

INTERNATIONAL ENERGY AGENCY

**IMPLEMENTING AGREEMENT
FOR A PROGRAMME OF RESEARCH,
DEVELOPMENT AND DEMONSTRATION
ON COAL COMBUSTION SCIENCES**

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The Contracting Parties

CONSIDERING that the Contracting Parties, being either governments of International Energy Agency ("Agency") countries, governments of other countries invited by the Governing Board of the Agency to be Contracting Parties, international organizations or parties designated by their respective governments, wish to take part in the establishment and operation of a continued Programme of Research on Coal Combustion Sciences (the "Programme") as provided in this Agreement;

CONSIDERING that the Contracting Parties which are governments of Agency countries and the governments of Agency countries which have designated Contracting Parties (referred to collectively as the "Governments") have agreed in Article 41 of the Agreement on an International Energy Program (the "I.E.P. Agreement") to undertake national programmes in the areas set out in Article 42 of the I.E.P. Agreement, including energy research and development in coal technology;

CONSIDERING that in a meeting of the Governing Board of the Agency on 24th October, 1984 the Governments approved the Programme as a special activity under Article 65 of the I.E.P. Agreement and on 26th October, 1982 endorsed programme thrusts towards technologies designed to remove the technical, economic and environmental impacts to the broadest possible use of coal;

CONSIDERING that the Agency has recognized the establishment of the Programme as an important component of international co-operation in the field of coal combustion energy research and development;

HAVE AGREED as follows:

Article 1

OBJECTIVES

(a) *Scope of Activity.* The Programme to be carried out by the Contracting Parties within the framework of this Agreement shall consist of co-operative research, exchange of information and other technology transfer activities regarding coal combustion sciences.

(b) *Method of Implementation.* The Contracting Parties shall implement the Programme by undertaking one or more tasks (the "Task" or "Tasks") each of which will be open to participation by two or more Contracting Parties as provided in Article 2 hereof. The Contracting Parties which participate in a particular Task are, for the purposes of that Task, referred to in this Agreement as "Participants".

(c) *Task Co-ordination and Co-operation.* The Contracting Parties shall co-operate in co-ordinating the work of the various Tasks and shall endeavour, on the basis of an appropriate sharing of burdens and benefits, to encourage co-operation among Participants engaged in the various Tasks with the objective of advancing the research and development activities of all Contracting Parties in the field of coal combustion sciences.

Article 2

IDENTIFICATION AND INITIATION OF TASKS

(a) *Identification.* The Tasks undertaken by Participants are identified in the Annex or Annexes to this Agreement. At the time of signing this Agreement, each Contracting Party shall confirm its intention to participate in one or more Tasks by giving the Executive Director of the Agency a Notice of Participation in the relevant Annex or Annexes and the Operating Agent for each Task shall give the Executive Director of the Agency a Notice of Acceptance of the Task Annex. Thereafter, each Task shall be carried out in accordance with the procedures set forth in Articles 2 to 11 hereof, unless otherwise specifically provided in the applicable Annex.

(b) *Initiation of Additional Tasks.* Additional Tasks may be initiated by any Contracting Party according to the following procedure:

- (1) A Contracting Party wishing to initiative a new Task shall present to one or more Contracting Parties for approval a draft Annex, similar in form to the Annex or Annexes attached hereto, containing a description of the scope of work and conditions of the Task proposed to be performed;
- (2) Whenever two or more Contracting Parties agree to undertake a new Task, they shall submit the draft Annex for approval by the Executive Committee pursuant to Article 3 (e) (2) hereof; the approved draft Annex shall become part of this Agreement; Notice of Participation in the Task by Contracting Parties and acceptance by the Operating Agent shall be communicated to the Executive Director in the manner provided in paragraph (a) above;

- (3) In carrying out the various Tasks, Participants shall co-ordinate their activities in order to avoid duplication of activities.

(c) *Application of Task Annexes.* Each Annex shall be binding only upon the Participants therein and upon the Operating Agent for that Task, and shall not affect the rights or obligations of other Contracting Parties.

Article 3

THE EXECUTIVE COMMITTEE

(a) *Supervisory Control.* Control of the Programme shall be vested in the Executive Committee constituted under this Article.

(b) *Membership.* The Executive Committee shall consist of one member designated by each Contracting Party; each Contracting Party shall also designate an alternate member to serve on the Executive Committee in the event that its designated member is unable to do so.

(c) *Responsibilities.* The Executive Committee shall:

- (1) Adopt for each year, acting by unanimity, the Programme of Work and Budget, if foreseen, for each Task, together with an indicative programme of work and budget for the following two years; the Executive Committee may, as required, make adjustments within the framework of the Programme of Work and Budget;
- (2) Make such rules and regulations as may be required for the sound management of the Tasks, including financial rules as provided in Article 6 hereof;
- (3) Carry out the other functions conferred upon it by this Agreement and the Annexes hereto; and
- (4) Consider any matters submitted to it by any of the Operating Agents or by any Contracting Party.

