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THE CAPACT PROJECT "CAPACITY BUILDING FOR AIR QUALITY MANAGEMENT AND THE APPLICATION OF CLEAN COAL COMBUSTION TECHNOLOGIES IN CENTRAL ASIA"

(Prepared by the secretariat)

I. INTRODUCTION

1. In 2003 a paper was prepared by the secretariat (ENERGY/GE.1/2003/9), which provided an overview of the project proposal submitted by the UNECE for funding under the fourth tranche of the United Nations Development Account (UNDA) for the biennium 2004-2005.

2. This submission was successfully approved for UNDA funding by the UN General Assembly in December 2003. The total funding amount awarded was US$ 680,000 for a three-year project.

3. The project "Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia" is now known by the acronym "CAPACT". This paper provides an update on the CAPACT Project, which commenced in mid-2004. The paper also provides a detailed outline of the six project Work Packages.

4. A web site dedicated to the CAPACT Project has now been established at: "http://www.unece.org/ie/capact". This site is regularly updated with project information and also provides details of forthcoming events and Project Working Group meetings.

II. EXECUTIVE SUMMARY OF CAPACT PROJECT

5. The following is the Executive Summary of the CAPACT Project:

Project Title:	Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia
Duration:	3 years (mid-2004 – mid-2007)
Location:	Central Asian economies: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
Executing Agency:	Economic Commission for Europe (UNECE), Industrial Restructuring, Energy and Enterprise Development Division and Environment and Human Settlements Division.
Cooperating Agencies:	ESCAP and UN Environment Programme (UNEP) Resource Centre for Asia and the Pacific
National Counterpart Offices:	National energy and environment offices
Funding from UN Development Account:	US$ 680,000
Approval by the General Assembly:	A/C.5/58/L.48 paragraph 58

II. PROJECT OBJECTIVE

6. The objective of the project is to strengthen the capacity of air quality management institutions in Central Asia to implement the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP) and its protocols as well as to promote the application of appropriate clean coal combustion technologies for heat and power generation from solid fuels. Implementation of the Convention and its protocols will be achieved through work on developing policies to manage air quality, air pollution monitoring and the reporting of pollutant emissions. To further facilitate this process the project will aim to develop sub-regional cooperation as well as, in cooperation with UNEP, to strengthen links between Asian and European monitoring programmes.

7. The application of appropriate clean coal combustion technologies for heat and power generation from solid fuels will be achieved through sub-regional networking and information dissemination via an Internet/Intranet system and promotion of the application of low-cost, fast payback methods for improving the energy efficiency and environmental performance of solid fuel combustion technologies. In addition, clean coal technology deployment will be facilitated through the provision of assistance with sustainable energy policy and energy pricing reforms as well as through the promotion of investment project finance.

III. BACKGROUND

8. Air pollution, in particular from the energy sector and transport, is a significant problem in Central Asia. In urban areas pollution levels are high, and have a significant impact on the health of the population. A specific problem for Central Asia is the large quantities of salt dust from the dried up areas of the Aral Sea.

9. Kazakhstan with its developed industry and dependence on coal as a major energy source is responsible for 43.7 per cent of air pollutants in Central Asia. Uzbekistan, also using large amounts of coal, accounts for 31.4 per cent. In Turkmenistan stationary pollution sources dominate, while in Kyrgyzstan and Tajikistan transport is the main source of pollution.

10. Solid fuels (hard coal and lignite) are an important indigenous energy resource for Central Asia. As economic growth continues in the region the dependence on solid fuels for power generation will increase – solid fuels offer a relatively low-cost and readily available source of energy and are an essential element of a balanced energy portfolio. However, coal has the highest carbon content of all the fossil fuels (coal, oil and gas) and without appropriate pollution control presents the greatest negative impact on the environment. The deployment and implementation of appropriate cleaner coal technologies offers significant potential to contribute to an improved environment.

