



**RENEWABLE ENERGY OBSERVATORY FOR LATIN
AMERICA AND THE CARIBBEAN**

*draft**

**EXECUTIVE SUMMARY
(February 2007)**

**The present document has not been officially edited by UNIDO*

The proposal of a *Renewable Energy Observatory for Latin America and the Caribbean* presented in this document and initially encompassing 23 countries of the region, is the result of a vast consultation process, carried out by the United Nations Industrial Development Organization (UNIDO), arising from the Iberoamerican Ministerial Meeting held in Montevideo, Uruguay on the 26 and 27 of September of 2006.

From the aforementioned date and with the objective of responding to the commitment of UNIDO with respect to the countries of the region, several bilateral meetings have been held with government representatives, including an *Expert Group Meeting in Vienna*, November 2006. The purpose of those consultations was to obtain the maximum amount of inputs in order to guide this proposal onto the most fruitful path possible for the benefit of the countries of the region.

The Renewable Energy Observatory for Latin America and the Caribbean is the result of an extensive review of similar practices in other regions. This proposal tries to adapt these successful experiences to the specific conditions in Latin America and the Caribbean.



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A. CONTEXT

1. Global context.

In 2005, the global economy grew at a constant pace of 3.6%. The developing countries have been at the top of this process, with an average Gross Domestic Product (GDP) growth rate of 6.4%. This is more than double those achieved by the industrialized nations, whose economies have grown at an average 2.8%. The main economies of the world, such as that of the United States of America, have suffered an economic slowdown, with growth rates of only 3.5% in 2005, compared to 4.2% in 2004. Vis-à-vis the rapid economic growth registered in the Baltic nations, almost 9% in 2005, the expansion of Central and Southeast Europe in 2005 was also reduced at 1.5% (2.4% in the first trimester of 2006 in the euro zone). Similarly, Japan's GDP grew only by 2.8% in 2005¹.

Generally, the economic growth of most of the developing and transitional world has been superior to that of the industrialized countries in terms of the global average. The GDP growth rate forecasted for 2006 is close to 5.6% in developing nations and 5.9% in the transition economies.² China and India continue to be by far the most dynamic economies with growth rates close to 10% in China and 8% in India for the year 2006, while the rest of Asia has been growing at a rate of 5%.

Due to the large revenue from oil exports, the Middle East oil exporting countries have witnessed a growth of almost 6% and a current account surplus of almost 20% of GDP.

At the same time, the increase in economic activity in Africa is still vigorous compared to previous periods. Its development has been mainly due to the increase in prices of basic products and to positive reforms carried out in the 90s. Economic activity in the region had grown by almost 5% in 2005, and it is forecasted to grow between 5.8 and 5.5% in 2006. This notwithstanding, the oil exporting countries of the region are outpacing the other countries by a significant margin.³

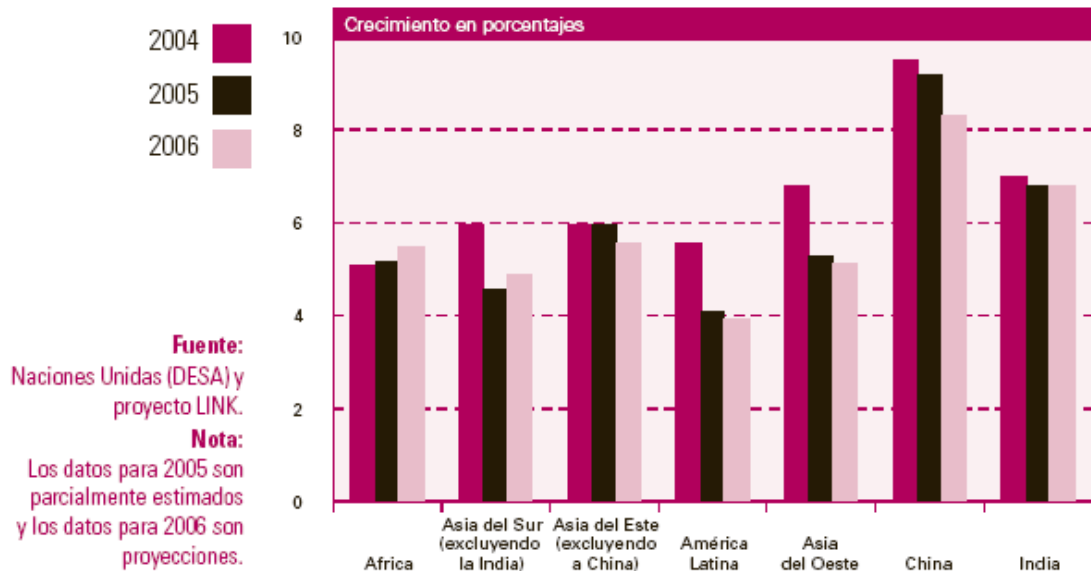
The Latin America and Caribbean (LAC) region's role in the World economy has also been noteworthy. The region is currently undergoing a rapid economic growth period. In 2004, it registered the highest rate in GDP growth in the last 24 years: 6% compared to just 2% in 2003.⁴

¹ World Flows in Development Financing. World Economy Perspectives 2006. World Bank, 2006.

² Global Economy Situation and Perspectives 2006.

³ Africa's Economic Perspective 2005/2006, ISBN-92-64- 022449-X © OCDE 2006

⁴ World Bank: Annual Report 2005.



It is important to mention that in the developing countries, the GDP growth came hand in hand with important increases in energy consumption, indicating that without appropriate energy supplies, the economies of these countries could confront barriers to their expansion.

Energy Sector

Currently, approximately 1.6 billion people⁵ throughout the world lack access to modern and stable energy sources. Most of them live in developing countries, where approximately 43%⁶ of the population lacks such services.

According to the *Global Energy Outlook 2005* of the International Energy Agency, global energy needs will continue to grow during, at least, the next two and a half decades. If governments continue with the same energy policies and schemes, global energy needs will grow by more than 50% in 2030.

Furthermore, the same report highlights that 20% of world energy demand comes from the developed countries, while two-thirds of future growth is expected to take place in the developing countries, where, as formerly mentioned, more than half the population lacks access to fuel and modern energy services, therefore satisfying their demand through the use of traditional resources, such as wood, manure and agricultural waste.

For this reason, one of the main current international challenges, if we are to achieve an effective development in these countries, is to satisfy the uncovered demand for alternative energy. In this way, a stable, constant and affordable

⁵ GEO Global Environment Outlook 2006 (United Nations Environmental Programme)

⁶ UN Statistics Division 2005

service for the end user can be guaranteed, while the environment and natural resources are respected.

Renewable energy sources currently account for 13.3% of the global supply of primary energy (IEA2005). At the moment, at least 43 countries in the world, including the 25 EU countries, and 10 developing countries, e.g. Brazil and the Dominican Republic in Latin America, have incorporated the use of renewables into their developmental and political objectives.⁷ (Renewables 2005, Global Status Report. REN21).

The option of counting on renewable sources for generating energy has gained importance due to the great recent increase in the prices of oil. The increasing global concern for the environment, due to its alarming deterioration as a consequence of excessive use of fossil fuels, especially in developing countries, also contributes to making renewables an attractive option.

The *Global Status Report (2006 Update) of REN21 (Renewable Energy Policy Network for the 21st Century)* highlights that in 2005, renewables have captured the attention of regional policy-makers and large investors:

From 30 billion dollars in 2004, investments have increased to 38 billion in 2005, a year in which at least 85 businesses in the renewable sector are valued at more than 40 million dollars each (compared to 60 businesses in 2004). With a rapid technology analysis we can see that:

- Wind Energy: installed capacity grew to 24% in 2005, up to 59 GW (USA 2.4 GW, Germany 1.8 GW and Spain 1.8 GW invested the most).
- Small Hydroelectric Plants: increase of 5 GW, adding up to 66 GW of world installed capacity, out of which 38.5 GW is found in China.
- Biofuels: The production of biofuels increased by 80% in 2005 and production has started in 9 European countries. The USA as well as some European countries are already ethanol producers.
- Photovoltaic Energy: installed capacity increased by 55% in 2005, (the equivalent of 6 billion dollars in investments). Germany, with over 200,000 roof solar panels, tops the list of countries using photovoltaic panels for electricity generation and connection to grid.
- Solar energy for water heating has increased by 23% in China, and in Europe it has also reached new high levels.

Consequently, many developing and emerging economies consider that this moment offers a great opportunity to increase the use of renewable energy technologies over the next years and take advantage of the great potential of

⁷ Renewables 2005, Global Status Report. REN21 (Renewable Energy Policy Network for the 21st Century).

these sources and elevate “energy security” in the areas that lack it the most. It is estimated that until 2030, global energy generation infrastructure investments will reach US\$16 trillion⁸. (REN21). The fact that most of these investments could be directed to renewable energy provides an opportunity to progress towards sustainable development of the areas where this type of energy will be used. However, the trend is different and most of the investments continue to be in the field of conventional energy. If this trend is not broken, the world will continue towards an energy system, which is incompatible with sustainable development.

Kyoto Protocol

The international response to the challenge of climate change has materialized in the form of two legal instruments: the United Nations Framework Convention on Climate Change, adopted in 1992 and enforced since 1994, and the Kyoto Protocol, which develops and gives concrete content to the generic prescriptions of the Convention. The Convention, ratified by 186 countries, has the ultimate objective of achieving the stabilization of greenhouse gases in the atmosphere with the goal of stopping the occurrence of dangerous anthropogenic perturbances to the climatic system. The Kyoto Protocol, adopted in 1997, establishes, for the first time, objectives to reduce the net emissions of Greenhouse Gases (GG) of the main developed countries and transition economies. For this purpose, a legal framework was established to cut the emissions of greenhouse gases of 38 industrialized countries by 5.2%, below the emission levels of 1990, an average to be sustained between 2008 and 2012. The Kyoto Protocol has been into force since its ratification by Russia, on February 16, 2005.

The Flexibility Mechanisms of the Kyoto Protocol (International Commerce of Emissions –ICE-, Clean Development Mechanism –CDM-, and Joint Enactment Activities –JE-) allow states to curtail emission limitations by reducing the emissions of other countries.

At the same time, in the European Union, businesses have an additional tool to meet the objectives of reducing Greenhouse Gases: this is the Market of Emission Rights (European Union Emissions Trading Scheme –EU ETS). It has been in place since 1 January 2005. Each member state has developed a National Assignment Plan (NAP) for emission rights that determines the total quantities of CO₂ emission, which member countries will assign to businesses through emission rights, which can then be sold and bought by enterprises.

Through this mechanism, member states will limit CO₂ emissions originating from the energy and industrial sector by creating a scarcity of emission rights. This, with time, will lead to an operative market that will at the same time lead to a real reduction of total emissions.

⁸ Global Status Report 2006, REN21

An industry that has been assigned by the European Government emission rights of 100 but emits 110, will be able to reduce the 10 extra points by buying the right from another enterprise whose emissions are below the assigned level. It will also be able to buy Emission Reduction Certificates from the private sector of the developing countries (from the Clean Development Mechanism), since this European Emission Rights Market is tied to the Flexibility Mechanisms of the Kyoto Protocol (Clean Development Mechanism and Joint Enactment Activities).

The Clean Development Mechanism is of special relevance for developing countries, especially for Latin America, since it allows industrialized countries that are committed to reducing Greenhouse Gases emission to do so through specific actions in the renewable energy field in developing countries. This offers them the advantage of reduced costs, since costs in developing countries are inferior to equivalent ones in industrialized countries, leading to the triple benefit of:

- Contributing to slow down climate change;
- Helping industrialized countries (Appendix 1) to comply with their greenhouse gas emission limits, and
- Contributing to the sustainable development objectives of the developing countries. (No Appendix I).

In many countries of Latin America and the Caribbean there is a great expectation for CDM projects and for a favorable framework for the valorization of international climate change treaties than can make projects more dynamic. The CDM offers an excellent opportunity for the attraction of investments and for technology transfers through projects to reduce greenhouse gas emissions that strengthen national sustainable development plans.

Latin America is characterized for its possession of a great potential in renewable resources for energy generation, and therefore for its great potential for the generation of Certified Emission Reduction units (CERs). The countries of Latin America and the Caribbean are in a leading position for the implementation of the CDM, even if the need for a greater development of institutional and technical capabilities has to be considered. The elaboration of CDM projects is a response to a complex process with high project elaboration and transaction costs.

A.2. Regional Context

Economic context

Even if Latin America's expansion has to a certain extent slowed down in 2004 (4.3%), its growth has continued to be considerably above its long-term average of less than 3%. This slow-down could be attributed mostly to the two most important economies of the region, namely to the decrease of investment in Brazil and to the slowing dynamism of the manufacturing and agricultural sectors of Mexico. On the other hand, growth has continued to be solid or has strengthened in Argentina, Paraguay, Uruguay and the Andean Region.

Internal demand, which used to be weak, has also increased in the region as a whole, even if at a slower rate than the growth in production. Investments, another delicate subject for the region in the long term, have increased from 18.6% of GDP in 2005 to 19.6% in 2006.⁹

At the same time, the low employment levels have been attenuated to a certain extent. The unemployment rate decreased by one percentage point between 2004 and 2005 to 9.3%. It is the first time that this rate is less than two digits since 1997.

The high oil prices have benefited the net oil exporting countries, such as Bolivia, Colombia and Venezuela, and, to a lesser extent, Ecuador and Mexico. Chile and Peru have ripened significant gains from the unprecedented prices of metals and minerals. On the other hand, the high fuel costs have worsened the exchange terms of Central America and the Caribbean.

