



# **Suggestions to Policy Address 2017**

**Friends of the Earth (HK)**

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## Table of Contents

<b>Key Highlights</b> .....	<b>4</b>
<b>Green Economy</b> .....	<b>5</b>
<b>Green Finance</b> .....	<b>5</b>
1. Promote green investment .....	5
2. Issue green bonds .....	5
3. Develop a MAC curve .....	6
<b>Green Industry</b> .....	<b>6</b>
4. Incentivise green businesses .....	6
5. Support green employment .....	7
6. Support green procurement .....	7
<b>Circular Economy</b> .....	<b>8</b>
<b>Resource Management</b> .....	<b>8</b>
7. Integrate producer responsibility .....	8
8. Support recycling industry .....	9
9. Enact landfill ban .....	10
<b>Sustainable Consumption</b> .....	<b>10</b>
10. Provide green subsidies .....	10
11. Develop and recognise eco-labels .....	11
12. Promote more sustainable behaviours .....	11
<b>City Planning and Nature Conservation</b> .....	<b>12</b>
<b>Transport-oriented Development</b> .....	<b>12</b>
13. Strengthen public transportation .....	12
14. Encourage walking and cycling .....	13
15. Set up low emission zones .....	13
<b>Green Infrastructure</b> .....	<b>14</b>
16. Preserve green and blue spaces .....	14
17. Advance sustainable agriculture .....	14
18. Expand urban greenery .....	15
<b>Energy and Climate Change</b> .....	<b>16</b>
<b>Energy Supply</b> .....	<b>16</b>

19. Set carbon reduction targets .....	16
20. Develop renewable energy capacity .....	17
21. Establish carbon pricing.....	17
<b>Demand-Side Management.....</b>	<b>18</b>
22. Support green buildings .....	18
23. Reform electricity tariffs .....	18
24. Install smart meters .....	19



## Key Highlights

- **Green Economy**

A low-carbon, climate-resilient economy should be developed for green industry and environmental friendly projects. Green businesses and green employment should be supported and technological solutions prioritised according to the marginal abatement cost curve.

- **Circular Economy**

A circular economy should be established to keep materials in a closed loop through reuse and recycling. The recycling industry needs to be supported by economic instruments, infrastructural support and producer responsibility schemes.

- **Brownfield-first Policy**

A brownfield-first policy should be adopted for long-term housing strategy. Redevelopment of poor land use should be considered over the ecologically-valuable spaces.

- **Urban Greenery**

An urban greenery plan (urban forestry and farming) should be established to provide economic, environmental, social and health benefits to citizens and enhance the liveability of the high-density, compact city.

- **Carbon Tax / Trade**

Carbon pricing should be implemented to reflect the true cost of carbon emissions and ensure emitters pay their fair share of the climate burden.

- **80 x 50, 10% RE by 2030**

Climate targets of 80% carbon reduction by 2050 and 10% renewable energy by 2030 should be enacted. Progressive goals help to facilitate climate actions and align the city with international targets. The goals are backed by new technologies, modern practices and strong policy instruments to minimise carbon emission.



## Green Economy

The shift to a low-carbon economy requires not only the political will to push for better policies, but also the money to invest into new infrastructures and technologies. At least US\$1 trillion per year of investment needs to be mobilised by 2020 to reach the goal of limiting global warming below 2°C<sup>1</sup>. The signing of the Paris Agreement is estimated to unlock around US\$90 trillion of low-carbon investments over the next 15 years<sup>2</sup>. As one of the leading global financial centres, Hong Kong is uniquely positioned to take advantage of this opportunity to drive the development of green finance and green industries within the region.

## **Green Finance**

1. Promote green investment: A good investment is evaluated on its ability to generate high financial returns in the short to medium-term. Issues such as environmental sustainability are typically considered immaterial<sup>3</sup>. In 2015, UNEP identified several barriers to integrate environmental, social and governance issues in long-term investment decision-making processes<sup>4</sup> - including the outdated perception of fiduciary duty of investors, lack of oversight for responsible investment, and inconsistent corporate reporting standards. UNCTAD also published a list of guiding principles for developing sustainable investment policies<sup>5</sup>. Beyond policymaking, building a green investor base is important as well. FSDC suggests hosting regional conferences and seminars and offering professional development courses at universities or professional institutions on green financing<sup>6</sup>. **FoE (HK) recommends the Government to raise interest and build a knowledge base in green financing to facilitate green investments.**
2. Issue green bonds: Clean technology projects are often perceived to be riskier, lacks regulatory and institutional frameworks, and not commercially viable for investment<sup>7</sup>. To support the development of the green industry, China became the first country to announce official guidelines for issuing green bonds after COP21<sup>8</sup>. Green bonds can help to attract private capital to support green projects by reducing the risks. For example, the UK Green Investment Bank launched the £1bn offshore wind fund, backing eight offshore

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<sup>1</sup> [Climate Bonds Initiative, Green Finance: Green Bond Directions](#)

<sup>2</sup> [The New Climate Economy, The New Climate Economy 2016](#)

<sup>3</sup> [European Commission, Resource Efficiency and Fiduciary Duties of Investors](#)

<sup>4</sup> [United Nations Environment Programme, Fiduciary Duty in the 21<sup>st</sup> Century](#)

<sup>5</sup> [United Nations Conference on Trade and Development, Investment Policy Framework for Sustainable Development](#)

<sup>6</sup> [Financial Services Development Council, Hong Kong as a Regional Green Finance Hub](#)

<sup>7</sup> [Organisation for Economic Co-operation and Development, Green Investment Banks](#)

<sup>8</sup> [Climate Bonds Initiative, PBoC Takes Post COP21 Step on Green Bonds, New Definitions, Market Guidance and Disclosure Rules](#)

wind projects<sup>9</sup> – including the London Array, the largest offshore wind farm in the world. Governments can stimulate interest in green bonds by providing a credible pipeline of green projects and tax incentives for investment<sup>10</sup>. **FoE (HK) recommends the Government to issue green bonds to support regional low-carbon infrastructures and technologies.**

