

International Energy Agency Geothermal Implementing Agreement

Strategic Plan for 2002-2007



Member Countries



Australia



Germany



Greece



Iceland



Italy



Japan



Mexico



New Zealand



Switzerland



United States



**European
Commission**

Revised December 2003

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DISCLOSURE

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International Energy Agency Geothermal Implementing Agreement Strategic Plan

1.0 INTRODUCTION

1.1 Background

This document is the Strategic Plan for the Geothermal Implementing Agreement, conducted under the auspices of the International Energy Agency (IEA), for the period 2002 through 2007. The IEA Implementing Agreement for a Cooperative Programme on Geothermal Research and Technology (Geothermal Implementing Agreement) (GIA) is one of a number of Implementing Agreements established by the IEA Committee on Energy Research and Technology (CERT), through its Renewable Energy Working Party (REWP). The IEA is an autonomous body, established in November 1974 within the framework of the Organization for Economic Co-operation and Development (OECD) and its 26 member countries.

The IEA Energy Technology Collaboration Programme (ETCP) has included Implementing Agreements with geothermal objectives in the past, such as the 'Man-Made Geothermal Energy Systems Project' (MAGES), 1978 - 1980 and 'Geothermal Equipment Testing', 1979 – 1981. However, in the succeeding years there was a hiatus in geothermal activities until the IEA Secretariat in Paris initiated an effort to revive them in 1995. At an ad-hoc meeting in May 1995, convened in conjunction with the World Geothermal Congress in Florence, Italy, representatives of 14 countries expressed general interest in international collaboration under the IEA ETCP umbrella. An IEA Geothermal Expert Panel was formed, specifically to formulate IA annexes. At two subsequent meetings in Paris (November 1995 and April 1996) the text for the Agreement and three technical annexes were formulated with the assistance of the IEA Secretariat. The GIA was signed and officially went into effect on 7 March 1997, and was designed to operate for an initial period of five years. The Agreement was subsequently extended, with the approval of the CERT and REWP, until 31 March 2007. As of 31 March 2003, 10 countries (Australia, Germany, Greece, Iceland, Italy, Japan, Mexico, New Zealand, Switzerland, and the United States) and the European Commission were participating in the GIA. (The United Kingdom dropped out in mid-2002).

1.2 Status of Geothermal Energy

Geothermal energy can provide electric power or direct heat for applications such as district heating, greenhouse heating, aquaculture pond heating, agricultural drying, industrial processes, bathing and swimming, and snow melting. In addition, geothermal heat pumps offer an energy-efficient, environmentally beneficial means of heating and cooling. Geothermal for electricity and direct heat applications is a mature technology with a long history in many countries.

Worldwide geothermal energy installed capacity increased from 6,833 MW_e to 7,974 MW_e between 1995 and 2000 (Huttrer, 2000). There is thought to be potential for a 45% growth in electricity generation between 2000 and 2010, largely because many suitable resources exist, particularly in the developing countries of South-East Asia, Latin America and Africa, where demand for electricity is increasing rapidly. Geothermal energy could potentially supply 5% of the global electricity by 2020. In addition, the worldwide installed capacity for direct heat use was about 4,700 MW in 1980, 8,664 MW in 1995 and 16,209 MW in 2000 (Lund and Freeston, 2000). Future growth in the direct use of geothermal energy is also expected to increase due to the

installation of geothermal heat pumps. Opportunities exist for direct use, particularly in Central and Eastern Europe, but direct heating is constrained by distance from the resources. For example, hot water for direct use is piped a maximum distance of 67 km in Iceland. It is estimated that the total worldwide geothermal resource potential suitable for future development amounts to approximately 5,000 EJ/a (WEA, 2000), with economic exploitation providing about 150 EJ/a for electricity generation and 350 EJ/a for direct uses (Bertani, 2003).

A large fraction of current geothermal energy deployment is in developed countries, while many of the untapped energy resources occur in developing countries. Barriers such as high initial capital costs, resource risks and drilling limitations pose a challenge to future development. Investment in geothermal R&D, which is primarily supported by the public sector, has dropped considerably in recent years due primarily to competition from lower-cost alternatives, such as natural gas.

