

**Review of and Recommendations for the
Study on the Potential Applications of Renewable Energy in Hong Kong
And
Comments on the Public Consultation Process for the Study**

**Submitted
By
Friends of the Earth (Hong Kong)**

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Synopsis

This paper sets out the views of Friends of the Earth (Hong Kong) (FoE) on the ***Study on the Potential Applications of Renewable Energy in Hong Kong*** (the Study) based on a review of the Study by the research team of FoE, and general suggestions and recommendations gathered from our members and participants in the Wind Energy Forum 2003 organised by FoE on 1 March 2003.

The overall comments on the Study are:

- Energy-from-waste should **NOT** be classified as renewable energy and a classification as such in the Study gives a shaky ground and not well-supported arguments to its overall credibility.
- Renewable energy targets are excessively underestimated and this lessens the efficacy of the Study as the basis to recommend the future renewable energy development in Hong Kong.
- Renewable source from Guangdong is excluded in the Study.
- A lack of detailed and well-researched analysis of the unique role to be played by Hong Kong and the SAR Government in promoting wide-scale application of renewable energy.
- A lack of concrete suggestions for medium- to long-term goals to see to the implementation of a renewable energy policy in Hong Kong.

Based on our review of the Study and FoE's independent, long-term research into wind energy development in the Pearl River Delta Region, FoE makes recommendations in this paper as to:

- Address current policy deficiencies to make renewable energy implementation practicable and cost-effective;
- Map out future renewable energy development in Hong Kong, especially wind energy development; and
- Urge the SAR Government to take the lead in procuring renewable energy.

Relating to the release of the Study to the public, the process of public consultation for the Study is another area that FoE addresses in this paper and wishes that relevant departments will take our comments into consideration in later public consultation processes to enable that timely and thorough communication with the public is effected.

FoE would be pleased to follow up on this paper and the public consultation for the Study by way of meetings and consultation with relevant departments, LegCo members, academics and researchers engaged in renewable energy study, the media and interested public. We welcome your feedback and requests for copies of our published position papers and research reports.

Overview of FoE's Review of and Comments on the Study

1. Energy-from-waste should NOT be classified as renewable energy. If excluding "energy-from-waste" as a form of renewable energy, the Study's renewable energy targets will be substantially reduced to less than 0.08% by 2012, 0.46% by 2017 and 1.2% by 2022.

In contrary, wind energy has already become a main-stream energy source in some countries, for instance, Denmark, with the installed capacity of wind turbines of 2,880 MW, can meet 20% of its country electricity needs from wind power. The Study's renewable energy targets are excessively underestimated because:

a) Renewable energy source from Guangdong is excluded.

Importing wind energy from Guangdong is both **COMMERCIALY** and **TECHNICALLY VIABLE**.

The grid-connection-price of Guangdong's wind energy is now RMB0.61/kWh, which is already comparable to that of the nuclear-generated electricity (RMB0.49/kWh) that CLP has been importing from the Daya Bay Nuclear Plant in Shenzhen to Hong Kong.

If Hong Kong were to import wind energy from Guangdong to meet the HKSAR's 1% renewable target, about 400 GWh – an amount of electricity just slightly higher than what CLP has been importing from Chonghua pumped-storage power plant (300 GWh), it is expected that there will be no major unsolvable technical issue.

b) Targets are set based on some overly conservative assumptions.

The Study has assumed that 1 MW on-shore wind turbines and 1.5 MW off-shore wind turbines will be adopted to meet the targets. To date, however, the capacity of the largest commercially available wind turbine (on-shore) is already 3.2 MW. The technology of wind turbines has been rapidly evolving with new generations of turbines coming on stream. It is not justifiable to assume that the 1.2 MW model would still be used 10 years or even 20 years later. The Study, therefore, has overestimated the physical constraints of wind energy in Hong Kong.

c) Full costs of power generation are not evaluated.

If there is 5% renewable energy in Hong Kong's energy mix, there will be a reduction of 8,150 tonnes (14% of total sulphur dioxide emission from power plants) of SO₂, 7,150 (13%) tonnes of nitrogen oxides, 440 tonnes (13%) of particulates, and 1,834,000 tonnes (5%) of carbon.

According to recent estimates made by the Department of Community Medicine of the University of Hong Kong based on its year 2000 data, **given the above reduction in emission (8,150 tonnes of sulphur dioxide, 7,150 tonnes of nitrogen oxides and 440 tonnes of particulates), it would lead each year to the avoidance of:**

- ♦ **200 deaths** from cardiovascular and respiratory causes.
- ♦ **2,102 hospital admissions** relating to cardiovascular and respiratory illnesses to Hospital Authority hospitals.

2. HKSAR Government has unique and significant roles in jumpstarting wide-scale application of renewable energy in the region. FoE recommends the Government:

a) Formulate a renewable energy policy

b) Undertake further studies including a) a feasibility study of importing wind energy from Guangdong to Hong Kong, and b) an economic assessment of social benefits of renewable energy and its economic impacts on Hong Kong's target.

c) Set up an Energy Commission. At present there is a fragmented control of energy-related policy, hence hampering the integrated response at an appropriate scale. An energy commission will ensure all energy-related policies including conventional energy policy, renewable energy policy and greenhouse gas policy will be reviewed by an integrated approach, with well-coordinated efforts from a designated authority.

d) Replace the Scheme of Control Agreements with a more socially responsible policy. The post-2008 agreements should a) contain the necessary provision to guarantee the power companies' investment of renewable energy, b) secure full costing of fossil fuels, and c) avoid discriminatory access to renewable energy, preferably by setting up an independent transmission operator.

e) Set renewable energy as a prioritized energy source to meet the 2010 emission reduction target

f) Take the lead to procure renewable energy

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1. FoE's Review of and Comments on the Study

1.1. Introduction

Friends of the Earth (Hong Kong) welcomes the release of the Study titled ***Potential Applications of Renewable Energy in Hong Kong*** as it is a first attempt to provide a comprehensive view of renewable energy in Hong Kong. It is particularly encouraging that the Study recognizes that wind energy is already **financially and technically viable**.

The Study concludes that internationally, the technology of land-based wind farms is **"mature and reliable, as evidenced by many overseas examples"**; and **"large land-based wind farms are potentially cost competitive with conventional power generation technologies"** and it is **"the least costly of the identified renewable energy options"** as the cost of wind energy ranges from \$0.2/kWh to \$0.35/kWh, compared with \$0.2/kWh to \$0.4/kWh of conventional energy.

FoE, however, after thorough review of the Study and based on our research into renewable energy, particularly wind energy, development in Hong Kong and the Pearl River Delta Region, would like to express our views and concerns about the following critical issues relating to wide-scale adoption of renewable energy, which are not duly addressed in the Study.

