

SUMMARY ON CLIMATE CHANGE (including estimated costs associated with Climate Change)

1. The results of AWARE¹ were considered in the preparation of the initial environmental examination (IEE) reports. In this connection, a Climate Vulnerability and Risk Assessment (CVRA) had been incorporated in the IEE which also includes discussions on greenhouse gas (GHG) emissions. Likewise, additional costs that may be attributed to climate change adaptation are estimated at \$3.15 million, representing about 3% of the ADB financing. Additional costs associated with climate change mitigation are considered negligible.

2. The AWARE results had a rating of HIGH for the subprojects in Viet Nam. In consideration of this, a CVRA was imbedded into the IEE. The discussions also include the GHG emissions of various subproject components. Cost attribution for climate change was also estimated. Additional costs for civil works that may be attributed to climate change arise from using elevated facility foundations, use of berms and bunds, and sufficient drainage for the wastewater treatment plants in Bac Giang and Mong Cai; an increase in the pumping capacity for storm water pumps in Bac Giang; grading, surfacing and increase lateral drainage of roads in Bac Gaing and Sa Pa to handle increased flood levels; and increasing the height of riverbank protection in Mong Cai. The wastewater treatment plant for Mong Cai was also relocated due to low elevation of the initial site, and a small cost is accounted for this. There are also costs associated with the time spent by key experts relating to climate change. In sum, these costs (and associated contingencies) amount to about **\$3.15 million of the ADB loan of \$100 million**. All of this cost is attributed to climate change adaptation.

¹ AWARE for Projects is an online tool used by ADB project teams to screen projects for climate risks. The tool uses data from 16 general circulation models, as well as databases on temperature increase, wildfire, permafrost, sea ice, water availability, precipitation change, flooding, snow loading, tropical storms, and landslides. For each project screened, the tool generates an overall climate risk ranking of low, medium, or high; key risk areas; and narratives on potential impacts and adaptive measures to guide subsequent activities