

INTERNATIONAL ENERGY AGENCY

**IMPLEMENTING AGREEMENT
FOR A CO-OPERATIVE PROGRAMME
ON OCEAN ENERGY SYSTEMS**

As amended on 5 September 2009

INTERNATIONAL ENERGY AGENCY

**IMPLEMENTING AGREEMENT
FOR A CO-OPERATIVE PROGRAMME
ON OCEAN ENERGY SYSTEMS**

TABLE OF CONTENTS

PREAMBLE	6
<i>Article 1</i>	
OBJECTIVES.....	7
<i>Article 2</i>	
IDENTIFICATION AND INITIATION OF TASKS	7
<i>Article 3</i>	
THE EXECUTIVE COMMITTEE.....	8
<i>Article 4</i>	
THE SECRETARY	11
<i>Article 5</i>	
THE OPERATING AGENTS	12

<i>Article 6</i>	
ADMINISTRATION AND STAFF	14
<i>Article 7</i>	
FINANCE	14
<i>Article 8</i>	
PROCUREMENT PROCEDURES.....	18
<i>Article 9</i>	
INFORMATION AND INTELLECTUAL PROPERTY	18
<i>Article 10</i>	
LEGAL RESPONSIBILITY AND INSURANCE.....	22
<i>Article 11</i>	
LEGISLATIVE PROVISIONS.....	22
<i>Article 12</i>	
ADMISSION AND WITHDRAWAL OF CONTRACTING PARTIES.....	23
<i>Article 13</i>	
SPONSORS.....	25
<i>Article 14</i>	
FINAL PROVISIONS	26
<i>Exhibit A</i>	
IEA FRAMEWORK FOR INTERNATIONAL ENERGY TECHNOLOGY CO-OPERATION	29
<i>Annex I</i>	
REVIEW, EXCHANGE AND DISSEMINATION OF INFORMATION ON OCEAN ENERGY SYSTEMS	36

Annex II

DEVELOPMENT OF RECOMMENDED PRACTICES FOR TESTING
AND EVALUATING OCEAN ENERGY SYSTEMS 41

Annex III

INTEGRATION OF OCEAN ENERGY PLANTS INTO DISTRIBUTION
AND TRANSMISSION ELECTRICAL GRIDS 45

Annex IV

ASSESSMENT OF ENVIRONMENTAL EFFECTS AND MONITORING
EFFORTS FOR OCEAN WAVE, TIDAL, AND CURRENT ENERGY SYSTEMS..... 49

INTERNATIONAL ENERGY AGENCY

**IMPLEMENTING AGREEMENT
FOR A CO-OPERATIVE PROGRAMME
ON OCEAN ENERGY SYSTEMS**

The Contracting Parties

CONSIDERING that the Contracting Parties, being either governments of International Energy Agency ("Agency") countries or parties designated by governments of Agency Member countries pursuant to Article III of the Guiding Principles for Co-operation in the Field of Energy Research and Development ("Guiding Principles") adopted by the Agency's Governing Board, as amended, wish to take part in the establishment and operation of a Co-operative Programme on Ocean Energy Systems (the "Programme");

CONSIDERING that the Contracting Parties, pursuant to Article IV of the Guiding Principles, wish to hold open to all governments of the Organisation for Economic Co-operation and Development ("OECD") countries, governments of non-OECD Member countries or international organizations in which such countries participate, or their designees, the opportunity to participate as Contracting Parties in the Programme;

CONSIDERING that the governments of Agency countries 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, and have agreed in Chapter IV of the Long-Term Co-operation Programme, adopted by the Governing Board of the Agency on 30th January, 1976, to undertake co-operative activities including jointly financed programmes and projects in energy research and development;

CONSIDERING that the Governing Board of the Agency on 18 October, 2001 approved the Programme as a special activity under Article 65 of the I.E.P. Agreement;

CONSIDERING that the Agency has recognized the establishment of the Programme as an important component of international co-operation in the field of 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 research, development, demonstration, analysis and information exchange related to ocean energy systems. A major part of the co-operative activity shall focus on current and potential status and markets for ocean energy systems. In addition, the co-operative activity shall include work on aspects of ocean energy systems which are relevant in these markets, such as operational performance of ocean energy schemes and components, as well as information exchange on ocean energy technology, economics, and impacts.

(b) *Method of Implementation.* The Contracting Parties shall implement the Programme by undertaking one or more collaborative activities (each, a "Task"). Each Task will be identified in an annex to this Agreement (each, an "Annex") and each Annex 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 Annex are, for the purposes of that Annex, 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 Tasks and shall endeavour, on the basis of an appropriate sharing of burdens and benefits, to encourage co-operation among Participants engaged in the Tasks with the objective of advancing the state of understanding of all Contracting Parties in the field of ocean energy systems.

Article 2

IDENTIFICATION AND INITIATION OF TASKS

(a) *Initial Task.* A Contracting Party may become a Participant in the Task of any Annex; such participation shall become effective upon the Contracting Party's giving the Executive Director of the Agency a written Notice of Participation in the appropriate Annex. Each Annex which is identified in the Annexes hereto at the time of the coming into force of this Agreement shall enter into force at such time as the Executive Committee, acting by unanimity of those Contracting Parties which have communicated to the Executive Director a Notice of Participation in that Annex, decides that there is sufficient participation to perform the Task to which that Annex relates.

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

- (1) Whenever two or more Contracting Parties agree to create a new Annex, they shall submit to the Executive Committee for adoption a draft Annex, similar in form to the Annexes attached hereto, containing a description of the scope of work and conditions

of the Task proposed to be performed; the adopted Annex shall become part of this Agreement;

- (2) The participation in the adopted Annex of any Contracting Parties identified therein shall become effective upon the Contracting Party's giving the Executive Director of the Agency a written Notice of Participation in that Annex. Article 12(c) shall apply for any Contracting Party that wishes to become a Participant in any Annex after the respective Annex has been adopted by the Executive Committee;
- (3) In carrying out the various Tasks, the 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 Annex, 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 Annex, 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 Annexes, including financial rules as provided in Article 7 hereof;
- (3) Carry out the other functions conferred upon it by this Agreement and the Annexes hereto;
- (4) Notify the IEA Secretariat of the intention to invite to any workshop, conference, meeting or similar event under the Programme any representative of any country that is neither a member of the Agency nor a Contracting Party hereto, written notice of such intention to be given sufficiently in advance of the event to permit appropriate consultations and approval action to be taken within the Agency;

- (5) 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 in alternate years elect a Chairperson and one or more Vice- Chairpersons;
- (2) The Executive Committee may establish such subsidiary bodies and rules of procedure as are required for its proper functioning;
- (3) 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;
- (4) The Executive Committee shall meet in regular session not less than twice each year; a special meeting shall be convened upon the request of any Contracting Party which can demonstrate the need therefor;
- (5) Meetings of the Executive Committee shall be held at such time and in such office or offices as may be designated by the Committee;
- (6) 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;
- (7) 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 Annex shall require a quorum as aforesaid of members or alternate members designated by the Participants in that Annex;
- (8) 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 Annex that the Executive Committee has previously approved, the Executive Committee shall act, subject always to Paragraph (5) below:
 - (i) for all decisions for which unanimity is required under this Agreement, by the affirmative vote of all Executive Committee members, or alternate

members in the absence of the member, who are designated by the Participants in that Annex and who are present or represented and are entitled to vote;

- (ii) notwithstanding sub-paragraph (1)(i) above, for all decisions involving the Annex's common fund or the Annex's budget, by the affirmative vote, in person or by proxy, of all Executive Committee representatives, or alternate representative in the absence of the representative, designated by the Participants in that Annex who are present and voting; and
 - (iii) When no express voting provision is made in this Agreement, then by the affirmative vote of a majority of those Executive Committee members or alternate members who are designated by the Participants in that Annex who are present or represented and are entitled to vote.
- (2) In all other cases when the Executive Committee adopts a decision or recommendation concerning other than a particular Annex, the Executive Committee shall act, subject always to Paragraph (4) below:
- (i) for all decisions for which unanimity is required by this Agreement, by the affirmative vote of all Executive Committee members, or alternate members in the absence of a member, who are present or represented and are entitled to vote;
 - (ii) notwithstanding sub-paragraph (2)(i) above, for all decisions involving amendment to this Agreement, the Secretary's common fund or the budget of the Implementing Agreement, by the affirmative vote, in person or by proxy, of all Executive Committee representatives, or alternate representative in the absence of the representative, present and voting; and
 - (iii) when no express voting provision is made in this Agreement, then by the affirmative vote of a majority of those Executive Committee members, or alternate members in the absence of a member, present or represented and entitled to vote.

- (3) The decisions and recommendations referred to in sub-paragraphs (1) and (2) above may, upon the reasonable request of any Executive Committee member, be made by written procedure by mail, telefax, or other means of electronic transmission without the necessity for calling a meeting. In that case, the Executive Committee Chairperson shall ensure that all Executive Committee members (a) receive the necessary documentation in relation to each decision or recommendation, and (b) be given twenty-one (21) days to vote from the date of delivery of the written procedure documentation, or any other period as may be determined by the Executive Committee. The Executive Committee Chairperson shall ensure that all members are informed of each decision or recommendation made pursuant to this sub-paragraph.
 - (4) The failure of any member, or alternate member in the absence of the member, to vote at a meeting, or the failure of any member, or alternate member in the absence of the member, to respond to a vote required by written procedure pursuant to sub-paragraph (3) above, shall be considered an abstention and such abstention shall not block an otherwise unanimous or majority vote.
 - (5) If a government has designated more than one Contracting Party to this Agreement the members or alternate members designated by those Contracting Parties together may cast only one vote under this Article.
- (f) *Reports.* The Executive Committee shall, by 31 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 SECRETARY

- (a) *Designation; Scope of Authority.* The Executive Committee, acting by unanimity, may designate a secretary (the "Secretary") to:
- (1) Make and distribute agendas, minutes and other documents of Executive Committee meetings;
 - (2) Prepare decisions and recommendations in accordance with Article 3(e)(3) hereof;
 - (3) Assist the Executive Committee and its Chairperson in carrying out their responsibilities, in particular under Articles 3(c)(4), 3(d)(8) and 3(f) of this Agreement;
 - (4) Assist the Executive Committee in the overall co-ordination of the work in the different Annexes;

- (5) Undertake such other administrative activities as may be required by the Executive Committee to assist it in carrying out its responsibilities under this Agreement.

