

## **INFORMATION NOTE**

### **Promotion of Renewable Energy**

#### **1. Introduction**

1.1 In recent years, renewable energy has become a global issue as the rise in energy demand has exacerbated the global warming and pollution impacts. This is especially an issue of concern for Hong Kong as it is a place with no indigenous resources and has been relying on imports of fossil fuel from other countries. In November 2000, the Electrical and Mechanical Services Department (EMSD) commissioned a two-stage consultancy study to investigate the feasibility of wider application of new and renewable energy technologies in Hong Kong. Furthermore, in June 2004, the Council for Sustainable Development launched its first consultation paper on a proposed Sustainable Development Strategy for Hong Kong. This information note is to provide information to Members of the Legislative Council with regard to the policies on renewable energy in Hong Kong and overseas jurisdictions. In particular, this note focuses on measures relating to the promotion of renewable energy in the following overseas jurisdictions:

- (a) the United States of America (US);
- (b) Australia; and
- (c) the United Kingdom (UK).

1.2 The US is chosen for our study because the US Congress is in the process of deliberating new legislation on renewable energy. Australia and the UK are chosen because both jurisdictions have already put in place policies on renewable energy. The study of the experience of these jurisdictions may serve as references for Hong Kong.

## 2. Definition of renewable energy

2.1 There is no universally accepted definition for the term “renewable energy”. According to the Renewable Energy Working Party of the International Energy Agency (IEA)<sup>1</sup>, renewable energy is “*energy that is derived from natural processes that are replenished constantly. In its various forms, it derives directly or indirectly from the sun, or from heat generated deep within the earth. Included in the definition is energy generated from solar, wind, biomass, geothermal, hydropower and ocean resources, and biofuels and hydrogen derived from renewable resources*”.

## 3. The United States of America

### Overview of energy policy

3.1 The US has faced the most serious energy shortage since the oil embargo in the 1970s. As at 2000, the largest source of electricity generation in the US was coal (52%), followed by nuclear energy (20%), natural gas (16%), renewable energy (9%) and oil (3%).<sup>2</sup> The dependence on fossil fuel for energy supply makes it vulnerable to price spikes and supply disruption. Therefore, the US is looking for ways to increase energy supplies in an environment-friendly and sustainable way.

3.2 The National Energy Policy Development (NEPD) Group was established in January 2001 to “*develop a national energy policy designed to help the private sector, state and local governments to promote dependable, affordable, and environmentally sound production and distribution of energy for the future*”. In May 2001, the NEPD Group issued the National Energy Policy (NEP) report which highlighted the use of renewable energy as a component to securing the energy future of the US.

### Responsible agency

3.3 The Office of National Energy Policy (NEP Office) is established by the Department of Energy (DOE) to provide strategic direction on energy policy as well as to co-ordinate with the federal government in implementing the recommendations of the NEPD Group.

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<sup>1</sup> IEA is an inter-governmental body within the Organization for Economic Co-operation and Development (OECD) committed to advancing security of energy supply, economic growth and environmental sustainability through energy policy co-operation.

<sup>2</sup> National Energy Policy Development Group (2001).

### Legislative initiatives

3.4 On 12 February 2004, a new energy bill, short titled “the Energy Policy Act of 2003”, was introduced by the Chairman of the Senate Committee on Energy and Natural Resources for Senate consideration. The new bill contains provisions on increasing energy conservation, expanding production of current energy sources and developing more clean and renewable energy sources for the future. The bill is currently under deliberation in Congress.

3.5 Some of the measures on renewable energy proposed by the energy bill include:

- (a) providing new incentives for the increased development and use of clean and renewable energy;
- (b) mandating a federal renewable energy resources assessment to assist in the long-term planning for the expansion of renewable energy production;
- (c) streamlining the re-licensing of hydroelectric facilities to ensure continued reliability of clean and reliable energy;
- (d) providing grants for turning forest materials from high-risk areas for fire or disease into biomass energy; and
- (e) addressing research and development needs in areas such as renewable energy and energy efficiency.

