EXECUTIVE SUMMARY

Responding to the Cebu Declaration of the leaders of the East Asia Summit (EAS) countries, Japan proposed to undertake a study of the energy savings and carbon dioxide (CO_2) emission reduction potential in the EAS region. The study would provide insights to national energy ministers for establishing goals, action plans and policies to improve energy efficiency in their respective countries. The first study was undertaken in 2007 by the Working Group (WG) for Analysis of Energy Saving Potential in East Asia. Subsequently this WG was reconvened and the study was revised and extended in 2008/2009 to incorporate more recent information and estimation procedures and incorporate further information about energy saving potentials and energy efficiency goals, action plans and policies. This is the report of that study.

This study examined two key scenarios over the time period 2005 to 2030, a Business As Usual (BAU) scenario reflecting each country's current goals, action plans and policies, and an Alternative Policy Scenario (APS). The APS incorporated additional goals, action plans and policies that are currently, or likely to be, under consideration in each country. Increased uptake of low emissions technologies was also considered in the APS. The focus of the study is on analysing the additional energy savings that might be achieved through the goals, action plans and policies of individual countries, above and beyond BAU. The additional savings may be measured as the difference between the BAU and APS scenarios.

Each scenario was modelled for each country by the WG members using their national model or by the Institute for Energy Economics, Japan (IEEJ) using the same model that was used in the preparation of IEEJ's *Asia/World Energy Outlook*[1]. The Working Group composed of experts from each EAS country. These WG members developed their own national level projections or supplied projections of key socio-economic variables, as well as energy saving plans to IEEJ. These input variables suggest that rapid growth in population, gross domestic product (GDP), vehicle ownership, and access to electricity will create a huge 'headwind' that will tend to work against efforts to limit energy consumption and CO_2 emissions in the EAS region. However, it is important to note that increased consumption of energy services is fundamental for achieving a range of socioeconomic and development goals.

[1] Ito, K. et. Al, 2007, *Asia/World Energy Outlook 2007*, Tokyo.

Modelling results show that EAS region final energy consumption in the BAU scenario is projected to increase from 1,946 million tonnes of oil equivalent (Mtoe) in 2005 to 4,572 Mtoe in 2030, an increase of 3.7 percent per year on average. In the APS, final energy consumption is projected to rise to 3,767 Mtoe in 2030, 18 percent less than in the BAU scenario. CO_2 emissions in the BAU scenario are projected to increase from 2,633 Mt C in 2005 to 5,762 Mt C in 2030, implying an annual average growth rate of 3.2 percent. In the APS, CO_2 emissions are projected to be 4,071 Mt C in 2030, 29 percent lower than in the BAU scenario.

While the emission reductions under the APS are significant, CO_2 emissions in the APS in 2030 will still be above 2005 levels and far above 1990 levels. The IPCC (2007) suggest that reductions of this extent will not be adequate to prevent severe climate change impacts.

Yet further additional policy developments will be needed even to achieve savings at the level outlined in the APS. While all of the EAS countries are actively developing and implementing energy efficiency and conservation (EEC) goals, action plans and policies, progress so far varies widely. Some countries are quite advanced in their efforts, while others are just getting started. A number of EAS countries have established EEC goals, but as yet lack concrete action plans for achieving them. It is recommended that EAS country leaders work individually and cooperatively to ensure implementation of their EEC goals through the development of concrete action plans. It is also recommended that capacity building programs be established to assist countries to develop and practically implement energy saving goals, action plans and policies.

Given the preliminary nature of EEC policy development and the potential for more advanced technologies than were outlined in the APS in many countries, it is likely that there are additional measures and technologies that could achieve further energy savings and reductions in CO_2 emissions. According to a preliminary analysis of an illustrative scenario at the EAS region level, the additional application of low carbon technologies, such as biofuels, civilian nuclear and carbon capture and storage in addition to the APS measures could significantly reduce CO_2 emissions – to about 2005 levels by 2030.

It is recommended that EAS country leaders work individually and cooperatively to facilitate exploration of further EEC policy and technology options in each country.