*Foreign Direct Investment*¹⁰

After four years of continuous fall, Foreign Direct Investment (FDI) flows to Latin America and the Caribbean have increased significantly in 2004 and have reached the amount of 68,000 million dollars, 44% more than in 2003. The region's economic recovery, the world economy's more vigorous growth, and the high prices of basic products, have contributed to making this possible.

⁹ "World Economic Situation and Prospects 2006: World Economic Situation and Prospects" is published at the beginning of each year by the Department of Economic and Social Affairs of the United Nations (UNCTAD) and the five regional commissions of the United Nations: Economic Commission for Africa (ECA), Economic Commission for Europe (ECE), Economic Commission for Latin America and the Caribbean, the Economic and Social Commission for Asia and the Pacific, and the Economic and Social Commission for Western Asia.

¹⁰ The data under this section has been extracted from the *World Investment Report 2006*, United Nations Conference on Trade and Development (UNCTAD), October 2006.

Brazil and Mexico were the main recipients with inflows of 18,000 and 17,000 million dollars respectively. Together with Chile and Argentina, these countries absorbed two-thirds of all FDI flows into the region in 2004. Notwithstanding the above, FDI inflows did not increase in all countries of Latin America. There have been important decreases in Bolivia and Venezuela, mainly due to the uncertainty created by new oil and gas production legislation.

The composition of FDI inflows per sector destined to the different parts of Latin America and the Caribbean seems to be changing. In many countries of the region, the natural resource exploitation industry and the manufacturing industry have become more interesting destinations for FDI than the service sector in 2004. In Argentina, Brazil and Mexico, the manufacturing sector attracted more FDI than the service sector. FDI in the maquila industries in Mexico increased strongly by 26% due to the increased demand in the United States, which came after three years of constant downturn. In Central America and the Caribbean, the new process of privatization has converted the service sector into the main recipient of FDI. In the Andean Community, the high prices of oil and minerals have guaranteed that the primary sector continues to be the major recipient of FDI flows.

Investments in energy generation continue to be marginal compared to the other sectors mentioned.

Poverty and Inequality in the Region

Notwithstanding the economic and political developments, poverty, inequality and social class differences continue to be a serious problem in the region. 2005 was the third consecutive year of important growth in the region, pulling 13 million people out of poverty. Still, poverty continues to be extremely high. 40.6% of the population lives in poverty and 16% live in indigence.¹¹ This positions Latin America and the Caribbean as one of the most unequal regions of the world. Peru, for instance, with amazing growth (6% in 2005), an increase of 10% in private investments and an expected inflation of 1.1% for 2006, is positioned in place 79 out of 177 in the Human Development Index¹² and register great inequalities amongst its inhabitants, 51.6% still live in poverty and 10% of Peruvian society earns 40% of the country's revenues¹³.

To further illustrate the topic, the case of Norway must be analyzed, a country with a Gini¹⁴ coefficient of 25.8. The richest 10% of the population possesses

¹¹ CEPAL

¹² UNDP

¹³ América Economía

¹⁴ The Gini Coefficient is an inequality measure created by the Italian statistician Corrado Gini, and that is used to measure all forms of unequal distribution. It is mainly used to measure wealth inequalities in a specific country. The Gini Coefficient is a number between 0 and 1, in which 0 corresponds to perfect

23.4% of the nation's income. Brazil, in contrast, which occupies position 63 in the HDI has a Gini coefficient of 59.3, and the richest 10% of its population absorbs half of the country's revenues. In the whole region, the Gini coefficient varies between 43.7 and 59.3 reaffirming the seriousness of the problem, since in countries with high human development this number rarely approximates 40.

Currently, all agents working for the development of Latin America and the Caribbean agree that in order for the countries of the region to meet the United Nations Millennium Development Goals, and specifically the first goal which focuses on the reduction of extreme poverty by half by 2015, inequality must be reduced.

This situation presents us with the challenge of strengthening the growth, emphasizing an increase in productivity, in order to continue a sustainable reduction of poverty through a process that also allows a more equitable distribution of wealth.

Indicadores de desigualdad para algunos países de América Latina, Estados Unidos e Italia

	<i>Coefficiente de Gini</i>	<i>Porcentaje del 10% superior en el ingreso total</i>	<i>Porcentaje del 20% superior en el ingreso total</i>	<i>Relación entre los ingresos del décimo decil y el primer decil</i>
Brasil (2001)	59,0	47,2%	2,6%	54,4
Guatemala (2000)	58,3	46,8%	2,4%	63,3
Colombia (1999)	57,6	46,5%	2,7%	57,8
Chile (2000)	57,1	47,0%	3,4%	40,6
México (2000)	54,6	43,1%	3,1%	45,0
Argentina (2000)	52,2	38,9%	3,1%	39,1
Jamaica (1999)	52,0	40,1%	3,4%	36,5
República Dominicana (1997)	49,7	38,6%	4,0%	28,4
Costa Rica (2000)	46,5	34,8%	4,2%	25,1
Uruguay (2000)	44,6	33,5%	4,8%	18,9
Estados Unidos (1997)	40,8	30,5%	5,2%	16,9
Italia (1998)	36,0	27,4%	6,0%	14,4

Fuente: Cuadros A.2 y A.3 del Apéndice Estadístico, Base de Datos de Indicadores de Desarrollo del Banco Mundial, Banco Mundial.

equality (all have same income) and 1 corresponds to perfect inequality (one person possesses all incomes, while all others possess none).

Regional Energy Sector

One of the structural factors that contributes to maintain inequalities in Latin America and the Caribbean, is the limited access to modern forms of energy for a part of the population. Furthermore, from the economic perspective, the main energy sources used for industries, electricity generation, and transport, are based on fossil fuels, which require great expenditures for non-oil producing countries and high economic costs from consumers. From an environmental perspective, this also contributes to climate change through the emission of greenhouse gases.

Paradoxically, the regional energy scene in Latin America and the Caribbean is characterized by energy production that surpasses demand. This excess supply, will continue to be a phenomenon in the next decades. This does not imply, though, that there are no pending matters concerning regional energy security. 55 million people in the region lack access to electricity¹⁵. As can be seen, although the supply is higher than demand, the surplus is exported, resulting in that internal energy needs are much higher than the existing supply. For this reason, energy demand and energy needs must be seen as separate concepts. Energy demand is a manifested demand, meaning that it can be paid. It is unfortunately much lower than real energy needs which would include the part of the population that lacks resources and cannot afford commercial forms of energy.

Other factors that characterize the region with regard to energy are its continued dependency on traditional energy sources, the insufficient contribution of renewable energy sources to the energy matrix, and the harsh capital cutback for the creation of additional energy generation capacity.

The different cases presented by the United Nations Department of Statistics show that although the region is heterogeneous, it still presents common problems, especially in the energy sector. One such problem is the existence of huge areas that still have not been connected to a grid or that possess inadequate and unreliable energy services. It must also be said that in Central America alone, 3.5 million homes have no access to basic electricity services, and that in South America the rural electrification index in 2003 varied between 50 and 75% from country to country.¹⁶ There are huge areas that lack electricity services since they are not connected to national supply networks (the only exception in Central America is Costa Rica). Furthermore, there is an overdependence on traditional energy sources, which means that the great renewable energy potential of the region has still not been fully exploited.

¹⁵ Energy Security in the Region of Latin America and the Caribbean, Norbert Wohlgemuth, University of Klagenfurt, Austria.

¹⁶ Renewable Energy Sources in Latin America and the Caribbean, Situation and Policy Proposals (ECLAC)

Mexico is one of the main oil producers in the world with an average production of 3.3 million barrels per day but approximately 4.8 million people are not connected to the grid (the electrification rate is of 95.27%, OLADE 2002). In addition, 81.6% of its energy matrix is produced through fossil fuels (51.2% through oil). It is forecasted that demand will grow by up to 5.5% annually in the next 10 years, meaning that national capacity will have to increase in 28,300 MW by 2012. Renewables are a clear option that has to be considered, even if in 2003 only 16% of the electricity was generated through renewable energy sources (12% hydroelectric and 4% geothermic). There is clearly still a long way to go.

The MERCOSUR countries, that have seen the most development in the region, still present a large dependency on fossil fuels (57.9% of their consumption), even if 32% of the Total Energy Supply is based on renewables (mainly hydroelectric power). Geothermal plants and small hydroelectric plants have become technologies with a huge potential due to their capacity to satisfy energy needs in the isolated areas of those countries.

In the Andean Community, the energy supply based on renewable sources represents 28% of total supply (20.8% is hydroelectric). Bolivia is self-sufficient in energy and possesses a great export potential (fossil fuels): but, paradoxically, it has one of the lowest electrification rates in the region. Ecuador, is one of the main oil exporting countries in LAC, but, as in Bolivia, 6.3% of urban families and 20.02% of rural ones lack access to electricity services (1.6 million inhabitants).

Even if, in 2003, the electrification rate of Brazil had gone up to 73%, this country is an exception. With an internal supply of 2% of total world consumption, Brazil lowered its oil dependency drastically (from 46.5% in 1997 to 12.8% in 2002). 70% of the electricity generation capacity in 2002 was based on hydroelectric plants (17% thermo plants- fossil fuels). Furthermore, Brazil has at the moment one of the most successful experiences in the world with renewable energy sources in the transportation sector, an area in which almost all other countries of the region and of the world depend on oil. In Brazil in 2004, 44% of all vehicles (excluding diesel vehicles) were using Ethanol.

In general terms, following Brazil's example and due to the increase in electricity and fuel for transportation demand in the region, it is nowadays a priority to promote from different angles the use of renewable energy sources in LAC. Currently, initiatives have been launched, both at the regional and national levels, that are backed up by multilateral and regional agencies and that promote renewable sources technologies. The great potential and multiple opportunities that these technologies offer are motivating for the first time different decision-making agents in the region to consider the need to coordinate efforts in renewable energy matters as a viable and not as a marginal alternative for satisfying the growing energy needs. On the other hand, in spite of this change, it is also necessary to admit the existence of legal, financial, institutional and technical barriers that limit the use of such technologies.

A.3. Global and Regional Energy Trends. International Treaties

Increasing the access of the most disadvantaged towns and communities to stable and reliable energy services is internationally acknowledged as a factor of vital importance in order to fight poverty effectively. In the World Summit for Sustainable Development¹⁷ (WSSD) in 2002, the effects of access to sustainable energy on economic development and in the fight against poverty was discussed. It was recognized that this is an essential factor in achieving the goals established in the Millennium Declaration.¹⁸

The WSSD of 2002 in Johannesburg, South Africa (also known as the Earth Summit or Rio + 10), was of special relevance due to its broad coverage. The Governments reaffirmed the existing need to revise national and international plans to guarantee adopted economic decisions and to consider possible environmental impacts. One of the key topics discussed was that of renewable energy, emphasizing the need that they eventually replace fossil fuels due to the negative impact that these have on global climate. With the purpose of increasing the use of renewable energy sources from Johannesburg onwards, new supranational initiatives of global and regional importance have appeared. These are:

- The *Johannesburg Renewable Energy Coalition (JREC)*, promoted by the EU (first 15 member states) and 51 other countries, was formed with the objective of substantially increasing the contribution of renewable energy to the energy supply of the countries who signed the Coalition Declaration. The Declaration calls for the commitment of its members to cooperate in the future development and promotion of renewable energy technologies, based on clear and ambitious national, regional and global objectives.
- The *World Conference on Renewable Energy*, held in Bonn, Germany, in June 2004, also known as *Renewables 2004*, emphasized the important role of renewable energy in the sustainable development context. Its goal was to attract attention to the importance of establishing specific objectives and reaching an international agreement on a Global Action Plan for the successful penetration of renewable energy sources. Another one of the achieved agreements was that of establishing a global network with the purpose of promoting renewable energy.

¹⁷ The World Summit on Sustainable Development – WSSD, that took place in Johannesburg in 2002, established an exhaustive agenda in the area of energy for sustainable development. The different governments agreed in promoting sustainable, reliable, affordable, and environmentally-friendly energy access at the international level, and to increase the use of renewable energies and promote energy efficiency.

¹⁸ The Millennium Declaration contains eight Millennium development objectives that go from reducing extreme poverty by half to stopping the spread of HIV/ AIDS, and achieving global primary education by 2015. These objectives make up a plan agreed to by the nations of the world and the most important international development institutions in the Millennium Summit held in September 2000, and approved through a Resolution of the UN General Assembly.

- The *Renewable Energy Network for the 21st Century (REN21)*, arose from the Bonn Conference, Renewables 2004, as a global network for policies that could be used as an international reference forum for the promotion of renewable energy. Its main objective is that of allowing and promoting the rapid expansion of renewable energies in developing countries and in industrialized economies.

Initiatives in Latin America and the Caribbean

- The *Latin American and Caribbean Sustainable Development Initiative (ILACDS)*, was presented and approved in the Latin American and Caribbean Forum for Ministers for the Environment, celebrated in Johannesburg in August 2002. One of its most ambitious objectives was to increase the renewable energy participation in national and regional energy matrixes, with the goal of achieving by 2010 a minimum participation of 10% of renewable energy in the primary energy supply. Other objectives of this initiative are that developed countries comply with their commitment to destine 0.7% of their GDP to development aid, the development of South-South cooperation plans, etc.
- The *Brasilia Platform for Renewable Energy*, stemmed from the regional meeting organized by the Government of Brazil in Brasilia, in October 2003. The representatives from the Ministries for the Environment and Energy of Latin America and the Caribbean participated in the meeting. The purpose of the meeting was to create a convergence of initiatives and to focus the discussion on problems and opportunities in the renewable energy field, in order to define a common position for Bonn 2004. At the end of the meeting, the government representatives of 21 countries approved the Brasilia Platform on Renewable Energies as an element of coordination and homogenization of the different focuses and interests of the Latin American countries.
- The *Latin American Parliament Declaration*, arose from the agreements reached by the parliamentary delegations of 10 countries of the region, in the framework of the XVII Meeting of the Energy and Mining Commission of the Latin American Parliament (PARLATINO), held in the CEPAL headquarters in Santiago, Chile in April 2004. The Chile Declaration covers treaties oriented towards the promotion of the sustainable management of natural resources and a greater penetration of renewable energy sources through the adoption of political, legal and economic policies. Similar to the *Brasilia Platform*, the Santiago Declaration is the first coordination effort of the Latin American parliamentarians in the field of sustainable renewable energy.

