

# ARE NEWSLETTER DECEMBER 2011



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## Editorial

*Simon Rolland*

*Secretary General*

### THE BEAUTY OF CONTINUOUS MOVEMENT

Leonardo da Vinci once said that water is the driver of nature. It is in a never-ending movement, always transforming, and being at the heart of life. There is no doubt we appreciate the significance it plays in our lives, but there is still so much more that can be gained by exploring and utilising hydro resources. Nearly a third of world's population has no or limited access to energy, and by taking the right approach towards the vast hydro resources, we are certainly able to contribute to improving this situation.

Hydropower is currently the most common form of renewable energy, about 16% of the global electricity generation. However, there are growing concerns about the negative side effects it might bring, such as the environmental damage or social implications for local communities (such as forced displacements or a loss of cultural heritage). At the same time, there is a huge difference in technologies used, and the consequences from a large hydropower dam are not comparable to the very low impact from small-scale hydro applications. Therefore, we believe it is important to focus more on these small hydro technologies and engage in a more thorough discussion about the benefits they bring to rural electrification. Having this in mind, we have dedicated this Issue to Small Hydropower.

Studies show that small hydropower has little or no environmental impact and it can offer solutions in rural areas that might be otherwise very hard to reach. These technologies also have the lowest

electricity generation price of all off-grid renewable energy applications. Currently Asia amounts for about 68% of the world's installed small hydropower capacity, but the potential in other regions is hugely untapped, even taking all the before-mentioned benefits into account – in South America this number is around 3%, whereas in Africa – only 0.5%. We believe that by promoting the achievements of the technology it can bring a lot more value to these regions and significantly shape the current electricity generation patterns.

To learn more about currently existing practices and best examples, we have prepared some very interesting articles for your attention.

Our “In Focus” section features The Lao Institute for Renewable Energy (LIRE). It is a non-profit organisation promoting a sustainable development of the renewable energy sector in Lao PDR. LIRE just celebrated its 5th anniversary, and we hear from Edward Allen, the Technical Programme Coordinator, about the Institute's work and the success of its pico hydropower projects in Lao PDR. We also talk with Dirk Hendricks, the Secretary General of the European Small Hydropower Association (ESHA), a member of ARE. Read more about the work of the Association and the upcoming plans and activities.

We are also extremely proud to welcome nine new members to the ARE network, coming from very diverse parts of the world. We are looking forward to a successful and long-lasting partnership!

As always, you can read the latest news from the Alliance and follow our future activities. Take a look at the upcoming renewable energy sector events, and we have covered a number of publications you might find interesting.

The year has almost reached its end, and we are looking forward to 2012, International Year of Sustainable Energy for All. We are ready to devote ourselves to it with more energy, passion and inspiring new ideas. The year will hopefully put energy poverty much higher on the international agenda. Also, ARE is currently working on organising the First International Off-grid Renewables Conference, and more information will be sent-out shortly.

Wishing you all a peaceful and relaxing holiday time, and let the New Year be full of positive surprises and success!

Thanks for reading and until next time,  
Simon Rolland



## In Focus

### **IMPROVED PICO HYDRO IN LAO PDR - POWER THAT BENEFITS THE ENVIRONMENT**

*In this edition of the Newsletter we hear from The Lao Institute for Renewable Energy (LIRE). LIRE is a social professional non-profit organisation dedicated to sustainable development of a self-sufficient renewable energy sector in Lao PDR, and it offers agronomical, technological and socio-economic research services and works to provide free public*



*resources on the sector. Celebrating the 5th anniversary of LIRE this fall, Edward Allen, the Technical Programme Coordinator, tells us about the Institute's work with pico hydro technologies and the benefits they bring the local communities and environment.*

#### **The Lao Context**

In the almost windless mountains of Lao PDR, remote villages have struggled for years without sufficient electrical power. These tribal villages, usually located in marginal uplands, provide Lao PDR with a rich cultural heritage, but also with huge challenges in service provisions, especially electricity.

However, in many cases there are strong streams running near the villages, which are often clogged with rather poor quality pico-turbines (less than 5 kW) that provide a small amount of unreliable power and are easily washed away if not taken care of before a major monsoonal storm arrives. These pico-turbines also impede river flow, need to be replaced frequently and are often wired in an unsafe way.