1.2 Energy-from-waste should not be classified as renewable energy

Around the world, a consensus of the definition of renewable energy has yet to be reached. However, a clearly defined and widely accepted definition is a prerequisite for an effective renewable energy policy that not only can help successfully promote wide-scale development of renewable energy, but can also help secure wide public support for renewables.

FoE is of the view that the renewable energy targets set by this Study have been heavily skewed towards "energy-from-waste", which is energy extracted during waste treatment such as gasification and that "energy-from-waste" should **NOT** be classified as a renewable energy source.

A generally definition is: renewable sources are inexhaustible energy from the nature such as wind and solar energy.

"Energy-from-waste" can be classified as "alternative energy source". Confusing "energy-from-waste" with genuinely renewable sources at this crucial time when the government has yet to formulate a decisive waste management programme in Hong Kong will no doubt hamper the effort to develop renewable energy in Hong Kong.

We agree with the Study that clarifying the term of renewable to genuinely renewable sources such as wind and solar ***"is important in communications with the public and***

NGOs, and in retaining the credibility of environmental claims made for the technologies and programmes concerned" (Section 14.1 of the full version of the Study). It is therefore of paramount importance that renewable energy should be clearly defined at the outset. Although having stated this, the Study has failed to follow it through and has rendered its estimation unconvincing and its recommendations feeble.

1.3 Renewable energy targets are excessively underestimated

The Study proposes that contribution from renewable energy to annual power demand (against the baseline year of 1999) should be set at **1% by 2012, 2% by 2017 and 3% by 2022.**

It should be noted that the Study places an extremely heavy reliance on "energy-from-waste" to meet the renewable targets. If excluding "energy-from-waste" as a form of renewable energy, the Study's renewable energy targets will be **substantially reduced to less than 0.08% by 2012, 0.46% by 2017 and 1.2% by 2022.**

This virtually zero target for the next 10 years is by no means justifiable, particularly if the global trend is put in context. With today's volatile fuel pricing, increasing environmental concerns and wind energy's cost competitiveness, around the world wind energy has become a main-stream energy source.

For example, Denmark, with the installed capacity of wind turbines of 2,880 MW, can meet 20% of its country electricity needs from wind power, whereas Germany, with the installed capacity of wind turbines of 12,001 MW by end-2002, can meet 4.7% of its national electricity needs from wind. As a matter of fact, wind is the world's fastest-growing energy source, with installed generating capacity quadrupled over the past five years from 7,600 MW at the end of 1997 to more than 31,000 MW at the end of 2002.¹

The Study projects that by 2012 onshore and offshore wind projects will only contribute 6GWh and 7GWh per year. This will only require the installation of **ONE** wind turbine (with 3.2MW capacity - the biggest commercially available wind turbine to date) erected on land and **ONE** turbine of the same capacity erected offshore to meet the target. This is an excessively underestimated target for wind energy as the technology is already mature enough and is destined to be more cost effective as the technology continues to evolve.

We are of the view that these vastly underestimated targets are the result of the following fundamentally flawed assumptions and unresolved issues:

1.3.1 Renewable source from Guangdong is excluded.

It is a fundamental flaw of the Study that it limits the sources of renewable energy to Hong Kong's territory. The Study fails to take into account the renewable energy sources from Guangdong whose development of wind energy is expected to mature and to achieve economies of scale in the near future.

¹ Website of American Wind Energy Association: <http://www.awea.org>, information as at 18 March 2003.

Hong Kong is situated in Guangdong which is a region of rich wind energy. Guangdong has a capacity of 30,000 MW for wind turbines (including on-shore and off-shore) and the provincial authorities are putting in place various support policies, including the Mandatory Market Share Concept, the Concession Model and the Renewable Energy Feed-in Tariffs, to streamline green energy development and to trim the cost down. Large-scale wind farms are about to happen and cheap wind energy will be easily accessible to Hong Kong.

Guangdong's wind development has been evolving since the 1980s. At present, its three wind farms (Nan'Ao, Hui Lai and Shan Wei) have about **a combined operating capacity of 85MW, and are feeding into the grid at an average of RMB 0.61/kWh.**

i) Importing wind energy from Guangdong is COMMERCIALLY VIABLE

This grid-connection-price of Guangdong's wind energy is now RMB0.61/kWh, which is already comparable to that of the nuclear-generated electricity (about RMB0.5/kWh) that CLP Hong Kong Ltd. has been importing from the Daya Bay Nuclear Plant in Shenzhen to Hong Kong. With many large wind farms in the pipeline and increased technology localisation, the cost per unit of capacity is set to fall.

ii) Importing wind energy from Guangdong is TECHNICALLY VIABLE

Guangdong's wind energy has been connected to Guangdong's provincial power grid.

In Guangdong, electricity generated by wind turbines has been pushed up to higher voltage by a series of transforming stations before connecting to the Guangdong power grid. **Figure 1** illustrates how wind energy from Shanwei wind farm connects to the Guangdong grid. Guangdong's power grid has a large capacity (Guangdong has a generation capacity of over 35000 MW already) and high reliability. It is therefore able to cushion any fluctuation in wind energy supply if wind development is contained in a manageable scale.

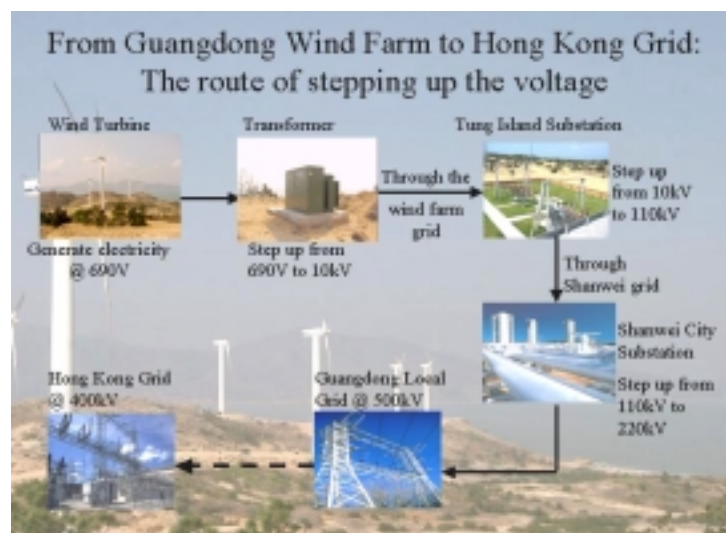


Figure 1. From Guangdong Wind Farm to Hong Kong Grid: the route of stepping up the voltage²

² Correspondence between Friends of the Earth (HK) and Guang Dong Ji Hua Wind Energy Co. Ltd., March 2003. Three existing wind farms in Guangdong are all connected to the Guangdong provincial grid. Hong Kong's two power utilities have yet to import wind energy from Guangdong, but CLP's grid has already been connected with the Guangdong provincial grid.

