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**World EU Cluster Initiative in Renewables and sustainable
Energy InterNAtional**

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REINA

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Technical Implementation Report

Final Report

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Contents

1 PUBLISHABLE EXECUTIVE SUMMARY3
2 FINAL REPORT ON THE IMPLEMENTATION OF THE ACTION.....6

1 PUBLISHABLE EXECUTIVE SUMMARY

The focus of the REINA Project was to support European SMEs internationalisation through the design and implementation of joint cluster specific internationalisation strategies in renewable energy growing markets and other related energy technologies, like energy efficiency and smart grids. These strategies contributed to:

- Stimulate the commercialization, in emerging international markets, of the capabilities and technologies developed by our companies (used to compete in leading European markets).
- Set up collaboration agreements with international peers in target markets (clusters, research centers, development agencies, etc)
- Prepare the European energy industry, especially the SMEs, to compete in international energy markets characterized by high growth.
- Provide visibility to European technology in renewables in international markets.

These main objectives unfolded into more operational objectives for each target group in the project, that were the Administration in charge of Cluster Programmes, cluster managers and clusters energy companies.

The project was divided in the 3 following phases or workpackages, which were carried out during the first and second periods.

- **Phase 1 - Energy market screening:** A preliminary analysis and visualization of the whole renewables and sustainable energy businesses has been undertaken in this phase in order to identify energy areas of opportunity worldwide, and to proceed with the assessment of competitive positioning of the participant clusters and the degree of complementarity among the three of them. The energy segments under the initial scope of the project are wind energy, biomass, concentrated solar power, solar thermal, geothermal, electricity transport and distribution (T&D) and energy efficiency.

This analysis has lead to the selection and prioritization of some specific target markets (in terms of energy segments and geographical situation) that show greater potential, in particular Wind, T&D and Biomass opportunities in LatAm countries such as Brazil, Mexico and Chile, North Africa and North America (USA and Canada).

- **Phase 2 - Definition of tailored internationalisation strategies:** In this phase the target markets selected in phase 1 have been analysed in depth and specific internationalization strategies have been defined for each of them. These strategies represent an integrated action plan in the area of internationalisation for the three clusters, with priority given for intercluster collaboration initiatives and innovative activities.

The main result of this phase, along with the several reports analysing the project target markets, is the elaboration of Internalization strategies for Brazil (focusing in wind energy), Mexico (focusing on T&D), Chile (focusing on Biomass) and North Africa.

- **Phase 3 - Action: strategies deployment:** This phase was devoted to the actual deployment of the internationalization strategies defined and it represented the core part of the project. During the first year of the project some activities were carried out and preliminary arrangements of others were launched, addressing in particular the target markets of Brazil, Chile, México, North America, and North Africa.

The outcome of the REINA project is a step forward in the growth of European energy industry's internationalisation, especially SME, with specific impact on each of the project's cluster partners as well as in other companies outside the project.

The most significant results that improve international position of target companies within the participant clusters are:

- the development of a paved way for European products and technologies in target markets
- a increased awareness of internationalisation opportunities in specific target markets
- a better understanding of the internationalisation process
- a increased knowledge of target markets
- the launching of specific internationalisation initiatives involving target companies.

As a result, the project could also lead to an intensification of the internationalisation profile of the three participant clusters in the medium term (increased export levels, higher presence in target markets, etc.) and to a strengthened position of cluster associations to support the internationalisation of their companies.

The knowledge and experience in internationalisation generated in REINA project will be disseminated outside the boundaries of the project partners and the energy sector. On this basis, it is considered that REINA project can have a high relevance in the development of successful and value-added internationalisation support mechanisms.