3. Develop a MAC curve: There are many means of carbon reduction – from different types of renewable energy, energy efficiency, power plant retrofits and more. The marginal abatement cost (MAC) curve presents low-carbon technologies as alternatives to business-as-usual scenario and quantifies the effectiveness of different abatement technologies<sup>11</sup>. It should be cautioned that the models are location-specific and do not reflect all indirect benefits of climate change mitigation<sup>12</sup>. Nevertheless, they provide a good starting point to evaluate the cost-effectiveness of green technologies in Hong Kong to identify the implementation priorities<sup>13</sup>. **FoE (HK) recommends the Government to develop a MAC curve for Hong Kong and set priorities on low-carbon solutions.**

## Green Industry

4. Incentivise green businesses: Green business refers to both creating new environmental goods and services and greening of existing industries<sup>14</sup>. In Hong Kong, the environmental industry represents just 0.4% of the city's GDP, but identified with potential for further development due to its rising growth over the past years<sup>15</sup>. In addition to supporting the budding industry through investments, policy instruments can be used to subsidise greener businesses while penalising polluting ones<sup>16</sup>. For example, the Canadian government provides a list of financial programmes to assist entrepreneurs in greening their businesses<sup>17</sup>. Furthermore, environmental regulations create explicit benefits<sup>18</sup>. For example, the Mandatory Energy Efficiency Labelling Scheme is used to promote energy saving by informing consumers on the energy performance of the products<sup>19</sup>. **FoE (HK) recommends the Government to bolster local green businesses through financial**

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<sup>9</sup> [United Kingdom Green Investment Bank, Offshore wind](#)

<sup>10</sup> [Climate Bonds Initiative, Scaling Up Green Bond Markets for Sustainable Development](#)

<sup>11</sup> [McKinsey & Company, Pathways to a Low-Carbon Economy](#)

<sup>12</sup> [Ekins, P. et al., Marginal Abatement Cost Curves: A call for caution](#)

<sup>13</sup> [Energieonderzoek Centrum Nederland, Policy Brief: Marginal Abatement Cost \(MAC\) Curve](#)

<sup>14</sup> [United Nations Industrial Development Organization, Green Industry: Policies for supporting Green Industry](#)

<sup>15</sup> [Census and Statistics Department, The Four Key Industries and Other Selected Industries in the Hong Kong Economy](#)

<sup>16</sup> [Organisation for Economic Co-operation and Development, the Political Economy of Environmentally Related Taxes](#)

<sup>17</sup> [Canada Business Network, Funding and incentive programs for greening your business](#)

<sup>18</sup> [United Nations Environment Programme, Green Jobs](#)

<sup>19</sup> [World Business Council for Sustainable Development, Sustainable Consumption Fact and Trends From a Business Perspective](#)

## incentives and policy instruments.

5. Support green employment: The growth in the environmental sector and the greening of other industries will unlock new opportunities in green jobs. UNEP estimated that the shift to the green economy could create 15-60 million jobs worldwide over the next 20 years<sup>20</sup>. The Government should raise interest among the younger generation of green careers in preparation of the green shift<sup>21</sup>. The nature and scope of existing jobs may evolve, requiring new skills and competencies<sup>22</sup>. Vocational training should be offered to build and enhance green skills of the workforce. Germany for instance runs a strong vocational education programme for young people and specialist training in the green industry<sup>23</sup>. **FoE (HK) recommends the Government to promote green careers by offering vocational training and certification programmes.**
  
6. Support green procurement: Public procurement accounts for a significant portion of a developed country's GDP, around 10-15%<sup>24</sup>. Green procurement helps to integrate environmental and social considerations in purchasing decisions<sup>25</sup>. Green products and services offer better financial savings over the entire lifecycle through enhanced efficiency and/or reduced disposal cost<sup>26</sup>. Although EPD currently provides green procurement guidelines for 150 items<sup>27</sup>, price is still the determining factor<sup>28</sup>. Countries like the U.S. and Canada adopted a price preference policy for green products as much as 15% more<sup>29</sup>. Lifecycle cost assessment can also be used to evaluate the environmental costs associated with a product<sup>30</sup>. As the largest consumer of goods and services, the Government has a significant role in promoting long-term efficiency, stimulating innovation and sustainability, and demonstrating commitment to the environment and the community. To facilitate green procurement, the Government needs to ensure that procurement officers are well-trained and there is coordination across bureaus and departments<sup>31</sup>. UNEP has

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<sup>20</sup> [United Nations Environment Programme, Transition to Green Economy Could Yield up to 60 Million Jobs](#)

<sup>21</sup> [United Nations Industrial Development Organization, Green Industry: Policies for supporting Green Industry](#)

<sup>22</sup> [European Centre for the Development of Vocational Training, Green skills and environmental awareness in vocational education and training](#)

<sup>23</sup> [Deutschland.de, In global demand – Vocational training in Germany](#)

<sup>24</sup> [Center for International Development at Harvard University, Government Procurement Summary](#)

<sup>25</sup> [United Nations Development Programme, Environmental Procurement](#)

<sup>26</sup> [Europa, Costs and Benefits of Green Public Procurement in Europe \(Part 1\)](#)

<sup>27</sup> [Environmental Protection Department, Green Procurement](#)

<sup>28</sup> [Financial Services and the Treasury Bureau, Tender Procedures for Government Procurement](#)

<sup>29</sup> [Environmental Protection Administration \(Taiwan\), Government Green Procurement Promotion Policy](#)

<sup>30</sup> [International Institute of Sustainable Development, Life Cycle Costing in Sustainable Public Procurement: A Question of Value](#)

<sup>31</sup> [Organisation for Economic Co-operation and Development, Promoting Sustainable Consumption: Good Practices in OECD Countries](#)

also compiled a list of national sustainable procurement guidelines for reference<sup>32</sup>. **FoE (HK) recommends the Government revise its public procurement guidelines to encourage green procurement across its bureaus and departments.**