The amount of geothermal resources in highly permeable, saturated rock formations is limited. However, there are large areas where the rock temperature exceeds 200°C at depths less than 5 km. Often, the permeability or fluid content of these formations is low, so that new technology will be necessary to improve the productivity of such resources to economic levels. Such technology has recently become known generically as Enhanced Geothermal Systems (EGS). Since the 1970's, a number of research programmes have worked towards developing technology to exploit heat sources which lack sufficient fluid, or permeability, or both; first in the USA, Germany, and the United Kingdom, then also in France, Japan, and Sweden. More recently, projects have begun in Australia and in Switzerland. These projects, previously identified as Hot Dry Rock (HDR), Hot Wet Rock (HWR), Hot Fractured Rock (HFR) and Deep Heat Mining (DHM), should be regarded as EGS.

1.3 Barriers to Development

In the initial stages of renewable energy technology development, technical barriers predominate. However, for the more technically mature technologies, such as geothermal, the priority is to become cost-effective in the marketplace. Barriers to market penetration can also arise from a general lack of public awareness and experience with the technologies. Finally, there are social and environmental barriers linked to lack of experience with planning, regulation, and gaining public acceptance.

Major barriers, which limit the growth of geothermal energy, are cost and the market's perception of cost. These result partly from the failure of the marketplace to fully account for the external cost of competing conventional technologies, and partly from the market's discrimination against capital-intensive technologies. Another barrier is the difficulty of characterizing the geothermal resource in a country prior to a major commitment of financial resources. Like other renewable energy sources, energy from geothermal resources has significant positive environmental benefits at the global level; however, deployment can have a local impact (mainly for limited time operations, such as drilling), so projects do not always enjoy universal local support.

2.0 OBJECTIVES OF THE IMPLEMENTING AGREEMENT (2002-2007)

2.1 Overview

The GIA represents an important framework for broad international cooperation on geothermal issues, especially for overcoming barriers to development. The Agreement brings together important national programmes and focuses especially on assembling specific know-how and

establishing direct cooperative links between experts in the participating countries. The GIA is managed by an Executive Committee (ExCo) with members and alternates from each of the Contracting Parties.

Activities under the GIA are directed primarily toward the coordination of the ongoing national activities of the Contracting Parties. All R&D activities are carried out under annexes to the GIA. If the ExCo identifies specific issues that should be explored cooperatively, tasks that address those issues are organized into an annex to the GIA. Participating Countries have the option to join the annex as their ability to contribute and interests dictate. A background description of the annexes currently in place, or under consideration, can be found in Appendix A.

2.2 Goals and Objectives

The Implementing Agreement, initially signed in 1997, states that the programme is to consist of international scientific collaborative efforts to:

- Compile and exchange information on geothermal energy research and development worldwide concerning existing and potential technologies and practices
- Develop improved technologies for geothermal energy utilization
- Improve the understanding of the environmental benefits of geothermal energy and ways to avoid or ameliorate environmental impacts

These efforts, augmented with additional ones focused on increasing the use of geothermal energy, are considered appropriate for the next five years of the Agreement. The basic environment for the work of the IEA, including the GIA, has changed since 1997 and continues to evolve. This Strategic Plan reflects the actions underway or being considered in the GIA in response to market, management and government policy dynamics, as well as technological advances. The specific goal and objectives planned by the ExCo are summarized herein.

According to the IEA World Energy Outlook 2002, the total share of non-hydro renewable energy sources used for electricity generation will increase from 2% in 2000 to roughly 4% in 2010 for the OECD countries ('Reference Scenario'). Geothermal energy is foreseen to grow at an annual rate of 4% (OECD) in this 10-year period. The 'Alternative Policy Scenario', based on policies and measures that OECD countries are currently considering, shows a more favourable share of non-hydro renewable energy sources (6% in 2010). The Alternative Policy Scenario assumes that all policies, measures and directives to promote renewables are fully carried out. The IEA GIA can play a significant role in achieving these ambitious targets. During the 2002-2007 term, the overall goal of the GIA will be to advance and support the use of geothermal energy on a worldwide scale by directing its efforts towards the following objectives:

Expand R&D collaboration – Geothermal energy technology development is progressing and new areas of collaboration are needed. Appendix A contains a summary of current collaborative efforts under the GIA. The ExCo will consider and implement annexes where additional collaboration could be useful.

Increase outreach to non-Member countries with large geothermal energy potential – The electricity markets in many countries were opened to competition in the 1990s. As energy markets deregulate, they are driven more by market forces and less by government programmes and intervention. Environmental impacts of energy development have become increasingly important. New regions are opening up as international energy markets expand. Although

research is still needed on advanced geothermal technology, the GIA will embrace this opportunity and explore ways to accelerate development of the world's geothermal resources.

