

# EDUCATION AND TRAINING FOR RENEWABLE ENERGIES AND CLIMATE PROTECTION

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## Speech for *RIO 02*

Distinguished experts,  
Ladies and Gentlemen,

It is my great pleasure to speak here on behalf of one of the sponsors of this conference. The institution I am working for is the Carl Duisberg Gesellschaft, a non-profit network for international training and personnel development.

The title of my short presentation is "Education and Training for Renewable Energies and Climate Protection".

We at CDG use a broad definition of the term "training". For us the term also includes dialogue-based measures and measures quite generally aimed at international and intercultural human resources development. Yet, for us, the term also encompasses a wide array of different types of measures, such as workshops, seminars, study trips, through which we seek to contribute to the solution of specifically analysed problems within the framework of training projects.

Nowadays development policy is increasingly understood as part of global structural policy. Human-resources-related cooperation, as part of that development policy, addresses the decision-makers who are able to change framework conditions that hinder development. What development do we wish to promote? What are the framework conditions that need to be changed? And who are the players who should be in a position to develop alternatives for action, to assess the consequences of decisions and to influence the decision-making and implementation structures?

The Carl Duisberg Gesellschaft has committed itself to the promotion of sustainable economic development. A sustainable energy supply, that means, one that is environment- and climate-friendly, economically viable and socially acceptable, is a key element of sustainable economic development. The goal, therefore, is to help manage the growing demand for energy in the countries of the South in an environmentally acceptable and economically efficient manner. However, it is also important that, in the debate about a climate-friendly energy supply in the South, we in the North should understand that we, too, must continue accordingly to restructure our own energy supply, towards a much higher percentage of renewable energy sources – while at the same time exploiting our energy-saving potentials and employing the most efficient energy conversion systems.

To be able to initiate and successfully shape the processes of change through training, we have developed a variety of approaches:

Within the framework of dialogue-based measures (e.g. conferences and congresses), we are able to bring together important decision-makers from industry, policy and science and discuss strategies and to organize an important exchange of experiences at management level and reach agreement on international strategic partnerships and collaborations.

We were and are convinced that, in order to achieve increased use of renewable energy sources at different levels, it is necessary to make trainings available at different levels. Therefore, we intend in future to step up our support of those multipliers who, in schools, vocational colleges and universities, convey basic knowledge about various technologies for harnessing renewable energy sources.

In addition, we offer measures aimed at general human resources development. By this we mean training programmes which convey problem-solving expertise and, for example, also management expertise at a general level. To achieve this, CDG has over many years organized and implemented long-term training. Junior managers from the energy sector have been enabled to plan and engineer wind farms or solar energy projects with reference to economic and technical aspects. Management training was part of this programme. However, a contribution to general human resources development is made also by programmes which relate to project-planning methods, other forms of management training, discussion-leadership and moderation techniques and communication strategies as well as by those which promote an ability to engage in intercultural dialogue.

I feel ever greater importance attaches to those measures which are designed to improve the capacity to tackle issues in the social plane. We cannot change hierarchies or structures of responsibility, but we can help young experts to develop strategies that enable them to gain attention for good ideas and problem-solving proposals. Here, the most important training objectives are to develop such strategies, to learn the necessary communication methods and strategies and also to overcome personal psychological barriers (away from: there's no point; they hardly listen to me).

Particularly when we plan and implement training projects to overcome obstacles to development or, more specifically, to propagate renewable energy sources, we need competent partners in the countries who have technical expertise and the capacity to take action. These may be government or private institutions or organizations; they may be networks, non-governmental organizations, industrial associations, scientific institutions, training enterprises or, for example, government planning departments. The choice of partner depends on the objective of the training programme and on the task required of the partner. The objectives of the training programme are always elaborated jointly with the partners, and those persons who are to initiate and organize the processes of change, i.e. the target groups, are also analysed jointly. If, for example, the aim is to support a market-led propagation strategy which is promoted by the government authorities in the developing country, then the partner institution must have good relations with both the government departments and the market players. The partner institution must also be a competent partner for the target groups.

The objective of such a training programme may be to upgrade the rural energy supply in order to improve local living conditions. This involves a very wide range of training: local entrepreneurs wishing to install renewable energy systems in rural areas must often be trained in business management; they must have access to knowledge relating to the quality of the systems they purchase; they must be enabled to organize the provision of services, i.e. maintenance and repair work, and to put in place an appropriate financing scheme; they must in general be enabled to work together with financing institutions, because only a proportion of potential customers in rural areas will be in a position to pay cash for the systems they want. However, a large proportion of people in rural areas will only at all be in a position to use such systems if they are made available to them below market prices.

The political decision-makers responsible for the rural region in question must decide whether the rural supply of energy is to take place under market conditions and, therefore, at market prices. Normally, this will mean that the prices of energy-related services are higher in the country than in the city. If, for social reasons, this is not desired, then decisions must be taken: Should the market launch of renewable energy systems be supported for a certain period of time? Should certain groups of persons receive subsidies for the purchase of RE systems? Or should they even receive them free of charge? Should the users become the owners of the decentralized energy supply systems? Or should the supply of energy be organized through energy-supply companies or cooperatives, with the user

paying only a charge: charge per kWh or monthly usage charge? Here, an exchange of experiences with people who have already implemented similar projects is of very great benefit and definitely helps to avoid mistakes and optimise planning. An interesting approach is being supported by CDG, for example, in Brazil through training: while the ministry of energy provides the installation of photovoltaic energy systems free of charge in rural areas for the lighting of health centres and schools as well as for water pumps in order to improve the supply of drinking water, CDG seeks in some of these communities to support private-sector initiatives to propagate RE systems by means of training measures for those players wishing to improve the basic economic conditions in those regions. Those communities are selected in which possibilities for the productive use of RE systems have already been identified by other Brazilian partners. Private companies can then not only install additional systems, but they can also offer a service to government agencies by taking over the maintenance of the systems installed at the social institutions.