## Circular Economy

The global economy is dominated by a linear model, encouraging a cycle of make, use and dispose. Globally, a-fifth of the material extracted becomes waste yearly<sup>33</sup>, and 80-90% of consumer products are disposed within six months<sup>34</sup>. Over the past 30 years, the amount of municipal solid waste (MSW) in Hong Kong has increased by almost 80%, nearly twice of the city's population growth<sup>35</sup>. In 2014, 5.62 million tonnes of MSW was generated<sup>36</sup>, averaging to 2 kg of waste per person per day<sup>37</sup>. Hong Kong generates more waste per capita compared to neighbouring cities such as Tokyo, Seoul and Taipei<sup>38</sup>. The Government has targeted to reduce per-capita waste disposal rates by 40% and increase the percentage of recycling to 55% by 2022<sup>39</sup>. A circular economy can close the material loop through sharing, leasing, reuse, repair, refurbishment and recycling. Material under this model is used at a sustainable rate, limiting waste and pollution<sup>40</sup>. FoE (HK) proposes the following recommendations to shift Hong Kong to a more sustainable economic model:

## **Resource Management**

7. Integrate producer responsibility: Under the polluter-pays principle, producer responsibility integrates the environmental costs of goods into its market price<sup>41</sup>. The aforementioned Taiwan's recycling fund is one such example (see recommendation 7). This year, the Legislative Council passed the enabling legislations on WEEE and glass beverage containers on March and May respectively<sup>42</sup>. Still, it has been disappointing to learn that the EPD has failed to meet all of the time targets set down for PRS implementation. According to EPD data, we disposed 136 tonnes PET plastic bottles at

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<sup>32</sup> [United Nations Environment Programme, Guidelines](#)

<sup>33</sup> [International Solid Waste Association, Circular Economy: Trends and Emerging Ideas](#)

<sup>34</sup> [World Economic Forum, Driving Sustainable Consumption – Closed Loop Systems](#)

<sup>35</sup> [Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resources 2013-2022](#)

<sup>36</sup> [Environmental Protection Department, Monitoring of Solid Waste in Hong Kong 2014](#)

<sup>37</sup> [Determined using GovHK's Hong Kong Fact Sheets – Population](#)

<sup>38</sup> [Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resources 2013 - 2022](#)

<sup>39</sup> [Environment Bureau, Hong Kong Blueprint for Sustainable Use of Resources 2013-2022](#)

<sup>40</sup> [Ellen MacArthur Foundation, Towards the Circular Economy](#)

<sup>41</sup> [European Commission, Development of Guidance on Extended Producer Responsibility \(EPR\)](#)

<sup>42</sup> [Environmental Protection Department, Producer Responsibility Schemes](#)

landfill every day in 2015<sup>43</sup>. The Government should develop a container deposit-refund system on plastic bottles, putting a rebatable duty to increase recovery rates<sup>44</sup>. The system has been adopted in many municipalities with much success<sup>45</sup>. The legislative proposal on MSW charging will also be submitted in the first half of 2017<sup>46</sup>. The Government should however review and adjust the charges regularly to ensure their effectiveness<sup>47</sup>. For example, the construction waste disposal charging scheme has not been reviewed for ten years, which does not truly reflect the cost of disposal<sup>48</sup>. Producer responsibility can be implemented through various means. In Japan, retailers are responsible for the take-back of waste goods, while manufacturers or importers responsible for their recycling<sup>49</sup>. In the EU, producer(s) have a financial obligation for the collection and treatment of their own products<sup>50</sup>. **FoE (HK) recommends the Government to integrate and accelerate producer responsibility to cover more goods and services to reflect their true environmental cost from production to disposal.**

8. Support recycling industry: Resource should be reused or recycled instead of disposed. In 2015, only 37% of MSW was recovered, with the remaining disposed of at landfills<sup>51</sup>. Of the recovered materials, 98% were shipped to the Mainland and other countries for recycling, creating little value locally<sup>52</sup>. The \$1 billion Recycling Fund launched in October 2015 has only approved 38 applicants and mobilised 5% of the earmarked funds so far<sup>53</sup>. However, the one-off funding is not able to solve the root of the problem, including the high operational cost (labour, rent, insurance, etc.) and the low value of certain recyclables. The Government needs to develop material recovery facilities (MRFs) in each of the 18 districts to receive and sort out solid waste for recycling. In addition, the Government should support the recycling industry through leasing the land with a lower rent and longer duration. Taiwan also has its own recycling funding. Manufacturers and importers must make mandatory contributions to the fund, which is used to subsidise waste collectors and recyclers and to support its recycling programme<sup>54</sup>. Effective programmes

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<sup>43</sup> [Monitoring of Solid Waste in Hong Kong](#)

<sup>44</sup> [Bottle Bill Resource Guide](#)

<sup>45</sup> [Cashing Bottles: The German Deposit Program](#)

<sup>46</sup> [Environmental Protection Department, Confirmed Minutes of the 212th Meeting of the Advisory Council on the Environment](#)

<sup>47</sup> [Poon, C.S. et al., Quantifying the Impact of Construction Waste Charging Scheme on Construction Waste Management in Hong Kong](#)

<sup>48</sup> [Audit Commission, Management of abandoned construction and demolition materials](#)

<sup>49</sup> [Ministry of the Environment, Solid Waste Management and Recycling Technology of Japan](#)

<sup>50</sup> [European Commission, Development of Guidance on Extended Producer Responsibility \(EPR\)](#)

<sup>51</sup> [Legislative Council, Environmental Affairs](#)

<sup>52</sup> [Environmental Protection Department, Monitoring of Solid Waste in Hong Kong 2014](#)

<sup>53</sup> [Environmental Protection Department, Recycling Fund – Application Results](#)

<sup>54</sup> [United States Environmental Protection Agency, Recycling Regulations in Taiwan and the 4-in-1 Recycling Program](#)

require accurate data and monitoring. Last year, the Audit Commission reported that EPD has inflated the MSW recovery rate due to the inclusion of re-exported recyclables<sup>55</sup>. Further, the US-based environmental protection watchdog, Basel Action Network, has traced waste electrical and electronic equipment (WEEE) being imported and stored illegally in multiple Hong Kong recycling sites<sup>56</sup>. **FoE (HK) recommends the Government to enhance the local recycling industry with increased infrastructure support, better economic instruments, stronger monitoring and strengthen enforcement.**

