

ENERGY WORKING GROUP PROJECTS: 1993-2002**ENERGY RELIABILITY & EFFICIENCY, INCLUDING ENERGY STANDARDS**

PROJECT	DESCRIPTION
1. Environmentally Sound Energy Infrastructure	<p><u>Phase 1:</u> This project, endorsed by APEC Ministers, aims to promote investment in energy infrastructure that is efficient and environmentally friendly. Two reports were prepared as an outcome of this project:</p> <ol style="list-style-type: none"> 1) Policies to Facilitate the Transfer and Uptake of Efficient and Clean Energy Technologies; and 2) Energy Sector Good Policy Practices. <p><u>Phase 2:</u> This project aims to promote good practice in environmental policy implementation. It will provide business-sector developers with a predictable and consistent playing field that allows them flexibility in meeting environmental requirements in the most cost effective manner and that reduces investment risk. It will also provide an opportunity for APEC member economies to share their experiences with policy practices that promote investment and environmental protection, and learn practical ways of implementing them.</p>
2. Comparative Study & Workshop on Transparent and Streamlined Procurement Processes for Power Infrastructure in APEC Member Economies	<p>A comparative study & workshop on transparent and streamlined procurement process for power infrastructure in APEC member economies.</p> <p>The output of this project was the <i>APEC Manual of Best Practice Principles for Independent Power Producers</i>, which was endorsed by Energy Ministers at Edmonton in 1997.</p>
3. Energy Security Initiative	<p>This project responds to the APEC Leaders' directive to the EWG to implement an energy security initiative. The project seeks to provide member economies with options to consider in addressing the economic impacts of oil market volatility and more fundamental energy security concerns.</p>
4. Energy for Sustainable Communities Program	<p>The objective of this program is to facilitate information exchange on sustainable development and improve access to technologies that promote a sustainable energy sector in APEC economies.</p>

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<p>5. Addressing the Barriers to the Inter-connection of Power Grids in APEC Member Economies</p>	<p>The project will conduct an evaluation of the nature of the barriers to the development of intra-regional energy infrastructure investment in APEC economies. This evaluation will include:</p> <ul style="list-style-type: none"> • an assessment of strategies that address barriers to energy infrastructure investment and the attainment of transit rights; • an examination of regional and international models of investment protection agreements and the regulatory implications of these; and • recommendations to overcome impediments to the interconnection of power grids in the APEC region.
<p>6. Measuring the Impacts of Regulatory Reform in the APEC Energy Sector</p>	<p>The project aims to promote the acceleration of investment in power supply, infrastructure and trading networks in the APEC region in accordance with the recommendations of APEC Energy Ministers to improve investor confidence and mobilise capital for infrastructure development.</p>
<p>7. Planning Workshop for an APEC Sustainable Cities Program</p>	<p>The planning workshop was held in August 1996 in California, USA. The workshop examined actual experiences in the use of energy efficiency and renewable energy technologies and programs for the development of sustainable cities. It also raised issues that currently impede effective sustainable development of cities in the Asia Pacific Region and developed a “plan of action” for promoting private sector participation in an APEC Sustainable Cities Program.</p>
<p>8. Energy Standards Information Development and Coordination</p>	<p>This project continues work on energy standards projects on reducing barriers to trade created by there being different energy performance test methods and energy performance requirements. A primary objective of the project is to establish the position of an 'APEC Energy Efficiency Test Procedures Coordinator'.</p>
<p>9. Consultancy and Workshop on Promoting Energy Security through Improved Access to International Fuel Markets</p>	<p>The Consultancy & Workshop resulted in the publication of the final report titled Promoting Energy Security Through Improved International Fuels Market Operations. Energy Ministers noted the recommendations of this report in Okinawa in October 1998.</p>
<p>10. Environmentally Sound Infrastructure in APEC Electricity Sectors</p>	<p>The project is aimed at advancing the dual objectives of expanded investment and environmental soundness in new electricity infrastructure in the APEC region.</p>

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PROJECT	DESCRIPTION
11. Rural Electrification in the APEC Region	This project was undertaken, via a series of workshops, to facilitate rural electrification in APEC member economies.
12. Planning Workshop on Energy Efficient Gas Technologies	The planning workshop was held in August 1996 in Hawaii to identify suitable demonstration possibilities for efficient gas technologies amongst member economies and assessed the usefulness of a gas inter-utility demand side management liaison group.
13. Regional Harmonisation of Appliance Energy Efficiency Standards	This project provided an overview of the trade flows of major energy-using products between APEC member economies. The final report includes trade flows of appliances and equipment.
14. Seminar/Workshop on “Promoting Trade and Investments in the Energy Sector among APEC Economies through EVSL”	The seminar/workshop will present and discuss recent applications of energy sector liberalization in various APEC economies with the view of providing such information and possible findings/recommendations to those APEC economies considering similar action. The experience and lessons from energy sector liberalization may help other sectors in the member economies in the drive towards early voluntary sectoral liberalization.
15. Compendium of Energy Efficiency and Conservation Programs and Projects In APEC Member Countries	The outcome of the project was the publication of a compendium of energy efficiency and conservation programs and projects in APEC member economies.
16. Compendium of Policies and Program Activities in Energy Efficiency and Conservation (Industrial and Building Sector)	The outcome of the project was the publication of a compendium that focussed on the industrial and building sectors (including both commercial and residential) and examined the effectiveness of these policies.
17. Compendium of Energy Efficiency Measures and Practices (Food and Beverage Industries)	The outcome of the project was the publication of a compendium of selected energy efficiency practices and conservation measures (food and beverage industries) that apply in general as well as to specific end-use sectors.

