



Internationale Konferenz
für Erneuerbare Energien, Bonn
International Conference
for Renewable Energies, Bonn

Content Analysis of the **International Action Programme**

**of the International Conference for Renewable Energies,
renewables2004 Bonn, 1-4 June 2004**

17 January 2005

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Acronyms

APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
CARICOM	Caribbean Community
CEPI	Confederation of European Paper Industries
CILLS	Permanent Inter-State Committee on Drought Control in Sahel
CSD	Commission on Sustainable Development
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency
EIB	European Investment Bank
EIP	European Investment Partners
EREC	European Renewable Energy Council
FAO	United Nations Food and Agriculture Organisation
GEF	Global Environment Facility
GNESD	Global Network on Energy for Sustainable Development
IAP	International Action Programme
IEA	International Energy Agency
IRSEAD	Institute for Research in Sustainable Energy and Development
JREC	Johannesburg Renewable Energy Coalition
RE	Renewable Energies
REEEP	Renewable Energy and Energy Efficiency Partnership
REILP	Renewable Energy International Law Project
SME	Small and Medium-Sized Enterprises
TREC	Trans-Mediterranean Renewable Energy Cooperation
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWEA	World Wind Energy Association
WWF	World Wide Fund for Nature

Summary

The IAP is the central outcome of the International Conference for Renewable Energies – *renewables2004*. It contains 197 actions and commitments from governments, international organisations and stakeholders from civil society, the private sector and other stakeholder groups participating in the conference.

The main part (61%) of the actions and commitments are put forward by governments. But also international organisations, local and regional governments, non-governmental organisations, research institutions and the private sector are well represented. This signals the determination of all stakeholder groups to increase the share of renewable energies in energy supply, and translate political commitments into concrete actions.

renewables2004 addressed three central issues: 1) formation of enabling policy framework conditions allowing the market development of renewable energies, 2) increasing the private and public financing in order to ensure a reliable demand for renewable energies, and 3) human and institutional capacity building, and coordination and intensification of research and development. The IAP includes commitments on each of these thematic issues. 39% of the actions focus on political framework conditions, 29 national or regional targets are included in the IAP. 42% of the actions concentrate on capacity development or research and development and 9% of the actions focus on financing mechanisms. The last 10% of the actions target at more than one issue.

Actions and commitments have been submitted to the IAP from all regions in the world. A large part of the actions originate in Europe (45%), Africa (20%) and South and Central America (9%), but actions are also submitted by actors from Asia, North America, the Pacific and the Middle East. However, not all actions are implemented in the region of their origin. 25% of the actions are implemented elsewhere and thus involve a flow of money and capacities between the regions. In general, these actions are of European (19,5%) or multiregional (3%) origin and have a multiregional or global target.

Many actions are financed by the leading actor itself; 31% by governments and 6% by international organisations, whereas 14% of the actions are financed by the private sector or are market driven. Donor funding is financing 10% of the actions, and 24% of the actions are financed through multiple sources often combining government allocations with donor contributions.

The submitting parties were asked to indicate the arrangements for monitoring the commitments. In most of the cases, the monitoring is either planned within existing monitoring procedures (43%), or in an action-specific monitoring process yet to be established (26%).

Regarding energy supply, the actions and commitments in the IAP will create an additional 163 GWel capacity from renewable energies by 2015: Assuming an average investment cost of about USD 2.000 per KW, this corresponds to investments on the level of USD 326 billion.

With the implementation of the IAP the global CO₂ emission will be reduced progressively leading to an estimated CO₂ reduction of 1,2 billion ton/annum in 2015. As regards additional CO₂ reduction, i.e. commitments going beyond the Kyoto Protocol commitments, China, Mexico, Germany, EIB and the USA are the largest contributors.

Moreover, the implementation of the IAP is estimated to bring access to energy to a large number of people by 2015. The actions contributing the most to ensuring access to energy are the actions submitted by China, the Global Market Initiative (GMI), the Philippines, South Africa and Egypt.

1 Background for the International Action Programme

1.1 Renewables2004

From 1 to 4 June, 2004, Germany hosted the International Conference for Renewable Energies Bonn 2004, as announced by Chancellor Gerhard Schröder at the World Summit on Sustainable Development in September 2002 in Johannesburg.

The conference – *renewables2004* – charted the way towards an expansion of renewable energies worldwide, responding to the call of the Johannesburg summit for the global development of renewable energies. It also kept up the momentum generated by the coalition of like-minded countries for promotion of renewable energies (known as the Johannesburg Renewable Energy Coalition, JREC). 3600 participants met in Bonn, among them official governmental delegations including energy, environmental and development ministers, representatives of the United Nations and other international organisations, and non-governmental organisations, civil society and the private sector.

renewables2004 addressed these central issues: How can the proportion of renewable energies used in industrialised and developing countries be substantially increased, and how can their advantages and potential be better used? The conference concentrated in particular on the following themes:

- Formation of enabling political framework conditions allowing the market development of renewable energies
- Increase in private and public financing in order to secure reliable demand for renewable energies
- Human and institutional capacity building, and coordination and intensification of research and development.

In addressing these issues, the conference reached three outcomes: The Political Declaration, the Policy Recommendations Paper, and the International Action Programme (IAP).

1.2 Call for Actions and Commitments

A worldwide call for actions and commitments was issued in February to governments, the UN and other international organisations, and to the private sector and civil society, with the aim of bringing submissions of proposals for the International Action Programme.¹

The actions and commitments should help to substantially increase the use of renewable energies by helping to overcome the obstacles that exist. Moreover, the actions should signal the participants' determination to increase the share of renewable energies in energy supply and show how political commitments are translated into concrete action.

Responding to the "Call for Actions and Commitments", conference participants worldwide contributed to the Action Programme with commitments to goals, targets and actions within their own spheres of responsibility. All actions and commitments included in the International Action Programme are of a voluntary nature. The differentiated actions and commitments reflect specific regional conditions, the capacities of actors, and specific sectoral objectives as well as overall development targets.

1.3 Screening of the Actions and Commitments

All proposals to the IAP have been reviewed and screened by the Convenors of the Conference. They set up a team consisting of members from the German Federal Ministry for Economic

¹ The Call for Actions and Commitments, also listing the criteria for by which the actions were screened, can be found in Annex 4.

Cooperation and Development (BMZ), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). Moreover, an external review of the submitted actions was provided by experts from Öko-Institut and the University of Mainz.

Any editing, clarification or consolidation of the submitted proposals has been carried out in cooperation with and the consent of the submitting parties. The proposals were reviewed in the light of criteria specified in the “Call for Actions and Commitments”:

- 1) **Significance:** The IAP should bring together Actions and Commitments that are significant in terms of the impact they are likely to have. In particular, they should be significant in terms of the resources and capacities that the promoting actor has at his or her disposal.
- 2) **New or Additional:** It was acknowledged that many governments and other actors have taken significant steps to promote renewable energies in the past. However, in order for the International Action Programme to make a real difference, proposed actions and commitments must be new or additional in that they make a significant contribution to the relevant objectives.
- 3) **Monitoring Process:** Actions and Commitments should be proposed such that, in principle, their implementation can be monitored and progress documented and reported. There should be a timetable indicating how the actions and commitments are to be implemented.
- 4) **Supported by Financial Resources:** Actions and Commitments should be supported, wherever relevant, by an indication of the availability of financial resources for their implementation. This indication should be realistic and may also mention possibilities for expansion and further development.