9. **Enact landfill ban**: Hong Kong's three strategic landfills were predicted to reach their full capacity on or before 2020<sup>57</sup>. Although funding for the extension of two landfills has been approved<sup>58</sup>, this is not a permanent or sustainable solution for avoidable waste. Both France and Italy have recently passed a ban on unsold food from supermarkets<sup>59,60</sup>. Germany has also implemented a landfill ban on recyclable, biodegradable and untreated waste, with evident waste reduction<sup>61</sup>. Putrescibles, plastics and papers are the three largest categories of waste, accounting for 44%, 21% and 20% of the MSW disposed in Hong Kong respectively<sup>62</sup>. Landfill ban by itself does not solve the waste problem. It needs to be coupled with policies, legislation and financial support to facilitate the sustainable development of the recycling industry. **FoE (HK) recommends the Government to enact a landfill ban on food waste and recyclables, accompanied with other policy instruments to ensure its effectiveness.**

## Sustainable Consumption

10. **Provide green subsidies**: Consumer choice and consumption patterns impact the society and the environment<sup>63</sup>. Although there are more green products and services on the market today<sup>64</sup>, the lack of green options for specific categories is still a barrier to people who want to buy sustainably<sup>65</sup>. Further, greener alternatives are typically offered at a price premium, meaning lower income households may not be able to afford better choices<sup>66</sup>.

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<sup>55</sup> [Audit Commission, Government's efforts in managing municipal solid waste](#)

<sup>56</sup> [Basel Action Network, Chemical waste allegedly found stored in nine Hong Kong recycling sites without approval](#)

<sup>57</sup> [Legislative Council, Panel on Environmental Affairs -Environmental Infrastructure Projects](#)

<sup>58</sup> [Legislative Council, Administration's paper on 2016 Policy Address – Policy initiatives of Environment Bureau: Environmental protection](#)

<sup>59</sup> [The Guardian, French law forbids food waste by supermarkets](#)

<sup>60</sup> [BBC, Italy adopts new law to slash food waste](#)

<sup>61</sup> [Department of Sustainability, Environment, Water, Population and Communities \(Australia\), Landfill ban investigation](#)

<sup>62</sup> [Environmental Protection Department, Monitoring of Solid Waste in Hong Kong, Waste Statistics for 2014](#)

<sup>63</sup> [United Nations Environment Programme, Assessing the Environmental Impacts of Consumption and Production, Priority Products and Materials](#)

<sup>64</sup> [European Commission, The EU Ecolabel Product Catalogue](#)

<sup>65</sup> [Organisation for Economic Co-operation and Development, Promoting Sustainable Consumption](#)

<sup>66</sup> [Organisation for Economic Co-operation and Development, the Political Economy of Environmentally Related Taxes](#)

The Consumer Council found Hong Kong citizens are concerned about the environment, but they are not willing to pay significantly for greener products and services<sup>67</sup>. Financial stimulus is an effective mean to influence consumer lifestyle and consumption behaviour<sup>68</sup>. Subsidies and incentives lower the price of green products, giving more flexibility to consumers and increasing overall participation in sustainable consumption. **FoE (HK) recommends the Government to provide subsidies to make green products and services more accessible to citizens.**

11. Develop and recognise eco-labels: Eco-labels allow consumers to identify authentic sustainable products. Currently, there are 465 eco-labels globally<sup>69</sup>. Hong Kong too has two voluntary eco-labels – namely Hong Kong Green Mark<sup>70</sup> and Green Label<sup>71</sup>. Although eco-labels provide useful information on the environmental impacts of the product, their usefulness falters with the overwhelming number of labels on the market and the lack of transparency<sup>72</sup>. Germany developed Label-Online, a web and app platform providing description and review of different eco-labels, facilitating better purchasing decisions<sup>73</sup>. On the other hand, mandatory labels in Hong Kong may be hindered by the city’s reliance on imported goods. However, the Mandatory Energy Efficiency Labelling Scheme shows that it can be effectively implemented. **FoE (HK) recommends the Government to establish mandatory labels and a repository of recognised voluntary eco-labels to promote more sustainable purchasing decisions.**
  
12. Promote more sustainable behaviours: Sustainably-made products are not sustainable if not consumed at a sustainable rate. Hong Kong has the highest per-capita meat consumption in the world according to the National Geographic<sup>74</sup>. The Hong Kong Ecological Footprint 2016 report also indicated that 3.9 Earths are needed to meet the global resource demand if the world lived as Hong Kong people do<sup>75</sup>. As a self-declared “shoppers’ paradise”<sup>76</sup>, it is evident that unsustainable consumption patterns are not being addressed. UNESCO recognises the need for education and learning to compliment technological solutions, political regulations and financial instruments in influencing

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<sup>67</sup> [Consumer Council, Sustainable Consumption for a Better Future](#)

<sup>68</sup> [Organisation for Economic Co-operation and Development, Promoting Sustainable Consumption – good practices](#)

<sup>69</sup> [Ecolabel Index, Ecolabel Index](#)

<sup>70</sup> [Hong Kong Q-Mark Council, The Hong Kong Green Mark Certification Scheme](#)

<sup>71</sup> [Green Council, Green Label Scheme](#)

<sup>72</sup> [Terlau, W. & Hirsch, D., Sustainable Consumption and the Attitude-Behaviour-Gap Phenomenon - Causes and Measurements towards a Sustainable Development](#)

<sup>73</sup> [Label-Online, Home](#)

<sup>74</sup> [National Geographic, What the World Eats](#)

<sup>75</sup> [WWF, Sustainable City & Ecological Footprint](#)

