

TNO innovation for life

Techno-Economic Analysis for Informed Decision Making

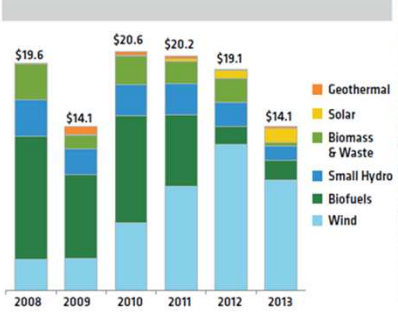
Jan Ebbing, TNO Caribbean
September 2015, InterExpo, Amsterdam



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Renewable Energy Component Grows

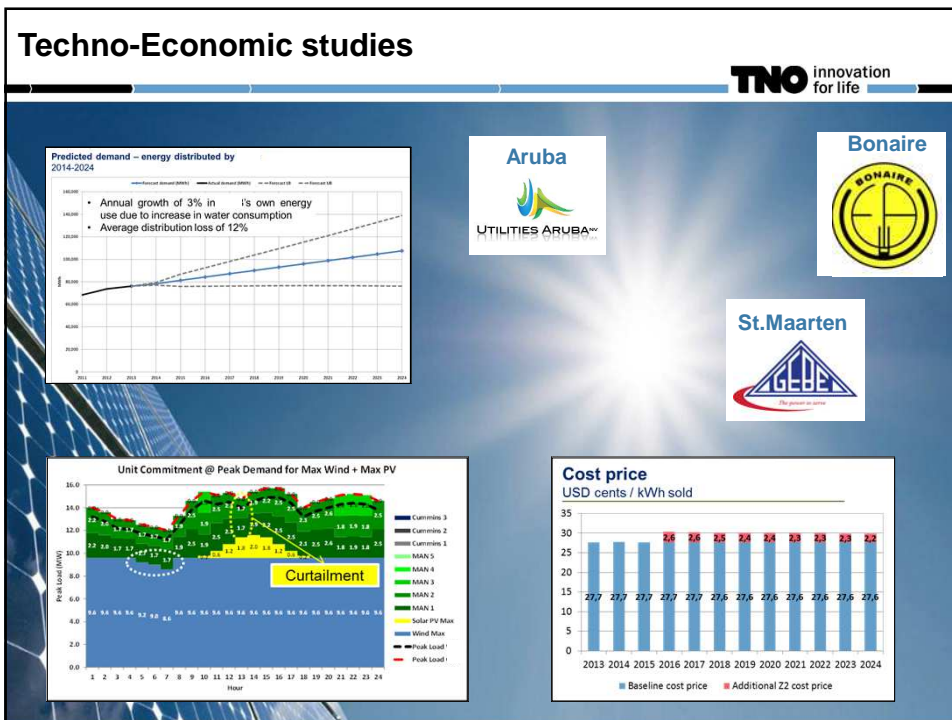
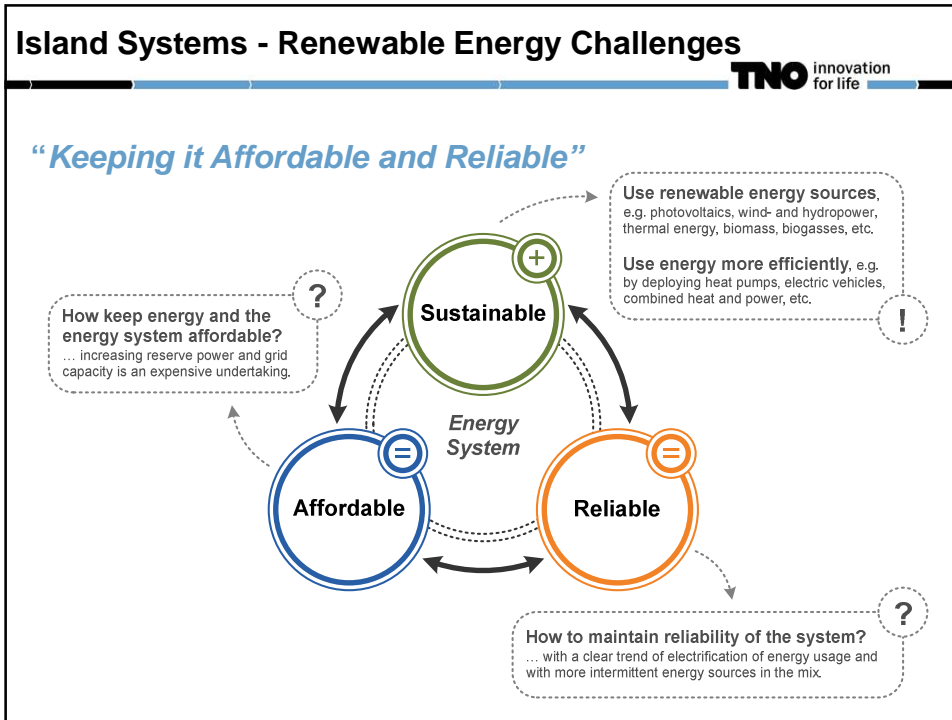
LATIN AMERICA AND CARIBBEAN INVESTMENT IN CLEAN ENERGY BY SECTOR, 2008-2013 (\$bn)