1.4 Conference Outcome IAP

At the *renewables2004* a first draft of the IAP was presented. The preliminary version as of 1 June containing 70 actions and commitments was handed out to the conference participants. A deadline for submission of actions and commitments was set for June 3rd 2004, and during the conference many new proposals for actions and commitments were submitted. These were issued daily in two addenda to the International Action Programme.

At 4 June, the conference version of the IAP, containing 165 actions and commitments, was submitted to the plenum, and a number of highlighted actions and commitments were presented by the submitting parties. The participating ministers and governments welcomed the IAP in their Political Declaration, thus underlining the close connection between the IAP as a portfolio of actions and the other conference outcomes and committing themselves to review its implementation (Paragraph 8 of the Political Declaration).

After the conference, the extensive review and editing process was continued and the final version, which is the object of the present analysis, was published on 30 August 2004, containing 197 actions and commitments.

2 Criteria for the Analysis

The analysis of the IAP consists of two main parts.

The *first part* analyses the content and the distribution of the actions and commitments according to certain criteria, described in more detail below.

As governments, international organisations and stakeholders from civil society, the private sector and other stakeholder groups were invited to contribute to the IAP, the analysis looks at which actors participated and in what proportion each of the actor categories are represented with actions and commitments.

Moreover, the analysis puts attention to in which regions the actions originate and what regions they are targeted for. More than giving information about to what extent each region participates actively, this allows us to indicate the extent to which a flow of renewable energy investments occurs between the regions.

Furthermore, the analysis assesses to which extent the actions and commitments focus on the three main themes of the conference: 1) policies for market development, 2) financing mechanisms, and 3) human and institutional capacity building and research and development, and whether the individual actions focus on one or more of the themes.

The actions also differ on the technology they address. Some actions focus on a single technology, others on a few, while others are general actions focusing on no specific technology.

One of the criteria for acceptance of a proposal to the international Action Programme was that the proposed actions could be financed. The analysis looks at to what extent financing is specified for the actions and commitments, and which are the sources of such financing.

An indication of the monitoring process was also a criteria for the actions. Here the actions are divided into three broad categories: actions monitored by existing mechanisms, actions foreseeing an action-specific monitoring, and actions where no monitoring is specified.

The *second part* of the analysis identifies the effects, which the actions and commitments are expected to have. This section addresses the possible effects on climate change, poverty alleviation and security of energy supply, which are the underlying background for the need for a global expansion of renewable energies. The effects on climate change are measured by the expected *CO₂ reduction* arising from the actions and commitments, whereas the effects on poverty alleviation are measured by the additional *access to energy* created by the actions and commitments. The expected *investment volume* and the *installed capacity* resulting from the actions and commitments are used as measures for the effects on security of energy supply.

Together, these two first aspects of the analysis enable us to make an assessment of the relative importance of the actions, choosing a number of “best of” actions and commitments.

After a summary of the findings, the analysis will briefly look at the perspectives for a follow-up mechanism, monitoring the International Action Programme.

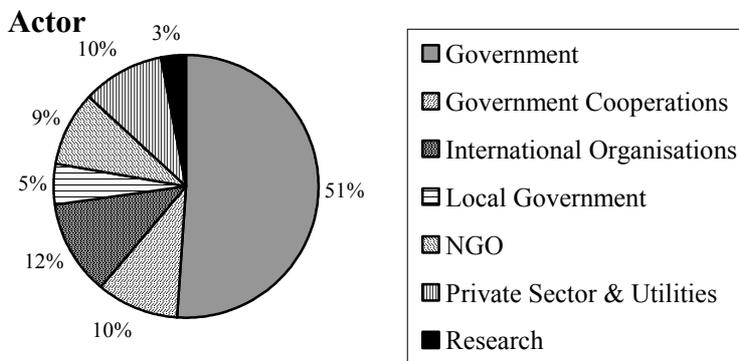
3 Content Analysis by Criteria

3.1 Main Actor

3.600 participants attended the Conference, representing 154 governments, 30 International Organisations, Industry, Non-Governmental Organisations, Research Bodies and Local Governments. All categories of actors have contributed to the IAP.²

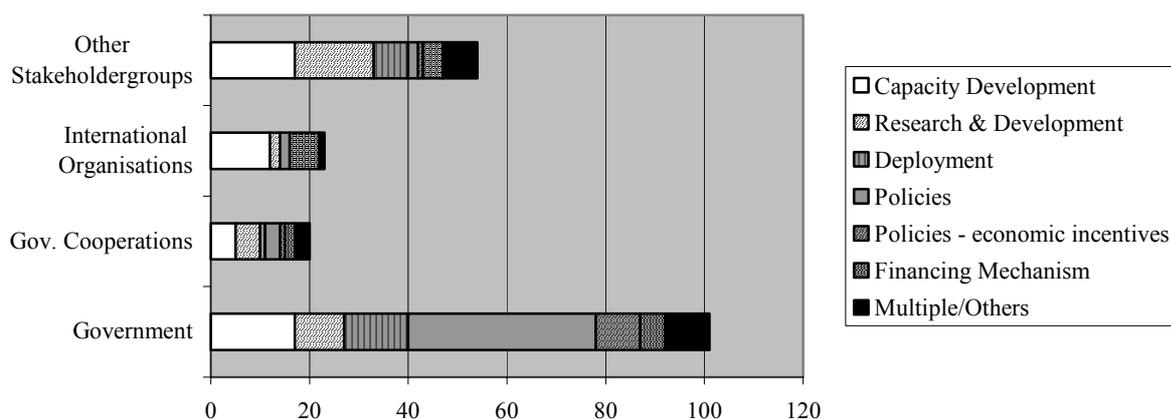
51% of the actions are initiated by a single government, while another 10% of the actions are submitted in co-operation by two or more governments. International Organisations stand behind 12% of the actions and the last 27% of the actions are distributed among the other stakeholder groups with 5% of the actions coming from sub-national governments, 9% of the actions coming from non-governmental organisations and 3% coming from research. The private sector and their associations can be ascribed 10% of the actions.

Figure 1: Distribution of Actions by Main Actor



Each actor group contribute with diverse actions and commitments covering many different issue areas. In the following, the main categories of actions taken by each actor group will be outlined.

Figure 2: Distribution of the issues within the different actor groups



Governments

Many actors, in particular the government actors have submitted whole clusters of actions to the IAP. 55 Governments have made contributions, either on their own or in cooperation with other

² For a full list of contributing actors please refer to Annex 3

actors. Moreover the European Union and four other government groupings (APEC, ASEAN, CARICOM, CILLS) have contributed with actions and commitments.

The actions provided by governments cover a wide range of issues, and address policies, financing, research and development as well as capacity development.

Three broad categories of policies prevail. For one, governments commit themselves to develop regulatory policies or overall strategies for the renewable energy development in their country. A second category of issues addressed by governments, is the introduction of fiscal incentives and market based mechanisms for the expansion of renewable energies. A third prong of the government actions involve the direct deployment of renewable energies. As an overarching policy measure, 29 governments have chosen to commit themselves to a target for the expansion of renewable energies in the IAP.³

Developing financing mechanisms is another prevalent issue in government actions. The governments of France, Germany, Switzerland, and Turkey committed themselves to finance renewable energy development at home or in developing countries. Germany, for instance, has committed to establishing a special – and additional – financing facility for renewable energy and energy efficiency with a volume up to EUR 500 million, offering low-interest loans for investments in developing countries. Moreover a cooperation of governments stand behind the commitment to the EC-ASEAN Energy Facility, and the Johannesburg Renewable Energy Coalition has made a commitment to establish a Global Renewable Energy Fund of Funds, a patient capital initiative directing funds from disparate donors and institutions.

