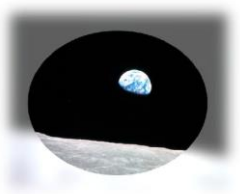


# 100% Renewable Barbados

## Next Steps Towards a Sustainable Energy Future

Prof. Dr. Olav Hohmeyer  
Europa-Universität Flensburg

Bridgetown, Barbados, November 11<sup>th</sup>, 2016



# Structure of the presentation

1. 100% RE Barbados
2. RE power costs under 100% RE in Barbados
3. Major elements of a 100% RE roadmap (example Seychelles)
4. What are the next steps (short of a roadmap) to be taken for 100% RE Barbados?



# 100% RE power is feasible



# 100% Renewable Power Supply for Barbados

## Load is met every hour of the year!

195 MW PV



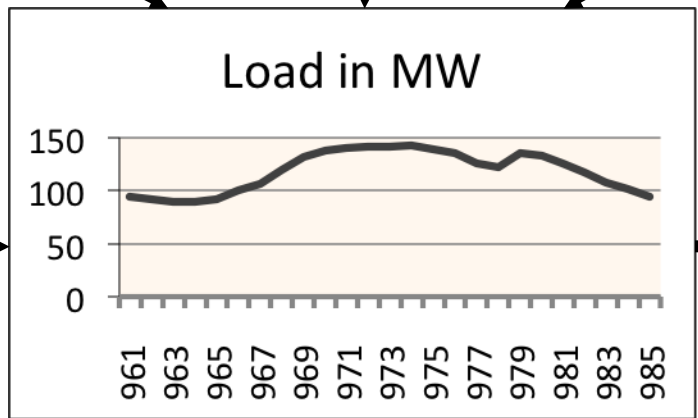
1 GWh PSH



200 MW wind

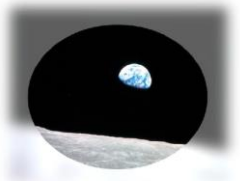


25 GWh biomass



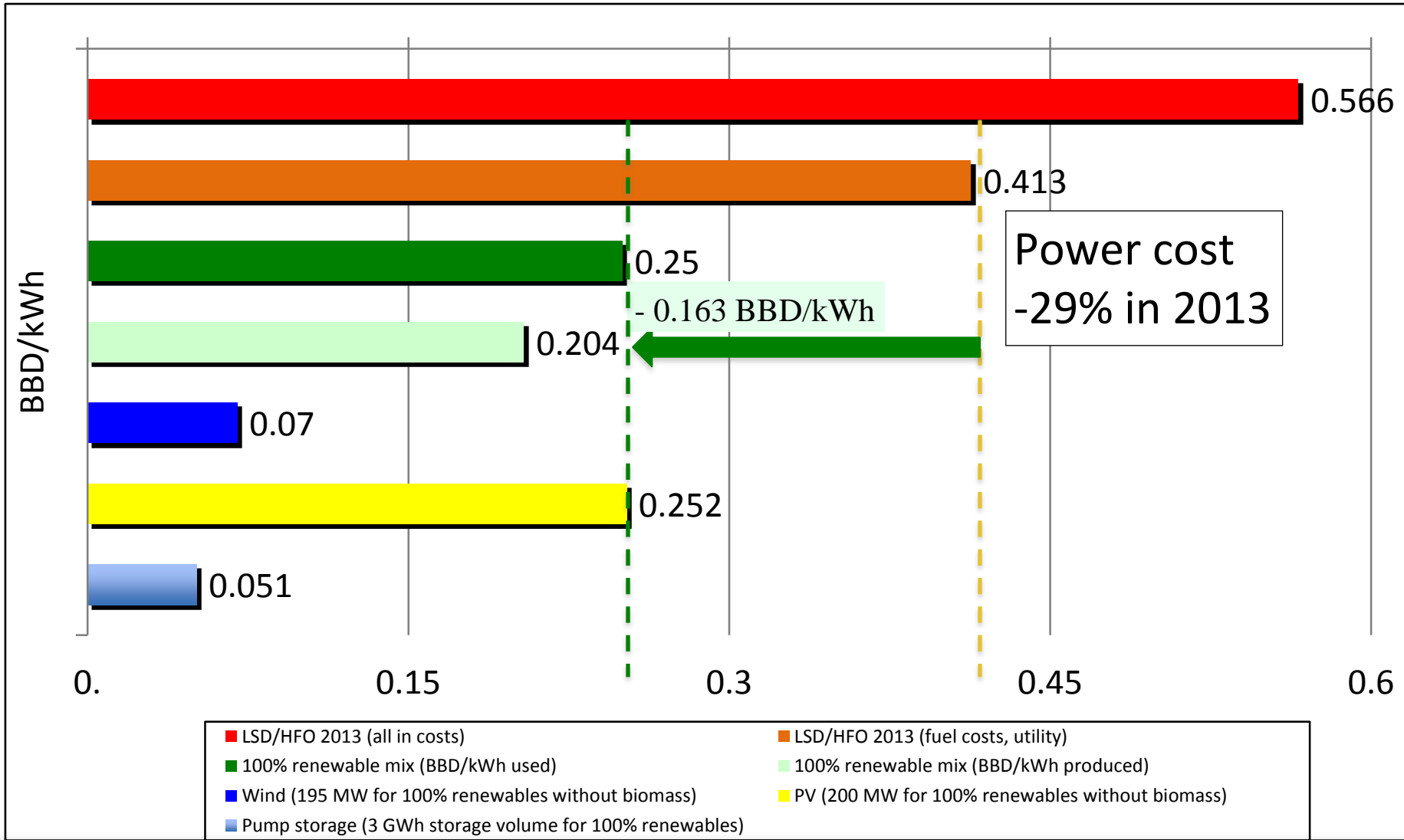


# 100% RE power is affordable



# Cost of 100% RE Power for Barbados 2013

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- LSD/HFO 2013 (all in costs)
- LSD/HFO 2013 (fuel costs, utility)
- 100% renewable mix (BBD/kWh used)
- 100% renewable mix (BBD/kWh produced)
- Wind (195 MW for 100% renewables without biomass)
- PV (200 MW for 100% renewables without biomass)
- Pump storage (3 GWh storage volume for 100% renewables)