11. National policies in the region are favouring increased use of coal and hence increased environmental pollution will follow unless current practices and technologies are improved. In August 2001, Kazakhstan announced plans to increase the country's annual coal production to in excess of 86 million tonnes (Mt) by 2005, of which over 60 per cent would be used domestically. In Uzbekistan, according to the objectives of the National Energy Strategy 2000-2010, coal will significantly increase its share in the energy mix. Coal production declined from 4.7 Mt in 1990 to 2.5 Mt in 2000, but will increase to 12.0 Mt by 2010. Under a government programme passed in 1998 to develop the coal industry, Kyrgyzstan's coal production should be increased to about 1 Mt per annum by 2005. Kyrgyzstan currently imports coal with total local coal consumption amounting to over 1.5 Mt in 2000. Similarly in Tajikistan, a Government Decree of 2002 adopting a framework for the development of the national energy programme for the period 2003 to 2015 includes two options for increasing coal production by 2015 to either 0.8 Mt or 0.65 Mt. Coal demand in Tajikistan in 2001 was 30 Mt.

12. Low rank coals predominate in the region. In Kazakhstan high ash coal supplies over 50 per cent of primary energy demand and is the key energy resource for electricity generation. Around 80 per cent of the total domestic coal production, estimated at 74 million tonnes (Mt) in 2000, is delivered to the 33 coal-fired power plants that generate approximately 70 per cent of the country's electricity. The majority of the electricity generating equipment is old, inefficient, and uses obsolete technologies. There is a pressing need for efficiency improvements and deployment of modern emission abatement controls and practices, however, there is a significant financial cost attached to this. Retrofitting old coal-fired power plants is necessary, but boosting an old plant's efficiency usually requires major capital expenditure. In some cases, modernising a cooling system can increase the thermal efficiency of the plant as a whole. A review of cooling performance could be of value for many older plants in the region. Cost is clearly an impediment to an improved environmental outcome in Central Asia and is unlikely to be overcome without foreign investment and until electricity tariffs fully cover the costs of generation, transmission and distribution.

13. Inadequate pricing and cost recovery is contributing to problems in the power sector in the region. Although Kyrgyzstan has excess electricity generation, up to one-third of the power that the country generates is lost due to the deteriorating power infrastructure; uneconomic energy pricing has also added to the problems. In March 2002, the Government of Kyrgyzstan allowed Kyrgyzenergo Joint-stock Company to raise electricity tariffs in an attempt to recoup generation costs, but at that time more than half of the residents in the capital city, Bishkek, were already not able to pay because of previous rate increases. Adapting energy prices to market levels or at least to cover generating costs is a critical step to attract the foreign investment needed to refurbish existing power plants and/or deploy new cleaner coal technologies. However, increasing energy prices in the region will have significant social implications due to the lower purchasing power of the majority of the population and hence appropriate policy measures are needed to compensate the lower income groups.

14. If the thermal power efficiency of power plants in the region was increased from the current level of 26 per cent -28 per cent to the West European average of 38 per cent around 30 Mt less coal would be required for the same electrical output and hence an improved environmental outcome would result.

15. Air pollution often has its main negative effect where it is generated, predominantly in urban areas. In addition, long-range transport of pollutants also contributes to pollution effects. It is the experience in Europe as well as Asia that developing a better understanding of the problem and setting up agreed programmes to decrease regional air pollution are very important for achieving air quality goals. A secondary, but no less important effect of international cooperation on air pollution is the potential for effective exchange and transfer of capacity and technology.

16. Regional cooperation on air pollution has proven to be successful in the UNECE region, in particular within the framework of the Convention that has 49 Parties from a region with 55 countries. However, efforts need to be made to assist new Parties to implement the Convention and to make it possible for more countries to ratify and implement the Convention and its protocols. Central Asia remains to be fully engaged. Kazakhstan and Kyrgyzstan ratified the Convention in 2001 and 2000 respectively, but neither has yet acceded to any of the Convention's protocols. Several countries have also ratified the UN Framework Convention on Climate Change and the Kyoto Protocol, and are preparing their National Action Plans for its implementation.

17. Central Asia is an important area when considering long-range transport of air pollution as it is situated between Europe and East Asia. It is important that a process of intergovernmental cooperation on air pollution problems can start and be sustained in the sub-region.

