



2002 Environmental Report

Environment, Transport and Works Bureau

With the implementation of the accountability system on 1 July 2002, the former Transport Bureau, Works Bureau and the "Environment" branch of the former Environment and Food Bureau were amalgamated into the Environment, Transport and Works Bureau (ETWB). This report covers the environmental efforts of ETWB for 2002, including the efforts of the former Bureaux/Branch in the first half year of 2002.

Introduction

In a land area of 1 098 square kilometres, Hong Kong houses about 6.7 million people. The average density of population is 6 100 per square kilometre. Less than 17% of the land is developed area. Population densities in the developed areas average over 36 000 per square kilometre, and in Kowloon the average is over 44 000. These are some of the highest densities found anywhere in the world, and are several times higher than cities like London, New York and Tokyo. Besides housing so many people in such a small area, Hong Kong is also home to intense economic activities. Per capita GDP in 2001 was about HK\$188,000, placing Hong Kong among the most prosperous communities in the world. Such combination of people and economic activities puts enormous strain on the capacity of the local environment as well as contributes to global environmental pressures, which in turn will affect the sustainable development of Hong Kong. On the other hand, Hong Kong also has tremendous environmental assets. It is the home of a wide diversity of wild plants and animals. 40% of the total land area of Hong Kong is within designated country park areas. The Mai Po Deep Bay Wetland, a wintering site for over 120,000 migratory birds, is one of the Wetlands of International Importance.

Key Responsibilities of ETWB

ETWB comprises the Environment and Transport Branch and the Works Branch. It is responsible for policy matters on environmental protection and conservation; on development of transport infrastructure, provision of transport services and traffic management; and on public works programme, greening, water supply, slope safety and flood prevention in Hong Kong.

The major areas of policy responsibilities of ETWB include-

- to improve our urban, rural and marine environment, conserve our natural heritage and optimize the use of resources and goods so as to reduce pollution and waste;
- to promote health and the enjoyment of our living environment;
- to oversee greening policy, to enhance the quality of the living environment through active planting, and proper maintenance and preservation of trees and vegetation;
- to plan for and implement the construction and improvement of our transport infrastructure, with emphasis on railways;
- to further promote the usage of public transport services by improving their quality and co-ordination;
- to effectively manage road use, reduce congestion and promote safety;
- to continue to support environmental improvement measures in transport-related areas;
- to ensure the provision of a reliable, adequate and quality water supply and an efficient water supply service; and
- to ensure the effective planning, management and implementation of public infrastructure development and works programmes in a safe, environmentally responsible, timely and



cost-effective manner and to maintain high quality and standards.

The Secretary for the Environment, Transport and Works is the head of ETWB. She is assisted by the Permanent Secretary for the Environment, Transport and Works (Environment and Transport) and the Permanent Secretary for the Environment, Transport and Works (Works). In addition, the Bureau oversees the operation of its executive departments, namely, Architectural Services Department, Civil Engineering Department, Drainage Services Department, Electrical and Mechanical Services Department, Environmental Protection Department, Highways Department, Territory Development Department, Transport Department and Water Supplies Department and the conservation programmes of the Agriculture, Fisheries and Conservation Department.

Environmental Goals of ETWB

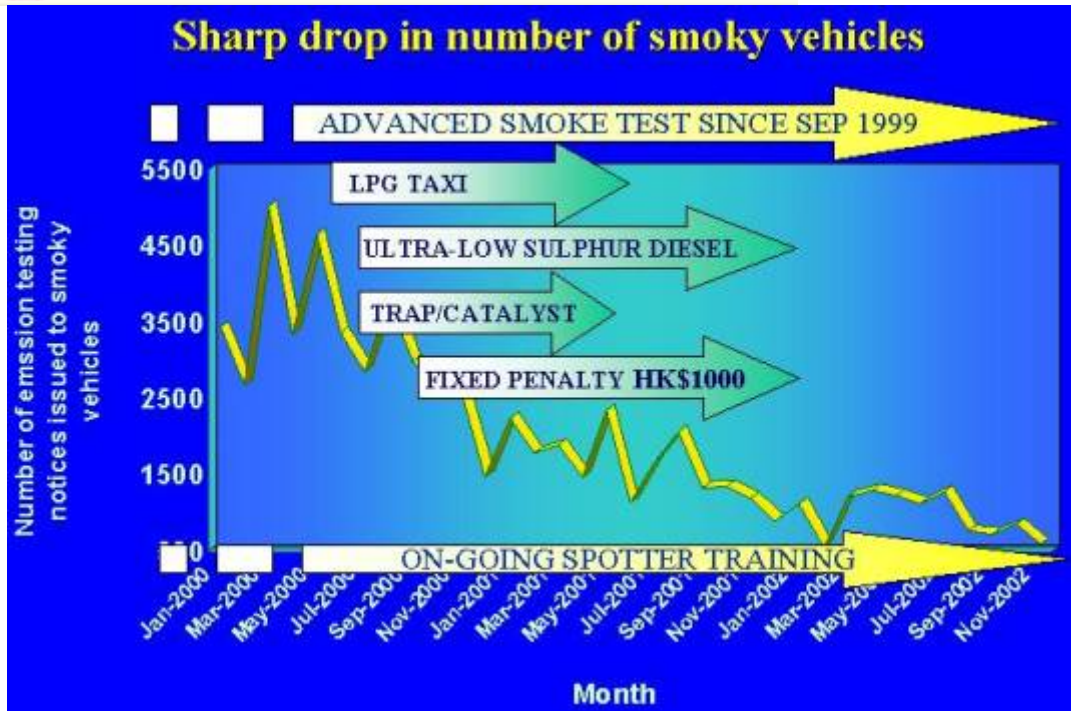
We task ourselves with improving the living environment of Hong Kong, for residents as well as visitors, human being as well as flora and fauna, this generation and beyond, through our continuous efforts that contribute to the betterment of the local, regional and global environment. In planning our transport systems and implementing public works, we require ourselves and our agents to minimize any possible environmental impacts. We are committed to alleviating and containing the environmental pressures arising from our large population, high population density and active economy and preserving the environmental assets that we have been enjoying. Specifically, our goals are -

- to improve local and regional air quality, water quality and noise pollution;
- to reduce waste and provide safe handling and effective waste treatment;
- to improve the efficiency with which energy and materials are used;
- to provide efficient and effective surveillance of environmental conditions;
- to conserve Hong Kong's important natural heritage;
- to promote green practice among the Government and the private sector;
- to enhance the quality of our living environment through active planting, and proper maintenance and preservation of trees and other vegetation;
- to provide transport infrastructure and services in an environmentally friendly manner;
- to ensure that public works projects are carried out to the highest quality according to latest environmental standards, with the latest environmental technology; and
- to lead by example, and to promote environmental awareness among works departments and within the local construction industry.

Key Environmental Indicators of Hong Kong

Air Quality

We have introduced a series of air pollution control measures and these efforts have brought positive results. Compared with 1999, the concentrations at urban roadside of particulates and nitrogen oxides, the two major air pollutants in Hong Kong at street level, dropped by 19% and 16% respectively in 2002. The incidences of exceedance of Air Pollution Index dropped by around 40%. The number of smoky vehicles also dropped by 70% in the same period. We expect to see a continuous improving trend in our air quality in the coming few years as we continue to bring the measures in the programme to fruition.



