

Global warming and – the local view in Asia

In this the third installment of our round-the-world view of how fire services are tackling global warming, Tokyo and Hong Kong speak out.

Teruyuki Kobayashi, Fire Chief, Tokyo Fire Department

In urban areas of Tokyo, the urban heat island phenomenon is increasing due to exhaust heat from vehicles and air conditioners combined with a ground surface covered with concrete and asphalt. This phenomenon is a possible cause of torrential rains, which affect our activities.

Recently the number of urban flooding incidents in Tokyo caused by torrential rainfall has been increasing. These incidents include flood-water overflowing the revetment of medium and small rivers and inundating lowland areas.

Once torrential rains occur, the ground surface – which is primarily covered with asphalt in the city – cannot absorb the water. The water rapidly runs off into rivers, which overflow, flooding houses. If the water flows underground, the flooding can cause casualties in underground passageways and basements, or damage power cables in underground utility tunnels, which could paralyze the city. To prevent such damage our firefighters regularly inspect targeted areas in their fire station areas where inundation is likely.

If flooding is likely to occur, the Tokyo Fire Department (TFD) will activate the Flood Alert or Flood Red Alert and call up the necessary career and volunteer firefighters. Firefighters patrol areas where damage is expected or are organised into flood protection units to protect our citizens and city from floods. Recently we have been increasing the amount of equipment (life jackets, rubber rafts etc) for firefighters to mount rescue operations effectively.

The TFD also works together closely with ward, city, town and village governments in Tokyo and jointly conducts comprehensive flood drills. Simulating torrential rains in urban areas, or a river overflowing its banks, these drills are carried out with local residents participating where there are specific flood risks.

In preparation for major flood disasters both inside and outside Tokyo, the TFD is improving its plans for accepting incoming fire units and dispatching its own units as part of the national program of the Emergency Fire Response Teams (EFRT). The TFD also continues training for the EFRT, improving its flood response capabilities.

Measures to reduce carbon dioxide emissions

Following the Tokyo Metropolitan Government (TMG) plan for reducing greenhouse gas emissions to stop global warming, the TFD has been working hard to reduce gas emissions department-wide to a level lower than FY 2004. The TFD succeeded in a 12.9 per cent reduction of greenhouse gas emissions in FY 2006 as compared to the FY 2004. In the TFD HQ building, we are striving to reduce gas emissions by 10.9 per cent between FY 2005 and 2009, compared with the average figure between FY 2002 to 2004.

Of the total CO₂ emissions in the Tokyo metropolis, 20 per cent are from automobiles. The TFD is introducing hybrid vehicles into its emergency fleet.

Since 1998 the TFD has worked to stop its vehicles from idling the engines when they can be turned off in non-emergency situations and is now extending this practice to a wider area of services.

When designing new fire department buildings, we adopt ideas for saving energy, using renewable forms of energy, and preserving and creating greenery space on the building premises, contributing to reducing CO₂ emissions.

The TMG is also implementing environmental management systems as an ISO 14001 certified organisation. In accordance with this movement, the TFD is working to reduce waste and paper use by strongly emphasizing the importance of saving energy to the TFD personnel. As a result, the waste in the TFD HQ building has been reduced by 15 per cent from the 210 tons of ten years ago to 177 tons today, which contributes to reducing carbon dioxide emissions during waste processing.

Although not direct measures for CO₂ emissions reduction, the Fire and Disaster Management Agency (FDMA) restrains the installation of halide fire extinguishing equipment based on the Montreal Protocol on Substances that Deplete the Ozone Layer. (Restrains are conducted via administrative guidance as there are no legal standards.)



Lo Chun Hung, Hong Kong Director of Fire Services Department, and (below) Teruyuki Kobayashi, Fire Chief of Tokyo Fire Department.