18. This project will involve technical, policy, legal, economic and institutional analysis and reforms of air quality management in Central Asia, development of sub-regional capacity in air quality management and development of air monitoring in Central Asia as a link between monitoring systems in Europe and Asia. In addition, it will facilitate sub-regional networking and information dissemination through an Internet/Intranet system and promote the introduction of low-cost, fast payback methods for improving the energy efficiency and environmental performance of solid fuel combustion technologies for heat and power

generation. It will provide assistance with sustainable energy policy and energy pricing reforms and explore investment project finance for clean coal technology deployment.

IV. EXPECTED ACCOMPLISHMENTS

19. The specific and measurable *expected accomplishments* arising from the implementation of the project are provided in document ENERGY/GE.1/2003/9.

V. PROJECT STRATEGY

20. The project will focus on capacity building to enhance and strengthen the institutional and professional expertise in Central Asia for improved air quality management, in particular through application of clean coal combustion technologies. To achieve this objective the project will involve technical, policy, legal, economic and institutional analysis and reforms of air quality management in Central Asia, development of sub-regional capacity in air quality management and development of air monitoring in Central Asia as a link between monitoring systems in Europe and Asia. In addition, it will facilitate sub-regional networking and information dissemination through an Internet/Intranet system and promote the introduction of low-cost, fast payback methods for improving the energy efficiency and environmental performance of solid fuel combustion technologies for heat and power generation. It will provide assistance with sustainable energy policy and energy pricing reforms and explore investment project finance for deployment of CCTs.

21. While UNECE in-house staff resources are, indeed, limited, it should be underscored that over the past several years the UNECE, through implementation of various activities in Central Asia, such as the Environmental Performance Reviews, the implementation of the Development Account project on the Rational Use of Energy and Water Resources in Central Asia, as well as other activities carried out in the context of the UN Special Programme for Economies of Central Asia (SPECA), has developed close and fruitful collaboration with local networks of experts and institutions, which are expected to be engaged in the implementation of this project. Such an approach, in addition to ensuring more cost-effective use of resources, would also help to both strengthen national capacities of the Central Asian countries and to ensure sustainability of national and regional follow-up to the project once it has been implemented.

22. In order to maximise use of resources, the project will seek to build on the significant ICT and web site related work of the UNDA Project on Rational Use of Energy and Water Resources in Central Asia, as well as other SPECA activities in the region. Some US$ 100,000 has been expended on ICT activities in Central Asia through the UNDA and SPECA work, including in developing sub-regional networks and web sites. Thus the extensive networks established and other ICT related activities already undertaken will form the framework for this project, hence proportionately less resources are required and have been allocated to fund ICT activities.

23. The project will seek to optimize and strengthen capacity building in the Central Asian states by actively engaging national consultants where possible. In instances where national knowledge and expertise is not adequate to perform specialized project activities, regional consultants with the ability to speak Russian will be contracted. However, it is foreseen that in

a limited number of cases it will be necessary to bring in experts from OECD countries. Where non-national consultants are utilized an approach will be adopted whereby national experts will work alongside the Western experts in order to facilitate and build up national capacity. All consultants will be contracted in accordance with UNDP rates. In addition, national events and activities will be undertaken by employing local institutions to take charge of all organizational, travel and other necessary arrangements.

24. At the technical level, the project approach is sectoral. Much of the substantive work on, for example, air monitoring or CCTs will target experts in different fields. However, plans are already developed where inter-sectoral approaches will be applied. In particular, the implementation of Work Packages 1, 2 and 5 will be made in such a way that energy experts and officials will be involved in air quality policy development and environmental experts and officials will be involved in the discussions on energy policies and the application of CCTs. The Project Working Group will be an important body to guide the project towards achieving optimal integration between countries and between sectors.

25. The whole project has been adopted as part of a regional environmental action programme by the Interstate Commission for Sustainable Development in Central Asia and this offers good opportunities for integration/cooperation between countries within the framework of the project.

VI. PROJECT ACTIVITES AND WORK PROGRAMMES

26. In order to attain the project goals and objectives, the project activities have been divided into six main Work Packages (WP). WP4, WP5 and WP6 refer specifically to energy/coal-related activities.