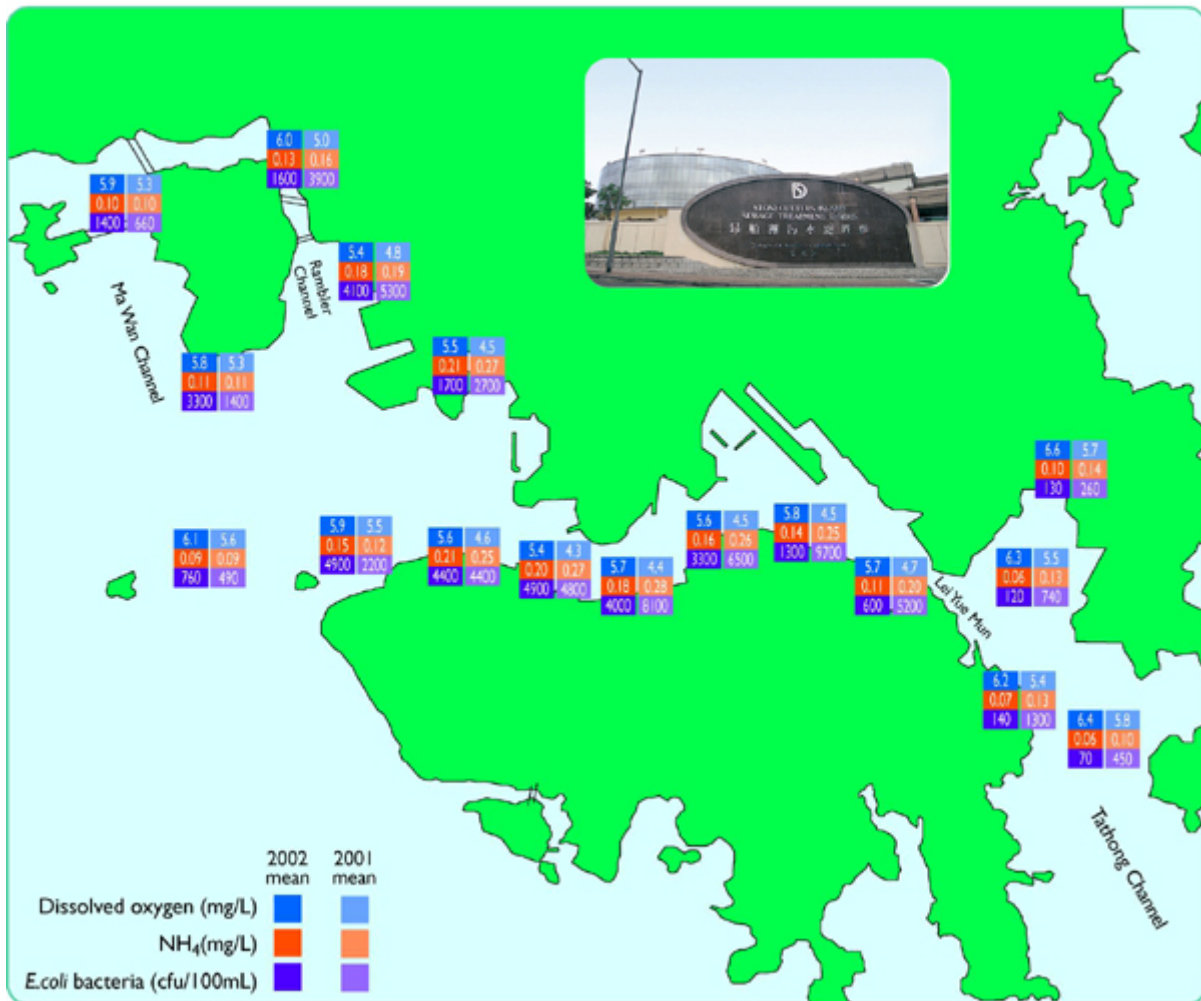
Water Quality

Harbour Water Quality

Stage 1 of the Harbour Area Treatment Scheme (HATS) was fully commissioned in late 2001. It treats 1.4 million cubic metres of sewage a day (or approximately 70% of the sewage entering the harbour) and successfully reduces the polluting load discharging into the Victoria Harbour by about 50% in terms of organic matters. It also prevents some 600 tonnes of sludge from ending up in our harbour waters each day. There have been very widespread improvements in the levels of E.coli bacteria in the central and eastern harbour. The dissolved oxygen levels, essential for marine life, have risen by 20 to 30% in most parts of the harbour. Nutrient levels have been reduced by up to 50%.



Water Quality Improvements after Commissioning of HATS Stage I

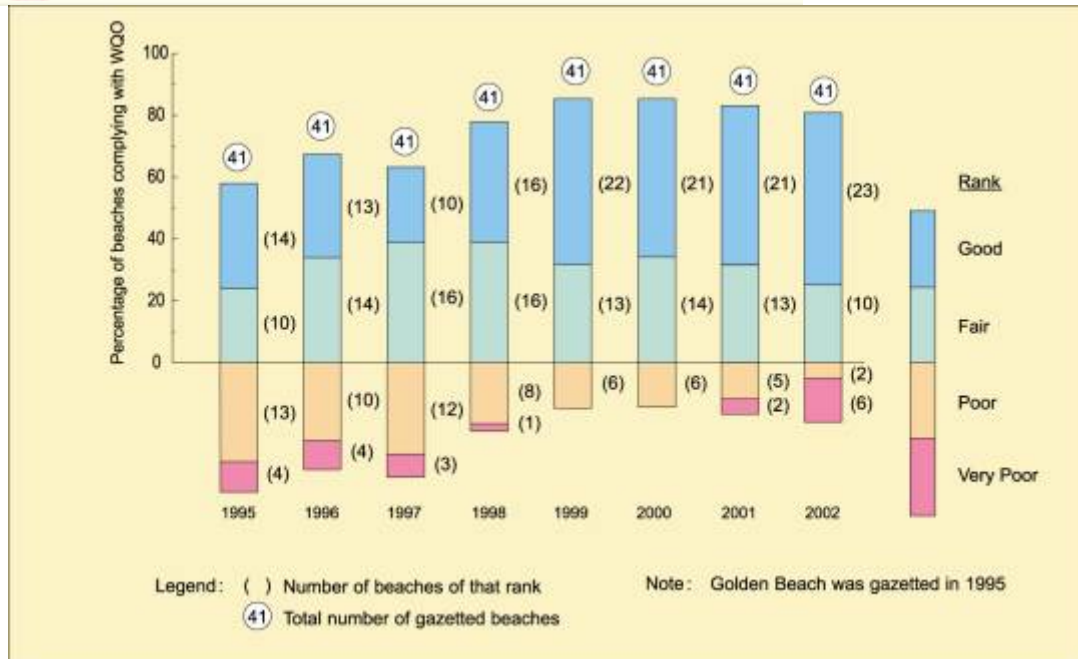


Map showing changes in dissolved oxygen (mg/L), NH₄(mg/L) and E.coli bacteria (cfu/100mL) at 17 stations in the HATS enhanced monitoring programme between (Jan - Dec 2002) and (Jan - Dec 2001)

Water Quality Improvements in Victoria Harbour between 2001 and 2002

Beach Water Quality (BWQ)

Between 1995 and 2000, there was a general improvement in beach water quality thanks to tighter enforcement of pollution controls, provision of local sewerage in the beach hinterlands, and implementation of the HATS's high priority sewerage programme. However, in 2002 while the beaches on the east side of Hong Kong Island improved as a result of the full implementation of Stage 1 of the HATS, the beaches in Tsuen Wan district reverted approximately to their 1997 conditions (as a result of the combined influence of continuing local pollution sources, and the interim redistribution of treated effluent from the Stonecutters Island Sewage Treatment Works). Nevertheless, the net result is that overall 33 out of 41 gazetted beaches (80.5%) met the WQO for bathing water in 2002. Moreover, the number of "good" water quality beaches increased to 23, which was more than half of the gazetted beaches in Hong Kong (56.1%).