### *Targets for renewable energy*

3.6 A Ranking Member of the Senate Committee on Energy and Natural Resources has advocated the establishment of a federal renewable portfolio standard which would require all retail sellers of electricity to generate or purchase 10% of their electricity from renewable sources by 2020. Utilities that meet the renewable energy target, or exceed the 10% target in 2020, could earn credits based on the extra renewable electricity they generate. They could then sell these credits to other utilities to help them meet their requirements. The scheme is under deliberation in Congress.

Fiscal initiatives

3.7 The proposed energy bill provides the following energy tax incentives on renewable energy and fuel:

- (a) buyers of new qualified fuel cell, hybrid, or other alternative fuel motor vehicles could earn tax credit; and
- (b) a company could earn an income tax credit if it is placed in service before a specified date in one of the following categories of renewable energy facilities:
  - (i) wind power facilities;
  - (ii) “closed-loop” biomass facilities;
  - (iii) facilities that convert poultry waste into energy;
  - (iv) “open-loop” biomass facilities;
  - (v) geothermal energy facilities;
  - (vi) solar energy facilities;
  - (vii) facilities with small hydroelectric turbines that work on the flow of water through irrigation systems;
  - (viii) facilities that convert recycled sludge from commercial, industrial or municipal wastewater;
  - (ix) facilities that convert pig or cow manure or litter; and
  - (x) facilities that produce energy from municipal waste.

Education and information campaigns

3.8 In the NEP report, the following recommendations on education and information campaigns were proposed:

- (a) DOE should explore potential opportunities for developing educational programmes related to energy development and use. These should include possible legislation to create public education awareness programmes about energy;
- (b) DOE should strengthen public education programmes related to energy efficiency;
- (c) The Environmental Protection Agency (EPA) should develop and implement a strategy to increase public awareness of the sizable savings that energy efficiency offers to homeowners;

- (d) EPA should promote consumer choice programmes to increase consumers' knowledge about the environmental benefits of purchasing renewable energy; and
- (e) DOE should develop an education campaign that communicates the benefits of alternative forms of energy, including hydrogen and fusion.

3.9 The implementation of the above recommendations is still underway.

#### **4. Australia**

##### Overview of energy policy

4.1 In Australia, energy use is the dominant source of greenhouse gas emissions, contributing more than 60% of the nation's total emissions. As at 2000, fossil fuel was Australia's major source of electricity generation: while black coal, brown coal, natural gas and oil provided 55%, 24%, 11% and 1% respectively of electricity supply, renewable sources provided 9% only.<sup>3</sup> With the demand for energy in Australia projected to increase by 50% by 2020, the objectives of the Australian Government are to ensure that Australians have reliable access to competitively priced energy, the value of energy resources is optimized, and environmental issues are well-managed.

4.2 Aware of the need to diversify the energy portfolio and to reduce greenhouse gas emissions, in June 2004, the Australian Government issued an energy white paper, entitled "Securing Australia's Energy Future", which sets out a comprehensive strategy for sustainable energy for the next 20 to 30 years. The white paper contains an integrated approach and a range of major new initiatives to meet energy objectives of prosperity, security and sustainability.

##### Responsible agency

4.3 Established in 1998, the Australian Greenhouse Office (AGO) is the lead Australian agency on greenhouse matters. It is also the first government agency among jurisdictions in the world dedicated to reducing greenhouse gas emissions. AGO administers a broad range of programmes supporting the uptake of cost-effective greenhouse gas abatement across industries and communities, including the growth of renewable energy industry. The agency has the responsibility for the delivery of a number of renewable energy programmes and a number of financial incentives for the production and use of renewable energy.

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<sup>3</sup> Dickson, A. et al. (2001).