Evaluate market stimulation mechanisms – In the ExCo's efforts to expand geothermal heat and power markets in both OECD and non-OECD countries, research actions are clearly important and indeed essential, but they are not in themselves sufficient to open up markets. Market stimulation is also needed to create an expanded market for geothermal energy.

Improve dissemination of information about geothermal energy– The ExCo has recognized its role in promoting the use of geothermal energy, but more emphasis is needed on the open distribution of high quality and attractive information products.

Leverage limited R&D funding – The R&D budgets in many of the Contracting Parties have been declining, and the need for cost-shared collaboration is increasing. An affiliation with the IEA brings added value to activities rather than funding. The IEA's reputation of technical competence and broad unbiased excellence can be leveraged to obtain support from industry and other multilateral organizations and financial institutions.

3.0 MEANS

3.1 Planning Considerations

In its efforts to foster the development of geothermal energy, the GIA has a number of strengths. These include:

Easy access to key information – Through its members, IEA GIA has access to major public sector programmes in geothermal energy. The exchange of information has supported progress in the national activities of the members and helped to avoid unnecessary duplication in member country R&D programmes.

International forum – The GIA provides an international forum dedicated to geothermal energy. In combining the efforts of several nations, the GIA can plan, support, and undertake projects beyond the capability of any single country or group.

Partnership with the OECD/IEA – The GIA can draw on and contribute to the efforts of the sponsoring organization, the OECD/IEA.

Cooperation with other international organizations – The GIA can join in cooperative efforts with the United Nations Environment Programme (UNEP), the Global Environmental Fund (GEF) and other project financing agencies.

National programmes – R&D activities in the participating countries provide a strong technical base for GIA outreach.

The GIA has limited financial resources, and in the past the ExCo has relied primarily on task-sharing and in-kind contributions from members to satisfy commitments under individual annexes. As the ExCo's interests expand and move beyond narrow technical issues of R&D, the financing of work through cost-sharing becomes increasingly important.

3.2 Actions

In carrying out its activities, the ExCo will take into account both administrative and technical factors, as well as policy guidance from the IEA. The ExCo will pursue the following actions in support of the goal of advancing and supporting the use of geothermal energy on a worldwide basis:

Involve the world geothermal community – Increasingly, geothermal development is occurring outside of the traditional membership of the IEA. Supporting extension of participation to both OECD and non-OECD non-participating countries with significant geothermal resources is an objective of this Strategic Plan. As a first step, the ExCo has agreed to invite China, France, the Philippines, Russia, Sweden and Turkey to participate in the Agreement. Formal invitations will be issued to those countries to become GIA members. In addition, and particularly in the light of the discussions on market development, the ExCo would also like to establish contact with countries in Eastern Europe, Latin America and other countries with geothermal potential with a view to possible participation in the GIA.

Collaborate on R&D through annexes – The ExCo will determine the desirability to expand the number of active annexes to cover a broader range of topics, such as geothermal power cycles, geothermal market acceleration and geothermal resource sustainability. Recently, annexes on geothermal well drilling and the direct use of geothermal energy were added to the Agreement. Other topics of a more specific nature may be considered when proposed by any one or more of the Contracting Parties. New annexes may be funded through either task-sharing or cost-sharing as determined by the Participants, acting in unanimity.

Evaluate impacts of government policies – Substantial incentive programmes for renewable resources have been introduced in many countries to stimulate market development. Incentive and deployment programmes are generating a wealth of information of use to other countries. These programmes will be evaluated to identify those that might work best under a variety of conditions based on regional or country-specific factors. Specific activities may include:

- Provide national policy overviews
- Promote international cooperation and leverage resources
- Conduct workshops and conferences
- Provide information dissemination
- Study incentives and government programmes pursued in various countries for supporting geothermal energy

These tasks will be performed by one or more contractors to the Participants, paid from a common fund, with the free exchange of information among the Participants in the annex. The ExCo will perform an oversight function.

