of 2010. Among the city’s policy supports were assistance in financing and low interest loans. It also subsidised deployment at JPY 30 000 per kilowatt with an upper limit of JPY 100 000 on the subsidy between 2004 and 2007. It then increased this level of subsidy to JPY 70 000 per kilowatt, with an upper limit of JPY 200 000, and applied it between 2008 in 2010. From 2009, the city has made the installation of solar effectively cost free with its so-called “zero yen system”.

The Environment Ministry is also helping the city to set up its own local power company. The ministry provides two-thirds of the financing for system installations via subsidies, and the rest is financed by investments from citizens and businesses in increments of JPY 100 000 per investment. The generating capacity comprises 5 to 10 kilowatt solar panel systems installed at 38 locations, for a total of 208 kilowatts. The sites include parks, day care centres and other facilities that are owned by the city. The power produced, in excess of the facility’s own consumption, is sold to the regional utility. The utility in turn pays a premium price for the renewable power. This payment is returned to the community power producer and becomes finance for the dividend that investors receive on their investments.

*Source:* Watanabe, S. (2011), (in Japanese) “Nagano Prefecture’s Iida City and the Cooperative Approach to Diffusing Renewable Energy”, Norinchukin Research Institute Report, October, [www.nochuri.co.jp/genba/pdf/otr11102601.pdf](http://www.nochuri.co.jp/genba/pdf/otr11102601.pdf).

Kitakyushu’s smart-grid project focuses on reducing end-user energy consumption, but undermines the opportunities of distributed energy supply. The Higashida smart-grid project aims for a comparatively low percentage of renewable energy supply (10%). A higher ratio of renewable energy would appear to be possible, in particular in the new investment climate shaped by the national feed-in tariffs. Current renewable energy policy and market movements indicate that the level of renewable energy reliance is likely to increase dramatically. Thus it would seem a lost opportunity for the city not to re-orient some of its planning and programmes towards increased distributed energy supply. It should also link these objectives with its smart-grid project in order to make it a comprehensive demand and supply focused system, and to optimise related equity opportunities of smart grids and distributed energy supply. Other Japanese cities,

including Hiroshima Prefecture and Tokyo's Setagaya-Ku (Box 4.9), have in fact maximised the degree of equity in the diffusion of renewable energy technology and the use of the feed-in tariff to supplement local incomes.

#### Box 4.9. Renewable energy exploitation in Hiroshima and Setagaya-Ku

Hiroshima Prefecture announced that it would set up a special fund to encourage area residents to invest in solar. The fund is one of the “Ohisama” project funds that have been a feature of Japanese local governments' renewable-energy programmes for some years. In Hiroshima's case, the fund is to be JPY 10 billion and to run for four years through 2015. The prefecture itself is putting up JPY 1 billion, JPY 3 billion is to be collected from area residents, and the balance from businesses and financial firms. The fund will cover the installation of solar arrays on approximately 6 700 homes. It will help residents put up solar panels, as they will rent them from the fund and get paid for their power via the feed-in tariff. It will also give residents an opportunity to invest in renewable power and receive dividends from the fund (Hiroshima, 2012).

As for Setagaya-Ku, one of the 24 wards of Tokyo, it is innovating through bulk purchases of solar to reduce the costs for ward residents. The measure will not cost the ward in fiscal terms, as its public agency will act as the purchaser for residents. The ward expects that it will be able to get solar panels onto 1 000 homes per year through this mechanism. Since 2009, the ward has had a subsidy system for defraying the roughly JPY 2 million cost of solar installations by JPY 100 000, but because of budget restrictions, this allows for only about 200 projects per year. The ward has roughly 1 800 residents with installed solar as of April 2012, and expects to increase that figure by 50% in the year. The ward's initiative was the result of a February 2012 public forum, where ideas were sought for promoting solar. Setagaya's measure is being closely watched by other Japanese local governments as a means for enhancing the access to home solar.

*Source:* Hiroshima (2012), (in Japanese) “Policies for Increasing the Diffusion of Solar Power,” [www.pref.hiroshima.lg.jp/uploaded/life/122142\\_175962\\_misc.pdf](http://www.pref.hiroshima.lg.jp/uploaded/life/122142_175962_misc.pdf).

### Use international networks to increase opportunities for green exports

Kitakyushu's international network is extensive, but centred on the east and southeast Asian countries. While this focus is to be expected, due to geography, Kitakyushu's particular focus on less-developed urban partners as sources for green growth may imply missing opportunities elsewhere. In particular, the city may risk finding itself with inadequate incentives to stay ahead of rapidly developing competitors in the swiftly evolving green city economy. Broadening its contacts and seeking export opportunities in more challenging markets is important to keep local industries in the green sector innovating at the cutting edge.

Kitakyushu's focus on international assistance has extended in the recent past to partnership and co-operation, with increasing stress on related economic opportunities. Kitakyushu has been involved in international environmental co-operation for over 30 years. Its initial forays into this field focused on assistance (Kikusawa, 2011). One notable example is the 1980 construction of KITA, the Kitakyushu International Techno-Co-operative Association (Box 4.10). From about 2000 however, Kitakyushu began to stress partnership and co-operation and in recent years has also focused on the economic benefits of overseas environmental co-operation. In June 2010, the city set up

the Kitakyushu Asian Centre for a Low-Carbon Society. The centre emphasises the connections between business and environmental and social infrastructures as export opportunities. The city is currently preparing a manual on its experiences for distribution, both as an instructional aid as well as to foster more sales.