To sum up, it can be said that there is a global and regional recognition of the need to modify current energy trends in order to substitute the use of fossil fuels

with alternative energy sources that are more affordable and environmentally sustainable.

For this reason, it is important to highlight that the countries of the European Union and the Latin American and Caribbean region have demonstrated a will to share from the benefits of globalization and new technological progress. The Heads of State and Government of both regions have met for the first time in Rio in 1999 and decided to construct a “bi-regional strategic association”.

The Fourth EU-LAC Summit was held in Vienna on 12 May 2006. Both regions agreed on the Summit’s purpose “Strengthening of the strategic association between the two regions”, establishing different priorities with the objective of a coordinated action in matters of political, social and economic importance. The Summit confirmed the importance of key strategic association policies, regional integration, multilateralism and social cohesion. Energy, environment and the need to create a safe investment environment were identified as key topics that needed to be covered in detail in the short run.

As a preparation for the XVI Iberoamerican Summit in Montevideo, Uruguay, 4 and 5 November 2006, an Iberoamerican Ministerial Meeting on “Energy Security in Latin America: Renewable Energy as a Viable Alternative” was held in Montevideo on 26 and 27 September. This meeting was organized by the United Nations Industrial Development Organization (UNIDO), in cooperation with the General Secretariat of the Iberoamerican Conference (SEGIB) and the Ministry of Industry, Energy and Mining of Uruguay (MIEM), with the objective of offering the ministers and representatives of the Ministries of Energy of the region a forum in which to cover the topics of energy security and renewable energy, and agree on a regional cooperation programme with the scope of uniting efforts in the area.

The event brought together over 40 experts from around the world and ministers and government representatives of 15 Iberoamerican countries in addition to representatives of enterprises, industries, international and intergovernmental organizations, universities, research institutes and non-governmental organizations.

One of the great achievements of the meeting was the signing of a Declaration by the Iberoamerican Ministers and Government Representatives, which emphasized the need for increasing regional integration in order to rationalize energy use, increase renewable energy supply and promote technological research and development in the field. The Declaration called for the countries of the region to study the creation of a Regional Renewable Energy Observatory, whose development is the topic of this paper.

In the XVI Iberoamerican Summit of the 4 and 5 November 2006, the regional commitment to renewable energy and energy efficiency was reinforced. For this reason, the topic shows up in various articles of the Final Declaration that was signed by top representatives of the Iberoamerican countries.



B. JUSTIFICATION

The Regional Renewable Energy Observatory is a mechanism that strives to unify efforts inside and outside Latin America and the Caribbean in order to increase energy security, which is essential for sustainable development, by increasing investments for renewable energy sources for industrial and productive ends and promote its use.

Energy security and the recourse to renewable energy sources are neither new practices nor concepts, what is new is the linkage between the two. Renewables have shown to have an important role in facing the challenge to meet energy security objectives. Energy security is understood as the constant provision of modern energy services that are both economically affordable and environmentally sustainable. This energy service is a necessary vehicle for the development of towns and communities through the practice of energy generating activities that create income and employment for their inhabitants. The close relationship between energy security, sustainable development and poverty relief, gives it a primary position in the political agendas of all countries of the region.

The LAC region currently offers a complex and heterogeneous energy scenario, even if all countries are naturally endowed with multiple renewable energy sources for energy generation. For this reason, the region presents an excellent scenario for exploiting the potential offered by renewables to ensure energy security. There are, however, obstacles to the implementation of these technologies in the region.

The barriers identified in various recent studies, notably *Renewables, Global Status Report de 2005 y 2006-Update (REN21 - Renewable Energy Policy Network for the 21st Century)* and the reports published in February and March 2005 for the OLA project (*OPET for Latin America*) of the OPET network (*Organizations for the Promotion of Energy Technologies*) of the European Commission, can be classified in the following manner:

1. Institutional and legal framework

- Absence of a regulated and effective legal framework that favors the development of renewable energies.
- Need for improved coordination and normative homogenization at the regional level.
- Lack of sufficient political measures to promote the use of renewable energies.
- Need to establish specific goals at the government level.

2. Financial Mechanisms

- Insufficient financial instruments that promote investments in the sector.
- High transaction costs for renewable energy projects.

3. Technological

- Need to establish a baseline at the country-level that reveals and details present renewable energy resources, as well as detailing new technology options.
- Insufficient technology demand to justify R&D in the renewable energy field.
- Insufficient capacity in the countries for the selection, adaptation and validation of new technologies.

4. Cultural

- The traditional patterns of consumption are related to traditional energy sources and not renewable ones.
- Lack of awareness with regards to the convenience and potential of renewable energy resources to satisfy local needs.
- Lack or scarcity of resources for the creation and consolidation of capacities in the sector at different levels.

The convergence between energy security objectives and the development of renewable energy sources is a serious challenge, as the described barriers reflect. Renewable energy is, however, a major opportunity for the region. The high and volatile prices of oil and its derivatives has put energy security at the top of the political agenda, since an increased contribution of renewable energy to the primary energy mix of the countries would help reduce their dependency on imported oil and contribute to reducing social inequalities and greenhouse gas emissions. Reducing imports of fossil fuels allows countries to reduce their national balance of payments thus allowing for a greater amount of national financial resources to be spent on promoting social and economic growth. The most important benefits offered by the use of renewable energy sources are those of increasing supply security, both at the national and local levels, and this new supply can allow for productive uses and to employment creation, in order to reduce poverty levels and reduce environmental degradation.

Therefore, it can be generally assumed that renewables are a very helpful instrument to meet the social, economic and environmental development objectives. But, the benefits that renewables can offer to each particular country depend on the different factors that are tied to their specific characteristics, such as the availability of renewable energy resources and technologies, the existing investment conditions, the legal framework, the existence of emerging energy markets, and the level of social acceptance of these technologies, etc.

In different countries of the Latin America and Caribbean region, important efforts are being made to obtain results from the numerous promotion programmes for rural electrification and biofuel for transportation. This demonstrates a growing interest in the introduction of clean and modern technologies for sustainable economic development in different sectors.

At the same time, the entry into force of the Kyoto Protocol offers the opportunity to obtain benefits for the region under the Clean Development Mechanism. This is an excellent instrument to attract investment and technology transfer with emission reduction projects within the framework of the different national development plans.

For all these reasons, many international and regional organizations are currently actively promoting the renewable energy sector from different perspectives. This situation creates the need and at the same time offers the opportunity to put coordination mechanisms into action, at the regional and global levels, directed towards the promotion of investments in this field.

This greater coordination has also been a crucial point emphasized by the High Level Panel of the Secretary General of the United Nations, created to carry out an array of reform proposals inside the United Nations System, with the aim of offering more solid, efficient and unified services to the countries in the areas of Development, Humanitarian Aid and the Environment. In the Panel Report titled “*Delivering as One*”, presented to the Secretary General on 9 November 2006, , the need to unite efforts in the areas where different agencies have been carrying out their separate work was emphasized. Many different players have a simultaneous role in the energy sector, and this fact presents a huge potential and an exceptional opportunity to unify efforts that generate synergies and multiply results¹⁹.

The *Renewable Energy Observatory* is one answer to the call for unity, integration and coordination through the task of supporting the development and adoption of necessary measures that will aid the countries of Latin America and the Caribbean to meet the challenge of guaranteeing energy security in the region on the basis of renewable energy sources.

¹⁹ “Delivering as One”, Report of the Secretary-General’s High-Level Panel, United Nations, New York, 9 November 2006.

UNIDO's Experience

The United Nations Industrial Development Organization (UNIDO) has been developing a solid renewable and rural energy programme oriented towards promoting the supply of modern energy services for productive uses for the most needy.

The programme is in accordance with the Millennium Development Goals and with the institutional strategy of UNIDO, which considers energy as a fundamental tool for allowing the establishment of income generating activities and for poverty relief.

The UNIDO projects in this sphere encompass the following actions:

- Studying and demonstrating the technical, economic, and social feasibility of the different renewable energy generation methods.
- Promoting sustainable local enterprises that could provide reliable energy supply services from renewable sources.
- Identifying income-generating activities related to the use of renewable energy mainly in the rural areas not connected to grid.
- Supporting national manufacturing and construction enterprises that participate in renewable energy projects.

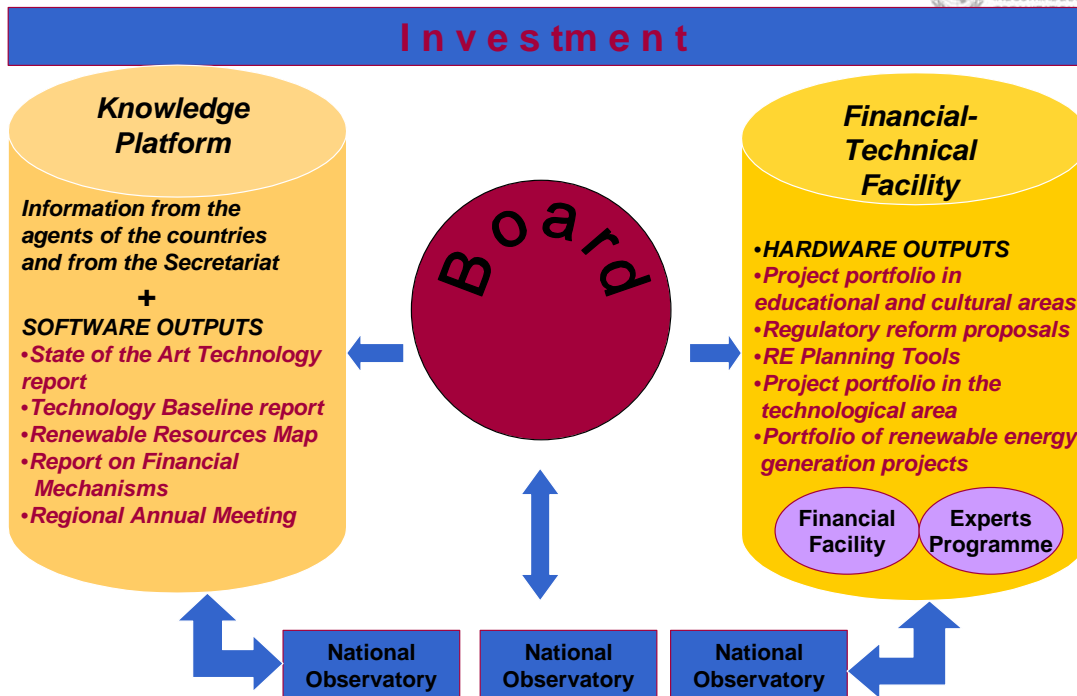
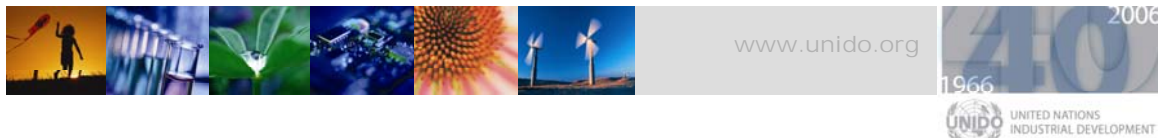
Amongst UNIDO's energy projects, there are projects related to: energy generation on the basis of renewable energy sources through the establishment of isolated distribution and generation systems; the establishment of renewable energy information systems; and the introduction of modern biomass technologies in rural areas.

It is also important to mention that in the field of *climate change*, the technical cooperation services of UNIDO are focused on the promotion of the capacity to create the right environment for industrial projects, within the framework of the flexible mechanisms of the Kyoto Protocol, as well as in facilitating their elaboration and execution through association modalities between the public and private sectors.

From this current initiative onwards, UNIDO aims at continuing to expand its activities directed towards the elimination of financial, legal, technical and social barriers to the increase of investments on renewables, as well as to become a facilitator by unifying efforts with other players inside and outside the region that share the same goals, and in this way generate synergies and avoid duplication.

C. Regional Observatory on Renewable Energy

The Renewable Energy Observatory for Latin America and the Caribbean is a multi-institutional and multi-disciplinary mechanism directed towards the promotion of specific actions and projects in the renewable energy field for productive and industrial applications with the intention of promoting poverty alleviation and sustainable development in the region.



C.1. General Objective

The General Objective of the Regional Renewable Energy Observatory is to join efforts to reduce the levels of poverty that exist in determined areas of the region and to guarantee energy security through the use of renewable energy sources. Increasing investment that will facilitate access to stable, modern and environmentally sustainable energy services for all inhabitants of the most disadvantaged areas of the region will undoubtedly contribute to the establishment and consolidation of a variety of income generating productive activities which, without proper energy supply, would not have been able to become a part of the productive spectrum of these communities.

Thus, the Observatory will strengthen the productive capacity of the most disadvantaged areas, promoting the supply of sustainable energy services that

allow the generation of markets around the productive opportunities that could offer the greatest potential inside each specific area.

The Observatory will also pursue the objective of promoting business and export of goods directly related to renewable energy. The region has shown to be a depository of valuable experiences in this context. The specific experience with ethanol is a clear example of business opportunities that could be taken to the international arena.