The Secretary shall carry out its functions under the supervision of the Executive Committee. Representatives of the Secretary may attend meetings of the Executive Committee and its subsidiary bodies in an advisory capacity with no voting rights.

(b) *Reimbursement of Costs.* The Executive Committee may provide that expenses and costs incurred by the Secretary under this Article shall be reimbursed to the Secretary from the common fund that the Executive Committee may establish under Article 7 hereof.

(c) *Replacement.* Should the Executive Committee wish to replace the Secretary with another entity, the Executive Committee may, acting by unanimity, take such action.

(d) *Resignation.* The Secretary shall have the right to resign at any time by giving six months written notice to that effect to the Executive Committee.

(e) *Information and Reports.* The Secretary shall furnish the Executive Committee such information concerning its work as the Executive Committee may request.

Article 5

THE OPERATING AGENTS

(a) *Designation.* Participants shall designate an Operating Agent for each Annex. 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) *Acceptance of Functions.* To the extent that an Operating Agent is not a Contracting Party, each Operating Agent will accept its specific functions and responsibilities under this Agreement or the relevant Annex by providing to the Executive Committee and to the IEA Executive Director a signed notice of acceptance of its rights and obligations under this Agreement and the relevant Annex.

(c) *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 relevant Operating Agent;
- (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 Annex.

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

(d) *Specific Responsibilities.* The Operating Agent for each Annex shall be responsible for the overall technical and administrative management of the work under that Annex and for implementing the decisions of the Executive Committee. To this end, the Operating Agent for each Annex shall:

- (1) Prepare and submit annual reports to the Executive Committee on progress made on work under the Annex;
- (2) Upon request of the Executive Committee, convene annual meetings to be attended by all Participants in the Annex, as well as meetings of working groups, where necessary, the cost of which will be borne by the Participants.

(e) *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 7 hereof.

(f) *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.

(g) *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;
- (2) Such Participant or entity is approved in its function of Operating Agent by the Executive Committee, acting by unanimity.

(h) *Accounting.* An Operating Agent which is replaced or which resigns as Operating Agent shall, not later than three months after such replacement or resignation takes effect, provide the Executive Committee with an accounting of any monies and other assets which it may have collected or acquired for the Annex in the course of carrying out its responsibilities as Operating Agent and shall transfer those monies and other assets to the replacement Operating Agent as soon as possible after the delivery of the accounts.

(i) *Transfer of Rights.* In the event that another Operating Agent is appointed under paragraph (f) or (g) above, the Operating Agent shall transfer to such replacement Operating Agent any property rights which it may hold on behalf of the Participants in the respective Annex, and shall assist the replacement Operating Agent for at least three months after the replacement Operating Agent has assumed its functions.

(j) *Information and Reports.* Each Operating Agent shall furnish to the Executive Committee

such information concerning the Annex as the Committee may request and shall each year submit, not later than two months after the end of the financial year established pursuant to Article 7(f)(1) below, a report on the status of the Annex.

Article 6

ADMINISTRATION AND STAFF

(a) *Administration of Annexes.* Each Operating Agent shall be responsible to the Executive Committee for implementing its designated Annex in accordance with this Agreement, the applicable 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 Annex 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 by the Executive Committee, 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 Annex, in accordance with Article 7(f)(6) hereof.

Article 7

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 (h) below.

(b) *Common Financial Obligations.* The Executive Committee may agree, acting by unanimity, to establish a common fund to share the costs of its responsibilities and administrative activities set forth under Article 3 hereof (the "Agreement Common Fund"). In addition, Participants wishing to share the costs of a particular Task may agree in the appropriate Annex to establish a separate common fund (each, an "Annex Common Fund"). The apportionment of contributions to such common funds (whether in the form of cash, services rendered, intellectual property or the supply of materials) as well as the management and use of such common funds shall be governed by the regulations and decisions made pursuant to this Article by the Executive Committee, acting by unanimity.

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

- (1) Establishment of budgetary and procurement procedures to be used by the Operating Agent in making payments from any Annex Common Funds or in making contracts on behalf of the Participants in the relevant Annex;
- (2) Establishment of budgetary and procurement procedures to be used by the Secretary in making payments from the Agreement Common Fund or in making contracts on behalf of the Participants; and
- (3) Establishment of minimum levels of expenditure for which Executive Committee approval shall be required, including expenditure involving payment of monies to the Operating Agent or the Secretary for other than routine salary and administrative expenses previously approved by the Executive Committee in the budget process.

In the expenditure of Annex 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 Annex.

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

(e) *Accounting.* The system of accounts employed by the Operating Agent and the Secretary shall conform to accounting principles generally accepted in the country of the Operating Agent or of the Secretary, as the case may be, and shall be consistently applied.

(f) *Programme of Work and Budget for Annex Common Funds, Keeping of Accounts.* Should Participants agree to maintain an Annex Common Fund for the payment of obligations under a Programme of Work and Budget of the Annex, the following provisions shall be applicable unless the Executive Committee, acting by unanimity, decides otherwise:

- (1) The financial year of the Annex 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; the Executive Committee shall then transmit the final programme, once approved, to the Agency and to the members of the Agency's Committee on Energy Research and Technology.
- (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 Annex.
- (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 Annex; 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 Annex 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 shall include all payroll-related costs.
- (g) *Programme of Work and Budget for the Agreement Common Fund, Keeping of Accounts.* Should the Contracting Parties agree to maintain an Agreement Common Fund, for the payment of obligations under a Programme of Work and Budget of the Agreement, the following provisions shall be applicable unless the Executive Committee, acting by unanimity, decides otherwise:
- (1) The financial year of the Annex shall correspond to the financial year of the Secretary.
 - (2) The Secretary 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; the Executive Committee shall then transmit the final programme, once approved, to the Agency and to the members of the Agency's Committee on Energy Research and Technology.
 - (3) The Secretary shall maintain complete and separate financial records which shall clearly account for all funds and property coming into the custody or possession of the Secretary in connection with the Agreement.
 - (4) Not later than three months after the close of each financial year the Secretary shall submit to auditors selected by the Executive Committee for audit the annual accounts maintained for the Agreement; upon completion of the annual audit, the Secretary 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 Secretary for the Agreement shall be preserved for at least 5 years.

(h) *Currency of Contributions.* Contributions due hereunder from the Contracting Parties shall be paid in the currency of the Operating Agent, or the Secretary, as the case may be, unless another currency is specified by the Operating Agent or the Secretary in agreement with the Executive

Committee for the purpose of meeting a commitment in that currency.

(i) *Contribution to Common Funds.* Should Participants agree to establish common funds under the annual Programme of Work and Budget for an Annex, any financial contributions due from Participants in an Annex shall be paid to 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 Annex;
- (2) The Operating Agent shall be under no obligation to carry out any work under the Annex until contributions amounting to at least fifty per cent (in cash terms) of the total due at any one time have been received.

(j) *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.

(k) *Taxes.* The Secretary and 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 this Agreement or an Annex, respectively, as expenditure incurred in the operation of the Agreement or that Annex under the Budget; the Secretary and the Operating Agent shall, however, endeavour to obtain all possible exemptions from such taxes.

(l) *Audit of Annex Common Fund.* Each Participant shall have the right, at its sole cost, to audit the accounts of an Annex Common Fund 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 Annex shall be excluded from such audit, but if the Participant concerned requires verification of charges to the Budget representing services rendered to the Annex 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.

(m) *Audit of Agreement Common Fund.* Each Contracting Party shall have the right, at its sole cost, to audit the accounts of the Agreement Common Fund on the following terms:

- (1) The Secretary shall provide the Contracting Parties with an opportunity to

participate in such audits on a cost-shared basis;

- (2) Accounts and records relating to activities of the Secretary other than those conducted for the Agreement shall be excluded from such audit, but if the Contracting Party concerned requires verification of charges to the Budget representing services rendered to the Agreement by the Secretary, it may, at its own cost, request and obtain an audit certificate in this respect from the auditors of the Secretary;
- (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 Contracting Parties.

Article 8

PROCUREMENT PROCEDURES

All procurement of equipment and material shall be in accordance with the procedures laid down by the Executive Committee under Article 7(c)(1) hereof, which shall provide, inter alia:

- (1) The Operating Agent of each Annex shall have the power to enter into agreements and contracts for all necessary support, design and developmental services, and material fabrication and facility construction activities in the interest of the Annex, provided that such agreements and contracts are authorized in an approved Budget or by the provisions of this Agreement or by the express authorization of the Executive Committee;
- (2) The Operating Agent for each Annex shall perform all procurement functions that may be necessary to carry out activities under the Annex, in accordance with the procurement procedures adopted by the Executive Committee pursuant to Article 7(c)(1) hereof;
- (3) Consistent with the aforementioned procurement procedures, the Operating Agent shall undertake to secure the best contractual terms and conditions available, including, where possible, provision for title to all intellectual property generated under the Agreement, for a royalty-free licence for the use of background intellectual property for the purposes of the Task alone, and for a right on reasonable terms and conditions in accordance with Article 9 hereof for the Contracting Parties to use such background intellectual property commercially.

Article 9

INFORMATION AND INTELLECTUAL PROPERTY

(a) *Application to Agreement and Annexes.* Pursuant to the General Guidelines Concerning Information and Intellectual Property, approved by the Governing Board of the Agency on 21st November, 1975, and any modification thereof, the following information and intellectual property provisions shall generally apply to this Agreement and each of its constituent Annexes. Exceptions and additions to these provisions may be made in any particular Annex, in which case they shall apply to that Annex alone.

(b) *Executive Committee's Powers.* The publication, distribution, handling, protection and ownership of information and intellectual property provided under or arising from each Annex shall be determined by the Executive Committee, acting by unanimity, in conformity with this Agreement and the laws of the countries of the Participants.

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

- (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 Participant 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 by Governments.* 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 performance of the work under each Annex. The Participants in each Annex should notify the Operating Agent of all pre-existing information, and information developed independently of the Annex known to them which is relevant to the Annex and which can be made available without contractual or legal limitations.