REINA projectpartners

<i>Region</i>	<i>Type of organization</i>	<i>Participant</i>
<i>Basque Country (Spain)</i>	<i>Regional Administration in charge of Cluster Programme (Host organization)</i>	<i>Basque Government</i>
	<i>Basque Energy Cluster management (Host cluster)</i>	<i>Asociación Cluster de Energía del País Vasco (CEPV)</i>
<i>Upper Austria (Austria)</i>	<i>Oekoenergie Cluster management (Invited cluster)</i>	<i>O.Ö. Energiesparverband (energy agency of Upper Austria) (ESV)</i>
<i>Vaasa (Finland)</i>	<i>EnergyVaasa Cluster management (Invited cluster)</i>	<i>Merinova (MER)</i>

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2 FINAL REPORT ON THE IMPLEMENTATION OF THE ACTION

This chapter summarizes the Work Packages (WPs) in which the project has been organized and carried out, including the objectives, main results, lessons learnt and European added value highlights for each of them. In Chapter 3 further information is provided about each of the missions and match-making events deployed under WP3.

REINA Project has been structured in four work packages or phases, three of which are operative and the other one is focused on project management.

WP1. ENERGY MARKETS SCREENING

The first work package aimed to carry out an overall review of energy areas of opportunity worldwide and to analyze participant cluster capabilities and interests in internationalisation, so as to obtain a first selection of the most interesting energy markets for the project.

In order to make this selection, the first input was to get an overall view of the market potential and its interest depending on a set of qualitative and quantitative variables. In this sense, worldwide markets situation and prospects were analyzed for the energy segments within the range of the REINA project. In particular, nine international energy markets were analyzed in this task: Concentrated Solar Power, Electricity T&D, Wind offshore, Wind onshore, Geothermal Energy, Energy efficiency in industry, Low energy buildings, Solar Thermal Energy and Biomass.

These analyses followed a common content structure which addressed issues such as the recent evolution and current size of the energy segment market, its forecast, general trends affecting its development and the identification of key countries. A brief analysis at key country level including some relevant aspects of the political, social and economic context and with specific information about the energy segment in the country were also been carried out. Deliverable 1, entitled "Overview of international energy markets and energy clusters positioning and complementarity for internationalization", provides further details.

A second key element for the decision of priority energy segments and geographic markets was to identify and compare the capabilities and interests of the cluster partners and their companies. The objective was to visualize energy areas or segments with stronger presence and greater degree of complementarity between partner clusters.

To perform this analysis in a structured way, the main positions within the value chain of each energy segment were defined and each cluster identified the position of their companies in these value chains, according to their capabilities, products and services. The detail of the results achieved in this task is also shown in deliverable 1, entitled "Overview of international energy markets and energy clusters positioning and complementarity for internationalization".

The analysis concluded that Wind energy, T&D, Biomass and Energy efficiency could be identified as REINA priorities, given the higher presence on them of companies from the three clusters, and therefore with greater potential for establishing intercluster collaborations.

On the basis of these previous views, a project meeting was held specifically with the objective to discuss the alternatives and decide the target markets for the rest of the project. As a result, a set of pairs "energy segment-specific geographic market" were determined,

which required a detailed analysis in order to define internationalisation strategies in phase 2. Within the selection made in the meeting held in Bilbao, some targets were fully categorized as a priority, while others required a further analysis in phase 2 to decide whether or not to be included as a focus of the project.

WP 1 was therefore concluded with the preselection of the following target markets:

	<i>Target countries</i>	<i>Energy segments</i>
<i>First level of priority</i>	<ul style="list-style-type: none"> ▪ LatinAmerica (Brazil, Mexico, Chile, etc.) 	<ul style="list-style-type: none"> ▪ Wind energy ▪ Electricity T&D ▪ Low energy in buildings ▪ Biomass
<i>Second level of priority</i>	<ul style="list-style-type: none"> ▪ USA-Canada ▪ China -India ▪ Russia ▪ North African countries 	<ul style="list-style-type: none"> ▪ Electricity T&D ▪ Wind energy ▪ Low energy in buildings ▪ Solar thermal energy ▪ Biomass

WP2: Definition of tailored internationalization strategies.

The objectives of this second work package were to complete the selection of the set of target pairs energy segment-specific geographic market and to define specific cluster internationalisation strategies to address each target market considered.

An in-depth analysis of the preselected pairs energy segment-specific geographic market was carried out in order to obtain a better knowledge of them and provide the pillars for an adequate approach in the definition of internationalisation strategies. Additionally, this analysis also helped the final selection of target markets, in particular to determine the interest and opportunity for those candidate target markets with some doubts in the pre-selection made in phase 1. Those detailed analyses were gathered in deliverable 2, entitled "Target Markets Report".