#### **LIRE's pilot project**

LIRE, together with its founding partner Sunlabob Renewable Energy, a member of the Alliance for Rural Electrification, saw the opportunity to improve the existing pico hydro technology and provide these affordable solutions to local villagers. In 2009 in Angsang Village, Huaphan province, a pilot site

was created where, by cutting a side channel from the stream, it was possible to replace 17 small pre-existing cheaply-purchased turbines (200-500W each) with just two improved ones (1 kW each) in a proper flow channel. Many villagers didn't have access to electricity prior to the project, and now all of them are able to use reliable and safe power. During the past year, two people died from electrocution in this particular village alone, therefore, to prevent such accidents, the new turbines were installed with circuit breakers, load-dumpers and a better quality wire.

This pilot site, where a community-based approach is used and safety manuals have been created, makes a steady roll-out of the above mentioned project possible. The applied pico hydro technologies have proved their strong economic benefits for the local communities and the country. Pico hydro is proving to be the most cost-effective safe way for electrifying rural off-grid areas in Lao PDR.

### **Key Success Factor**

The technology itself can only be a part of the solution. The key success factor learnt from setting up the new system was the creation of the Village Energy Committee. Through it, the local people are trained to manage the system themselves, and the Committee nominates two local representatives to receive further training to operate and maintain the system. The Committee also sets the tariff (in the case of Angsang Village, there are two types of tariffs – a low one and a high one, allowing villagers to choose their power needs and pay accordingly).

The tariff is needed to generate enough income for the system maintenance and the stipends to the village energy committee and the two people trained to operate the system. The underlying concept is that the power should be as cheap as possible, but the operational costs should be covered reliably. The Village Energy Committee is given clear guidance and support with respect to the range of viable tariffs, so it is a feasible and reasonable local decision for them. Also, the community understands the benefits provided by the approach, as the generated power is more reliable and available for most of the year.

The benefits from this approach to rural electrification and the environment are substantial - the systems only take two to three months to be fully operational, the river channels are improved, and usually all villagers participate in the installation process and the operation of the systems.

### **Limitations**

However, hurdles remain, the most obvious being the fact that when the national grid is extended to villages, the pico hydro technology will be seen as irrelevant. Policy makers in Lao PDR are often

unenthusiastic about this technology, especially due to the rapid expansion of the grid (heading towards more than 90% by 2020). It is important to remember that improved pico hydro is not a replacement option for national power grids, but it can be the right solution in particular places, which positively engages local communities in providing for their own needs.

Another issue to keep in mind is the necessity for a year-round water supply, without which even the best pico hydro systems won't work. Stakeholders have to understand that even with the finest design work there will still be a few weeks per year with reduced power production. And in case of severe weather conditions, such as a strong storm, it might be necessary to shut the side channel completely off from the flow, which means there is no power provision at all. The positive aspect is that compared to the previously used technologies, the improved pico hydro systems do not get badly damaged or even washed away.

It should be also kept in mind that sometimes the communities are simply too big to be served by the available water resources in the particular location.

### **Key advantages**

In most of the remote rural communities the power usage tends to peak in the early evening hours, when electricity is used for recreation purposes, doing homework, and being engaged in household activities, such as washing and cooking.

Around this time solar systems, if used for electrification purposes, reduce their power output. In case of sufficient battery capacity, solar can be used as a back-up for pico hydro to offset these evening peak loads. Solar systems are often seen as an alternative to pico hydro, but despite their popularity, the costs of pico hydro are much cheaper. If looking at cost competitiveness, a small gasoline generator connected to the system as a back-up source can be an even more practical option that can also be easily connected to a micro-grid.

Energy production in the case of pico hydro can also be a part of a solution for environmental protection, since by cleaning up the channel, the local environment is improved.

Perhaps the most important advantage though is the safety of the generated power – the usage of proper wiring and circuit breakers ensures that the community is not being put at risk.

### **Conclusion**

The improved pico hydro has demonstrated its significant success in Lao PDR. It has proven not only

to be Renewable Energy but also Relevant Energy, improving the already existing technologies by making them safer and better.

The technology, however, is not immune to decisions related to grid-extension and national power development plans. Thus, policy makers play an important role here, and pico hydro often tends to be overlooked as a suitable solution for the growing energy needs.