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18. Workshop on Implementation of Successful Demand Side Management Programs in the Asia Pacific Region	The workshop was held on 12-14 May 1993 in Seoul, Korea. It assisted member economies in achieving efficiency and conservation benefits on the demand side, particularly in relation to electricity demand.
19. A Demand Side Management Manual for the APEC Economies	The purpose of the manual is to provide an overview of demand side management principles and practices.
20. Energy Audit Workshop	The Energy audit workshop held in Chinese Taipei in November 1994 provided a plan for future cooperation in the area of energy audits and monitoring of energy use.
21. A Directory of Demand Side Management Program Service Providers and Vendors	The directory is intended to facilitate the development of utility demand-side management programs by providing Governments, utilities and other organisations with a Directory of organisations and companies providing technical assistance and/or consulting services in support of demand side management programs.
22. Survey of Commercialisation Strategies for Energy Efficiency and Conservation Technologies	The survey identified successful and unsuccessful commercialisation strategies for energy efficiency and conservation technologies in APEC economies, to assess the relative cost effectiveness of successful commercialisation strategies.
23. Workshop on Heat Recovery and Industrial Cogeneration Technologies and Systems	The workshop was held on 13-15 November 1995 in Singapore and assisted in developing an 'APEC Heat Recovery and Co-generation Plan of Action'. This will assist in facilitating the effective application of relevant technologies, systems and the establishment of the necessary energy infrastructure in the APEC region.
24. Survey of Regulation Strategies for Energy Efficiency and Conservation Technologies in Transportation Sector	The survey identified the successful and unsuccessful regulatory strategies for energy efficiency and conservation technologies within the APEC region's transport sector, and assessed the relative cost effectiveness of the successful regulatory strategies.
25. Urban Transport Forum	Held in April 1996 in Auckland.

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26. Analysis of Energy Use Benchmark Data in Member Economies	This project analysed data on commercial buildings received and being analysed; data on industry benchmarks to be assembled.
27. Energy Benchmark System Development and Implementation	The objective of this project was to institute a regularly scheduled uniform system for energy benchmark data collection and dissemination for use by APEC member economies to improve the energy efficiency of commercial buildings/industries.
28. Institutionalisation of a Benchmarking System for Data on the Energy Use of Commercial and Industrial Buildings	The objective of this project is to extend pilot and development phases of APEC benchmarking activities and provide a permanent "home" for collecting energy benchmarking data on commercial and industrial buildings in APEC member economies.
29. Workshop on Emerging Energy-Efficient Industrial Technologies	The objectives of this workshop were to (a) provide a forum for manufacturers and designers and potential users to exchange information on emerging energy-efficient industrial technologies and (b) identify demonstration possibilities for these technologies in APEC member economies.
30. APEC Energy Efficiency Database Construction	The primary objective of the project is to collect information on what technologies are deployed in each economy and to what extent. It focuses on selected economies where technology information is limited.
31. Workshop on Energy Efficient Retrofits of Commercial Buildings	The workshop provided a forum for government policy makers, energy service companies and firms involved in manufacturing energy-efficient components for buildings to share information and experiences related to retrofitting buildings.
32. Symposium on Domestic Refrigeration Appliances	The symposium identified existing differences in requirements for measuring the energy performance of domestic refrigerating appliances, to examine the reasons for those differences and, where possible, to propose ways of overcoming those differences.

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PROJECT	DESCRIPTION
33. Workshop on Financing and Implementing Energy Efficiency Programs	The workshop investigated alternative mechanisms for financing and implementing energy-efficiency programs in light of drastic existing and proposed changes in the industrial structure of energy industries throughout the APEC region.
34. Green Buildings - Investing in our Future - A Showcase Workshop	The purpose of this project is to increase private sector investment in environmentally sound commercial building technologies.
35. Study on Algorithm Development for Energy Performance Testing	The project will investigate and report on the scope for development of algorithms to be used for converting energy performance test results from one energy performance test method to another, thereby avoiding expensive repeat testing.
36. Supporting High Quality Energy Efficiency Indicator Development	The purpose of this project is to develop capacity in APEC economies to overcome the critical missing link in the development of energy efficiency indicators, which is the availability of quality energy end-use data, analysis, methodologies and communication of energy efficiency indicators for monitoring and policy development purposes. The project will also help identify the role of the key factors that explain energy use and energy intensity variations over time and across APEC member economies.
37. Workshop on Distribution Generation, Distribution and Efficiency	The purpose of this workshop is to explore distributed-generation technologies and their potential impact on power systems in APEC economies.
38. Development of Algorithm Criteria	The project aims to short circuit the algorithm development work examined by the Steering Group on Energy Standards by developing criteria for the acceptability of algorithms to be used for converting energy performance test results from one energy performance test method to another, thereby avoiding expensive repeat testing.
39. Symposium on the Development and Coordination of Energy Efficiency Programs and Standards during Energy Market Restructuring	The project is aimed at assisting private sector energy efficiency service providers, and those providing energy efficiency services to private sector clients or within restructured energy markets, to increase the coverage and effectiveness of their services.