Commitments towards research and development are also made by governments. Of these, the most important are made by the USA, which in four actions make commitments to research efforts in order to make renewable energies cost competitive – cost targets and research activities are developed for biomass, geothermal, photovoltaic and wind energy. Also Austria, Belgium Canada, Nigeria, Switzerland and the UK makes commitments towards research and development, as does Germany in cooperation with Denmark, Egypt and France respectively. GNESD and REILP have also submitted actions dealing with capacity development and research.

18 % of all government actions target capacity development. Especially the European countries, but also Australia and Canada and the REEEP partnership, make commitments toward capacity development supporting transfer of technology and information as well as human and institutional capacity development in developing or transformation countries around the world.

European Governments make up for a large part the actions. Within this share, the German government appears as leading actor in 16 of the actions, half of them being all-German actions, 5 being bilateral actions and 3 of them made in cooperation with more than one other government. The government is mentioned directly as a source of financing in 14 other actions.

International Organisations

Contributions were made by international organisations, both UN organisations, development banks, GEF and the IEA.

The four UN Economic Commissions for Latin America & The Caribbean, Western Asia, Africa and Europe contributed as leading actors to the IAP. Moreover, three other UN bodies (FAO, UNESCO and UNEP) and the UN based secretariats of two conventions (Basel Convention Secretariat and the UNCCD Secretariat) appear as leading actors.

Five regional development banks contributed as leading actors to the IAP, namely the Inter-American Development Bank, the African Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank and the World Bank Group. The

³ For an overview of the targets submitted, please refer to Annex 1

European Investment Bank submitted three actions committing to increase the Banks lending for renewable energies to 50% of the total lending for electricity generation by 2010⁴, to increase lending for research and development in the renewable energy sector, and to address the issue of climate change through finance investments, transaction costs and support of carbon credit market. The World Bank Group has committed to achieving a 20% average annual growth in the Banks renewable energy and energy efficiency commitments over the 5 years following the conference⁵, and the remaining three banks have all committed to promote the development of renewable energies within their partner countries.

The Global Environment Facility submitted three actions to the action programme. In these actions GEF makes commitments to establish a finance facility distributing USD 100 million per annum to country driven projects, to establish a consultation forum on renewable energy for development agencies, and to support the IEA Policies and Measures Database with information on GEF countries.

A similar commitment was made by the IEA itself in connection with the JREC secretariat, providing information for the Database for the JREC countries. IEA also had an action on their own, the development of an Implementing Agreement on RE Technology Deployment.

Local Governments

Municipal and regional governments, that actively participated at the “Local Renewables”, contributed to the IAP as leading actors.

The Indian cities Pune and Pimpri-Chinchwad, the Uzbek city Buchara, the South African city Cape Town and the German cities Freiburg, Bremen, Bonn, Aachen, and Munich all submitted actions. Moreover, the Climate Alliance of European Cities with Indigenous Rainforest Peoples has committed themselves to emphasize renewable energies as part of the local climate protection strategies in European cities.

The regional governments of Tuscany in Italy, North Rhine-Westphalia in Germany and Walloon in Belgium have submitted commitments to enhance renewable energies in their region. Moreover, the Clean Energy Group, consisting of the governments of various US States, has made a commitment to facilitate exchange of best practices and innovative financing between US state clean energy funds.

NGOs

The Non-Governmental Organisations fulfil the important function of providing information to particular stakeholder groups, raise awareness and stimulate public debate, neutral and free of commercial interests. The actions submitted by non-governmental organisations range from research activities, deployment of renewable energy deployment, financing and to the more traditional capacity development.

Deployment of renewable energy technologies is the focus of the actions submitted by “Action pour un Développement Equitable, Integre et Durable”, the African Support Group, and the World Wide Fund for Nature. The WWF international Power-Switch Campaign gathers pioneers among energy sector companies in Germany and the US, which are committed to invest in renewable power generation in order to increase the share of new renewable energy sources applied in their company to at least 20% by 2020.

Deutscher Naturschutz Ring in cooperation with Bundesverband Windenergie, Deutsche Gesellschaft für Sonnenenergie, and the International Energy Initiative all focus on research activities in their actions. Financing mechanisms are provided in the action from the Basel Agency for Sustainable Energy, which commits to establish a Transaction Support Facility, to shift the flow of finance towards renewable energy systems.

⁴ The 50% increase by 2010 corresponds to EUR 1.300 million in additional funds for renewable energies.

⁵ This growth corresponds to USD 200 million in additional funds for renewable energies

The remaining actions and commitments submitted by nongovernmental actors all deal with capacity development. The actions have a broad range of target groups from youth, women, consumers and governments, and their activities cover developing and developed countries

Research Bodies

Research and development is a pre-requisite for the evolution of new and innovative renewable energy technologies and to the competitiveness of these technologies. Several research institutions have contributed to the IAP, offering their commitments towards the expansion of renewable energy use.

Fraunhofer Institute for Solar Energy Systems has committed to establish an International Science Panel on Renewable Energy, assessing the scientific, technical and socio-economic status relevant to the development and deployment of renewable energy technologies and bridge the way from R&D results to policy making.

Technology-specific research is the focus of another two actions. The Trans Mediterranean Renewable Energy Cooperation (TREC) has committed to investigate the options for Concentrating Solar Power and combining power production with water desalination, and the Institute for Research in Sustainable Energy and Development (IRSEAD) has committed to undertake research in biomass.

Several research institutes and universities have committed to investigate closer the role of renewable energies in poverty alleviation. This concerns the African Energy Policy Research Network and the Heinrich Böll Foundation Regional Office for East Africa; the Center for Environmental and Development Studies of Cameroon at Maroua and the InTCaB International team for capacity building in the promotion of sustainable development together with Cuban and German universities.

Private Sector, Utilities and Industry Association

The private sector has a special responsibility to implement the existing renewable energy solutions and to advance new and innovative technologies. The energy utilities are among the most important actors in this respect and some of them contributed with actions and commitments to the IAP. Danish, German, Russian and South African utilities are committed to advance their efforts in renewable energies. And, through the “African Union of Producers, Transporters and Distributors of Electric Power”, utilities of several African countries are committed to utilize renewable energy sources as means to electrification of border regions.

Also the renewable industry made active commitments to the IAP. The company Enercon commits itself to developing a combined wind power and water desalination technology, whereas Renergys and SES have made a combined commitment setting up a wind park in Brazil. Also the Renewable Industry Associations has contributed to the IAP: EREC with the commitment to help establish a South American Renewable Energy Council, and WWEA commits to develop guidelines for the improved development of wind energy projects.

Private Investment sources have also submitted actions and commitments. E+Co Europe commits to make substantial direct investments to support small and medium clean energy enterprises, EIP establish a mezzanine fund for investments in renewable energy projects in Eastern Europe and Triodos as well as ecos in cooperation with Solsuisse finance renewable energy for development.