CDG also supports the national institutions in their efforts, through joint training measures, to extend national networks between companies from the RE industry, the financial sector, government planning authorities, user groups, NGOs etc. In my opinion, this project is exemplary in illustrating the need to coordinate the content and timing of measures aimed at different target groups with different objectives and involving a multiplicity of learning methods. The project also shows how such an international cooperation project is – and must be – a constant learning process for both sides. Differences in strategic approach, different political and economic systems as well as different cultures and mentalities certainly impose demands on the intercultural learning ability of all those involved in the project.

A further important objective of CDG's training activities is to achieve a rapid and sustainable increase in the proportion of the overall energy mix accounted for by renewable energy systems which supply to the grid. CDG has been offering targeted training measures to this end since as early as 1992. Since 1999 we have been engaged in a cooperation project with Argentinian and Brazilian partners together with the German wind energy industry and its subsidiaries as well as with German research and training institutions. The prime goal here is to strengthen the necessary dialogue between parliamentarians and political decision-makers in order to formulate and implement the basic political framework. The story of the origin and success of the German Renewable Energy Sources Act is very well known to Argentinian and Brazilian politicians, mainly thanks to our project partner DEWI and ISET. The importance of this Act and its forerunners, not only for the propagation of RE technologies but also for the rapid development of a German RE industry, has also been brought by us to the attention of high-ranking representatives here in Brasil.

We are willing to offer more open dialogues with important representatives of ministries and parliament, with science and industry and with those who were ultimately responsible for drafting the German Renewable Energy Sources Act.

Our objective was and is also to make a wider ranger of Brazilian wind experts available in this country, experts who are in the position to plan, implement, operate and maintain wind park projects. At the same time we hope to contribute with our training measures to make experts available for the producers of components and of wind energy converters here in this country. We are prepared for a close cooperation with those industries.

Here in Brazil we conducted already a series of workshops i.e. on wind measurement and WASP, on wind farm planning, on anemometer calibration, and on drawing up business plans appropriate to the local facts and figures. We have worked out what expectations, attitudes and behaviour patterns are responsible for the fact that, despite – in some cases – very favourable wind conditions, e.g. in Brazil, fewer wind farms are financed than, for example, in Germany, although, precisely now in Brazil (unlike in Germany), there is an additional demand for electricity. However, expectations with regard to the return from private investment projects are difficult to influence through training. Yet it is important to know that we are not confronted here with technical problems or with a lack of demand for electricity, but, rather, that electricity prices are still too low from the point of view of potential

investors, and, in particular, that potential wind-farm operators from the private sector are still finding it very difficult to conclude long-term contracts with agreed prices for supplying electricity to the grid.

In two weeks we will have another workshop in which we will include the first impact measurement of the grid to the converters and vice versa.

As part of the training project, our partners, supported by CDG, had developed training modules for a basic course in the harnessing of wind energy. The courses have been introduced at three universities in each of the two countries last year and we expect that these universities will offer these courses annually from now on.

We will start this year – together with our Brazilian partners a new training project which we call wind – hydrogen – fuel cell. With this project we like to show ways how to use electricity in mobile and stationary applications without emitting CO<sub>2</sub>. The electricity used to produce hydrogen (which can be stored and transported) has to come from renewable energies.

CDG is engaged here in two other projects: We are cooperating with the environmental secretariat here in Rio on municipal energy management and we are also involved in some projects on a most efficient use of natural gas to support a more decentralized energy supply.

It remains to be pointed out that human-resources-related development cooperation of the kind outlined here is also of benefit to companies from the Northern hemisphere, which gather valuable experience through, for example, joint ventures, be it in the planning or operation of renewable energy projects or in the production of components or systems. Furthermore, a developing-country initiated increase in demand can result in new development efforts and more efficient production methods. Application-related experiences from the Southern hemisphere can, through cooperation, be taken into account in the process of further development. Based on the expectations of various partners, financing models can be jointly developed for the financing of RE projects; risks can be minimized if one has knowledge, for example, of the insurance options and costs of insurance; and partners for the covering of risks can more easily be found and integrated. Project partners from the South can be trained by CDG jointly with German companies within the framework of public-private partnership (PPP) projects.

CDG will continue in future to support partners in these countries in the field of renewable energy sources; it will continue to train a broad range of experts and integrate them into an international exchange of experiences. The result of this will be a comprehensive range of practical knowledge available for further expansion in the use of renewable energy sources. This knowledge pertains to all levels: the political level, but also the level of science, research and teaching, and especially also the level of the operators and producers of energy facilities – both in the planning and realization of projects – as well as in the financial sector. Committed players in these countries can then successfully engage in educational campaigns and lobbying and can plan, implement and operate projects and plants. In close cooperation with political decision-makers and industry, we seek thereby to make a contribution to a more environment- and climate-friendly supply of energy in North and South alike.