

**Extract of the discussion regarding the sorting and recycling plant
from the Confirmed Minutes of the 166th Meeting of
the Advisory Council on the Environment
held on 14 December 2009 at 2:30 pm**

Present:

Prof LAM Kin-che, SBS, JP (Chairman)
Prof Paul LAM, JP (Deputy Chairman)
Dr Dorothy CHAN, BBS
Prof CHAU Kwai-cheong
Mr Oscar CHOW
Mr Michael JEBSEN, BBS
Mr Edwin LAU, MH
Mr Michael LEE
Dr MAN Chi-sum, JP
Dr Alfred TAM
Mr TSANG Kam-lam
Prof WONG Ming-hung
Mr Simon WONG, JP
Prof Ignatius YU
Mr Carlson K S CHAN (Secretary)

Absent with Apologies:

Ms Teresa AU
Ms Betty HO
Prof Joseph LEE
Dr YAU Wing-kwong

In Attendance:

Ms Anissa WONG, JP	Permanent Secretary for the Environment
Mr C C LAY	Assistant Director (Conservation), Agriculture, Fisheries and Conservation Department (AFCD)
Mr P Y TAM	Assistant Director/Technical Services, Planning Department
Dr Tina MOK	Principal Medical and Health Officer, Department of Health (for agenda item 3)
Ms Eva WONG	Senior Information Officer, Environmental Protection Department (EPD)
Ms Josephine CHEUNG	Chief Executive Officer (CBD), EPD

Ms Loletta LAU
Miss Kim KWAN

Executive Officer (CBD), EPD
Executive Manager (CBD), EPD

In Attendance for Agenda Item 4:

Mr Albert LAM, JP
Mr Vincent TANG

Deputy Director of Environmental Protection (2), EPD
Assistant Director (Nature Conservation &
Infrastructure Planning), EPD

Mr LUI Ping-hon

Principal Environmental Protection Officer
(Infrastructure Planning), EPD

Dr Ken LUK
Ms Echo LEONG
Dr Lee POTTS

Regional Director, AECOM Asia Co. Ltd. (AECOM)
Associate, AECOM
Technical Specialist, AECOM

*Extracts of of the discussion regarding the sorting and recycling plant under
agenda item 4*

Action

**Agenda Item 4 : Integrated Waste Management Facilities – Technology
review and associated facilities**

(ACE Paper 22/2009)

18. Mr Albert Lam briefed Members on the background of the Integrated Waste Management Facilities (IWMF). The EPD planned to develop the first phase of the IWMF with a treatment capacity of about 3,000 tonnes per day (tpd) for municipal solid waste (MSW). Incineration with energy recovery would be adopted as the core technology and a demonstration scale sorting and recycling plant would be incorporated to recover resources from the MSW. Shek Kwu Chau and Tuen Mun Tsang Tsui Ash Lagoon were considered potential sites. Dr Lee Potts briefed Members on the results of the technology review carried out under the Engineering Investigation and Environmental Impact Assessment Studies for the proposed development of the IWMF. For the thermal technologies, incineration by using moving grate technology was recommended. For the sorting and recycling technologies, mechanical and biological treatment (MBT) was proposed. Dr Ken Luk briefed Members on the initial views on the associated facilities that might be incorporated in the IWMF.

31. Regarding the sorting and recycling technologies, the Chairman asked the reasons for developing only a demonstration scale plant given MBT was a well proven technology. Mr Vincent Tang explained that the plan was to develop the first phase of the IWMF with a treatment capacity of 3,000 tpd with incineration as the core technology. An incineration facility with a treatment capacity of about 2,800 tonnes plus a demonstration scale sorting and recycling facility by using MBT for treating about 200 tpd were proposed to maximize the capacity. Consideration of adopting MBT would be given to the second phase of the IWMF should it prove to be effective. Dr Ken Luk added that one of the key considerations was the requirement of land space for MBT plant. With the provision of 10 hectare of land for the IWMF, it was more suitable to have a thermal treatment plant as the core process plus a MBT plant at demonstration scale.

32. Dr Lee Potts explained that MBT could serve as a pre-treatment process of thermal treatment when more recycling was required. A thermal treatment process was necessary to manage the residual waste. During the MBT sorting and recycling process, different types of wastes, such as paper cardboards, plastics, metal cans and organic food waste were sorted out. In UK, metal cans were normally recycled. However, the residual wastes, including dirty plastics, paper cardboards and compost, were normally treated by other means, such as thermal treatment or disposal at landfills.

33. The Chairman considered that the public would expect the IWMF to include technologies other than thermal technology to make it a truly integrated one. He considered that there was scope for further expanding the scale and scope of sorting and recycling. Dr Lee Potts explained that the expansion could be made possible if outlets of the waste from the MBT plant could be expanded. For example, the combustible rich fraction of waste could be further refined by chopping up plastics and papers to produce refuse-derived fuel. The end products could then be fed into a cement plant or power station as an alternative fuel. The digested residue from a MBT plant could be used for landfill restoration.