Each report followed a similar structure and covered detailed information regarding current and forecast market volumes, energy policies and support plans, competitive landscapes with information about main players and their supply chains, other key agents (clusters, R&D centres), etc.

Once these reports were ready, it was time to involve the companies from the three partner clusters so as to strengthen the knowledge about their internationalisation capabilities, activities and interests, especially regarding priority target markets. The objective was double: first, to obtain direct inputs and opinions from the companies for the design of

internationalisation strategies; secondly, to anticipate to companies the type of support that the REINA project may provide to them. Field work was carried out in each of the participating regions to obtain these inputs and to foster the interaction between companies from different Clusters and from different segments of the value chains.

We faced highly motivated companies towards internationalization. Companies showed interest in being involved throughout the project processes and they expressed the importance of the cluster organizations to support joint internationalization activities. The REINA project approach was well appreciated because companies consider that the impact of these activities would be increased if they were developed in a coordinated way as part of a strategy of European clusters to support the internationalization of its members.

Based on the analysis developed in previous tasks, both in terms of the markets themselves and their attractiveness and interest for the partner cluster companies, final target markets were selected and the corresponding strategies to address each of them were designed, including the objectives, lines of action and activities to be developed for each target market during REINA project's phase 3.

Specific strategies were prepared, each of them under the coordination of a partner cluster, for the following target markets (see deliverable 3, entitled "Cluster Internationalisation Strategies Report"):

- Cluster Internationalisation Strategy for the wind sector in Brazil (coordinated by CEPV)
- Cluster Internationalisation Strategy for the T&D sector in México (coordinated by CEPV)
- Cluster Internationalisation Strategy for the biomass sector and Solar (CSP) sector in Chile (coordinated by OEC)
- Cluster Internationalisation Strategy for the North Africa (coordinated by Merinova)
- Cluster Internationalisation Strategy for North America (coordinated by OEC)

WP3: Strategies deployment.

The implementation of the internationalization strategies in each particular target market began in the second semester of the project (2012), and developed throughout 2013 with the different actions that had been planned and some others that were launched by decision of the partners as a consequence of the development of the different activities.

All of these 5 Cluster internationalization strategies included as a central or key action the organization of a joint outgoing mission to the specific target market identified in WP2. Chapter 3 of this Final Report is devoted to describing each of the specific missions (or match-making events) in deeper detail.

1. Brazil – Wind energy.

- a. Outgoing mission to Brazil: was aimed to get first-hand information from the different players of the wind energy sector. Different opinions were clearly identified through the 14 meetings held with different stakeholders during the 3 days agenda (May 27-29, 2013) scheduled with the support of the Basque Government delegation in Sao Paulo. Besides that, representatives of Cluster de Energía and Merinova attended the Brazil Wind Energy Conference in Sao Paulo, where they had the opportunity to give a speech about REINA project and the European Cluster Collaboration experience.

The meetings in Brazil were held with the following entities:

- Government representatives: Rio Grande do Sul Development Agency, Governo de Bahia, Ceara State ADECE, BNDES
- Windfarm developers: Iberdrola, Cleantech Investors.
- Wind turbine manufacturers (global players): Gamesa, General Electric, Alstom
- Associations of suppliers and component manufacturers: ABIMAQ, ABINEE, ABEEOLICA, ABIFA, Brazilian Foundry Association.

One of the remarkable lessons learnt from this mission is the importance of checking the vision and information from different stakeholders and from companies in different levels of the value chain. That allowed REINA partners get a full overview of the market situation and better define partnership opportunities.

The last action regarding the Brazilian market in the REINA Project has been to organize an international seminar in Bilbao (16th December 2013), where representatives of the participant Clusters and guest speakers from Brazil explained the present situation and the opportunities of the wind energy Brazilian market, from the point of view of European SMEs.