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## Legislative initiatives

### *Targets for renewable energy*

4.4 The Australian Government has introduced the Mandatory Renewable Energy Target (MRET) with objectives to encourage additional renewable energy generation, reduce greenhouse gas emissions, and ensure that renewable energy sources are ecologically sustainable. Commenced in April 2001, MRET requires the sourcing of 9 500 gigawatt-hours (GWh) of extra renewable electricity per year from 2010 to 2020, producing enough power to meet the residential electricity needs of four million people. The target applies nationally, and is implemented through the Renewable Energy (Electricity) Act 2000 passed by the Parliament of Australia.

4.5 MRET places a liability on wholesale purchasers of electricity to proportionately contribute towards the generation of additional renewable energy. Under MRET, tradeable renewable energy certificates are created on the basis of eligible renewable energy sources, which include hydro, wind, solar and various biomass sources, with provision for emerging technologies not yet commercialized in Australia such as wave, tidal and geothermal energy.

4.6 The energy white paper further provides incentives for over AUS\$2 billion (HK\$10.2 billion)<sup>4</sup> investment in renewable energy under MRET. This is expected to lead to an estimated increase in Australian renewable electricity output of 60% over the first decade of the 21<sup>st</sup> century. The Australian Government will also encourage investment under MRET by improving the transparency and operation of the market for renewable certificates.

## Fiscal measures and initiatives

4.7 To provide a major boost to renewable energy as a key part of its overall strategy for reducing Australia's greenhouse gas emissions, the Australian Government is implementing the following fiscal measures:

(a) Photovoltaic Rebate Programme

Under the Photovoltaic Rebate Programme commenced on 1 January 2000, cash rebates are available to householders and owners of community-use buildings who install grid-connected or stand-alone photovoltaic systems to convert sunlight into electricity;

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<sup>4</sup> The average exchange rate of Australian dollar to Hong Kong dollar for 2003 was AUS\$1 = HK\$5.08.

(b) Renewable Remote Power Generation Programme

The Renewable Remote Power Generation Programme provides financial support to increase the use of renewable energy generation in remote parts of Australia that presently rely on diesel for electricity generation.

(c) Renewable Energy Equity Fund

The Renewable Energy Equity Fund provides venture capital for small innovative renewable energy companies, which include companies that are commercializing direct or enabling renewable energy technologies and services, such as manufacturers of photovoltaic cells; and

(d) Alternative Fuels Programmes

The Alternative Fuels Programmes are designed to reduce greenhouse gas and other vehicular emissions generated by the road transport sector. The aim of the programmes is to increase the use of alternative fuel, especially compressed natural gas and liquefied petroleum gas which produce a lower level of emissions than their conventional equivalents.

4.8 The energy white paper further calls for new fiscal initiatives to achieve the energy objectives of the Australian Government:

(a) a commitment of AUS\$75 million (HK\$381 million) for Solar Cities trials to demonstrate a visionary new energy scenario, where solar energy, energy efficiency and market reforms combine to provide a sustainable future; and

(b) the provision of AUS\$134 million (HK\$681 million) to support commercialization of renewable technologies for the following projects:

(i) Renewable Energy Development Initiative

A funding of AUS\$100 million (HK\$508 million) over seven years, comprising AUS\$50 million (HK\$254 million) new funding and AUS\$50 million (HK\$254 million) from the Commercial Ready Programme, will be allocated to promote strategic development of renewable energy technologies, systems and processes that have strong commercial potential. This will ensure a continuing supply of innovative ideas for renewable energy technologies;

(ii) Intermittent Energy Storage

A funding of AUS\$20 million (HK\$102 million) will be provided to support development of advanced electricity storage technologies for renewable energy, including batteries, electro-mechanical and chemical storage; and

(iii) Wind Forecast

A funding of up to AUS\$14 million (HK\$71 million) will be allocated to develop and install systems to provide accurate long range forecasts for wind output. This will facilitate greater penetration of wind in the energy market and allow for more strategic planning of wind farms.