Two new turbines installed in Ansang



Side channel cut for turbines to be located in



## INTERVIEW FROM THE RURAL ELECTRIFICATION SECTOR

## **EUROPEAN SMALL HYDROPOWER ASSOCIATION (ESHA)**

*We talk with Dirk Hendricks, the Secretary General of the European Small Hydropower Association (ESHA).*

Can you please introduce us to the main activities and objectives of ESHA?

The European Small Hydropower Association (ESHA) represents the interests of the hydropower sector by campaigning for improved market conditions for the small hydropower sector, removal of any barriers to hydropower development and an increase in hydro-electricity production in Europe.



In this respect, ESHA's main activity is to provide policy advice to European key decision-makers and to participate in EU and national policy processes relevant for the small hydropower sector. Main topics for the coming year include the harmonisation of the Water Framework and the Renewable Energy Directives; storage and grid issues as well as future financial support for hydropower-related research and development.

Next to policy and media work, ESHA provides services and benefits for its members. They include the promotion and business activities for members, saving opportunities, and information on hydropower-related developments.

What are the major benefits of small hydropower in comparison to other renewable energy sources?

With more than 17,800 small hydropower schemes and a total of 40,517 GWh electricity produced from small hydropower in the EU-27, the sector plays an important part in meeting today's urgent need for clean energy.

Small hydro is one of the most reliable and cost-effective methods to generate electricity. In use since the 18th century, the technology has a long lifespan of up to 100 years and relatively low operation and maintenance costs.

SHP's chief advantage is that it provides a steady and secure source of electricity supply. Unlike other renewables, it can immediately respond to fluctuations in electricity demand meeting both base-load and peak-load demand. SHP is therefore essential in order to stabilize the power grid. Moreover, since it allows for energy storage applications, small hydro can also help accommodate higher percentages of other (intermittent) renewable energy by balancing the supply and demand and improving the power quality.

Other benefits may include water supply during dry summer months and flood control, which are growing in importance with regard to climate change effects.

ESHA represents the European small hydro sector. Are your members also involved in activities outside the region, especially in developing countries? And in what ways is ESHA involved in the global development of the sector; is there any cooperation with similar entities in other regions?

ESHA is engaged outside of Europe in several ways: its EU policy work include the promotion of small hydropower in all relevant EU policies including the EU's cooperation with non-EU countries and EU climate activities. Non-European ESHA members, mainly from Africa and Latin America, keep us informed about opportunities and challenges in their region and promote their activities in the European arena. A large percentage of ESHA's website visitors are from Asia and the Americas downloading especially ESHA's many guides and brochures on various aspects of small hydropower development. There are also some European ESHA members who actively develop small hydropower businesses in Africa and Asia.

For 2012, ESHA will continue its cooperation with similar entities, mainly the International Network on Small Hydropower (IN-SHP) which is in the process of developing a World Small Hydropower Development Report to which ESHA contributes and which it will promote at several occasions. Joint activities with ARE are also envisaged and are currently under development.

At the moment Asia amounts for nearly 70% of the world's total installed small hydropower capacity, with a significant share located in China alone. Are there any other regions with a particularly high potential for small hydro technologies?

Africa and Latin America have always been highlighted as those regions with the highest potential. I am also aware that local governments in Central Asia plan to develop their enormous small hydropower resources.

Are there any upcoming events and projects ESHA is currently working on that you'd like to tell the readers of our newsletter? For example, special activities planned for 2012, the UN Year of Sustainable Energy for All?

There are three of the many ESHA's 2012 activities to which I would like to draw your attention to. The first one is a training seminar on the development and management of EU co-sponsored projects



which will be held in mid-February in Brussels. A joint ARE-ESHA seminar (date to be determined) about EU and non-EU funding opportunities outside Europe will complement this seminar.

The second one is Hidroenergia 2012 – traditionally the congress and trade fair for small hydropower stakeholders and investors which ESHA organises bi-annually for more than 20 years. Traditionally, the development of small hydropower outside Europe is addressed in several congress sessions.

The third one is a postgraduate course "Sustainable Hydropower" which is offered and organised by the Life Long Learning Academy Technikum Wien. Its different modules are tailored to professionals in the hydro power business, to potential investors who want to learn about the background of their business, to students who want to specialise in hydropower exploitation and generally to people who are interested in one of the most colourful sectors of renewable energy.

Could you expand a bit on the future development trends you see in the small hydro sector? What are the major challenges to be faced and what might be the possible solutions?