(d) *Procedures.* The Executive Committee shall carry out its responsibilities in accordance with the following procedures:

- (1) The Executive Committee shall each year elect a Chairman and one or more Vice-Chairmen;
- (2) The Executive Committee may establish such subsidiary bodies and rules of procedure as are required for its proper functioning; a representative of the Agency and a representative of each Operating Agent (in its capacity as such) may attend meetings of the Executive Committee and its subsidiary bodies in an advisory capacity;

- (3) The Executive Committee shall meet in regular session not more than twice each year; a special meeting shall be convened upon the request of any Contracting Party which can demonstrate the need therefor;
- (4) Meetings of the Executive Committee shall be held at such time and in such office or offices as may be designated by the Committee;
- (5) At least twenty-eight days before each meeting of the Executive Committee, notice of the time, place and purpose of the meeting shall be given to each Contracting Party and to other persons or entities entitled to attend the meeting; notice need not be given to any person or entity otherwise entitled thereto if notice is waived before or after the meeting;
- (6) The quorum for the transaction of business in meetings of the Executive Committee shall be one-half of the members plus one (less any resulting fraction) provided that any action relating to a particular Task shall require a quorum as aforesaid of members or alternate members designated by the Participants in that Task;
- (7) The Executive Committee shall ensure that minutes of each meeting are distributed promptly after the meeting to each person or entity entitled to attend the meeting.

(e) *Voting*

- (1) When the Executive Committee adopts a decision or recommendation for or concerning a particular Task, the Executive Committee shall act:
 - (i) When unanimity is required under this Agreement: by agreement of those members or alternate members which were designated by the Participants in that Task and which are present and voting;
 - (ii) When no express voting provision is made in this Agreement: by majority vote of those members or alternate members which were designated by the Participants in that Task and which are present and voting.
- (2) In all other cases in which this Agreement expressly requires the Executive Committee to act by unanimity, this shall require the agreement of each member or alternate member present and voting, and in respect of all other decisions and recommendations for which no express voting provision is made in this Agreement, the Executive Committee shall act by a majority vote of the members or alternate members present and voting.
- (3) If a government has designated more than one Contracting Party to this Agreement, those Contracting Parties together may cast only one vote under this paragraph.

- (4) The decisions and recommendations referred to in sub-paragraphs (1) and (2) above may, with the agreement of each member or alternate member entitled to act thereon, be made by mail, telex or cable without the necessity for calling a meeting. Such action shall be taken by unanimity or majority of such members as in a meeting. The Chairman of the Executive Committee shall ensure that all members are informed of each decision or recommendation made pursuant to this sub-paragraph.

(f) *Reports.* The Executive Committee shall, by 31st January each year, provide the Agency with 30 copies of reports containing technically substantive, non-proprietary information on the progress of the Programme and its results.

Article 4

THE OPERATING AGENTS

(a) *Designation.* Participants shall designate in the relevant Annex an Operating Agent for each Task. References in this Agreement to the Operating Agent shall apply to each Operating Agent in respect of the Task for which it is responsible.

(b) *Scope of Authority to Act on Behalf of Participants.* Subject to the provisions of the applicable Annex:

- (1) All legal acts required to carry out each Task shall be performed on behalf of the Participants by the Operating Agent for the Task;
- (2) The Operating Agent shall hold, for the benefit of the Participants, the legal title to all property rights which may accrue to or be acquired for the Task.

The Operating Agent shall operate the Task under its supervision and responsibility, subject to this Agreement, in accordance with the law of the country of the Operating Agent.

(c) *Reimbursement of Costs.* The Executive Committee may provide that expenses and costs incurred by an Operating Agent in acting as such pursuant to this Agreement shall be reimbursed to the Operating Agent from funds made available by the Participants pursuant to Article 6 hereof.

(d) *Replacement.* Should the Executive Committee wish to replace an Operating Agent with another government or entity, the Executive Committee may, acting by unanimity and with the consent of such government or entity, replace the initial Operating Agent. References in this Agreement to the "Operating Agent" shall include any government or entity appointed to replace the original Operating Agent under this paragraph.

(e) *Resignation.* An Operating Agent shall have the right to resign at any time by giving six months written notice to that effect to the Executive Committee, provided that:

- (1) A Participant, or entity designated by a Participant, is at such time willing to assume the duties and obligations of the Operating Agent and so notifies the Executive Committee and the other Participants to that effect, in writing, not less than three months in advance of the effective date of such resignation; and
- (2) Such Participant or entity is approved in its function of Operating Agent by the Executive Committee, acting by unanimity.

(f) *Accounting.* An Operating Agent which is replaced or which resigns as Operating Agent shall provide the Executive Committee with an accounting of any monies and other assets which it may have collected or acquired for the Task in the course of carrying out its responsibilities as Operating Agent.

(g) *Transfer of Rights.* In the event that another Operating Agent is appointed under paragraph (d) or (e) above, the Operating Agent shall transfer to such replacement Operating Agent any property rights which it may hold on behalf of the Task.

