

**Title: Energy Demand and Capacities in Economies: A case study of Cancun, Mexico**

Group Members:

Hector Flores – Tohoku University

Yang Wang – Osaka university (r

Aisling Tierney – Bristol University

Ray Edmunds – Leeds University

**Context:**

Mexico is one of the four MINT countries, along with Indonesia, Nigeria and Turkey. Mexico with its large economic growth and growing power demand faces enormous challenges in the development of its power system. With increasing imports from US the cost of power in Mexico is unsustainable for a developing country and domestic production of energy is required to satisfy growing demand. Cancun was chosen as a city for analysis, because of its global reach with high tourism and attractive site for international conferences, for example the UNFCCC in 2010. Cancun surrounding land is undeveloped and ideal for large scale energy generation technologies. This will benefit both the local economy in terms of jobs and energy resilience in addition to encouraging Mexico's independence from reliance on imports.

**Social and Environmental Considerations:**

Dramatic social and economic inequalities exist in Cancun. The lack of fundamental social systems (clean running water, electricity, housing, and transport) compared to the wasteful luxuries of internationally-funded hotel chains lead to a sense of social injustice for the local Mayan population. Migrant workers travel from across the Yucatan peninsula to supply the cheap unskilled workforce required to support the tourism industry, but this leads to community fragmentation and a destruction of traditional cultural systems.

The environment suffers due to the waste created by the tourist industry. Over 450 tons of waste travels to landfills every day and is frequently burned as part of the disposal process. Hotel sewage is either stored in septic tanks and illegally dumped in the local lagoon or water systems, or is directly poured untreated into the drainage systems. Sewage purification industry is limited in Cancun.

**Objectives:**

- 1) Highlight the requirements for a sustainable energy system for a mint country taking as a case study a city in Mexico.
- 2) Provide an example for wholes system approach to system design for all MINT countries.
- 3) Assess the technical, economic, environmental and social aspects of energy system design in a MINT country.

**Data Collection and Analysis:**

- GIS was used to understand the wind, wave, geothermal and solar resource availability
- The regional demand was approximated by using national and provincial energy statistics
- An energy mix was decided based on the resource availability, efficiency of technologies and system compatibility
- Levelised costs of new technologies were compared to existing cost of the current fuel mix
- The market framework and current reforms were assessed to ensure that Mexico and the Cancun region provided an attractive commercial opportunity for both national and international investors
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**Conclusions and Recommendations**

- Fantastic opportunity for development in Mexico
- Great resource and market potential
- Cancun an opportunity to provide example of decarbonised city in a MINT country.

This was pre-feasibility study. A further feasibility study is required, this will take into consideration the following

- Detailed cost and resource analysis
- Detailed analysis of the Mexican electricity and energy markets
- Forecasting of future load requirements in the Cancun region
- System adequacy analysis