<sup>76</sup> [Hong Kong Yearbook, Travel and Tourism](#)

consumers to make decisive change in their consumption habits<sup>77</sup>. Sustainable Consumption policies often fail as they abide by the rational choice theory and rely on information and education alone<sup>78</sup>. Positive social norms will only be adopted if they are safe, comfortable and cheap to adopt<sup>79</sup>. Direct intervention is necessary as regulations are the most effective policy tool in changing consumption behaviours<sup>80</sup>. **FoE (HK) recommends the Government to coordinate soft approaches such as education with top-down regulatory changes to reinforce sustainable behaviour.**

## City Planning and Nature Conservation

Cities should cater to the needs of their people and enhance their livelihood. However, uncoordinated urban development often conflict with environmental sustainability and social equity<sup>81</sup>. The transport sector is responsible for the unsafe levels of NO<sub>2</sub> levels recorded at the city's three major roads<sup>82</sup>, imposing adverse health impacts. Ecosystems provide a wide variety of tangible and intangible benefits to the society. Despite their importance, they are often overlooked in environmental decision-making processes<sup>83</sup>. Although 40% of Hong Kong's land is designated as country parks and protected areas<sup>84</sup>, Government intend to develop the city's natural legacy<sup>85</sup>. FoE (HK) proposes the following recommendations to ensure the sustainable development in Hong Kong:

### **Transport-oriented Development**

13. **Strengthen public transportation:** Traffic congestion is well-known in Hong Kong and is the main source of roadside air pollution. Private cars are the key contributors to the city's slow traffic. The average traffic speed fluctuates around 20 km/h in the city – and as low as 10 km/h on major roads during peak hours<sup>86</sup>. Although private cars make up for 40-70% of traffic flow on the major roads in Hong Kong, they only account for around 11% of daily road-based passenger boardings. In particular, people tend to commute alone for work purposes, making poor use of traffic infrastructures<sup>87</sup>. Many cities, such as Birmingham,

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<sup>77</sup> [United Nations Educational, Scientific and Cultural Organization, Education for Sustainable Development](#)

<sup>78</sup> [Norden, Improving Nordic policymaking by dispelling myths on sustainable consumption](#)

<sup>79</sup> [Norden, Improving Nordic policymaking by dispelling myths on sustainable consumption](#)

<sup>80</sup> [Hansen, M.S. & Power, K., Evaluation of Tools to Promote Sustainable Consumption and Green Lifestyles](#)

<sup>81</sup> [Basiago, A.D., Economic, social, and environmental sustainability in development theory and urban planning practice](#)

<sup>82</sup> [Environmental Protection Department, Air Quality in Hong Kong 2015](#)

<sup>83</sup> [United Nations Environment Programme, Payment for Ecosystem Services](#)

<sup>84</sup> [HK: The Facts, Country Parks and Conservation](#)

<sup>85</sup> [Hong Kong's Information Services Department, news.gov.hk, Country park development feasible: CE](#)

<sup>86</sup> [Transport Advisory Committee, Report on Study of Road Traffic Congestion in Hong Kong](#)

<sup>87</sup> [United States Department of Transportation, Beyond Traffic: Trends and Choices 2045](#)

are now envisioning to expand low-impact modes of transport and to reduce the role of private cars<sup>88</sup>. The Government needs to control the growth of private cars. At the same time, the performance of public transports should be enhanced to reduce pollutants and GHG emission and fossil fuel use<sup>89</sup>. **FoE (HK) recommends the Government continue strengthening the public transportation network while phasing out private cars through policy and regulation.**

14. Encourage walking and cycling: Walking and cycling are the most sustainable modes of transport, yet they are often overlooked by city planners<sup>90</sup>. The majority of Hong Kong's streets are allocated to vehicles, leaving sidewalks narrow and crowded<sup>91</sup>. Less than 1% of daily weekday trips are made by bicycles, and only 3% of that occurs within the city<sup>92</sup>. Cycling is primarily used for recreation or fitness rather than for commuting. In addition to being pollution-free, walking and cycling promotes healthier lifestyles, social connectivity among Hong Kong citizens and mitigate climate change<sup>93</sup>. In its vision for 2030, Sydney plans to have 10% of trips made by bicycles and 50% by walking<sup>94</sup>. Its citizens would access to most local services within a reasonable walking distance and live within a 3-minute walk to continuous green links. In Denmark, the city promotes its Cycle Superhighway to encourage more people to commute by bicycle<sup>95</sup>. **FoE (HK) recommends the Government to promote walking and cycling as sustainable modes of transport through both policies and infrastructures.**

15. Set up low emission zones: More than 220 European cities have adopted low emission zones (LEZs)<sup>96</sup>. The effectiveness of LEZs to curb roadside air pollution depends on various factors. A study on the London LEZ has found that the increasing proportion of diesel vehicles and delay in implementing more stringent standards has hindered its implementation<sup>97</sup>. Before 2016, the Government has set up LEZs at major roads in Causeway Bay, Central and Mong Kok, targeting franchised buses<sup>98</sup>. FoE (HK) welcomed

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<sup>88</sup> [Birmingham City Council, Birmingham Connected White Paper](#)

<sup>89</sup> [Transport Department, Environmental Report 2014](#)

<sup>90</sup> [United Nations Environment Programme, Global Outlook on Walking and Cycling](#)

<sup>91</sup> [Lee, H.K., Pedestrianization schemes in Hong Kong](#)

<sup>92</sup> [TD, Cycling Study](#)

<sup>93</sup> [Macmillian, A. et al., The Societal Costs and Benefits of Commuter Bicycling: Simulating the Effects of Specific Policies Using System Dynamics Modeling](#)

<sup>94</sup> [City of Sydney, Sustainable Sydney 2030](#)

<sup>95</sup> [The New York Times, Commuters Pedal to Work on Their Very Own Superhighway](#)

<sup>96</sup> [Low Emission Zones, Urban Access Regulation in Europe](#)

<sup>97</sup> [Wood, H.E. et al., Effects of Air Pollution and the Introduction of the London Low Emission Zone on the Prevalence of Respiratory and Allergic Symptoms in Schoolchildren in East London: A Sequential Cross-Sectional Study](#)