(e) *Production of Available Information by Participants.* Each Participant in an Annex agrees to provide to the Operating Agent all previously existing information and information developed independently of the Annex which is needed by the Operating Agent to carry out its functions in that Annex, which is freely at the disposal of the Participant, and the transmission of which is not subject to any contractual and/or legal limitations:

- (1) If no substantial cost is incurred by the Participant in making such information available, at no charge to the Annex;

- (2) If substantial costs must be incurred by the Participant to make such information available, at such charge to the Annex as shall be agreed between the Operating Agent and the Participant with the approval of the Executive Committee.

(f) *Use of Proprietary Information.* If a Participant in an Annex has access to proprietary information which would be useful to the Operating Agent in conducting studies, assessments, analyses, or evaluations, such information may be communicated to the Operating Agent in accordance with an agreement between the Operating Agent and the specific Participant setting forth the terms and conditions for such acceptance; but the proprietary information shall not become part of reports, handbooks, or other documentation, nor be communicated to the other Participants, except as may be agreed in writing between the Operating Agent and the Participant which supplied such information.

(g) *Arising Proprietary Information.* It shall be the responsibility of the Operating Agent to identify information arising from each Task which qualifies as proprietary information under this Article and to ensure that it is appropriately marked. If any Contracting Party questions the decision of the Operating Agent regarding the proprietary nature of arising information, the question shall be submitted to the Executive Committee for decision. In accordance with Article 5(c)(2), the Operating Agent will hold legal title to any proprietary information arising from any Task for the benefit of the Participants in the Task. The Operating Agent shall license such proprietary information for non-exclusive use as follows:

- (1) To each Participant in the Task:
 - (i) On the most favourable terms and conditions for use by the Participant in its own country;
 - (ii) On favourable terms and conditions for the purpose of sub-licensing others for use in its own country.

In each case, the terms and conditions are to be stipulated by the Executive Committee taking into account the equities of the Participants based upon the sharing of obligations, contributions, rights and benefits of all Participants;

- (2) Subject to sub-paragraph (1) above, to each Participant in the Task for use in all countries, on reasonable terms and conditions stipulated by the Executive Committee taking into account the equities of the Participants based upon the sharing of obligations, contributions, rights and benefits of all Participants;
- (3) To the government of any Agency country and nationals designated by it, for use in such country in order to meet its energy needs, on terms and conditions stipulated by the Executive Committee taking into account any equitable conditions which might arise from the support provided by the Agency to the Task;
- (4) To entities and persons not mentioned above in this paragraph, if agreed by the Executive Committee, on terms and conditions stipulated by the Executive Committee.

(h) *Acquisition of Information.* Each Participant in an Annex shall inform the Operating Agent of the existence of information known to the Participant that can be of value to the Annex, but which is not freely available, and the Participant shall endeavour to make the information available to the Annex under reasonable conditions.

(i) *Exchange of Information with Others.* The Executive Committee may, acting by unanimity, make arrangements for the acquisition of information from sources other than the Participants in an Annex. The Executive Committee shall, acting by unanimity, determine the rules by which information available to Participants in an Annex may be made available to governments, utilities, research institutions, and other appropriate entities of countries which do not participate in an Annex.

(j) *Reports on Work Performed.* The Operating Agent of each Annex shall provide to the Participants reports on all work performed under the Annex and the results thereof, including studies, assessments, analyses, evaluations and other documentation, but excluding proprietary information.

(k) *Copyright.* The Operating Agent of each Annex may take appropriate measures necessary to protect copyrightable material generated under that Annex. Copyrights obtained shall be held by the Operating Agent for the benefit of the Annex Participants, in accordance with Article 5(c)2 hereof. Participants may reproduce and distribute such material, but shall not publish it with a view to profit, except as agreed by the Executive Committee, acting by unanimity.

(l) *Authors.* Each Participant shall, without prejudice to any rights of authors under its national laws, take necessary steps to provide the co-operation with its 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.

(m) *Access to Information and Reports.* Participants in each Annex shall be entitled without charge to have access to the information and reports produced by the Operating Agent of that Annex. The Executive Committee shall lay down guidance as to the use any Participant may make of the information and, where appropriate, the charges to be imposed.

(n) *Effect of Termination or Withdrawal.* The Executive Committee shall, at the time of the termination of this Agreement or the withdrawal of any Contracting Party, adopt appropriate measures for the subsequent application of the obligations of paragraph (m) above and related questions, which may include guidance as to the use any previous Participant may make of the information and, where appropriate, the charges to be imposed.

Article 10

LEGAL RESPONSIBILITY AND INSURANCE

(a) *Liability of the 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 approved by the Executive Committee and undertaken with common funds for a Task shall be charged to the Budget of the relevant Annex; such costs and expenses arising from other work undertaken for a Task shall be charged to the Budget of the relevant Annex if the 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 Annex.

(c) *Responsibility of the 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 11

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 Annex 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) *Applicable Rules.* Notwithstanding Article 7 of the IEA Framework for International Energy Technology Co-operation, adopted by the IEA Governing Board on 3 April 2003, the Framework shall apply to, and be an integral part of, this Agreement from 20 March 2007. A copy of the Framework is attached as Exhibit A to this Implementing Agreement.

(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 Chairperson of the tribunal. Should the Contracting Parties concerned fail to agree upon the composition of the tribunal or the selection of its Chairperson, 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 12

ADMISSION AND WITHDRAWAL OF CONTRACTING PARTIES

(a) *Admission of New Contracting Parties.* Upon the invitation of the Executive Committee, acting by unanimity, admission to this Agreement shall be open to:

- (1) the governments of both OECD member and OECD non-member countries;
- (2) the European Communities;
- (3) international organisations in which the governments of OECD member countries and/or OECD non-member countries participate; and
- (4) any national agency, public organisation, private corporation or other entity designated by the government of an OECD member country or an OECD non-member country, or by the European Communities.

(b) *Conditions of Participation.* The Executive Committee shall establish the terms and conditions for the admission, participation and withdrawal of Contracting Parties, including their rights and obligations, subject always to the IEA Framework for International Energy Technology Co-operation as adopted by the IEA Governing Board on 3 April 2003.

(c) *Admission of New Participants in Annexes.* Any Contracting Party may, with the agreement of the Participants in an Annex, acting by unanimity, become a Participant in that Annex.

Such participation shall become effective upon the Contracting Party's giving the Executive Director of the Agency a Notice of Participation in the appropriate Annex and the adoption of consequential amendments thereto.

(d) *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 Annex in which it participates.

(e) *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.

(f) *Withdrawal.* Any Contracting Party may withdraw from this Agreement or from any Annex 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 an Annex, their proportionate shares in the Budget shall be adjusted to take account of such withdrawal.

(g) *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 (f) 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.

(h) *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 13

SPONSORS

The Executive Committee may, in exceptional cases and with the approval of the Committee on Energy Research and Technology (CERT) of the Agency, invite any entity of an OECD Member country that is not designated by that country to participate in the Agreement, or any non-intergovernmental international entity in which one or more entities of OECD Member countries participate, to participate in the Programme as a "Sponsor" in accordance with the following paragraphs:

(a) The Executive Committee, acting by unanimity, shall submit to the CERT for approval a proposal with regard to the terms and conditions (including duration) of participation of a Sponsor, on an equitable basis in relation to the sharing of obligations, contributions, rights and benefits. Such a proposal may provide for the Sponsor to exercise the rights and undertake the duties of a Contracting Party on such matters as representation on the Executive Committee and other bodies or in workshops established under the Programme, financial contributions, staff secondment, intellectual property, voting arrangements, sharing in the liquidation of assets, termination, and withdrawal. The proposal shall lay down which provisions of this Agreement referring to "Contracting Party", "Contracting Parties", "Participant" and/or "Participants" would also apply to the Sponsor. The CERT may expressly condition its approval, in which case the Executive Committee shall either adopt such conditions, acting by unanimity, or elect not to invite that entity as a Sponsor. Any amendment to the approved terms and conditions shall be subject to the same approval procedures.

(b) The terms and conditions (including duration) of participation of a Sponsor, or any amendment thereto, shall enter into force upon (i) the adoption by the Executive Committee, acting by unanimity, (ii) approval by the CERT, and (iii) acceptance by the Sponsor, in a letter addressed to the Executive Director of the Agency.

(c) In the event that the Executive Committee amends the Agreement so as to impose additional obligations on Contracting Parties or Participants, the Executive Committee shall decide, acting by unanimity, whether, or to what extent, such additional obligations shall be imposed upon the Sponsor. In such cases the Sponsor shall notify the Executive Committee of its acceptance of the amendments within three months or such other period as may be fixed by the Executive Committee, failing which it shall be deemed to have withdrawn from participation in the Agreement.

Article 14

FINAL PROVISIONS

(a) This Agreement shall be open for signature, until 30 September, 2002, by the government of any country (or by a national agency, public organization, private corporation, company or other entity designated by such government), and by the European Communities.

(b) *Term of Agreement.* This Agreement shall enter into force upon signature by two or more Contracting Parties and shall remain in force for an initial period of five years. The term of the Agreement may be extended for such additional periods as may be determined by the Executive Committee, acting by unanimity, with the prior approval of the Governing Board of the Agency. The Executive Committee may, acting by unanimity, terminate this Agreement at any time.

(c) *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.

(d) *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 relevant common funds. Intellectual property held by an Operating Agent for the benefit of Participants will for this purpose be regarded as assets of the respective Annex.

(1) *Liquidation of Annexes:* In the event of such liquidation, the Executive Committee will, unless it decides otherwise, give the assets of the Annex, or the proceeds thereof, if any, to the Agreement Common Fund.

(2) *Liquidation of the Agreement Common Fund:* Any unused monies in the Agreement Common Fund and/or outstanding expenditures, if any, will be allocated to the Contracting Parties in proportion to their respective cumulative contributions received since the date on which the participation of each Contracting Party began.

(e) *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.

(f) *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 nineteenth day of October, 2001.

Amended on 20 March 2007

Further amended on 5 September 2009

LIST OF CONTRACTING PARTIES
(as of 5 September 2009)

INSTITUTO NACIONAL DE ENGENHARIA E TECNOLOGIA INDUSTRIAL (INETI) (PORTUGAL)

MINISTRY OF TRANSPORT AND ENERGY, DANISH ENERGY AUTHORITY (DENMARK)

DEPARTMENT OF ENERGY AND CLIMATE CHANGE (DECC) (U.K.)