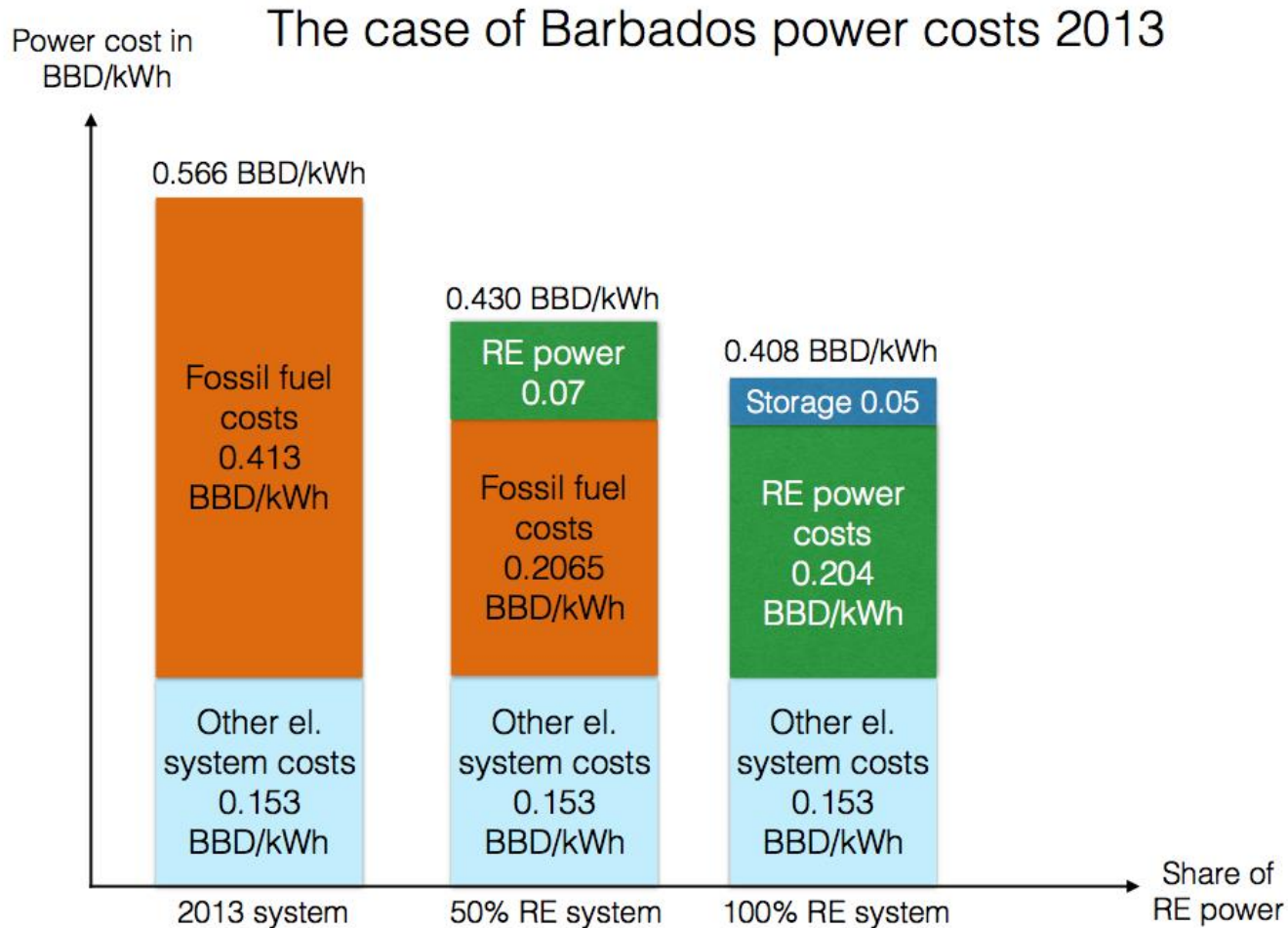


# Main impacts of 100% RE Power for Barbados 2013

- **A 100% renewable power supply for Barbados is no problem**
- **Electricity bill lowered by 175 Million BBD/a**
- **Diesel import savings of about 375 Million BBD/a**
- **Net import reduction per year - 300 Million BBD/a**
- **Net tax increase per year + 104 Million BBD/a**



