Chapter 3
A Global Perspective on Experiences and Practices for Low Carbon Technologies and Renewable Energy in Islands

ABSTRACT
Attention on islands energy systems is gradually increasing worldwide, enhancing sustainable resources on islands through a number of strategies and plans which aim to support and raise local awareness towards climate change. These plans, either in the form of official legal frameworks or through initiatives, aim at promoting energy efficiency, renewable energy, and effective resource management. Outcomes of those initiatives includes actions, programs, and projects where a number of islands demonstrate as test-beds for innovation and best practices. While autonomous states have larger control on implementing sustainable policies, they usually experience low economic prosperity. Islands that are part of a wider nation need to ensure adequate representation in government decision making. Due to the complexity of islands characteristics, best practices were discussed and analyzed for very small and small islands (micro), medium islands nations (meso), and large islands nations (macro).

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INTRODUCTION

Island nations depending on their size, economic structure, population and location, encounter different barriers and drivers towards sustainable development. They require tailor-made policies and regulations to drive transition towards sustainable energy and resource management. These depends on various characteristics:

- **Climate** (cold, temperature, tropical) and **climatic parameters** (Meschede et al., 2016) (annual mean temperature, variance of monthly temperature, heating degree days, annual mean precipitation, coefficient of variation of monthly precipitation, annual mean global horizontal irradiance, variance of monthly global horizontal irradiance, annual mean wind speed) – islands located in colder climate have less tourists throughout the year

- **Socio economic parameters** (Meschede et al., 2016) – inhabitants, population, density, total gross domestic product, energy demand, economic activities

- **Physical characteristics** (Meschede et al., 2016; Sheldon, 2005) - area, the proximity to the mainland and other islands, the highest elevation of the island, the % of the island’s area which is available for the implementation of large ground size renewable energy systems

- **Geographical restrictions** (Schallenberg-Rodríguez & Notario-del Pino, 2014) — altitudes higher than 2000 m, hillsides with slopes exceeding 25%, protected areas, forests and woodlands with tree density greater than 25%, waters

- **The Governance of the island** (Sheldon, 2005) plays a key role in the support of sustainable development plans. This depends on if the island is an autonomous state or they are part of larger countries and follow the same national or regional policies could impact future plans based on the applied national strategies. While autonomous states have larger control on implementing sustainable policies, they usually experience low economic prosperity. Islands that are part of a wider nation need to ensure adequate representation in the government decision-making.

- **Population levels/Economic Growth** (Sheldon, 2005) is significant in designing sustainable policies. Islands have large population discrepancies thought the year. Usually, islands with low permanent population levels have weaker economies and cannot support large
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