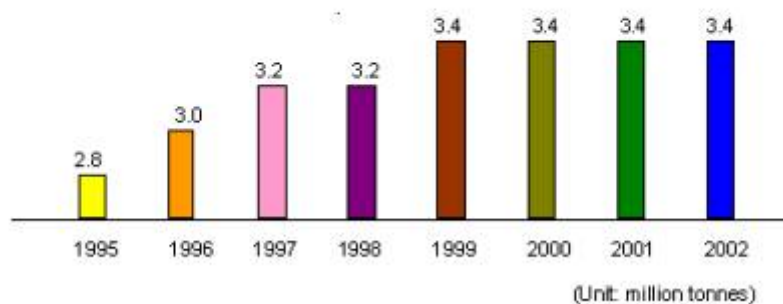
Compliance with WQOs for beaches from 1995 to 2002

Waste Management

Waste prevention and recovery has been our main focus in tackling the waste problem. We have been implementing various measures to further promote prevention and recovery of municipal solid waste (MSW) and achieved solid progress so far -

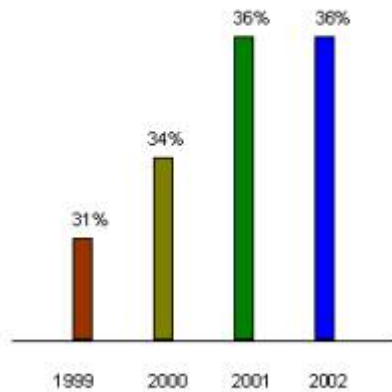
- the quantity of MSW requiring disposal has been maintained at 3.4 million tonnes each year in 2000, 2001 and 2002. This compares favourably with the 3.5% annual growth rate in the years before 2000;
- the overall MSW recovery rate has risen from 34% to 36% in 2002; and
- the domestic waste recovery rate has risen from 8% to 13% in 2002.

• **Quantity of MSW requiring disposal - maintained at about 3.4 million tonnes in 2000, 2001 & 2002**

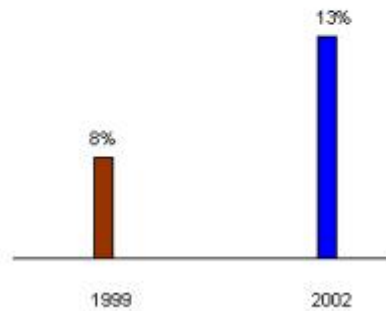




**Overall MSW recovery rate -
from 34% to 36% in 2002**



**Domestic recovery rate -
from 8% to 13% in 2002**

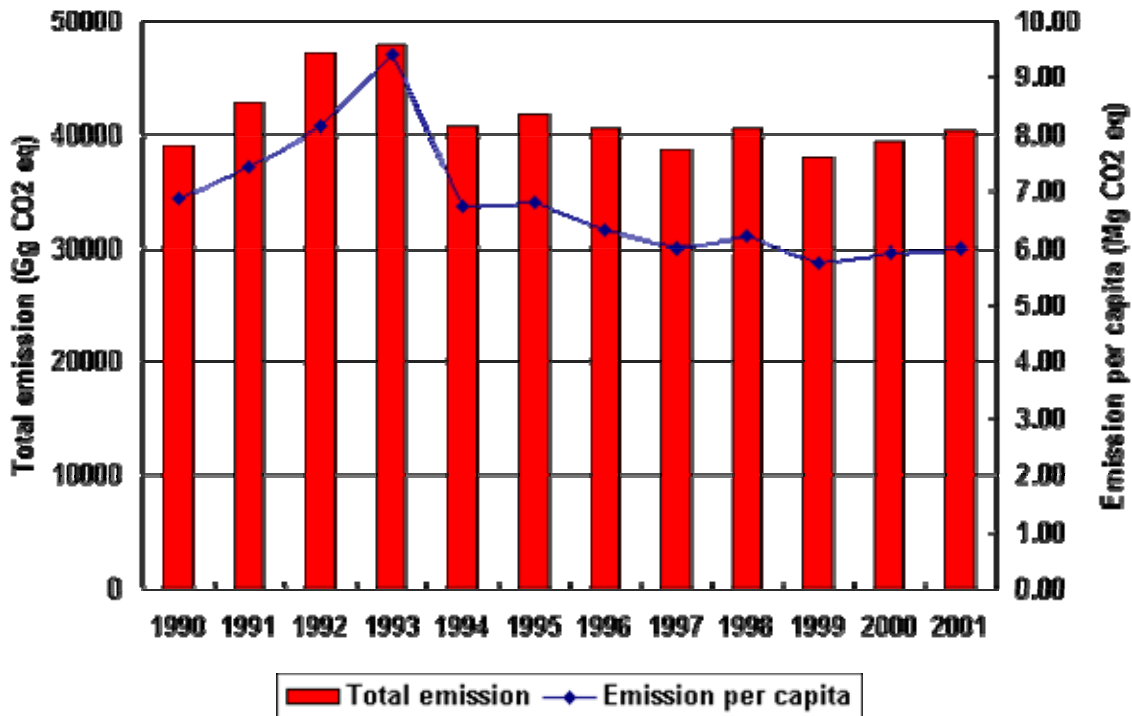


Greenhouse Gas (GHG) Emission

We have been sparing no efforts to reduce GHG emission, and contributing our efforts to mitigate global climate change. Even before the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol were applicable to HKSAR, through importing nuclear power, energy efficiency measures, afforestation and other measures, the GHG emission in Hong Kong has dropped by 18% from its peak back to the 1990 level by 2000, achieving the same requirements imposed on developed economies under the UNFCCC. The emission per capita has dropped to 14% below the 1990 level by 2000. The total emission in 2001 slightly increased as a result of increase in electricity consumption but our emission per capita is still on the low side as compared to major developed economies. The figure for 2002 is not yet available.



Greenhouse gas emission (1990-2001)



Environmental Performance of Major Policy Programmes under ETWB Air Quality

- Reduction of regional air pollutants

We have been working hand in hand with the Guangdong Provincial Government to improve regional air quality. In April 2002, the two Governments reached a consensus to strive to reduce by 2010 the regional emissions of the four major air pollutants (sulphur dioxide, particulates, nitrogen oxides and volatile organic compounds in the ambient air) to such levels as will enable Hong Kong to meet its current Air Quality Objectives. The two Governments are drawing up regional air quality management plan to achieve the reduction targets. A dedicated Special Panel has been set up under the Hong Kong/Guangdong Joint Working Group on Sustainable Development and Environmental Protection to study the feasibility of introducing a pilot emissions trading scheme among power plants in Hong Kong and Guangdong as one of the possible means to achieve the reduction targets in a more cost-effective manner. The State Environmental Protection Bureau has expressed support for the pilot scheme.

- Control of vehicle emissions

We have implemented a comprehensive programme to improve our air quality through reducing vehicle emissions.