<sup>98</sup> [Environment Bureau, Roadside Air Quality and the Vehicle Emission control Measures, AQO Review Working Group](#)

the move but hopes LEZs will be expanded to cover all vehicle types. LEZs can be paired with pedestrianisation to enhance public space utilisation and encourage low-impact commutes. The Des Voeux Road Central initiative has demonstrated that pedestrian zones can facilitate social, cultural and tourism activities<sup>99</sup>. **FoE (HK) recommends the Government to set up more low emission zones and expand coverage to all vehicle types to enhance roadside air quality.**

## Green Infrastructure

16. Preserve green and blue spaces: Owing to its unique geographical location and topography, Hong Kong boasts a rich diversity of flora and fauna despite its small area of about 1,100 square kilometres<sup>100</sup>. The city supports more than 3,300 vascular plant species, 390 birds, 230 butterflies, and more other species recorded<sup>101</sup>. The destruction or fragmentation of habitats will lead to the direct loss of biodiversity and alter ecosystem functions<sup>102</sup>. The Government should instead consider areas with low ecological value for housing development – such as the 800 ha of underutilised brownfields<sup>103</sup>. The total area of brownfields is sufficient to cover the projected housing needs in the “Long Term Housing Strategy”<sup>104</sup>. Country parks and green belts cannot be sacrificed for housing development. The Government’s “Hong Kong 2030+” study also proposed to create an East Lantau Metropolis through reclamation<sup>105</sup>, which would create irreversible damage to the local ecosystem. The Government should refer to the list of 400 recommendations submitted by the Biodiversity Strategy and Action Plan Focus Groups to develop measures and practices on conservation<sup>106</sup>. **FoE (HK) recommends the Government to protect Hong Kong’s natural legacy and to embrace a brownfield-first approach in its planning policy.**
17. Advance sustainable agriculture: Hong Kong imports 90% of its food, largely from the Mainland<sup>107</sup>. Local vegetable production accounts for only 2% of what is consumed<sup>108</sup>. Hong Kong has low food security, making it vulnerable to volatile food prices during

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<sup>99</sup> [Walk DVRC, The Issue](#)

<sup>100</sup> [Agriculture, Fisheries and Conservation Department, Geodiversity – A New Challenge for Nature Conservation in Hong Kong](#)

<sup>101</sup> [Agriculture, Fisheries and Conservation Department, About Conservation](#)

<sup>102</sup> [Convention on Biological Diversity, TARGET 5 - Technical Rationale extended](#)

<sup>103</sup> [Civil Engineering and Development Department & Planning Department, North East New Territories New Development Areas Planning and Engineering Study](#)

<sup>104</sup> [Transport and Housing Bureau, The Long Term Housing Strategy](#)

<sup>105</sup> [Hong Kong 2030+ Preliminary Concepts for the East Lantau Metropolis](#)

<sup>106</sup> [Agriculture, Fisheries and Conservation Department, Biodiversity Strategy and Action Plan Specific Proposals from Focus Groups](#)

<sup>107</sup> [Food and Health Bureau, Frequently Asked Questions on Food Supply of Hong Kong](#)

<sup>108</sup> [Agriculture, Fisheries and Conservation Department, Agriculture and Fisheries](#)

political or economic instability<sup>109</sup>. The 2007-08 global food crisis was a notable example<sup>110</sup>. To modernise agricultural practices and technology, AFCD is exploring the feasibility of establishing an 80-ha Agricultural Park<sup>111</sup>. However, AFCD should reserve all agricultural land and revitalise the 3,781 ha of abandoned farmlands, which represents 80% of total agricultural land in Hong Kong<sup>112</sup>. The Government should learn from UNEP to promote the use of payments for ecosystem services to incentivise farmers or landowners to provide ecological service<sup>113</sup>. To enhance the uptake of local produce, the Government should provide more locations to set up farmers markets for local produce. **FoE (HK) recommends the Government advance local agriculture as a healthier and more sustainable source of food for Hong Kong.**

18. Expand urban greenery: Hong Kong can take pride for having the most per-capita green space amongst neighbouring Asian cities<sup>114</sup> – though this green space is mostly located in rural areas instead of within the city. Urban greenery provides a number of environmental, social and health benefits<sup>115</sup>. It can be considered a form of ecological compensation by neutralising air pollution and improving micro-climate<sup>116</sup>. It also provides recreational, cultural and social benefits<sup>117</sup>. China has urban forestry policies for its municipalities<sup>118</sup>, while Hong Kong has only established an advisory panel recently<sup>119</sup>. Urban greenery refers to more than just trees, but also ornamental and edible vegetable. Beyond street trees, green walls and urban gardens should also be pursued to reintegrate nature into urban cities. While the roof collapse at the City University may have deterred some people, the incident demonstrated that policymakers need to formulate clear safety guidelines to facilitate better and safer urban gardens<sup>120</sup>. **FoE (HK) recommends the Government to recognise the importance of urban greenery and support its expansion through urban planning and clear regulations.**

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<sup>109</sup> [Food and Agriculture Organization of the United Nations, The State of Agricultural Commodity Markets 2015-16 In Depth](#)

<sup>110</sup> [Global Issues, Global Food Crisis 2008](#)

<sup>111</sup> [Agriculture, Fisheries and Conservation Department, New Agricultural Policy: Sustainable Agricultural Development in Hong Kong](#)

<sup>112</sup> [Agriculture, Fisheries and Conservation Department, Agricultural Land Utilisation 2012-14](#)

<sup>113</sup> [United Nations Environment Programme, Payments for Ecosystem Services: Getting Started](#)

<sup>114</sup> [Siemens, Asian Green City Index](#)

<sup>115</sup> [Project EverGreen, Environmental Benefits of Green Space](#)

<sup>116</sup> [United States Department of Agriculture, The Effects of Urban Trees on Air Quality](#)

<sup>117</sup> [Food and Agriculture Organization of the United Nations, Benefits of urban and peri-urban forestry](#)

<sup>118</sup> [FAO, Urban Forestry in China: Status and Prospect](#)

<sup>119</sup> [RTHK, Govt sets up new advisory panel on urban forestry](#)