#### Education and information campaigns

4.9 All levels of the Australian Government, as well as industries and non-government agencies, are actively involved in awareness raising and education and training programmes on renewable energy. Below are some of the examples of such programmes in promoting Australia's greenhouse policies and measures:

- (a) the Australian Government supports and works with the States and Territories to promote greenhouse education in schools;
- (b) an environmental briefing series aimed at providing teachers with views from the academic, government and industry sectors on the issue of energy, greenhouse, and climate change is conducted in each State and Territory;
- (c) greenhouse-related elements are incorporated into relevant areas of vocational education and training curricula;
- (d) the Australian Government conducted a nationwide public information campaign during February 2001 to raise awareness of the greenhouse issue and to advise actions that individuals could take to contribute to national efforts to reduce greenhouse emissions; and
- (e) the Australian Government departments and agencies produce various publications aimed at keeping industries and the general community informed of greenhouse-related initiatives, success stories and developments in national and international policies.

## **5. The United Kingdom**

### Overview of energy policy

5.1 In the UK, the energy industry relies on finite and potentially unsecure sources of fossil fuel such as coal, oil and gas to run its business. Currently, around 80% of the UK's electricity supply comes from these sources, with an additional 15.6% being generated by the nuclear power sector. Only 3.86% of the total amount of electricity generated in the UK comes from renewable sources.<sup>5</sup>

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<sup>5</sup> The Department of Trade and Industry (2004).

5.2 Recognizing the need to reduce carbon dioxide emission and to bring diversity and security of supply to the UK's energy infrastructure, in February 2003, the Department of Trade and Industry (DTI) issued an energy white paper entitled "Our Energy Future – Creating a Low Carbon Economy" to address the challenges faced by the energy sector. The white paper sets out a strategy to develop a new energy policy which is sustainable, reliable and competitive to support economic growth in the UK.

#### Responsible agency

5.3 DTI has the responsibility within the UK Government for supporting businesses in the UK and for much of the underlying framework for economic activities. One of the major aims of DTI is to increase competitiveness and scientific excellence in order to generate higher levels of sustainable growth and productivity in a modern economy.

#### Legislative initiatives

5.4 In April 2002, the UK Government introduced the Renewables Obligation which called on all licensed electricity suppliers in England and Wales to supply a specified and growing proportion of their electricity sales from eligible renewable sources and provided financial incentives for them to do so. The Renewables Obligation Scotland is the equivalent instrument applicable to Scotland.

5.5 The Renewables Obligation is enforced by the Renewables Obligation Order 2002. Licensed electricity suppliers are required to comply with the terms under the Renewables Obligation:

- (a) each supplier is required to sell a target proportion of its sales from renewable sources, or prove that someone else has done so on its behalf. The aim is that by 2010, 10% of the UK's electricity should be supplied from renewable sources. Targets have been set for each year up to 2010;
- (b) compliance is required to be demonstrated to the Office of Gas and Electricity Markets, a regulator for the UK's gas and electricity industry, through a system of Renewables Obligation Certificates (ROCs);
- (c) ROCs are issued to accredited generators and can be sold separately to the electricity suppliers to which they relate. This allows for open trading of certificates so that those who have surpassed their Obligation requirements could sell to those suppliers who have been unable to purchase enough renewables-generated electricity; and

- (d) individual suppliers can also choose to buy out their Obligation commitment. The buy out price is currently set at £30.51 (HK\$388.1)<sup>6</sup> per megawatt-hour.

### *Targets for climate change*

5.6 In 2001, the UK Government formally signed the Kyoto Protocol, which legally bound the country to reduce greenhouse gas emissions to 12.5% below the 1990 levels by 2008-2012. The UK Government's Climate Change Programme of 2000 further seeks to reduce emissions to 20% below the 1990 levels by 2010. In the energy white paper, the UK Government pledges to cut carbon dioxide emissions by some 60% by 2050.