Hong Kong has been connecting to Guangdong's provincial power grid. As a matter of fact, Hong Kong and Guangdong have over two decades of experience in sharing power on their common grid (CLP, one of the two power utilities in Hong Kong, has been selling electricity to Guangdong since the late-1970s and CLP has been importing nuclear energy from the nuclear plant in Daya Bay, Shenzhen, since the mid-1990s) **(Figure 2).**



Figure 2: Existing CLP's power grid extending from the New Territories, Hong Kong, into Guangdong

When it comes to the issue of technical viability, it is of particular interest to compare the similarities between importing electricity from Chonghua pumped-storage power plant to CLP grid, (which CLP has **already** been practising) and importing wind energy from Guangdong in the near future (see Box 1 below).

Box 1. Similarities between importing electricity from Chonghua pumped-storage power plant and Guangdong wind farms into Hong Kong's grid.

The Daya Bay nuclear plant and the Chonghua pumped-storage power plant are a complementary system in which a portion of the electricity from the nuclear plant is transmitted to the Chonghua plant, in order to shift base load energy to peak demand times.

Since the mid-1990s, CLP in Hong Kong has been importing 75% of the electricity from the Daya Bay nuclear plant, by bringing in **10TWh/year directly from Daya Bay** (through two direct transmission cables connecting Daya Bay plant and CLP's grid in Hong Kong), and **300 GWh from Chonghua plant** (which is connected to the Guangdong's provincial grid via which electricity is transmitted to CLP).

The transmission route of electricity from "Chonghua plant" to "Guangdong provincial grid" and then to "CLP grid in Hong Kong" is a particularly valuable reference for wind energy because the transmission route for wind energy will be very similar if Hong Kong is to import wind energy from Guangdong.

Technical viability has been a major debatable area for the importation of wind energy from Guangdong. But it should be noted that the operation of this kind of transmission route has been well demonstrated for more than a decade in the case of Chonghua plant. For now, **if Hong Kong were to import wind energy from Guangdong to meet the HKSAR's 1% renewable target, i.e. about 400 GWh – an amount just slightly more than what CLP has been importing from Chonghua plant (300GWh), it is expected that there will be no major unsolvable technical issue.**

All we need now is some political stamina.

iii) Hong Kong's UNIQUE ROLE in jumpstarting regional development of wind energy

Hong Kong can play an important role in jumpstarting the development of wind energy in the Pearl River Delta Region. Hong Kong can facilitate economies of scale needed to substantially lower power generation costs to attract new players to the wind energy market so that they can go head-to-head with conventional generation without the need for mandates and subsidies in the near future.

Hong Kong is not only a green purchaser, but can also serve as a catalyst of the regional wind movement. With its leading legal and financial systems, Hong Kong can help attract international investors who often lack confidence in Mainland regulatory systems.

b) Misconceptions about Guangdong wind energy

There are, however, general misconceptions and misunderstandings about importing renewable energy from Guangdong. We would like to address them one by one here:

Table 1: Misconceptions about Guangdong wind energy

<i>Misconception 1: Connecting wind energy to Hong Kong power grid via Guangdong grid will lead to instability of Hong Kong grid.</i>
<u>Fact 1:</u> - Guangdong's power grid has a large capacity (Guangdong has a generation capacity of over 35,000 MW already) and high reliability. Hence it is able to cushion any fluctuation in wind energy supply if wind development is contained in a manageable scale. - CLP has more than a decade of experience in importing electricity from Chonghua pumped-storage power plant (300 Gwh annually), which is also connected to Guangdong's grid.
<i>Misconception 2: Wind energy source is unreliable.</i>
<u>Fact 2:</u> Wind is by nature intermittent energy source. Wind does not blow all the time but there are proven strategies to manage it. - First, a wider wind network can reduce the total variation of power output—as more wind farms are connected over a larger area, the wind pattern affecting each is different (this points to the advantage of cooperation between Hong Kong and Guangdong on wind development). - Second, pumped storage to shift base load energy to peak demand times can be used to smooth out wind power variation. - In fact, wind energy has a unique role in Guangdong in strengthening the Guangdong power grid by improving the energy portfolio of Guangdong. Hydro power plants are of considerable scale in Guangdong. The rain season starts from April to August every year and the generation rate of hydropower drops significantly in winters. On the other hand, Guangdong has rich wind resources from every September to March. That makes wind and hydro perfectly complementary to each other.
<i>Misconception 3: Guangdong is running out of electricity. It is unrealistic to import green energy from Guangdong.</i>
<u>Fact 3:</u> Hong Kong can play an important role in jumpstarting the development of wind energy in the Pearl River Delta region.

.../continued on page 7

- ♦ Shortage of electricity in some parts of Guangdong occurs in part because the Central Government has been restricting the building of conventional power plants due to pollution concerns whilst imports of cleaner power from the Western provinces are delayed by transmission extensions.
- ♦ Speeding up power capacity installation in Guangdong is a must. The key is whether the new power plants will be coal-fired, nuclear powered incurring pollution, or there will be wind farms. With the ease of construction and connection to the power grid, wind energy is particularly beneficial to Guangdong's energy situation as wind farms can be built quickly to respond to electricity shortages, say twelve months, assuming permits and resource assessments are complete. Wind energy, hence, is an important component of Guangdong's future energy market.
- ♦ With its leading legal and financial systems, Hong Kong can help attract international investors who often lack confidence in Mainland regulatory systems and facilitate the economies of scale needed to drive costs down to attract new players to the wind energy market so that they can go head-to-head with conventional generation without the need for mandates and subsidies in near future.

1.4 Overly conservative assumptions

We are of the view that the targets set out in the Study are deduced based on overly conservative assumptions. For all the 2012, 2017 and 2022 renewable targets, the Study has assumed that 1 MW on-shore wind turbines and 1.5 MW off-shore wind turbines will be adopted, some 107 wind turbines will have to be erected to fulfil the 2022 target. However, to date, the capacity of the largest commercially available wind turbine (onshore) is already 3.2 MW. As the technology is rapidly evolving, it is not justifiable to assume that a 1.2 MW model would still be used ten and even twenty years later. Hence the Study has overestimated the physical constraints of wind energy in Hong Kong, resulting in its hugely underestimated targets.

1.5 Full costs including social costs such as health costs of energy generation have not been accounted for

This Study fails to account for the estimated social costs of power generation in Hong Kong, which is a crucial piece of information for formulating renewable energy policy.