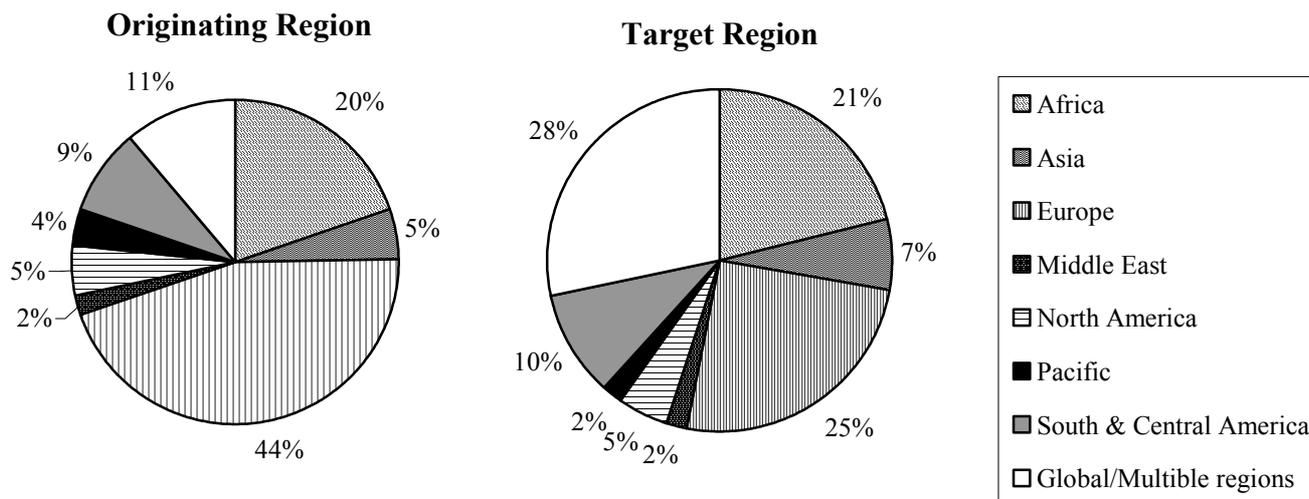
Other private sector partners also participate actively in the IAP. e5, the European Business Council for a Sustainable Energy Future commits to establish the e5 Sustainable Energy Accelerator to support RE SMEs. The Confederation of European Paper Industries has declared it's intent to increase the use of biomass as energy source. Also Unst Partnership Ltd, Volkswagen AG, DaimlerChrysler AG, Siemens Afghanistan AG have made commitments to the Action Programme.

3.2 Region

The call for actions and commitments has met a world-wide response and actions and commitments have been submitted to the IAP from all regions in the world.

A large part of the actions originate in Europe, with 44% of all actions being initiated by an European actor. Africa is the second largest initiator of the actions with 20%, whereas South & Central America follows with 9%. Smaller shares of the actions originate in Asia (5%), North America (5%), the Pacific (4%) and the Middle East (2%). Some 11% of the actions are initiated by global based actors or have a multiregional origin.

Figure 2: Distribution of Actions by Originating and Target Region



Most actions (75%) are carried out in the region of it's origin. That is, the leading actor performs the action at home, or at least within his home region. However, not all the actions are implemented in the region of their origin. 25% of all the actions are implemented elsewhere and thus involve a money flow, and a redistribution among the regions.

Thus the distribution of target region differs somewhat from the distribution of the region of origin. 25% of the actions will be implemented in Europe, whereas 21% of the actions target Africa. 10% of the actions are implemented in South & Central America, and 7% in Asia. North America (5%) and the Middle East (2%) are the target regions of the actions in the same proportion as the origin. And 2% of the actions target the Pacific area. Many (28%) of the actions have a global target or target more than one region

Money flow between the regions

In the 50 cases where the region of origin differs from the target region, the actions involve a flow of funds and capacities between the regions. In 39 cases (78%), the actions originate in Europe, 6 cases (12%) have a multiregional origin, and in 3 cases (6%), the actions have origin in the Pacific, North America and South America.

Most of these 50 cases have a global or multi regional scope. Only 10 actions (20%) are targeted at a specific region; this concerns in general actions originating in Europe that are implemented in the regions of Africa, Asia and south America, but also include a few global based actions targeting specific regions.

All in all, many of the actions that have an European leading actor will be implemented either globally or in other regions.

3.3 Issue

The conference issue paper set the agenda for the conference addressing the broad question of how to change to a sustainable energy system in an active and timely manner, while allowing for the

social and economic development of both industrialised and developing countries and taking into account divergent and specific national conditions.

The conference issue paper identified three main issues to be addressed to facilitate the global expansion of renewable energies.

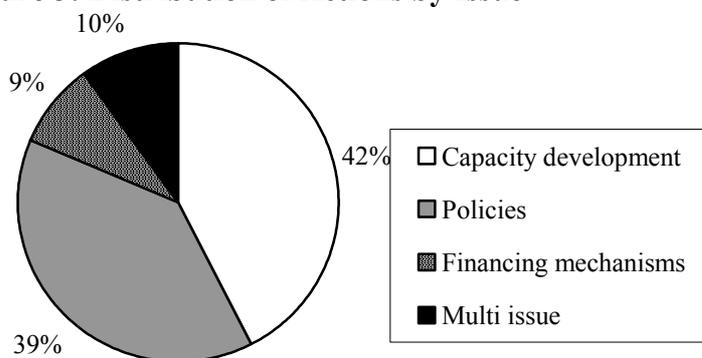
1) The substantial increase in the use of renewable energies can only be secured by a massive development of relevant markets. Today, however, renewable energies do not find the necessary enabling **policy framework** to fully develop their market potentials, and the risks of relying upon fossil energy sources are not well translated into appropriate market signals.

2) The characteristics of renewable energy technologies imply high upfront investments that require particular financing solutions. In addition, markets for financing tend to rate risks of innovative technology higher than those of their conventional competitors. This makes **financing** renewable energies unreasonably expensive. Moreover, renewable energies are frequently decentralised, and small-scale in nature, and hence appropriate for markets in rural areas. However poor rural people, especially women, often do not have access to the proper financing or support schemes to afford renewable energy.

3) When dealing with renewable energies, political decision-makers, administrations, technology and project developers, financiers and users are confronted with new and rapidly developing challenges. Individual knowledge and institutional structures are not yet sufficient to overcome the market failures and barriers to financing. **Capacity and institution building** together with well targeted **research and development** on technologies should thus be high on the agenda.

The IAP includes commitments on each of these three thematic issues.

Figure 3: Distribution of Actions by Issue



39% of the actions address the challenge of creating an enabling policy framework for renewable energy market development. This happens through target setting, regulations and strategies for renewable energy development, economic incentives and through commitments and tenders for renewable energy technology deployment. Altogether, 29 national targets for the expanded use of renewable energies were included in the IAP (see Annex 1).