### *Targets for renewable energy*

5.7 In the energy white paper, the UK Government sets a target for renewable energy that by 2020, 20% of the UK's electricity requirement should be met by renewable energy. This would be achieved via intermediate targets of 5% by 2005 and 10% by 2010.

### Regulatory and fiscal measures

5.8 The UK Government has put in place a range of measures to deliver the new energy policy. In particular, it has:

- (a) exempted renewable electricity from the Climate Change Levy (CCL)<sup>7</sup>;
- (b) created a renewable support programme worth £250 million (HK\$3,180 million) from 2002 to 2005;
- (c) drawn up a strategic framework for a major expansion of offshore wind; and
- (d) created a new organization within the UK Government – Renewables UK – to help the renewable industry grow and compete internationally.

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<sup>6</sup> The average exchange rate of British pound to Hong Kong dollar for 2003 was £1=HK\$12.72.

<sup>7</sup> CCL is a tax on the use of energy in the industry, commerce and public sectors. The aim of the levy is to encourage these sectors to improve energy efficiency and reduce emissions of greenhouse gas.

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### Education and information campaigns

5.9 In February 2004, the Minister of State for Energy, e-Commerce and Postal Services launched a £2 million (HK\$25.4 million) information campaign to raise awareness of renewable energy among key decision makers. The campaign, "It's Only Natural", will continue until the end of March 2005 seeking to inform planners, investors and the community of the potential and benefits of renewable energy. As part of the campaign, a high level seminar was held in April 2004 for senior representatives from banks, industries and the investment community to discuss the UK Government's commitment to renewable energy and to debate the issues facing investors.

5.10 In addition, DTI has produced a collection of literature on renewable energy, including case studies and technical reports. DTI also sponsors an education website named "Planet Energy" which has simple examples of how each renewable energy technology works, and provides information for teachers and children aged seven to 16.

## **6. Hong Kong**

### Overview of energy policy

6.1 As a small place with no indigenous resources such as oil, gas or coal, Hong Kong has been relying mainly on imported fossil fuel to support its energy provision. At present, the Government's policy objectives with respect to energy supply are to:

- (a) ensure that the energy needs of the community are met reliably, efficiently, safely and at reasonable prices; and
- (b) minimize the environmental impact of energy production and use, and promote the efficient use and conservation of energy.

6.2 The renewable energy sector is still at a very early stage of development in Hong Kong. Renewable energy technologies make a negligible contribution to overall electricity supply at present.<sup>8</sup> There have been a number of small-scale solar power demonstration projects, and a few small wind turbines are in operation. Additionally, a fuel cell demonstration project is under development. There is no waste incineration with energy recovery. The application that is most advanced currently in Hong Kong is the utilization of landfill gas, but even this use is limited in extent.

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<sup>8</sup> Electrical and Mechanical Services Department (2002). According to the Environment, Transport and Works Bureau, the breakdown of fuel sources for electricity generation in terms of GWh of electricity generated in 2003 was as follows: coal (59.01%), oil (0.5%), gas (17.65%) and nuclear/pump storage (22.84%).

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Responsible agency

6.3 While the Environment, Transport and Works Bureau (ETWB) is the lead government bureau for the promotion of wider use of renewable energy in Hong Kong, the Economic Development and Labour Bureau (EDLB) is charged with the responsibility for ensuring a reliable supply of energy at reasonable prices to the community. Therefore, ETWB works with EDLB to formulate strategies for the promotion of renewable energy in Hong Kong.<sup>9</sup>

Study on the potential applications of renewable energy in Hong Kong

6.4 EMSD commissioned a two-stage consultancy study in November 2000 to investigate the feasibility of wider application of new and renewable energy technologies in Hong Kong.<sup>10</sup> The “Study on the Potential Applications of Renewable Energy in Hong Kong” (Study) comprises the following two stages:

- (a) Stage One evaluated the potential of various forms of renewable energy for wide-scale local use and was completed in December 2002. The key findings and recommendations of this stage were:
  - (i) renewable energy sources that were considered potentially feasible for wide-scale application in Hong Kong;
  - (ii) major hindrances for wide-scale development of renewable energy;
  - (iii) measures for setting up a positive market environment for wide-scale application of renewable energy; and
  - (iv) targets of contribution from renewable energy produced locally to meet annual electricity demand.
- (b) Stage Two is a design-and-build project involving the installation of different types of building-integrated photovoltaic panels<sup>11</sup> to assess their performance under local weather conditions. Installation work for Stage Two has been completed and the performance of the various types of panels is being monitored.

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<sup>9</sup> Reply from the Environment, Transport and Works Bureau.

<sup>10</sup> The Study was commissioned as a consultancy contract by the Government to Camp Dresser & McKee International Inc. at a fee of HK\$4.9 million.

<sup>11</sup> Photovoltaic panel is a panel completed with specially prepared built-in semi-conductors that allow the direct conversion of light energy from the sun into electricity.

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## Policy on renewable energy

### *Barriers for wide-scale development of renewable energy*

6.5 Hong Kong has yet to make significant use of renewable resources to meet energy needs. According to the findings of the Study, the major issues that may hinder the wide-scale development of renewable energy in Hong Kong include:

- (a) there may not be suitable sites for implementing large-scale renewable energy projects;
- (b) there may be concerns about the visual, noise and possibly safety impacts of some renewable energy systems;
- (c) the current pricing of power supply has not taken into account the environmental costs associated with the combustion of fossil fuel (such as coal, oil and natural gas) which remains the major fuel source for energy production.<sup>12</sup> Therefore, power generated by the more environment-friendly renewable energy appears to be comparatively more expensive than that generated by conventional fossil fuel; and
- (d) terms and conditions for accessing the electricity grid by third parties including renewable energy providers are currently set at the sole discretion of the existing power companies.

### *Scheme of Control Agreement*

6.6 The Scheme of Control (SOC) Agreements signed between the Government and CLP Power Hong Kong Limited (CLP) and The Hong Kong Electric Company Limited (HEC) set out the obligations of the power companies, the returns for shareholders and the arrangements by which the Government monitors the power companies' financial affairs. The SOC Agreements have the dual objective of ensuring that consumers enjoy a reliable and efficient supply of electricity at a reasonable price and the electricity supply companies receive a reasonable return on their investment to encourage continued investment. The current SOC Agreements have a term of 15 years and will expire in 2008.

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<sup>12</sup> According to an environmental organization, Friends of the Earth, if there is a 5% supply of renewable energy in Hong Kong, there will be a reduction of 8 150 tonnes of sulphur dioxide (14% of total sulphur dioxide emission from power plants), 7 150 tonnes (13%) of nitrogen oxides, 440 tonnes (13%) of particulates and 1 834 000 tonnes (5%) of carbon. Each year, it would in turn lead to an avoidance of 200 deaths from cardiovascular and respiratory causes, and 2 102 hospital admissions relating to cardiovascular and respiratory illnesses to Hospital Authority hospitals. Friends of the Earth (Hong Kong) (2003).

6.7 With regard to renewable energy, the SOC Agreements do not offer financial incentives for power companies to explore renewable energy nor place obligations on them to buy renewable energy generated in the areas under their jurisdiction. There are no terms in the SOC Agreements setting out the basis for power purchase by CLP or HEC from third-party producers. In similar vein, there is no mechanism for the power companies to recover from general tariffs the additional costs that may be associated with the purchase and re-sale of renewable energy from third parties. Nor is there provision in the SOC Agreements for “green power” tariffs for renewable-sourced electricity to be offered to the market.

6.8 Whereas there is obligation on utilities or energy suppliers to deliver a given percentage or a specified volume of energy from renewable resources in Australia and the UK<sup>13</sup>, there is no such statutory obligation in Hong Kong. With the expiry of the current SOC Agreements in 2008, the issue of how the electricity supply market is regulated beyond 2008 will become an important factor when new investment in renewable energy schemes is considered.