- b. Market Opportunity Seminar on “Wind Energy Opportunities in Latin America”. A learning seminar was organized in Vaasa, Finland, on 21st of February 2013. The seminar focused on the wind energy market opportunities in Brazil, market conditions, and relevant up-coming trade shows. 17 participants attended the seminar.

As a summary, some outcomes and European added value activities derived from REINA should be highlighted:

- SMEs from the 3 participant Clusters have had access (and still have through the written reports) to relevant and clear information about the situation and main opportunities in the Brazilian wind energy market, from different perspectives: governments, developers, customers, manufacturing partners.
- The presence of a global player in one of the participant Clusters (Gamesa from Cluster de Energía), that organized in Brazil a “Suppliers day” event, has provided SMEs from all the Clusters a direct view of the local market requirements and contact with the purchasing decision-makers in Brazil (European added value).

- In the Seminar in December it could be confirmed that 5 SMEs from the participant Clusters have started in 2013 the process to establish a subsidiary or create a joint-venture with a local company in Brazil. Some of them are negotiating conditions and incentives with partners and/or state governments. The great interest showed by companies has made the REINA Clusters consider convenient to organize an outgoing mission to Brazil for 2014.
- Gamesa has been awarded in December 2013 with a contract to supply 64 wind turbines (model G97 of 2 MW), for five windfarms owned by the developer Gestamp Wind in Rio Grande do Norte. The scope of the contract (wind turbines manufacturing and wind farm an substations construction and installation) will require components and services that could be supplied by SMEs from REINA Clusters, for an estimated value of around 50 M€.

2. Mexico – T&D (Electricitygrid)

The outgoing mission to México (25 to 27/09/2013) had as a main objective to support SMEs from REINA Clusters to obtain visibility and recognition in the target market (Mexican electricity Transport and Distribution sector, T&D). The mission consisted of two main kinds of actions:

- Presence with a joint-stand at the international event “The Green Expo Conference and Exhibition” in Mexico DF.
- Meetings with relevant stakeholders in Mexico: CRE (Comisión Reguladora de Energía), the Energy Regulatory Commission; CFE (Comisión federal de Electricidad), the Electricity Federal Commission; IIE (Instituto de Investigaciones Eléctricas), Institute for Electricity Research.

One of the lessons learnt organizing this mission that is worth to highlight, has to do with the importance of local contacts and relationships to have access to the right persons and decision-makers in some countries, like Mexico. The meetings scheduled with 2 of the most relevant stakeholders in Mexican energy sector (CRE and CFE) were only possible using the personal close relationship of the Basque Country Delegate in Mexico with the President of CRE and the Deputy Manager for Projects and Investments in CFE. It could be said that in this case the cultural and language knowledge of Mexico provided by the Spanish Cluster de Energia gave European added value to the mission.

The main outcomes and European added value results from the Mexican mission could be summarized as follows:

- SMEs from the participant Clusters have had access to first-hand relevant information about the coming Energy Reform Law that the Mexican Government has recently proposed and approved. This Reform is expected to foster investment in oil and electricity sectors and therefore generate interesting opportunities for company profiles similar to members of REINA Clusters.
- The fact that 15 SMEs members of Cluster de Energia and MERINOVA are already present in Mexico with local subsidiaries and, in some cases,

manufacturing and service facilities, has enabled other SMEs from both Clusters to have a direct view of the Mexican market, to check partnership proposals and to take quicker decisions regarding their presence and activities in Mexico (European added value).

- The representatives of REINA Clusters in the stand got more than 20 leads of medium-high commercial interest, that have been followed-up by companies or by the Cluster organizations themselves.
- During the presentations of REINA Clusters to the Mexican stakeholders (CRE, CFE, IIE), high-level executives from those organizations were invited to participate in an incoming mission to Europe in the first semester of 2014. The objective of this mission would be to visit some relevant energy projects and infrastructures and to take part as guest speakers in a Seminar (probably in the Basque Country) about the challenges and opportunities offered by the Mexican energy market.

3. Chile –Solar energy and Biomass

Identified as one of the key markets, Chile has proved to be one of the most interesting markets within the project. Due to the market screening results, the following actions were planned and deployed:

- a. Exploratory Thermo Solar Mission: This trip enabled the REINA consortium and its companies to collect information about the business opportunities, needs in the solar power value chain, administrative and other legal aspects. Besides, it was possible to obtain first-hand information for the companies to contrast with their capabilities and possibilities of internationalization in Chile.