The latest data update of our HYDI database (Hydro Data Initiative) which ESHA and its partners developed under the IEE project StreamMap suggests that the European small hydropower sector will continue growing as predicted. It also confirms that there is a much higher potential which – until now – unfortunately remains mostly untapped.

Generally, there are currently two major challenges: the first one is to ensure that small hydropower does not get overlooked by EU decision-makers within the promotion of the European renewable energy mix. The second one is to convince more environmentalists about the compatibility of small hydro and the environment. ESHA addresses these challenges in its activities on EU and national level.

Thank you very much for your time.



## News from the Alliance

### **NEW MEMBERS IN THE ALLIANCE FOR RURAL ELECTRIFICATION:**

**ARE is proud to welcome new members:**



#### **ANKUR SCIENTIFIC ENERGY TECHNOLOGIES PVT. LTD.**

Country: India

Website: [www.ankurscientific.com](http://www.ankurscientific.com)

Ankur Scientific Energy Technologies are specializing in renewable energy technologies for more than two decades in the area of Biomass Gasification & Biogas Systems. The company develops and manufactures high precision Biomass Gasification Systems which have been exported to countries all around the world. The systems are very suitable and feasible for rural electrification and decentralized, distributed power generation units.

Ankur Scientific Energy Technologies join ARE as the only off-grid renewable energy industry association worldwide, thus being able to use the provided platform and network.

#### **BLUE SKY ENERGY, INC**

Country: USA

Website: [www.blueskyenergyinc.com](http://www.blueskyenergyinc.com)

Blue Sky Energy, Inc. is a manufacturer of solar charge controllers. The products are developed for use in the off grid market for the purpose of charging batteries. The controllers can be used in solar lighting, rural electrification, telecom and other applications.

By joining the Alliance Blue Sky Energy, Inc. hopes to participate in promoting the off-grid renewables market and engage in networking activities.

#### **CHEMTROLS SOLAR PVT. LTD.**

Country: India

Website: [www.chemtrolssolar.com](http://www.chemtrolssolar.com)

Chemtrols Solar Pvt. Ltd., a part of the Chemtrols Group, offers a variety of both grid connected and off-grid solar applications. Solar solutions are provided to rural villages and also businesses in need of remote solutions, such as telecoms, banks and others.

Chemtrols believes rural electrification is one of those areas where a business purpose can be the catalyst for major social change, which is one of the reasons it has decided to join the Alliance. This would allow promoting the sector not only among the private sector participants, but also on the policy making level.

#### **FUNDACIÓN ACCIONA MICROENERGIA**

Country: Spain

Website: <http://www.accion.es/sostenibilidad/fundacion-accion-microenergia>

ACCIONA Microenergy Foundation was created in 2008 to facilitate sustainable access to basic services such as energy, water and infrastructure to isolated rural populations in developing countries. The Foundation aims to create social sustainable enterprises providing electrical services with a fee for service model for rural isolated communities.

By joining ARE, the Foundation hopes to engage in knowledge and experience sharing, networking and the promotion of rural off-grid electrification.

#### **IKRATOS AFRICA SA**

Country: Burkina Faso

Website: [www.ikratos-africa.com](http://www.ikratos-africa.com)

Ikratos Africa SA, founded by the German company iKratos Solar- und Energietechnik GmbH, provides consultancy to governments, authorities, companies and individuals in West Africa willing to invest in solar energy. The offered services include engineering, installation and maintenance of solar energy systems, and providing corresponding training and workshops for technicians and planning engineers. It also facilitates the technology and knowledge transfer between Germany and West Africa.

Ikratos Africa is glad to join the Alliance in order to become a part of a global independent organization.

#### **RENEWABLE ENERGY CORPORATION (REC)**

Country: Norway

Website: <http://www.recgroup.com/>

REC is among the world's largest producers of polysilicon and wafers for solar applications, and a rapidly growing manufacturer of solar cells and modules. REC is also engaged in project development activities in selected PV segments. Founded in Norway in 1996, it has now become a leading vertically integrated player in the solar energy industry.

By joining ARE, REC hopes to help influencing regulation in developing countries in order to enhance the growth of the solar market, as well as to get a better understanding of the products that would meet the needs of these new regions and segments.

### **SOLARLAND (WUXI) ELECTRIC POWER TECHNOLOGY LIMITED**

Country: China

Website: [www.solarland.com](http://www.solarland.com)

Solarland offers off-grid and on-grid solar power solutions, providing a full product line tailored to customers' particular requirements. The company also provides training on photovoltaic system design and installation, specific products and solar sales principles.