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40. Energy Efficiency Performance Testing and Conformity Assessment in APEC Economies: Survey and Recommendations	The report looks at major issues such as test procedures in use for major product groups, and examines accreditation and certification practices within APEC for energy testing.
41. Overview of Trade Flows of Energy-using Products between APEC Member Economies	Examines trade flows within APEC for major electrical appliances and equipment including refrigerators, air conditions, electric motors and lighting equipment. Data is provided on value of trade and the numbers of units traded.
42. Review of Energy Efficiency Test Standards & Regulations in APEC Member Economies	Examines program requirements and test procedures for all electrical products that are regulated for energy efficiency within APEC economies.
43. Workshop on Setting Up and Running an Energy Performance Testing Laboratory	This workshop demonstrated the practicalities and problems of setting up and running an energy performance testing laboratory. It defined and address technical issues relating to harmonisation, including complying with requirements for mutual recognition and the dissemination of findings.
44. Colloquium on the Technical Issues of Minimum Energy Performance Standards	The colloquium was held in Seoul. Sessions on room air-conditioners and on ballasts for fluorescent lamps produced an agreed way forward to closer alignment of energy performance measurement methods.
45. Symposium on Domestic Refrigeration Appliances	The symposium resulted in an enhanced understanding of the complex technical issues surrounding the process of making refrigerators and freezers more energy efficient. Symposium participants agreed on a way towards solving these issues.
46. Study on Algorithm Development for Energy Performance Testing	This project identifies products for which the development of testing algorithms would be appropriate/unnecessary. The scope of the study is limited to electrical appliances and equipment and does not cover safety or non-energy related products or requirements.

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
<p>1. APEC 21st Century Renewable Energy Initiative: Training and Accreditation Needs and Capabilities Study</p>	<p>The project will provide an assessment of the training needs and capabilities of APEC member economies for the planning, design, operation and maintenance of renewable energy systems.</p>
<p>2. Workshop on Renewable Energy as it Relates to Sustainable Development</p>	<p>The workshop was held in September 1995 in Hawaii to consider energy as it relates to sustainable development.</p>
<p>3. A Costed Strategy and Action Plan to Convert all Municipal Services in the City of Melbourne to Renewable Energy Supplies - Phase 1</p>	<p>The City of Melbourne's original proposal was to develop a costed strategy and action plan to convert all municipal services to renewable energy supplies. During the course of investigations, consultant advice led to a decision by the City of Melbourne to expand and refine the scope of the overall project. The project scope is now to complete a fully costed strategy for achieving zero net greenhouse gas emissions in the municipality as a whole by 2020.</p>
<p>4. A Costed Strategy for Achieving Net Zero Greenhouse Gas Emissions in the City of Melbourne by 2020</p>	<p>This is the second phase of a project with the primary objective to prepare the Strategy developed as a result of that project. The project will deliver a best practice model as well as substantial methodological development in energy planning for major cities in other APEC economies. It will also serve as a vehicle to facilitate significant greenhouse gas reduction across APEC economies.</p>
<p>5. Greenstar Micro-Enterprise Project Combining Solar Power and Internet Connectivity for Sustainable Development</p>	<p>The purpose of this project is to bring solar power and micro-enterprise to remote communities in PR China based on the field-proven Greenstar concept, which delivers a solar-powered centre with a link to the internet.</p>
<p>6. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Monitoring and Assessing the Design, Operation and Performance of an Ocean Thermal Energy Conversion Project</p>	<p>The purpose of this project is to monitor and assess the design, operation and performance of an ocean thermal energy conversion (OTEC) project proposed for implementation in an APEC member economy. The land-based OTEC design will be capable of producing both electricity and desalinated water on a large scale, using only solar energy from the tropical ocean. By-products, such as fish, vegetables and industrial gases offer additional potential opportunities.</p>

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
7. Solar Energy Training Program	A prototype information visits program on photovoltaic technology held in Australia on 27 July - 5 August 1993. The project was designed to improve the understanding of photovoltaic applications and the environmental benefits of the technology, and reduce impediments to applications of the technology.
8. Survey of Impediments to the Use of New and Renewable Technologies	The goal of the project was to assess the barriers to the increased use of renewables, with a view to developing strategies for overcoming those barriers.
9. Asia Pacific Renewable Energy and Efficiency Business Development Conference	The conference was held in Denver, USA in June 1996. The project was designed to serve as a catalyst for sustainable renewable energy and energy efficiency investments for grid connected and village/household power .
10. APEC Joint Project for the Recovery and Utilisation of Methane Emitted from Municipal Landfills	The major output of the project is an assessment of the quality and quantity of the land fill gas resource at selected sites in Thailand, Indonesia and the Philippines. Capturing and harnessing landfill gas represents one of the promising options for APEC economies to concurrently minimise energy costs, mitigate environmental impact at the local and global levels, improve the energy security and reduce safety and general health.
11. APEC Renewable Energy Infrastructure Assessment	The aim of this project is to document the status of renewable energy infrastructure in APEC member economies. Lack of infrastructure is one of the major impediments to the widespread implementation of renewable energy technologies.
12. 1992-93 APEC Energy R&D Technology Transfer Seminar	This seminar was held in Bali in 17-19 November 1992 to promote the introduction and diffusion of new energy into the APEC region.
13. Energy R&D Data Bank	The objectives of the Data Bank are twofold: (a) to collate energy R&D expenditures within APEC economies by area of technology, and (b) to establish the first directory of major R&D establishments.