- Liquefied petroleum gas (LPG) vehicles

We have been providing a one-off grant to encourage the early replacement of diesel taxis with ones that are run on LPG. Currently, 99% of the taxi fleet are run on



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LPG. In August 2002, we introduced an other incentive scheme to encourage the early replacement of diesel light buses with ones running on LPG or electricity. About 80% of the newly registered light buses are LPG ones.

- Ultra-low sulphur diesel (ULSD)

The maximum sulphur content allowed in motor diesel has been progressively reduced since 1995. From 1 April 2002, ultra-low sulphur diesel (ULSD), with sulphur content not more than 0.005% by weight, has become the statutory standard for motor diesel. Hong Kong has the most stringent motor diesel standard in Asia.

- Euro III emission standards

In January 2001, we introduced Euro III emission standards for all newly registered vehicles in parallel with the European Union.

- Retrofitting pre-Euro diesel vehicles

Our programme to retrofit pre-Euro diesel light vehicles with particulate traps or catalysts has been completed.

We have introduced legislative amendments to mandate the installation of emission reduction devices for pre-Euro diesel light vehicles from 1 December 2003 onwards. Under a similar retrofit programme that commenced in December 2002 for pre-Euro diesel heavy vehicles, 50% of this class of vehicles have been installed with catalysts.

- The other measures that have been carried out include the increase in penalty on smoky vehicles, the training and appointment of over 800 new spotters for smoky vehicles since 2000 and, the use of chassis dynamometer for smoke testing for all diesel vehicles. We are also planning to require the installation of vapour recovery systems at petrol filling stations.

We will promote the adoption of state-of-the-art, environmentally friendly technology by bus companies in their new fleet purchases and encourage them to deploy cleaner vehicles along busy corridors. We will introduce new franchise conditions requiring bus companies to adopt the latest commercially available environmental technologies in their new buses.

Noise Pollution

- Traffic noises

To avoid exposing noise sensitive receivers to excessive traffic noise generated by new roads, proponents of designated road projects are required to go through the Environmental Impact Assessment process and implement practicable noise mitigation measures as part of their road projects. We are also implementing a programme to address the noise impact of existing roads on residents. We have so far identified some 30 existing road sections where retrofitting of noise barriers is practicable. Another 72 road sections will be resurfaced with low-noise surfacing materials. The retrofit and resurfacing programmes are expected to benefit some 65 000 dwellings when completed.

In the light of the public concerns over the noise barriers put up on Tolo Highway, we have reminded the works departments concerned to pay due regard to the aesthetic design of noise barriers to make sure that they are as compatible with their surrounding environment as



possible. The works departments should also tie in, where practicable, the installation of noise barrier with the development programme of planned noise sensitive receivers.

- Reducing other types of noise

We are taking an active participation in the land-use and infrastructure planning process to pre-empt noise problems. We have been implementing comprehensive noise control legislation since the late 80s to control noise from construction, commercial and industrial activities. Many noise sources have been brought under tighter control and some have been eliminated. We will continue our efforts to reduce public exposure to excessive noise through planning, the Environmental Impact Assessment process, implementation of mitigation measures and enforcement of legislation.

Water Quality and Conservation

- Sewage treatment

In 1989, over 50% of the total human sewage produced in Hong Kong was discharged directly into the sea or inland waters without treatment. Less than a quarter of the sewage collected received advanced levels of treatment. To rectify the situation, the Administration formulated 16 Sewerage Master Plans (SMPs) in the early 1990's to identify the sewerage infrastructure necessary for meeting population demand and improving water quality in coastal waters throughout Hong Kong. These SMPs are being implemented in phases, and together with HATS, the amount of sewage, which now receives treatment, has increased by more than 100% since 1989. In addition, polluted flows have been intercepted in many sensitive areas and the capacity of the sewerage system has been enhanced.

- Conservation of fresh water

Good progress has been made over the years to conserve precious fresh water. The implementation of the following conservation measures have achieved considerable savings in fresh water -

- use of sea water for flushing - about 80% of the population is supplied with sea water for flushing which, in turn, saves more than 20% of fresh water consumption (in the order of 240 mcm annually). The average daily consumption of sea water in 2002 was 0.66 million cubic metres mcm.
- adoption of proactive leak detection and pressure management techniques in the distribution network for the detection and reduction of the leakage. A daily saving of 0.18 mcm in fresh water was achieved in 2002.
- use of individual metering and tiered tariff system (increasing block rate) to promote water conservation.
- reducing the response time for attending leaks and bursts to cut down the amount of water loss.
- reusing filter backwash water in major water treatment works to reduce water loss during operation.

We have put in place the following initiatives to secure further saving in the coming years -

- wider use of low-flow flushing cistern and dual-flush cistern in toilets to reduce sewage.
- implementation of a pilot scheme for recycling treated sewage effluent for toilet flushing and landscape irrigation in Ngong Ping - an inter-departmental working group chaired by WSD has been set up to take forward the scheme.
- commissioning of a pilot Reverse Osmosis (RO) desalination plant with a capacity of 200 cubic metres per day to assess the potential for building a full-scale RO plant for



sea water desalination. The consultancy study for the pilot plant commenced in May 2003.

Waste Management and Recovery

- Waste Recovery

Waste prevention and recycling is the essential component of our waste management strategy. We have been implementing various measures to further promote waste prevention and recovery, including -

- Continuously supporting and promoting various waste recovery activities, and trying out different forms of waste recovery methods, including the wet/dry waste sorting pilot scheme, and the placement of waste separation bins in public places and public/private housing estates ;
- strengthening public education, publicity and community involvement programmes on waste recovery;
- injecting \$100 million into the Environment and Conservation Fund, mainly for district organisations and green groups to carry out community waste recovery projects; and
- planning for the establishment of a 20-hectare Recovery Park in Tuen Mun to provide a long-term site for recycling operation and providing suitable land for lease to the recycling industry exclusively.

We will introduce the 12-month pilot scheme on wet/dry waste sorting at four housing estates in the Eastern District in March 2003. Upon completion of the scheme, we will examine the feasibility, logistics and cost-effectiveness of this form of waste recovery.

- Recovery Park

The Preliminary Study carried out by the Consultants on the development of a Recovery Park (RP) in Tuen Mun had been completed in November 2002, which concluded that the development of the RP was feasible in terms of environmental, road traffic, marine traffic and design. Implementation of the RP would help achieve Government's goals of enhancing the recovery/recycling industry within Hong Kong. Further detailed Environmental Assessment, Traffic Assessment and design for the infrastructural and advance works will be carried out and it is scheduled that the RP could be commissioned at end of 2005.

- Marine Disposal Areas

Dredging of sediments / mud creates demand for fill and need for disposal of the dredged materials. To minimize the unnecessary impact of the marine environment, we have a firm policy of minimizing the dredging activities and encouraging the use of surplus fill from public works projects for reclamation. We have issued a Technical Circular in 2002 to restrict marine mud removal in public works to protect the marine environment and ecology. CED is the administration department who operates mud disposal facilities for safe deposition of dredged mud. Overall, dredging and marine dumping activities will only be carried out in absolute necessity. Appropriate mitigation measures will be employed to minimize the potential impact of the dredging and dumping activities to a minimum and within tolerable limits. Extensive field monitoring programme will also be carried out to ensure the whole operation is conducted in an environmentally acceptable manner. Apart from the project based on-site measurements, we will also conduct long term marine water quality, sediment quality and ecological monitoring to ensure that there is no long term / unacceptable impacts to the marine environment due to marine disposal operations.