A particular focus of Solarland's activities is put on rural electrification issue in China, and it is providing solar lights and clean energy solutions to people in remote areas. He company joins ARE to become a part of a wider network involved in these activities.

### **WIND ENERGY SOLUTIONS B.V.**

Country: The Netherlands

Website: [www.windenergysolutions.nl](http://www.windenergysolutions.nl)

Wind Energy Solutions, established in 1983, manufactures a range of small and midsize wind turbines. Up to now, over 1,000 turbines have been installed and operate successfully in various locations worldwide for businesses, universities, islands and small communities both in coastal and mountainous areas.

### **ZEPHYR CORPORATION**

Country: Japan

Website: [www.zephyreco.co.jp/eng](http://www.zephyreco.co.jp/eng)

Zephyr Corporation, established in 1997, is a manufacturer of small wind turbines. The company offers also other renewable energy solutions, such as PV. The small wind turbines provide high

performance in harsh environments, and there are over 3,000 installations in more than 40 countries already.

Zephyr Corporation is focusing on bringing electricity to remote villages in developing countries, which is also one of the reasons for joining the Alliance, thus increasing cooperation possibilities and networking with other sector representatives.

## **WEBINAR ON CLIMATE FINANCE**

ARE, together with Climate Focus, a leading consultancy on climate finance, carbon credits and climate change policy, organised a webinar, exclusively for its members, on how climate finance mechanisms can create benefits for renewable energy sector companies in developing countries.

Participants were given a detailed insight in the functioning of carbon markets, the existing mechanisms and the future outlook. Our members had an excellent possibility to ask very concrete questions specific to their activities, thus providing a lot of valuable in-depth information.

The webinar was presented by Adriaan Korthuis, the Director of Climate Focus. Webinar materials are available only for ARE's members. If you would like to receive them, please contact us.

We are currently planning upcoming webinars for 2012. If there are any topics you would be particularly interested in, we will be happy to hear your comments and feedback!

## **PHOTOVOLTAIC FORUM MEXICO 2011**

Ernesto Macias, the President of ARE, participated in the Photovoltaic Forum taking place in Mexico City on 10-11 November. The event was organised by the Electrical Research Institute of Mexico in collaboration with the Mexican Energy Secretariat, Mexico's Federal Electricity Commission, and the United Nations Development Program.

The Forum aimed to bring together various actors involved in the PV sector of Mexico – businesses, financial sector, academia and Government representatives.

Among others, topics discussed included legislation and regulatory framework, need for a more effective PV technology promotion, as well as financing opportunities.

The Forum revealed that Mexico has one of the highest renewable energy potentials in the world, solar in particular, taking the high irradiation level and the low annual per capita electricity consumption into account. There is a growing interest in the country around PV technology, both grid-connected and off-grid. Renewable energy off-grid solutions are of a particular importance -

despite the high electrification rate (nearly 98%) there are still about 3 million people without access to it.

Mexico's rural electrification plan now includes a dedicated program for the implementation of off-grid systems in 1,160 villages in the country, and further steps will be taken to achieve the objective. The program also identifies more than 600,000 persons living in even smaller communities that will be included in this electrification plan.

To access the presentation materials (in Spanish), [click here](#).

## **2ND OFID IEF SYMPOSIUM ON ENERGY POVERTY**

Balthasar Klimbie, the Vice President of ARE, participated in the 2nd IEF (International Energy Forum) Symposium on Energy Poverty, organised in partnership with the OFID (OPEC Fund for International Development). The Symposium gathered participants from developed and developing countries, representatives from governments, NGOs and industry, multilateral and bilateral organisations, finance institutions, and aid agencies, at OFID Headquarters in Vienna on 15-16 November. Participants discussed ways and means to tackle energy poverty and achieve universal access to modern energy services by 2030.

There were three main sessions in which the following topics were discussed:

How to achieve universal access to modern energy by 2030?

Local, national and regional experiences to alleviate energy poverty; can they be adapted and transferred to other regions?

Multifaceted cooperation to finance energy access for the poor; what are the most sustainable mechanisms?