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
14. Publication of a Technology Co-operation Guide	The purpose of the guide is to improve information flows on the availability of renewable technologies within the region and the needs of economies for these technologies.
15. Establishment of an Information Exchange Network on Natural Gas Vehicles	The objective of the report is to provide APEC member economies with up-to-date information on natural gas vehicles as a first step towards introducing them to existing information exchange networks on this topic.
16. Compendium of Renewable Energy Programs and Projects in APEC Member Economies	The compendium was published in November 1995 and is designed to facilitate an improved understanding of developments and opportunities available in the field of renewable energy.
17. 1993-94 APEC Energy R&D and Technology Transfer Seminar	1993-1994 APEC Energy R&D Technology Transfer Seminar held in Chinese Taipei in 1-3 February 1994.
18. 1994-95 APEC Energy R&D and Technology Transfer Seminar	The seminar's theme was "Transfer of Technologies and Fostering of Human Resources Related to New Energy and Energy Conservation", held in Seoul, Republic of Korea in 14-17 February 1995.
19. Workshop on Renewable Energy Resource Assessment Techniques	The seminar was held in Beijing, PR China in Feb 1996 and focused on renewable energy research and development and renewable energy resource assessment techniques. The seminar provided the professionals responsible for planning and implementing of renewable energy programs with an overview of the tools and techniques available for assessing renewable energy resources.
20. 1995-1996 APEC Energy R&D and Technology Transfer Seminar	The seminar was held on 6-9 February 1996 in Beijing, PR China.
21. Renewable Energy Tour 1996	A renewable energy tour of major renewable energy demonstration sites in the US was held in June 1996.

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
<p>22. Assessment and Development of Technology Cooperation Need, Skills and Capabilities for Sustaining Area-based New and Renewable Energy Project</p>	<p>The output of this project is a detailed study on technology co-operation needs among APEC member economies. Existing expertise and technical capabilities in the field of new and renewable energy (as well as the level of needs for new and renewable technology sharing/transfer) was established.</p>
<p>23. High Value End-use Application Analysis</p>	<p>The output of this project is a report that offers a qualitative assessment of renewable energy applications which have the highest opportunity value and offer the greatest economic and social benefit to the member economies of China, Indonesia, Philippines and USA.</p>
<p>24. 1996-7 APEC Energy R&D and Technology Transfer Seminar</p>	<p>The seminar held in March 1997 in Santiago, Chile promoted the introduction and popularisation of renewable energy and energy conservation technologies and efficient utilisation technologies for natural gas.</p>
<p>25. Analysis of Renewable Energy Retrofit Options to Existing Diesel Mini-Grids</p>	<p>The output of this project is a report presenting the technical, economic, social and environmental issues associated with retrofitting diesel mini-grids with renewable energy technologies and develops a systematic approach for evaluating the various retrofit options.</p>
<p>26. 1998-99 APEC Energy R&D and Technology Transfer Seminar</p>	<p>1998/99 APEC Energy R&D and Technology Transfer Seminar held in Okinawa, Japan in Oct 1998. The seminar consisted of two parts: (a) a half day workshop on financing new and renewable energy projects in rural areas and (b) a one-day symposium on the utilisation of new and renewable energy technologies in remote areas.</p>
<p>27. Survey and Asses Analytic Methodologies to Incorporate Renewable Energy in National Energy and Economic Planning</p>	<p>The objective of this project is to identify, assess and improve analytic methodologies to incorporate renewable energy options in member-wide energy and economic planning.</p>

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
28. Assessment of Integrated Rural and Village Power Programs for Potential Collaborative Projects in the APEC Region	The project assessed the potential acceleration of renewable technology deployment in the APEC region from integrating rural energy and economic development programs with village power programs.
29. APEC Guidebook for Financing New & Renewable Energy	The first section of the Guidebook, written for project developers indicates mechanisms for assuaging investor concerns, explains possible financing institutions interested in capitalising new and renewable energy projects. The second section, written for policy makers, suggests policies for creating a better business environment for promoting the use of new and renewable energy.
30. Review of the Quality & Completeness of Resource Assessment Data & Resource Studies for the APEC Region	The output of project was the publication of a report summarising the literature on published information about solar, wind, biomass, geothermal, and hydro resources in each economy. The report includes an extensive bibliography and reference system.
31. 1999-2000 APEC Energy R&D and Technology Transfer Seminar	The seminar was held in Bangkok, Thailand on 20-22 October 1999. Its purpose was to learn analytically about the significant barriers restricting the growth of new and renewable energy.
32. Economy-level Renewable Energy Roadmap	This project developed a renewable energy road map that documents important information and necessary steps for identifying and implementing successful renewable energy projects.
33. 2000-2001 APEC Energy R&D and Technology Transfer Seminar.	The seminar was held in Morelos, Mexico on 30-31 October 2000 with the purpose of facilitating the increased utilization of new and renewable energy technologies among APEC economies through the sharing of information regarding new and renewable energy technology introduction enhancement.
34. Including New and Renewable Energy Technologies in Economy Level Energy Models	The purpose of this project is to build upon the work of previous APEC studies and previous multi-economy studies on economy level energy modeling by working with at least three APEC member economies to refine their economy level energy models to better characterize the potential of new and renewable energy technologies.

