EXECUTIVE SUMMARY

This project provides broad insights into opportunities to improve electricity generation in APEC economies by reducing CO_2 emissions. Examples are selected from within the APEC region and externally to provide quantified data that can be used as a guide for other APEC economies as they develop their energy planning.

It is Phase II of a project commissioned by the APEC Experts Group on Clean Fossil Energy. The first phase identified 19 possible scenarios for reducing CO_2 emission within the APEC region and estimated the maximum potential saving.

This phase seeks to take into account local conditions to give attainable targets. A number of case studies are presented with impediments, opportunities and financial information. The selection is broad enough to allow energy planners to take advantage of the projects already executed and incorporate them into their alternatives.

In most cases the improvements were economically viable in their own right. Repowering initiatives were most successful, giving large increases in generating capacity for the same fuel consumption and corresponding large reductions in greenhouse gas release. This was achieved with little change in existing infrastructure.

The next most effective process was refurbishment of older units. This gave increased capacity at a lower cost than new plant together with reduced greenhouse gas release.

Most cases studied showed a CO_2 abatement benefit rather than a cost. This, together with access to equity to proceed with the improvements were major enabling factors.

In all cases governments played a key role in facilitating the process to achieve project aims. This included introduction of competitive electricity markets to allow foreign investment, cross economy collaboration, implementation of national greenhouse abatement schemes, policies requiring high efficiency generation plant for new installations, development of new generation technologies and providing funding for appropriate demonstration projects.

In addition, the energy planning for two APEC economies, Malaysia and Viet Nam was reviewed. These provide effective but quite different approaches to meeting generation needs using mainly indigenous resources economically and reducing greenhouse gas release. Suggestions, arising from the case studies, have been made to enhance these plans and at the same time reduce CO_2 emission.

The majority of case studies improved efficiency, increased plant output and reduced greenhouse gas release at economic cost. It is recommended that the key stakeholders be brought together in a suitable forum to encourage and facilitate adoption of measures such as these case studies demonstrate to help meet expansion needs and at the same time improve greenhouse abatement. Further, even more specific work is recommended to investigate opportunities for the implementation of measures to reduce CO_2 emissions within one APEC economy. Taking a longer term view, facilitation of international collaboration in the use and development of Zero Emissions Technologies (ZETs) in the APEC region is also recommended.

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