Exchange information – The GIA website will become a primary means of disseminating information about GIA activities to interested persons, groups and organizations. Special GIA sessions of the World Geothermal Congress 2005 will be requested. The ExCo will also sponsor workshops or symposia to review current issues, ongoing research and the need for future research. This process provides a variety of outputs such as research reports and data that can be used by government and industry in the countries that participate in that task. Furthermore, the geothermal energy community will make the results of tasks available for use worldwide. As the need arises, the ExCo will authorize the preparation of brochures or other documents that describe

the GIA, its activities, and the benefits of geothermal energy. These materials will be made available at appropriate meetings, conferences, and other venues suitable to highlight the values and benefits of geothermal energy. The ExCo has re-designed its annual report of activities and plans to make it more useful to organizations and key decision makers in government and industry. A country reports section was also added and is now an integral part of the annual report.

4.0 ORGANIZATIONAL AND FINANCIAL STRUCTURE

4.1 Executive Committee (ExCo)

Control of the GIA is vested in the ExCo. Decisions made by the ExCo are binding on the Contracting Parties. The ExCo consists of one voting member from each Contracting Party; an alternate may serve on the ExCo if the designated member is unable to do so. The ExCo meets twice a year and manages all administrative activities resulting from or affecting the GIA. During ExCo meetings the members report on national programmes, exchange information and results of work under annexes, and consider ongoing or arising issues. A person elected by the Contracting Parties for a minimum term of one year chairs the ExCo. Two Vice-Chairpersons, one responsible for planning, the other responsible for technology, assist the Chairperson. The Vice-Chairpersons are also elected by the Contracting Parties.

4.2 Secretary

The GIA provides for a Secretary to support the ExCo. The basic duties of the Secretary, defined fully in Art.5 of the Agreement, but excluding any issues that might arise from future annexes, are to:

- Make and distribute agendas, minutes and other documents
- Prepare decisions and recommendations
- Assist the Officers in carrying out their responsibilities
- Assist the committee in overall coordination of the work in the Annexes
- Prepare the annual budget for planned activities
- Prepare the Annual Report
- Undertake such other activities as may be required by the ExCo

Although a voluntary Secretary had been adequate during the first term of the GIA, more frequent meetings and expanded workload dictate a paid Secretary supported from a common fund.

4.3 Standing Committees

At its March 2001 meeting, the ExCo established a Planning Committee consisting of the Chairperson, the two Vice-Chairs and the Secretary to address the issue of a new Strategic Plan for the extension of the GIA. This committee will continue in place as a standing committee to deal with future issues related to GIA policy and plans. The ExCo may elect to appoint other standing committees as the need arises.

4.4 Budgets and Costs

During the GIA's initial term, annex activities in general, and the ExCo's work in particular, were implemented under the task-sharing mode. As the scope of work under the GIA broadened and the need for a paid Secretary became apparent, the ExCo has moved toward accepting some cost-sharing activities. The mode of support for new activities accepted by the ExCo will be decided on a case-by-case basis.

Contracting Parties will continue to cover the travel expenses for their members to attend meetings and workshops. Travel costs will be minimized by doing business by mail and e-mail whenever possible. To the extent practicable, meetings will be scheduled to coincide with other events to minimize travel costs. Each Participant bears all the costs it incurs in carrying out its Task activities, including reporting and travel expenses. Unless otherwise specified, the cost of publishing annex reports and summary assessments shall be borne by the Operating Agent.

The expenses for the Secretary and other common costs of the ExCo are met from a Secretariat Common Fund, administered by the National Renewable Energy Laboratory (NREL) (USA). The Secretary will prepare an annual budget of planned activities stemming from this Plan for the calendar year and submit this annual work plan for approval by the ExCo. Only the Chairperson can authorize expenditures that are not in accordance with the approved budget. The Chairperson must notify the ExCo at once of any exceptions to the approved budget. See Appendix B for apportionment of the Common Fund.

Other common funds may be established as required to meet the needs of new annexes. The costs will be shared among the Participants of the relevant annex in accordance with the shares established by the IEA and set out in the Table in Appendix B. The designated Operating Agent will serve as the Custodian of the annex common fund. Arising issues of finance and budgeting will be decided based upon the conditions and requirements of Art.7 of the GIA.

4.5 Term

This Strategic Plan, in present form or as subsequently modified by the ExCo, will remain in effect for the term of the Agreement; 7 March 2002 – 31 March 2007.

References

- Bertani, R. 2003. What is geothermal potential? IGA News, No. 53, July-September 2003, 1-3.
- Huttrer, G.W. 2000. The Status of world geothermal power generation 1995-2000. Proc. World Geothermal Congress 2000, Kyushu-Tohoku, May 28-June 10, 2000, 23-37.
- Lund, J.W. and Freeston, D.H. 2000. Worldwide direct use of geothermal energy 2000. Proc. World Geothermal Congress 2000, Kyushu-Tohoku, May 28-June 10, 2000, 1-21.
- WEA 2000. World Energy Assessment: energy and the challenge of sustainability. Ed. J. Goldemberg, United Nations Development Programme, UNDECOSOC, WEC, 2000.