(h) *Information and Reports.* Each Operating Agent shall furnish to the Executive Committee such information concerning the Task as the Committee may request and shall each year submit, not later than two months after the end of the financial year, a report on the status of the Task.

Article 5

ADMINISTRATION AND STAFF

(a) *Administration of Tasks.* Each Operating Agent shall be responsible to the Executive Committee for implementing its designated Task in accordance with this Agreement, the applicable Task Annex, and the decisions of the Executive Committee.

(b) *Staff.* It shall be the responsibility of the Operating Agent to retain such staff as may be required to carry out its designated Task in accordance with rules determined by the Executive Committee. The Operating Agent may also, as required, utilize the services of personnel employed by other Participants (or organizations or other entities designated by Contracting Parties) and made available to the Operating Agent by secondment or otherwise. Such personnel shall be remunerated by their respective employers and shall, except as provided in this Article, be subject to their employers' conditions of service. The Contracting Parties shall be entitled to claim the appropriate cost of such remuneration or to receive an appropriate credit for such cost as part of the Budget of the Task, in accordance with Article 6(f) (6) hereof.

Article 6

FINANCE

(a) *Individual Financial Obligations.* Each Contracting Party shall bear the costs it incurs in carrying out this Agreement, including the costs of formulating or transmitting reports and of reimbursing its employees for travel and other per diem expenses incurred in connection with work carried out on the respective Tasks, unless provision is made for such costs to be reimbursed from common funds as provided in paragraph (g) below.

(b) *Common Financial Obligations.* Participants wishing to share the costs of a particular Task shall agree in the appropriate Task Annex to do so. The apportionment of contributions to such costs (whether in the form of cash, services rendered, intellectual property or the supply of materials) and the use of such contributions shall be governed by the regulations and decisions made pursuant to this Article by the Executive Committee.

(c) *Financial Rules, Expenditure.* The Executive Committee, acting by unanimity, may make such regulations as are required for the sound financial management of each Task including, where necessary:

- (1) Establishment of budgetary and procurement procedures to be used by the Operating Agent in making payments from any common funds which may be maintained by Participants for the account of the Task or in making contracts on behalf of the Participants;
- (2) Establishment of minimum levels of expenditure for which Executive Committee approval shall be required, including expenditure involving payment of monies to the Operating Agent for other than routine salary and administrative expenses previously approved by the Executive Committee in the budget process.

In the expenditure of common funds, the Operating Agent shall take into account the necessity of ensuring a fair distribution of such expenditure in the Participants' countries, where this is fully compatible with the most efficient technical and financial management of the Task.

(d) *Crediting of Income to Budget.* Any income which accrues from a Task shall be credited to the Budget of that Task.

(e) *Accounting.* The system of accounts employed by the Operating Agent shall conform to accounting principles generally accepted in the country of the Operating Agent and consistently applied.

(f) *Programme of Work and Budget, Keeping of Accounts.* Should Participants agree to maintain common funds for the payment of obligations under a programme of work and budget of the Task, the following provisions shall be applicable unless the Executive Committee, acting by unanimity, decides otherwise:

- (1) The financial year of the Task shall correspond to the financial year of the Operating Agent;

- (2) The Operating Agent shall each year prepare and submit to the Executive Committee for approval a draft programme of work and budget, together with an indicative programme of work and budget for the following two years, not later than three months before the beginning of each financial year;
- (3) The Operating Agent shall maintain complete and separate financial records which shall clearly account for all funds and property coming into the custody or possession of the Operating Agent in connection with the Task;
- (4) Not later than three months after the close of each financial year the Operating Agent shall submit to auditors selected by the Executive Committee for audit the annual accounts maintained for the Task; upon completion of the annual audit, the Operating Agent shall present the accounts together with the auditors' report to the Executive Committee for approval;
- (5) All books of account and records maintained by the Operating Agent for the Task shall be preserved for at least three years from the date of termination of the Task;
- (6) Where provided in the relevant Annex, a Participant supplying services, materials or intellectual property to the Task shall be entitled to a credit, determined by the Executive Committee, acting by unanimity, against its contribution (or to compensation, if the value of such services, materials or intellectual property exceeds the amount of the Participant's contribution); such credits for services of staff shall be calculated on an agreed scale approved by the Executive Committee and include all payroll-related costs.

(g) *Contribution to Common Funds.* Should Participants agree to establish common funds under the annual Programme of Work and Budget for a Task, any financial contributions due from Participants in a Task shall be paid to the Operating Agent in the currency of the country of the Operating Agent at such times and upon such other conditions as the Executive Committee, acting by unanimity, shall determine, provided, however, that:

- (1) Contributions received by the Operating Agent shall be used solely in accordance with the Programme of Work and Budget for the Task;
- (2) The Operating Agent shall be under no obligation to carry out any work on the Task until contributions amounting to at least fifty per cent (in cash terms) of the total due at any one time have been received.

(h) *Ancillary Services.* Ancillary services may, as agreed between the Executive Committee and the Operating Agent, be provided by that Operating Agent for the operation of a Task and the cost of such services, including overheads connected therewith, may be met from budgeted funds of that Task.