If there is to be a 5% renewable energy in Hong Kong energy mix, there will be a reduction of 8,150 tonnes (14% of total sulphur dioxide emission from power plants) of SO₂, 7,150 (13%) tonnes of nitrogen oxides, 440 tonnes (13%) of particulates, and 1,834,000 tonnes (5%) of carbon³. (please also refer to Section 2.G "What will be the impact on the environment" on page 11 for details).

The Department of Community Medicine of the University of Hong Kong has recently estimated that, based on its Year 2000 data, **given the above reduction in emission (8,150 tonnes of sulphur dioxide, 7,150 tonnes of nitrogen oxides and 440 tonnes of particulates), it would lead each year to the avoidance of:**

- ♦ **200 deaths from cardiovascular and respiratory causes**
- ♦ **2102 hospital admissions relating to cardiovascular and respiratory illnesses to Hospital Authority hospitals.⁴**

³ The estimation is derived based on the assumption that coal-fired plants will be replaced, according to year 2000 figures. Source: correspondence between Friends of the Earth (HK) and the Environmental Protection Department, December 2002.

⁴ Environmental Epidemiology Group, Department of Community Medicine, University of Hong Kong, April 2003.

We have to emphasise that the above estimation is based on the assumption that a reduction of such emissions would lead to a similar overall reduction in the mean ambient level of these pollutants. However, this estimation is still valuable and highly pertinent in the sense that it is clearly indicative of the benefits of even marginal increases in the use of renewable energy in Hong Kong.

External costs are difficult to quantify. However, they are real and can be immense if their impacts become externalized, and there is a rough consensus internationally that the external costs of coal-fired generation are around \$0.1 / kWh.⁵

NONE of the social costs of fossil fuel-powered electricity are factored into the existing tariff. In other words, the public has been subsidising fossil fuels already, with the incurred social costs reflected on our medical bills, deterioration of quality of life, and the adverse impact on our international image.

There is an absence of a level playing field for renewable and conventional energy. However it should be noted that the pressure for power plants to internalise the social costs has been mounting and the cost of conventional energy is destined to rise.

Further studies on the social costs of conventional power generation and social benefits of renewable energy should be conducted.

⁵ "Size matters – getting bigger and cheaper", *Windpower Monthly*, January 2003.

2. **FoE's Proposed Scenario of a 5% Renewable Energy Target Based on Research Findings for Consideration**

Having illustrated that the Study's renewable energy targets are excessively underestimated, we proceed to give an illustration by putting together a scenario of a 5% renewable energy target with wind energy imported from Guangdong.

If Hong Kong were to import wind energy from Guangdong to achieve a 5% renewable target...

A. **How much electricity we need to import?**

Hong Kong's total energy consumption is about 37 TWh⁶. To meet the 5% renewable target, Hong Kong will need about 2TWh electricity from wind turbines. To generate 2TWh, wind farms with a total capacity of 1000 MW will be needed.

B. **How much land will be taken up?**

Wind farms of 1000 MW capacity will occupy an area of about 60km². Just across our border, Guangdong has abundant land which is cheap and readily available for wind turbines. Hong Kong has huge potential to cooperate with Guangdong for regional wind development and Guangdong can serve as a wind energy supplier for Hong Kong.

C. **How to finance the project?**

If HKSAR Government is to require the two local power companies to provide 5% renewable energy in their energy supply, the two power companies will have strong incentives to look for investment opportunities in Guangdong wind projects as wind energy has strong potential to be a mainstream energy source in both technological and financial aspects (see Section 1.3.1. on pp. 3-7 of this paper).

To date, the Guangdong Province has launched a series of financial incentives to promote wide-scale development of wind energy:

- ♦ **Guaranteed purchase**: the Guangdong grid company has to purchase all wind energy generated.
- ♦ **Land cost**: only the area actually occupied by the turbine foundation and other infrastructural facilities will be counted.
- ♦ **Tax concession**: there are TWO tax concessions for wind projects in Guangdong:
 - 1) **Value-added tax** has been reduced from 17% to 8.5% for wind projects.
 - 2) **Profit tax** has been reduced: the 33% profit tax is 100% waived in the first two years; reduced to 7.5% from the 3rd to 5th years, reduced to 15% for the 6th year and onwards.

⁶ Hong Kong Energy Statistics 2001 Annual Report, Census and Statistics Department, 2001.

It should be noted that the development of Shanwei Wind Farm gives an indication that Guangdong is reducing its reliance on foreign low-interest loans and has started to finance wind projects solely by investors, as Guangdong has been gaining experience in financing and constructing wind farms.

Phase I of Shanwei wind farm, of the scale of 16.5MW of generation capacity by twenty-five 660kW turbines, had its construction started in August 2002. Completion is due by April 2003. Phase I required an investment of RMB 138 million, one-third of which was drawn from low-interest loans from the Danish Government and the rest from Mainland investors.

Phase II, an extension of Phase I, involving 18MW generation capacity and RMB 130 million of investment, has recently started its planning process. The construction of Phase II is expected to be completed by end-2003. It should be noted that Phase II will be solely financed by investors. No international loan will be made for this Phase. The major reasons for such a change are: 1) banks are now more familiar with the finance of wind projects; b) there are proven success examples of the planning, construction and operation of wind farms in China.

D. How long will the construction take?

From wind monitoring to operation, the 1000 MW wind facilities in Guangdong can take no more than 4 years. Wind monitoring usually takes one to two years. Infrastructural works including building local grids and access roads will take one year. Construction works including building foundation, erecting wind turbines will take another one year.

CLP, one of the two power utilities in Hong Kong, in early-2003 has signed an agreement with Guangdong to start a feasibility study of wind resources in Yangjiang, 250km southwest to Hong Kong. If the wind resources are good enough, the study will lead to a wind farm investment of RMB 800 million with a generation capacity of 100 MW. In addition to this, an ABB's 200-MW off-shore wind farm project just off the shore of Nan'Ao Island, Guangdong, is also in the planning process. In other words, 10 CLP's Yangjiang projects or 5 ABB's Nan'Ao projects will be enough to meet this 1000 MW target.

E. What will be the impact on electricity price?

Assuming the Government will subsidise RMB400 million each year in the form of tax concessions, etc., the retail electricity price will only increase by RMB 0.004 as the price gap between wind and conventional energy can be spread out by the Guangdong grid

with existing capacity of 35,000 MW. The RMB400 million subsidy will bring the grid-connection-price of wind energy further down to RMB0.55/kWh, close enough to compete with conventional energy (grid-connection-prices of coal-fired, LNG-fired and nuclear are RMB0.35, 0.46 and 0.48 respectively).

The impact on Hong Kong's tariff is yet to be calculated. But two issues are worth to note: (a) The integration of renewable power into Hong Kong's power grid in the near future would have no significant impact on consumer rates because of its small capacity; and (b) The market price for wind is highly dependent on the regional context of energy policies, pollution costs, development sites, the wind resource, transmission access, and other issues.