SAGA UNIVERSITY (JAPAN)

SUSTAINABLE ENERGY IRELAND (SEI) (IRELAND)

THE COMMISSION OF EUROPEAN COMMUNITIES

NATURAL RESOURCES CANADA

UNITED STATES DEPARTMENT OF ENERGY (DOE) (U.S.A.)

FEDERAL PUBLIC SERVICE ECONOMY (BELGIUM)

THE GOVERNMENT OF THE FEDERAL REPUBLIC OF GERMANY

THE RESEARCH COUNCIL OF NORWAY

THE GOVERNMENT OF MEXICO

TECNALIA (SPAIN)

GESTORE SERVIZI ELETTRICI (GSE) (ITALY)

AOTEAROA WAVE AND TIDAL ENERGY ASSOCIATION (AWATEA) (NEW ZEALAND)

SWEDISH ENERGY AGENCY

OCEANLINX (AUSTRALIA)

Exhibit A

IEA FRAMEWORK FOR INTERNATIONAL ENERGY TECHNOLOGY CO-OPERATION

I. General Principles

Article 1

Mandate

- 1.1 In fulfilment of Chapter VII of the Agreement on an International Energy Program and in light of the Shared Goals of the IEA, the IEA operates Implementing Agreements to enable IEA Member countries to carry out programmes and projects on energy technology research, development and deployment.
- 1.2 An Implementing Agreement is a contractual relationship established by at least two IEA Member countries, and approved by the Governing Board, for the purpose set out in Article 1.1.
- 1.3 Participants in an Implementing Agreement shall contribute as fully as possible to the achievement of its objectives and shall endeavour to secure, through public and private support, the necessary scientific, technical and financial resources for the programmes and projects carried out under such an Implementing Agreement.
- 1.4 Each Implementing Agreement shall have an Executive Committee composed of representatives of all participants.

Article 2

Nature of Implementing Agreements

- 2.1 The activities of an Implementing Agreement may include, *inter alia*:
 - (a) co-ordination and planning of specific energy technology research, development and deployment studies, works or experiments carried out at a national or international level, with subsequent exchange, joint evaluation and pooling of the scientific and technical results acquired through such activities;
 - (b) participation in the operation of special research or pilot facilities and equipment provided by a participant, or the joint design, construction and operation of such facilities and equipment;
 - (c) exchange of information on (i) national programmes and policies, (ii) scientific and technological developments and (iii) energy legislation, regulations and practices;
 - (d) exchanges of scientists, technicians or other experts;

- (e) joint development of energy related technologies; and
 - (f) any other energy technology related activity.
- 2.2 Participation in an Implementing Agreement shall be based on equitable sharing of obligations, contributions, rights and benefits. Participants in an Implementing Agreement shall undertake to make constructive contributions, whether technical, financial or otherwise, as may be agreed by the Executive Committee.
- 2.3 Some or all of the participants in an Implementing Agreement may choose to execute specific projects and/or programmes through Annexes to the Implementing Agreement.

II. Rules Applicable to IEA Implementing Agreements

Article 3

Participation, Admission and Withdrawal

- 3.1 An Implementing Agreement can be established by two or more IEA Member countries subject to approval of the Committee on Energy Research and Technology (CERT) and of the Governing Board. There are two possible categories of participants in Implementing Agreements: Contracting Parties and Sponsors.
- 3.2 Contracting Parties may be
- (a) the governments of both OECD member or OECD non-member countries;
 - (b) the European Communities;
 - (c) international organisations in which the governments of OECD member countries and/or OECD non-member countries participate; and
 - (d) any national agency, public organisation, private corporation or other entity designated by the government of an OECD member country or an OECD non-member country, or by the European Communities.
- 3.2.1 Participation in any Implementing Agreement for OECD non-member countries or for international organisations requires prior approval by the CERT. However, should the CERT consider a first time application by an OECD non-member country or an international organisation to be sensitive, it may refer the decision to the Governing Board as it deems appropriate.

- 3.2.2 Prior to CERT approval of participation of OECD non-member countries or international organisations in any Implementing Agreement, the Executive Committee shall:
- (a) have voted in favour of the applicant to join the Implementing Agreement and provide evidence of the same to the CERT;
 - (b) provide the CERT with a copy of the terms and conditions of the applicant's participation in the Implementing Agreement; and
 - (c) provide the CERT with a letter from the applicant expressing the applicant's desire to join the Implementing Agreement and specifying which Annexes it wishes to join; its acceptance of the terms and conditions of the Implementing Agreement; the name of its designated entity if it is not the applicant itself; and the name of the entity that will sign the Implementing Agreement.
- 3.2.3 The terms and conditions for the admission, participation and withdrawal of Contracting Parties, including their rights and obligations, in Implementing Agreements and their Annexes, if any, shall be established by the Executive Committee of each Implementing Agreement.
- 3.2.4 Notwithstanding Article 3.2.3, no Contracting Party from an OECD non-member country or international organisation shall have greater rights or benefits than Contracting Parties from OECD member countries.

3.3 Sponsors may be

- (a) entities of OECD member countries or OECD non-member countries who are not designated by the governments of their respective countries to participate in a particular Implementing Agreement; and
 - (b) non-intergovernmental international entities in which one or more entities of OECD member countries or OECD non-member countries participate.
- 3.3.1 Participation of Sponsors in Implementing Agreements requires prior approval by the CERT.
- 3.3.2 Prior to CERT approval of Sponsor participation in any Implementing Agreement, the Executive Committee shall:

- (a) have voted in favour of the applicant to join the Implementing Agreement and provide evidence of the same to the CERT;
- (b) provide the CERT with a copy of the terms and conditions of the applicant's participation in the Implementing Agreement; and
- (c) provide the CERT with a letter from the applicant expressing the applicant's desire to join the Implementing Agreement and specifying which Annexes it wishes to join; its acceptance of the terms and conditions of the Implementing Agreement; and the name of the entity that will sign the Implementing Agreement.

3.3.3 The terms and conditions for the admission, participation and withdrawal of Sponsors, including rights and obligations, in Implementing Agreements and their Annexes, if any, shall be established by the Executive Committee of each Implementing Agreement.

3.3.4 Notwithstanding Article 3.3.3, no Sponsor shall have greater rights or benefits than Contracting Parties from OECD non-member countries and no Sponsor shall be designated Chair or Vice-chair of an Implementing Agreement.

3.3.5 The CERT shall have the right to not approve participation of a Sponsor if the terms and conditions of such participation do not comply with this Framework, any Decisions of the CERT or the Governing Board and the Shared Goals of the IEA.

Article 4

Specific Provisions

4.1 Unless the CERT otherwise agrees, based on exceptional circumstance and sufficient justification, Implementing Agreements shall be for an initial term of up to, but no more than, five years.

4.2 An Implementing Agreement may be extended for such additional periods as may be determined by its Executive Committee, subject to approval of the CERT. Any single extension period shall not be greater than five years unless the CERT otherwise decides, based on exceptional circumstances and sufficient justification.

4.3 Notwithstanding Paragraph 4.2, should the duration of the programme of work of an Annex exceed the term of the Implementing Agreement to which it relates, the CERT shall not unreasonably withhold approval to extend the Implementing Agreement for such additional period to permit the conclusion of the work then being conducted under the Annex.

- 4.4 Either the Contracting Parties or the Executive Committee of each Implementing Agreement shall:
- 4.4.1 approve the programme activities and the annual programme of work and budget for the relevant Implementing Agreement;
 - 4.4.2 establish the terms of the contribution for scientific and technical information, know-how and studies, manpower, capital investment or other forms of financing to be provided by each participant in the Implementing Agreement;
 - 4.4.3 establish the necessary provisions on information and intellectual property and ensure the protection of IEA copyrights, logos and other intellectual property rights as established by the IEA;
 - 4.4.4 assign the responsibility for the operational management of the programme or project to an entity accountable to the Executive Committee of the relevant Implementing Agreement;
 - 4.4.5 establish the initial term of the Implementing Agreement and its Annexes;
 - 4.4.6 approve amendments to the text of the Implementing Agreement and Annexes;
and
 - 4.4.7 invite a representative of the IEA Secretariat to its Executive Committee meetings in an advisory capacity and, sufficiently in advance of the meeting, provide the Secretariat with all documentation made available to the Executive Committee members for purposes of the meeting.

Article 5

Copyright

- 5.1 Notwithstanding the use of the IEA name in the title of Implementing Agreements, the Implementing Agreements, the Executive Committee or the entity responsible for the operational management of the programme or project may use the name, acronym and emblem of the IEA as notified to the World Intellectual Property Organisation (WIPO) only upon prior written authorisation of the IEA and solely for the purposes of executing the Implementing Agreements.
- 5.2 The IEA shall retain the copyright to all IEA deliverables and published or unpublished IEA material. Implementing Agreements wishing to use, copy or print such IEA

deliverables and/or material shall submit a prior written request of authorisation to the IEA.

Article 6

Reports to the IEA

- 6.1 Each Executive Committee shall submit to the IEA:
- 6.1.1 as soon as such events occur, notifications of any admissions and withdrawals of Contracting Parties and Sponsors, any changes in the names or status of Contracting Parties or Sponsors, any changes in the Members of the Executive Committee or of the entity responsible for the operational management of the programme or project, or any amendments to an Implementing Agreement and Annex thereto;
 - 6.1.2 annual reports on the progress of programmes and projects of the Implementing Agreement and any Annex;
 - 6.1.3 notwithstanding Article 6.1.1, in addition to and with the Annual Report, annually provide the IEA with the following information:
 - (a) the names and contact details of all current Contracting Parties and Sponsors;
 - (b) the names and contact details of all Contracting Parties and Sponsors who may have withdrawn from the Implementing Agreement or any Annex in the year covered by the Annual Report;
 - (c) the names and contact details of all new Contracting Parties and Sponsors who may have joined the Implementing Agreement or any Annex in the year covered by the Annual Report;
 - (d) any changes in the names or status of any Contracting Parties or Sponsors;

- (e) the names and contact details of the Executive Committee members and the entity responsible for the operational management of the programme or project; and
 - (f) any amendments to the text of an Implementing Agreement and any Annex thereto.
- 6.1.4 End of Term Reports, which shall include all the information and documentation required by Decisions of the CERT then in effect and relating thereto; and
- 6.1.5 at the request of the IEA, any other non-proprietary information as may be requested by the IEA in connection with the IEA's mandate.