(i) *Taxes.* The Operating Agent shall pay all taxes and similar impositions (other than taxes on income) imposed by national or local governments and incurred by it in connection with a Task, as expenditure incurred in the operation of that Task under the Budget; the Operating Agent shall, however, endeavour to obtain all possible exemptions from such taxes.

(j) *Audit.* Each Participant shall have the right, at its sole cost, to audit the accounts of any work in a Task for which common funds are maintained, on the following terms:

- (1) The Operating Agent shall provide the other Participants with an opportunity to participate in such audits on a cost-shared basis;
- (2) Accounts and records relating to activities of the Operating Agent other than those conducted for the Task shall be excluded from such audit, but if the Participant concerned requires verification of charges to the Budget representing services rendered to the Task by the Operating Agent, it may, at its own cost, request and obtain an audit certificate in this respect from the auditors of the Operating Agent;
- (3) Not more than one such audit shall be required in any financial year;
- (4) Any such audit shall be carried out by not more than three representatives of the Participants.

Article 7

INFORMATION AND INTELLECTUAL PROPERTY

It is expected that, for each Task agreed pursuant to this Agreement, the applicable Annex will contain information and intellectual property provisions. The General Guidelines Concerning Information and Intellectual Property, approved by the Governing Board of the Agency on 21st November, 1975, shall be taken into account in developing information and intellectual property provisions pursuant to this Article.

Article 8

LEGAL RESPONSIBILITY AND INSURANCE

(a) *Liability of Operating Agent.* The Operating Agent shall use all reasonable skill and care in carrying out its duties under this Agreement in accordance with all applicable laws and regulations. Except as otherwise provided in this Article, the cost of all damage to property, and all expenses associated with claims, actions and other costs arising from work undertaken with common funds for a Task shall be charged to the Budget of that Task; such

costs and expenses arising from other work undertaken for a Task shall be charged to the Budget of that Task if the Task Annex so provides or the Executive Committee, acting by unanimity, so decides.

(b) *Insurance.* The Operating Agent shall propose to the Executive Committee all necessary liability, fire and other insurance, and shall carry such insurance as the Executive Committee may direct. The cost of obtaining and maintaining insurance shall be charged to the Budget of the Task.

(c) *Responsibility of Operating Agent.* The Operating Agent shall, in accordance with the laws of the country of the Operating Agent, be responsible in its capacity as such, for any damage to property and all legal liabilities, actions, claims, costs and expenses connected therewith to the extent that they:

- (1) Result from the failure of the Operating Agent to maintain such insurance as it may be required to maintain under paragraph (b) above; or
- (2) Result from the gross negligence or wilful misconduct of any officers or employees of the Operating Agent in carrying out their duties under this Agreement.

Article 9

LEGISLATIVE PROVISIONS

(a) *Accomplishment of Formalities.* Each Participant shall request the appropriate authorities of its country (or its Member States in the case of an international organization) to use their best endeavours, within the framework of applicable legislation, to facilitate the accomplishment of formalities involved in the movement of persons, the importation of materials and equipment and the transfer of currency which shall be required to conduct the Task in which it is engaged.

(b) *Appropriation of Funds and Applicable Laws.* In carrying out this Agreement and its Annexes, the Contracting Parties shall be subject to the appropriation of funds by the appropriate governmental authority, where necessary, and to the constitutions, laws and regulations applicable to the respective Contracting Parties, including, but not limited to, laws establishing prohibitions upon the payment of commissions, percentages, brokerage or contingent fees to persons retained to solicit governmental contracts and upon any share of such contracts accruing to governmental officials.

(c) *Decisions of Agency Governing Board.* Participants in the various Tasks shall take account, as appropriate, of the Guiding Principles for Co-operation in the Field of Energy Research and Development, and any modification thereof, as well as other decisions of the Governing Board of the Agency in that field. The termination of the Guiding Principles shall not affect this Agreement, which shall remain in force in accordance with the terms hereof.

(d) *Settlement of Disputes.* Any dispute among the Contracting Parties concerning the interpretation or the application of this Agreement which is not settled by negotiation or other agreed mode of settlement shall be referred to a tribunal of three arbitrators to be chosen by the Contracting Parties concerned who shall also choose the Chairman of the tribunal. Should the Contracting Parties concerned fail to agree upon the composition of the tribunal or the selection of its Chairman, the President of the International Court of Justice shall, at the request of any of the Contracting Parties concerned, exercise those responsibilities. The tribunal shall decide any such dispute by reference to the terms of this Agreement and any applicable laws and regulations, and its decision on a question of fact shall be final and binding on the Contracting Parties concerned. Operating Agents which are not Contracting Parties shall be regarded as Contracting Parties for the purpose of this paragraph.