(a) WP1: Implementation Plans for the LRTAP Convention Protocols

27. On the basis of monitoring and scientific studies, a National Concept for implementing selected protocols to the LRTAP Convention will be developed for one of the Central Asian countries. The country will be selected on the basis of the level of preparedness for implementation of CLRTAP Protocols. In this work the major requirements and legislative measures for meeting obligations under the protocols will be defined. The National Concept will also define and assess the important driving forces for action, e.g. human health.

28. Using the Concept for guidance, a detailed National Programme will be drawn up for meeting obligations for selected protocols. This should consider not just technical measures in a chosen sector but also possible structural change and behavioral adjustments. It should accommodate national awareness raising at all levels (including: effects on public health, environment, agricultural crop yields; economic development; and, international cooperation for cost-effective solutions whilst stressing the long-term benefits). It should recognize the particular difficulties and obstacles in the region and ideally be developed as part of the country's National Development Plan to ensure the problem of air pollution receives the political attention it deserves. Stressing the benefits of action will help this process. It should address the specific requirements of protocols, including emissions reporting.

29. This WP will be implemented in close coordination with WP5.

30. To implement the National Programme, a third step will be the development of an Implementation Plan. This will identify the detailed steps and timetable for implementing the National Programme.

31. The *outputs* as well as *indicators* of this WP are: a National Concept, a National Programme and an Implementation Plan agreed on by authorities in one Central Asian country.

(b) WP2: Development of Sub regional Cooperation on Air Pollution Problems as part of the Regional Cooperation under the Convention

32. Experience from the work carried out at the national level will be used as the basis for raising awareness and developing capacity in the other countries of Central Asia. The air component of the Regional Environmental Action Programme will be developed for the sub-region, addressing the specific challenges related to air pollution and defining recommendations for urgent action. The document, which will be brief, concise and succinct, will be an input to awareness-raising, and, when appropriately endorsed, could guide political action. It could contribute to the further development of sub-regional cooperation and could also serve as a checklist for the degree of achievement.

33. In workshops, to which air quality experts from all countries of Central Asia will be invited, the Strategic Framework document and the results of the work performed in WP1 will be presented and discussed. These workshops will aim at awareness raising, stressing the driving forces for regulatory action and highlighting the benefits – human, social and economic – of taking measures. An important task of the workshops will be to develop and agree on a structure for sub-regional cooperation on air quality management for inclusion in the Regional Environmental Action Programme.

34. Development of Internet information and promotion of a communication network on air pollution issues in Central Asia, especially those related to the implementation of the Convention and its protocols will also be a part of this WP.

35. WP2 will also be implemented in close coordination with WP5.

36. The *outputs* as well as *indicators* of this work package are:

- Training of 30 air pollution experts from at least four countries of Central Asia during two training workshops (on Air Quality Management and the International Legal Framework; and International Air Monitoring, Data and Reporting);
- A developed version of the air component of the Regional Environmental Action Programme that includes an agreed structure for improved sub-regional cooperation on air quality management.
- Information on air pollution issues in Central Asia available on the Internet.

(c) WP3: Linking European and Asian Air Monitoring and Evaluation Programmes

37. The objectives of WP3 are to establish links between systems of regional ambient air monitoring and air quality management in Asia and Europe and to improve the monitoring network of ambient air quality in Central Asia.

38. Cooperation between other actors in Asia and Europe is necessary on all levels: effects, science, emission inventories, monitoring, atmosphere modelling abatement options and costs, integrated assessments and policy development. Activities will include consultancy reports and an international workshop with representation of responsible programmes and institutions in Asia and Europe. As a first step the results of these will include a plan for using monitoring results from Central Asia as an integrated part of the Asian monitoring work and the EMEP system (Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe). Some consideration will also be given to the future development of reporting of effects through the establishment of monitoring programmes, though full development of this activity lies outside the scope of the current project.

39. The project will fund the upgrading of one ambient monitoring station in Central Asia. The criteria for selecting the monitoring station will be suitability for inclusion in the EMEP network and sustainability of its funding.