#### *Targets for renewable energy*

6.9 According to the Study, given the small size of Hong Kong and the early state of development of the renewable energy market, it is recommended that a cautious approach to target setting should be adopted. As such, it is suggested that targets of local renewable energy contribution to meet electricity demand (against the baseline year of 1999) should be set at

- (a) 1%, 355 GWh by 2012;
- (b) 2%, 710 GWh by 2017; and
- (c) 3%, 1065 GWh by 2022.

6.10 Most of the respondents of the Study, however, considered the proposed renewable energy targets too conservative. Taking into consideration the findings and recommendations of the Study and the public opinion gathered thereafter, ETWB is working with EDLB to consider the practicability of renewable energy and possible impacts on the electricity supply reliability and tariffs before determining the revised targets for the post-2008 electricity market.

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<sup>13</sup> In the US, the proposal is under deliberation in Congress.

### Consultation on sustainable development strategy

6.11 On 15 July 2004, the Council for Sustainable Development launched its first consultation paper on a proposed Sustainable Development Strategy for Hong Kong. The consultation paper, in the form of an “Invitation and Response” document, seeks the public’s views on issues related to sustainable development in three areas – solid waste management, renewable energy and urban living space.

6.12 According to the consultation paper, the current technologies for renewable energy that might be used in Hong Kong include wind power, solar power and the treatment of solid waste. Based on the assumption that demand for generated electric power would remain steady at about 40 000 GWh annually, the implication of such targets might be as follows:

- (a) to meet 1% of the annual requirements solely from wind power, 100 wind turbines each with a capacity of 2 megawatts would need to be installed. This would take up an area of over 4 000 hectares, which is equivalent to some 240 times the area of Victoria Park;
- (b) to meet about 2% of the annual electric power needs, two facilities each treating one million tonnes of solid waste per year would need to be built, taking up about 20 hectares of land; and
- (c) solar panels covering 12% of the rooftops of existing commercial and government buildings in Hong Kong, together with “solar farms” requiring 12 hectares of land, could meet 0.1% of the annual electric power needs.

6.13 To help formulate the strategy on sustainable development, the consultation paper invites responses from the public on issues relating to renewable energy during the four-month consultation period. The deadline for submission of views is 12 November 2004.

**Table 1 - Summary of measures promoting renewable energy in the United States of America, Australia, the United Kingdom and Hong Kong**

	<b>The United States of America</b>	<b>Australia</b>	<b>The United Kingdom</b>	<b>Hong Kong</b>
Responsible agency	The Office of National Energy Policy.	The Australian Greenhouse Office.	The Department of Trade and Industry.	The Environment, Transport and Works Bureau and the Economic Development and Labour Bureau.
Relevant legislation	Energy Policy Act of 2003, which is under deliberation in Congress.	Renewable Energy (Electricity) Act 2000.	The Renewables Obligation Order 2002.	No legislation that requires or prohibits the generation and use of renewable energy in Hong Kong.
Percentage of renewable energy as total electricity supply	9%, as at 2000.	9%, as at 2000.	3.86%, as at 2004.	Negligible.
Target for renewable energy	Under the proposed renewable portfolio standard, retail sellers of electricity are required to generate or purchase 10% of their electricity from renewable sources by 2020. The above scheme is under deliberation in Congress.	The Mandatory Renewable Energy Target requires the sourcing of 9 500 gigawatt-hours of extra renewable electricity per year from 2010 to 2020.	In the energy white paper, the UK Government sets a target of 20% of the UK's electricity requirements to be met by renewable energy by 2020. This should be achieved via intermediate targets of 5% by 2005 and 10% by 2010.	The consultancy study commissioned by the Electrical and Mechanical Services Department recommends the targets of renewable energy contribution to meet annual electricity demand (against the baseline year of 1999) to be set at 1% by 2012, 2% by 2017 and 3% by 2022.