Energy Efficiency and Conservation



- Wider use of renewable energy

Stage 1 of the consultancy study on the Potential Application of Renewable Energy (RE) in Hong Kong has been completed. Stage 1 Study evaluates the potential of various forms of RE for wide-scale local use, and related legal, institutional and promotional issues. The consultant considers that wind energy is potentially feasible for wider application in Hong Kong. Taking into consideration the findings and recommendations of the consultancy study and the public opinion gathered thereafter, we are now working with Economic Development and Labour Bureau on the wider application of renewable energy in the post-2008 electricity market.

- Water-cooled air conditioning systems

In collaboration with the relevant government departments, we introduced a pilot scheme for the wider use of water-cooled air conditioning systems to replace air-cooled air conditioning systems to save energy in Hong Kong in June 2000. Subsequent to a review in June 2001, the covered areas under the pilot scheme were increased from 6 to 17 throughout the territory. The scheme was further expanded in December 2002 to cover 45 areas. Around thirty applications have been received and twenty-five applications have been approved-in-principle by the Water Supplies Department, covering a floor area of about 1.2 million square metres. The estimated annual saving in electricity would be about 14.4 million KWh.

The consultancy study report on the territory-wide implementation study for wider use of water-cooled air conditioning system is at the very final stage. Based on study findings and recommendations, we will formulate the long-term policy on the use of water for air conditioning systems.

Nature Conservation

- Better conservation of ecologically important sites

The existing nature conservation policy provides for the protection of important natural heritage in Hong Kong through a number of conservation tools including establishment of the "protected areas" system, implementation of the statutory environmental impact assessment mechanism, enforcement of legislation and implementation of conservation plans for protecting important flora and fauna, and public education and publicity. The "protected areas" system currently covers over 40% of the total land area in the territory. To enhance our nature conservation efforts, we are conducting a review of the existing policy and measures with a view to identifying areas for further improvements.



Aberdeen Country Park

Meanwhile, we will continue to vigorously implement the existing policy and measures for protecting the biodiversity of Hong Kong. In addition, AFCD has started conducting territory-wide ecological surveys with a view to establishing a comprehensive ecological database in phases by 2005. The survey findings can provide useful input for formulating and implementing nature conservation strategies and measures.



Yellow Coster (left) Scarlet Dwarf (right)

Controlling environmental impact by public works policy

The environmental problems associated with the construction industry are unique. It is difficult to implement control measures on a construction site economically due to its temporary nature, scale of operation, and the highly variable environment.

Notwithstanding the difficulties, we aim to ensure that the environmental integrity of the projects under the Public Works Programme (PWP) is continually strengthened through improved management and control measures. To achieve this, we establish and promulgate our policies through issuing of Technical Circulars for our Works Departments to follow. The environmental policies set out in these Circulars address a wide range of important environmental issues, such as on waste management and reduction, marine mud removal, Environmental Impact Assessment Ordinance (EIAO) matters, materials usage (use less timber), site cleanliness and tidiness, noise from piling, tree planting etc. In the delivery of a public works project, we always bear in mind the possible long-term and short-term impact that the project may have on the environment, and adopt corresponding measures. We require our works projects to abide strictly by the requirements of the Environmental Impact Assessment (EIA)



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Ordinance and implement wholeheartedly all requirements set out in the EIA report and the environmental permit. We are working, in the long run, to reduce the impact of the project on the environment by means of proper design. In the short run, we include contractual provisions to govern the behaviour of our contractors and to require them to adopt the best environmental practice.

We will continue with the trial implementation of the Construction Design Management technique by incorporating environment friendly features as part of the design requirement (such as waste reduction) at the design stage of our projects.

- Waste reduction, management and control on the use of raw materials

Specifically, we require, as part of our works policy, the following:

- All of our projects are to have on-site sorting of construction waste. Our objective is to ensure that no excessive amount of inert construction and demolition (C & D) materials go to landfills which are expensive to provide, if they can go to public fills.
 - All of our major projects with export of surplus fill to register with the Public Fill Committee, who manages public fill capacity in the territory. The Public Fill Committee will match the surplus fill with projects that have a demand on the material. It also distributes public fill capacity orderly for such projects.
 - To ensure proper disposal of C&D materials, we implement the trip ticket system with an aim to provide an audit trail for verification by the project team to prevent illegal dumping.
 - Our project proponents, as part of their submission to the Public Works Subcommittee for upgrading to Category A, are to demonstrate what measures have been taken to minimize waste in the planning and design stages.
 - Our contractors are required to provide a waste management plan (WMP) for each project to help in control of construction waste including waste reduction. Through the submission of WMP, contractors shall commit on the method and system to reduce and properly dispose of the wastes at construction sites. In addition, our contractors are also required to maintain the site in clean and tidy condition by the implementation of WMP.
 - To enhance waste management on site, we will expand the Pay for Safety Scheme as the Pay for Safety and Environment Scheme to cover waste management, including submission of a waste management plan, coordination meeting on control of waste and training.
 - In general, no tropical hardwood are to be used in false work, formwork, temporary supports or work of a like nature. We require all hoardings be made of metal, and they should be bolt-fixed to enable maximum recovery.
 - Project specifications are to allow the use of recycled aggregates made from construction and demolition materials to be used initially in filling works, drainage bedding, road sub-base and concrete production etc. This will be gradually widened to higher-grade concrete and paving block production.
- Contractor management

Contractor's environmental performance has an ultimate effect on the successful implementation of our environmental policy. Tools are installed to ensure contractor's compliance with environmental requirements. The 'contractor performance index' system is an indicator to project teams and the tender boards when considering the award of contracts. The index is based on a scoring system for which environmental performance is one important aspect.

We also have control on contractor's environmental performance through the management of the Approved List system. We set up regulatory action in the form of suspension from tendering against any contractor on Works Branch's Approved List who is convicted of environment related offences irrespective of whether the site is one which is a public works



project. We will aim to make the regulatory action on the contractor fair but stringent by including a review by panel mechanism.

We will make effort on management of site hygiene a reportable performance aspect and conviction of allowing mosquito to breed on site an offence for which the contractor can be liable to suspension from tendering.

- Construction noise

We will consider starting to review in 2003 the possibility of including as part of a package of contractual measures on the control of site environment in public works contracts by including the control of noise from construction plants (such as air compressors or percussion construction tools).

- Achievements in 2002

- We have issued Technical Circulars to facilitate the use of recycled aggregates in concrete production and construction of road sub-bases, to enhance the management of C&D materials and to improve our trip-ticket system for proper disposal of wastes respectively;
- We completed a review on our policy on site crushers and issued a Technical Circular to facilitate the recycling of C&D materials at locations close to their origins;
- We commissioned a temporary recycling plant for C&D materials at Tuen Mun Area 38. We were successful in producing good quality recycled aggregates for use by public works projects;
- We itemized the actions from our contractors in terms of maintaining site tidiness and related payment to its performance on these matters. The contractor is also required to deal with public areas around his construction site, and to ensure all parts of the site visible to the public are cleaned regularly.