C.2. Expected Outcomes.

The Observatory aims at the achievement of two main interrelated results. Firstly, the Observatory will try to increase the access of different players and agents²⁰ related to the energy sector in each country to the existing energy know-how inside and outside the region.

Secondly, and closely related to the first result, the Observatory will pursue substantial increases in investments in renewables.

In order to obtain the expected results and mitigate the barriers to renewable energy development, the Observatory will put at the disposal of the different agents of the region two mechanisms that, together with its inherent products, will allow them to share knowledge and implement specific actions and projects: The Knowledge Platform and the Technical-Financial Facility. The products will be grouped in two categories according to their most direct relationship to the result tied to knowledge (software) or to the result tied to investments (hardware).

The identified products respond to practices and methods that exist inside and outside of the region, although the Observatory will present them in an integrated and periodic way, so that its constant update provides an important added value.

The combination of these two mechanisms, supported by the proposed products, will convert the Observatory into an agile and practical tool oriented towards strengthening national, interregional and global bonds in order to increase investment in the energy sector. This will allow LAC to progress in the field of energy security thereby supporting its sustainable development.

²⁰ Agents are referred to in this document as: representatives of public instances involved with the energy sector, the private sector, the universities, the technical institutes, the research centers, the NGOs, the bilateral and multilateral development agencies, the representatives of civil society, etc. In other words, we refer to all those who belong to an entity with mandate, competencies or interest in all forms of energy and, more specifically, renewable energy.

C.2.1. Expected Outcome 1: Increased access of regional agents to know how in the field of renewable energy (*software*).

C.2.1.1. Knowledge Platform

This first pillar of the Observatory consists of the consolidation of a *knowledge platform* with the mission of promoting cooperation between the countries of the region and, more specifically, amongst the *agents*²¹ of each country, in order for the Observatory to allow them to share technologies tried, successful experiences, information on specific projects, existing financing mechanisms, successful legal practices and, above all, all that could be helpful to promoting the local, national and regional investment situation in the field of renewables.

The knowledge platform is supported by an information base that will allow the fluid exchange of knowledge amongst its users, who will be connected to a network through the Internet. At the same time, procedural rules and guidelines will be designed and distributed – communication protocol – with the purpose to allow all users to offer and access information in an orderly manner, guaranteeing in all instances the quality of the shared knowledge.

The information found in the knowledge platform will be placed in perfect order and classified according to the different disciplines that the issue encompasses:

- Technological Area (selection, adaptation and validation of technologies).
- Regulatory Framework – Financial (legal framework and financial instruments and public policies).
- Managerial Area (strengthening of specific action implementation capacities in this field).
- Educational and Cultural Area (consolidation of an appropriate educational scenario)

A classification of the information will exist based on geographic criteria, so that any user interested in a particular zone of the region can access all the information that refers to the geographic parameter employed. Also, through the utilization of a search browser offered by the platform, one can access in a fast and direct way the information contained in the different parts of the platform.

²¹ Agents are referred to in this document as: representatives of public instances involved with the energy sector, the private sector, the universities, the technical institutes, the research centers, the NGOs, the bilateral and multilateral development agencies, the representatives of civil society, etc. In other words, all those who belong to an entity with a mandate, competencies or interest in issues related with energy and, more specifically, renewable energy.

In addition to its condition of holistic knowledge center in energy matters, the knowledge platform has a fundamental characteristic that gives it an even higher utility level for the agent-user, which is its *constant actualization* of the information it contains. The platform will demand, from the agents that feed it with information, a firm and lasting commitment to supply it with punctual and periodic data.

In conclusion, the platform will generate and distribute multidisciplinary knowledge on energy, and especially on renewable energy, becoming an extraordinarily useful tool that provides specialized guidance to the agents involved into the investment processes, at the regional, national and local levels, stimulating them to take appropriate decisions at the right moment.

C.2.1.2 Annual Report: State of the Art

The Observatory will publish a yearly report detailing the regional *State of the Art* in renewables, describing the latest developments in renewable energy technologies in LAC. This report will carry out a review of the latest and most successful practices in the field of renewable energy, analyzing and describing them so that they can be replicated in other areas of the region.

This exercise will be carried out, starting with a detailed analysis at country level, going down to the local level in order to find new experiences in the use of certain technologies that due to the good results they offer (productive uses) are relevant and could be replicated in other areas under similar circumstances. This exploration and analysis exercise will be carried out in close cooperation with those agents that are currently promoting the use of renewable sources in electricity generation and for the production of biofuels, whose expansion and popularity is an important phenomenon to be taken into consideration in the region.

C.2.1.3. Technology baseline according to country

In each of the Observatory's member countries, and in close collaboration with the agents that work with the different technologies, an initial research study, to be updated annually, will be carried out. With this study, an inventory will be carried out and the current situation of renewable energy technologies in the national scenarios will be described. This document will mention and analyze all energy generating technologies based on renewable sources that are being used in each country, as well as the productive uses for which they are being utilized.

The study will not only mention the existing experiences with traditional renewable sources (biomass for domestic use and large hydroelectrics), but also with *new generation* sources such as wind energy, small hydroelectric plants, modern biomass plants, geothermic energy, photovoltaic energy and solar thermo energy. Each one of these technologies is appropriate in determined situations and under specific circumstances. The study will extract information in

order to review which technology is the appropriate for each case, based on the results obtained.

This overview of the current situation of the technologies for renewables will allow each potential investor or agent that works in the sector in each country, to know in depth the available technologies in their country and in the region, as well as the productive activities that this technologie could best serve.

C.2.1.4. Renewable Resources Map at country level

The renewable resources map (wind, solar, hydro, geothermic map, etc.) will offer a detailed geo-reference to the places in which such resources can be found in a specific country.

This exercise is valuable for all those interested in investing in generation projects based on renewable sources.

The studies will be carried out closely with the national institutions, which could aid in the dissemination of essential information needed to successfully carry out this objective. This close alliance with national institutions will also allow for the final result to be used in carrying out project investment promotion activities within national development plans that use a specific renewable source.

C.2.1.5. Annual Report on accessible financial mechanisms

The annual regional report on financial mechanisms will analyze and describe the functioning of financial models, mechanisms and facilities that can be accessed to finance renewable energy based generation, transmission and distribution projects, as well as projects for the attainment of biofuels for transportation.

At the moment, different formulas for the provision of sustainable financing for those wanting to start investment projects in the field of renewables exist. Some of them are classified by Sonntag-O'Brien and Usher (2004)²² according to the project phase in which financing is provided. These two authors differentiate between:

- Start-up capital support to confront start-up capital costs, market awareness creation costs and transaction costs that tend to be high for renewable energies. Financial aid to entrepreneurial development and concession of seed-capital go into this category.

²² Extracted from the report by Norbert Wohlgemuth for UNIDO “*Energy Security in the Region of Latin America and the Caribbean (LAC): Renewable Energy as a Viable Alternative*”, Vienna 2006.

- Operative capital support, including access to lines of credit and credit capacity strengthening mechanisms for the provision of loans to small and medium renewable energy businesses. The lines of credit refer to the creation of credit windows in national and local banks; with the support of donors and international financial institutions, to give loans to businesses in the sector. The strengthening of credit capacity refers to subsidies offered by donors and international financial institutions to make the financing of loans *soft*, both for the one who lends and the one who borrows, through the spreading of risk or the reduction of interest rates. These take the form of partial risk guarantees that ensure the payment of debt services to the lender, and partial credit guarantees that are used to extend loan payment periods, improving in this way the cash flows of the project. These guarantees can motivate banks to provide loans to projects that are considered of high risk.

In this annual or biannual report, the mentioned models will be described in detail, including the specific mechanisms that are being used at the national and local level, describing the successful experiences and including the necessary information for potential investors who might benefit from these mechanisms.

Also existing global mechanisms and the ways in which they can be accessed will be described.

C.2.1.6. Annual Regional Meeting.

The Observatory will organize an annual regional meeting, with each annual session being held in a determined country, enabling the generation of continuous dialogue, within a regional scope, on the most important topics related to renewable energy, such as its potential to satisfy the growing energy demand of the region, as well as its possible industrial applications, especially in the sector of Small and Medium Businesses.

An in-depth analysis of these technologies will be made from a technical, economic and institutional point of view and the opportunity will be provided to politicians, experts and planners to evaluate and discuss the current status of obstacles and opportunities of renewable energies in the region. A topic of discussions will also be the advantages of establishing regional joint cooperation programmes to take advantage of the potential offered by renewable energy sources in the context of the social and economic realities of LAC.

A constructive dialogue on these topics will facilitate the creation of a common vision and of specific opportunities to develop regional joint projects, with the purpose of providing a modern, accessible and sustainable energy supply in those parts of the region that need it the most.

C.2.2. Expected Outcome 2: Increase investment in renewables in the region (*hardware*)

C.2.2.1. Technical-Financial Facility

The second pillar on which the Observatory is built is that of allowing the use of up-to-date and disposable knowledge to the agents of the region, in order to expand the implementation of specific actions in the key areas related to renewable energy.

The Observatory establishes, through the Technical-Financial Facility, the necessary mechanisms to carry out the role of *facilitator* of projects, always in a close relation to governments and the respective public instances. In this way, the Observatory will have the capacity to mobilize the necessary technical and financial resources so that the agents, inside each country, can develop and implement specific actions in the field of renewable energy.

In order to understand the need to establish this mechanism, it is necessary to provide a short review of the situation of financial markets with respect to renewable energy projects.

The majority of energy generation systems on the basis of renewable sources differ from conventional systems in the structure of their costs. The fossil combustion systems generally have moderate costs of start-up capital or even low ones, but high operational costs due to the fuel they use. On the other hand, the renewables usually do not have fuel costs, although they require a relatively high initial investment.

The financial community has shown itself from the beginning to be hesitant in investing in renewable energy technologies. With all this, the politics of the leading European countries, as well as China, India, Japan and the United States have positioned renewable energies (especially wind and solar) as one of the dominant forms in the new electricity generation capacity of recent years. According to the Worldwatch Institute, global investment in renewable energy had reached a record high of \$38 billion in 2005, 8 billion more than in 2004.

The key to this success derives from the fact that some countries have favored the advantages of renewable energy through clear and oriented policies and support programmes. For this reason, the countries that have benefited the most from the popularity of renewable energy are mainly those that have adopted effective public policies and appropriate financial instruments.²³

The rules on renewable energy portfolios and tariffs for the introduction of renewable energy to the electricity network have become the main support tools

²³ Renewable Energy Financing Case Studies: Lessons to be learned from Successful Initiatives, March 2006. Report prepared by Envirochem Service Inc. for the Environmental Cooperation Commission of Montreal, QC, Canada.

for renewable energies at a greater scale. Some environmental groups have successfully tried voluntary programmes on “green electricity”, with the capacity of producing considerable volumes of electricity in full respect of the environment.

In small-scale isolated systems and for productive uses, the access to financing is essential to overcome market barriers. For this reason, revolving funds and credit programmes (that are also being used in other sectors²⁴) have been expanding. Nonetheless, commercial banks continue to refuse to participate in a market of small loans, at high risks, so that renewable energy in many places continues to await improvements in this sense.

The Technical-Financial Facility is intended to confront this gap, complementing the expert exchange service with the establishment of a Financial Facility that will grant preferential loans directed towards the implementation of specific projects in any discipline related to renewable energy.

The Technical-Financial Facility will also constantly monitor the project once it has started its implementation phase.

C.2.2.2. Educational and cultural projects Portfolio

The Observatory will formulate a battery of regional, national and local projects, directed toward the formation of human resources in the area of renewable energy, with the objective of increasing the number of experts and reducing the massive import of knowledge from outside the LAC region.

Following the same train of thought, the Observatory will work in close cooperation with the universities, specialized academies and/or prestigious technical schools to, amongst other actions, introduce in the respective curricula subjects related to renewable energy, in order to slowly establish them in the region’s educational institutions that could create qualified human resources in this area.

In addition, a proposal for a diffusion campaign in each country for sensitizing civil society into the importance of demanding a clean, sustainable and affordable energy service will be made.

C.2.2.3. Specific Proposals Portfolio in the existing regulatory framework

²⁴ In this context the Nobel Peace Prize awarded this year to the work of Mohamed Yunus (Bangladesh, 1940) and the organization he founded in 1978, the Grameen Bank must be mentioned, for his efforts in promoting social and economic development from the most humble spheres of society through a programme of micro credits as an instrument to combat poverty. This has allowed us to prove that even the poorest of the poorest can work for their own development.

In each one of the countries, the Observatory, and the Technical-Financial Facility, will formulate and promote, between the pertinent governmental institutions, an Incentive Programme that considers legal measures to encourage the development of renewable energies. This could include moratoria or national and municipal tax exemptions (income tax, imports tax, etc.) accelerated depreciation, and other measures of fiscal or other nature.

C.2.2.4. Portfolio of Energy Planning Proposals

The Observatory, from the Technical-Financial Facility will work with the Governments in improving their capacity to analyze the energy demand and supply, as well as to carry out future projections that allow them to establish improved and better energy strategies, in order to confront their challenges to national development.

The technical assistance provided by the Observatory contemplates the implementation of national energy diagnostics that analyze real energy needs and the possibility to satisfy them through the different available energy sources. At the same time, it will evaluate to which extent the regulatory framework could be adapted to promote a particular technology.