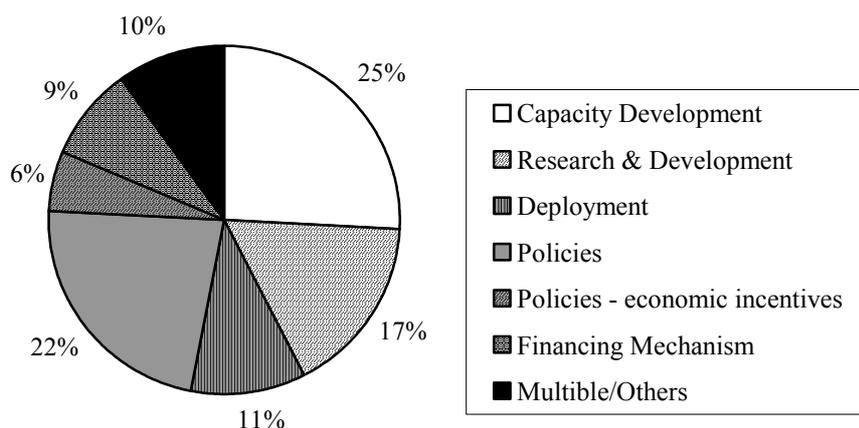
9% of the actions address the issue of providing financing options for renewable energies. Financing solutions are offered by a wide range of actors, including private investment companies, international organisations and development banks, and governments.

42% of the actions face the challenge of developing human and institutional capacities for renewable energies and addressing research and development on renewable energy technologies. Governments, international organisations, local governments, the private sector and non-governmental organisations all provide options on this issue.

10% of the actions address two or all three of these issues simultaneously, thus providing multi-issue options for renewable energy development. These multi-issue actions typically combine capacity development either with a financing mechanism or with the development of enabling policy frameworks.

The more specific differentiation within each category can be seen from the graph below. 25% of the actions target development of human and institutional capacity, while 17% of the actions focus on research and development of renewable energy technologies. Actions that address the issues of a policy framework either focus on either regulation and strategies (22% of all actions), economic incentives (6%) or deployment (11%).

Figure 4: Distribution of Actions by detailed issue

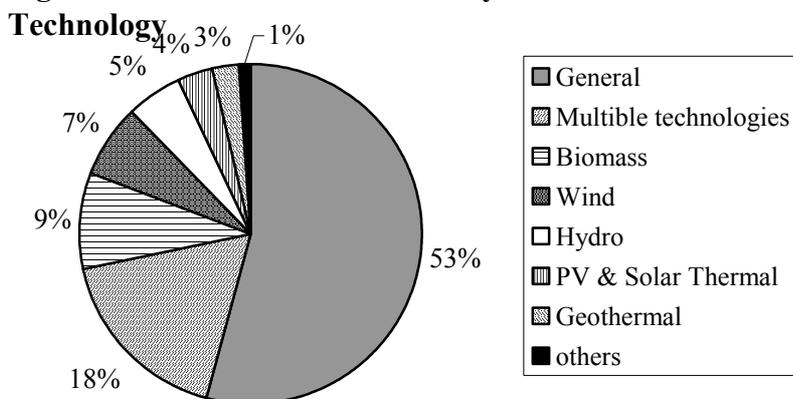


3.4 Technology

While the actions and commitments cover a broad spectrum of renewable energy technologies, most of them are not technology-specific. 53% of the actions deal with renewable energies in general, whereas 18% target two or more specific technologies.

Only 28% of the actions place focus on one specific technology. As can be seen from the diagram below, biomass (9%), wind (7%) and hydro (5%) are the most used technologies in these technology-specific actions. Energy from solar (4%) and geothermal (3%) sources are less frequent, and a single action targets tidal/wave energy.

Figure 5: Distribution of Actions by Technology

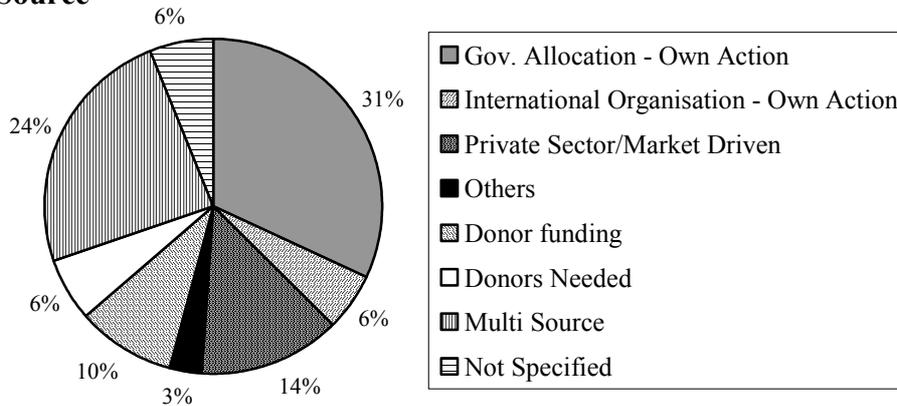


3.5 Financing

Looking at the source of financing for the actions, we again see a transfer of funding between the leading partners and the location of implementation. 10% of the actions are donor funded either through Official Development Aid or through international Financing Institutions and another 6%

of the actions specifies that donors are needed to realise the commitment made. Many actions (24%) are financed through a mix of sources often combining government allocations with private sector and donor contributions. 31% of the actions are self-financed by governments and 6% are self-financed by International Organisations. Private sector financing and market driven actions account for 14% of the actions. For 12 % of the actions, financing information is less specified.

Figure 6: Distribution of Actions by Financing Source



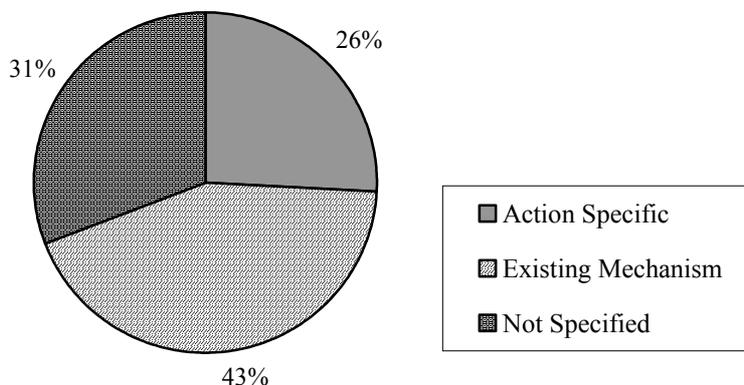
3.6 Monitoring

Monitoring of the individual actions is an important part of the follow-up of the conference, and the submitting parties were asked to indicate a time frame of implementation and the arrangements for monitoring the actions. However, in 31% of the cases the monitoring process is not specified.

In those cases where specifications concerning the monitoring process is made, the actions distribute themselves into two main categories. The first category consists of actions, which will be monitored through an existing mechanism, i.e. according to established rules of the submitting party. 43% of all actions belong to this category.

The second category consists of actions, where an action-specific monitoring process is being planned. 26% of the actions fall into this category.

Figure 7: Distribution of Actions by Monitoring Process



Almost 1/3 of the actions do not specify a monitoring process at this point. This underlines the importance of an overall follow-up and monitoring process after the renewables2004. The options for the follow-up will be discussed later.

4 Expected Effects

4.1 Installed Capacity & Investment Volume

The actions and commitments from the IAP will produce an additional 163 GWel capacity of renewable energy by 2015. With average investment costs of about USD 2000 per kW this corresponds to an investment level of USD 326 billion, of these USD 138 billion in China alone.

4.2 CO₂ Reduction

The following estimation of the CO₂ reduction potentially resulting from the International Action Programme includes only those actions for which a quantification of direct implementation was possible. The remaining actions also do contribute to CO₂ reduction, e.g., through reducing barriers, raising awareness, reducing specific investment costs, or reducing transaction costs.