APPENDIX A: Status of GIA Annexes and Future Plans as of 3 December 2003

The status of each annex considered by the ExCo during the first term of the Agreement is presented in the table below, followed by a summary description.

ANNEX NO.	TITLE	STATUS
Annex I	Environmental Impacts of Geothermal Development	Active
Annex II	Shallow Geothermal Resources	Closed
Annex III	Enhanced Geothermal Systems	Active
Annex IV	Deep Geothermal Resources	Active
Annex V	Sustainability of Geothermal Energy Utilization	Draft
Annex VI	Geothermal Power Generation Cycles	Suspended
Annex VII	Advanced Geothermal Drilling Techniques	Active
Annex VIII	Direct Use of Geothermal Energy	Active
Annex IX	Geothermal Market Acceleration	Draft

Annex I: Environmental Impacts of Geothermal Energy Development

To further the use of geothermal energy, possible environmental effects need to be clearly identified, and countermeasures devised and adopted to avoid or minimize their impact. To assist in this, a Task was set up with the following objectives:

- Encourage the sustainable development of geothermal energy resources in an economic and environmentally responsible manner
- Quantify any adverse or beneficial impacts that geothermal energy development may have on the environment
- Identify ways of avoiding, remedying or mitigating such adverse effects on the environment

At the start of 2001, six countries were formally participating in Annex I: Greece, Iceland, Japan, Mexico, New Zealand, and United States of America.

This Annex is sub-divided into three Subtasks:

- Subtask A: Impacts on natural features
- Subtask B: Discharge and reinjection problems
- Subtask C: Methods of impact mitigation and Environmental Manual

Plans for the period 2002-2005 include:

- Continuation of data collection and analysis
- Establishment of a Web site and the organization of lectures and courses to widen the understanding of environmental impacts among technical non-specialists
- Further publications in journals and conferences, and preparation of the Environmental Manual
- Dissemination of information to the general public

Annex II: Shallow Geothermal Resources

This Annex, for geothermal heat pumps, reached a draft stage but was closed by decision of the ExCo at the October 2000 Meeting. At that time, the ExCo decided to include geothermal heat pumps within the proposed IEA Market Initiative.

Annex III: Enhanced Geothermal Systems

The objective of the Enhanced Geothermal Systems Task is to address new and improved technologies, which can be used to artificially stimulate a geothermal resource to enable commercial heat extraction.

The countries and organization participating in Annex III are: Australia, Germany, Japan, Switzerland, USA and EC.

Annex III (during 2002-2005) will consist of three Subtasks:

- Subtask B: Application of Conventional Geothermal to Enhanced Geothermal Systems (EGS)
- Subtask C: Data Acquisition and Processing
- Subtask D: Reservoir Evaluation

(Subtask A: Hot Dry Rock Economic Models, was completed in 2001, and the modelling program is now available on the web.)

Plans for the 2002-2005 period include:

- Extension of collaboration to new Australian and German partners
- Continued exchange of personnel, information and experience between the projects

Annex IV: Deep Geothermal Resources

The objective of the Task is to address the issues necessary for the commercial development of geothermal resources at depths of about 3,000 meters and deeper.

Participants in Annex IV are: New Zealand, Japan, Mexico, United States, Germany and Italy.

The work addresses, on a task-sharing basis:

- Subtask A: Collaborative research on exploration technologies and reservoir engineering for deep, hot reservoirs
- Subtask B: Collaborative research on drilling and logging technologies, with review and collation of experience from within participating countries
- Subtask C: Exchange of information and establishment of a database on fluid chemistries, materials properties and corrosion issues, together with field-testing

Future plans for Annex IV are being discussed among the participating countries.

Annex V: Sustainability of Geothermal Energy Utilization

Although geothermal energy is commonly considered a renewable resource, geothermal reservoirs can become depleted if they are improperly managed. With proper operation of producing geothermal fields they may be considered to be 'sustainable' in the sense of the World Commission on Environment and Development (Brundtland Commission) to indicate use that "meets the needs of the present generation without compromising the needs of future generations."