# Electricity cost reductions 2013 by 50% or 100% renewable power production for Barbados

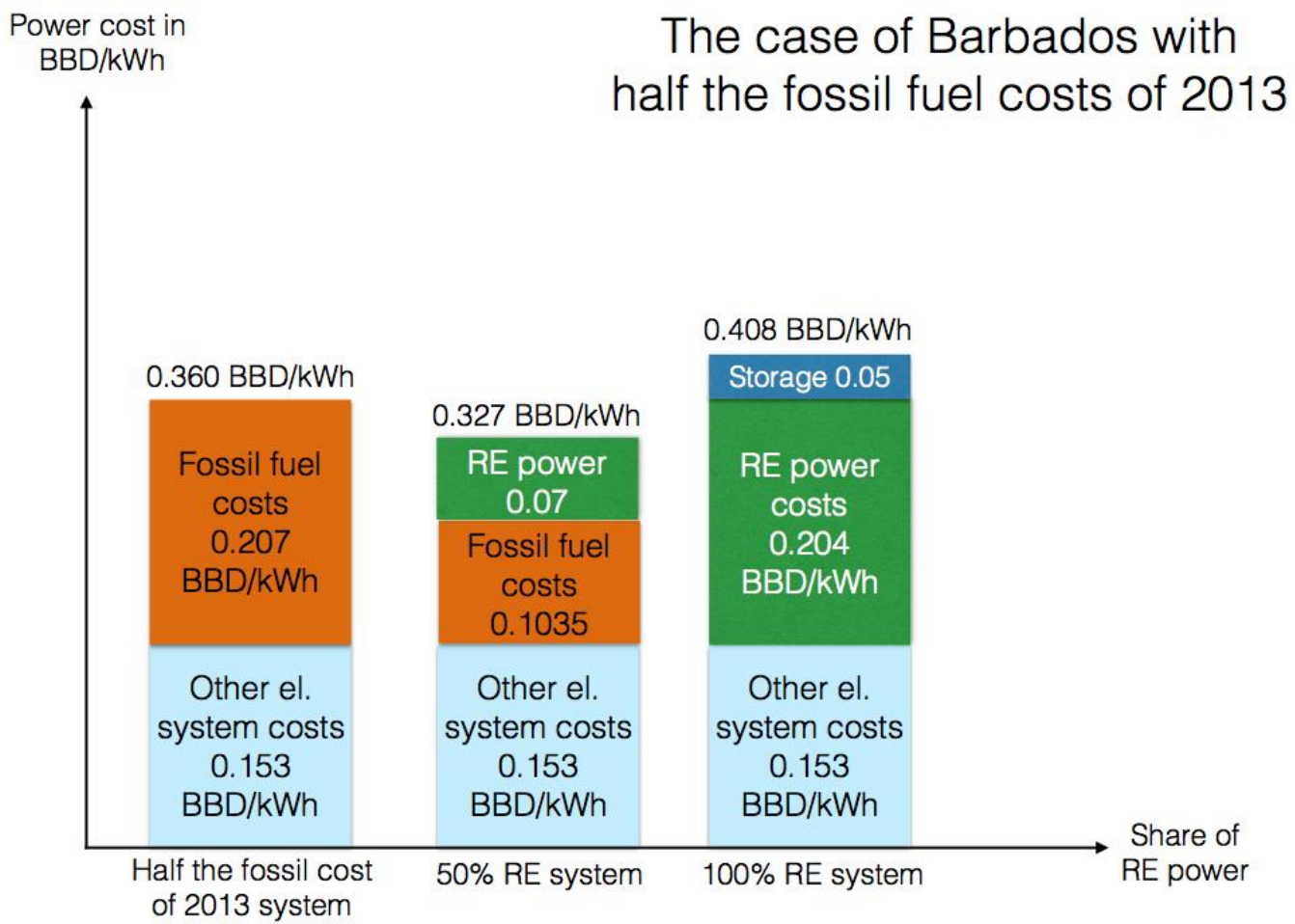






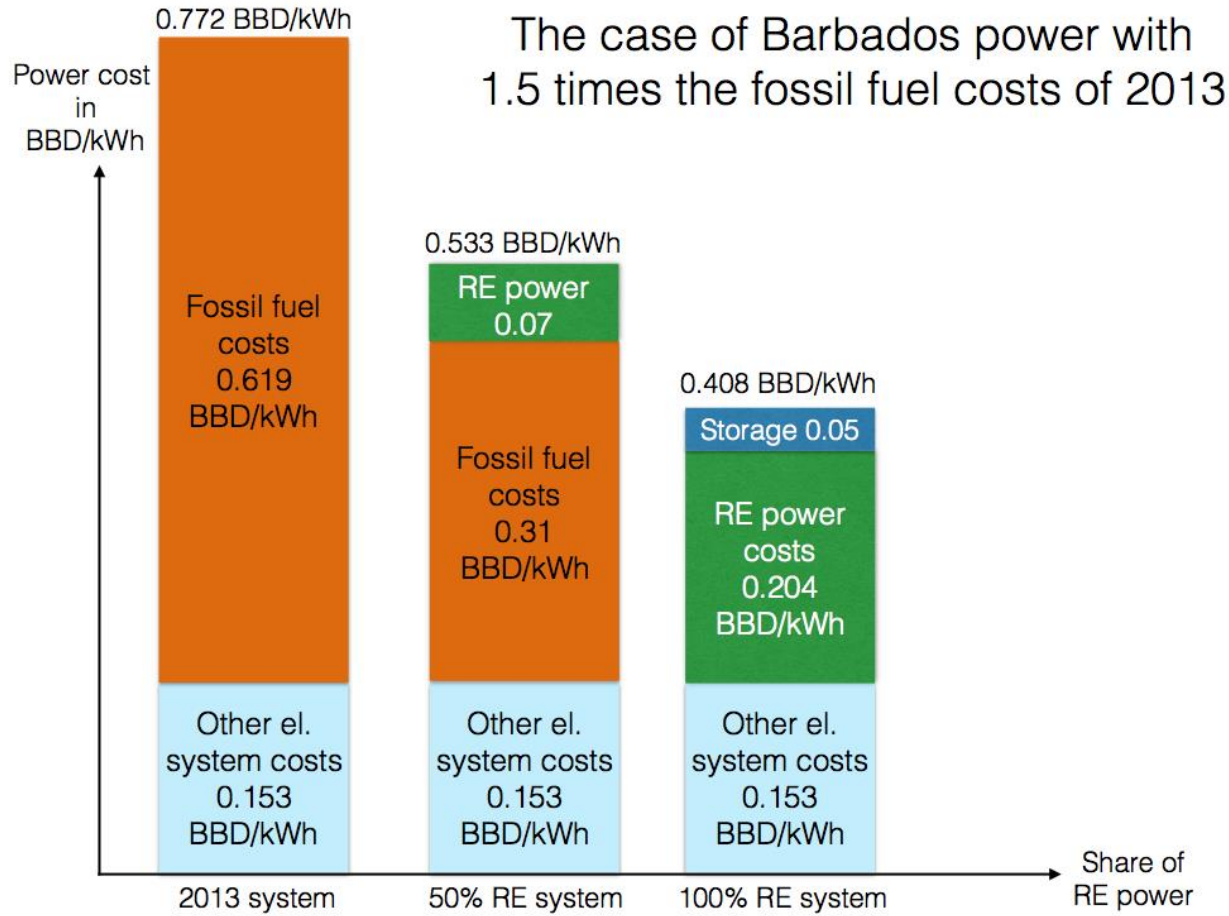
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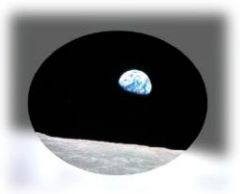
# Electricity cost changes for Barbados at *half* the fossil price of 2013