Article 7

Effective Date

This Framework shall take effect and become binding on all participants in the Implementing Agreements and Annexes from the date of its approval as a decision by the Governing Board.

Annex I

REVIEW, EXCHANGE AND DISSEMINATION OF INFORMATION ON OCEAN ENERGY SYSTEMS

1. *Objective*

The objective of this Task is to collate, review and facilitate the exchange and dissemination of information on the technical, economic, environmental and social aspects of ocean energy systems. Access to this information should facilitate further development and adoption of cost-effective ocean energy systems. In addition, the results of this Task will facilitate identification of further Annexes, as well as continuing to promote information exchange. Ocean waves and marine currents energy systems (“waves and currents systems“) are the current priority.

2. *Means*

Work in pursuit of the foregoing objective will be performed by analysts and technical writers in the Participants' countries. Participants will carry out the following Subtasks:

(a) Subtask I/1 Collation, Review and Publication of Information on Ocean Waves and Marine Currents Energy Systems

This will be carried out by a sub-contractor (a technical analyst and writer) from one of the Participants' countries.

(1) Collation of Information

The analyst will collect information on the technical, economic, environmental and social characteristics of waves and currents systems by means of published and unpublished written materials, questionnaires and interviews. This activity will co-operate with the Wave Energy Network. This information will provide input to sub-paragraph (2) below. The information will be collected on the following items:

- (i) Commercial, government and utility activities related to waves and currents systems, including (where available) the description of the activities and the budgets involved;
- (ii) Demonstration schemes already deployed in the sea, including a description of the device, the performance of the device and its components, the capital and operating costs, its current status and the lessons learned from its design, deployment and operation;
- (iii) Systems under development for deployment within the next two years, including a description of the device, principles of design, method of energy capture, predicted performance and current status;

- (iv) General technologies employed in waves and currents systems, including methods of energy capture, structural design, emplacement and mooring as well as energy transformation, storage and integration;
- (v) Available resources, including average wave power levels and currents velocity, sources of information and methods of description and prediction;

- (vi) Legal and institutional factors affecting the adoption of waves and currents systems, including incentives and regulations;
- (vii) Public perceptions of installed and planned waves and currents systems;
- (viii) Impacts of manufacture and installation of waves and currents systems on the environment.

(2) Review of Information

The information collected in sub-paragraph (1) above will be reviewed, in order to develop a summary assessment of both the status of and trends in waves and currents systems applications.

(3) Publication of Information

A general report on the findings of the above items will be prepared and submitted for the approval of the Participants. The report will then be published and made available via the Agreement web site to disseminate the information collected.

(b) Subtask I/2 Exchange of Information on Ocean Energy Systems

Participants will update the information on ocean energy systems to be published under Subtask I/1 (3) as described in sub-paragraph 2(a)(1) above. They will exchange this information at annual meetings to provide input to Subtask I/3. The information is to be collected using a standard format.

(c) Subtask I/3 Analysis and Dissemination of Information on Ocean Energy Systems

Participants will analyze the information on ocean energy systems collected under Subtask I/2 in order to develop joint summary assessments of trends in ocean energy exploitation. Each Participant will be responsible for data collection in its own country and for preparation of a brief annual report on items described in sub-paragraph 2 (a)(1) above. The Operating Agent will ensure that each Participant provides uniform and comparable information. A general annual report assessing progress on ocean energy exploitation, with particular emphasis on commercial activity, will be prepared and published to disseminate the information collected.

(d) Subtask I/4 Website Creation and Maintenance

To enhance the dissemination of the information published by the Agreement, a website will be created and maintained, in co-operation with that of the Wave Energy Network wherever possible. This site will contain information produced within the scope of the Agreement, namely the reports pursuant to Subtasks I/1 and I/3 and the proceedings pursuant to Subtask I/2.

3. *Results*

The products of work performed in this Annex will be designed for use by researchers, industry, utility executives, senior government officials, and others. The results of the joint activity will include:

- (a) Reports on the findings of Subtask I/1(1) and (2), as described respectively in sub-paragraphs 2(a)(1) and (2) above, which will be published under Subtask I/1(3). The publication of the above report is due four months from the date of entry into force of this Agreement;
- (b) Proceedings of annual meetings to exchange information on ocean energy systems, pursuant to Subtask I/2, as described in sub-paragraph 2(b) above;
- (c) Reports on the trends of ocean energy systems, pursuant to Subtask I/3 as described in sub-paragraph 2 (c) above;
- (d) Website for the Ocean Energy Systems Implementing Agreement.

4. *Time Schedule*

This Annex shall enter into force on 19 October, 2001 and shall remain in force for a period of five years. It may be extended by two or more Participants, acting in the Executive Committee, taking into account any recommendations of the Agency's Committee on Energy Research and Technology concerning the term of this Annex, and shall thereafter apply only to those Participants.

The IEA-OES IA has been extended for another 5-year term (2007-2011). This Annex, being the mandatory Annex of the IA, has been extended automatically to 18 October, 2011.

5. *Specific Responsibilities of the Operating Agent*

In addition to carrying out the specific responsibilities enumerated in Article 5 of this Agreement, the Operating Agent shall:

- (a) Publish proceedings of papers presented at the annual meetings, pursuant to Subtask I/2, on the topics enumerated in sub-paragraph 2(a) (1) above;
- (b) Prepare joint assessments of trends in ocean energy exploitation, pursuant to Subtask I/3, as described in sub-paragraph 2(c) above.

6. *Funding*

- (a) *Annual Meetings.* The annual meetings pursuant to Subtask I/2 shall be hosted in turn by the Participants and the hosts will sustain the expenses of local organization.
- (b) *Publications.* The cost of publishing the proceedings and summary assessments described in paragraph 3 above will be met by the Common Fund.
- (c) *Individual Financial Obligations.* Each Participant shall bear all the costs it incurs in carrying out its obligations under this Annex, including reporting and travel expenses.
- (d) *Task-Sharing Requirements.* The total level of effort to perform the work specified in Subtask I/1 is estimated at 0.25 person-years to be carried out by a sub-contractor, funded from the Common Fund. The total level of effort to perform the work specified in Subtask I/2 and Subtask I/3 is estimated as 2 person-months per year.

7. *Operating Agent*

The Instituto Nacional de Engenharia e Tecnologia Industrial (INETI) is designated as Operating Agent.

8. *Information and Intellectual Property*

The information on ocean energy systems developed under this Annex shall be confined to publicly available, non-proprietary and unclassified information.

9. *Participants*

This Annex is a mandatory Annex of the Agreement.

Annex II

DEVELOPMENT OF RECOMMENDED PRACTICES FOR TESTING AND EVALUATING OCEAN ENERGY SYSTEMS

1. *Objective*

The objective of this Task is to develop recommended practices for testing and evaluating ocean energy systems and, in this way, to improve the comparability of experimental results. This will be done by collecting and analysing information on testing facilities and testing procedures. Standards for presentation of technical design and data, and for assessment of system performance, will be produced. Ocean waves and marine currents energy systems are the current priority.

2. *Means*

Work in pursuit of the foregoing objective will be performed by ocean energy experts and offshore engineers, and by hydraulic institutes in the Participants' countries. Information will be collected from experts and institutes in the Participants' countries and in other IEA Member and non-Member countries, previously and presently engaged in the technologies. To ensure consistency, a standard data collection format and a set of standard definitions will be used. Participants will contribute to the following Subtasks:

(a) Subtask II/1 Testing Facilities and Test Sites

A database describing the existing testing facilities and test sites for ocean energy systems in the Participants' and other countries will be compiled.

(b) Subtask II/2 Testing Procedures

Standards for testing wave energy systems have been proposed as part of wave energy programmes in the Participants' and other countries. These standards will be collected to form the basis for general standards on testing ocean energy systems.

(c) Subtask II/3 Presentation of Results

There is a need for standardization of the presentation of test results on the performance and survivability of ocean energy systems. Definitions of the relevant ocean parameters and ocean energy converting systems parameters will be presented, and a standard format for the presentation of results will be proposed.

(d) Subtask II/4 Performance Assessment

The standardized presentation of the performance defined in Subtask II/3 will be

used to calculate the annual energy production of various ocean energy systems at different sites. For each system, the ratio between the energy production and the system volume, and the ratio between the energy production and the system weight will be produced.

Annex II Extension

(e) WP 1 Generic and site related Wave & Tidal Data

Task 1.1 Generic and site related Wave Data

Objective: Four generic scatter diagrams that reflect typical wave conditions at different member states' coast lines ranging from 10 kW/m to 50 kW/m will be compiled. Directionality and tidal range information as well as seabed conditions and distance from shore to 25 and 50-meter depth contour will be compiled. The goal is to enable comparison between the performance of different wave energy systems.

Task Leader: Portugal,

Partners: Denmark, Canada, Ireland, USA and Norway

Task 1.2 Generic and site related Marine Current Data

Objective: Four generic diagrams that reflect typical tidal flow conditions at different member states' coast lines ranging from 0,5 kW/m² to 2 kW/ m² will be compiled. Directionality and tidal range information as well as seabed conditions and distance from shore to 25 and 50-meter depth contour will be compiled. The goal is to enable comparison between different tidal energy systems performance.

Task Leader: Canada

Partners: USA, UK, Norway and Ireland

(f) WP 2 Development and Evaluation Protocol for Ocean Energy Systems

Objective: The objective of the Protocol is to provide a document that in simple terms explains steps needed in the development of Ocean Energy Systems. The protocol aims at explaining in a common language the objective and expected outcome of each step for developers and supporting bodies. Criteria for moving from one step to the next will be explained and discussed.