C.2.2.5. Technology Projects Portfolio

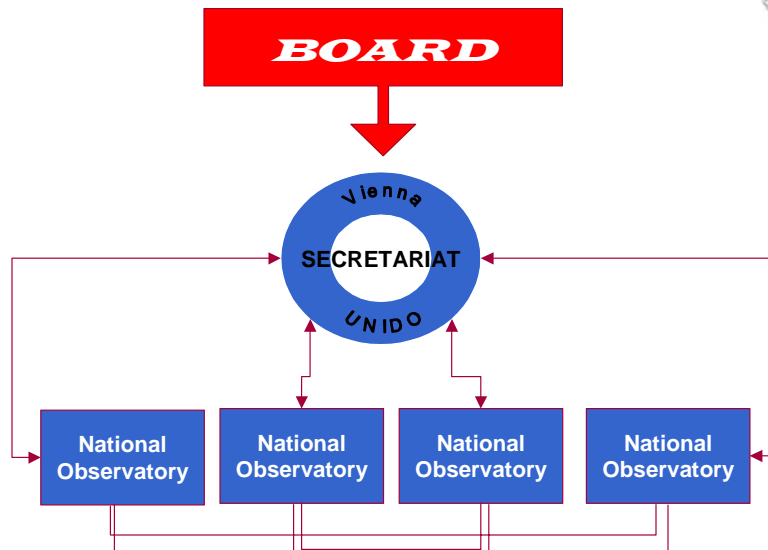
The Observatory, from the Technical-Financial Facility, will present to the pertinent national institutions a series of proposals directed towards consolidating the national capacity to select, adapt and validate determined technologies with the capacity to be adopted in a determined place and for a specific purpose.

In this way, it is expected that the country will find itself in the best possible position to accept the technological development that is most convenient and adapt it to their own situation, minimizing the costs and optimizing the results.

C.2.2.6. Portfolio of renewable energy generation, transmission and distribution projects

The Technical-Financial Facility will identify specific renewable energy investment projects (wind, hydroelectric, solar, biomass, etc.) in the countries and will develop them, at the pre-feasibility level, consolidating a coherent portfolio of projects per year that will be presented to the pertinent institutions. At the same time, it will provide technical assistance during the different stages of the project, from the feasibility of the project or its business study through to the technology, supplier selection, etc.

C.3. Structure of the Observatory.



The Regional Renewable Energy Observatory has a network structure where three levels can be differentiated. The first level includes the government institutions, development agencies and organizations that compose the International Board of Directors.

The second level is constituted by the Secretariat that will guarantee that the tools of the Observatory are put at the disposal of the agents to share information (Knowledge Platform) and to carry out investment projects (Technical-Financial Facility). The Technical Secretariat will also provide the required administrative support to the Board of Directors.

The third level will consist of the National Observatories, which include the agents that work in the energy sector within each country and the National Board of Directors that represents them. The two parties will be interconnected horizontally through the Knowledge Platform and the Technical-Financial Facility.

C.3.1. International Board of Directors

The Observatory is based on a firm political compromise on the part of the countries and the international organizations involved. It attempts to create an international consortium that comprises the members of the Board of Directors, initially integrated by the Iberoamerican General Secretariat (SEGIB), UNIDO, the Governments of the participating countries and the representatives of donors.

The participants of the International Board of Directors will firmly commit themselves, through appropriate legal tools, to direct and provide the necessary resources to support the activities of the Observatory in the long run.

The Board of Directors is witness to the compromise of the countries to the Observatory and oversees its function, guaranteeing that the Observatory adjusts itself to the goals pursued.

The Board of Directors will meet once a year.

Amongst its main functions are:

- Discussing and establishing the direction and strategies to be pursued by the Observatory, establishing the terms of reference and offering recommendations to the Technical Secretariat in order to achieve the desired results.
- Approving an annual work plan, initially prepared by the Technical Secretariat for the implementation of the Project's activities.
- Approving a monitoring and evaluation plan, prepared by the Technical Secretariat, that allows a progress review of the Observatory, identifying the challenges encountered so that the necessary measures can be established on time to correct deviations.
- Directly contributing with its own funds and giving support to actions directed towards identifying partners and completing the necessary financing for the functioning of the Observatory.
- The Members of the Board of Directors will at the same time provide technical assistance needed to attain the Observatory's goals in the areas of which, through their mandate, they are depositaries of cumulative knowledge that confers them a prominent position.

C.3.2. Secretariat

The Regional Observatory is more than the sum of National Observatories. The interrelation amongst agents within and outside each country and the permanent exchange of information can allow them to share experiences, develop joint views and design coordinated strategies in the topic of energy security. Within this framework, the Secretariat role, which will be assumed by UNIDO, will have the responsibilities of network coordinator from the administrative and technical point of view, guaranteeing that the national observatories carry out their commitment to the knowledge platform.

It is important to emphasize that the National Observatories are situated within entities that have their own objectives. So the Secretariat will have to promote the compatibility and convergence between both types of objectives, meaning the integration of the interests of each national partner with those of the network and vice versa.

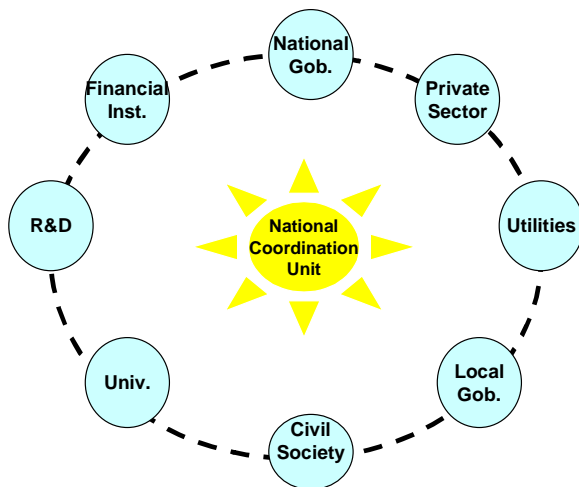
The Secretariat will be in charge of guaranteeing the functioning of the Knowledge Platform and the Technical-Financial Facility, and of offering the Board of Directors the administrative support they might need to carry out its directive functions.

The Secretariat must be a versatile and reduced entity, within the exercise of maximum decentralization, as will the Observatory, whose installed capacity must stay in the countries where it operates.

C.3.3. National Observatories



National Observatory



■ According to UNIDO's rules and regulations, *Memorandum of Understandings* will be established to provide the adequate legal framework, which would include the rights and responsibilities of the National Observatories' members.

■ *National Boards* composed by representatives of the different disciplines related to RE, will represent the National Observatories and will meet regularly to revise the national main RE topics and establish national plans and strategies.

To guarantee the two fundamental roles of the Observatory, those of increasing access to know-how and implementing specific actions; and in response to the need of acting at all levels within the region (regional, national and local), the Observatory will be consolidated as a network, creating National Observatories that will be composed of the main agents in energy matters within each country (public institutions, private enterprises, civil society organizations, technology institutes, development agencies, universities, research institutes and others) and represented by a **National Board of Directors**. They will all operate as a national network and will be articulated by a focal point that will perform the function of **National Coordinator** of the Observatory.

The agents of the different countries will become part of the Observatory, by signing a Memorandum of Understanding that establishes, explicitly and clearly, the responsibilities and rights they are entitled to as part of the National Observatory.

Amongst the activities carried out with the help of the national coordinator and with the constant support of the Secretariat, the following must be mentioned:

i. Feeding the Knowledge Platform on Renewable Energy:

The national coordinator will have the task of guaranteeing that every agent compiles, analyzes and registers information related to their specific activities within the energy field, to then place this information on the knowledge platform so that the users can make use of it. For this purpose, the coordinator will formally agree with each determined agent on the type of information to be distributed and in which form, in order to establish standards to be met by the agents within the same sector (enterprises, public sector, NGOs, Universities, Research Institutes, etc.).

The national coordinator will guarantee that the products directed towards increasing know-how in the region are obtained on time and in the correct form. The existing network at the national level, as well as the knowledge platform, will be extremely useful to the national coordinator for this task.

ii. Technical-Financial Facility:

The National Observatories have the fundamental task of acting as a technical facility by providing technical assistance in the processes of initiatives and projects preparation, at the feasibility level, within the renewable energy field. In this manner, the projects will have the degree of development needed to apply for financing (Financial Facility).

The National Observatories will also accompany the project developers in their implementation phases, offering them any technical support that they may need.

iii. Serve as a focal point specialized in a specific technology within the region:

The countries' National Observatories can carry out an essential role within the region, as they are depositaries of specific successful experiences and they have a comparative advantage in relation to a specific technology for specific national circumstances. This confers them a special role. This specific National Observatory will carry out the function of being the national referral point of that particular technology, disseminating and sharing specific experiences to favor their replication in other countries.

C.4. Implementation Strategy

The implementation of the Regional Renewable Energy Observatory for the achievement of the proposed results needs a preparation phase that will extend for the period of one year, during which actions will be carried out directed towards:

1. Creating the structure of the observatory and its levels:
 - Appointing the Secretariat.
 - Integration of the International Board of Directors, to the intent of looking for alliances at this level and the signing of an appropriate legal instruments on the part of the members.
 - Consolidating the national observatories and their Boards of Directors: this implies identifying the national coordinators of national observatories and the members of the observatories.
2. Designing and putting into action the Knowledge Platform and the Technical-Financial Facility.

Once the structure and instruments of the Observatory are consolidated, it will be ready to start its normal activities related to the Knowledge Platform and the Technical-Financial Facility, besides guaranteeing the products defined to increase the knowledge exchange in the region (software) and the promotion of investments (hardware).

It must be taken into consideration that, to the extent in which the National Observatories are consolidated, its members will start to assume the rights and obligations contracted with the Knowledge Platform and the Technical-Financial Facility. In this way, the National Coordinator can start the appropriate actions to obtain the products in each of the countries, as these advance in the consolidation process of their national observatories.

C.5. Logical Framework Analysis (*preparation phase*).

Expected Outcome 1: Increasing access to knowledge in renewable energy matters on the part of regional agents

1.1. Established Structure of the Observatory.

- 1.1.1. Creation of the Secretariat:
- 1.1.2. Appointment of the Board of Directors:
- 1.1.3. Appointment of the National Observatories

1.2. Established Knowledge Platform and enactment.

- 1.2.1. Design of necessary appliances and market identification, acquisition and adaptation of the information support programme.
- 1.2.2. Enactment.

Expected Outcome 2: Increased renewable energy investments in the region.

2.1. Technical-Financial Facility for the development of renewable energy projects for productive uses.

- 2.1.1. Design of the Facility.
- 2.1.2. Capitalization of the Facility
- 2.1.3. Enactment of the Facility.

C.6. Activity Chronogram (preparation phase).

Outcomes/Outputs/Activities	1	2	3	4	5	6	7	8	9	10	11	12
1. Increased access of regional agents to the know how in the field of renewable energy (software).												
1.1. Observatory structure established.												
1.1.1. Secretariat												
1.1.2. Executive Board												
1.1.3. National Observatories												
1.2. Knowledge Platform established and operative.												
1.2.1. Design												
1.2.2. Operative												
2. Increased renewable energy investments in the region.												
2.1. Technical-Financial Facility established and operative												
2.2.1. Design												
2.2.2. Capitalization												
2.3.3. Operative												

D. Sustainability – Sources of Financing

As main source of resources, the project requires funds from the international community (donor countries, development agencies, bilateral and multilateral development organizations, multination corporations, etc.) This co-financing (see E.1 Budget) is produced in a decreasing manner during the four initial years of the project, until its disappearance in the fifth year.

The decreasing co-financing mode will be compensated through a progressive increase, from the second year onwards of the Observatory's activity, of capital income originating from:

- *Ownership* from the part of the countries: the government counterparts (mainly Ministries of Industry and Mining), the national private sector, the utilities, the local development agents, the NGOs, the universities and the other national agents will slowly takeover the respective national observatories, progressively contributing with funds directed towards meeting the structural and operational costs of the National Observatories.
- Revenues for the implementation of specific actions to face the future demand of the different interested agents within the countries. These specific projects will originate from portfolios that the national observatories, through the Technical-Financial Facility, will generate in the different areas related to renewable energies.

UNIDO will contribute with the costs of the Secretariat, so that it can put the Observatory into motion and carry out its coordination tasks.

As can be seen in Section E (Budget), the *Renewable Energy Observatory for Latin America and the Caribbean*, has a total budget of €21,125,500 (€538,000 UNIDO + €20,587,500 co-financing) calculated on the basis of carrying out its activities in 23 countries (see Section F).

The implementation of the Observatory will be progressively started both in the thematic (products) and geographic (country) aspects as the budgeted resources are secured.

