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## Why Distributed Power Generation is a Natural Step

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**By: Galen Torneby, Head of Project Delivery, Masdar Clean Energy**

Access to energy is a major issue for overall development around the world, many countries are assessing and reassessing their various energy infrastructure projects and initiatives so much so that propositions that might not have been considered before are being taken seriously now, particularly in distributed power generation.



Will these no longer be necessary?

Now that the world's population has officially reached seven billion and with around half of this now living in urban areas, new and creative strategies in energy generation are definitely needed for the increasing number of us, and distributed renewable power generation presents a viable and importantly, sustainable solution.

Let's get the basics out of the way, distributed generation in general terms refers to technology that is capable of producing anything between 3kW to 10,000 kW in or near the point of use. In addition to the potential cost savings, the other main driver to using the distributed generation model is of course its efficiency over centralized generation: distributed generation overcomes the issue of lost energy during transmission as it generates electricity close to where it will be used.

In the renewable energy space there are a number of different distributed generation technologies out there but solar appears to be the strongest contender. We'll focus on solar as its market has witnessed the most growth in the last couple of years. In fact in the distributed generation space we could see the global market for photovoltaics (PV) **triple to US\$154 billion in just over four years time** compared to \$66 billion in 2010 if recent reports are anything to go by.

The reason for this is quite simple: reliability. Conventional grid-based power distribution networks usually satisfy consumer demand, if they are connected to the grid to begin with. What about all those who are not or when there is a grid-wide power outage? – this is particularly relevant in developing countries with their large off-grid populations and intermittent power supply.

The built up urban environment offers just the ideal kind of infrastructure needed for rapid deployment of power generation and distribution in an increasingly urbanized world. In distributed generation, a little bit goes a long way because you simply reduce the amount of power that the grid has to supply and you may not even need to feed it back to the grid.

You could argue that in this regard many rural communities especially in the developing world are ahead of the game due to the stark energy realities on the ground forcing them to seek reliable and cleaner energy sources such as solar. So now we're in a strange place where affluent towns and cities with their established grid connections are playing catch-up to remote villages and settlements in terms of distributed generation.

Places like the UAE or California with their ample source of sunshine and highly urbanized environments have the potential to reign in the era of a truly sustainable renewable energy solution on a utility scale.

We're already seeing California's 'Million Solar Roofs' program taking shape to make solar power more competitive with fossil fuel-powered electricity generation. This intervention in fundamentally shaking up the energy landscape of a state like California is certainly a first and serves as a model for other regions around the world. **According to the influential Californian environmental advocacy group Environment California**, it's not a "question of if, but when solar power becomes cost-competitive with traditional electricity sources," I think we can all afford to extrapolate this idea a little further!

With around 150,000 new homes being built in the state each year (not to mention the surrounding associated infrastructure), there's a strong impetus to integrating solar energy technology at the construction stage of a new build as it can save up to 33% on construction costs as oppose to retrofitting a property. Each of these

homes is essentially an independent power station helping to considerably relieve pressure on the main grid and give the Golden State a more sustainable and brighter energy future.

Equally, I believe a rich country like the UAE which is seeing exponential growth in building construction work could tap into the potential for distributed generation from the get go, expediting its entry into more sustainable power generation.

For example just last month Abu Dhabi installed 2.3MWs of solar PV panels on various government building rooftops, it's a small yet significant step for a nation which has ambitious plans to transition to renewable energy. It's clear that by kickstarting government-level distributed renewable power generation which promises to yield a lot both environmentally and in return on investment terms, the Abu Dhabi leadership is doing just that: leading by example.

Another clear demonstration of this young Arab nation's leadership in seeking to address the vagaries of climate change is its hosting of arguably the world's biggest cash prize (\$4 million) award for innovation and advancement in renewable energy and sustainability, the Zayed Future Energy Prize. The award has been held in Abu Dhabi every year since 2009, attracting candidates such as Toyota for mainstreaming its hybrid car, the Prius, and the founder of Bangladeshi clean energy company Grameen Shakti, Dipal Barua who helped bring solar electricity systems to 2 million people in Bangladesh.

You don't make commitments like that as a major oil producer if you don't believe in a greener and cleaner future for the earth. Attracting and selecting influential candidates such as these for an award on this scale calls for diligent quality control. Being part of the Prize's international Review Committee to shortlist this year's candidates gave me a great insight into the current debates being had around clean energy and sustainability.

What's more the Prize this year, has attracted yet another committed and promising group of green innovators and policymakers from large multinational and diversified companies, NGOs, Small and Medium size Enterprises (SMEs) and individuals.

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[Image credit: Duke Energy, Flickr]

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