

## Chapter 4

# Biofuel Policies in India: An Assessment of Policy Barriers

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### ABSTRACT

*Energy is one of the most precious and demanded commodities among various industries and consumers to sustain the current lifestyle. Energy is a crucial element, which unswervingly influences the country's economic development. Numerous methods are adopted to reduce global warming, embracing clean energy from wind, solar, and biomass sources. This chapter speaks about the current situation of energy demand, the innovations in biofuel sources, and the obstacles regarding the commercialization and production of microalgal biofuel.*

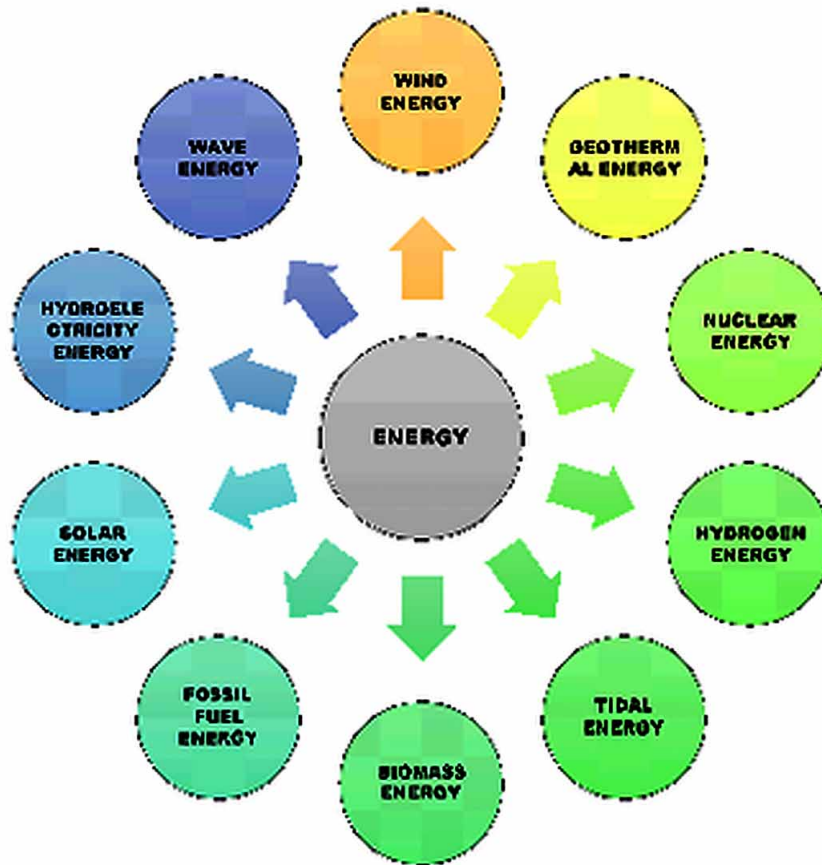
### 1. INTRODUCTION

#### 1.1. Green Energy Projection and Foundation of Energy Demand

The term 'energy' is supposed to be a derivative of the Greek word '*Energeia*' which means activity, and as we advanced, the explanation of energy transformed according to its field. When coming to the biological system, cells store energy in biomolecules such as lipids, complex carbohydrates, and proteins. The first law of thermodynamics can conclude that energy can neither be created nor destroyed; it can only be transformed from one form to another (Figure 1).

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*Figure 1. Various types of Energy*



Worldwide to sustain the current lifestyle, energy is one of the most precious and demanded commodities among various industries and consumers. Energy is a crucial element, which unswervingly influences the country's economic development (Cleveland et al., 2000). It can be comprehended that the advanced energy accessibility the improved chances of nations growth. There is a solid and direct correlation between energy to per capita GNP, countries with the higher gross national product have higher energy consumption per individual (Stern, 2011). The exponential boom of energy use was originated through fossil hydrocarbon burning, with the additional support of coal in the 19<sup>th</sup> century, followed by Crude oil use in the 20<sup>th</sup> century, and currently, prolonged with the help of natural gas (Hall, 2016; IEA, 2016; Sayre, 2010). Currently, fossil fuels' central portion of energy demands is fulfilled. Worldwide, there is an increase in fuel price due to decrease in fossil fuel reserves (Monari et al., 2016), in addition with increased greenhouse gas emissions leading to global warming are two major concerning coercions for the transport area (Reyimu and Özçimen, 2017; Hashim et al., 2017; Lecksiwilai et al., 2017). Combustion of fossil fuel is required for power generation despite having several negative consequences such as pollution (Liu et al., 2017). Several pollutants such as SO<sub>2</sub>, NO<sub>x</sub>, CO, CO<sub>2</sub>, ground-level ozone, particulate matter, volatile organic compounds (VOC) are emitted.

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