Article 10

ADMISSION AND WITHDRAWAL OF CONTRACTING PARTIES

(a) *Admission of New Contracting Parties: Agency Countries.* Upon the invitation of the Executive Committee, acting by unanimity, admission to this Agreement shall be open to the government of any Agency Participating Country (or a national agency, public organization, private corporation, company or other entity designated by such government), which signs or accedes to this Agreement, accepts the rights and obligations of a Contracting Party, and is accepted for participation in at least one Task by the Participants in that Task, acting by unanimity. Such admission of a Contracting Party shall become effective upon the signature of this Agreement by the new Contracting Party or its accession thereto and its giving Notice of Participation in one or more Annexes and the adoption of any consequential amendments thereto.

(b) *Admission of New Contracting Parties: Other OECD Countries.* The government of any Member of the Organisation for Economic Co-operation and Development which does not participate in the Agency may, on the proposal of the Executive Committee, acting by unanimity, be invited by the Governing Board of the Agency to become a Contracting Party to this Agreement (or to designate a national agency, public organization, private corporation, company or other entity to do so), under the conditions stated in paragraph (a) above.

(c) *Participation by the European Communities.* The European Communities may participate in this Agreement in accordance with arrangements to be made by the Executive Committee, acting by unanimity.

(d) *Admission of New Participants in Tasks.* Any Contracting Party may, with the agreement of the Participants in a Task, acting by unanimity, become a Participant in that Task. Such participation shall become effective upon the Contracting Party's giving the Executive Director of the Agency a Notice of Participation in the appropriate Task Annex and the adoption of consequential amendments thereto.

(e) *Contributions.* The Executive Committee may require, as a condition to admission to participation, that the new Contracting Party or new Participant shall contribute

(in the form of cash, services, materials or intellectual property) an appropriate proportion of the prior budget expenditure of any Task in which it participates.

(f) *Replacement of Contracting Parties.* With the agreement of the Executive Committee, acting by unanimity, and upon the request of a government, a Contracting Party designated by that government may be replaced by another party. In the event of such replacement, the replacement party shall assume the rights and obligations of a Contracting Party as provided in paragraph (a) above and in accordance with the procedure provided therein.

(g) *Withdrawal.* Any Contracting Party may withdraw from this Agreement or from any Task either with the agreement of the Executive Committee, acting by unanimity, or by giving twelve months written Notice of Withdrawal to the Executive Director of the Agency, such Notice to be given not less than one year after the date hereof. The withdrawal of a Contracting Party under this paragraph shall not affect the rights and obligations of the other Contracting Parties; except that, where the other Contracting Parties have contributed to common funds for a Task, their proportionate shares in the Task Budget shall be adjusted to take account of such withdrawal.

(h) *Changes of Status of Contracting Party.* A Contracting Party other than a government or an international organization shall forthwith notify the Executive Committee of any significant change in its status or ownership, or of its becoming bankrupt or entering into liquidation. The Executive Committee shall determine whether any such change in status of a Contracting Party significantly affects the interests of the other Contracting Parties; if the Executive Committee so determines, then, unless the Executive Committee, acting upon the unanimous decision of the other Contracting Parties, otherwise agrees:

- (1) That Contracting Party shall be deemed to have withdrawn from the Agreement under paragraph (g) above on a date to be fixed by the Executive Committee; and
- (2) The Executive Committee shall invite the government which designated that Contracting Party to designate, within a period of three months of the withdrawal of that Contracting Party, a different entity to become a Contracting Party; if approved by the Executive Committee, acting by unanimity, such entity shall become a Contracting Party with effect from the date on which it signs or accedes to this Agreement and gives the Executive Director of the Agency a Notice of Participation in one or more Annexes.

(i) *Failure to Fulfil Contractual Obligations.* Any Contracting Party which fails to fulfil its obligations under this Agreement within sixty days after its receipt of notice, specifying the nature of such failure and invoking this paragraph, may be deemed by the Executive Committee, acting by unanimity, to have withdrawn from this Agreement.

Article 11

FINAL PROVISIONS

(a) *Term of Agreement.* This Agreement shall remain in force for an initial period of three years from the date hereof. It may be extended by the Executive Committee, acting by unanimity, and taking into account any recommendations of the Agency's Committee on Energy Research and Development concerning the term of the Agreement.

(b) *Legal Relationship of Contracting Parties and Participants.* Nothing in this Agreement shall be regarded as constituting a partnership between any of the Contracting Parties or Participants.

(c) *Termination.* Upon termination of this Agreement, or any Annex to this Agreement, the Executive Committee, acting by unanimity, shall arrange for the liquidation of the assets of the Task or Tasks. In the event of such liquidation, the Executive Committee shall, so far as practicable, distribute the assets of the Task, or the proceeds therefrom, in proportion to the contributions which the Participants have made from the beginning of the operation of the Task, and for that purpose shall take into account the contributions and any outstanding obligations of former Contracting Parties. Disputes with a former Contracting Party about the proportion allocated to it under this paragraph shall be settled under Article 9(d) hereof, for which purpose a former Contracting Party shall be regarded as a Contracting Party.

(d) *Amendment.* This Agreement may be amended at any time by the Executive Committee, acting by unanimity, and any Annex to this Agreement may be amended at any time by the Executive Committee, acting by unanimity of the Participants in the Task to which the Annex refers. Such amendments shall come into force in a manner determined by the Executive Committee, acting under the voting rule applicable to the decision to adopt the amendment.