Year	Wind	Biofuels	Small Hydro	Biomass & Waste	Solar	Geothermal	Total (\$bn)
2008	3.5	10.0	2.5	2.5	0.0	0.0	19.6
2009	2.5	5.0	1.5	0.5	0.5	0.0	14.1
2010	4.0	10.0	2.5	0.5	0.0	0.0	20.6
2011	5.0	8.0	2.5	0.5	0.0	0.0	20.2
2012	6.0	5.0	2.5	0.5	0.0	0.0	19.1
2013	6.0	3.0	1.5	0.5	0.5	0.0	14.1

Source: Bloomberg New Energy Finance



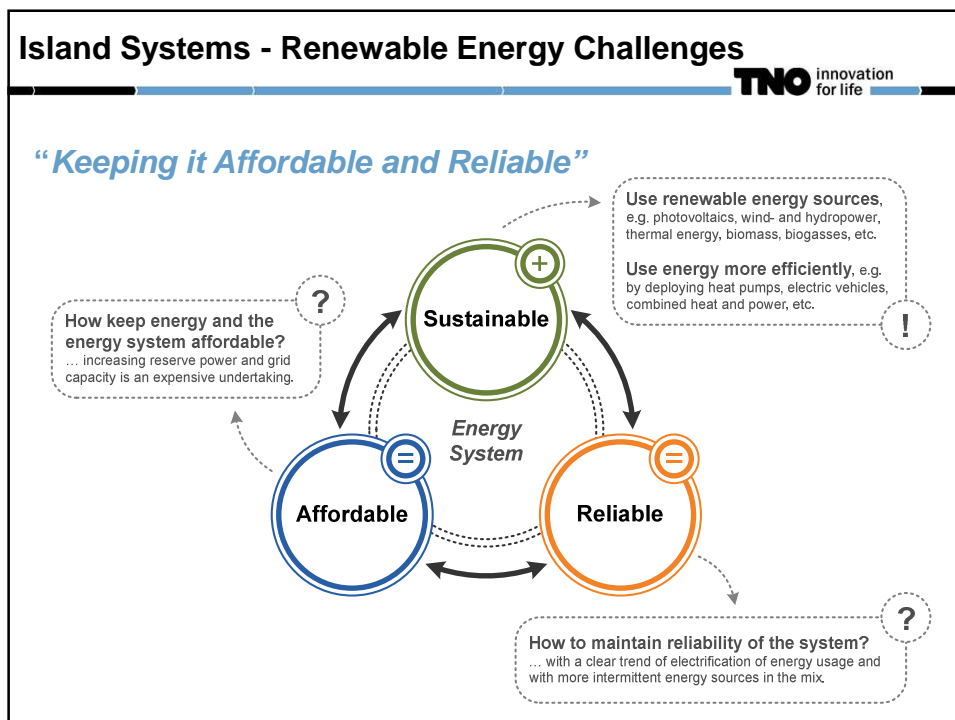
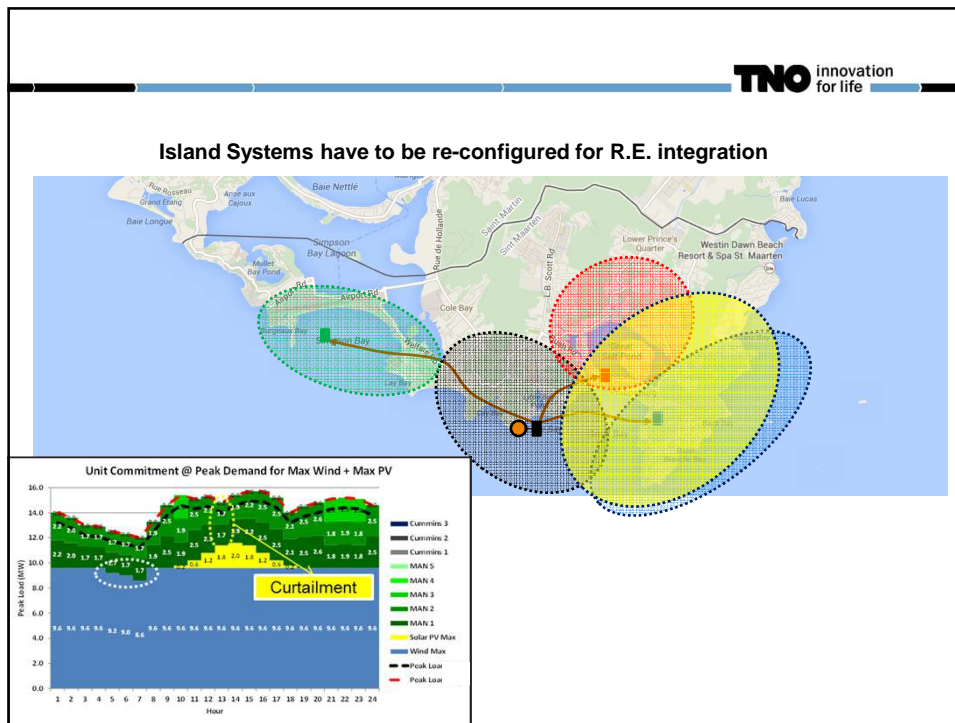