# Electricity cost changes for Barbados at 1.5 times the fossil price of 2013

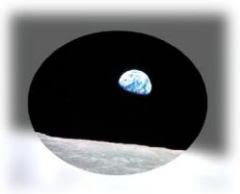




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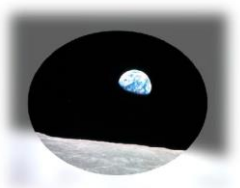
# Next steps to 100% RE power supply for Barbados





# Next steps from the road map for Seychelles

	Major Steps	Start	End
1	Refinement of road map	2017	2029
2	Data and information pool	2017	2030
3	Detailed resource assessment	2017	2021
4	Assessment of conventional power system	2017	2018
5	Cost assessment of different system components	2017	2022
6	Scenario development and system simulation	2017	2018
7	Electrical power system simulation	2017	2019
8	Development of policies and regulations	2017	2020
9	Institutional capacity building	2017	2020
10	Vocational and intellectual capacity building	2017	2030
11	Stakeholder participation	2017	2030



# Next steps from the road map for Seychelles

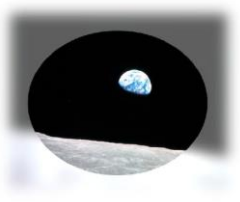
	Major Step	Start	End
12	RE expansion planning based on assessments	2017	2020
13	Detailed grid expansion planning (continuous)	2017	2030
14	Detailed planning of central pump storage	2017	2022
15	Construction of RE expansion	2017	2030
16	Construction of central pump storage Phase 1	2022	2024
17	Construction of central pump storage Phase 2-4	2025	2030
17	Development of e-mobility concept	2017	2019
18	Planning of e-mobility infrastructure	2020	2021
19	Building of e-mobility infrastructure	2021	2027
20	Market diffusion of e-vehicles	2022	2035
21	Expansion of RE capacity for e-mobility	2022	2015



## Next steps for Barbados

1. Reach agreement about the 100% RE target scenario
2. Political decision to go for 100% RE far before 2066
3. Organise broad citizens' participation
4. Draw up a (real) roadmap to a 100% RE future
5. Secure international climate funding (NAMA facility or GCF)
6. Set up the necessary policy framework
7. Set up necessary rules and regulations
8. Perform exakt on site measurements of wind speeds
9. Plan grid reinforcement and extensions
10. Plan storage

For further steps see Road Map for 100% RE Seychelles



## Conclusions

*Like the Seychelles Barbados can reach  
100% RE power by 2030 and  
100% green e-mobility by 2035!*

*We know how to do it!*

*All necessary technologies are available!*

*It is in your hands to decide!*