Based on these sessions, a concluding statement was developed with several core recommendations:

Political will and government commitment need to be strengthened Data and information on poverty should be improved

Ability of the poor to pay for energy should be addressed

Realistic, measurable and achievable targets have to be set

Efforts should be joined to mobilize required investments

Solutions need to be adapted to local environment

Local management capacity needs to be built

All energy sources and technical solutions should be considered

International cooperation should be enhanced

The participants showed a positive stance towards renewable solutions, especially hybrid technologies combining renewables with diesel.

More information and the presentations can be found here

## **CLUB ER - TECHNICAL WORKSHOP ON HYBRID SYSTEMS FOR RURAL ELECTRIFICATION**

Balthasar Klimbie, the Vice-President of ARE, attended a workshop organised by Club ER, the Club of National Agencies and Structures in Charge of Rural Electrification. The event took place in Nairobi, Kenya at the end of November. Delegates from Mozambique, Tanzania, Kenya, Rwanda and Uganda attended the event, and also private sector representatives took part, among them ARE's members Studer Innotec and IED.

Attendees presented their experiences in the renewable energy field, and it was promising to see the vast local experience from the different governmental actors. The participants also had a chance to visit a geothermal plant near Lake Naivasha, where, due to the location in the Rift valley, there is a lot of thermal activity that is transferred into grid electricity.

## **IRENA PRACTITIONERS' WORKSHOP IN INDIA**

More than 50 participants from 20 countries attended a workshop organized by IRENA, the International Renewable Energy Agency, in Bangalore, India at the end of November. Simon Rolland, Secretary General of ARE was present and participated in the discussions around how to best enable local renewable energy entrepreneurship as a solution to energy poverty.

Workshop gathered representatives from social enterprises, development agencies, local financial institutions and government policy makers. It provided a platform for an exchange of viewpoints on barriers hindering the deployment of renewable energy technologies in rural areas in developing countries, and also touched upon such subjects as innovative approaches, favorable policies and appropriate institutional frameworks for creating viable local renewable energy markets.

One of the major challenges faced in the sector is the competition faced from government subsidies for grid extension. Other barriers pointed out by entrepreneurs include the scarcity of appropriate market data, bureaucratic hurdles to obtaining support, and the shortage of skills and capacity of rural populations.

It was agreed among the participants that successful business models should be scaled up, while simultaneously considering the relevant resources and capacity needs along each stage of the value chain, the technology specific requirements for the development of markets as well as solutions provided by local governments and financial institutions.

More information and workshop materials can be found [here](#).



## RECENT PUBLICATIONS AND STUDIES

### IMPROVING THE CLEAN DEVELOPMENT MECHANISM - OPTIONS AND CHALLENGES POST-2012

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A collection of essays has been published in November bringing together more than twenty experts with diverse professional and geographic backgrounds for a discussion of the Clean Development Mechanism (CDM) and its prospective role beyond 2012.

Using conceptual analyses and a series of evidence-based case studies, the authors identify important challenges and opportunities on the path towards CDM reform. An up-to-date foreword has been written by Martin Hession, Chair of the CDM Executive Board.

The publication is of an interest to both practitioners and academics.

More information [here](#).

### MINI HYDRO POWER DICTIONARY

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The Renewable Energy Support Programme for ASEAN (ASEAN-RESP) has published the “Mini Hydro Power Dictionary” in three volumes: English-Khmer, English-Lao and English-Vietnamese. English-Indonesian and English only versions are planned too.

The dictionary comprises more than 370 mini hydropower related technical terms reaching from civil engineering to socio-economic aspects and financial engineering. The most important terms are presented in a clear structure and are enriched by numerous examples and pictures. Its details and comprehensiveness make the dictionary a valuable tool for mini hydropower practitioners.

For more information contact Arne Schweinfurth ([arne.schweinfurth\(at\)giz.de](mailto:arne.schweinfurth(at)giz.de)).

## **THE SMALL HYDROPOWER MARKET 2011-2021**

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The Small Hydropower Market 2011-2021 report analyses the market over the next ten years. In-depth analyses and forecasts for both the market size and small hydropower capacity are given for the seven regional markets from 2011-2021.

The report also examines the main drivers and restraints influencing the small hydropower market; analyzes individual national developments within each regional market, and provides a unique SWOT analysis for small hydropower technology.

More information [here](#).

## **TAKING CHARGE. CASE STUDIES OF DECENTRALISED RENEWABLE ENERGY PROJECTS IN INDIA IN 2010**

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Taking Charge is a selection of case studies of small-scale, decentralised renewable energy systems in India in 2010. Each case study includes the main story, capturing some of the remarkable human and social elements that have shaped these pioneering projects, and a quick-glance section, providing an easy reference for the more technical aspects.