#### Box 4.10. Kitakyushu International Techno-cooperative Association

Kitakyushu International Techno-cooperative Association (KITA) works with the Japan International Co-operation Agency (JICA) in fostering education in developing countries. The association was renamed the Kitakyushu International Techno Co-operative Association in August of 1992. In 1994, the KITA worked with Kitakyushu to develop an association inside KITA called the KITA Environmental Co-operation Centre. This centre receives staff from the city's management personnel. The KITA receives technical students from overseas and also sends experts overseas. It has received 6 200 trainees from 138 countries.

*Source:* Kikusawa, I. (2011), "Development of Japan-China Environmental Co-operation and Business Potential – Case of Kitakyushu City", *A Perspective on East Asia*, 23-26 September, International Centre for the Study of East Asian Development Foundation, Kitakyushu, Japan, <http://enviroscope.iges.or.jp/modules/envirolib/view.php?docid=3345>, accessed 16 November 2012.

While Kitakyushu is aware of its high-carbon footprint, it argues that it should be afforded special consideration because it exports energy-efficient products that reduce emissions indirectly. Kitakyushu counts its exports of energy-intensive products – mostly steel – which are produced more energy efficiently in Kitakyushu than in the recipient countries as a reduction factor for local carbon emissions. The city considers that if these relative emission savings are not taken into account, "the city's successes in green growth are underestimated" (City of Kitakyushu, 2012a). This would indeed be a relevant claim if there were a regime for consumption-based carbon accounting for cities with a generally recognised accounting standard. In that case, upstream impacts of cities would be taken into account along with downstream impacts. International data availability, however, does not as yet allow for such accounting. More generally, given the scope of policies and influence of local governments, focusing on local challenges that can be solved locally is likely to be more effective.

Kitakyushu's current structure of international collaboration might distort its incentives to advance its own green profile and to stay competitive among green growing industries and cities. While transitioning to a more service-based and knowledge-intensive industry structure, Kitakyushu also has to become more attractive to highly educated and mobile workforce. For this purpose, local environmental performance is an important factor. While a comparison with post-industrial cities, such as Stockholm or Sydney would be inappropriate, Kitakyushu would profit from stronger reflecting international and long-term trends in its current strategies. Indirectly offsetting local carbon emissions overseas might give a temporary benefit for local carbon accounting. But at the same time, the approach risks creating misleading incentives concerning the needs of local development, both with regards to increasing the competitiveness of local industries and in terms of increasing the city's attractiveness to highly skilled workforce. These points are also matter for staying competitive within the growing arena of international green cities.

International city networks, such as the International Council for Local Environmental Initiatives (ICLEI), could be better used to enhance Kitakyushu's position on the green cities map and to find new export opportunities for local products. Kitakyushu's focus so far has been on developing links and partnerships with less developed Asian countries and cities. Good potential also lies in developed countries' and cities' markets, in particular for resource-efficient and energy-saving products. Enhancing Kitakyushu's exposure to the network of cities that are pursuing green growth internationally affords opportunities not only for the city to share its own experience and ambition, but also for local industries to promote their products. Increasing export shares of green products will help the city both in growing green industries in Kitakyushu and in supporting the city's ambitions to contribute to urban sustainability worldwide.

The city now confronts the challenge of deepening the hue of its green city model by opening it up to a broader network of actors, ideas and institutions. Kitakyushu has achieved impressive results on the basis of its core strategy, garnering worldwide recognition for rapidly alleviating its own dire environmental challenges between the mid-1960s and early 1990s. From the 1990s, it went on to work hard in helping decrease the environmental impact of its urban partners in Cambodia, Vietnam, China and elsewhere. Its green development and branding have started to position it smartly on the international stage. But the Kitakyushu green growth strategy could become too strongly defined by the city's extant business network and their priorities as well as the various agendas of central agencies. The city confronts the risk of a "Galapagos effect", referring to the recent failure of popular Japanese products to sell well outside the home market because of costly overspecialisation, inadequate responsiveness with shifting market conditions, and insufficient engagement with actual and potential clients.

This challenge could be addressed by better identifying local assets, broadening the city's orientation to international markets and intensifying international exposure to keep abreast of fast-moving technologies. The City of Kitakyushu is involved in the development of a Water Plaza, based on its experience in industrial wastewater treatment. While the water technology market is developing worldwide, the city's sales target is a rather constrained category of developing country markets, including Vietnam, Cambodia and Saudi Arabia. Kitakyushu's smart-grid experiment is expected to deliver valuable experience that could be commercialised internationally. The fact that Kitakyushu's smart grid is developed and operated in an industrial city differentiates it from many other smart grids in high-tech, service-centred and upper-income cities and might make it particularly valuable for future smart-grid markets in mixed residential and commercial areas in industrial cities. Maintaining a competitive edge on an international stage will need further external engagement. Certainly, Kitakyushu is a member of the Japan Smart City Portal and related organisations within Japan. It is also a member of the Overseas Water Development Platform that links Japan's central and big local governments. However, Kitakyushu needs more global exposure to assure continuous learning and to maximise opportunities in international markets.

## Notes

1. Moreover, the Kitakyushu Overseas Water Business Association includes a broad array of national and local actors. The former include, among others, the Japan Waterworks Association, the Development Bank of Japan, and the Japan Bank for International Co-operation.
2. One example is the Kyushu Bureau of Economy, Trade and Industry, the Kyushu regional agency of the METI.
3. Japan's amalgamation policies have seen the number of its cities, towns and villages fall from 3 232 on 1 April 1999 to 1 719 as of 4 January 2012 (MIC, 2012).
4. Japan's Ministry of Health, Labour and Welfare's jurisdiction includes the "Hello Work" centres for co-ordinating employment markets and dealing with the unemployed. The decentralisation of its functions is to be tested from the fall of 2012 in special regional zones in Saitama and Shiga Prefectures

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