Islands have some Unique Challenges


This section highlights four unique challenges of islands through a grid of images and text:

- Isolated**
 - No Interconnection
- High temperature**
 - UV
- Additional transport cost**
 - Logistic Issues
- Constant strong winds**
 - "salt spray", corrosion

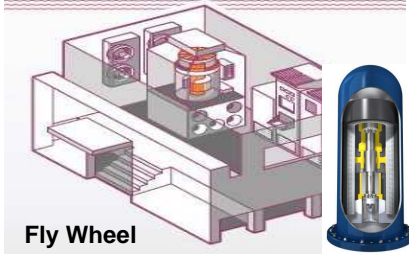


E.g.: Storage an important step in the total solution

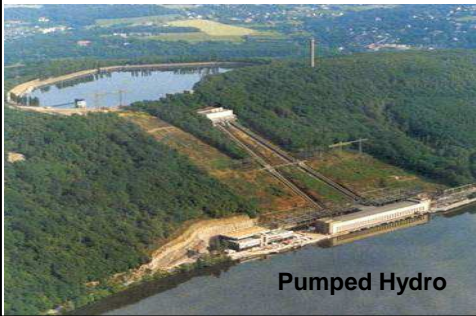
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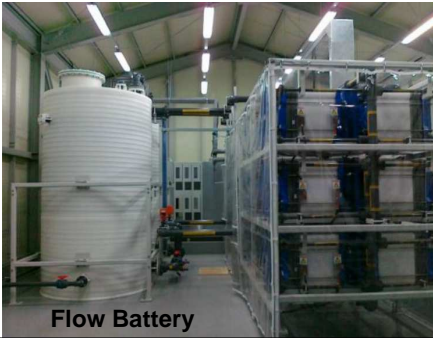
NAS Battery Storage



Fly Wheel




Pumped Hydro



Flow Battery


TNO Caribbean Team is Ready to Assist

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Thank you

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TNO
caribbean branch