Read the report [here](#).



## UPCOMING ARE EVENTS

## ARE GENERAL ASSEMBLY, 15-16 FEBRUARY 2012

In order to evaluate the activities and achievements of the Alliance in 2011 and plan its activities in 2012, the International Year of Sustainable Energy for All, ARE will organize its annual General Assembly at the beginning of 2012. We invite all members to be present.

The Assembly is also a perfect occasion to meet and network in an informal atmosphere, so we will once again organise our traditional Gala Dinner.

ARE members will receive a detailed programme and more information about the event and registration shortly. Please contact us if you have additional questions.

## UPCOMING HYDRO EVENTS

### INTERNATIONAL TRAINING COURSE ON SMALL HYDROPOWER DEVELOPMENT, ROORKEE, INDIA, 31 JANUARY-11 FEBRUARY 2012

The course has been designed for the participants having Engineering/Scientific background and who are involved in Small Hydropower Development. The participants may be from government departments, academic institutions, private developers, manufacturers and NGOs who are contributing or intend to contribute in Small Hydropower Development.

[More information](#)

### 6TH WORLD WATER FORUM, MARSEILLE, FRANCE, 12-17 MARCH 2012

The World Water Forum mobilises creativity, innovation, competence and know-how in favour of water. It gathers all stakeholders around today's local, regional and global issues that cannot be undertaken without all stakeholders into a common framework of goals and concrete targets to reach. The goal of the 6th World Water Forum is to tackle the challenges our world is facing and to bring water high on all political agendas.

[More information](#)

## WATER RESOURCES AND RENEWABLE ENERGY DEVELOPMENT IN ASIA, CHIANG MAI, THAILAND, 26-27 MARCH 2012

The Conference, organised in collaboration with the Electricity Generating Authority of Thailand, will host speakers from major water and energy utilities of the Asia and Pacific regions, as well as financiers, environmental specialists, and international experts on all aspects of dams and renewable energy. Participants will have a chance to visit projects in northern Thailand, and in the neighboring Lao PDR and Myanmar, where major hydro projects are under way.

[More information](#)

## HYDRO COSTA RICA 2012: SUSTAINABLE HYDROPOWER IN LATIN AMERICA IN A CONTEXT OF CLIMATE CHANGE, SAN JOSE, COSTA RICA, 16-18 APRIL 2012

The conference is organised by the Instituto Costarricense de Electricidad (ICE) and The International Centre for Hydropower (ICH). Among others, the topics include Sustainability and good practices in hydropower development, Integrating hydropower and other renewable, regional policies for water and energy resources, and funding, investment and incentives.

[More information](#)

## HIDROENERGIA 2012, WROCLAW, POLAND, 23-26 MAY 2012

Hidroenergia is the key event of the Small Hydropower (SHP) sector during which new political, financial and technical sector developments are debated and assessed. The 2012 congress will attract several hundred delegates from Europe and other parts of the world. Leading SHP players will exhibit their latest activities and products.

[More information](#)

## OTHER UPCOMING EVENTS

### WORLD FUTURE ENERGY SUMMIT, ABU-DHABI, 16-19 JANUARY 2012

World Future Energy Summit is the world's foremost annual meeting committed to advancing future energy, energy efficiency and clean technologies by engaging political, business, finance, academic and industry leaders to drive innovation, business and investment opportunities in response to the growing need for sustainable energy.

More information

ENERGY STORAGE - INTERNATIONAL SUMMIT FOR THE STORAGE OF RENEWABLE ENERGIES,  
DÜSSELDORF, GERMANY, 13-14 MARCH 2012

The summit gathers research, political, industry and utility companies to discuss innovative concepts and market-ready applications for the storage of energy. The target of the "Energy Storage Summit" is to show what future energy supply can look like, based on renewable energies and what role energy storage technologies play in this industry.

More information

4TH ANNUAL MAGHREB/MIDDLE EAST RENEWABLE ENERGY SUMMIT 2012, CASABLANCA,  
MOROCCO, 16-17 APRIL 2012

The event will cover such themes as the post-unrest implications for wind & solar energy development in the Maghreb/Middle East region, as well as emerging renewable energy regulatory framework and policy options for the further adoption of solar and wind energy.

More information

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