Task 2.1 Development Protocol Wave

Task leader: Ireland

Partners: Denmark, Canada,UK, Norway, Portugal

Task 2.2 Development Protocol Tidal

Task leader: UK,

Partners: Canada, Ireland, Norway and Mexico

(g) WP 3: Guidelines For Open Sea Testing And Evaluation Of Ocean Energy Systems

Task 3.1 Monitoring and data acquisition Wave & Tidal

Objective: Guidelines regarding monitoring and data acquisition of different types of Ocean energy systems will be compiled based on best practice and experience from the Ocean Energy community. Practical experience that can help future development will be listed. Typical instrumentation used and experience in handling will be provided. Grid connected prototypes and prototypes that dump the power at sea will be discussed and in each case the technical issues involved will be treated.

Task Leader: UK,

Partners: Canada, Ireland, Portugal, Norway, Denmark, USA

Task 3.2 Data preparation and presentation of results Wave & Tidal

Objective: Guidelines regarding preparation of data and presentation of will be compiled based on best practice and experience from the Ocean Energy community. The guidelines will describe how the results from the test-site can be transformed to the generic ocean conditions of task 1.1 & 1.2.

Task Leader: Ireland

Partners: Canada, UK, Portugal, Norway, Denmark, USA,

Task 3.3 Guidelines on Design, Safety and Installation procedures Wave & Tidal

Objective: Guidelines in the design of the Ocean energy system will be compiled based on best practice and experience from the Ocean Energy community. Practical experience that can help future development will be listed. Guidelines developed by DNV and Germanisher Lloyd can form the basis for this task.

Task Leader: UK,

Partners: Canada, Ireland, Portugal, Norway, Denmark and USA

3. *Results*

The deliverables resulting from the work performed in this Annex will be designed for use by the other Annexes of this Agreement, as necessary. The presentation format of performance results should be meaningful to industry and investors, as well as to researchers.

4. *Time Schedule*

The first part of Annex II entered into force on 19 October, 2001 and resulted in the publication presented in 2003 on the IEA-OES Web page. Based on Members decision during the 10th Executive Committee meeting in Vancouver May 2006 the Annex II has been extended and shall remain in force until December 2008. It may be even further extended by agreement of two or more Participants, acting in the Executive Committee, taking into account any recommendations of the Agency's Committee on Energy Research and Technology concerning the term of this Annex, and shall thereafter apply only to those Participants.

5. *Specific Responsibilities of the Operating Agent*

In addition to carrying out the specific responsibilities enumerated in Article 5 of this Agreement, the Operating Agent shall co-ordinate the presentation of results with those ocean energy projects assessed within Annex I to this Agreement for which development of standardized performance assessment is meaningful.

6. *Funding*

Each participant has agreed to contribute 3000€ to the Annex II Extension to cover the cost of the Operating Agent, meetings and printing of report. This contribution will be paid in 2007 together with the annual membership fee and cover the work on the Annex until Ultimo 2008.

- (a) *Publications.* The cost of publishing reports and other information dissemination shall be met by the budget
- (b) *Individual Financial Obligations.* Each Participant shall bear all the costs it incurs in carrying out its obligations under this Annex, including travel expenses.
- (c) *Task-Sharing Requirements.* The total level of effort to perform the work is estimated individually by each member, but is expected to be in order of 2 man-months per Participant per year in addition to existing work that already has been carried out in the member countries.
- (d) The Operating Agent will provide a level of work estimated at 2 person-months for the co-ordination and compilation of information of the Annex II extension

7. *Operating Agent*

The Ministry of Environment and Energy, Danish Energy Agency, acting through RAMBOLL, Denmark, is designated as Operating Agent.

8. *Participants*

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

Instituto Nacional de Engenharia e Tecnologia Industrial (INETI) (PORTUGAL)
Ministry of Transport and Energy, Danish Energy Authority (Denmark)
Department of Energy and Climate Change (DECC) (U.K.)
Sustainable Energy Ireland (SEI) (Ireland)
Natural Resources Canada
United States Department of Energy (DOE) (U.S.A.)
Federal Public Service Economy (Belgium)
The Research Council of Norway
The Government of Mexico
TECNALIA (Spain)
Oceanlinx (Australia)

Annex III

INTEGRATION OF OCEAN ENERGY PLANTS INTO DISTRIBUTION AND TRANSMISSION ELECTRICAL GRIDS

1. Objective

The primary purposes of this Annex are to conduct cooperative research concerning the generation, transmission, and economics of integrating ocean energy into electrical grids and to provide a forum for relevant information exchange. Specific objectives of the Annex are as follows:

- Identify potential differences and opportunities associated with integration of wave and tidal current energy plants to electrical grids, in comparison to wind energy,
- Develop a relevant interconnection guideline for electrical utilities and/or project developers considering connecting pilot wave and tidal current projects to the grids,
- Create a comprehensive database for characterizing well advanced wave and tidal current conversion systems,
- Demonstrate integration of wave & tidal current energy plants to electrical grids through case studies involving simplified network modeling techniques, and identify the near-term & longer-term practical level of the ocean power that could be integrated in target geographical areas for a member country, and
- Coordinate the work of this Annex with relevant activities being carried out within IEA as well as by individual participating members.

2. Means

This Annex will draw upon research efforts within member countries related to integration of ocean energy within an electricity supply system. The participating member countries will determine level of contributions to various work packages of the work program and the organizations that will be participating in this Annex. Annual meetings of the Annex will follow. In order to achieve the stated objectives of the proposed Annex, the following specific Work Packages and Coordination activities will be carried out:

(a) Work Package 1: Identify Potential Differences and Opportunities Associated with Integration of Wave & Tidal Current Plants and Development of a Relevant Interconnection Guideline

Scope of this work package will include identification of integration issues that are different from the integration of wind energy and the opportunity associated with integration of ocean energy. Relevant existing documents by the respective member countries will be identified. These documents will be reviewed and synthesized. Feedbacks from the limited operating experience from some of the existing grid-connected wave and tidal current demonstration plants will also be sought. In-depth review of various critical power qualities and grid issues and the

present solutions from the operating experience of wind turbines/farm will also be reviewed.

Based on the above review and synthesis, differences and opportunity (i.e., complimentary with offshore wind, capacity factor, etc. other form of utilizations) associated with the integration of wave and tidal current plants will be identified. A relevant interconnection guideline that could be used by developers, utilities and others, will be developed.

WP 1 Leader and Potential Contributors

Canada will take the lead for this Work Package with contribution from UK, Ireland, Portugal, Denmark, Germany, USA, and others.

(b) Work Package 2: Dynamic Characteristics of Ocean Energy Electricity Generators

Scope of this work package would include the e followings:

- Reviewing steady state power characteristics of device types
- Development of dynamic model for devices
- Analysis of impact of a wave/tidal current generator on the design of offshore network

There are a wide variety of energy conversion chains associated with harnessing power from wave and tidal current. These variations are associated with both the mechanical as well as electrical sub-conversion systems. For an example, a particular conversion process could have air turbines or hydraulic turbines or hydraulic pump or reciprocating devices or propeller types. There are also different types of electrical generators that are used in the conversion chain, such as, synchronous, induction, permanent magnet, or linear generation. Ocean power generators may or may not have governors or voltage regulators, and they may be connected through inverters or other types of power conversion equipment. So there are many options to be considered.

There is a need to gather and develop an authoritative, comprehensive and unbiased dynamic characteristics of relevant wave and tidal current conversion technologies, and present results in such a way that these models can be easily used for carrying out load flow and network stability analysis.

WP 2 Leader and Potential Contributors

Ireland will take the lead for this Work Package with contributions from UK, Canada, Germany, Portugal, Denmark, and others

(c) Work Package 3: Identify Near-term and Longer-term Practical Potential of Ocean Power, Through Case Studies Involving Integration of Ocean Energy Plants with Distribution and Transmission Network

Scope of this work package would be to carry out case studies involving network modelling for integrating ocean energy plants to distribution and transmission networks.

Specific case studies involving some target market areas within the participating countries will also determine the present capacity limits for integrating ocean energy resources. These case studies will determine what could be obvious market potential for ocean energy resources in these target areas, and the associated distribution, transmission grid upgrading costs, considering future scenarios. These simplified case studies must consider system-wide perspective. The case

studies could also include cross-boarder network analysis to determine capacity and identify congestion.

Participating countries can contribute to this work package by carrying out specific case studies relevant to their national market area and sharing relevant results and reports with the Annex participants.

WP 3 Leader and Potential Contributors

UK will take the lead for this Work Package with contribution from Ireland, Canada, Portugal, Denmark, and others. The contributions will be in the form of case studies, illustrating network modeling involving integration of ocean energy plants to determine practical level of OE integration, or identifying grid constraints & limitations, or synergy of integration with other renewable such as, offshore wind combined with offshore wave, or integration with Hydro generations, as well as other form of generations.

(d) Coordination Activities

Activities from this Annex will be communicated with other relevant IEA implementing agreements, such as, Electricity Networks Analysis, Research and Development (ENARD), Integration of Renewable into Electricity Grids, Annex on Integration of Wind and Hydropower System of the IEA-IA-Wind, as well as other relevant national initiatives.

UK will lead the Coordination activities of the Annex with inputs from other participating member countries.

3. Results

Expected deliverables from the proposed work packages are:

- A technical report that will list critical power quality and integration issues to be considered for ocean power, and will identify differences and opportunity for ocean energy, as compared to wind energy.
- A preliminary interconnection guidelines for developers, utilities and others considering building pilot projects.
- A technical report containing dynamic characteristics of the most common wave and tidal current conversion technologies, suitable for use in load flow and system stability models.
- A technical reports containing various case studies illustrating network modelling involving integration of ocean energy with other renewables and/or other form of generations.

4. Time Schedule

The Annex was approved by the IEA-OES Executive Committee in Lisbon, November 2006 meeting. After approval of the work program of the Annex at the Mexico City meeting of the

ExCo, the Annex shall remain in force until May 2009. It may be further extended by agreement of two or more Participants, acting in the Executive Committee, taking into account any recommendation of the Agency's Committee on Energy Research and Technology concerning the term of this Annex, and shall thereafter apply only to those Participants.

5. *Specific Responsibility of the Operating Agent*

Be responsible for the performance of the tasks and report annually to the Executive Committee on the progress and results of the work performed.

Provide to the Executive Committee, within six months after completion of individual work package a report summarizing findings of the Annex Work Packages for its approval and transmittal to the Agency.