(e) *Deposit.* The original of this Agreement shall be deposited with the Executive Director of the Agency and a certified copy thereof shall be furnished to each Contracting Party and to the Operating Agents. A copy of this Agreement shall be furnished to each Agency Participating Country, to each Member country of the Organisation for Economic Co-operation and Development and to the European Communities.

Done in Paris, this 27th day of March, 1985.

For the DEPARTMENT OF RESOURCES AND ENERGY
for and on behalf of the Government of
Australia:

For the DEPARTMENT OF ENERGY, MINES AND RESOURCES
for and on behalf of the Government of Canada:

For the STICHTING ENERGIEONDERZOEK
CENTRUM NEDERLAND
(designated by the Government of
the Netherlands):

For the DEPARTMENT OF ENERGY
for and on behalf of the Government of the United States of America:

Annex I

CO-OPERATION ON INVESTIGATIONS INTO ADVANCED ANALYTICAL TECHNIQUES AND BASIC AND APPLIED RESEARCH IN THE FIELD OF COAL COMBUSTION SCIENCES

1. *Background*

In order to understand fully the mechanisms which are involved in transforming coal into useful energy, it is necessary to be able to monitor, analyze and simulate the different chemical, physical and gas dynamic parameters involved in the combustion process. Similarly, to enable quantitative interpretation and prediction of coal combustion phenomena, computational models of these phenomena are required. Existing diagnostic techniques, analytical instrumentation and computational apparatus need to be evaluated and validated with respect to their use in analyzing and helping to simulate the complex issues of multiphase, particle-laden and high-temperature coal combustion.

2. *Objectives*

The objectives of this Task are to:

- (1) Provide Participants with access to the advanced research apparatus currently available for studying combustion flows;
- (2) Conduct research leading to improved research methods and tools for understanding particle-laden coal combustion processes and flames;
- (3) Enlarge the basic data base on the combustion of a wide variety of coals, chars, beneficiated coals and coal-liquid mixtures of interest to the Participants.

3. *Scope*

Each Participant will conduct work in at least one of the following areas:

Area A: Advanced Diagnostic and Analytical Techniques

- (1) *Combustion Diagnostics.* The development of advanced diagnostic methods for in-situ measurements in high temperature, reacting, coal- and particle-laden flows;
- (2) *Computational Modelling.* The development and application of computational techniques and detailed models for the analysis of the subscale chemical, physical and fluid dynamic processes in reacting, coal- and particle-laden combustion environments;
- (3) *Solid Characterization.* The investigation of off-line automated analytical methods, in particular the integration of electron optical techniques with automated image analysis, in order to determine accurately the distribution and size of solid particles and their chemical composition.

Area B: Fundamental Research on the Combustion Process

- (1) *The Fate of Mineral Matter.* Research on the formation, transformation, and ultimate fate of mineral matter and ash during the three principal phases of the combustion process, namely coal pre-treatment, combustion and post-combustion phenomena;
- (2) *Coal Combustion Phenomena.* Basic experimental and theoretical research on the physical and chemical rates and mechanisms of pyrolysis, ignition, devolatilization and oxidation of volatiles and char from carefully-prepared and analyzed coals, beneficiated coals, chars, and coal-liquid mixtures;
- (3) *Trace Pollutants Formation and Emission.* Measurements of trace species, including fuel-bound nitrogen and sulphur, hydrocarbons, combustion-generated soot, and carbon monoxide, which evolve during the controlled pyrolysis and oxidation of carefully characterized and sized coal samples, using in-situ advanced spectroscopic diagnostic techniques.

Area C: Applied Coal-Combustion Research

Laboratory-scale experimental research and analytical, computational modelling of coal-fired turbulent diffusion flames to be performed by applying modern research methods, including those to be developed under this Task.

4. *Means*

(a) *Co-operative Activities*

Participants will achieve the objectives of the Task by carrying out the following activities:

- (1) Participants shall exchange information in one or more of the areas set out in paragraph 3 above.
- (2) Participants may assign scientists, engineers, or other technical personnel to work at the Combustion Research Facility of the Sandia National Laboratory in Livermore, California or any other facility provided to the Task by any Participant with the approval of the Operating Agent (hereinafter referred to as the "Facility").
- (3) Participants may supply equipment to the Facility.

(b) *Responsibilities of the Participants*

- (1) Each Participant shall provide to the Operating Agent all information in one or more of the areas set out in paragraph 3 above and in accordance with paragraph 7 below.
- (2) Each Participant may send personnel and equipment to the Facility in accordance with paragraphs (d) and (e) below.

- (3) Proposals for experiments to be carried out at the Facility shall be submitted by each Participant to the Participant providing the Facility. These shall include a detailed description of aims, programme, design, means, personnel (including experts to be assigned), time period required and time schedule, and other conditions.
- (4) After the conclusion of an experiment, each Participant shall, upon the request of the Participant providing the Facility, forthwith effect at its own cost the removal of materials and/or equipment, if any, introduced by that Participant into the Facility.
- (5) Each Participant shall report the results of its experiments in writing to the Operating Agent and the Participant providing the Facility within 60 days of the conclusion of each experiment.