The aforementioned mission to Chile is led by the interest expressed by various companies from the consortium regarding the potential development of the solar power plants (CSP) market in Chile.

This trip included a meeting agenda with key Solar Thermal Power sector players, and the attendance to the CSP Latam Conference which meant a great opportunity to see the plans and challenges that Chile is now facing and, more specifically, the northern mining region, facing a possible development of solar power generation, mainly based on CSP technologies, both parabolic trough and central tower.

- b. Chile Internationalisation Seminar: As a first step, a seminar in Linz was organised on 10 April 2013 which attracted 21 participants from 5 countries (including representatives from the two other REINA clusters). The main objective was to provide specific information on the biomass and solar heating markets in Chile. The programme included the presentation of the market analysis carried out in Phase 2 of the project, a presentation by an expert from the Centro de Energias Renovables in Chile and a German expert who has a long track record of biomass projects in Chile. Also three cluster companies that are already doing business in Latin America shared their experiences with the other companies present.

- c. Chile market exploration tour: The main purpose of the REINA exploration tour was to obtain first-hand information on biomass and solar markets, to develop an understanding for the requirements for exporting to Chile and to meet potential Chilean business partners. The trip took place from 30 June to 5 July 2013.

The Chilean market was considered very suitable for companies offering solutions for heating with biomass and solar technologies as the geographic and climatic conditions are very appropriate for both applications. Also due to high prices for fossil fuels, the availability of biomass and a relatively stable economic situation, Chile was selected as a key target market. The participating companies reflect the diversity of the cluster companies focusing in this field - from biomass boilers manufacturers to flue gas cleaning for biomass installations, solar drying technologies and electronics for PV installations.

The programme consisted of three main elements: an information seminar which included B2B meetings, meetings with government representatives, associations and businesses as well as technical visits to relevant sites to allow for an insight into the technical standards and requirements.

In summary of the internationalisation activities for Chile in the fields of biomass and solar it can be said that there are a number of drivers that could make Chile an interesting market for European biomass and solar technologies, however, there are also some challenges to be overcome until this market development can fully take place:

- Energy demand in the mining industry in northern Chile: Because of the type of process required mining has a high energy demand: 20,000 GWh in 2012, with a forecast of 40,000 GWh by 2020.
- High level of solar radiation: The northern Chile offers the highest levels of solar radiation intensity in the world: 2,900 kWh/m² year.
- The Chilean Government supports the introduction of renewable energy, but is not willing to establish subsidies as they do in other countries.
- The meetings with government officials, associations and companies were characterised by high level of professionalism and very open communication. There seemed to be a real interest in technologies provided by REINA cluster companies.
- Great impact for both the country and the European companies. Some consortium companies started developing renewable projects in Chile, found local partners or employed local resources.

4. North America – Biomass and T&D

The focus in North America was on strengthening existing contacts and supporting specific market development issues through information and networking. One key challenge that needs to be addressed in the US is to establish the market infrastructure and supply chains for automatic biomass heating (including the know-how needed by a range of market actors) as well as the respective government support programmes. Without addressing these barriers, the market for biomass heating will remain a very small niche market. Therefore, the REINA actions for the North American market focused on:

- Establishing and strengthening contacts to relevant cluster and network organisations in North America and strengthening them in their ability to address market barriers
- Providing know-how directly to the market actors through presentations at the conferences (Christiane Egger was invited to give 4 key note presentations at important North American biomass conferences) as well as by receiving incoming missions.

