

Towards a Clean Energy Sector in Barbados: Stakeholder Workshop

This workshop aimed to lay the foundations for a well-informed discussion on possible future energy scenarios that would provide up to 100% renewable power supply for Barbados. The overall aim was to have the main energy sector stakeholder begin a discussion process for building a consensus on the most desirable composition of a **low cost, low risk sustainable energy future for the island**. The stakeholders who attended included:

- The island's electricity utility (BL&P),
- The regulator (Fair Trade Commission),
- Government representatives (from Town & Country Development Planning Office and Government Electrical Engineering Department),
- Barbados Renewable Energy Association (BREA),
- The finance sector (The Central Bank of Barbados),
- Industry representatives (Williams Industries, REPower Barbados and Viking Development Group),
- Academia (University of Flensburg and UWI Cave Hill), and
- International development partners (EU Barbados delegation).

Starting from Professor Hohmeyer's original 2014 paper¹, and following dialogue amongst the workshop participants, 26 scenarios were entered into Professor Hohmeyer's model and the expected cost of energy for each scenario was determined. The figure below shows a selection of options from the explored scenarios. At \$0.22/kWh, Option 1 produces the lowest cost energy for the island, less than half the current cost of producing electricity. Even with a higher share of solar PV (Option 2), and a bad wind year (Option 6), attractive savings can be expected.

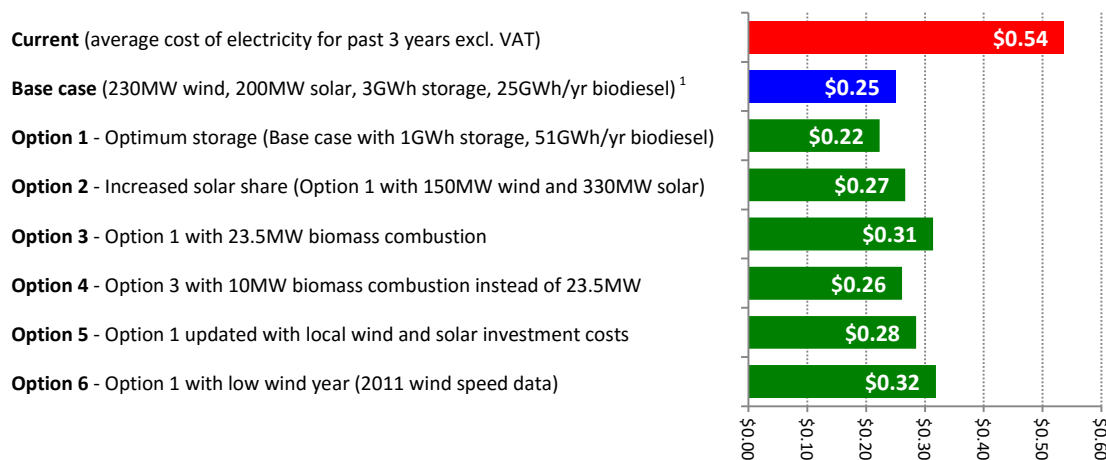


Figure 1. A selection of the scenarios explored during the workshop, showing the substantial savings from higher share of renewable energy when compared with current electricity prices.

¹ http://www.barbadosenergy.org/?page_id=1105



Figure 2. Professor Hohmeyer leading the workshop on future renewable energy scenarios for Barbados.

The discourse amongst the workshop participants was open and informative, with the main findings being that:

1. A shift to a predominantly renewable power supply can help to reduce the heavy economic burden of fuel imports for power production, as well as reduce the future risk of highly fluctuating power costs
2. Greatest economic benefit of a shift to renewable energy can be achieved if the investment is done by domestic investors with the resulting income thereby kept in Barbados
3. For the foreseeable future, utility-scale wind turbines will be the cheapest source of renewable energy (\$0.07 – \$0.15/kWh), even in years with very low average wind speeds
4. Barbados has a wind power potential of about 400 MW in seven larger areas with good wind speeds, which are predominantly located in the northern and eastern parishes of the island (the scenarios explored at the workshop only require 230MW)
5. Barbados will need to consider ‘citizen’ or ‘community’ ownership models for wind energy in order to realise its cheapest renewable energy source
6. The optimum hydro pump-storage size is 1GWh (requiring an upper and lower lakes, each with an area of 100,000m² and a depth of 10m – approximately 300m x 300m x 10m)



Figure 3. Photomontage of wind turbines on agricultural land in St Lucy.

Considering the scenario results derived at the workshop, the participants discussed the need for a reliable policy framework, which was agreed to be absolutely essential for a successful transition to a high level of renewable power. The main results of this part of the discussion can be summarised in the following points:

- The long term reliability of a policy framework is absolutely essential for all investments in renewable energy technologies
- A reliable discounted cash flow from the investment will secure very high bankability of the investments and low interest rates
- High bankability will allow a maximum share of domestic citizen ownership, cheap international loans and a maximum benefit for Barbados' economy
- A fair feed-in-tariff seems to be the most appropriate policy framework for the necessary investments, if established as a highly reliable system
- Feed-in-tariffs, once granted for a realised investment should therefore never be changed after the original tariff has been granted, and they should be differentiated according to a number of criteria to make for a level playing field (e.g. by renewable energy source, installation size, characteristics of a wind turbine site)
- If the government should decide to put additional taxes on the renewable energy investments, after fixed feed-in-tariffs have been granted, the tariff needs to be automatically adjusted to include these additional financial burdens on the investor
- The policy framework needs to include a strategic plan, with quantity targets for every year of the transition period to the final year set for reaching the 100% target
- In order to keep the existing power generating equipment, which is mostly written off, as long term back up, a capacity payment needs to be guaranteed for BL&P in order to maintain the equipment in very good repair
- If BL&P will receive approximately this sum for its future system operation, it could still make the same profits, even if other investors from Barbados made the power generation investments. This payment would already include a fair capacity payment for keeping all existing power generation equipment in good repair.
- Although it is highly unlikely that solid waste gasification or solid waste combustion will be competitive in a renewable energy system, a waste incineration facility may be necessary for waste management reasons. In this case, the technology used for waste-to-energy conversion should be as cheap and robust as possible to keep the costs for solving Barbados' waste problem to the minimum.

A detailed 18-page report of the workshop can be downloaded from [<insert link to full report at the central bank website>](#).