The estimation of CO₂ is based on several key assumptions for renewable energy electricity generation and for renewable energies delivering heat or transport fuels⁶. The assumptions made results in a *conservative* estimate.

With the implementation of the IAP the global CO₂ emissions will be reduced by increasing amounts. Based on the assumptions above, the CO₂ reduction expected in 2015 will amount to 1,2 billion ton/annum. This corresponds to about 5% of the expected global CO₂ emission in 2015.

The largest contributions to the – measurable – CO₂ reduction comes from actions submitted by governments. As regards additional CO₂ reductions (i.e. those going beyond the Kyoto Protocol Commitments), China, Mexico, Germany, the USA, Brazil and the Philippines are the largest contributors to the reduction, but significant contributions also arise from the actions submitted by Australia, Japan, South Africa, Egypt, Pakistan, Benin, Argentina, Turkey, Canada, Dominican Republic, Cyprus, France, Morocco, Iran, Tunisia, Jordan, Senegal and Botswana. Moreover the actions submitted by governments in cooperation: the Global Market Initiative and the Global Renewable Energy Fund of Funds by the JREC make contributions to the CO₂ reduction as well.

Four international organisations contribute to the additional CO₂ reduction namely the EIB, the World Bank Group, the GEF, and the EBRD.

From the civil society an important contribution to the additional CO₂ reductions comes from the WWF Powerswitch campaign, and from private sector contributions made by renergys & SES, E+Co Europe, EIP, Triodos, and the utilities OAO "Derevoobtabotchik", OOO Enteks and Ec Bioenergie Heidelberg GmbH.

Besides the abovementioned actions, a number of actions imply a CO₂ reduction, but an non-additional one. Especially many commitments made by European actors can be seen rather as a *reconfirmation* of previous commitments, and however positive, these are not included in the expected additional effect on CO₂ reductions. Such actions are submitted by Spain, Italy, UK, France, partly Germany, Denmark, Norway, New Zealand, Czech Republic, Switzerland, Belgium and CEPI.

Based on the additional CO₂ reductions resulting from the actions the following 20 actions can be emphasized:

⁶ The assumptions and methodology used is described in Annex 2

Table 1: Top 20 actions regarding CO₂ reduction in 2015

Rank	Description of the Action	CO2 Reduction [million t/a]
1	China - Renewable Energy Development Strategy and Plan until 2010	813
2	Mexico - Renewable Energy Target for 2014	66
3	Germany - Renewable Energy Target for 2020	42
4	European Investment Bank – RE Loan Target and Climate Facility	18
5	USA - Renewable Energy Production Tax Credit	14
6	Brazil - PROINFA and “Light for All” Projects	13
7	Philippines - Renewable Energy Target for 2013	10
8	Australia - Renewable Energy Target for 2010/2020	9
9	Japan - Renewable Portfolio Standard Law	8
10	South Africa - Renewable Energy Target for 2013	8
11	Egypt - Renewable Energy Target for 2020	7
12	Germany - Special Facility for RE & EE	7
13	GMI – Global Market Initiative for Concentrating Solar Power	7
14	Pakistan - Renewable Energy Target for 2015	6
15	Germany, UNEP, GEF – East Africa Geothermal Initiative	6
16	Benin – Provision of Energy Services through RE (Biomass)	6
17	Argentina - Renewable Energy Target of 8%	4
18	WWF PowerSwitch! Campaign	4
19	Turkey - World Bank Renewable Energy Investment Loans	3
20	Canada - Wind Power Production and RE Deployment Incentives	3

4.3 Access to Energy

In the Political Declaration, the participating governments reaffirmed their commitment to achieving the United Nations’ Millennium Development Goals, in particular the goal to halve the proportion of people living in extreme poverty. They underlined the need to expand access to energy in order to achieve the MDG, and endorsed estimates that up to one billion people could be given access to energy services from renewable sources by 2015.

Additional access to energy is a result provided mainly through the actions of governments. The main contributors among the governments are China, the Philippines, South Africa, Egypt, and Germany. The Global Market Initiative also contributes to a large share. Moreover Pakistan, Brazil, Morocco, Dominican Republic, France, Argentina, Jordan, Senegal, Tunisia, Iran, Botswana and Benin, as well as JREC’s commitment concerning the Global Renewable Energy Fund of Funds, contribute to access to energy.

The commitments by the GEF and the World Bank Group as well as the commitments by the private sector actors E+Co Europe, Triodos and renergys & SES also result in giving people access to energy.

5 Perspectives

The political declaration of the conference outlined a two-pronged strategy for the follow-up to the *renewables2004* conference.

The *first* element aims at bringing the follow-up back to the context of the UN with a review of commitments of the Johannesburg of Implementation and the International Action Programme at the CSD 14/15 in 2006/2007. In order to facilitate this process, a meeting of interested countries on the level of Director Generals is planned in preparation of the Commission on Sustainable Development (CSD) 14/15 with the purpose of discussing different options for such a review arrangement. However, since the time horizon of most actions is more than five years it's necessary to look as well at review options after 2007.

A *second* string of the follow-up will consist of the establishment of a Renewable Energies Global Policy Network in which representatives from governments, parliaments, international organisations, local and regional authorities, the private sector, civil society and existing partnerships will continue the cooperation and high-level policy dialogue to keep momentum for the global expansion of renewable energies. In the preparatory meetings for the network several stakeholders have expressed the wish that a follow-up of the IAP will be among the tasks of the network.

Annex 1: Targets for the expansion of renewable energies from 29 countries

Argentina	8 % of the energy demand from RE by 2005
Australia	Achieve an additional 9.500 GWh of electricity from RE sources by 2010, and maintain this level to 2020
Belgium	6% of total gross energy consumption from green electricity by 2010
Brazil	3.300 MW additional power generation capacity from RE by 2010. Achieve 100% electrification by 2008
China	10% of the installed power generation capacity from RE by 2010, 12% by 2020
Cyprus	9% share of energy from RE sources and 6% electricity generated from RE by 2010
Czech Republic	8% of the gross electricity consumption from RE by 2010
Denmark	25% of the total power production from RE by 2008 through new off-shore wind parks and re-powering projects
Egypt	14% of the Egyptian energy demand covered by RE by 2020
European Commission	Commitment to formulate a RE target beyond 2010 by 2007
France	21% of the power consumption from RE by 2010 and a 50% increase in RE heat contribution by 2015
Germany	12,5% share of electricity from RE sources by 2010, and 20% by 2020
Iran	500 MW installed capacity of RE by 2010
Italy	Increase electricity production from RE from 50 TWh to 75 TWh by 2012
Japan	12,2 TWh of the electricity supply from RE by 2010 (corresponding to 1,35%)
Jordan	5% of the total energy supply from RE by 2015
Mexico	4.000 MW additional installed capacity from RE by 2014
Morocco	Additional 600 MW wind parks and 400.000 m ² solar panels installed by 2015, and access to energy to 150.000 rural households.
New Zealand	30 PJ additional consumer energy per year from RE until 2012.
Norway	Minimum 10 TWh annual increased RE production and EE (corresponding to 10% of the electricity consumption)
Pakistan	10% of the total electricity generation from RE by 2015
Philippines	Double the installed generating capacity from RE by 2013 to 4700 MW.
Senegal	15% of the energy balance by 2025
South Africa	1667 MW total RE capacity by 2013
Spain	29,4% of electricity consumption and 12% of total energy consumption from RE by 2010
Switzerland	Increase electricity production from RE by 500 GWh (1% of total production), and heat production from RE by 3.000 GWh (3% of total production) by 2010.
Tunisia	300 MW additional wind capacity by 2011
Uganda	About 200 MW installed capacity from RE by 2010
United Kingdom	15,4% of the electricity supply from RE by 2015/2016 and und 12% of the electricity consumption of Northern Ireland from RE.