NEW & RENEWABLE ENERGY TECHNOLOGIES

PROJECT	DESCRIPTION
35. Adoption of Renewable Energy Standards	The purpose of this project is to ensure that all APEC economies have access to current standards for equipment performance, installation, commissioning, operation, and maintenance.
36. 2001-2002 APEC Energy R&D and Technology Transfer Seminar	The seminar aims to facilitate the increased utilization of new and renewable energy technologies among APEC members.
37. 2002 APEC Renewable Energy Fair	The purpose of the renewable energy fair is to promote public awareness on renewable energy; foster the distribution of demonstrated renewable energy technologies; offer an opportunity for each economy to adopt the appropriate technologies for their own environment; and reduce the environmental impact of energy supply systems.

CONVENTIONAL FUELS & TECHNOLOGIES

PROJECT	DESCRIPTION
<p>1. Environmental Cooperation Workshop for Sustainable Mine Development held in Japan in October 1997</p>	<p>The objective of the workshop was to develop and introduce environment policies, environmental standards, and mine pollution prevention techniques in individual economies and to discuss the best methods for mutual cooperation between economies in this field</p>
<p>2. A Study of CO₂ Reduction Options in the APEC Region (Phase 1)</p>	<p>The project surveyed the current status of the approaches taken by member economies in dealing with CO₂ reduction as it applies to burning fossil fuels. The results of the survey will be the basis of future studies that will examine individual economies and provide suggested solutions to reducing CO₂ emissions tailored to specific APEC economies.</p>
<p>3. CO₂ Reduction Options for APEC Economies (Phase II)</p>	<p>This project has been designed to identify CO₂ reduction options among APEC economies and its objectives are to:</p> <ul style="list-style-type: none"> • evaluate long term CO₂ reduction research projects underway in APEC; • examine advanced technology and fuel scenarios for reducing CO₂; • examine policy options for reducing CO₂ emissions; and • assess the status and prospects for CO₂ capture and sequestration.
<p>4. Strategic Petroleum Reserve Workshop</p>	<p>The workshop provided an opportunity to exchange ideas on the strategic storage of petroleum with emphasis on how this mechanism could help stabilize oil prices in the APEC region.</p>
<p>5. Clean Transportation Fuels Supply Security</p>	<p>The purpose of this project are two-fold:</p> <ul style="list-style-type: none"> • the first is short term and is to undertake a study of the current and planned specifications for diesel, jet fuel, gasoline, and fuel oil in the APEC region, the supply capabilities of refineries in the region, matching of supply and demand for differently specified products, how markets will develop in the region, how security of petroleum product supply will be affected; and • secondly, to review current and planned APEC member economies' policies on non-petroleum based (including mainly coal-based) fuels and gas-to-liquid fuels.

CONVENTIONAL FUELS & TECHNOLOGIES

PROJECT	DESCRIPTION
6. Report on the Role of Coal and Clean Coal Technologies in the Asia Pacific Region	The aim of the report was to develop a better understanding of regional issues concerning environmental aspects of coal and coal technologies.
7. Seminar on Clean Coal Technology (CCT)	The first seminar held in Chiang Mai, Thailand in September 1993 provided a forum to facilitate in depth discussion of practical issues associated with the introduction of CCTs including their efficiencies, economics, environmental performance, financing and policy.
8. Technical Seminar on Utilisation of Clean Coal Technologies (CCT)	Second seminar held in Jakarta, Indonesia in October 1994. The seminar provided the opportunity to share knowledge of actual commercial scale operations, addressing relevant policy issues, evaluating CCT's relative to other energy options, and the promotion of means to facilitate deployment of CCT's for existing and planned coal-fired facilities in the Asia-Pacific region.
9. Technical Training Course on Clean Coal Technologies (CCT)	First training course held in Sydney, Australia from 28 November to 7 December 1994. The course strengthened participants understanding of both the technical aspects of CCT's and the techniques for evaluating technology options.
10. Technical Seminar on Utilisation of Clean Coal Technologies (CCT)	Third seminar held in Taejon, Republic of Korea in August 1995 provided an opportunity for experts to examine CCT in APEC member economies from the perspective of development, operating efficiencies, environmental performance and project financing.
11. Technical Training Course on Clean Coal Technologies (CCT)	Second training course held in Kitakyushu, Japan from 19-30 September 1995 provided training on the technical, environmental and economic aspects of CCT.
12. APEC Clean Fossil Fuels Technology (CFFT) Technical Seminar	Fourth seminar was held Beijing on 7-11 October 1996. The theme of the seminar was "Clean coal technologies: energy and environmental aspects of clean coal technologies".