The objective of this task is to estimate the production of energy from geothermal resources under different scenarios, with the view of determining the long-term economic sustainability of such production. It became clear in discussion that ExCo members had different interpretations of the meaning of 'sustainable'. The ExCo determined that work on developing the annex should continue.

Annex VI: Geothermal Power Generation Cycles (suspended)

A draft Annex has been prepared. This would be a task-sharing annex. The subtasks would cover reference scenarios as a basis for comparison of cycles, plant performance and availability, economics, and environmental impact and mitigation. The latter implies strong links to Annex I. The output would be in the form of a database and guidelines of best practice. The ExCo agreed that Annex VI should be suspended until two or more participants agreed to join.

Annex VII: Advanced Geothermal Drilling Techniques

Drilling is an essential and expensive part of geothermal exploration, development and utilization. Drilling, logging and completing geothermal wells are expensive because of high temperatures and hard, fractured formations. The consequences of reducing cost are often impressive, because drilling and well completion can account for more than half of the capital cost for a geothermal power project.

There are three Subtasks:

- Subtask A: Documentation of Drilling Costs
- Subtask B: Geothermal Drilling Best Practices
- Subtask C: Advanced Drilling Collaboration

The objectives of the Advanced Geothermal Drilling Techniques Task are to:

- Quantitatively understand geothermal drilling costs from around the world and identify ways to reduce those costs, while maintaining or enhancing productivity
- Identify and develop new and improved technologies for significantly reducing the cost of geothermal well construction to lower the cost of electricity and/or heat produced with geothermal resources
- Inform the international geothermal community about these drilling technologies
- Provide a vehicle for international cooperation, field tests, etc. toward the development and demonstration of improved geothermal drilling technology

Plans for 2002-2005 include:

- Developing a Best Practices Handbook

- Employment of economic modeling to predict cost savings by advanced drilling techniques
- Compilation of cost data in a database

Annex VIII: Direct Use of Geothermal Energy

A draft for this annex was first proposed by Iceland in 2001. After discussion, it was agreed that Iceland should be asked to develop the annex further, and a revised draft was presented by Iceland at the 9th meeting of the ExCo in Paris, 13-14 March 2003. At the 10th ExCo meeting in Reykjavik, 18-19 September 2003, the Annex was started.

The objectives of the Direct Use of Geothermal Energy Task are to:

- Define and characterize the direct use applications for geothermal energy, with emphasis on defining barriers to widespread application
- Identify and promote opportunities for new and innovative applications
- Define and initiate research to remove barriers, to enhance economics and to promote implementation
- Test and standardize equipment
- Develop engineering standards

At the start, four countries are participating: Iceland, New Zealand, Switzerland and the USA.

Annex IX: Geothermal Market Acceleration

Special emphasis has been given to launching an annex on ‘Geothermal Energy Market Acceleration’, because of interest in possible cooperation with UNEP and the GEF. The alliance would undertake efforts in regions with high geothermal potential like Africa, Central and Latin America, and Central and Eastern Europe. These cooperative efforts would be coordinated with other efforts in that direction underway at IEA headquarters.

The ExCo may focus its initial efforts in the area of geothermal market development on how government policies can affect, and have affected, local geothermal development. Further, incentive programmes for renewable resources have been pursued in many countries to stimulate the development of renewable energy. These incentive and deployment programmes are generating a wealth of information useful to other countries as well. These programmes will be evaluated to identify those that might work best under a variety of conditions based on regional and country-specific factors.

APPENDIX B: Common Fund Apportionment

As discussed in section 4.4, the expenses and other common costs of the ExCo are met from a Common Fund. To support the creation of the Common Fund, the IEA has provided general guidance on a fair apportionment of monetary contributions in the form of shares assigned to different Member States of the OECD. Based on current membership, the apportionment for the GIA is:

Australia	2	Japan	4
European Commission	4	Mexico	1
Germany	4	New Zealand	1
Greece	1	Switzerland	2
Iceland	1	United States	4
Italy	2		
<i>Total = 26 shares</i>			

With the addition of new Contracting Parties, or the withdrawal of current members, the total shares will increase or decrease, affecting each member's contribution. Contributions will be made annually on a calendar year basis. The number of shares assigned to new Contracting Parties who are non-Members of OECD will be determined by the ExCo acting in unanimity. A Custodian, currently the National Renewable Energy Laboratory, will be responsible for administering the Common Fund and providing periodic accounting reports to the ExCo.