Annex 2: Explanatory notes

The estimation of the CO₂ reduction resulting from the IAP include only those actions for which a quantification of direct implementation was possible.

The actions not included here also do contribute to CO₂ reduction, e.g., through reducing barriers, raising awareness, reducing specific investment costs, or reducing transaction costs.

The estimation of CO₂ reductions from actions for renewable energy (RE) are based on several key assumptions:

Key assumptions for RE electricity generation

If actions concern the extension of existing or creation of new funds to finance investments in renewable energies, a common leverage factor was assumed for all undedicated funds.

Furthermore, a "generic" investment cost factor was used which does not differentiate between RE technologies, countries, or operating conditions.

From the total induced investment and the specific investment cost factor, the total additional RE capacity was derived and then multiplied with a generic utilization rate to determine overall additional RE generation.

If actions concern quantified targets and timetables for countries, e.g. a 10% share of RE in the national electricity generation mix, this was translated into absolute amounts of electricity using the year 2000 baseline generation, and the year 2000 baseline RE generation (if any).

Then the future (e.g. 2010) amount of electricity was computed assuming country-specific growth rates taken from averaged IEA data for 1990-2000. Multiplying the 2010 generation figures by the year 2010 target for RE, the 2010 RE generation figure was derived. The net additional RE generation was then computed in subtracting the base year RE generation from the year 2010 RE generation.

If actions concern specified capacity extensions/new capacities, or increases in RE generation for specified RE technologies, those figures were used.

No correction was made for gross or net generation, avoided transmission/distribution losses, increased system services for backup or power firming, etc. The net additional RE generation was multiplied with a CO₂ emission factor of the avoided future generation for which a marginal plant (or a mix of several) was assumed. The marginal plant technology and fuel-base (or mix of those) was chosen on country-specific terms. All marginal plants were assumed to be state-of-the-art new plants.

Key Assumptions for RE delivering heat, or transport fuels

If actions concern quantified targets for the provision of heat or transport fuels from RE sources, or specified extensions of RE shares, the computation followed the logic for electricity, but used oil heating as the marginal option avoided by RE. CO₂ emissions for heating oil are quite similar to those of gasoline and diesel, so that this is a good proxy.

Limitations of the Quantification Approach

Some of the actions regarding funds for RE also cover energy efficiency (EE) investments, and do not give a share. As EE investments also reduce marginal plants similar to RE investments, but usually have lower investment costs, the approach to assume all investments to be made in RE is conservative.

The nature of the RE investments (i.e. which source, technology etc.) is also not given for the funds, so that an estimate of an average specific investment cost figure was used which may be higher or lower in reality, thus leading to more or less additional RE electricity generation.

The marginal plant approach is a good proxy to identify CO₂ reductions - for most developing countries, a new coal-fired steam-turbine power plant (PP) for electricity, and oil-based heat generation were used. In reality, the marginal plant might differ in fuel use, and efficiency, e.g. the operating time of an existing plant might be reduced. As existing plants usually have lower efficiencies than the new plants assumed here, the approach seems conservative in most cases.

Annex 3: List of Actors

Governments

Afghanistan
Algeria
Arab Republic of Egypt
Argentina
Armenia
Australia
Austria
Belgium
Benin
Botswana
Brazil
Canada
Caribbean Community Secretariat
Chad
China
CILSS -Permanent Inter-State Committee on Drought Control in the Sahel
Republic of Congo
Cyprus
Czech Republic
Denmark
Dominican Republic
Eritrea
Ethiopia
European Union
Finland
France
The Gambia
Germany
Guatemala
Iceland
Israel
Iran
Italy
Japan
Jordan
Johannesburg Renewable Energy Coalition
Kenya
Mali
Mexico
Morocco
The Netherlands
New Zealand
Nigeria
Norway
Pakistan
Peru
Philippines

Renewable Energy and Energy Efficiency Partnership
Senegal
Sierra Leone
Slovenia
South Africa
Spain
Sweden
Switzerland
Tunisia
Turkey
Uganda
United Kingdom
USA
Vietnam
Yemen

International Organisations

African Development Bank
Andean Community
Asia-Pacific Economic Cooperation
Association of South-East Asian Nations
Basel Convention Secretariat
European Union
KfW Bankgroup
Global Environment Facility
Inter-American Development Bank
International Energy Agency
South Pacific Regional Environment Programme
UN Convention to Combat Desertification
UN Development Programme
UN Economic and Social Commission for Western Asia
UN Economic Commission for Africa
UN Economic Commission for Europe
UN Economic Commission for Latin America and the Caribbean
UN Educational, Scientific and Cultural Organisation
UN Environment Programme
UN Environment Programme and Intermediate Technology Development Group
World Bank Group

Global Network on Energy for Sustainable Development (GNESD)

Local Governments

City of Aachen, Germany
City of Bonn, Germany
City of Bremen, Germany
City of Bucharra, Uzbekistan
City of Capetown, South Africa
City of Freiburg im Breisgau, Germany
City of Munich, Germany
City of Pimpri-Chinchwad, India
City of Pune, India

ICLEI - Local Governments for Sustainability
Local Renewables
North Rhine-Westfalia, Germany
Region of Tuscany, Italy
Walloon government, Belgium
Clean Energy Group
Climate Alliance of European Cities with Indigenous Rainforest Peoples

Non-Governmental Organisations

African Support Group (RPTES)
Agence Nationale des Energies Renouvelable
Baker & McKenzie's Global Clean Energy & Climate Change Practice
Action pour un Développement Equitable, Intégré et Durable
Basel Agency for Sustainable Energy (BASE)
Bundesverband Windenergie e.V., Germany
Deutscher Naturschutzring e.V., Germany
EC Baltic Renewable Energy Centre
ENERGIA - The International Network on Gender and Sustainable Development
International Energy Initiative (IEI)
International Team for capacity building in the promotion of sustainable development (InTCaB)
Investigation and formation network on sustainable development (IFAN)
JEA - The Ecological Youth of Angola
Latin American Parliament
North South Initiative e.V. / SUDERETA
Sustainable Chile Programme
Sustainable South Cone Programme
Tanzania Traditional Energy Development and Environment Organisation
Venezuela's Bolivarian Women Association "Rigoberta Menchú" in Maneiro - Margarita Island
Verbraucherzentrale Bundesverband, Germany
World Wide Fund for Nature (WWF)
World Energy Council

Research Bodies

African Energy Policy Research Network / Foundation for Woodstove Dissemination
Centre for Appropriate Technology (CAT), Cameroon
Centre of Environmental and Development Studies (CECD) of Cameroon and Maroua
Experimental University "Ezequiel Zamora" (UNELLEZ)
Forschungsverbund Sonnenenergie
Heinrich Boell Foundation
Institute for Research in Sustainable Energy and Development (IRSEAD)
Renewable Energy & International Law Project
Technical University of Berlin, Germany
Trans-Mediterranean Renewable Energy Cooperation (TREC)
University of Sancti Spiritus
Yale University's Center for Environmental Law and Policy, USA