(c) *Responsibilities of the Participant Providing the Facility*

- (1) The Participant providing the Facility shall be responsible for either funding, or certifying that funding is available from other sources, for those overall administrative and technical management activities undertaken by the Facility as a result and in support of activities under this Task that would not have been required otherwise.
- (2) The Participant providing the Facility shall use its best efforts to provide the necessary office space and, subject to mutual agreement, laboratory space for Participants at the Facility.
- (3) The Participant providing the Facility shall make the necessary arrangements to facilitate access for each Participant to the Facility.

(d) *Assignment of Personnel*

- (1) The Participants may assign experts in the areas set out in paragraph 3 above to work at the Facility site in accordance with agreements to be made between the Participant providing the Facility and the assigning Participant. Such agreements shall specify the work plan to be followed by such experts.
- (2) The procedures to be followed in assigning experts shall be as follows:
 - (a) Each Participant desiring to assign an expert shall endeavour to submit its nomination to the Participant providing the Facility, as a general rule, at least four months prior to the expected assignment date. Each such nomination shall specify the qualifications of the expert, its activities during the assignment and the length of the assignment.

(b) The Participant providing the Facility shall, as soon as possible, notify the nominating Participant of the acceptability of the assignment.

- (3) The duration of each assignment shall normally be one year, except as may otherwise be agreed between the Participant providing the Facility and the nominating Participant.
- (4) Publications resulting from theoretical or experimental investigations carried out in connection with the Task shall normally be issued in the form of joint reports of the Participants or individuals who contributed to the investigations.
- (5) All personnel expenses associated with an assignment shall be borne by the assigning Participant. Such expenses shall include, but not be limited to, costs of salary, travel, insurance and living expenses of the assigned personnel. Assigned personnel shall in no way be deemed to be employees of the Participant providing the Facility by virtue of their assignment. Assigned personnel shall adhere to all the general and special rules of work and safety regulations and other operating procedures in force at the Facility.

(e) *Supply of Equipment*

The supply of equipment by a Participant to the Facility shall be carried out as set forth below unless the sending Participant and the Participant providing the Facility otherwise agree:

- (1) The sending Participant shall supply to the Participant providing the Facility as soon as possible a detailed list of the equipment to be provided, together with the available, related specifications and technical documentation and shall indicate the specific activity for which the equipment is to be used.
- (2) The equipment, spare parts and documentation supplied by the sending Participant shall remain its property and shall be returned to the sending Participant upon completion of the specific activity.
- (3) The Participant providing the Facility shall ensure that the Facility provides the necessary premises and shelter for the equipment, as well as such electric power, water, gas and other facilities in accordance with any technical requirements which may be agreed upon between the Participant providing the Facility and the sending Participant.
- (4) The equipment shall be considered to be scientific and not commercial in character.
- (5) The sending Participant shall be responsible and shall bear the costs for transporting the equipment to an authorized port of entry in the

country of the Participant providing the Facility convenient to the ultimate destination, and, upon return, from the port of departure in the country of the Participant providing the Facility to the destination to be determined by the sending Participant. The Participant providing the Facility shall be responsible and shall bear the transport costs from the port of entry to the Facility and, upon return, to the port of departure.

5. *Results*

The results of this Task will be a compilation of the information produced in each Area of the Task as set out in paragraph 3 above.

6. *Responsibilities of the Operating Agent*

- (a) The Operating Agent shall be responsible for the overall administrative management of the work under this Annex and for implementing the decisions of the Executive Committee. To that end, the Operating Agent shall:
 - (1) Prepare and submit for approval to the Executive Committee not later than one month after the entry into force of this Annex a detailed programme of work;
 - (2) Report to the Executive Committee on the results and progress of work under this Annex, at least semi-annually.
- (b) Upon completion of the Task, the Operating Agent shall compile and disseminate to all Participants the information received in the course of and in connection with the Task.

7. *Information and Intellectual Property*

- (a) *Executive Committee's Powers.* The publication, distribution, handling, protection and ownership of information and intellectual property provided to or arising from activities conducted under this Annex shall be determined by the Executive Committee, acting by unanimity, in conformity with this Annex.
- (b) *Right to Publish.* Subject only to the patents and copyright restrictions of this Annex, the Participants in this Annex (referred to in this Annex as the "Participants") shall have the right to publish all information provided to or arising from this Annex except proprietary information, but they shall not publish it with a view to profit, except as agreed by the Executive Committee, acting by unanimity. Neither the Participants nor personnel designated by them shall introduce into the Facility proprietary information unless such information is specifically identified and the terms and conditions for its introduction are agreed upon in writing by the Operating Agent and the concerned Participant.

