## Value Creation in 2022

## **Waste Management**

## **1** Managing Waste

In 2022, despite facing increased waste generation, we found opportunities to improve our waste management practices and increase our waste recycling and recovery rate, contributed largely by a close and continued collaboration between our operations and waste treatment technology and waste management service providers.



Quarterly assurance assessments were also carried out at all off-site waste treatment and disposal facilities owned by our waste management contractors to verify that they meet both regulatory and our requirements.

## 2 Reducing and Reusing Hazardous Waste

Oily sludge is one of the most common waste of our operations. In collaboration with the Shimizu Institute of Technology, we embarked on a pilot project to use carbonisation technology to treat hazardous waste, including oily sludge generated from the refining process. The initiative aims to explore broader means of a circular economy by reducing hazardous waste and reusing it for other purposes instead of merely disposing it to a licensed facility. The pilot project was funded by the Japan Cooperation Center for Petroleum and Sustainable Energy (JCCP), utilising selected sites provided by the Malaysia Refining Company Sdn. Bhd. (MRCSB). During the Phase 1 pilot (50kg kiln), the identified hazardous waste types generated by MRCSB were tested in batches and was extended to other types of hazardous waste including Vacuum Gas Oil (VGO), used activated carbons, spent clay and effluent treatment sludges. The Phase 1 pilot test was completed in December 2022 and preliminary results showed promising results with 99.6 per cent to 99.9 per cent of oil recovered from oily sludge samples and a weight reduction range of 84 per cent to 97 per cent for all samples. Phase 2 pilot testing is planned in 2023, utilising 500kg kiln capacity. The pilot results will determine the feasibility for full-scale implementation.