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the fire service

Lo Chun Hung, Director of Fire Services Department, Hong Kong

According to the Hong Kong Observatory, the effect of global warming on Hong Kong can be summarized as follows:

- The annual mean temperature has increased at a rate of 0.12 °C per decade.
- The annual total rainfall has risen at a rate of 46mm per decade.
- The mean sea level has risen at an average rate of 2.4mm per year.
- The annual number of tropical cyclones has decreased at a rate of about 0.18 per decade.
- The mean relative humidity has been more or less on a steady level.

The above figures indicate that the effects of global warming on Hong Kong are insignificant in the short term.

The Hong Kong Fire Services Department (HKFSD) is always keen on taking environmental protection measures in energy saving and reduction of carbon footprint. Those measures include the fact that the live-fire training facilities are using environmental-friendly fuel and conducted on a need basis.

In designing our new fire stations and ambulance depots, energy saving installations have been adopted such as solar water heating system,

occupancy sensors for lighting, etc.

We are replacing pre-Euro vehicles with those conforming to Euro IV standards and introducing Hybrid and LPG vehicles.

To preserve energy and protect our environment, operating temperature of air conditioning systems of all units including fire stations, ambulance depots, offices and other supporting

Below centre: Warehouse fire in downtown Tokyo, 2007.



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Fire caused by a natural gas eruption in Tokyo.

units has been pre-fixed at 25.5 °C.

To cope with a warmer working environment, staff not required to wear uniform are encouraged to dress in smart casual without the need of wearing a tie, and all Service drivers are required to strictly comply with the regulation of switching off the engine when the vehicle is idle.

Consequences for firefighters as a whole

Although the effects of global warming on Hong Kong are not yet significant, HKFSD is always well-prepared and aware of any climate change in the region.

Recognising the fact that fires make a significant contribution to the greenhouse effect, firefighters should inevitably shoulder the obligation of improving firefighting efficiency to minimise the emission of smoke and gases.



A head for heights is needed – high altitude training with Hong Kong fire department.

We set up the Environmental Auditing Committee (EAC) in 1995 to initiate steps for energy conservation and monitor and audit environmental protection initiatives undertaken by various units.

We have also commissioned the Third Generation Mobilising System to enhance the efficiency in fleet management, resulting in the reduction of fuel consumption as well as CO₂ emission. HKFSD will continue to follow the concept of green management with an aim to reduce waste and carbon footprint in the course of operation, administration, training and procurement processes.

Hong Kong – specific hazards

- Flooding due to heavier rainfall – more turnout will be required to rescue people trapped by the floods.
- Severe heat due to rising temperature – frontline fire fighters are prone to exhaustion.
- Intense wild land fire due to rising temperature – residents and properties in the vicinity become more vulnerable.
- Upsurge of ambulance calls due to severe hot, cold and freak weather – pressing needs for ambulance service.

Preparing for potential incidents

HKFSD has long been one of the fire brigades worldwide with the most advanced firefighting technology and sophisticated skills. Throughout the years we have formulated various contingency plans to deal with all kinds of emergencies and disasters such as major fires, chemical incidents, landslides and flooding. Such plans are regularly reviewed to keep abreast of the latest developments in technologies and changing times.

A comprehensive weather warning system relaying important messages to the public via the media has been established. Weather forecasts, warning of severe weather and special announcements are issued in occasion of extreme weathers as well as fire danger. They are broadcast on radio, television, internet and telephone hotlines.

While HKFSD is not the agency responsible for educating the Hong Kong people about global warming, one of our missions is to promote public awareness on fire safety. For instance, we regularly line up with other agencies to stage a hill fire prevention campaign before the peak season of wild land fire.

As most of the wildland fires are caused by grave sweepers during Ching Ming and Chung Yeung festivals when people commemorate their ancestors by burning a joss stick and paper, last year we worked with a green organization to launch the “Zero Hill Fire” campaign.

“To preserve energy and protect our environment, operating temperature of air conditioning systems of all units including fire stations, ambulance depots, offices and other supporting units has been pre-fixed at 25.5 °C.”

Lo Chun Hung,
Hong Kong Fire Services
Department Director.