40. The results from the upgraded monitoring station and deliveries from that station will be posted to the project web site in order to share the information gained with the region hence further facilitating capacity and knowledge building.

41. The *outputs* of this work package are:

- Upgrading of one ambient air monitoring station according to EMEP requirements;
- Delivery of monitoring results, according to the requirements of the EMEP monitoring strategy, to EMEP and UNEP Bangkok over a six-month period; and
- Proposals for estimating and reporting emission inventories and for future collaboration on effects monitoring.

The indicators are:

- Report from monitoring station on the installation of equipment;
- Report of monitoring results to EMEP and Asian network(s); and
- Plan for estimating and reporting on emissions and collaboration on effects monitoring.

(d) WP4: <u>Development of Sub-Regional Network for Energy Related Emission Reductions</u>

42. A sub-regional network will be established between national participating institutions and international partners through enhanced Internet/Intranet communications for value added information transfers on air pollution problems (WP1 above), energy efficiency and CCTs, as well as modalities and sources of finance for investment projects in the heat and thermal power generation sector. The network will comprise representatives of relevant national ministries and public and private sector experts from electric power utilities, the coal industry, municipal heat distribution companies and international experts.

43. Air monitoring and air quality evaluation are complex processes, as are the conditions under which these processes can be practically realized due to a range of issues, including information uncertainties, unknown models of measurement errors, and cross-correlation between components of air and pollutants etc. It is therefore important that a powerful methodological base and information system for air monitoring, air quality estimation and

management for energy-related emission reductions, compatible with the EMEP system (WP3 above) is used.

44. A Regional Information Network of national institutions involved in energy and water saving, comprising eight information-analytical centers in four Central Asia countries, was created on the basis of BIT within the framework of the UNDA project "Rational and Efficient Use of Energy and Water Resources in Central Asia". A dedicated web site and set of electronic maps in GIS (Geographic Information System) format were also developed. In implementing the project it would therefore be logical, economic and practically useful to build on and upgrade the software previously created for selected centers in Central Asia.

45. An analytical information system will be created for generating recommendations and air quality management decision-making in the energy sector, on the basis of the expertise, data and analysis available in the EMEP system.

46. Two training workshops will be organized to provide instruction on the use of the new analytical information system. Selected experts from each of the interested Central Asian economies will be invited to take part, with a total of 10-12 participants. Experts will be provided with tasks for completion nationally and these will then be finalized, checked and corrected at the training sessions using the new analytical information system.

47. Databases comprising information on clean coal combustion technologies and their effective application for different types of pollutants and their sources will be established for use by coal exploration and production enterprises. An Internet/Intranet web site will be developed for use by all participants of the sub-regional network for value added information exchanges and dissemination of project outputs.

48. The specific outputs of this work package are:

- The establishment of a sub-regional network comprising representative experts on clean coal technologies and investment project finance from the public and private sectors of interested participating countries in Central Asia;
- An Internet/Intranet web site for use by all participants of the sub-regional network for value added information exchanges and dissemination of project outputs; and
- Enhanced capacity on the use of the analytical information system and the web portal, specifically through two training workshops for selected experts from interested Central Asian states.

(e) WP5: Strengthening of Sustainable Energy Policies and Energy Pricing Reforms

49. In participating countries assistance will be provided to national administrations and municipal authorities to introduce the economic, institutional, regulatory, energy policy and energy pricing reforms needed to develop the CLRTAP National Programme (WP1) and to support investments in deployment of appropriate and commercially viable CCTs in the sub-region. Specific options for energy policy and pricing reforms will be oriented to particular projects of participating public institutions and private sector companies.

50. A series of three seminars, to which a total of 15-20 participants from all the Central Asian economies will be invited, will be organized to introduce and assess the following issues:

- Seminar One: Various cost-effective CCT options with high efficiency and environmental performance capable of utilizing locally available coal whilst meeting environmental protection standards and regulations, including CLRTAP. This seminar, which will be based upon the results of the in-depth study outlined in 53(a), is provisionally scheduled to be held in Almaty, Kazakhstan, in November 2004.