<sup>120</sup> [City University of Hong Kong, Report of the Investigation Committee for the CityU Sports Hall Incident](#)

## Energy and Climate Change

Climate change is one of the greatest environmental threats to humanity. Global greenhouse gas (GHG) emissions have increased since pre-industrial times, predominantly driven by economic and population growth<sup>121</sup>. Global temperatures are predicted to increase by 1.8 to 4.0°C by the end of this century<sup>122</sup>. The use of fossil fuels changing the climate at an unprecedented rate. The frequency and severity of extreme weather events have been increased in recent decades. Unchecked GHG emission is resulting in vast environmental and social costs, creating health and financial burden upon the society. Just before the COP22 Marrakech Climate Conference, the Paris Agreement has entered into force to keep global temperature rise well below 2°C above pre-industrial levels<sup>123</sup>. Climate change is a global phenomenon that requires local actions. Hong Kong generated over 44 million tonnes of GHG in 2013 – 68% coming from electricity production<sup>124</sup>. In its pledge to combat climate change, the Government has set a carbon intensity reduction target of 50-60% by 2020<sup>125</sup>. However, it has no targets for renewable energy production<sup>126</sup>. FoE (HK) proposes the following recommendations to better align Hong Kong with international climate change goals:

### **Energy Supply**

19. **Set carbon reduction targets:** Environment Bureau estimated that the 50-60% target is equivalent to one-fifth to one-third of absolute carbon reduction<sup>127</sup> – far below than the 80% carbon reduction that other C40 member states such as Washington D.C., Yokohama and Vancouver has pledged<sup>128</sup>. Further, carbon intensity is carbon emission measured against our GDP, which is a poor indicator of GHG reduction in Hong Kong as the city's economy is not industrial-based. IPCC<sup>129</sup> and UNEP<sup>130</sup> indicated that we must reduce our global GHG emissions by 40-70% by 2050 relative to 2010 levels to limit warming to no more than 2°C above pre-industrial levels. **FoE (HK) recommends the Government to adopt an absolute target of 80% carbon reduction by 2050 for a low-carbon Hong Kong.**

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<sup>121</sup> [Intergovernmental Panel on Climate Change, Fifth Assessment Report](#)

<sup>122</sup> [Intergovernmental Panel on Climate Change, Facts on Climate Change](#)

<sup>123</sup> [United Nations, Paris Climate Agreement to enter into force on 4 November](#)

<sup>124</sup> [Environmental Protection Department, Greenhouse gas emissions in Hong Kong](#)

<sup>125</sup> [Environment Bureau, Hong Kong Climate Change Report 2015](#)

<sup>126</sup> [Environment Bureau, Energy Saving Plan 2015~2025+](#)

<sup>127</sup> [Hong Kong's Information Services Department, news.gov.hk, Hong Kong's Climate Change Strategy and Action](#)

<sup>128</sup> [Arup, Working Together: Global Aggregation of City Climate Commitments](#)

<sup>129</sup> [Intergovernmental Panel on Climate Change, Fifth Assessment Report](#)

<sup>130</sup> [United Nations Environment Programme, The Emissions Gap Report 2014](#)

20. Develop renewable energy capacity: Electricity generation is the major source of Hong Kong's GHG emission due to its predominately fossil fuel-based fuel mix<sup>131</sup>. Around three-quarter is supplied by coal and natural gas, and the remaining with nuclear. Renewable energy is the key in generating electricity in a sustainable manner and thereby mitigating climate change. Since 2016, at least 173 countries have renewable energy targets<sup>132</sup>. Hong Kong is blessed by ample winds and sunlight. In 2002, EMSD found that the city has the potential to generate 8,058 and 5,944 GWh of energy every year from wind and solar respectively<sup>133</sup>, which is equivalent to over 30% of Hong Kong's electricity demand<sup>134</sup>. Unfortunately, our Government only plans to supply 1% of our electricity demand through waste-to-energy. Nationally, China is targeting to meet 9% of its electricity demand with non-hydro renewable sources by 2020<sup>135</sup>. Financial instrument such as feed-in tariffs showed a great success to incentivise the development of distributed renewable energy<sup>136</sup>. In addition, renewable energy has experienced significant cost reductions. For example, the levelised cost of electricity of photovoltaics decreased by 60% since 2010<sup>137</sup>. Taking into account of practicality, **FoE (HK) recommends the Government to supply 10% of Hong Kong's electricity with renewable energy by 2030, with decarbonising the power sector as the long-term goal.**
21. Establish carbon pricing: Following the polluter-pays principle, carbon pricing internalises and translates the indirect and intangible effects of GHG into more tangible, financial costs to producers through the use of economic instruments<sup>138</sup>. This allows renewable energy to become more competitive with conventional power. Carbon pricing policies have been adopted around the world such as Japan, Germany, Sweden and Australia. Models have demonstrated that such price signals are effective on both individuals and businesses to curb the carbon emissions<sup>139</sup>. There are two methods of carbon pricing: cap-and-trade, where emitters are allotted with carbon allowances for emission trading; and carbon tax, which directly regulates carbon emissions<sup>140</sup>. China for example will launch a world's largest national emission trading program in 2017 under its 13<sup>th</sup> Five-Year Plan<sup>141</sup>. Given

<sup>131</sup> [Environment Bureau, Future Fuel Mix for Electricity Generation](#)

<sup>132</sup> [Renewable Energy Policy Network for the 21st Century, Renewables 2016 Global Status Report](#)

<sup>133</sup> [Electrical and Mechanical Services Department, Study on the Potential Application of Renewable Energy in Hong Kong](#)

<sup>134</sup> [Electrical and Mechanical Services Department, Hong Kong Energy End-use Data 2016](#)

<sup>135</sup> [National Energy Administration, 國家能源局關於建立可再生能源開發利用目標引導制度的指導意見](#). (Chinese only)

<sup>136</sup> [Ministry for the Environment, Nature Conservation and Nuclear Safety \(BMU\), Recent developments of feed-in systems in the EU - A research paper for the International Feed-In Cooperation](#)