F. **What will be the impact on the environment?**

If there is 5% renewable energy in Hong Kong's energy mix, there will be a reduction of 8,150 tonnes (14% of total sulphur dioxide emission from power plants) of SO₂, 7,150 (13%) tonnes of Nitrogen oxides, 440 tonnes (13%) of particulates, and 1,834,000 tonnes (5%) of carbon.⁷

G. **What will be the impact on our health?**

The Department of Community Medicine of the University of Hong Kong has recently estimated that, based on its Year 2000 data, **given the above reduction in emission (8,150 tonnes of sulphur dioxide, 7,150 tonnes of nitrogen oxides and 440 tonnes of particulates), it would lead each year to the avoidance of:**

- ♦ **200 deaths from cardiovascular and respiratory causes**
- ♦ **2102 hospital admissions relating to cardiovascular and respiratory illnesses to Hospital Authority hospitals.⁸**

⁷ The estimation is derived based on the assumption that coal-fired plants will be replaced, according to year 2000 figures. Source: correspondence between Friends of the Earth (HK) and the Environmental Protection Department, December 2002.

⁸ Environmental Epidemiology Group, Department of Community Medicine, University of Hong Kong, April 2003.

3. **FoE's Recommendations to the Government for Promoting Wide-scale Application of Renewable Energy**

3.1 **Formulate a renewable energy policy**

Support for wind energy from governments is currently needed because: (a) Conventional sources have unfair advantage because of subsidies; (b) Conventional sources incur minimal pollution charges; and (c) Initial capital investment of wind energy is high because of the newness of the technology, but operational costs are significantly lower than conventional energy as wind energy requires no fuel and relative costs are expected to fall with widespread commercialisation.⁹

As a level playing field for the supply of renewable and conventional energy is yet to be established, it is a common practice worldwide that countries help jumpstart the development of renewable are required to set a certain amount of renewable energy in their energy portfolios so as to spur investment and to facilitate the economics of scale needed to drive costs down – so that renewables can go head-to-head with conventional energy without the need for subsidies.

Around the world, many countries/economies have fully recognised the role of government in the development of renewable energy and have committed to a renewable energy target to ensure a market for renewable energy **(Table 2)**.

Table 2. Policies and/or Statutory Requirements of Selected Countries on the Use of Non-fossil Fuel/Renewable Energy Sources

	Policies/Statutory Requirements
China	In 1995, the Central Government made new commitment to renewable energy, as outlined in the New and Renewable Energy Development Program, 1996-2010, which was developed by the State Economic and Trade Commission and the former State Planning Commission and State Science and Technology Commission. The project comprises the <i>installation of 190MW wind farms and 10 MW PV system from 1999 to 2004</i> , of which, Shanghai will install 20 MW wind turbines.
Republic of Korea	A target to supply 2% of total energy demand by new and renewable energy by 2006.
Australia	Set a mandatory target of an additional 2% of their power generation from renewable energy. This will move up the share of renewables to 11% by 2010.
European Union	The Communication from the Commission entitled “Energy for the future: Renewable Energy Sources—White Paper for a Community Strategy and Action Plan (COM(97) 599 final)” and the European Council Resolution of 8 June 1998 on renewable sources of energy stipulate a target to double the share of renewable energies in gross domestic energy consumption across the EU from the present 6% to 12% on average by 2010. All member states are required to set national (non-binding) targets for renewables to be consistent with the EU target.

...continued on page 13

⁹ “Renewable Portfolio Standard: A Tool for Environmental Policy in the Chinese Electricity Sector,” *Energy for Sustainable Development*, Vol V No. 4, December 2001.

United Kingdom	Under the U.K.'s Non-Fossil Fuel Obligation Orders, introduced in 1989, more than 2% of its electricity (about 1,177 MW) must be generated from renewable sources. The U.K. aims to increase renewable output to 5 % <i>by 2003 and 10% by 2010</i> under the EU target. As part of its revised policy for renewable energy in the UK, the Government has introduced a new Renewables Obligation (RO) in 2000 to succeed the Non-Fossil Fuel Obligation (NFFO) and the RO has become the British government's main toll for achieving its target of 10% of UK electricity from renewables by 2010.¹⁰
Republic of Ireland	In 1996, 2% of power was from renewable energy. Share of renewable energy in total energy supply to be increased to 5% <i>by 2010</i>. Ireland would be required to generate 13.2% of electricity by renewables by 2010 under the EU target.
Denmark	20% of electricity consumption from renewable energy by 2003. Denmark would be required to generate 29% of electricity by renewables by 2010 under the EU target. Denmark has committed to using 1.4 million tones of biomass for the production of electricity and heat, and to installing 750 MW offshore wind power capacity by 2005 and 2008, respectively.
The Netherlands	A target of 10% renewables in 2020. The Netherlands would be required to generate 12% of electricity by renewables by 2010 under the EU target.
United States	Non-hydro renewables and alternative energy currently account for 2% of electricity needs. Hydropower provides about 7% of electricity supply. New York State requires, through an executive order, the purchase of no less than 10% <i>and 20%</i> of the overall State facility energy requirements from renewables <i>by 2005 and 2010</i>, respectively.

(Source: EPD, 2002¹¹)

Hong Kong's existing energy policy, however, pays too little attention to the environment. Our energy is to "ensure reliable and safe supply at reasonable costs¹²". In other words, our energy policy has its main focus on: 1) reliable supply of energy, and 2) stable and reasonable costs. There is minimal linkage between the current energy policy and vital environmental concerns. The Hong Kong SAR Government has to date made no commitment to developing renewable energy. While there have been some initiatives for promoting renewable energy, they have been few in number and among them, few voluntary by nature.

The SAR Government should commit to developing a specific policy to promote the wide-scale application of renewable energy in Hong Kong, with definitive targets and time frame.

¹⁰ Web page of the Department of Trade and Industry, U.K.: <http://www.dti.gov.uk/renewable/nffo.html>, as at 2 December 2002

¹¹ Environmental Protection Department, "Sustainable Development Provides a Better Future Environment," Paper presented at a forum entitled "Pursuing a Sustainable Future, 2002".

¹² Website of Economic Development and Labour Bureau: <http://www.edlb.gov.hk> as at 20 March 2003

When formulating a right combination of supporting policies such as Renewable Portfolio Standard, Renewable Energy Feed-in Tariffs and System Benefit Charge for renewable energy in Hong Kong, the Government should take into account international experience. Different approaches have come with success and have met with failure in different places depending on actual implementation processes and obstacles. In addition, transparency in the decision-making process of energy issues should be duly enhanced.