E. BUDGET

E.1. BUDGET BY OUTCOME / OUTPUT (*Results Based Management*)

EXPECTED OUTCOMES	OUTPUTS	Year 1				Year 2				Year 3			
		UNIDO	Co-fin.	Ownership / Incomes	Total	ONUDI	Co-fin.	Ownership / Incomes	Total	UNIDO	Co-fin.	Ownership / Incomes	Total
1. Increased access of regional agents to the know how in the field of renewable energy (software).	Output 1.1. Knowledge Platform	40,000	550,000	0	590,000	30,000	412,500	124,500	567,000	20,000	275,000	272,000	567,000
	Output 1.2. State of the Art report	25,000	460,000	0	485,000	15,000	345,000	125,000	485,000	10,000	230,000	245,000	485,000
	Output 1.3. Technology Base Line	25,000	1,150,000	0	1,175,000	0	862,500	312,500	1,175,000	0	575,000	600,000	1,175,000
	Output 1.4. Renewable reources map	25,000	1,650,000	0	1,675,000	0	1,237,500	437,500	1,675,000	0	825,000	850,000	1,675,000
	Output 1.5. Financial Mechnisms report	18,000	460,000	0	478,000	0	345,000	133,000	478,000	0	230,000	238,000	468,000
	Output 1.6. Annual Regional Meeting	40,000	115,000	0	155,000	40,000	86,250	28,750	155,000	10,000	57,500	97,500	165,000
	TOTAL OUTCOME 1	173,000	4,385,000	0	4,558,000	85,000	3,288,750	1,161,250	4,535,000	40,000	2,192,500	2,302,500	4,535,000
2. Increased renewable energy investments in the region (hardware).	Output 2.1. Technical-Financial Facility	45,000	515,000	0	560,000	30,000	386,250	108,750	525,000	20,000	257,500	247,500	525,000
	Output 2.2. Portfolio – educational and cultural area	25,000	575,000	0	600,000	5,000	431,250	163,750	600,000	0	287,500	312,500	600,000
	Output 2.3. Portfolio –legal area	25,000	575,000	0	600,000	5,000	431,250	163,750	600,000	0	287,500	312,500	600,000
	Output 2.4. Portfolio – energy planning tools	20,000	575,000	0	595,000	5,000	431,250	158,750	595,000	0	287,500	307,500	595,000
	Output 2.5. Portfolio –technological area	5,000	690,000	0	695,000	5,000	517,500	172,500	695,000	0	345,000	350,000	695,000
	Output 2.6. Portfolio – generation projects	20,000	920,000	0	940,000	5,000	690,000	245,000	940,000	0	460,000	480,000	940,000
	TOTAL OUTCOME 2	140,000	3,850,000	0	3,990,000	55,000	2,887,500	1,012,500	3,955,000	20,000	1,925,000	2,010,000	3,955,000
TOTAL PROYECT	313,000	8,235,000	0	8,548,000	140,000	6,176,250	2,173,750	8,490,000	60,000	4,117,500	4,312,500	8,490,000	

EXPECTED OUTCOMES	OUTPUTS	Year 4				TOTAL (€)				Year 5			
		UNIDO	Co-fin.	Ownership / Incomes	Total	UNIDO	Co-fin.	Ownership / Incomes	Total	UNIDO	Co-fin.	Ownership / Incomes	Total
1. Increased access of regional agents to the know how in the field of renewable energy (software).	Output 1.1. Knowledge Platform	10,000	137,500	419,500	567,000	100,000	1,375,000	816,000	2,291,000	0	0	567,000	567,000
	Output 1.2. State of the Art report	5,000	115,000	365,000	485,000	55,000	1,150,000	735,000	1,940,000	0	0	485,000	485,000
	Output 1.3. Technology Base Line	0	287,500	887,500	1,175,000	25,000	2,875,000	1,800,000	4,700,000	0	0	1,175,000	1,175,000
	Output 1.4. Renewable resources map	0	412,500	1,262,500	1,675,000	25,000	4,125,000	2,550,000	6,700,000	0	0	1,675,000	1,675,000
	Output 1.5. Financial Mechanisms report	0	115,000	363,000	478,000	28,000	1,150,000	734,000	1,912,000	0	0	478,000	478,000
	Output 1.6. Annual Regional Meeting	0	28,750	126,250	155,000	80,000	287,500	252,500	620,000	0	0	155,000	155,000
	TOTAL OUTCOME 1	15,000	1,096,250	3,423,750	4,535,000	313,000	10,962,500	6,887,500	18,163,000	0	0	4,535,000	4,535,000
2. Increased renewable energy investments in the region (hardware).	Output 2.1. Technical-Financial Facility	10,000	128,750	386,250	525,000	105,000	1,287,500	742,500	2,135,000	0	0	525,000	525,000
	Output 2.2. Portfolio – educational and cultural area	0	143,750	456,250	600,000	30,000	1,437,500	932,500	2,400,000	0	0	600,000	600,000
	Output 2.3. Portfolio –legal area	0	143,750	456,250	600,000	30,000	1,437,500	932,500	2,400,000	0	0	600,000	600,000
	Output 2.4. Portfolio – energy planning tools	0	143,750	451,250	595,000	25,000	1,437,500	917,500	2,380,000	0	0	595,000	595,000
	Output 2.5. Portfolio –technological area	0	172,500	522,500	695,000	10,000	1,725,000	1,045,000	2,780,000	0	0	695,000	695,000
	Output 2.6. Portfolio – generation projects	0	230,000	710,000	940,000	25,000	2,300,000	1,435,000	3,760,000	0	0	940,000	940,000
	TOTAL OUTCOME 2	10,000	962,500	2,982,500	3,955,000	225,000	9,625,000	6,005,000	15,855,000	0	0	3,955,000	3,955,000
TOTAL PROJECT	25,000	2,058,750	6,406,250	8,490,000	538,000	20,587,500	12,892,500	34,018,000	0	0	8,490,000	8,490,000	

E.2. BUDGET BY STRUCTURE

Costs	Year 1				Year 2				Year 3			
	UNIDO	Co-Fin.	Ownership / Incomes	Total	UNIDO	Co-Fin.	Ownership / Incomes	Total	UNIDO	Co-Fin.	Ownership / Incomes	Total
National Observatories (23 países)	0	8,235,000	0	8,235,000	0	6,176,250	2,058,750	8,235,000	0	4,117,500	4,117,500	8,235,000
Secretariat	313,000	0	0	313,000	140,000	0	115,000	255,000	60,000	0	195,000	255,000
TOTAL PROYECT	313,000	8,235,000	0	8,548,000	140,000	6,176,250	2,173,750	8,490,000	60,000	4,117,500	4,312,500	8,490,000

Year 4				Total				Year 5			
UNIDO	Co-Fin.	Ownership / Incomes	Total	UNIDO	Co-Fin.	Ownership / Incomes	Total	UNIDO	Co-Fin.	Ownership / Incomes	Total
0	2,058,750	6,176,250	8,235,000	0	20,587,500	12,352,500	32,940,000	0	0	8,235,000	8,235,000
25,000	0	230,000	255,000	538,000	0	540,000	1,078,000	0	0	255,000	255,000
25,000	2,058,750	6,406,250	8,490,000	538,000	20,587,500	12,892,500	34,018,000	0	0	8,490,000	
				21,125,500							

E.3. BUDGET OF THE SECRETARIAT

BL	Description	Year 1	Year 2	Year 3	Year 4	Total (€)
11 00	International Expert (L3 / 12 Months)	90,000	60,000	25,000	15,000	190,000
11 50	International Experts	45,000	10,000	5,000	5,000	65,000
13 00	Project Assistant (1 Assistant / 12 Months)	40,000	30,000	10,000	5,000	85,000
15 00	Project Travel	20,000	10,000	5,000		35,000
16 00	UNIDO Staff Travel	40,000	10,000	5,000		55,000
17 00	Nationals	40,000	8,000			48,000
35 00	Meetings	30,000	10,000	10,000		50,000
51 00	Sundries	8,000	2,000			10,000
Total		313,000	140,000	60,000	25,000	538,000

F. Identified Countries.

- 1. República Argentina*
- 2. República de Belice*
- 3. República de Bolivia*
- 4. República Federativa del Brasil*
- 5. República de Chile*
- 6. República de Colombia*
- 7. República de Costa Rica*
- 8. República de Cuba*
- 9. República Dominicana*
- 10. República de Ecuador*
- 11. República de El Salvador*
- 12. República de Guatemala*
- 13. República de Haití*
- 14. República de Honduras*
- 15. República de Jamaica*
- 16. Estados Unidos Mexicanos*
- 17. República de Nicaragua*
- 18. República de Panamá*
- 19. República del Paraguay*
- 20. República del Perú*
- 21. República de Suriname*
- 22. República Oriental del Uruguay*
- 23. República Bolivariana de Venezuela*

Annex 1. Outcomes and outputs

The Observatory aims at the achievement of two main interrelated results. Firstly, the Observatory will try to increase the access of different players and agents²⁵, related to the energy sector of each country, to the existing know-how inside and outside the region.

Secondly, and closely related to the first result, the Observatory will promote that member countries see their renewable energy generating capacity and ability to attract investments strengthened.

In order to obtain the expected results and mitigate the barriers to renewable energy development, the Observatory will put at the disposal of the different agents of the region two mechanisms that, together with its inherent products, will allow them to share knowledge and implement specific actions and projects: The Knowledge Platform and the Technical-Financial Facility. The products will be grouped in two categories according to their most direct relationship to the result tied to knowledge (software) or to the result tied to investments (hardware).

The identified products respond to practices and observances that exist inside and outside of the region, although the Observatory will present them in an integrated and periodic way, so that its constant update and simple access provides an important aggregate value.

The combination of these two mechanisms, supported by the proposed products, will convert the Observatory into an agile and practical tool to strengthen interregional bonds in order to increase investment in the energy sector. This will allow LAC to progress in the field of energy security and aid in its sustainable development.

In the following, the products leading to the two aforementioned results will be described. In the section dedicated to each product, an analysis of the estimated costs during a four-year period is included.

The cost analysis carried out according to each product is done on a classification of countries based on their size using two criteria: demographics and geographic extension. In this way, the equal treatment of costs among unequal countries is avoided. However, the amounts assigned to each country for the implementation of each product correspond to an average estimate, so that once the product is implemented, cost differences can be made up within a group. As an example, in the case of a group of quantitatively smaller countries consisting of Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El

²⁵ Agents are referred to in this document as: representatives of public instances involved in the energy sector, the private sector, the universities, the technical institutes, the research centers, the NGOs, the bilateral and multilateral development agencies, the representatives of civil society, etc. In other words, we refer to all those who belong to an entity with mandate, competencies or interest in all forms of energy and, more specifically, renewable energy.

Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Surinam and Uruguay, estimated costs for the uploading of information that will allow the elaboration of the State of the Art Report (Product 1.2) reach an average of €20.000 per country and year, not necessarily €20,000 per country.

On the other hand, the decreasing financing model proposed in the cost analysis of every product, will be compensated through a progressive increase of capital income from the second year onwards of the Observatory's existence, originating from:

- *Ownership* from within the countries: the government counterparts (mainly Ministries of Industry and Mining), the national private sector, the utilities, the local development agents, the NGOS, the universities and other national agents will slowly take over the respective national observatories, progressively contributing with funds directed towards meeting the structural and operational costs.
- Revenues for the implementation of specific actions to face the future demand of the different interested agents within the countries. These specific projects will originate from portfolios that the national observatories, through the Technical-Financial Facility, will generate in the different areas related to renewable energies.

At the same time, there is always a possibility that multi- and bilateral cooperation agents and multinational corporations involved in the energy sector, as well as other organizations and international institutions, participate actively in the long-term economic sustainability of the Observatory.

Expected Outcome 1: Increased access of regional agents to the know how in the field of renewable energy (software).

Products Result 1	Year 1	Year 2	Year 3	Year 4	TOTAL
<i>1.1. Knowledge Platform</i>	590,000	442,500	295,000	147,500	1,475,000
<i>1.2. Annual Report: State of the Art</i>	485,000	360,000	240,000	120,000	1,205,000
<i>1.3. Technology baseline per country</i>	1,175,000	862,500	575,000	287,500	2,900,000
<i>1.4. Renewable Resources Map per country</i>	1,675,000	1,237,500	825,000	412,500	4,150,000
<i>1.5. Accessible Financial Mechanisms</i>	478,000	345,000	230,000	115,000	1,168,000
<i>1.6. Regional Annual Meeting</i>	155,000	126,250	67,500	28,750	377,000
Total Result 1 (€)	4,558,000	3,373,750	2,232,500	1,111,250	11,275,500

1.1. Knowledge Platform

This product is the first of two mechanisms on which the Observatory is based. The rest of the products related to the result, namely the incremented access to knowledge on renewable energy in the region (software), will be based specifically on this mechanism.

The knowledge platform has the mission of promoting cooperation between the countries of the region and, more specifically, among the *agents* of each country, in order for the Observatory to allow them to share tried technologies, successful experiences, information on specific projects, existing financing mechanisms, successful legal practices and, above all, all that could be helpful to promoting the local, national and regional investment situation in the field of renewables.

The knowledge platform rests on an information base that will allow the fluid exchange of knowledge amongst its users, who will be connected to a network through the Internet. At the same time, procedural rules and guidelines will be designed and distributed – communication protocol – with the purpose to allow all users to offer and access information in an orderly manner, guaranteeing in all instances the quality of the shared knowledge. In this way, the knowledge platform will not only allow access to the existing information, but will also allow the agents to share information related to their area of expertise.

In order to make sure that this exchange is carried out in such a way that the quality and relevance of the information is guaranteed, a National Coordinator in each country will play an active role in the standardization of the information, offering assistance to all agents who wish to share information on the platform. At the same time, the national coordinator will feed the platform with a series of documents, analyses, and reports that will increase the usefulness of the knowledge platform.

The information found on the knowledge platform will be placed in perfect order and classified according to the different disciplines that the issue of renewable energy encompasses:

- **Technological Area:** the market agents at all levels (regional, national, and local) that use energy generating technologies on the base of renewable sources will find a useful window in this section, one that will allow them to obtain detailed information on the different technologies that are being used in the region with the different renewable sources. In this way, the consumers of these technologies will be provided with a necessary instrument for the correct selection, adaptation and validation of technologies. Furthermore, the different providers of technologies will be able to offer their products through this section, offering all kinds of details related to their technologies. Also in this section, the knowledge platform will have space for information related to all technological developments and their supplier industries that are found in other regions and which can be applied in Latin America and the Caribbean.
- **Regulatory-Legal Framework** – the knowledge platform will consolidate a homepage that compiles the regulations related to renewable energies in each country, highlighting those laws that, due to their application and scope, have strengthened the implementation of renewables generation systems. A close relationship with public parties is necessary in order to obtain such information. These, at the same time, will find this section useful since they will be able to contrast the laws that are being applied, therefore enabling them to extract the best practices and adapt them to their own geographical area. Also investors and private developers will be able to find here essential information for the success of their investment projects.
- **Financial framework:** In this window of the knowledge platform, the financial mechanisms that investors interested in the region can access will be described. Also, special attention will be drawn to the financial facility that the Observatory will offer.
- **Managerial Area:** The best practices will be described and all institutions and enterprises that provide services related to the implementation of renewable energy projects will be announced. The purpose of this is to strengthen the capacities of market agents to implement specific investment actions in the renewable energy field.
- **Educational and Cultural Area:** This window of the knowledge platform will include detailed information on the centers, institutes, and universities that offer different sorts of educational programs related to renewable energy. From this section, alliances between educational entities within and outside the region will be promoted in order to consolidate in Latin America and the Caribbean a proper educational scenario that will allow

future generations to obtain the necessary knowledge on the subject without having to import it from other regions.