- Targets for 2003

We will continue to promote and explore the wider uses of recycled aggregates in concrete production (and the use of paving blocks made from recycled aggregates) through collaboration with the key stakeholders and academia. We will review the waste management provisions for public work projects and issue guidelines to provide on site sorting of C & D materials for recycling and continue to find more public works contracts to participate in the reuse of recycled materials in their construction works. Works Department (instead of their contractors) will have to prepare a C & D material management plan in the early planning stage of a project.

We will draw up a specification on pollution control measures on certain construction site nuisance: dust, fumes, noise, muddy runoff and wastewater.

Greening

Trees and plants can offer psychological comfort and relief, and is vital to the health of the people, visual amenity and aesthetic quality of such a densely populated place like Hong Kong.

Our greening policy is to enhance the quality of living environment through active planting, and proper maintenance and preservation of trees and vegetation. The target is to bring noticeable improvements in urban greenery, improve the quality of existing greened areas, and maximize greening opportunities during the planning and development stages of public works projects.

We have established policies to take care of planting in public works. We have promulgated, through the issue of Technical Circular, our policies covering vegetation maintenance, tree preservation, tree planting and improvement of aesthetic appearance of man-made slopes. In 2002, we issued circulars to works departments providing guidelines on management and maintenance responsibilities for



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natural vegetation and landscape works. Furthermore, the policy of tree preservation in the planning, design and construction stage of a project was advocated.

We set up in December 2002 a high-level Steering Committee on Greening (SCG) to provide a steer and focus on the overall greening strategy and to oversee the implementation of greening programmes. The SCG is chaired by the Permanent Secretary for the Environment, Transport and Works (Works) with members from 17 bureaux and departments. Under the SCG, there are different committees to look after its implementation in public works, the manuals and standards, maintenance, and community involvement. We, in cooperation with other bureaux and works departments, have developed strategies which aim to improve the coordination and effectiveness of greening efforts within the current regime, and to make greening an integral part of public works projects and in the furtherance of government's objective of making Hong Kong a greener city.

An annual greening programme was compiled to facilitate planning and monitoring of progress. The greening works mainly include -

- (a) planting of trees in association with works projects, parks, roadside amenity areas, and along expressways;
- (b) planting of tree seedlings in country parks and countryside areas outside country parks;
- (c) thematic planting and beautification works at priority sites in the urban area (e.g. key waterfront sites, footbridges and pedestrianization schemes); and
- (d) landscaping man-made slopes under the Landslip Preventive Measures (LPM) Programme and Enhanced Maintenance Works Programme.

In 2002, we have planted a total of 10 million trees, shrubs and annuals.

We, in 2003, will work on the effective management of greenery and to provide more coordinated maintenance to improve the quality of existing greened areas. A register of old and valuable trees on government land will be compiled to afford them better protection. We shall review the existing standards and guidelines on greening to improve the effectiveness of our greening efforts. Furthermore, we will encourage private sector and community participation to promote greening programme in the urban areas.



We, for 2003, also plan to increase the overall green coverage in the urban areas and to improve the visual quality of landscaping by properly-designed planting themes and careful selection of species. Major areas for improvement include pedestrianization zones, footbridges, roadside, and vacant government sites. We will take advantage of greening opportunities created by public works projects and urban renewal schemes in old urban areas.



Our plan for 2003 is to plant about 15 million trees, shrubs and annuals with about 60% of them planted in the urban areas.

Hong Kong's hilly terrain coupled with dense building and infrastructure developments has resulted in some 54,000 man-made slopes.

We are committed to landscaping every newly formed or upgraded government man-made slopes. We have adopted the policy of making the man-made slopes look as natural as possible, by using vegetation for slope surface protection wherever possible and applying hard surface only as a last resort. To improve the slope greening technology, we are conducting trials of growing new vegetation mixes and applying new planting techniques on steep slopes. Over the years, we have spared no effort in improving the cityscape of Hong Kong at the same time as we are implementing our public works programme. Landscape treatments have been provided to all the man-made slopes upgraded under the LPM Programme in 2002, amongst which 75% have been applied with vegetation cover for slope surface protection.

We will continue to landscape every man-made slopes upgraded under the LPM Programme and to provide vegetation cover to at least 70% of the upgraded slopes. We will also conclude trials of growing new vegetation mixes and applying new planting techniques on steep slopes in 2003. And, as part of the quarry rehabilitation works, active quarries are being rehabilitated to form green areas suitable for a variety of uses. The quarry on Lamma Island has been rehabilitated with the formation of a natural-looking landscape in harmony with the adjoining environment and suitable for future development. The site will be handed back to Government in January 2003. We will continue to rehabilitate active quarries to form attractive green areas.

Transport

In pursuing our policy objective to provide a safe, efficient, reliable and environmentally friendly transport system which meets the needs of the community, we will press ahead the following initiatives

- priority for efficient and environmentally friendly transport modes
- reduction in traffic and inter-model coordination
- greater emphasis on pedestrian facilities
- application of IT to transport management

Priority for efficient and environmentally friendly transport modes

Railways are the most environmentally friendly and efficient mass carriers in Hong Kong, carrying more than 30% of our public transport passengers. As at April 2003, the length of the Kowloon-Canton Railway Light Rail, East Rail and Mass Transit Railway (MTR) lines stood at 32 km, 34 km and 88 km respectively. The railway network will be further expanded to over 200 km by 2007 through the addition of the following lines -

- West Rail



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- Ma On Shan to Tai Wai Rail Link
- Tsim Sha Tsui Extension
- Penny's Bay Rail Link
- Sheung Shui to Lok Ma Chau Spur Line

Railway Development Strategy 2000 (RDS-2000) further recommends the implementation of five passenger lines as follows -

- Shatin to Central Link (SCL)
- Kowloon Southern Link (KSL)
- Island Line Extensions (ILE)
- Northern Link (NOL)
- Regional Express Line (REL) together with a Port Rail Line for freight traffic.

Completion of these railway projects will increase the railway share of the public transport market from about one-third at present to nearly 45%.

To ensure that resources for railway projects are effectively invested, the Government keeps constant review of the priority of the railway projects taking into account changes in transport, population and land use planning. To this end, the Government decided in January 2003 to defer the implementation of the North Hong Kong Island Line and to withhold planning for part of the West Hong Kong Island Line (WIL) until the way forward for the Western District Reclamation becomes clear. At the same time, the Chief Executive in Council decided that the Administration should consider to develop the South Hong Kong Island Line in conjunction with part of the WIL.

With railway forming the backbone of Hong Kong's public transport system, the Administration will continue with its efforts in enhancing the co-ordination between railway and other public transport modes so as to avoid wasteful duplication of public transport resources and alleviate traffic congestion in the urban area. Integrated railway development is also promoted to enhance environmentally-friendly transport, such as the future integration of the Tsim Sha Tsui Extension with the pedestrian subway system in Tsim Sha Tsui to alleviate traffic congestion.

Reduction in traffic and inter-model co-ordination

To reduce traffic in busy areas and hence the impact on the environment, we have taken the following measures -

- implementation of more bus-bus and bus-rail interchange schemes
- rationalisation of bus routes and stops
- introduction of park-and-ride schemes by railway corporations

Bus-bus Interchange Schemes

Bus-bus interchange schemes are pursued as one of the measures to achieve more efficient use of bus resources, relieve congestion and minimise environmental impact on busy corridors and reduce the need for long-haul point-to-point bus routes.

In 2002, a total of 66 bus-bus interchange schemes involving 285 bus routes offering fare concessions of \$1 to \$20.7 to passengers were implemented. Through the provision of fare discount incentives and selection of convenient interchanging locations, the implementation of these schemes is welcome by the public.