3.2. Undertake further studies

This Study is a first attempt to provide a full picture of renewable energy development in Hong Kong but has failed to address some of the key issues of wide-scale application of renewable energy. At least two further studies, as suggested below, should be undertaken to facilitate policy change and consensus building:

- a) a feasibility study of importing wind energy from Guangdong to Hong Kong;
- b) an economic assessment of the social benefits of renewable energy and economic impacts on Hong Kong's tariff (this study should take into account the impacts on both regional and local air quality, as Hong Kong has been adversely affected by regional air quality)

3.3. Set up an Energy Commission

In comparison to many other developed economies, Hong Kong lacks a well-coordinated authority to oversee the energy-related policies. This has resulted in fragmented control and lack of leadership in energy planning.

At present, responsibility for renewable energy policy resides with at least two bureaus and three departments, including Economic Development and Labour Bureau (EDLB), Environment, Transport and Works Bureau (ETWB), Electrical and Mechanical Services Department (EMSD), Environmental Protection Department (EPD) and Hong Kong Observatory (see Table 3 below).

Table 3: HK Government's fragmented structure for renewable energy development/ policy

Department/Bureau	Responsibility	Actions
Economic Development and Labour Bureau (EDLB)	♦ Formulate and review energy policy ♦ Initiate renewable energy study ♦ Financial monitoring of electricity companies through Scheme of Control agreements with utilities ♦ Review applications for new power stations ♦ Member of Energy Advisory Committee	Joint sponsorship with the Environment, Transport and Works Bureau for a consultancy study on renewable energy. The study examines the potential applications of several types of renewable energy technologies in Hong Kong. The study was released in February 2003. <i>...continued on page 15</i>

Environment, Transport and Works Bureau (ETWB)	♦ Formulate and review policies on increasing efficiency in energy consumption and monitor programme implementation ♦ Member of Energy Advisory Committee	♦ Joint sponsorship with EDLB for renewable energy consultancy study (see above)
Electrical and Mechanical Services Department – Energy Efficiency Office	♦ Monitor electricity supply companies under the Scheme of Control Agreements ♦ Implement Energy Management programme ♦ Conduct energy audits ♦ Implement Building Energy Codes ♦ Implement water-cooled air conditioning systems ♦ Operate voluntary Energy Efficiency Labelling Scheme ♦ Implement Demand Side Management programmes ♦ Compile energy end-use data	♦ Involved in the EDLB and ETWB-commissioned renewable energy consultancy study (see above)
Environmental Protection Department	♦ Compile Hong Kong air pollutants and greenhouse gases emission inventory ♦ Develop initiatives concerning global warming and related energy matters ♦ Promote environmental education and awareness through various programmes and campaigns ♦ Member of Environmental Campaign Committee	♦ Commissioned a consultant study titled “<i>Greenhouse Gas Emission Control Study</i>” in 2000
Hong Kong Observatory	♦ Operate a network of 67 automatic weather stations located at various places in Hong Kong and gather wind resources data.	♦ Produced a report titled “<i>Wind Statistics in Hong Kong in Relation to Wind Power</i>” in March 2002.

(Source: Hong Kong SAR Government Website)

The fragmented structure has resulted in two major drawbacks:

First, there is a fragmented control of energy-related policies (for instance, the greenhouse gas policy and the energy policy are resided with the ETWB and the EDLB respectively), hence hampering the integrated response at an appropriate scale.

Second, the present fragmented structure fails to devote adequate and focused resources to energy planning. The Economic Development and Labour Bureau is the bureau responsible for energy policy review, but at the same time the bureau has the policy responsibility for a wide spectrum of areas ranging from reducing unemployment rate, resolving strained employer-employee relations, to developing economic infrastructure. “Energy” is only one of these many issues.

An energy commission will ensure that all energy-related policies including conventional energy policy, renewable energy policy and greenhouse gas policy will be reviewed by an integrated approach, with well-coordinated efforts from a single designated authority.

3.4 Replace the Scheme of Control Agreements with a more socially responsible agreement

The present Scheme of Control Agreements (SCAs) between the Government and the two local power companies are disincentive to renewable energy development because:

- (a) **False pricing.** The SCAs do not require power companies to take into account external costs of fossil fuels. In the absence of energy resources that take into account environmental concerns, it is evident that the power companies' shift in the use of different fuels depends on market prices of fuels, rather than for environmental reasons. While coal-powered plants produce much more pollution, the use of coal for energy production has increased 40% in recent years. Between 1997 and 2001, production has risen from 5,711,456 tonnes to 8,033,097 tonnes, while the price of coal plummeted about 30% from HK\$269/tonne to HK\$195/tonne from 1997 to 2001.¹³ As such, **full pricing** of fossil fuels is essential to provide a level playing field for renewable energy.
- (b) **SCAs' guarantee returns from fixed assets.** SCAs offer no financial incentives for power utilities to explore renewable.
- (c) **No Interconnection.** SCAs have no requirement of interconnection of energy grids provided by CLP Power and HEC. Although CLP Power has been connected with the Guangdong power grid for decades, HEC has been isolated and is not able to reach renewable sources in Guangdong. In fact, the Government has long recognised the need for interconnection. It was clearly stated in June 2000 in a reply from the Economic Services Bureau to the Legislative Council that "*we see increased interconnection, not just between the two power companies but also with Mainland China, as the logical way forward for the longer term.*"

Hence, the existing SCAs should be replaced by a more socially responsible policy, one that is not discriminatory to renewable energy. The interim review of the SCAs next year will pave the way for the 2008 final review of the SCAs. It is now a most opportune time to convene a renewable energy debate in order to ensure that the post-2008 agreements will **(a) contain the necessary provisions to guarantee the power companies' investment in renewable energy, (b) secure full costing of fossil fuels, including environmental costs, in order to allow a sensible economic decision-making on energy choices, and c) avoid discriminatory access to renewable energy sources, preferably by setting up an independent transmission operator.**

An important point to note is that Hong Kong should remove the negative factors of deregulation in the course of replacing SCAs. Deregulation of the power market for open competition can destroy the goals of renewable energy and rational energy use

¹³ Census and Statistics Department, Hong Kong Energy Statistics 2001 Annual Report, 2001.

(e.g., California). New profit incentives for the power companies to develop clean power sources will benefit Hong Kong far more than a simple competition policy.

3.5 Renewable energy should be a prioritized energy source to meet the 2010 emission reduction target

Immediately following the release of the “Study of Air Quality in the Pearl River Delta Region”¹⁴ in April 2002, the HKSAR Government and the Guangdong Provincial Government announced a commitment to reducing by 2010 the regional emissions of the four major atmospheric pollutants, namely sulphur dioxide, nitrogen oxides, respirable suspended particulates and volatile organic compounds, by 40%, 20%, 55% and 55% respectively, using the emission level at 1997 as a base.