<sup>137</sup> [The International Renewable Energy Agency, The Power to Change: Solar and Wind Cost Reduction Potential to 2025](#)

<sup>138</sup> [Institute for Research on the Economics of Taxation, The Polluter Pays Principle](#)

<sup>139</sup> [World Resources Institutes, Putting a Price on Carbon: Reducing Emissions](#)

<sup>140</sup> [Center for Climate and Energy Solutions, Cap and Trade v Taxes](#)

<sup>141</sup> [International Emissions Trading Association, China's National Emissions Trading System: Implications for Carbon Markets](#)

that Hong Kong's emissions come primarily from the power and transport sectors, a similar trading scheme may be difficult to enact with the small pool of players. A carbon tax would be more equitable and less susceptible to speculation or being gamed<sup>142</sup>. **FoE (HK) recommends the Government to implement a carbon tax to ensure producers pay their equitable share of the climate burden.**

### **Demand-Side Management**

22. Support green buildings: Buildings account for 40% of energy use and 1/3 of GHG emissions globally<sup>143</sup>. In Hong Kong, buildings are responsible for 64% and 92% of the city's energy and electricity consumption respectively<sup>144</sup>. Since 2001, EMSD provides the energy utilisation index and benchmarking tools to monitor consumption levels and performance<sup>145</sup>. However, there is a lack of carrot-and-stick policies to encourage the adoption of green buildings<sup>146</sup>. In many cases, tenants cannot retrofit buildings due to ownership issues, and there are no incentives for landlords to do so if they are not responsible for electric bills<sup>147</sup>. Mandates for energy efficiency in existing buildings are expanding around the world. In the UK, landlords are mandated to provide certificates of their property's energy performance to potential buyers and tenants<sup>148</sup>. Germany, on the other hand, has pledged to perform thermal retrofit for 2% of its buildings annually<sup>149</sup>. The Hong Kong Green Building Council's "HK3030" programme aims to reduce the absolute electricity consumption of buildings by 30% by 2030, based on 2005 level<sup>150</sup>. It requires greater government support. **FoE (HK) recommends the Government to strengthen performance standards and establish economic instruments to promote greener buildings.**
23. Reform electricity tariffs: Jevons's paradox has illustrated how consumption levels cannot be truly addressed through technological progress alone<sup>151</sup>. Reducing peak electricity demand helps to delay the need for new power sources<sup>152</sup>. Energy consumption can be regulated through reforming the tariff structure to facilitate conservation. Currently, some

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#### and Trade

<sup>142</sup> [Corporate Europe Observatory & Carbon Trade Watch, Letting the market play](#)

<sup>143</sup> [United Nations Environment Programme, Why Buildings](#)

<sup>144</sup> [Electrical and Mechanical Services Department, Hong Kong Energy End-use Data 2016](#)

<sup>145</sup> [Electrical and Mechanical Services Department, Energy Consumption Indicators and Online Benchmarking Tools](#)

<sup>146</sup> [Fung, L.E., Developing green building policy in Hong Kong](#)

<sup>147</sup> [European Commission, Overcoming the split incentive barrier in the building sector](#)

<sup>148</sup> [Gov.uk, Buying or selling your home](#)

<sup>149</sup> [Climate Policy Initiative, Thermal Efficiency Retrofit of Residential Buildings: The German Experience](#)

<sup>150</sup> [Hong Kong Green Building Council, HK3030](#)

<sup>151</sup> [Alcott, B., Jevons' Paradox](#)

<sup>152</sup> [United Nations Industrial Development Organization, Demand-side management](#)

non-residential users in Hong Kong still enjoy lower rates with higher consumption levels, betraying the user-pays principle<sup>153</sup>. Progressive pricing of electricity has been demonstrated to be effective in reducing usage<sup>154</sup>. In 2009, Ireland implemented time-of-use rates to reduce peak load by influencing consumption patterns<sup>155</sup>. Dynamic pricing also helps to balance between electricity supply and demand, such as for the more fluctuating renewable energy sources<sup>156</sup>. **FoE (HK) recommends the Government to integrate progressive rates and time-of-use rates to electricity tariffs to encourage better consumption patterns.**

24. Install smart meters: Smart meters display real-time information regarding energy consumption. The bi-directional communication allows for more flexibility for operators and information for users on their usage and areas for improvement<sup>157</sup>. An Ohio study on student behaviour demonstrated that real-time visual feedback and incentives lead to reductions in electricity consumption<sup>158</sup>. In Hong Kong, only CLP provides a platform for customers to understand their behaviour<sup>159</sup>. Smart meters, when paired with variable rates (i.e. time-of-use), enable users to better budget their electricity use, avoid price volatility and enjoy electricity savings<sup>160</sup>. As the collected information on user behaviour and status can be monetised and used for malicious purposes, the Government must ensure user's privacy protection is adequately addressed<sup>161</sup>. **FoE (HK) recommends the Government to support the expansion of smart metering to synergise with tariff reforms and enable sustainable behaviours.**

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<sup>153</sup> [CLP, CLP 2016 Tariff Tables](#)

<sup>154</sup> [Youn, H. & Jin, H.J., The effects of progressive pricing on household electricity use](#)

<sup>155</sup> [McLoughlin, F. et al., Characterising domestic electricity consumption patterns by dwelling and occupant socio-economic variables: An Irish case study](#)

<sup>156</sup> [Centrum Wiskunde & Informatica, Balancing supply and demand in future energy systems](#)

<sup>157</sup> [Mohsenian-Rad, A. & Leon-Garcia, A., Optimal Residential Load Control with Price Prediction in Real-Time Electricity Pricing Environments](#)

<sup>158</sup> [Petersen, J.E. et al., Dormitory residents reduce electricity consumption when exposed to real-time visual feedback and incentives](#)

<sup>159</sup> [CLP, Residential Customer Service](#)

<sup>160</sup> [Albadi, M.H. & El-Saadany, E.F., A summary of demand response in electricity markets](#)

<sup>161</sup> [BC Hydro, Smart meters and your privacy](#)