34. A Member said that his understanding of the IWMF included an organic waste treatment plant plus a thermal treatment plant or a MBT plant. A delegation of the Council paid a study visit to the Netherlands and Germany in 2006 to acquire information on management of MSW. In view of the

unsatisfactory operation of the MBT plant which the delegation visited in Germany, the delegation recommended that the MBT method for un-sorted and mixed MSW should not be used. Mr Albert Lam clarified that a separate organic waste treatment facility to be located at Siu Ho Wan was proposed for treating organic waste.

35. In reply to a Member's enquiry about the purpose of setting up a demonstration scale of sorting and recycling MBT plant, Mr P H Lui explained that the proposal of the IWWMF with incineration as the core technology plus a sorting and recycling plant as a component of the IWWMF was based on the advice of the Advisory Group on Waste Management Facilities (AG). For the current technology review, the main purpose was to identify the most appropriate thermal treatment technology as well as sorting and recycling technology. The review recommended that moving grate incineration technology be adopted as the core technology while MBT was proposed for the sorting and recycling plant as a component of the IWWMF. MBT was a popular technology in Europe in recent years. It should be noted that if no thermal or biological treatment was conducted on the mixed MSW, the organic residual would not be stabilized and when disposed of at landfills it would generate leachate with high pollutant levels as well as methane which was a strong greenhouse gas.

36. A Member considered that while incineration technology was necessary in view of the land problem in Hong Kong, the resources devoted to the MBT plant could be deployed to strengthening public education on household recycling. He recalled that the MBT technology was not included in the recommendation of the AG. Mr Vincent Tang said that the AG recommended that the IWWMF should adopt a multi-technology approach with incineration as the major component of the IWWMF strategy. Application of MBT technologies could be considered at suitable scale under particular circumstances and as a component of the overall IWWMF strategy. Based on the recommendations of the AG, moving grate incineration technology was proposed as the core technology and MBT was proposed to be tested out in small scale to explore how far it could be applied in the future phases of the IWWMF.

37. The Chairman considered that the intention of having an integrated waste management approach comprising different technologies was to allow maximum opportunity for recycling before the waste was treated by combustion. Thus, a sorting and recycling facility as well as an organic waste treatment plant

were recommended.

38. A Member enquired about operation of the MBT plant as a sorting and recycling facility. Dr Lee Potts explained that the process employed mechanical treatment to pre-treat the waste by reducing the size of waste and removing contaminants before the waste entered into the later biological treatment stage for generation of biogas by anaerobic digestion and/or treatment by composting. For example, magnetic separator was used to sort out metal cans, current separator to sort out non-ferrous metals like aluminum and infra-red separator to sort out plastic bottles. MBT could help maximize the amount of recyclables to be captured from the MSW. In Europe, MBT served as a half-way house and allowed recovery of more waste for recycling and digestion of the organic part.

39. A Member asked whether the MBT would enable the increase in the amount of recyclable waste and hence reduce the amount of waste for incineration. Dr Lee Potts explained that MBT could reduce the amount of waste for incineration if the recyclables, such as dirty plastics, paper cardboards and organic waste could be sorted out and consumed by the market, thus reducing the mass of waste for incineration.

40. The Chairman drew Members' attention to the recommendations of the delegation after the study visit to the Netherlands and Germany in 2006 as recorded in ACE Paper 11/2006. One of the recommendations was that for the treatment of waste, mechanical sorting and recycling plants could be used for source-separated mixed recyclable waste. Based on the German experience, the MBT method for un-sorted and mixed MSW should not be used. Given the importance of the IWMF and the need to consider the issue in context and from a holistic point of view, the Chairman suggested that the Council would not make a recommendation regarding the sorting and recycling facilities at this stage and the issue be further examined by the Waste Management Subcommittee by taking into account previous discussions and recommendations of the Council and further information provided by the Administration. The Subcommittee would then report its findings and recommendations to the full Council for consideration. The meeting agreed to the approach.

44. The Chairman summarized Members' views as follows –

- (a) on the basis of the information provided, the Council had no objection to employing moving grate incineration technology as the thermal treatment technology for further consideration;
- (b) given the importance of the IWMF and the need to consider the issue in context and from a holistic point of view, the Waste Management Subcommittee would examine the proposal on the sorting and recycling facilities in greater detail taking into account previous discussions and recommendations of the Council, and report the findings and recommendations to the full Council for consideration;
- (c) the Council welcomed the proposal of setting up associated community facilities to make good use of the energy generated from the incineration facility. More creative ideas would be necessary on the type of facilities to be selected as the facilities should be meaningful and welcome by the community. Views of the community and stakeholders concerned should be seriously considered on the proposal and detailed design; and
- (d) the Council considered that it was essential to put the IWMF in the context of an integrated waste management framework set out in the "Policy Framework for the Management of Municipal Solid Waste (2005-2014)". For the IWMF, the public would expect a host of "integrated" technologies other than the thermal technology in order to maximize the recycling rate.

ACE Secretariat
December 2009