- Seminar Two: Economic, legal, environmental, institutional, and regulatory policy measures supported by appropriate energy pricing reforms needed to develop the CLRTAP National Programme (WP1) and to facilitate investments in the sub-region for deployment of appropriate, cost-effective and commercially available CCTs. This will be based on an in-depth expert review.

- Seminar Three: The most appropriate pricing reforms regarding coal (taking into account competitiveness with alternative hydrocarbons), heat, and electricity that should be implemented in Central Asian countries to facilitate investments for deployment in the sub-region of appropriate CCTs, with in particular lower specific capital costs and optimal environmental performance whilst ensuring energy affordability and acceptability for the lower income groups.

51. Kyoto Protocol flexible mechanisms, in particular the Clean Development Mechanism (CDM) and Joint Implementation (JI) with emphasis on prospects for implementation of CDM and JI in the sub-region and benefits that might be gained in terms of facilitating investment in technology deployment. Various market mechanisms for financing investments in CCTs, in particular, such advanced schemes as third party financing, leasing, BOT, TOT etc.

52. Specific options for energy policy and pricing reforms will be oriented to specific projects of participating public institutions and private sector companies. Assessment of environmental externalities attributed to coal use will be conducted as a tool to demonstrate the benefits of CCTs at the local and regional levels. Potential and prospects for implementation of CDM and JI will be analyzed in terms of creation of additional incentives for facilitating clean coal investments.

53. The series of three seminars will be supported by two corresponding expert reviews on:

(a) Clean coal technologies and specific applicability to Central Asia, including (i) cost versus performance analysis of various CCTs paying special attention to the environmental outcome in terms of the emission of air pollutants (SOx, NOx, GHGs, particulates, volatile organic compounds etc) and generation and disposal of solid and liquid waste; (ii) consideration and assessment of the specific characteristics and properties of Central Asian coal resources and identification of those CCTs that are most suitable for local application; and (iii) assessment of the environmental performance of CCTs when applied to local coals and identification of the need for additional air pollution abatement equipment.

(b) Energy policies and pricing reforms in Central Asia and scenarios for future energy development in order to evaluate the environmental benefits with regard to air pollution in Central Asia from full-scale deployment of appropriate CCTs.

54. The expert review outlined in 53(a) and entitled “Technical and Economic Status of Cost-Effective Clean Coal Technology Options and Prospects for their Implementation in

Central Asia" will be prepared in the second half of 2004 by three experts each focussing on one of the pre-combustion, combustion and post-combustion stages. The review will also be prepared in collaboration with national coordinators in the Central Asian countries. The final review will be made available to the Ad Hoc Group of Experts on Coal in Sustainable Development.

55. Following completion of the seminars and supporting reviews, a CD-ROM will be created comprising all the activities undertaken and also including comprehensive recommendations for national decision makers, administrations and municipal authorities. The material on the CD-ROM will also be made available on the project web site to widen its audience.

56. This WP will specifically result in:

- Detailed reviews of appropriate CCTs applicable for Central Asia and energy policy and energy pricing reforms relevant to the promotion of appropriate CCTs in collaboration with national and municipal authorities, private sector partners and international experts;
- Assessment of specific policy options and pricing reforms required to support selected case study investment projects; and
- Enhanced capacity of national administrations and municipal authorities to introduce the economic, institutional, regulatory, energy policy and energy pricing reforms needed to develop the CLRTAP Implementation Plan (WP1) and to support investments in deployment of appropriate CCTs in the sub-region so as to achieve cost-effective environmental benefits.

(f) WP6: <u>Promotion of Investment Project Finance for the Deployment of Clean Coal Technologies</u>

57. Sources of project finance and work methods for the development of investment projects will be introduced to the sub-regional network (WP4) focussing on a selection of specific projects proposals prepared by national participating institutions. Information and advisory services on investment project preparation and financing modalities will be provided. Investment project proposals formulated as business plans that meet with agreed financial and environmental criteria will be promoted to relevant international financial institutions, commercial banks, targeted funds and energy service companies (ESCOs).

