



# Could Romania be Eastern Europe's PV powerhouse?

It may come as a surprise to learn that during the 1970s and 80s, Romania was one of the world's leading providers of photovoltaic technology, having installed approximately 860,000 square metres of photovoltaic cells. Though the quality of the cells was considered relatively low, at the time Romania boasted the third largest surface area of PV in the world...

In recent years, Romania has begun to re-establish itself as a major user of photovoltaic systems. The Covaci Solar Park – which is currently under construction on a 60 hectare plot of land to the north of the city of Timișoara – will be one of the world's largest thin-film photovoltaic power plants. The park will upon completion, be a 35-megawatt system using state-of-the-art thin film technology, with 480,000 modules being employed – provided by US based PV manufacturer First Solar. The plant is expected to supply 35,000 MWh of electricity per year.

Smaller schemes are also underway elsewhere in the country; the Avram Iancu Solar Park, another thin-film photovoltaic

power system, is being built on a five hectare plot of land near the Avram Iancu commune in Romania. The power plant, due for completion in 2012 will be a three megawatt solar power system using state-of-the-art thin film technology, and is expected to supply 2,000 MWh of electricity per year.

The first park of this type was a 10 megawatt system built in the fields surrounding the village of Gura Lalomita. The five hectare site is expected to produce electricity for the local community for the next 30 years and was built, as many of these sites are, on land that is considered agriculturally unproductive, but close enough to a population centre to be efficient.

As well as the solar parks, there have been a number of smaller projects completed, installing PV arrays on existing buildings. The city of Alba Iulia installed a total of 1,700 PV cells on several public buildings that have a rated power of 257 kW, and in Bucharest, one of the most important solar projects was the installation of a 30 kW system on the roof of the Politehnica University of Bucharest that is capable of producing 60 MWh of electricity per year.

Romania's strong history and subsequent renewed drive for greater photovoltaic electricity production is hardly a surprise, given that the country has strong solar potential. The country has an average of 210 sunny days per year and an annual solar

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energy flux between 1,000 kWh/ m<sup>2</sup>/year and 1,300 kWh/ m<sup>2</sup>/year. The Black Sea coast, Dobrogea and Oltenia are considered the crucial areas for the implementation of PV solutions, as they are capable of generating an average of 1,600 kWh/ m<sup>2</sup>/ year.

Clearly the large scale PV developments are built to serve the greater population centres of Romania, but one of the major issues the country is focusing on is how to harness the technology to provide electrification for the many rural settlements that are as yet, still unconnected to the national grid.

It is estimated that there are 10,000 homes, schools and farms spread across over 500 settlements that would benefit from independent photovoltaic systems. There are many rural settlements where electrification is a problem yet to be solved, such as the isolated hamlets in the Apuseni Mountains, the Cema Valley, the Danube Delta or the Romanian Plain. A great many dwellings and indeed some whole communities do not currently have any form of electricity, a situation the government and their development partners are seeking to address. There is currently ongoing research into finding and developing the

ideal technical and economical solutions for these remote communities, though it has been stated that any system would require the capability to allow the user to adjust their energy consumption to compensate for weather variations. One potential solution proposed is to provide a mix of PV and wind turbine systems.

While Romania still sits behind other markets like the Czech Republic in its establishment of photovoltaic as a considerable source of energy, there have been increasing moves by the government to encourage the development and use of PV in the country. Bucking the trend of many western European countries, Feed-in tariffs have been decided to be elevated from a very low 0,029 Cents to 0,148 Cents per kWh soon, while the Romanian government has recently improved installation incentives by raising the number of Green Certificates granted per PV MW from 3 to finally 6, with each certificate selling off at a guaranteed price of EUR 52.

As a result of this increased government focus on encouraging the use and installation of photovoltaic systems, not only some of the local players shift their focus from wind energy (which has been a

more dominant renewable in the country) to sun, but also the first international companies have announced their plans to build module factories in Romania. The country is set to be a major manufacturer of the technology – particularly in the high end market. The Renovatio Group has recently announced the launch of the largest and the most technologically advanced photovoltaic panel manufacturing facility in Eastern Europe. The fully automated factory covers a total area of 3000 square metres, and has a total capacity of 50 MWp, producing 250,000 panels per year. The company chose to build its manufacturing plant in Romania, citing a highly skilled local work force and the strong logistic facilities in the area.

Despite the early uptake of PV in the 70s and 80s, in the EU market Romania is still a relative newcomer to the modern PV market and like many others, is still suffering the effects of the global financial crisis. However it has received glowing political support, though politics has a tendency to wait for inspiration from investors when it comes to their EU-related catching-up commitments in energy concepts. It is believed that any investment in the Romanian PV market will be a strategic one. ■

### A look to Bulgaria for inspiration

Bulgaria does not have the historical use of solar and PV systems that made Romania an early adopter, but geographical and political similarities between the two countries make Bulgaria an interesting comparison for the potential future of photovoltaic technology in South-East Europe.

Like Romania, the Bulgarian market has yet to develop since its membership to the EU, though there is a clear sign that this technology will be a growing area of investment.

A new "Renewable Energy Act", to be approved in the first half of 2011, could provide favourable conditions for PV investments and this may allow the market take-off. Currently, Bulgaria has a total installed capacity of approximately 10 MWp from photovoltaic power systems. At the same time there are applications for more than 4000 MWp. Still, only up to 5% of those projects are regarded as 'real' in terms of technical and financial ability of implementation.

As of April 2011, the FiT level may be fixed for the next 25 years, a major change from the current rule which foresees annual decreases for existing projects. Also, the procedure for funding rooftop applications between 30 kW and 1 MW could be simplified. As in the Czech Republic, the regulator intends to establish annual caps for the amount of new renewable energy capacity permitted to be connected to the grid, based on the estimated capacity of the electricity network to integrate it. Further to the cap, a grid connection fee could also be introduced.

However Nikola Gazdov, chairman of the BPVA believes the fixing of FiT levels will provide a major boost for increased

adoption of PV "The introduction of fixed rates of FiT should remove the biggest bottleneck in the development of the Bulgarian market – financial uncertainty".

With the incentive of a fixed Feed-in Tariff supplying a stable and estimable return for investors, the Bulgarian Photovoltaic Association believe that by 2020 the country could have an overall installed a capacity of up to 2500-4000 MWp from Solar PV power systems.

Just a few days after the first draft of the new FIT law was announced, the BPvA held a conference aimed at establishing greater cooperation between Bulgaria and Russia with an aim to develop partnering solutions that would grow Bulgaria's potential as a major player in the PV market. While the country cannot currently boast the private investment in manufacturing that Romania can with the Renovatio Solar plant, it would appear that efforts are being made through these relationships to strengthen their fledgling position in the market.

As political support in Romania has grown for PV as a credible and economically viable source of renewable energy, so the BPvA has repeatedly called for greater support for photovoltaic implementation from the Bulgarian government.

Like Romania, investment in technologies such as offshore wind farms currently outweighs that of PV, but with moves being made by government to provide greater support and increased stability for investors, the market in Bulgaria remains one with strong potential.