The main actions deployed in the market are:

- a. Key note presentations at important biomass conferences:
 - i. International Bioenergy Conference, Prince George, Canada (13-15 June 2012)
 - ii. PFI Annual Conference (30-31 July 2012)
 - iii. Heating the Midwest Conference (25-26 April 2013)
 - iv. Bright Business Conference (15-16 October 2013)
- b. Incoming missions to Europe:
 - i. Delegation from Georgia/USA, 15 October 2012
 - ii. US master student (focus biomass district heating), 2 July 2012
 - iii. Canadian Delegation, 15 May 2013
 - iv. International Training Seminar on Biomass Heating, 9-12 September 2013

5. North Africa markets.

The previous actions in North Africa, such as the market screening analysis and outgoing mission to Tunisia in November 2012, lead to the following joint action in phase 3 of the REINA project:

- a. Incoming mission from Tunisia on March 18-21.2013. Key cooperation partners from Tunisia were invited and attended the “Energy Week 2013” in Vaasa. The programme focused on B2B meetings and company visits and negotiations. At the end of the visit, it was agreed to arrange a joint “*Energy Days*” event in Tunisia in October 2013.

- Signing of cooperation agreements with strategic cooperation partners. In 2013, cooperation agreements were signed with 3 strategic Tunisian cooperation partners
 - o STEG- International services (March 2013)
 - o Sfax Business Development Centre (March 2013)
 - o STEG-Renewable energy (October 2013)

The cooperation agreements focus on:

- o Preparation and submission of international tenders for power generation and transmission projects.
- o Share experiences and competences in the areas of rural electrification, power generation, operation and maintenance, smart grids etc., through business to business meetings, seminar presentation and joint workshops.
- o Identification and application of project funding from international development institutions.
- o Initiation of business to business cooperation; subcontracting, production facility establishment etc.

- b. A joint market opportunity and B2B match-making event, “ENERGY DAYS – Creating Opportunities”, in Tunisia on October 29-31, 2013: During this event, the consortium companies had the opportunity to obtain North African energy sector market information from relevant key players, present their activities and intentions, as well as meet Tunisian and other North African companies. The trip was organized in the framework of an international matchmaking event, “ENERGY DAYS”.

The 3 days event was very successful; companies from the consortium took part in the event to meet their counterparts from Tunisia and Libya. 278 participants from the private and public sector participated in the event. A short video summary of the event is available on YouTube <http://www.youtube.com/watch?v=n7U5ezUgu90>

This event enabled the REINA consortium, and its companies, to collect information on the business opportunities within the energy sector, not only in Tunisia and North Africa, but also in Africa in general. The focus was on providing information related to the market needs of the energy sector, financing and implementation of renewable energy projects, as well as the on the needs of the industry.

Some of the involved key players of the event included:

- o **The African Development Bank:** presented their financial tools for support to support renewable energy projects.
- o **The European Bank for Reconstruction and Development:** presented their funding of research and development as well as their financial instruments for renewable energy projects.
- o **The Tunisian Trade Union of Industries, Commerce and Craft:** Presented their intention and strategies to develop the African Market and collaboration opportunities for European companies.
- o **STEG and STEG International Services:** Presented their renewable energy plans and the strategies for developing the electricity production and transmission in Africa.

- **University of Sfax:** Presented the importance of international research collaboration for the support of industrial performance.
- **Potential Projects:** The large TUNUR 2GW solar project they gave an overview of their technological needs.
- **The Embassy of Finland:** Provided political support by stressing the European Union relationship with Tunisia in general and the Finnish support for such actions.
- **The REINA Consortium companies:** The consortium companies presented their activities, products and services.

The presentations were followed by two days of company presentations and B2B meetings

Result of the REINA activities in North Africa

The results of the project activities in North Africa, as by May 5, 2014, are summarized below:

Company type	Activity	Status	Value, Million Euros	Obtained additional internationalisation funding, €
Mekrapid	Automatisation of steel factory	Ongoing negotiations	1,2 – 1,5	10.000 € (50.000 € -in application stage)
Vacon	Distribution agreement	Signed and ongoing	?	
Vacon	Process control equipment	Ongoing negotiations	1-2	
Finnwind	Supply of small scale wind turbines	Negotiations started	4-5	
VeljeksetAla-Talkkari	Adaption and test of equipment	Ongoing	0,5	(50.000 € - in application stage)
Merinova	Provision of training	Application submitted to ADB	0,1	(100.000 € in application stage)
Total			6,8- 9,1	10.000 € (200.000 in application stage)