58. The promotion of investment project finance is an integral component of the project and this will be achieved through the provision of a training course comprising a series of three workshops of one-week duration each. These workshops will serve to train a group of experts from each of the Central Asia countries on the development of energy efficiency projects for improved air quality management and deployment of appropriate clean coal combustion technologies for heat and power generation from solid fuels. National Coordinators will select projects on the basis of criteria elaborated by the workshop trainers, who will in turn assist the chosen experts to be responsible for implementation of this project in the future. Some 10-12 experts from Central Asia will be invited to participate. Business plans prepared by the experts will be posted to the web site to be created during the implementation of WP4.

59. The training course will include the following elements:

- Study of modern low-cost, fast payback clean coal combustion technologies;
- Study of energy inspection methods for energy installations in order to evaluate efficiency of using solid fuels for heat and electric power generation and their impact on the environment; and
- Development of investment projects on modernization and rehabilitation of operational energy and utility installations, including the development of their concept, feasibility studies and business plans meeting the criteria of national and international financial and environmental institutions.

60. Additionally, the training course will be broken down into the following modules:

- Lecture courses;
- Consultations during preparation of projects (including taking technical decisions, financial analysis of the project, Feasibility Studies and Business Plans);
- Practical aspects (financial analysis of the project, utilization of specific software), and
- Interaction with the students between training sessions will be maintained via Internet communications.

61. Specific criteria will be identified for selection of the workshop trainers and detailed Terms of Reference established for execution of the workshops.

62. This WP will specifically result in:

- Enhanced capacity of the Central Asian economies to identify and develop investment projects for the introduction of low-cost, fast payback clean coal technologies for the heat and power generation sector in sub-region, and
- Greater awareness of the modalities of project finance, guarantee mechanisms and sources of investment available for reducing air pollution emissions through the introduction of energy efficiency measures and common best practice clean coal technologies.

VII. IMPLEMENTATION ARRANGEMENTS

63. UNECE will be the lead agency, with the project being jointly implemented by the Environment and Human Settlements Division and the Industrial Restructuring, Energy and Enterprise Development Division thereof. The project will be instigated in collaboration with UNESCAP and UNEP Bangkok (Regional Resource Centre for Asia and the Pacific, the Secretariat for three international air pollution agreements in the Asian region). Implementation will also be made in close collaboration with the responsible authorities in Central Asia.

64. UNESCAP will participate in the project, in particular in the series of three training workshops to be organised under WP5. They will provide their expertise in the preparation of materials for elaboration during the sessions on Kyoto Protocol Mechanisms and other related policy matters.

65. UNEP Bangkok will participate with their expertise in several of the workshops and seminars. They will also be responsible for the part of WP2 related to the development of sub-regional cooperation within Central Asia.

66. The anticipated duration of the project is for a three year period commencing mid-2004.

67. A Project Working Group has been established that will oversee and review the status of the project. The Government of each Central Asian state has been invited to nominate a senior official from each of the energy and environment sectors to be a member of the Group. Three meetings of this Project Working Group will be conducted during implementation of the project: at the beginning, in the middle and at the end of the project. All such meetings will be organized to coincide with other substantial events scheduled during the project.

VIII. CONCLUSIONS

68. The CAPACT project is a significant extrabudgetary initiative for the Ad Hoc Group of Experts on Coal in Sustainable Development offering an opportunity for deployment of appropriate clean coal combustion technologies in Central Asia with the accompanying environmental improvements.

69. The Ad Hoc Group of Experts should also consider the benefits of extending the project at the end of the three-year period (or before if possible) to interested members of the Commonwealth of Independent States. If this proposal is greeted positively additional sources of funding should be explored.

70. Air quality management and application of clean coal technology have been linked in this project due to the fact that the majority of the electricity generated in the region is based on thermal power. Solid fuels are an important indigenous source of energy and dependency on coal for power generation will increase – solid fuels are a relatively low-cost source of energy and an essential element of a balanced energy mix. National policies in the region are increasingly favouring the use of coal for electricity.

71. The establishment of a Project Working Group is an important mechanism to guide the project towards achieving optimal integration between countries and between sectors.

72. The project offers the important added value of increased cooperation and collaboration between energy and environment, both within the United Nations and between the relevant Ministries of the Central Asian economies.