**Table 1 - Summary of measures promoting renewable energy in the United States of America, Australia, the United Kingdom and Hong Kong (cont'd)**

	<b>The United States of America</b>	<b>Australia</b>	<b>The United Kingdom</b>	<b>Hong Kong</b>
Fiscal measures / initiatives	<p>Under the proposed Energy Policy Act of 2003, tax credits could be earned for:</p> <p>(a) buyers of new qualified fuel cell, hybrid, or other alternative fuel motor vehicles; and</p> <p>(b) companies operating in one of the following categories of renewable energy facilities:</p> <p>(i) wind power facilities;</p> <p>(ii) “closed-loop” biomass facilities;</p> <p>(iii) facilities that convert poultry waste into energy;</p> <p>(iv) “open-loop” biomass facilities;</p> <p>(v) geothermal energy facilities;</p> <p>(vi) solar energy facilities;</p>	<p>Fiscal measures introduced include:</p> <p>(a) Photovoltaic Rebate Programme;</p> <p>(b) Renewable Remote Power Generation Programme;</p> <p>(c) Renewable Energy Equity Fund; and</p> <p>(d) Alternative Fuels Programmes.</p>	<p>Fiscal measures introduced include:</p> <p>(a) exempting renewable electricity from the Climate Change Levy; and</p> <p>(b) creating a renewable support programme worth £250 million (HK\$3,180 million) from 2002 to 2005.</p>	No fiscal measures.

**Table 1 - Summary of measures promoting renewable energy in the United States of America, Australia, the United Kingdom and Hong Kong (cont'd)**

	<b>The United States of America</b>	<b>Australia</b>	<b>The United Kingdom</b>	<b>Hong Kong</b>
Fiscal measures / initiatives (cont'd)	<p>(vii) facilities with small hydroelectric turbines that work on the flow of water through irrigation systems;</p> <p>(viii) facilities that convert recycled sludge from commercial, industrial or municipal wastewater;</p> <p>(ix) facilities that convert pig or cow manure or litter; and</p> <p>(x) facilities that convert municipal waste.</p>	<p>The energy white paper further called for a commitment of AUS\$75 million (HK\$381 million) for Solar Cities trials and provision of AUS\$134 million (HK\$681 million) to support commercialization of renewable technologies.</p>		

**Table 1 - Summary of measures promoting renewable energy in the United States of America, Australia, the United Kingdom and Hong Kong (cont'd)**

	<b>The United States of America</b>	<b>Australia</b>	<b>The United Kingdom</b>	<b>Hong Kong</b>
Education and information campaigns	The National Energy Policy has proposed recommendations on education and information campaigns. The implementation is still underway.	Examples of the campaigns: (a) support of the Australian Government to promote greenhouse education in schools; (b) an environmental briefing series is conducted in each State and Territory; (c) incorporation of greenhouse-related elements into relevant areas of vocational education and training curricula;	Examples of the campaigns: (a) a £2 million (HK\$25.4 million) information campaign to raise awareness of renewable energy; (b) publications on renewable energy; and (c) an education website for teachers and students.	In July 2004, the Council for Sustainable Development launched a consultation paper on a proposed Sustainable Development Strategy. During the four-month consultation period, the Council invites public's views on issues relating to solid waste management, renewable energy and urban living space.

**Table 1 - Summary of measures promoting renewable energy in the United States of America, Australia, the United Kingdom and Hong Kong (cont'd)**

	The United States of America	Australia	The United Kingdom	Hong Kong
Education and information campaigns (cont'd)		<p>(d) a nationwide public information campaign to raise awareness of the greenhouse issue and to advise actions that individuals could take to reduce greenhouse emissions; and</p> <p>(e) the production of publications to keep industries and communities informed of greenhouse-related initiatives and developments.</p>		

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### The United States of America

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### Australia

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