

Annex

**Supplementary information
on the Organic Resources Recovery Centre Phase 2 requested at
the meeting of Finance Committee held on 31 May 2019**

1.	<p>The Administration expected that the Organic Resources Recovery Centre Phase 2 (ORRC2) can produce about 10 000 tonnes of compost annually by treating 300 tonnes of food waste daily. If the compost is converted to energy through combustion, what are the estimates on the cost of the facilities (including capital cost and recurrent expenditure) and the revenue generated from the energy sale.</p> <p><i>(Requested by Hon Tommy Cheung at 18:37:04 and 18:38:00 at the meeting)</i></p>															
Reply:	<p>The treatment technologies adopted by the Organic Resources Recovery Centre Phase 2 (ORRC2) (i.e. anaerobic digestion and composting) are recognized internationally as the advanced methods for treatment of organic waste. If the digestate produced from the anaerobic digestion of food waste is treated by incineration instead of composting, the composting facilities can be saved but additional facilities will be required for dewatering and drying of the digestate produced from anaerobic digestion, so as to increase the solid content of the digestate to at least 30% as required for incineration. Besides, there is no dedicated incineration facilities in Hong Kong for treatment of food waste digestate, while the construction of the required incineration facilities at the ORRC2 will incur extra cost. Taking the above factors into consideration and adopting a 15-year operation period of the ORRC2 as a basis, the preliminary estimates of the total costs for the treatment of digestate of the ORRC2 by composting or incineration are set out in the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">Estimated total cost of ORRC2 for a period of 15 years ^[Note 1]</th> <th style="text-align: center;">Treatment of Digestate by Composting</th> <th style="text-align: center;">Treatment of Digestate by New Incineration Facilities</th> </tr> </thead> <tbody> <tr> <td>Capital Cost (money-of-the-day prices) (\$million)</td> <td style="text-align: center;">2,453</td> <td style="text-align: center;">2,393</td> </tr> <tr> <td>Recurrent Expenditure (\$million)</td> <td style="text-align: center;">1,619</td> <td style="text-align: center;">1,759</td> </tr> <tr> <td>Deduct the Revenue from Sale of Compost or Electricity generated by Incineration (\$million)</td> <td style="text-align: center;">150</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Total Cost (\$million)</td> <td style="text-align: center;">3,922</td> <td style="text-align: center;">4,151</td> </tr> </tbody> </table>	Estimated total cost of ORRC2 for a period of 15 years ^[Note 1]	Treatment of Digestate by Composting	Treatment of Digestate by New Incineration Facilities	Capital Cost (money-of-the-day prices) (\$million)	2,453	2,393	Recurrent Expenditure (\$million)	1,619	1,759	Deduct the Revenue from Sale of Compost or Electricity generated by Incineration (\$million)	150	1	Total Cost (\$million)	3,922	4,151
Estimated total cost of ORRC2 for a period of 15 years ^[Note 1]	Treatment of Digestate by Composting	Treatment of Digestate by New Incineration Facilities														
Capital Cost (money-of-the-day prices) (\$million)	2,453	2,393														
Recurrent Expenditure (\$million)	1,619	1,759														
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Total Cost (\$million)	3,922	4,151														

Note 1: The recurrent expenditure, revenue and total cost of the ORRC2 with treatment of digestate by composting or by new incineration facilities are estimated based on a 15-year operation period of the ORRC2. The total cost refers to the cost (which includes capital cost and recurrent expenditure) after deducting the revenue.

On the other hand, if we can treat the digestate produced from the anaerobic digestion at the existing incineration facilities, the estimated cost can be reduced. At present, we are conducting the “food waste / sewage sludge anaerobic co-digestion” trial at the Tai Po Sewage Treatment Works. The trial includes an assessment on the feasibility of delivering the digestate to the T-PARK for incineration. Assuming the dewatered digestate can be treated at the T-PARK, the total operation cost can be further reduced given that there is no need to provide incineration facilities at the ORRC2. Taking ORRC2 and a 15-year operation period as a basis for comparison, the estimated total cost can be reduced to \$3,581 million which is less than that for the treatment of the digestate by composting.

Incineration of Digestate at T-PARK	Estimated total cost of ORRC2 for a period of 15 years (\$ million)
Capital Cost (money-of-the-day prices)	2,063
Recurrent Expenditure	1,519
Deduct the Revenue from Sale of Electricity generated by Incineration	1
Total Cost	3,581

However, this option is based on the condition that there is adequate spare capacity of the T-PARK, and we need to examine the actual impacts imposed on the T-PARK as well as the requirements for any modification works. Hence, the ORRC2 cannot adopt this option. We will include this option in the planning of the ORRC3 for consideration.