A concrete plan for such reductions is yet to be derived but it is noteworthy that there has been no indication from the HKSAR Government to consider renewable energy as a means to live up to its 2010 commitment. It should be noted that simply moving to “cleaner fuels” like natural gas is not enough. Renewable energy can help the Government make huge strides forward in meeting its 2010 targets. Hence, the Government should make renewable energy a prioritized energy source by offering supporting policies and incentives.

3.6 Take the Lead to Procure Renewable Energy

The Study suggests that the Government is the largest single power consumer in Hong Kong. Although the consultants cannot obtain a complete inventory of power consumption by the Government, Government Purchasing Agency data on shared office buildings alone suggest an annual consumption of 303 GWh. The Study also suggests that ***“To this must be added Water Services Department consumption, Housing Authority purchases, and those of Environmental Protection Department, Drainage Services Department, Education Department”, and “Data made publicly available by CLP show that Government accounts absorbed 24% of the company’s Hong Kong electricity sales in 2000.”*** (Section 12.4.3, full version of the Study)

Green purchase plays a catalytic role to renewable energy market. It should take the lead in the community to demonstrate preferential purchase of renewable energy and less greenhouse-intensive energy.

To date, public awareness of renewable energy has yet to be built up. Before the general public can comprehend the long-term benefits of renewable energy as opposed to its short time costs, the government has an important role in establishing a stable local market for renewable energy with its influence in the market.

¹⁴ Website of Hong Kong Government: <http://www.info.gov.hk/gia> as at 29 April 2002

4. FoE's Comments on the Public Consultation Process

Public access to the full version of the Study was only made available when this public consultation was already half-way through. The two-month public consultation began on 6 February and by that time only the 22-page executive summary of the Study was posted onto the Electrical and Mechanical Services Department's website and a CD-ROM of the full version was only available upon written request.

It was only following repeated requests, the 240-page full report was finally published online on 19 March, when there was only less than 3 weeks left for public consultation.

To make all the available information accessible to the public in a user-friendly way is the basis of a proper public consultation. The best available information will empower the concerned parties to give constructive suggestions to the authority and to make informed decisions in future.

- END -

This paper will also be posted on the website of FoE at: www.foe.org.hk

For further communication, please contact:

Ms Daphne Mah

Campaigns Co-ordinator

Friends of the Earth (Hong Kong)

2/F., 53-55 Lockhart Road

Wanchai, Hong Kong

Phone: +852 2528 5588

Fax: +852 2529 2777

Email: mahngaryin@foe.org.hk

內容撮要

1. 「廢物轉化能源」不應被視為可再生能源
2. 顧問漠視可再生能源的潛能，建議一個近乎「零」的可再生能源目標。根據顧問的建議，若剔除「廢物轉化能源」，二零一二年、二零一七年及二零二二年的可再生能源目標將分別只有 0.08%，0.46% 及 1.2%。

事實上，風力能已成為部分國家的主流電力供應，例如丹麥已設有 2,880 兆瓦的風力能裝置，足以供應丹麥百分之二十的電力供應。此研究主要因以下原因低估可再生能源在香港的發展空間：

2.1 未有考慮從廣東引入可再生能源的可能性。

從廣東引入風力能到香港，無論在價格上及技術上均已經可行。

價格：廣東風力能與廣東電網連接的上網價是每度電六毫一，而大亞灣核電廠的核電上網價是每度電是四毫九，兩者在價格上已可以競爭。

技術：事實上，中電現時每年由從化抽水蓄能電廠輸入三億千瓦時(300 GWh)，從化抽水蓄能電廠的電力須先駁上廣東電網再輸到香港中電的電網，與廣東風電駁上廣東電網的情況十分相似；另一方面，若從廣東輸入風電到香港以供應本港 1% 的用電量，以達到香港訂下 1% 的可再生能源目標，香港便需要輸入約四億千瓦時(400 GWh)的風電，與從化的輸電量規模相若，因此香港若要輸入四億千瓦時的風電不應有嚴重的技術性問題。

2.2 顧問採用了過份保守的假設

以風力能為例，根據顧問建議的可再生能源發展進度，到二零一二年香港的風力能供應為一千三百萬度電(13GWh)，換言之，屆時 只需豎立一座陸上風車，以及一座海上風車便足以達到 13 百萬度電的發電目標 (假設採用 3.2 兆瓦的風車)，這明顯是一個過低的目標。根據國際經驗，發展大型風力場的技術發展已成熟，而價格亦可以與傳統電力匹敵，風力能應有更大的發展空間。

2.3 並未評估傳統發電造成的社會成本

若香港訂立 5% 的可再生能源目標，將會減少 8,150 噸二氧化硫(香港電廠的二氧化硫總排放量的 14%)、7,150 噸氧化氮(13%總排放量)，440 噸的懸浮粒子(13%總排放量)及 1,834,000 噸的二氧化碳(5%總排放量)。

根據香港大學的最新評估，以上的減幅(減少 8,150 噸二氧化硫、7,150 噸氧化氮及 440 噸懸浮粒子)將：

- ♦ 減少 200 宗因心臟及呼吸疾病引致的死亡
- ♦ 減少 2102 宗因心臟及呼吸疾病引致的入院個案

3. 港府在廣東省可再生能源的大規模發展中有重要的推動作用

3.1 制定可再生能源政策

3.2 進行進一步研究，包括 a) 香港從廣東輸入風力能的可行性研究，b) 可再生能源帶來經濟效益及對電價的影響。

3.3 成立電力局統籌可再生能源及其他相關政策(如溫室氣體政策)的發展。

3.4 改變現行的利潤管制計劃，以確保：1) 電力公司有推動力引入可再生能源；2) 電費可反映用電的整體成本，包括空氣污染等的成本，讓決策者在選擇能源供應的；3) 由獨立的電力公司負責電力輸送，以確保電網的透明度，此有助可再生能源的項目上網。

3.5 以可再生能源為「優先能源」，以達到二零一零年的減廢氣目標。

3.6 帶動採購可再生能源

Box 1: 若香港從廣東輸入風力能以達到香港 5%的可再生能源目標...

1. 香港需要輸入多少風力能?

香港的電力需求量为 370 億千瓦時(37TWh)，要達到 5%的可再生能源目標則需要約 20 億千瓦時(2TWh)的可再生能源電力，需興建總裝置量为 1000 兆瓦的風力場。

2. 要多少地?