As at end 2002, a total of 96 bus-bus interchange schemes have been implemented and on average some 103,000 passengers are using these interchanges each day. The schemes



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have improved the bus network and facilitated inter-district travel whilst minimizing the need to introduce additional bus routes.



Bus-bus Interchange Scheme in Wan Chai

Bus-rail and Green Minibus-rail Interchange

Since 1 September 2001, the MTR Corporation Ltd. and the New Lantao Bus Co. (1973) Ltd. (NLB) have jointly offered a bus-rail interchange scheme. Passengers are offered \$1 fare discount for interchanging between MTR Tung Chung Line and NLB's routes 37, 37A, 38 and N38.

During 1 October 2002 - 31 March 2003, the MTR Corporation Ltd. and Discovery Bay Transit Services Ltd. also jointly offered a flat \$3 discount to passengers interchanging between MTR Tung Chung Line and bus route DB01R.

Since 1 October 2002, a total of four green minibus (GMB) - rail interchange schemes involving 9 GMB routes have been introduced. Passengers interchanging between the MTR and these GMB routes can enjoy a fare discount of \$0.3 to \$1.

Rationalisation of Bus Routes and Stops

To improve the efficiency of bus operation and to alleviate the traffic and environment impact, the Administration has been working together with the franchised bus companies to rationalise bus services and improve bus stopping arrangement.

Through route amalgamation, route truncation and frequency adjustment, about 350 bus trips passing through Central and 140 bus trips passing through Yee Wo Street per day were removed in 2002. On the Kowloon side, about 1,600 bus trips were removed from Kowloon region in which about 250 bus trips passing through Nathan Road per day were cancelled.

Moreover, bus stop rationalization schemes were implemented which reduced about 120 bus stoppings per peak hour between Central and Causeway Bay on Hong Kong Island and about 190 bus stoppings per peak hour along Nathan Road.

Deployment of environmentally friendly buses in busy corridors

Since January 2002, bus companies have deployed only Euro II and Euro III buses in Yee Wo Street to help enhance the environment in the corridor. The Administration will continue to work with franchised bus companies on deployment of more Euro II and III buses in other busy corridors.

Park-and-Ride Scheme



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Park-and-ride (PnR) facilities are usually provided at public transport hubs strategically located on the fringe of busy business/urban areas so that motorists can leave their cars behind and use public transport to complete their trips.

PnR schemes have been operating at Choi Yuen Road near the East Rail Sheung Shui Station, at Hong Kong, Kowloon, Olympic and Tsing Yi Stations of the Airport Railway, and at Hang Hau Station of the MTR Tseung Kwan O Line. In addition, a new PnR scheme will be introduced in December 2003 at Kam Sheung Road Station of West Rail upon the commissioning of this new railway.

Apart from these schemes, PnR facilities have been planned at the existing rail station at Choi Hung. Construction of the Choi Hung PnR scheme which will provide 450 parking spaces commenced in November 2001 with target completion in 2006. In planning future rail stations and major transport interchanges, especially those on the fringe of the urban area, PnR facilities will be developed wherever appropriate.



Park-and-Ride Facility

Greater emphasis on pedestrian facilities

Pedestrian Schemes

Since March 2000, we have implemented 5 full-time, 22 part-time and 22 traffic-calming pedestrian schemes in various districts to improve the overall pedestrian environment. The schemes are well received by the local communities and the public at large.



Traffic Calming Scheme at Russel Street

The Transport Department and the Planning Department will jointly commission a comprehensive study for introducing such a scheme at Tsim Sha Tsui. The objectives are to beautify the area and improve the pedestrian environment in Tsim Sha Tsui. It is expected that the study will be completed by end 2005.

Pedestrian schemes are implemented on an on-going basis. We will continue to identify areas with heavy vehicular traffic and pedestrian flow, and assess the viability of extending such schemes to those areas.



Pedestrian Walkway Systems

By segregating pedestrians from vehicular traffic, pedestrian walkway system could improve pedestrian safety, reduce traffic congestions and minimize air pollution to pedestrian walking environment. The effect is particularly prominent in areas with heavy traffic and pedestrian flow. We have completed the preliminary feasibility study for the pedestrian walkway system in Wan Chai in conjunction with the pedestrian scheme for the district and are now proceeding with the design of the scheme.

We would continue the implementation of pedestrian walkway system wherever practicable and necessary.

Application of IT to transport management

The Transport Department developed the Intelligent Transport Systems Strategy in 2001 with the objective of maximising the capacity and performance of our existing transport system, and reducing fuel consumption, vehicle emissions and travelling time. The strategy sets the direction for the implementation of transport information services and traffic management systems in Hong Kong in the next decade. The strategy features two core projects, viz. the Transport Information System (TIS) and the Journey Time Indication System (JTIS).

The TIS is a centralised data warehouse with comprehensive transport information. It enables public transport passengers and motorists to plan their routes before the journey. Passengers will be provided with public transport information such as service schedule and details on fare, while motorists can make easy searches of driving routes.

The TIS will also provide up-to-date information on traffic directions, turning movements at road junctions and stopping restrictions, etc. Value-added service providers in the private sector can make use of the information to provide the public with services such as car navigation, fleet management systems and personalised information services. The TIS project is scheduled for commissioning in phases starting from mid 2004.

The JTIS advises motorists of the estimated journey time on key routes from Hong Kong Island to Kowloon via the three cross-harbour tunnels. Three journey time indicators will be installed at Gloucester Road, Canal Road Flyover and Island Eastern Corridor respectively. They are expected to come into operation by the end of 2003.

Green Government

Environmental reporting

Hong Kong is one of the few jurisdictions in the world requiring all the governmental organizations to keep the public informed of their environmental performance. Since 1999, all bureaux and departments publish environmental reports annually. A Review of Environmental Reports of 1999 and 2000 of the bureaux and departments has been completed. A new set of benchmark will be developed to provide the bureaux and departments with more guidance in the Environmental Performance Reporting.

Green housekeeping in the government

The total paper consumption of the Government in 2002 is 1.86 million reams of papers. It is largely contained at the 2001 level, with only 1% increase, which is within the margin of natural fluctuation. However, the total electricity consumption of the government substantially increases from \$1,784.5 M in 2001 by 8.6% to \$1,938.8 M in 2002.

We are concerned about the increase in electricity consumption. We are studying the reasons for the increase with a view to identify solutions to help bureaux and departments to reduce electricity consumption without affecting their operations and services. Meanwhile, we will double our effort in promoting green management practice within the government. We will develop a web-based Bulletin Board for all civil servants to browse and download the up-to-date information and to exchange their



views and experience. Workshops and seminars to enhance staff awareness and encourage participation will be widely organized from time to time.

Green Management of ETWB

ETWB operates on 10/F - 13/F, 15/F - 16/F and 21/F of Murray Building, as well as 9/F and 10/F of Citibank Tower at Garden Road.

Greening Office Activities

Being the policy Bureau responsible for the protection and conservation of our environment, it is our ultimate responsibility to serve as the role model for the other Bureaux and Departments in keeping a green workplace through our day-to-day office management, which includes:

- efficient Use of Materials/Resources - paper for office use, general stationery, furniture, vehicles, etc.
- saving of Energy - electricity consumption for the daily office operation.
- clean Air - indoor and outdoor air quality.