6. *Funding*

Each participant has agreed to contribute 3000 Euro to the Annex to cover the cost of the Operating Agent. This contribution will be paid in 2007 and cover the work on the Annex until May 2009. It is expected that the following shall apply:

- Each participant shall bear their own costs for carrying out the scientific work, including reporting and travel expenses.
- The host country shall bear the costs of workshops and meetings convened in conjunction with the Annex.
- Task-sharing requirements: The total level of effort to perform the work is estimated individually by each member, but it is expected to be in the order of 2 man-months per participant per year in addition to existing work that already has been carried out in the member countries
- The Operating Agent will provide 2 person-months for the compilation of information and necessary coordination of the Annex.

7. *Operating Agent*

Powertech Labs Inc. of Canada is designated as Operating Agent.

8. *Participants*

The Contracting Parties, which are Participants in this Annex, are the followings:

Department of Energy and Climate Change (DECC) (U.K.)
Sustainable Energy Ireland (SEI) (Ireland)
Natural Resources Canada
TECNALIA (Spain)
Aotearoa Wave and Tidal Energy Association (AWATEA) (New Zealand)

Annex IV

ASSESSMENT OF ENVIRONMENTAL EFFECTS AND MONITORING EFFORTS FOR OCEAN WAVE, TIDAL, AND CURRENT ENERGY SYSTEMS

(A) *Background*

This Annex responds to a need for information on the environmental effects related to ocean wave, tidal, and current energy technologies described in the 18 October 2007 summary of the International Energy Agency's (IEA's) meeting on Ocean Energy Systems held in Messina, Italy (the Messina report).¹ It particularly focuses on a need to compile and disseminate information on the environmental effects of ocean energy technologies and on identifying methods of monitoring for such effects.

The Messina report highlighted a need for combining the lessons of related studies and for sharing robust, reliable environmental monitoring methods that detect change and are adaptable to the unexpected. It concludes with a table listing and prioritizing environmental issues related to the above technologies. This Annex IV effort will start where the Messina Report concluded, by identifying potentially critical environmental issues associated with the new technologies, as identified in recent syntheses of the available information on the new technologies. Such syntheses include the United States Department of Energy's (USDOE) Report to Congress on Potential Environmental Effects of Marine and Hydrokinetic Energy Technologies (using data from around the world and due to the U.S. Congress in June 2009); the April 2008 Fundy Tidal Energy Strategic Environmental Assessment by the Nova Scotia, Canada, Department of Energy; the July 2007 Worldwide Synthesis and Analysis of Existing Information Regarding Environmental Effects of Alternative energy Uses on the Outer Continental Shelf by the U.S. Department of the Interior's Minerals Management Service; and the March 2007 Scottish Marine Renewables Strategic Environmental Assessment by the Scottish Executive. Other applicable syntheses will be used as they are identified.

Annex IV will focus on ocean wave, tidal, and current energy development; the Annex will not specifically address offshore wind power, ocean thermal energy conversion (OTEC), or tidal barrages. Ocean wave, tidal, and current technologies are the focus of a great deal of activity at the moment and have a much shorter history of study than offshore wind power, tidal barrages, and OTEC. However, to the extent that information pertaining to offshore wind power, tidal barrages, or OTEC is transferable to this analysis, it will be incorporated.

(B) *Objectives*

Annex IV will increase our understanding of the environmental effects of ocean wave, tidal, and current energy development on the marine environment. Depending on the extent of information available, examples of environmental impacts for potential consideration may include impacts to

¹ National Renewable Energy Laboratory (USA) and Natural Resources Canada (Canada). October 18, 2007. Potential Environmental Impacts Of Ocean Energy Devices: Meeting Summary Report.

benthic organisms, fish, marine mammals, birds, sediment transport and coastal processes, multiple uses, visual impacts, social impacts and economics, among others. Before analysis begins, Annex members will determine which impacts should be included to ensure that efforts are focused on priority needs.

The Annex will facilitate efficient government oversight of the development of ocean energy systems by expanding our baseline knowledge of environmental effects and monitoring methods. One of the primary goals of the Annex is to ensure that existing information and data on environmental monitoring (and, to the extent possible, practices for environmental mitigation) are more widely accessible to those in the industry; national, state, and regional governments; and the public. The Annex will facilitate knowledge and information transfer. The database and the final report will be made publicly available. Annex participants will compile and assess information from existing and proposed environmental monitoring studies. Monitoring protocols and results will be documented in a prescribed report format and lessons learned regarding monitoring methods will be identified. If monitoring has revealed viable practices for mitigating environmental effects, those practices will be reported.

The Annex will culminate in an accessible and searchable database, an expert's workshop, and a comprehensive summary report that will be published by the IEA-OES. The report will present all relevant information gathered, provide critical analysis on monitoring efforts and mitigation, and provide guidance to international ocean energy stakeholders including policymakers, developers, regulators, agencies, academic institutions, and research organizations. Greater understanding of the environmental effects and monitoring methods related to ocean energy will foster public acceptance and help to advance ocean energy technology.

(C) Methods and Tasks

The Operating Agent (The United States Department of Energy) will coordinate tasks among the Annex's Participants. Coordination will be accomplished through regular meetings, such as teleconferences or videoconferences, on an agreed-to schedule (e.g., quarterly). Additional coordination will occur through e-mail, teleconferencing, a community website (e.g., WebEx), and through presentations and discussions at various conferences and meetings.

Tasks will be conducted by analysts and technical writers from the Annex's participating countries. A contractor also will be selected, with input from Annex participants, to help with technical and analytical tasks. (See "responsible parties" for each task in Figure 1 for more information on what is to be expected from each Annex member.)

Year 1 (2009): Identify potential environmental effects of ocean wave, tidal, and current energy systems; compile existing monitoring information and identify high priority information gaps; design and develop database; and begin to enter data.

Specific tasks include:

- (a) Identify and review valuable existing syntheses addressing ocean wave, tidal, or current energy systems;

- (b) Based on existing syntheses, assemble a master list of potential environmental effects, related monitoring methods, and (if possible) mitigation strategies;
- (c) Design and develop the database and input data on environmental effects, monitoring methods, and (if possible) mitigation strategies; and
- (d) Identify and prioritize crucial information gaps related to monitoring methods and environmental impacts, and select higher priority gaps for further evaluation using analogous technologies.

Year 2 (2010): Develop a standard data format; identify, select, and compile into the database case study information; and research analogous technologies (analogues) for additional information.

In an effort to better understand the current state of ocean energy systems and associated environmental challenges, existing projects conducting environmental monitoring studies will be identified, selected, and reviewed by participating countries. These environmental case study reports will detail the specific methods and findings of each project with particular emphasis on identifying potential environmental impacts, environmental monitoring methodologies, and mitigation efforts. Cooperation from project developers may be a critical component in this task in order to obtain the information necessary to carry out the proper analysis. The Annex Participants will work closely with identified project managers or developers and only request information needed to complete the case studies analysis.

Specific tasks include:

- (e) Develop a standard format for reporting case study information, which may include, for example, the following fields: type and location of project, device monitored, generating capacity, power source, water depth, special environmental issue of concern, planned duration of monitoring efforts, frequency and timing of monitoring, measurement strategy and technology, estimated project cost, monitoring cost and funding source, relevant findings, and strengths and weaknesses of monitoring approaches and mitigation efforts.
- (f) Identify projects where ocean wave, tidal, or current energy devices are operational and for which environmental monitoring has been or is being undertaken or is planned. Select case studies to be reviewed.
- (g) Compile and submit case study reports to operating agent.
- (h) For priority information gaps, participating nations select analogue monitoring and mitigation methods that can be used to help evaluate the environmental effects of ocean wave, tidal, and current energy systems (e.g., from wind, aquaculture, ocean thermal energy technology, electric or telecommunications sub-sea cables, etc.).

- (i) Enter case study and analogue information into the database and distribute for review by all Annex participants.

Year 3 (2011): Final analysis of all information and case studies; completion of preliminary, draft, and final reports; experts workshop; distribution of final report and database on internet website.

The Annex IV report will compile all information and analysis from Years 1-3. It will highlight potential environmental effects, describe case studies, identify monitoring and mitigation strategies, and discuss lessons learned. The Final Annex Report will be completed at the end of Year 3. Comments from Annex participants and workshop participants will be incorporated.

Specific tasks include:

- (j) Analyze the synthesis data, case study data, and analogue information and prepare a preliminary report for initial review including a summary of the database information and any lessons learned and best practices for monitoring and mitigating environmental effects of ocean wave, current, and tidal energy devices.
- (k) Solicit comments on the preliminary report and hold an experts' workshop (including participating nations and other experts) to discuss the preliminary findings.
- (l) Incorporate workshop and written comments into a draft report and distribute the draft report for review by participating nations.
- (m) Finalize Annex IV Report, including characterization of the environmental effects of ocean wave, tidal, and current systems; identification of successful monitoring methods and mitigation strategies; and a description of any lessons learned and best practices (where possible).
- (n) Post final report and database to the internet, and link the final Annex IV database to other ocean energy databases.

(D) Deliverables

The major products of Annex IV will include:

- (1) A searchable database, accessible to the public via a website, that is derived from:
 - (a) Existing syntheses with information on environmental effects, monitoring methods, and mitigation measures (if available) of ocean wave, current, and tidal energy devices, referencing the synthesis documents that address them;

- (b) Case study reports that highlight select projects around the world with relevant information on environmental effects, environmental monitoring methods, as well as mitigation strategies (if available); and
 - (c) Information from carefully selected, directly relevant analogues (e.g., offshore wind, OTEC, etc.) filling crucial information gaps.
- (2) An Annex IV Report, accessible to the public via a website, including:
- (a) A summary of the findings in the database and a description of any lessons learned and best practices (if available) for monitoring and mitigating environmental effects of ocean wave, current, and tidal energy devices. The report will incorporate the findings from the experts' workshop.

(E) Operating Agent

The United States Department of Energy (DOE) is designated as Operating Agent. On behalf of DOE, the United States Minerals Management Service (MMS) and Federal Energy Regulatory Commission (FERC) shall Co-Chair the effort. The Co-Chairs will coordinate the work program, working closely with the other Participants and DOE to implement the Annex IV.