CONVENTIONAL FUELS & TECHNOLOGIES

PROJECT	DESCRIPTION
<p>13. Study on Atmospheric Emissions Regulations in APEC Economies and their Compliance at Coal Fired Plants</p>	<p>The output of this project was a major report, which for the first time correlated emission regulations within each economy and related these emissions to control systems that may or may have not exist in each of the 15 participating economies.</p>
<p>14. APEC Clean Fossil Fuels Technology (CFFT) Technical Seminar</p>	<p>Fifth seminar was held in Reno Nevada USA; on 28-30 October 1997. Subjects covered by the seminar included (1) current conventional CFFTs; (2) current commercial state-of-the-art technologies; (3) specific CFFT applications suitable for the Asia Pacific region; (4) performance characteristics and physical performance efficiency, environmental performance, and economic costs; (5) alternate energy options; and (6) policy issues to CFFT deployment.</p>
<p>15. APEC Joint Multilateral Demonstration Project for Recovery and Utilisation of Coal Mine Gas - Phase 1</p>	<p>The outputs of the project comprised the publication of a site survey and selection report, an options analysis, a report evaluating possible options for use of coal mine gas in the region of the mine and an environmental impact assessment report.</p>
<p>16. APEC Joint Multilateral Demonstration Project for Recovery and Utilisation of Coal Mine Gas - Phase 2</p>	<p>Specific activities and products of the project included (a) a site survey in Tiefa coal Mining Administration and Tielin City of Liaoning Province, PR China in January 1998, (b) a Coal Mine Gas Experts Workshop in Tokyo in May 1998 and (c) two reports: <i>Site Survey Report of Phase 2 of the APEC Coal Mine Gas Project at Tiefa Coal Mining Administration in the People's Republic of China</i>, and <i>Study Report of environmental Impact Assessment</i>.</p>
<p>17. Coal Mine Gas (CMG) – Phase III</p>	<p>Phase 3 of the coal mine gas project (self-funded) involves the installation of a demonstration system for the recovery and utilisation of CMG. It includes the improvement of the CMG recovery system in seven mines at Tiefa, PR China, a gas storage facility and pipeline network to allow CMG use in Tiefa.</p>
<p>18. APEC Coal Trade and Investment Liberalisation and Facilitation Workshop Series</p>	<p>The inaugural workshop in 1997 and the 2nd workshop in 1998 focussed on the liberalisation and facilitation of trade and investment in the coal and coal based energy sectors of developing member economies and to support the region's rapidly expanding demand for clean and efficient energy.</p>

CONVENTIONAL FUELS & TECHNOLOGIES

PROJECT	DESCRIPTION
19. APEC Clean Fossil Fuels Technology (CFFT) Technical Seminar	Sixth seminar held in Okinawa, Japan on 6-9 October 1998 focussed on promoting practical clean fossil technologies (for oil and gas as well as coal) to the developing economies in the APEC region.
20. Coal Flow Seminar Series	Six coal flow seminars were held in order to facilitate a better understanding of the supply and demand for coal in the APEC region:
21. Coal & Natural Gas Competition in APEC Economies	The project examined and summarised the status and potential role of coal and natural gas in each APEC economy. The survey paid particular attention to policy options that can enhance the participation of the private sector and open market forces in the selection and use of the competing energy reserves in meeting long-term electricity needs at the lowest long-term costs and with the lowest associated environmental impacts.
22. 7th CFE Technical Seminar	The seminar was hosted by Chinese Taipei and held in Taipei on 6-9 March 2000. The seminar included a tour of one of Asia's largest coal-fired power plants, and a full review of the advanced environmental technologies in use and the economics and efficiency of the plant.
23. The Role of Petroleum Based and Alternative Transport (Coal & Natural Gas) Fuels in Reducing Emissions in the APEC Region	The study examined the more efficient and environmentally beneficial use of petroleum fuels including fuel quality improvements through reformulated and oxygenated fuels. The use of alternative transport fuels such as compressed natural gas, liquid petroleum gas, alcohol fuels such as ethanol and methanol as well as coal and natural gas derived liquid fuels were also examined.
24. APEC Coal Trade and Investment Liberalisation and Facilitation (TILF) Workshop Series	The 3rd APEC Coal TILF Workshop was conducted in Hanoi, Vietnam on 7-8 November 2000. The workshop addressed issues in Viet Nam's existing coal mining industry - developing the surface mining coal sector; environmental mine management; facilitating developing in Vietnam's existing coal industry; facilitating profitable energy development; facilitating development of Viet Nam's coal resources; and electricity for economic development.

CONVENTIONAL FUELS & TECHNOLOGIES

PROJECT	DESCRIPTION
25. The Clean and Efficient Use of Fossil Energy for Power Generation in Thailand	The workshop examined the technologies currently available and provided information on how to use fossil fuels for power generation that are environmentally safe and efficient.
26. APEC Coal Trade and Investment Liberalisation and Facilitation Workshop	The venue and timing of this workshop is yet to be determined.
27. Coal Flow Seminar and Clean Fossil Energy Technical Seminar (Joint Workshop) in Malaysia	The workshop is intended to provide a forum where both government and industry participants from all APEC member economies can address the latest issues and experiences in fossil energy-related issues and share their individual experiences for the mutual benefit of all.

