

Utilisation of Brownfield for Renewable Energy in Building Sustainable Cities

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1 Introduction

The scarcity of land availability and the increasing demand for energy require us to be more innovative and creative in finding solutions.

In order to save the environment, greenfield should be reserved, and brownfield should be reused.

Usage of exhaustive energy should be reduced and stopped.



2 Motivation/ Objectives

- To study the possibility of optimising renewable energy generation by combining different types of energy at each site (e.g. solar, ground source and wind).
- To assess the profitability of generating renewable energy on brownfield sites based on the economic and environmental conditions.
- To build a transferable framework in utilising brownfields not suitable for built development as renewable energy generation/ harvesting sites.
- To compare and illustrate what can be learnt from other country's renewable energy plan and deployment specifically in terms of solar PV systems.

3 Sustainability Elements

- Sustainable energy - promotes renewable energy and energy that promote efficiency.
- Sustainable development - development that meets the needs of the present without compromising the ability of future generation (Brundtland Report, 1987).
- Sustainable environment - part of the Sustainability Pillar: parallel with society and economy (Adams, 2006).
- Sustainable city - covers a wide area including power management, water management, waste management, population, quality of life and air quality (Zhao, 2011; Tao & Hung, 2003).

4 Impact of Research

- Promoting the usage of brownfield unsuitable for housing development for renewable energy generation.
- Increasing the amount of energy generated in a sustainable way.
- Creating a transferable framework and policy tool in utilising brownfields unsuitable for housing as energy harvesting sites.

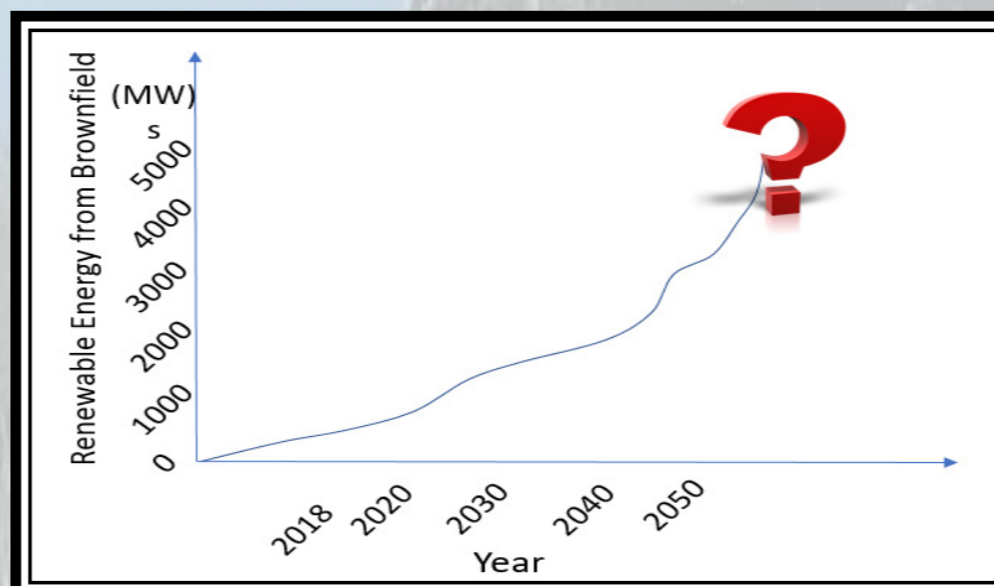


Fig. 1: Projection of generated energy over the years.

5 Strategy

Quantitative & Qualitative

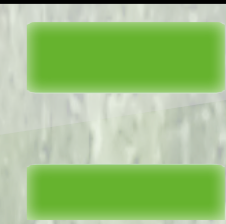
Mapping will be done using GIS to locate available brownfields.

Sites will be chosen based on analysis of location, slope, direction they face, etc.

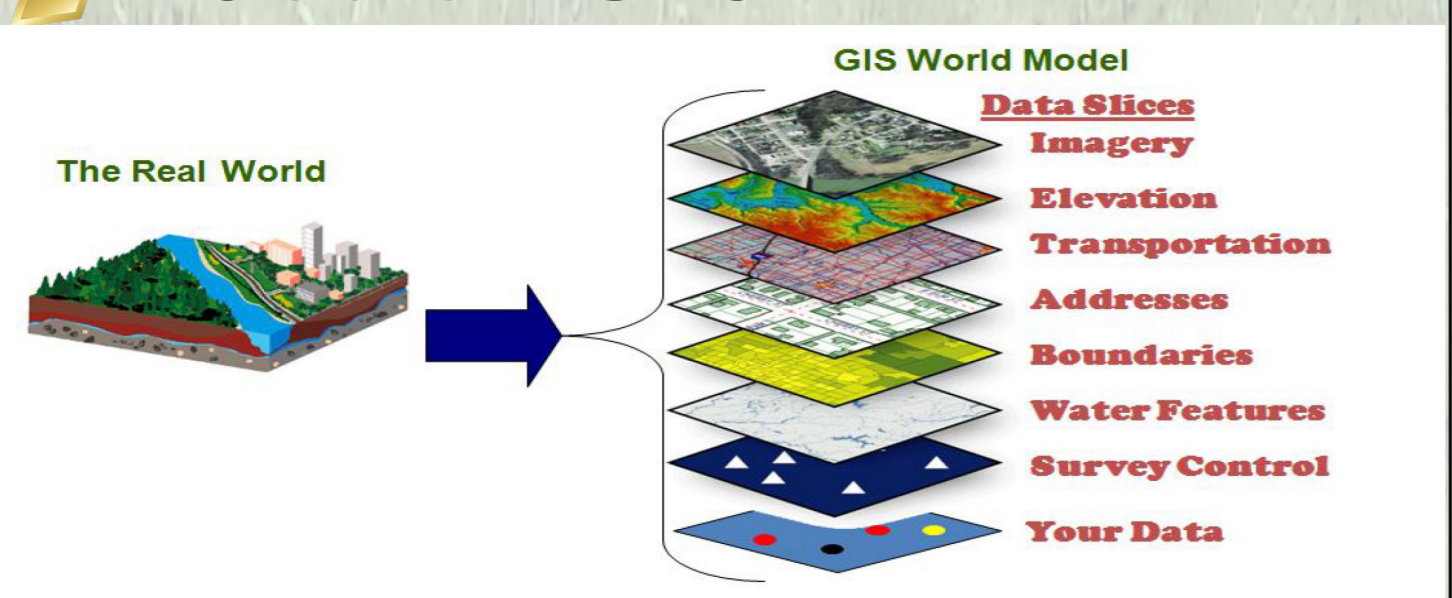
Feasibility of installing solar PV and wind turbine and energy generated will be calculated on chosen sites after mapping using GIS.

Induction method will be used to recommend policy and framework for project execution.

6 Implementation



7 Use of GIS



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