

KPI	Unit	Dahej	Daye	Yunan	Tongling	Saganoseki	Naoshima	Gresik	Onsan	Kansanshi	Mufulira	Hamburg East	Miami	Garfield	Altonorte	Ilo	Sterlite Copper Data	Graphical Representation
Zero Liquid Discharge	Y/N	No <sup>6</sup>	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	Yes	--
Presence of ETP	Y/N	Yes	Yes	Yes	N/A	N/A	N/A	Yes	N/A	N/A	N/A	Yes	Yes	Yes	N/A	Yes	Yes	Refer to Figure 16
Use of Desalinated Water	Y/N	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	Yes	Yes	Refer to Figure 17
Presence of waste heat recovery boiler	Y/N	N/A	Yes	Yes	Yes	N/A	N/A	Yes	Yes	Yes	N/A	Yes	Yes	Yes	N/A	N/A	Yes	Refer to Figure 18
GHG emissions		3.47 tCO <sub>2</sub> e/MT	551,531 tCO <sub>2</sub> e	N/A	N/A	N/A	7933 tCO <sub>2</sub> e	N/A	N/A	4 Tonne CO <sub>2</sub> e/Tonne CU-eq	N/A	1,459 tCO <sub>2</sub> e	N/A	26.4 million tCO <sub>2</sub> e	0.8 t CO <sub>2</sub> eq/ t anode	N/A	2.09 tCO <sub>2</sub> Eq/MT of Cathode	--

N/A= Facility level information is not available in public domain

Figure 16: Presence of ETP

Copper Smelters	Presence of Effluent Treatment Plant	
	Yes	N/A
Dahej	Yes	N/A
Daye	Yes	N/A
Yunan	Yes	N/A
Tongling	Yes	N/A
Saganoseki	Yes	N/A
Naoshima	Yes	N/A
Gresik	Yes	N/A
Onsan	Yes	N/A
Kansanshi	Yes	N/A
Mufulira	Yes	N/A
Hamburg East	Yes	N/A
Miami	Yes	N/A
Garfield	Yes	N/A
Altonorte	Yes	N/A
Ilo	Yes	N/A
Sterlite (Thoothukudi)	Yes	N/A

Yes  
 Facility level information is not available in public domain

Figure 17: Different Sources of Water Consumption

Copper Smelters	Different Sources of Water Consumption				
	Desalinated Water	River Water	Groundwater	Supply Water	Other Source
Dahej	Yes				
Daye		Yes			
Yunan		Yes			
Tongling		Yes			
Saganoseki	Yes				
Naoshima			Yes		
Gresik	Yes				
Onsan		Yes			
Kansanshi		Yes			
Mufulira		Yes			
Hamburg East		Yes			
Miami		Yes			
Garfield			Yes		
Altonorte			Yes		
Ilo	Yes				
Sterlite (Thoothukudi)	Yes				

Yes  
 Facility level information is not available in public domain

Figure 18: Presence of Waste Heat Recovery System

Copper Smelters	Presence of Waste Heat Recovery System	
	Yes	N/A
Dahej	Yes	N/A
Daye	Yes	N/A
Yunan	Yes	N/A
Tongling	Yes	N/A
Saganoseki	Yes	N/A
Naoshima	Yes	N/A
Gresik	Yes	N/A
Onsan	Yes	N/A
Kansanshi	Yes	N/A
Mufulira	Yes	N/A
Hamburg East	Yes	N/A
Miami	Yes	N/A
Garfield	Yes	N/A
Altonorte	Yes	N/A
Ilo	Yes	N/A
Sterlite (Thoothukudi)	Yes	N/A

Yes  
 Facility level information is not available in public domain

<sup>6</sup> As per EC condition Dahej copper smelter plant needs to ensure ZLD system however, as per the latest Hindalco Sustainability Report FY 2019-20, it is stated that Hindalco is close to achieving their target of Zero Liquid Discharge for all their plants by 2020-21 (<http://www.hindalco.com/upload/pdf/sustainability-report-2019-20.pdf>).