TRAINING, DATA DEVELOPMENT & ANALYSIS FOR CAPACITY BUILDING

PROJECT	DESCRIPTION
<p>1. Strengthening Operational Aspects of APEC Energy Micro-Economic Reform</p>	<p><u>Phase 1:</u> The purpose of this project is to promote and implement a regional strategy for institutional strengthening and capacity building amongst APEC member economies in microeconomic reform of energy utilities. Phase 1 is a base-line study to identify the current status in relation to the priority policy principles for Independent Power Producers identified in the APEC-PECC Workshop on Improving Investor Confidence and Mobilising Capital.</p> <p>Report titled 'Implementation of the APEC Best Practice Principles for Independent Power Producers in APEC Economies'</p> <p><u>Phase 2:</u> The outcome of this project was a manual of strategic principles, which can be used by individual economies to guide their process of designing, implementing and managing the reform of their electricity supply industry.</p> <p>Report titled 'Manual of Strategic Principles'.</p> <p><u>Phase 3:</u> Phase 2 of the project produced a Manual of Strategic Principles which has been used to underpin the work of Phase 3. Phase 3 will utilise the Strategic manual to assist member economies implement and manage a micro-economic reform program. It will be delivered through:</p> <ul style="list-style-type: none"> • A series of workshops in individual member economies involving the regulatory institutions and government departments responsible for energy sector reform; and • Preparation of a final report summarising principal findings and making recommendations for follow-up work.

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<p>2. Earthquake Response Cooperation Program for Energy Supply Systems</p>	<p><u>Phase 1:</u> The aim of the project was to establish a cooperative contingency mechanism among the APEC member economies for energy supply systems, by providing the opportunity for APEC member economies to share their experiences in both preventing the collapse of energy supply systems during earthquakes and rebuilding these systems after earthquakes.</p> <p>Results of the project's research can be found in the publication "Earthquake Disaster Management of Energy Supply System". In addition the project established an information website on earthquake response for energy systems in the Asia-Pacific region.</p> <p><u>Phase 2:</u> Whilst Phase 1 of this program focused on experience sharing among participants, Phase 2 will put emphasis on more technical and regulatory aspects as the first step to enhance participants' capabilities in earthquake disaster management on energy supply systems.</p>
<p>3. Harmonising Economic and Environmental Objectives of Energy Policy - Phase 1</p>	<p>The project will undertake a comprehensive examination of key relevant issues relating to the harmonisation of economic and environmental objectives. The information obtained would provide member economies with relevant background, implications, and options details which would assist them in their decision making capacity.</p>
<p>4. Measuring the Impacts of New Economy Technologies on the Energy Sector in APEC Economies</p>	<p>The project will provide a quantitative analysis of the benefits of the uptake of 'new economy' technologies to the energy sector in APEC member economies.</p>
<p>5. Asia Pacific Energy Research Centre</p>	<p>The major objective of the Centre will be the compilation of an APEC regional energy outlook, the undertaking of policy and commercially relevant energy research, the establishment of a know-how transfer program and the establishment of an Internet-based energy network.</p>

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<p>6. Comprehensive Linked Database on Mining Related Opportunities and Regional Legal Frame Work-Phase 1</p>	<p>Phase 1 of the development of a database on opportunities in the mining sector, considering factors of trade, mineral resource deposits, taxation, legal frameworks in APEC member economies as well as links to other relevant databases has been operational on the Internet since October 1997. The database is titled APEC Network of Minerals and Energy Databases. Its aim is to facilitate strategic planning, definition of new trends and investment in resource development and infrastructure within and between member economies.</p>
<p>7. Comprehensive Linked Database on Mining Related Opportunities and Regional Legal Frame Work – Phase 2</p>	<p>Catalogues and links individual member economies’ databases and meta-databases to provide Internet access to an up-to-date bank of data and information on the mining and energy resource sectors in member economies.</p>
<p>8. Comprehensive Linked Database on Mining Related Opportunities and Regional Legal Frame Work – Extension of Phase 2</p>	<p>The purpose of this project is to continue database development. A further objective is to attract worldwide interest in minerals and energy exploration and development in APEC member economies by making the database accessible around the globe via the Internet.</p>
<p>9. Comprehensive Linked Database on Mining and Energy Related Opportunities and Regional Legal Framework within APEC Member Economies - Phase 3</p>	<p>This continuation phase keeps its objective to encourage investment. The project will be developed as a phase emphasizing a marketing effort to secure the independent funding of this initiative in future years.</p>
<p>10. Comprehensive Linked Database on Mining and Energy Related Opportunities and Regional Legal Framework within APEC Member Economies - Ext of Phase 3</p>	<p>The APEC Network of Minerals and Energy Data is a comprehensive internet site that is hyperlinked to mining and energy related databases in APEC member economies. It provides member economies with an up to date assessment of their mining and energy resource sectors to facilitate their strategic planning, definition of new trends, investment development, production, trade, transportation and other aspects. A key objective is to attract worldwide interest in minerals and energy exploration and development in APEC member economies.</p>