To make positive progress in promoting green management and to further enhance the efficient use of resources, we adhere to the 3-R principles 'Reduce, Re-use and Recycle' in our day-to-day housekeeping.

Managing Paper Consumption

In 2002, apart from circulation of circulars and dissemination of information by email and e-bulletin boards in place of hard copy, we have also established an Intranet for the Works Branch as an additional electronic means of communication and information dissemination. The Intranet will be extended for the use of the Environment and Transport Branch in 2003. Meanwhile, e-faxes have been extensively used by officers at office of Citibank Tower.

Subsequent to the review of internal paper distribution practice and the implementation of a centralized paper distribution system in the former Works Bureau in 2001, we managed to reduce the paper consumption by 4.3% in 2002 even though we had to conduct during the year a number of major reviews and surveys which were paper-consuming. We will continue to monitor the use of paper in various Sections with a view to achieving the target of a further 5-10% reduction in paper consumption in 2003. In the meantime, the envelope consumption of 2002 has also reduced by 28.8% when compared with that of 2001.

Since the turn of 2002, the use of non-recycled paper has been phased out and only recycled photocopying paper was ordered for office use.

Apart from the above, the following green measures are also practiced:

- duplex printing has been set as the default mode for some network printers;
- electronic greeting cards were produced for staff use to minimize the demand for paper ones;
- only environmentally friendly plain paper fax machines were used;
- boxes and trays were placed beside photocopiers for containing paper for recycling and paper used on one side only; and
- staff were encouraged to use paper on both sides, reuse envelopes and loose minute jackets, and use the back page of outdated letterhead for drafting or printing incoming fax, as well as not to use fax leader page as far as possible.

Taking the advantage of IT advancement and the implementation of the Electronic Document Management System (EDMS) in the coming years, we target that there will be a minimum of 12% reduction in paper consumption in 2006/07 when having 2002 as the base year. Furthermore, we shall reduce the quantity of printed copies of a number of our publications or to replace them by internet version to save paper from 2003 onwards.

Managing Electricity Consumption



T5 fluorescent lighting technology and movement sensors were used in our office at Citibank Tower, while T8 fluorescent lights were used in the rest of our workplace. We will continue to ensure that the most energy-saving lighting technology is applied whenever office renovation is carried out in future. Some quartz tungsten light fitting will also be replaced by energy efficient ones with a view to saving more energy.

Other energy-saving measures adopted include:

- energy-saving light bulbs were used in all possible locations;
- thermometers were placed in various office locations to regularly cross check the temperature setting (around 24°C); and
- when an office area was too cold or unevenly air-conditioned, technician would be called upon to rectify the situation at first instance.

Staff members were reminded regularly to do the following:

- switch off the lights and air-conditioning when they were not in office;
- turn off all electrical appliances/equipment when not in use and switch them to energy-saving mode, if available; and
- make good use of the energy-saving features and options which come with the Operating System of the computers.

Green Purchasing

"Green" stationery supplied by the Government Logistics Department, such as clutch pencils, refillable ball pens, recycled pencils, correction fluid and furniture made of chip board, is widely used in our Bureau. Such green purchasing constitutes about 25% of the Bureau's total expenditure on stationery. Other green items, e.g. recyclable laser printer toner cartridges and box files made of recycled paper are also ordered from contractors for office use. To make further progress, we will procure more environmentally sound stationery items in place of those non-green ones in the years ahead. Office equipment, such as photocopiers and printers, with Energy Efficiency label will be purchased when they are replaced. We will also consider using e-tender whenever applicable in future.

Clean Air

Carpet cleaning and overhaul cleaning of fan coils are carried out at biannually and annually intervals respectively to uphold a satisfactory level of indoor air quality in our workplace environment. In regard our concern over the outdoor air quality, we constantly remind our motor drivers to turn off idle engines and use only low sulphur petroleum for all our departmental vehicles. Our vehicles are also under regular maintenance to prevent the emission of excessive smoke.

Environmental Awareness Among Staff

It has always been the aim of our Administration Section to promote staff awareness on both environmental protection and green office management through introducing various environmental initiatives. To upkeep the staff's attention to green management in office, advice on energy and paper saving, together with the 'Ten Tips for Good Housekeeping' are re-circulated among staff by email on a quarterly basis and posted on the Intranet and electronic bulletin board as a constant reminder. In late 2001, our Works Branch (the former Works Bureau) and the then Planning and Lands Bureau have jointly organized a "Green and Clean" Message Competition and 3 winning messages were selected. In 2002, memo pads with the winning messages were printed and distributed to staff to reinforce the green management concept as planned. Further to our own initiatives, we encouraged staff to support green activities launched by other government departments and organizations, including:

- "No-smoking Day in the Workplace" Campaign
- World Environment Day 2002
- Clean Air Exhibition organized by Environmental Protection Department and Environmental Campaign Committee



- The Community Chest Green Day

As in the past, we shall continue to support green events organized by other government departments and organizations and implement new initiatives to further enhance environmental awareness among our staff in the future.

Looking Ahead

Construction Waste Disposal Charging Scheme

Disposal of waste at landfills has always been free of charge. This is undesirable and encourages indiscriminate use of landfills. At present, construction waste accounts for 48% of all the waste disposed of at landfills each year. Given the serious waste problem, our three existing landfills are expected to be filled up in 8 to 12 years.

As a first step, we intend to introduce charging on the disposal of construction waste at landfills, sorting facilities and public fill reception facilities. This is to provide an economic incentive for waste producers to reduce waste and to carry out sorting to facilitate reuse/recycling. We aim to implement the charging scheme in late 2004.

Export of Construction and Demolition Material

We are exploring the possibility of reusing construction and demolition material in reclamation and land formation projects in the Mainland. This will alleviate the problem of inadequate reclamation projects in Hong Kong to take up the material and help slow down depletion of the limited capacity of the fill banks in Tuen Mun and Tseung Kwan O.

The Clinical Waste Control Scheme

We secured the trade's support for the Clinical Waste Control Scheme (Control Scheme) through comprehensive consultation conducted in 2001 and 2002. The relevant Bill would be introduced to the Legislative Council in 2003. Under the Control Scheme, clinical waste producers will be legally required to arrange for proper disposal of their clinical waste. Licensing control will also be imposed on the collection and disposal of clinical waste.

Bus-bus, Bus-rail and Green Minibus-rail Interchange

To reduce the number of bus trips and the demand for more direct bus services, in particular those operating through the busy corridors, Transport Department will continue to promote bus-bus interchange schemes. About 20 new bus-bus interchange schemes are planned to be implemented in various districts in 2003 subject to consultation with the relevant District Councils are necessary.

We will continue to encourage the railway corporations and bus and minibus operators to provide joint-operator interchange schemes. Schemes being actively pursued include those for the West Rail and Ma On Shan to Tai Wai Rail Link.

Deployment of environmentally friendly buses in busy corridors

Building on the existing arrangement whereby only Euro II and Euro III engine buses are deployed to bus routes operating in Yee Wo Street, Transport Department will continue to pursue vigorously with franchised bus companies on deployment of more Euro II and III buses in other busy corridors, viz. Hennessy Road, Queensway, Des Voeux Road Central and Nathan Road.

Views and Suggestions

If you have any views and suggestions in connection with this Environmental Report, you are welcome to contact us via email at etwbeng@etwb.gov.hk or by fax on 2523 7948 or write to us at 10/F, Murray Building, Garden Road, Central, Hong Kong.