1000 兆瓦的風車場佔地約 60 平方千米，廣東有大量適合建立風力場的土地供應，香港應與廣東共同合作發展地域性的風力能，再從廣東供應風力能來港。

3. 投資額情況

如果港府訂立可再生能源政策，要求中電及港燈在電力供應中最少 5%必須來自可再生能源，兩電便會有推動力探索在廣東投資發展風力能的機會。

現時，廣東省政策正提供一系列的經濟優惠，以鼓勵風力能的投資，包括：

- **購買保證**：所有廣東電網保證購買所有廣東風力能所生產的風電；
- **地價優惠**：租地的面積只計算按風車的地基及其他設施實際佔地的面積
- **稅務優惠**：增值稅由 17%減至 8.5%；利得稅：首兩年完全豁免，第三至五年由 33%減至 7.5%，第六年及之後由 33%減至 15%。

值得留意的一點是，汕尾風力場的最新發展顯示廣東省風力的發展由以往依賴外國低息 / 免息貸款轉為全數從股東集資，反映隨著廣東有越來越多興建風力場的經驗，銀行及投資者對風力的信心有所增加。

汕尾風力場第一期共有 25 台 660 千瓦風車，產電量共 16.5 兆瓦，由去年開始興建，預料在今年四月完工。第一期的投資額為一億三千八百萬人民幣，當中三分一來自丹麥政府的免息貸款，其餘三分二來自國內資金。

第二期擴建工程將另興建共 18 兆瓦、超過二十台的風車，計劃於今年底完工，投資額共一億三千萬人民幣。第二期工程將透過集資籌集資金，而不涉及外國貸款。

4. 建築期多久?

興建 1000 兆瓦的風力場，由風力監察至運作，可在四年內完成：風力監察般需要一至兩年，興建運輸道路、電網等配套設施需一年，而豎立風車則需要一年。

中電剛在今年初與廣東簽訂合約在廣東陽江進行維期兩年的風力監測，若風力資源充足，預計將興建一個 100 兆瓦的陸上風力場，投資額約八億人民幣；另一方面，ABB 公司亦計劃在廣東南澳島對開海面興建 200 兆瓦的海上風力場。因此，10 個中電的陽江發力場，或 5 個 ABB 的南澳海上風力場便足以提供 1000 千瓦的電力給香港。

6. 對香港電價有何影響?

假設廣東省政府提供每年四億人民幣的財政資助(如透過減稅)，由於廣東省電量龐大(3,500 兆瓦)，風力能與傳統電價的分別可由全國廣東省電網分擔，以 20 億千瓦時(2TWh)的風力能為例，只會令廣東省每度電的零售電價上升 0.004 元人民幣。

輸入二百萬兆風力能來港對香港電價的影響尚有待計算，但有兩件事值得留意：a) 由於輸入的風電量只佔香港整體電量的一小部分，對電價影響不會明顯；b) 風電的電價同時會受其他因素影響，包括電力政策、空氣污染的成本、當地的風力資源等影響。

7. 為環境帶來什麼好處?

若香港訂立 5%的可再生能源目標，將會減少 8,150 噸二氧化硫(香港電廠的二氧化硫總排放量的 14%)、7,150 噸氧化氮(13%總排放量)、440 噸的懸浮粒子(13%總排放量)及 1,834,000 噸的二氧化碳(5%總排放量)。

8. 對香港市民健康帶來什麼好處?

根據香港大學的最新評估，以上的減幅(減少 8,150 噸二氧化硫、7,150 噸氧化氮及 440 噸懸浮粒子)將：

- 減少 200 宗因心臟及呼吸疾病引致的死亡
- 減少 2102 宗因心臟及呼吸疾病引致的入院個案

**List of Signatories of FoE's signatory petition for renewable energy launched
between 2 February and 1 April 2003.**

This statement

Friends of the Earth (HK) and the undersigned call on the HKSAR Administration to formulate a renewable energy policy which:

- 1. reflects the full costs (including health costs) of electricity generation;**
- 2. provides financial incentive for local power companies to invest in renewable projects;**
- 3. allows renewable energy sources, not only in Hong Kong but also from Guangdong, to enter Hong Kong's power grids.**

has been endorsed by the following organization and members of the public:

Organisation:	
Citizens Party	
Democratic Party	
Objection to Route 10 Action Group	
The Conservancy Association	
Vicmax Technology Ltd	
World Wide Fund For Nature Hong Kong	
Members of the Public:	
Chan, Corrin	Lam Ching Choi (Dr)
Chan, Susanna	Lam Kin Che (Prof)
Cheng M., Daniel	Lau, Patrick (Prof)
Cheung Ching Mui, Quidde	Lee Sau Mui
Cheung, Maria	Lo Chee Pui
Chi Wai Hui, David	Ma, Becky
Chin, Danny	Ma, Kalmond
Chu L. M.	Ooi Yew Chin
Doh Po Wan, Christina	Tien Hou Wah
Fong, Stephen	Tsoi Kwok Ho
Greg Pearce	Wong, Kenneth
Heyer, Daniel R.	Wong, Vivian
Ho Cheung Hung	Wu Hoi Yin
Kwok, Jackson	Young, Robert
Lai Yu Sum, Kevin	Yu Chai Mei, Jimmy (Dr)
Lam Chi Kwong, Angus	

Friends of the Earth (HK)



Signatory Petition for Renewable Energy

In response to the findings of the Hong Kong SAR Government's study on renewable energy

14 March 2003

Dear Friends:

If you look forward to cleaner air in Hong Kong, here comes an opportunity for you to shape public policy and to make it happen sooner! The HKSAR Government has just released a consultancy study on renewable energy this February and is now inviting public feedback until 6 April 2003.

Now is the time to state your views and voice your opinion. Do you think the renewable target proposed by the study is far too low? Do you consider incineration or other energy-from-waste technology as renewable energy sources? Do you think our existing energy market is holding back the development of renewables? There are lots of issues and perspectives that the government would like to gather from you before setting the target and time frame for introducing renewable energy to Hong Kong.

What can you do **NOW**?

Say what you'd like to say and what you have to say about renewable energy development in Hong Kong and

1. Join Friends of the Earth's Signatory Petition; or
2. Write individually to the Electrical and Mechanical Services Department (email: info@emsd.gov.hk; fax: 2890 6081) to tell them what you think. 6 April is the deadline!

The statement to be endorsed by you:

Friends of the Earth (HK) and the undersigned call on the HKSAR Administration to formulate a renewable energy policy which:

- 1. reflects the full costs (including health costs) of electricity generation;**
- 2. provides financial incentive for local power companies to invest in renewable projects;**
- 3. allows renewable energy sources, not only in Hong Kong but also from Guangdong, to enter Hong Kong's power grids.**

We value each and every signature. FoE (HK) is inviting all major stakeholders, including professional groups, academics, the private sector, legislators, green groups and individuals to join the signatory petition.

If you would like to endorse our petition for renewable energy,
please fill out the [online petition form](#) on our website
OR send the attached reply slip by e-mail (petition@foe.org.hk)
OR fax (2529.2777) to Friends of the Earth (Hong Kong)

Thank you for your support. Every single signature counts!