To guarantee the maximum usefulness of the Knowledge Platform, in addition to a thematic filter that will guide the user through the described areas, a classification of the information will also exist based on geographic criteria, so that any user interested in a particular zone of the region can access all the information that refers to the geographic parameter employed. Also, through the utilization of a search engine offered by the platform, it is possible to access in a fast and direct way the information contained in the different parts of the menu.

In addition to its role of a holistic knowledge center in energy matters, the knowledge platform has a fundamental characteristic that makes it even more useful to the agent-user, namely the *constant up-dating* of the information. The platform will demand, from the agents that feed it with information, a firm and lasting commitment to supply it with punctual and periodic data.

In conclusion, the platform will generate and distribute multidisciplinary knowledge on energy, especially on renewable energy issues, becoming an extraordinarily useful tool that provides specialized guidance to the agents involved into the investment processes, at the regional, national and local levels, enhancing them to take appropriate decisions at the right moment.

It is also important to mention that there are currently a great variety of organizations in the region making important efforts in several of the areas mentioned above, which result from their involvement in the knowledge platform. This involvement is essential in order to make the information accessible to everyone. Although the direct target group will be the one of the market agents, the obtainable information of the knowledge platform will also be available - without restrictions- to the general public.

Analysis of Estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<i>Design and operation of the knowledge platform: design of the homepages of information classified on a thematic and geographic basis, interconnection between pages, information uploading and downloading protocols, filter mechanisms, identification of user types and responsibilities, actualization mechanisms.</i>	40,000	30,000	20,000	10,000
<p><i>Implementation and operation according to country on the basis of size:</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, Mexico</i> (1rst years: 40,000 € / country x 3countries= 120,000 €) • <i>Medium Countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> (1rst Year: 26,000 € / country x 5 country = 130,000 €) • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> (1rst year: 20,000 € / country x 15 countries = 300,000 €) 	550,000	412,500	275,000	137,500
<i>Total</i>	590,000	442,500	295,000	147,500

Total product (4 Years, 23 countries): 1,475,000 €

1.2 Annual Report: State of the Art

The Observatory will publish a report every year, detailing the regional *State of the Art* in renewables, describing exclusively the higher development levels of renewable energy technologies in LAC. This report will review the latest and most successful practices in the field of renewable energy, analyzing and describing them so that they can be replicated in other areas within the region.

This exercise will be carried out by starting at first with a detailed study of each country, going further to the local level in order to find new experiences in the application of certain technologies that again, due to the results achieved in terms of their productive uses, have gained in importance and could therefore be replicated under similar circumstances in other areas. This exploration and analysis exercise will be carried out in close cooperation with those agents that are currently promoting the use of renewable sources in electricity generation and for the production of bio-fuels, whose expansion and popularity is an important phenomenon to be taken into consideration in the region.

Each annual report of every country will be prepared carefully, reviewing the successful practices of each technology based on the use of renewable energy for the purpose of electricity or fuel generation for the transportation sector. By this means, the report will dedicate one chapter to each technology (wind, hydro, solar, biomass, or new generation) including data related to suppliers in and outside the region.

Every coordinator of a National Observatory, will contact the most qualified experts of each renewable sources area in their institutions, organizations and research centers, so that at the end they are the ones to explore and extract the information documented in the final report. This highlights the important fieldwork required to grant to the State of the Art Report the usefulness and relevance needed to promote investments that allow the reproduction of successful practices.

Once the country reports are completed, the Observatory's Secretariat will elaborate a Regional State of the Art Report. For this purpose, the most important energy generation experiences with each renewable source in every country will be selected.

The report will offer information of vital importance to the public institutions and private organizations that wish to carry out projects in this area, since they will be able to draw on practical experience and thus reduce the uncertainty associated with new investment projects.

By carrying out this exercise, the technology gaps of the region will be revealed as well, so that a new niche for those technologies that have been tried out successfully in other parts of the globe will be established. Therefore, the State of the Art is an important element that will contribute to the optimization of the technology selection, adaptation and validation process in other regions.

The regional State of the Art will offer, within the Knowledge Platform, a specific space dealing with technologies, which will be at the disposal of the general public. Furthermore, the national State of the Art Reports will be available in each country's portal.

Analysis of estimated Costs (UNIDO + Co financing):

€Euros €	Year 1	Year 2	Year 3	Year 4
<i>Elaboration of the Terms of Reference of the National States of the Art, preparation of the Table of Contents, elaboration of the Regional Document.</i>	25,000	15,000	10,000	5,000
<p><i>Field exploratory work per country</i></p> <ul style="list-style-type: none"> • <i>Large Countries: Argentina, Brazil, Mexico</i> (1rst year: 30,000 € / country x 3 countries = 90,000 €) • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> (1rst year: 20,000 € / country x 5 countries= 100,000 €) • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> (1rst year: 12,000 € / country x 15 countries = 225,000 €) 	370,000	277,500	185,000	92,000
<i>Compiling the information and elaboration of the document (4,000 € approx. per country)</i>	90,000	67,500	45,000	23,000
<i>Total</i>	485,000	360,000	240,000	120,000

Total product (4 years, 23 countries): 1,205,000 €

1.3. Technology baseline according to country

An initial research study, to be updated annually, will be carried out in every member state, jointly with the agents that apply different energy generation technologies related to renewable sources. This study will include an inventory that describes the current situation of renewable energy technologies within the national scenarios. Besides, the document will also mention and analyze all those energy-generating technologies, based on renewable sources, that are being currently employed in each country, as well as their productive uses.

The study will not only cover the existing experiences regarding traditional renewable sources (like biomass for domestic uses and large hydro electric), but will also highlight those sources belonging to the *new generation* (like wind energy, small hydroelectric plants, modern biomass plants, geothermic energy, photovoltaic energy and solar thermo energy). As all these technologies can only be applied under specific circumstances and in certain situations, based on the results obtained, the study will evaluate which technology is the appropriate one for each case.

The scenario thus obtained will allow potential investors or agents working in the different countries to be fully informed of which technologies are available in the country and region, as well as the productive uses that those technologies could best serve.

This exercise will fundamentally allow us to carry out an objective diagnosis of each country's current situation regarding the energy generating technologies and enable us to plan in a coherent manner.

At the same time, from a regional perspective, the simultaneous availability of updated information in the whole region is extremely useful for comparing a country with another and evaluate similar practices and common problems. Many market agents will realize that the problems in the application of certain technologies are not unique and that similar situations occur in other regions. Going deep into the differences and similarities amongst agents in the region will create a greater regional interconnection (South-South cooperation) that will highlight the different ways of facing similar situations and the respective results achieved. This is mainly a mutual learning exercise within the region, which will lead to the selection of certain practices and the refusal of others.

In addition, it will provide knowledge, in an objective and localized manner, of the limitations with regard to technologies, as well as practices abroad, which should be taken into consideration. In the case of the State of the Art, this product will allow us to optimize the selection, adaptation, and validation of external technologies.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<i>Elaboration of the Terms of Reference of the technology baseline studies (biomass for domestic use, hydroelectric plants, wind energy, biomass, geothermal, photovoltaic, and thermal solar energy), coordination of parties involved in the research of primary sources and in the elaboration of the final document.</i>	35,000	20,000	15,000	10,000
<p><i>Field exploratory work per country and technology:</i></p> <ul style="list-style-type: none"> • <i>Large Countries: Argentina, Brazil, Mexico</i> (1st year: 80,000 € / country x 3 countries = 240,000 €) • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> (60,000 € / country x 5 countries = 300,000 €) • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> (1st year: 40,000 € / country x 15 countries = 600,000 €) 	1,140,000	842,500	560,000	277,500
<i>Total</i>	1,175,000	862,500	575,000	287,500

Total product (4 years, 23 countries): 2,900,000 €

1.4. Renewable Resources Map at country level

The renewable resources map (wind, solar, hydro, geothermic map, mini-hydraulic, and bio-energy) will offer a detailed geo reference to the places and form in which such resources can be found in a specific country, thus facilitating their possible application in terms of energy generation.

The solar map, for example, will offer a solar energetic balance of each province and state within a country. Furthermore, it will offer data referring to energy in kWh per m² of horizontal surface in a year, as well as the number of hours of sun.

The wind resources map will identify data related to wind speed and its density, which will allow us to determine the best places to produce energy on account of

its currents. It will be necessary to carry out wind measurements in those areas where models indicate the potential presence of resources that can be used for energy generation. Such measurements must meet international requirements.

The studies will be carried out in close cooperation with the national institutions, which in turn could aid in the dissemination of essential information needed to successfully carry out this objective. This close alliance with national institutions will also allow the latter to profit from the final result by carrying out promotional activities in order to obtain investments in renewable energy projects, within the national development plans.

Each National Observatory will contact agents in and outside each region who can create and strengthen the capacities found in different countries with respect to homologation of methods, scales, data and models, using the best international practices. In this way, this product of the observatory will extract the best practices taking into consideration the specific circumstances of each country in the evaluation of the energy potential existing in the region.

In conclusion, the cartographic information that will be obtained through the different mapping exercises is valuable for all those agents of the private or public sectors interested in investing in energy generation projects based on renewable sources.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>
<i>Identification of key agents, revision of existing documents, identification of methodology according to renewable source, coordination of the final document.</i>	35,000	20,000	15,000	10,000
<ul style="list-style-type: none"> <i>Field exploratory work per country and per source</i> • <i>Large Countries: Argentina, Brazil, Mexico</i> (1rst year: 130,000 € / country x 3 countries = 390,000 €) • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> <i>(100,000 € / country x 5 countries =500,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> <i>(1rst year: 50,000 € / country x 15 countries =750,000 €)</i> 	1,640,000	1,217,500	810,000	402,500
<i>Total</i>	1,675,000	1,237,500	825,000	412,500

Total product (4 years, 23 countries): 4,150,000 €



1.5. Annual Report on accessible financial mechanisms

The annual regional report on financial mechanisms will analyze and describe regularly the mode of operation of financial models, mechanisms and facilities that can be accessed to finance renewable energy based generation, transmission and distribution projects, as well as projects to obtain bio-fuels in the transportation sector.

At the moment, different formulas exist for the provision of sustainable financing for those wanting to start investment projects in the field of renewables. Some of them are classified by Sonntag-O'Brien and Usher (2004)²⁶, according to the project phase in which financing is provided. These two authors differentiate between:

- Start-up capital support to confront start-up capital costs, market awareness creation costs and transaction costs that tend to be high for renewable energies. Financial aid to entrepreneurial development and concession of seed-capital belong to this category.
- Operative capital support, including access to credit opportunities and credit capacity strengthening mechanisms for the provision of loans to small and medium renewable energy enterprises. These credit opportunities within national and local banks refer to the support of donors and international financial institutions, to grant loans to enterprises in the sector. The strengthening of credit capacity refers to subsidies offered by donors and international financial institutions to make the financing of loans *soft*, both for the one who lends and the one who borrows, through the spreading of risk or the reduction of interest rates. These take the form of partial risk guarantees that ensure the payment of debt services to the lender, and partial credit guarantees that are used to extend loan payment periods, thus improving the cash flow of the project. These guarantees can motivate banks to provide loans to projects that are considered of high risk.

In this annual or biannual report, the mentioned models will be described in detail, including the specific mechanisms that are being used at the national and local level, describing successful experiences and including the necessary information for potential investors.

Apart from a national report, a regional report will be prepared that compiles the most convenient and successful mechanisms, as well as other existing global mechanisms and the ways to access them.

²⁶ Extracted from the report by Norbert Wohlgemuth for UNIDO “*Energy Security in the Region of Latin America and the Caribbean (LAC): Renewable Energy as a Viable Alternative*”, Vienna 2006.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<i>Elaboration of the Terms of Reference of the reports, preparation of Table of Contents, elaboration of the Regional Document.</i>	18,000	0	0	0
<i>Revision de mechanisms, study and description per country</i> <ul style="list-style-type: none"> • <i>Large Countries: Argentina, Brazil, Mexico</i> (1rst year: 30,000 € / country x 3 countries = 90,000 €) • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> (1rst year: 20,000 € / country x 5 countries = 100,000 €) • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> (1rst year: 12,000 € / country x 15 countries = 225,000 €) 	370,000	277,500	185,000	92,000
<i>Compilation of the information and elaboration of the document (4,000 € approx. per country)</i>	90,000	67,500	45,000	23,000
<i>Total</i>	478,000	345,000	230,000	115,000

Total product (4 years, 23 countries): 1,168,000 €

1.6. Regional Annual Meeting

The Observatory will organize annually a regional meeting, enabling a continuous dialogue, within a regional scope, about the most important topics related to the field of renewable energy, such as its potential to satisfy the growing energy demand of the region, as well as its possible industrial applications, especially in the sector of Small and Medium Enterprises.