(c) *Proprietary Information.* The Participants shall take all necessary measures in accordance with this Annex, the laws of their respective countries, and international law to protect proprietary information. For the purposes of this sub-paragraph, proprietary information shall mean information of a confidential nature acquired prior to or outside the scope of this Annex, such as trade secrets and know-how (for example, computer programmes, design procedures and techniques, chemical composition of materials, or manufacturing methods, processes or treatments), which is appropriately marked, provided such information:

- (1) Is not generally known or publicly available from other sources;
- (2) Has not previously been made available by the owner to others without obligation concerning its confidentiality; and
- (3) Is not already in the possession of the recipient Participants without obligation concerning its confidentiality.

It shall be the responsibility of each Participant supplying proprietary information to identify the information as such and to ensure that it is appropriately marked.

(d) *Production of Relevant Information.* The Operating Agent should encourage the governments of all Agency Participating Countries to make available or to identify to the Operating Agent all published or otherwise freely available information known to them that is relevant to the Task. The Participants should notify the Operating Agent of all pre-existing information and information developed independently of the Task known to them which is relevant to the Task and which can be made available to the Task without contractual or legal limitations.

(e) *Reports on Programme Work.* Reports containing arising information and pre-existing information necessary for and used in the Task, including proprietary information, shall be provided to the Operating Agent by each Participant performing the work. Each Participant agrees to provide to the Operating Agent all information which is utilized in the activities under this Annex or which is necessary for practising the results of the undertakings in this Annex. The Operating Agent shall provide all such information to all Participants. The Operating Agent shall provide summary reports of work performed under this Annex and results thereof (arising information), excluding proprietary information, to the Executive Committee.

(f) *Arising Information.* All information developed in connection with and during activities carried out under this Annex (arising information) shall be provided to each Participant by the Operating Agent, subject only to the need to retain information concerning patentable inventions in confidence until appropriate action can be taken to protect such inventions in accordance with sub-paragraph (h) below.

(g) *Licensing of Pre-existing Inventions.* Each Participant agrees to license all pre-existing inventions covered by patents owned or controlled by it which

are necessary for and used in the Task to the other Participants, their governments and the nationals of their respective countries designated by them on a royalty-free, non-exclusive, irrevocable basis, for use in all countries and to the government of any Agency Participating Country for use in its own country of any such invention on reasonable terms and conditions in order to meet its energy needs.

- (h) *Arising Inventions.* Inventions made or conceived in the course of or under the Task (arising inventions) shall be owned in all countries by the inventing Participant, subject to a royalty-free, non-exclusive, irrevocable licence to each of the other Participants, their governments, and the nationals of their respective countries designated by them. Information regarding inventions on which patent protection is to be obtained by the Participants shall not be published or publicly disclosed by the other Participants until a patent application has been filed, provided, however, that this restriction on publication or disclosure shall not extend beyond six months from the date of receipt of such information. It shall be the responsibility of the inventing Participant to appropriately mark reports which disclose inventions that have not been appropriately protected by the filing of a patent application. In order that public disclosure of inventions shall not adversely affect the patent interest of the Participants, patent approval for release or publication of information generated by or made a part of the activities under this Annex shall be obtained from the Operating Agent prior to any release or publication. Each Participant agrees to license such arising inventions to the Government of any Agency Participating Country for use in its own country on reasonable terms and conditions in order to meet its energy needs.
- (i) *Copyright.* The Operating Agent or each Participant for its own work may take appropriate measures necessary to protect copyrightable material generated under the Task. Copyrights obtained shall be the property of that Participant or the Operating Agent for the benefit of the Participants, provided, however, that Participants may reproduce and distribute such material, but shall not publish it with a view to profit.
- (j) *Inventors and Authors.* Each Participant shall, without prejudice to any rights of inventors or authors under its national laws, take all necessary steps to provide the co-operation from its inventors and authors required to carry out the provisions of this paragraph. Each Participant will assume the responsibility to pay awards or compensation required to be paid to its employees according to the laws of its country.
- (k) *Determination of "National".* The Participants may establish guidelines to determine what constitutes a "national" of a Participant.

8. *Funding*

Each Participant shall bear the costs it incurs in carrying out its work under this Annex, including the costs of formulating or transmitting reports and of reimbursing its experts and employees for travel and other per diem expenses incurred in the performance of this Task.

The total minimum level of effort for each of the Areas set out in paragraph 3 above within the first three years is intended to be:

- 6 staff/years for each of the first two years; and
- 7 staff/years for the third year.

9. *Time Schedule*

This Annex will enter into force on 27th March, 1985, and will remain in force for a period of three years. It may be extended by agreement of two or more Participants, acting in the Executive Committee and taking into account any recommendations of the Agency's Committee on Energy Research and Development concerning the term of this Annex, which shall thereafter apply only to those Participants.

10. *Operating Agent*

The United States Department of Energy.

11. *Participants in this Task*

The Contracting Parties which are Participants in this Task are the following:

The Department of Resources and Energy (Australia),

The Department of Energy, Mines and Resources (Canada),

The Stichting Energieonderzoek Centrum Nederland (Netherlands),

The United States Department of Energy.