(F) Specific Responsibilities of the Operating Agent and other Annex Partners

In addition to carrying out the specific responsibilities enumerated in this Annex, the Co-Chairs shall arrange meetings (generally teleconferences or videoconferences); facilitate the sharing of tasks among Participants; and distribute (generally electronically) interim reports, workshop proceedings and the final report. At a minimum, other Annex Partners shall assist in identifying existing synthesis documents, crucial information gaps, existing and proposed monitoring methodologies, and case studies; and also refine and finalize the draft report and other interim results. These types of activities are part of each participant's in-kind contribution.

(G) Time Schedule (See Figure 1)

This Annex shall enter into force upon its members on April 16, 2009 and shall remain in force for a period of three years. It may be extended by two or more Participants, acting in the Executive Committee, taking into account any recommendations of the Agency's Committee on Energy Research and Technology concerning the term of this Annex, and shall thereafter apply only to those Participants.

The Annex Participants will refine and finalize the schedule provided in Figure 1 before the Annex commences. An initial interest meeting will be held via teleconference or web conference in January 2009 to inform all IEA-OES members and to determine which members will commit to participation. The final schedule will include completion dates for all tasks, regular update meetings among Annex participants (many by video, web, or teleconference), and the experts' workshop.

(H) Funding (See Figure 2A, B)

(1) Individual Financial Obligations and Regular Meetings.

- Except as provided below, each Participant shall bear all of its own costs in carrying out its obligations under this Annex, including reporting and travel expenses and technology costs (e.g., teleconferencing or videoconferencing). These types of costs are included as in-kind contributions for budgeting purposes.

(2) Completion of Tasks

- The Operating Agent, in cooperation with the Annex Participants, will provide in-kind time to carry out portions of the tasks in-house, such as identifying existing synthesis documents, crucial information gaps, existing and proposed monitoring methodologies, and case studies; and also refining and finalizing the draft report and other interim results. A contractor also will be selected to assist with certain tasks. See Figure 1 for details.

(3) Cost-Sharing Requirements.

- The total proposed cost for completing all listed tasks on Annex IV is estimated at €157,500 (U.S. \$225,000). This estimate includes costs for the technical consultant (contractor) as well as in-kind costs for the Operating Agent and Annex Participants.
- Annex Participants, including the Operating Agent, will be required to contribute €5,000 (\$7,150) per year for each of the three years of the Annex. This will total €15,000 (\$21,450) per Annex Participant. This contribution does not include estimated in-kind costs.
- For estimation purposes, we assume that around eight IEA-OES members will participate in the annex. Eight Annex Participants would generate €40,000 (\$52,500) per year for a total of €120,000 (\$171,450).
- The difference between the amount provided by Annex Participants and the estimated expenses of the Annex, excluding in-kind contributions ($€127,400 - €120,000 = €7,400$), including any additional shortfall due to recruiting fewer than eight participants, will be bridged with funds raised by the Operating Agent, by provision of additional in kind services, or by reducing the overall workload cost of the Annex.

Figure 1: Time Schedule

YEAR	TASKS	6-MONTH-PERIOD						RESPONSIBLE PARTIES			YEAR -END PRODUCT
		Jan - Jun 2009	Jul - Dec 2009	Jan - Jun 2010	Jul - Dec 2010	Jan - Jun 2011	Jul - Dec 2011	U.S. DOE / MMS / FERC	Participating Nations	Technical Consultant	
1	Identify valuable synthesis documents							✓	✓		Database from Syntheses From syntheses, a database of existing information on environmental impacts, monitoring methods, and (where possible) mitigation strategies with priority information gaps identified
	Design database							✓		✓	
	From syntheses, assemble master list of potential environmental impacts, related monitor methods, and (if possible) mitigation strategies							✓		✓	
	Review database design and master list								✓		
	Enter master list into database							✓		✓	
	Review database and identify crucial information gaps in monitoring methods							✓	✓		
	Select high priority information gaps							✓	✓		
2	Develop standard format for data collection based on database design							✓		✓	New Case Study and Analogue Information Database expanded to include new information from case studies and analogue information with particular attention to priority information gaps identified in year 1
	Review data collection format								✓		
	Identify and select case studies							✓	✓		
	Identify analogue information sources to pursue							✓	✓		
	Compile and submit case studies to operating agent							✓	✓		
	Research analogues							✓		✓	
	Add case study and analogue information to the database							✓		✓	
Review new information and expanded database								✓			
3	Analyze the syntheses, case study, and analogue info and prepare a preliminary report to characterize environmental effects and identify successful monitoring methods and mitigation strategies, including any lessons learned and best practices							✓		✓	Final Report and Database Final report and database including lessons learned and best practices for monitoring and (where possible) mitigation of environmental impacts based on analysis of new and existing case studies and analogue information entered in years 1 and 2
	Hold workshop on the preliminary report; provide input at workshop and in writing							✓	✓	✓	
	Incorporate workshop and written comments into draft report (replacing preliminary report)							✓		✓	
	Review draft report								✓		
	Finalize report and distribute							✓			
	Post final report and database to the internet							✓		✓	
	Link final Annex IV database to other ocean energy databases							✓			

Figure 2A: Budget (Dollars)

YEAR	TASKS	DOLLARS			
		Operating Agent (In-Kind)	Participating Nations (In-Kind)	Technical Consultant	TASK TOTAL
1	Identify valuable synthesis documents	\$775	\$5,425		\$6,200
	Design database	\$300		\$25,000	\$25,300
	From syntheses, assemble master list of potential environmental impacts, related monitoring methods, and (if possible) mitigation strategies	\$300		\$35,000	\$35,300
	Review database design and master list		\$2,100		\$2,100
	Enter master list into database	\$100		\$12,500	\$12,600
	Review database and identify crucial information gaps in monitoring methods	\$500	\$2,800		\$3,300
	Select high priority information gaps	\$500	\$4,200		\$4,700
	YEAR 1 TOTAL	\$2,475	\$14,525	\$72,500	\$89,500
1	Develop standard format for data collection based on database design	\$200		\$4,500	\$4,700
	Review data collection format		\$350		\$350
	Identify and select case studies	\$250	\$2,050		\$2,300
	Identify analogue information sources to pursue	\$250	\$2,050		\$2,300
	Compile and submit case studies to operating agent	\$250	\$2,050		\$2,300
	Research analogues	\$100		\$15,000	\$15,100
	Add case study and analogue information to the database	\$100		\$5,000	\$5,100
	Review new information and expanded database		\$350		\$350
YEAR 2 TOTAL	\$1,150	\$6,850	\$24,500	\$32,500	
3	Analyze the synthesis case study, and analogue info and prepare a preliminary report to characterize environmental effects and identify successful monitoring methods and mitigation strategies, including any lessons learned and best practices	\$800		\$37,000	\$37,800
	Hold workshop on the preliminary report, provide input at workshop and in writing	\$1,950	\$12,250	\$37,000	\$51,200
	Incorporate workshop and written comments into draft report (replacing preliminary report)	\$500		\$10,000	\$10,500
	Review draft report		\$1,400		\$1,400
	Finalize report and distribute	\$600			\$600
	Post final report and database to the internet	\$200		\$1,000	\$1,200
	Link final Annex IV database to other ocean energy databases	\$300			\$300
YEAR 3 TOTAL	\$4,350	\$13,650	\$85,000	\$103,000	
TOTAL BUDGET	\$7,975	\$35,025	\$182,000	\$225,000	

Figure 2B: Budget (Euros)

YEAR	TASKS	EUROS			
		Operating Agent (In-Kind)	Participating Nations (In-Kind)	Technical Consultant	TASK TOTAL
1	Identify valuable synthesis documents	€ 543	€ 3,798	€ 0	€ 4,340
	Design database	€ 210	€ 0	€ 17,500	€ 17,710
	From syntheses, assemble master list of potential environmental impacts, related monitoring methods, and (if possible) mitigation strategies	€ 210	€ 0	€ 24,500	€ 24,710
	Review database design and master list	€ 0	€ 1,470	€ 0	€ 1,470
	Enter master list into database	€ 70	€ 0	€ 8,750	€ 8,820
	Review database and identify crucial information gaps in monitoring methods	€ 350	€ 1,960	€ 0	€ 2,310
	Select high priority information gaps	€ 350	€ 2,940	€ 0	€ 3,290
	YEAR 1 TOTAL	€ 1,733	€ 10,168	€ 50,750	€ 62,650
1	Develop standard format for data collection based on database design	€ 140	€ 0	€ 3,150	€ 3,290
	Review data collection format	€ 0	€ 245	€ 0	€ 245
	Identify and select case studies	€ 175	€ 1,435	€ 0	€ 1,610
	Identify analogue information sources to pursue	€ 175	€ 1,435	€ 0	€ 1,610
	Compile and submit case studies to operating agent	€ 175	€ 1,435	€ 0	€ 1,610
	Research analogues	€ 70	€ 0	€ 10,500	€ 10,570
	Add case study and analogue information to the database	€ 70	€ 0	€ 3,500	€ 3,570
	Review new information and expanded database	€ 0	€ 245	€ 0	€ 245
YEAR 2 TOTAL	€ 805	€ 4,795	€ 17,150	€ 22,750	
3	Analyze the synthesis case study, and analogue info and prepare a preliminary report to characterize environmental effects and identify successful monitoring methods and mitigation strategies, including any lessons learned and best practices	€ 560	€ 0	€ 25,900	€ 26,460
	Hold workshop on the preliminary report, provide input at workshop and in writing	€ 1,365	€ 8,575	€ 25,900	€ 35,840
	Incorporate workshop and written comments into draft report (replacing preliminary report)	€ 350	€ 0	€ 7,000	€ 7,350
	Review draft report	€ 0	€ 980	€ 0	€ 980
	Finalize report and distribute	€ 420	€ 0	€ 0	€ 420
	Post final report and database to the internet	€ 140	€ 0	€ 700	€ 840
	Link final Annex IV database to other ocean energy databases	€ 210	€ 0	€ 0	€ 210
YEAR 3 TOTAL	€ 3,045	€ 9,555	€ 59,500	€ 72,100	
TOTAL BUDGET	€ 5,583	€ 24,518	€ 127,400	€ 157,500	