An in-depth analysis of these technologies will be made from a technical, economic and institutional point of view and the opportunity will be provided to politicians, experts and planners to evaluate and discuss the current status, the obstacles and opportunities of renewable energies in the region. A topic of discussions will also be the advantages of establishing regional cooperation

programs to seize the opportunity of the potential offered by renewable energy sources in the context of the social and economic realities of the LAC region.

Every year, a destination within the region will be chosen because of strategic reasons linked to renewable energy issues (successful experiences that may have taken place in a particular place, new regulations in the area, etc.). The chosen venue should meet the necessary requirements to carry out a regional meeting and host experts and market agents in the field of energy, and particularly renewable energy, to discuss the current situation of this sector and identify synergies and projects between the institutions.

A constructive dialogue on these topics will facilitate the creation of a common vision and of specific opportunities to develop regional projects, with the purpose of providing a modern, accessible and sustainable energy supply in those parts of the region that need it the most.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>
<i>Organization and logistics of the event</i>	40,000	40,000	10,000	0
<i>Recruitment of Experts</i>	115,000	86,250	57,500	28,750
<i>Total</i>	155,000	126,250	67,500	29,250

Total product (4 years, 23 countries): 377,500 €

Expected Outcome 2: Investment in renewables in the region increased (hardware)

Expected outcome 2	Year 1	Year 2	Year 3	Year 4	TOTAL
<i>2.1. Technical-Financial Facility</i>	560,000	416,250	277,500	138,750	1,392,500
<i>2.2. Portfolio – educational area</i>	600,000	436,250	287,500	143,750	1,467,500
<i>2.3. Portfolio –legal area</i>	600,000	436,250	287,500	143,750	1,467,500
<i>2.4. Portfolio – energy planning tools</i>	595,000	436,250	287,500	143,750	1,462,500
<i>2.5. Portfolio –technological area</i>	695,000	522,500	345,000	172,500	1,735,000
<i>2.6. Portfolio – generation projects</i>	940,000	695,000	460,000	230,000	2,325,000
Total Outcome 2 (€)	3,990,000	2,942,500	1,945,000	972,500	9,850,000

2.1. Technical-Financial Facility

The second pillar on which the Observatory has been built allows the use of updated knowledge to the agents of the region, in order to expand the implementation of specific actions in the key areas related to renewable energy.

The Observatory establishes, through the Technical-Financial Facility, the necessary mechanisms to carry out the role of *facilitator* of projects, always in close cooperation with governments and the respective public instances. In this way, the Observatory will have the capacity to mobilize the necessary technical and financial resources so that the agents of every country can develop and implement specific actions in the field of renewable energy.

In order to understand the need to establish this mechanism, it is necessary to provide a short review of the financial market situation with reference to renewable energy projects.

The majority of energy generation systems on the basis of renewable sources differ from conventional systems in the structure of their costs. The fossil combustion systems generally have moderate costs of start-up capital or even low ones, but high operational costs due to the fuel they use. On the other hand, the renewables usually do not have fuel costs, although they require a relatively high initial investment.

The financial community has hesitated from the beginning to invest in renewable energy technologies. Even though the politics of the leading European countries, as well as those of China, India, Japan and the United States, have positioned renewable energies (especially wind and solar) as one of the leading forms when it comes to a new capacity form of electricity generation. According to the Worldwatch Institute, global investment in renewable energy had reached a record high of \$38 billion in 2005, 8 billion more than in 2004.

The key to this success derives from the fact that some countries have favored the advantages of renewable energy through clear and focused policies and support programs. For this reason, the countries that have benefited the most from the popularity of renewable energy are mainly those that have adopted effective public policies and appropriate financial instruments.²⁷

The rules on renewable energy portfolios and tariffs for the introduction of renewable energy to the electricity network have become the main supporting tools for renewable energies at a greater scale. Some environmental groups have successfully tried voluntary programs on “green electricity”, with the capacity of producing considerable volumes of electricity in full respect of the environment.

In small-scale isolated systems and for the purpose of productive uses, the access to funding is essential to overcome market barriers. For this reason, revolving funds and credit programs (that are also being used in other sectors²⁸) have been expanding. Nonetheless, commercial banks continue to refuse to participate in a market of small loans, at high risks, so that renewable energy in many places continues to await improvements in this sense.

The Technical-Financial Facility is intended to address this shortcoming, complementing the expert exchange service with the establishment of a Financial Facility that will grant preferential loans directed towards the implementation of specific projects in any discipline related to renewable energy.

The Technical-Financial Facility will also constantly monitor the project once it has started its implementation phase.

In the Observatory’s initial implementation phase, closely coordinated work will be carried out between the Observatory’s Secretariat and the National Observatory Coordinators in their role as representatives of the National Boards of Directors, with the purpose of identifying appropriate partners and designing the financial mechanism that adapts itself to the economic and financial realities of each country, taking into consideration a possible extrapolation of the mechanism to a regional level. In this way, the medium term objective would be a regional mechanism that establishes standard managerial systems for the whole region as well as credit and operation preconditions.

In principle, the implementation of this mechanism will start out with an in-depth analysis of the financial situation of each country in the energy field, followed by

²⁷ Renewable Energy Financing Case Studies: Lessons to be learned from Successful Initiatives, March 2006. Report prepared by Envirochem Service Inc. for the Environmental Cooperation Commission of Montreal, QC, Canada.

²⁸ In this context the Nobel Peace Prize awarded this year to the work of Mohamed Yunus (Bangladesh, 1940) and the organization he founded in 1978, the Grameen Bank must be mentioned, for his efforts in promoting social and economic development from the most humble spheres of society through a program of micro credits as an instrument to combat poverty. This has allowed us to prove that even the poorest of the poorest can work for their own development.

an analysis of those agents that could join the Facility within their national financial system. For this reason, the Knowledge Platform and the report on accessible financial mechanisms are of great use in the first stage of research and negotiation at the national and local levels.

A similar analysis of the regional and global institutions will be made from the Secretariat. This will allow a local, national, regional and global view and the establishment of necessary interconnections between these levels to enable the consolidation of the mechanism.

The Secretariat will also launch an extensive campaign to attract resources from the international community and strengthen the alliances with supranational financial entities that may consider the Facility an important niche to work in provided they have sufficient guarantees.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<i>Establishment of alliances and attraction of regional and global resources. Design of the Facility (operation and control mechanisms)</i>	55,000	30,000	20,000	10,000
<i>Consolidation of mechanisms required to operate the facility locally, and establish alliances with appropriate institutions that will manage funds.</i> <ul style="list-style-type: none"> • <i>Large Countries: Argentina, Brazil, Mexico</i> 5,000 € / country x 3 countries = 105,000 € • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> 20,000 € / country x 5 countries = 100,000 € • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> 20,000 € / country x 15 countries = 300,000 € 	505,000	386,250	257,500	128,750
<i>Total</i>	560,000	416,250	277,500	138,750

Total product (4 years, 23 countries): 1,392,500 €

2.2. Portfolio of Projects in the Educational and the Cultural Area

National Observatories will formulate a portfolio of regional, national and local projects, which involve the training of human resources in the renewable energy area, and aims to increase the number of experts on the one hand, and to reduce the massive knowledge import from outside the LAC region on the other.

On that account, the Observatory will work in close cooperation with universities, specialized academies and/or prestigious technical schools in order to, amongst other actions, introduce in the respective curricula those subjects related to renewable energy, so as to establish stable educational institutions in the region that could build up qualified human resources in this area.

In addition, regional interconnection amongst universities and learning centers of different countries will be promoted in order to create regional references at the educational level in specific subjects related to renewable energy.

The projects that are thus created must be agreed upon among the parties involved in their implementation.

In addition, a proposal will be made for a distribution campaign in each country for sensitizing civil society into the importance of demanding a clean, sustainable and affordable energy service.

The implementation of proposals that are formulated under this output (at the educational and cultural level) will depend on the availability of the financial resources needed. The national coordinator will guarantee that the proposals that are going to be carried out are assured of at least some of these funds.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<p><i>Identification of national partners and elaboration of proposals:</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, México</i> <i>(1rst year: 40,000 € / country x 3 countries = 120,000 €)</i> • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela</i> <i>(1rst year: 25,000 € / country x 5 countries = 125,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay.</i> <i>(1rst year: 22,000 € / country x 15 countries = 330,000 €)</i> <p>+ <i>Administrative expenses (Secretariat): 30,000 € (4 years)</i></p>	600,000	436,250	287,500	143,750

Total product (4 years, 23 countries): 1,467,500 €

2.3. Portfolio of Specific Proposals within the existing Regulatory Framework

Through the Technical-Financial-Facility, the Observatory will draft and promote in each country and within the existing legal frameworks, an Incentives Programme among the relevant governmental bodies that considers legal measures to favor the further development of renewable energies. These could include moratoriums as well as national and municipal tax exemptions (rent taxes, import taxes, etc.), accelerated depreciation, and other measures of a financial or other nature.

Therefore, the objective of this product is to identify specific norms whose evaluation and modification could substantially increase the use of renewable energy sources.

In order to succeed with this product, it is essential to establish solid alliances with those governmental bodies that are involved in this subject matter either directly or indirectly.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<p><i>Identification of the national and regional partners; revision of the legislation of other countries and elaboration of proposals in coordination with relevant national authorities:</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, Mexico (1st year: 40,000 € / country x 3 countries = 120,000 €)</i> • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela (1st year: 25,000 € / country x 5 countries = 125,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay. (1st year: 22,000 € / country x 15 countries = 330,000 €)</i> <p>+ <i>Administrative expenses (Secretariat): 30,000 € (4 years)</i></p>	600,000	436,250	287,500	143,750

Total product (4 years, 23 countries): 1,467,500 €

2.4. Portfolio of Energy Planning Proposals

By means of the Technical-Financial-Facility, the Observatory will work jointly with the governments in improving their capacity to analyze the energy demand and supply, as well as in carrying out future projections, which would allow them to establish the most successful and best applicable energy strategies, in order to confront their own national development challenges.

The Proposals Portfolio will focus on this specific area, offering the countries proper instruments and methodologies for providing a national diagnosis in energy matters and a further analysis, which takes into consideration their real needs as well as the possibility of satisfying them by using the existing energy resources.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<p><i>Identification of the best practices inside and outside the region, as well as of the existing IT- tools. Coordination with national authorities and international organizations for an appropriate knowledge transfer</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, Mexico (1st year: 40,000 € / country x 3 countries = 120,000 €)</i> • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela (1st year: 25,000 € / country x 5 countries = 125,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay. (1st year: 22,000 € / country x 15 countries = 330,000 €)</i> <p>+ <i>Administrative expenses (Secretariat): 25,000 € (4 years)</i></p>	595,000	436,250	287,500	143,750

Total product (4 years, 23 countries): 1,467,500 €

2.5. Portfolio of Projects in the Technological Area

The Observatory will present, through the Technical-Financial-Facility, several proposals that aim to consolidate and reinforce the national capacity to select, adapt and validate those technologies that could be applied in a certain place and with a specific purpose.

In doing so, a country will be in the best position to adopt those technological developments that suit her best and to adapt them to its reality while minimizing costs and optimizing the results.

Furthermore, the proposals that derive from this product will give the respective Governments of the region the opportunity to have the appropriate (technical and human) resources to optimize the use of technologies coming from other countries of Latin America and the Caribbean or other regions. Thus the risk of importing technology that is non-applicable to the necessities of each country can be reduced.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<p><i>Identification of national and international partners that contribute to the elaboration of proposals that reinforce the national capacities in their selection, adaptation and technology validation. Coordination with governmental national authorities.</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, Mexico (1st year: 45,000 € / country x 3 countries = 135,000 €)</i> • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela (1st year: 30,000 € / country x 5 countries = 150,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay. (1st year: 27,000 € / country x 15 countries = 405,000 €)</i> <p>+ <i>Administrative expenses (Secretariat): 10,000 € (4 years)</i></p>	695,000	522,500	345,000	172,500

Total product (4 years, 23 countries): 1,735,000€

2.6. Portfolio on Generation, Transmission and Distribution of Renewable Energy Projects

The Technical-Financial Facility will identify specific national projects that handle investments in the renewable energy field (wind, hydro, solar, biomass, etc.) and will further develop them to a pre-feasibility level, consolidating a coherent portfolio of projects per year.

The projects that will be carried out have to reach a high consensus between the parties involved in their implementation. This way, it will be more realistic to implement those proposals, which again will also depend on the availability of the required financial resources. The national coordinator will guarantee that the proposals made are assured of at least some of these resources. At the same time, the Technical-Financial Facility will provide to those agents who demand it, financial resources for project investment under more favorable conditions than the ones offered by the market.

Finally, the Facility will also provide technical assistance through the different development and implementation stages of those projects, from the feasibility of the project or its business study, to the technology-, and suppliers selection, etc.

Analysis of estimated Costs (UNIDO + Co financing):

€ Euros €	Year 1	Year 2	Year 3	Year 4
<p><i>Identification of national and regional partners, identification of viable projects, preparation of pre-feasibility studies.</i></p> <ul style="list-style-type: none"> • <i>Large countries: Argentina, Brazil, Mexico (1st year: 60,000 € / country x 3 countries = 180,000 €)</i> • <i>Medium countries: Bolivia, Colombia, Chile, Peru, Venezuela (1st year: 40,000 € / country x 5 countries = 200,000 €)</i> • <i>Other countries: Belize, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname, Uruguay. (1st year: 36,000 € / country x 15 countries = 540,000 €)</i> <p>+ <i>Administrative expenses (Secretariat): 25,000 € (4 years)</i></p>	940,000	695,000	460,000	230,000

Total product (4 years, 23 countries): 2,325,000€