Privat Sector, Utilities and Industry Associations

African Union of Producers, Transporters and Distributors of Electric Power
Ec Bioenergie Heidelberg GmbH, Germany

Elsam Kraft A/S, Denmark
Eskom, South Africa
Ethiopian Electric Power Corporation
OAO "Derevoobtabotchik"
OOO Enteks, Russia

European Renewable Energy Council (EREC) South America/Europe
European Solar Thermal Industry Association (ESTIA)
Ethiopian Rural Energy Development & Promotion Centre and Rural Electrification European
International Solar Energy Society / German Section
Russian Geothermal Energy Society
US Solar Energy Industry Association (SEIA)
World Wind Energy Association

Australian Business Council for Sustainable Energy
European Business Council for Sustainable Energy (e5)
UK Business Council for Sustainable Energy
US Business Council for Sustainable Energy

Confederation of European Paper Industries (CEPI)
DaimlerChrysler AG, Germany
ENERCON
Renergys GmbH, Germany
SES Ltda. Brazil
Siemens AG Afghanistan Branch
Solsuisse GIE, Timbuktu, Mali
Unst Partnership Ltd., UK
Volkswagen AG, Germany

E+Co
E+Co Europe
Ecos, Basel, Switzerland
Environmental Investment Partners, Poland
Triodos International Fund Management BV

Annex 4: A Call for Actions and Commitments

Towards an International Action Plan for Renewable Energies

Background to the Conference

On 1 – 4 June 2004, Germany will be hosting the International Conference for Renewable Energies, Bonn 2004, as announced by Chancellor Gerhard Schröder in September 2002 at the World Summit on Sustainable Development in Johannesburg. The conference – *renewables 2004* – will chart the way towards an expansion of renewable energies worldwide, responding to the call made at the Johannesburg Summit for the global development of renewable energy. It will also keep up the momentum generated by the coalition of like-minded countries for the promotion of renewable energies (known as the Johannesburg Renewable Energy Coalition, JREC). More than 1,000 participants are expected to meet in Bonn, among them official governmental delegations including energy, environmental and development ministers, representatives of the United Nations and other international and non-governmental organisations, civil society and the private sector.

Expected Outcomes

The conference aims at three key outcomes:

- A **Political Declaration** describing common political objectives, offering a vision on how renewable energy can play a greater role in a more efficient and sustainable energy system, and including agreements on a follow-up process.
- An **International Action Plan** in which various governments and other actors propose concrete actions and commitments for developing renewable energies.
- **“Guidance for Good Policy”** leading to greater impact and coherence of the policy strategies employed.

The International Action Plan

This “Call for Actions and Commitments” invites governments, international organisations and other actors (e.g. civil society groups, business and finance) to contribute to the International Action Plan by proposing actions and commitments that will help to substantially increase the use of renewable energies. These actions and commitments should help overcome the obstacles that exist. In combination with the other conference outcomes, the International Action Plan will signal the participants’ determination to increase the share of renewable energies in energy supply, including the promotion of efficient energy systems, and will show how political commitments are translated into concrete action. This will also help implement the Johannesburg Plan of Implementation and achieve the Millennium Development Goals. The conference conveners will collect proposed contributions in the run-up to the conference (see below for procedural aspects).

All actions and commitments included in the International Action Plan will be of a voluntary nature. The conference aims at achieving differentiated actions and commitments that reflect specific regional conditions, capacities of actors or specific sectoral objectives and overall development targets. Actions and commitments are expected to emerge in a bottom-up approach.

The following list of potential Actions and Commitments indicates what the conveners imagine the International Action Plan to contain; however, this list is by no means designed to limit the imagination and creativity of all actors to come up with other concrete ideas:

- The EU may present their results of the current considerations to extend the renewable energy target to 2020 based on the existing targets of 21 % of electricity production or 5.75 % for biofuels from renewable energies by 2010.
- Other supporters of the Johannesburg Renewable Energy Coalition (JREC) present their voluntary targets for RE extension and present actions to reach those targets (extension of JREC).
- An alliance of donors offers a facility designed to enhance strategic cooperation between donors and developing countries and to support actions recommended by the G8 Task Force on Renewable Energy.
- Innovative financing tools involving private equity and venture capital are presented.
- Initiatives for RE market development are presented (e.g. the Global Market Initiative for Concentrating Solar Power).
- Government X (or several governments) presents a plan to extend access to modern energy services by Solar Home Systems or other technologies.
- International R&D cooperation agreements.
- A group of private-sector corporations presents a plan to restructure corporate energy consumption and/or investment working towards more energy from renewable resources and enhanced efficiency.
- Networks linking policy analysts and advisors, researchers and practitioners in the field of RE are strengthened and extended.
- etc.

What is expected? – Turning Political Commitments into Action!

In recognition of the challenges involved in the promotion of renewable energies at a global level and in appreciation of the high-level participation at *renewables 2004*, proposed actions and commitments should generally satisfy the following criteria:

Significance

While the conveners recognise that in order to increase the use of renewable energy sources, innumerable actions are required by a very large number of actors, the International Action Plan should bring together Actions and Commitments that are significant in terms of the impact they are likely to have. In particular, they should be significant in terms of the resources and capacities that the promoting actor has at his or her disposal.

New or Additional

It is important to acknowledge that many governments and other actors have taken significant steps to promote renewable energies in the past. However, in order for the International Action Plan to make a real difference, proposed actions and commitments must be new or additional in that they make a significant contribution to the relevant objectives.

Monitoring Process

Actions and Commitments should be proposed such that, in principle, their implementation can be monitored and progress documented and reported. Monitoring of implementation of the International Action Plan is envisaged to become an integral part of the follow-up process to the conference. There should be a timetable indicating how the actions and commitments are to be implemented.

Supported by Financial Resources

Actions and Commitments should be supported, wherever relevant, by an indication of the availability of financial resources for their implementation. This indication should be realistic and may also mention possibilities for expansion and further development.

Submission of Proposals

Governments, international organisations and other stakeholders wishing to contribute to the International Action Plan are invited to fill in the attached form and to submit it to the Conference Secretariat at the given address. In view of the limited time left before the conference, intended contributions to the International Action Plan should be submitted as soon as possible (by 22 May 2004 at the latest), even if some of the information is of a preliminary nature. This would leave time for consultation with the initiators, where necessary, and with the Multi-Stakeholder Dialogue for proposals originating from the private sector and from civil society. There will be further opportunities to update/elaborate this information. The Conference Secretariat plans to publish the proposed Actions and Commitments on the conference website at www.renewables2004.de with a view to further stimulating the preparatory process for the conference and to motivate others to submit proposals.

Screening of Proposals

The conveners will screen the received proposals for Actions and Commitments. Proposals from non-governmental actors will be screened in consultation with the Multi-Stakeholder Dialogue. Should the conveners see a need for clarification, they will consult with the proposing party. While due flexibility will be applied when screening the proposals, the conveners will give clear priority to proposals that are in accordance with the spirit or the overall objectives of the conference. There are no plans to negotiate individual proposals for the International Action Plan at the conference; however, there will be room for discussion on the International Action Plan as a whole and on its role in the larger set of expected conference outcomes.

Presentation of the International Action Plan at the Conference

The conveners will set aside time in the conference programme for prominent presentation and discussion of the International Action Plan. The conveners would like to propose outstanding Actions and Commitments to be presented in more depth.