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PROJECT	DESCRIPTION
11. Establishment and Operation of the APEC Energy Database.	The objective of the project is the establishment of a consistent framework for energy reporting and forecasting for the APEC region. The objective of the ongoing work of the project is to collect energy statistics using a consistent framework for energy data reporting and processing to produce the APEC Energy Statistics.
12. Publication of Energy Data	Publication of APEC Energy Statistics for 1991 to 1997
13. APEC Historical Energy Statistics 1980 - 1992	Publication released September 1995.
14. Operation of APEC Energy Database	<p>“APEC Energy Statistics 1998”. The report consists of the following three chapters:</p> <ul style="list-style-type: none"> • Explanation of the APEC Energy Statistics • Overview of the APEC Energy Situation • Member Tables <p>“APEC Energy Handbook 1998”. The Report is a pocket-sized summary of key energy data and a supplement to APEC Energy Statistics 1998, which has been released in October 2000.</p>
15. Operation of APEC Energy Database and Analysis	<p>The objective of the work on this project is to collect basic energy statistics. The data is processed to produce APEC Energy Statistics, including energy demand and supply projections within the APEC region, and operate a computerized network system for data and information to assist the identification of significant trends in energy demand and supply to be consistent with projects and priorities under the theme of Regional Energy Cooperation.</p> <p>Publications available:</p> <ul style="list-style-type: none"> • APEC Energy Overview 2001 • APEC Energy Statistics 1999 • APEC Energy Handbook 1999
16. Energy Projections Workshop	

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PROJECT	DESCRIPTION
<p>17. Workshop to Develop & Design a Comprehensive Database Covering Mining & Energy Resource Related Opportunities</p>	<p>A self funded workshop held on 9-12 September 1996 in Canberra to develop and design a comprehensive database covering mining and energy resource related opportunities.</p>
<p>18. Construction of a Database on the Oil and Gas Fields in the APEC Region</p>	<p>This database project overlaps to a limited extent with the Comprehensive linked database on mining related opportunities and regional legal framework, but emphasises geoscience based data and drilling data.</p>
<p>19. Survey of Factors Influencing Demand for Minerals and Metals in the APEC Region</p>	<p>The project is designed to assist industry and governments within the APEC region to develop strategies for investment and production in selected base metals and energy minerals, by examining factors influencing demand, including prospective increases in energy demand arising from likely increases in mineral production.</p>
<p>20. APEC Energy Demand & Supply Outlook (published March 1998)</p>	<p>Examines energy trends in the APEC region over the 15 year period from 1995 to 2010. A supplement was published in June 1998.</p>
<p>21. APEC Regional Energy Outlook (published in September 1998)</p>	<p>The Outlook is presented in the form of standard Energy Balance Tables as used for the APEC Energy Database.</p>
<p>22. APERC Pacific Rim Workshop</p>	<p>The overall focus and aim of the workshop (held on 9-10 November 1999 in Kanagawa, Japan) was to encourage a debate amongst regional experts on the topic of energy sector reform. Another important objective was to gain valuable insights into the experience of APEC member economies with respect to recent energy sector developments, and in particular with respect to electricity and gas sector deregulation.</p>

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<p>23. Reports of APERC research themes available on their website.</p>	<p>Research Themes for 1999/2000:</p> <ul style="list-style-type: none"> - APEC Energy Pricing Practices: Implications for Energy Efficiency, the Environment and Supply Infrastructure; - Energy Efficiency Indicators for Industry: in the APEC Region; - Natural Gas Infrastructure Development; Southeast Asia - Costs and Benefits, Northeast Asia - Costs and Benefits. - Power Interconnection in the APEC Region: Current Status and Future Potentials; - Electricity Sector Deregulation in the APEC Region; - Emergency Oil Stocks and Energy Security in the APEC Region. <p>Research Themes for 2000/2001:</p> <ul style="list-style-type: none"> - Energy Efficiency Indicators; - Sustainable Electricity Supply Options for the APEC Region; - Making the Clean Development Mechanism Work; - APERC Pricing Practices: Natural Gas End-Use Prices; - Energy Supply Infrastructure in the APEC Region. <p>Research Themes for 2001/2002:</p> <ul style="list-style-type: none"> - APEC Energy Demand and Supply Outlook 2002 (to 2020); - Oil Security in the APEC Region; - Energy Efficiency Indicators and Potential Energy Savings in APEC Economies; - Emerging Energy Options in the APERC Region; - Natural Gas Storage in the APEC Region - Natural Gas Utilisation in Industrial Sector
<p>24. Development of a Framework to Facilitate Investment in Power Infrastructure in APEC Member Economies</p>	<p>Following the completion of a study entitled “Regional Co-operation for Power Infrastructure”, an Ad Hoc Business Forum on Regional Co-operation for Power Infrastructure and an Electricity Regulators’ Forum were established to assist the Energy Working Group to progress the recommendations of the study.</p>
<p>25. Assessing the Impacts of Liberalising Energy Trade and Investment in APEC Member Economies</p>	<p>The project provided a quantitative analysis of the economic impacts on the energy sector of policies to liberalise trade and investment in the APEC region.</p>

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<p>26. Energy Working Group Website Maintenance and Support in 2000</p>	<p>The outcome of this project was to upgrade and provide ongoing maintenance for the APEC Energy Working Group’s web-site.</p>
<p>27. Training and Communication Program for Energy Regulators on the Investment Benefits of Structural Reform</p>	<p>The objective of this project was to provide APEC energy regulators with a detailed understanding of how financial institutions, insurers and energy project developers assess investment risks in individual economies.</p> <p>The workshop report is titled 'Risk Assessment by the Business/Private Sector and its Implications for the Regulation Process in APEC Member Economies'</p>