

Namibia: Pristine conditions for CSP deployment?

Posted by [Rikki Stancich](#) [1] on May 4, 2012

Could Namibia's high DNI and clear skies release it from its current state of energy dependency on its Southern neighbours? An international team of renewable energy experts is on a mission to find out.

Interview by Rikki Stancich

Namibia's Ministry of Mines and Energy (MME), recently called for a pre-feasibility study for a pilot concentrated solar power plant in Namibia. A team of experts [has responded](#) [2] and is currently seeking further in-put from the international concentrated solar power (CSP) community.

To learn more about the challenges of deploying CSP technology in Namibia, CSP Today contacts Kudakwashe (Kuda) Ndhlukula, Renewable Energy and Energy Efficiency Institute Coordinator at the Polytechnic of Namibia; Pedro Borges, Chief Operations Officer at GESTO Energy Consulting; and Agostinho Miguel Garcia, Physics Engineer and Chief of Development and Engineering at SunBD.

CSP Today: The Polytechnic of Namibia's Renewable Energy and Energy Efficiency Institute (REEEI) commissioned the pre-feasibility study for a pilot concentrated solar power plant in Namibia on behalf of Namibia's Ministry of Mines and Energy (MME). Has the REEEI carried out any preliminary DNI measurements? Is any data available that gives some indication of Namibia's CSP potential?

Kuda Ndhlukula: The DNI measurements are currently not available and the data selected and commissioned for the study is from Geomodel Solar with a special analysis made by Chris Gueymard on the aerosols optical depth in the specific Namibian context.

On the other hand we are analysing the accuracy of this data and suggest a ground based measurement network to be able to generate valid data. This will be defined by Concentrated Solar Power Services and Chris Gueymard.

CSP Today: Agostinho, you and a high profile team CSP industry experts have been invited to provide technical services on a pre-feasibility study for a CSP pilot plant in Namibia. What key areas will your study cover?

Agostinho Miguel Garcia: The study will cover a nation-wide solar resource assessment, where we couple the data from Geomodel Solar with an AOD analysis to improve the quality of the data.

It will also cover site selection and environmental analysis where a GIS study based on local data will enable us to identify suitable locations for CSP development, followed by site inspections and validation.

A high-level technology review will also be conducted, including evaluation of hybrid generation options. We will produce a business model incorporating CSP technologies and technologies for site specific conditions, as well as financial analysis for the development of CSP.

We will share best practice for the development of a network of ground measurement stations able to deliver solar resource statistical data.

A technology transfer program will also be included, where we design a program to develop the CSP industry in Namibia and provide opportunities for skills development and job creation associated with the CSP value chain.

CSP Today: Are you soliciting advice from other industry players at this point, and if so, in what areas?

Pedro Borges: We believe that the involvement of all the players is beneficial to all parties. We would welcome industry feedback on the proposed methodology and the robustness of the study; whether additional variables could be included; what the industry perceives as being the optimal size of a pilot plant for a given CSP technology; Namibia's local supply chain potential; the likely policy mechanisms options (FIT, PPA or turnkey); and whether other industry players would be interested in attending the workshop in Windhoek on the 20th of July 2012, either physically or via a web cast.

CSP Today: Currently only around 40% of Namibia's population is served by the electricity grid. To what extent will this be an impediment to large-scale CSP deployment?

Kuda Ndhlukula: Namibia imports up to 60% of the electricity demand and security of supply is an increasingly important issue. CSP's dispatchability and the fact that it is the only source that actually can lower the LCOE with storage is likely to secure it a role in Namibia's energy generation mix.

Increasing energy access in rural and off-grid areas is being addressed through other appropriate renewable energy technologies such as solar home systems.

CSP Today: Is Namibia likely to opt for modular off-grid or micro-grid CSP? Is this a financially viable option?

Agostinho Miguel Garcia: It is unlikely at this stage. CSP is a utility scale technology and achieves all its potential at that level and not with smaller applications. In addition, the bankability of such projects is likely to be more difficult than utility scale generation with a PPA from an offtaker.

For off-grid applications, other technologies are better positioned to take the lead because these areas are sparsely populated to make grid extension viable.

CSP Today: As a net energy importer, how economically viable is a hybrid (CSP/fossil fuel) thermal power option for Namibia?

Pedro Borges: We are analysing hybridization with gas and biomass as well as coal augmentation, since all of these are possibilities in the nearer future. It presents a more efficient use of gas, coal and biomass resources, and will result in a more reliable way to operate the power plants.

Namibia's energy imports are mostly from Southern African Power Pool member states and that raises many issues, from autonomy to dependency, which is further exacerbated by anticipated power shortfalls in the near future. Every option regarding the use of CSP is being analysed in scenarios so that every option is fully assessed.

CSP Today: Is biomass hybridisation an option - is biomass feedstock readily available, without compromising food security?

Kuda Ndhlukula: Biomass is readily available in some areas of the country and is actually clogging the agricultural use of lands. Biomass studies have been made and the resource has been analysed, so biomass is available as well as very good conditions for CSP development. As mentioned earlier that scenario is being fully assessed.

CSP Today: What are the known policy-related, geographical, and climatic advantages for CSP deployment in Namibia?

Agostinho Miguel Garcia: Private sector participation in power generation is encouraged through the IPP framework in place, but politically we are going to suggest some lessons learned from other countries to support the CSP development in Namibia in order to pave the way for further projects.

Geographically the country is flat, suitable soils are found throughout the country. Namibia has moderate temperatures, very clear skies (so no dust or haze issues), the DNI is abundant, wind is not strong in the interior, floods usually do not occur on high DNI areas. Overall we believe Namibia has a golden resource: DNI.

We are analysing all the data and making a thorough assessment, so these remain preliminary assessments.

To view the proposed feasibility study please [click here](#) [2].

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