

Chapter
3

REDUCTION OF GREENHOUSE GAS EMISSION THROUGH BIOGAS PRODUCTION FROM OLIVE RESIDUE IN TURKEY

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Introduction

Today, biomass becomes the one of the most widely used renewable energy sources in the world. Biomass contributes energy security in rural areas and provides reduction of net greenhouse gas emissions to the atmosphere⁽¹⁾. According to World Energy Council (2016) bioenergy is the largest renewable energy source with 14% out of 18% renewables in the world energy mix that supplies 10% of global energy⁽²⁾. Biomass energy is regarded as a fossil fuel energy substitute to avoid atmospheric pollution and to reduce the dependency of nations on energy imports⁽³⁾.

Biomass can be originated from agricultural residues, forestry products, livestock manures and wastes containing organic materials that can be converted into energy and other products through several conversion processes such as combustion, gasification, pyrolysis, anaerobic digestion, etc.⁽⁴⁾. Anaerobic digestion, which is defined as the process of biochemical degradation of organic material in bio-waste, has become as one of the most promising routes for utilization of waste⁽⁵⁻⁸⁾. Anaerobic digestion process is composed of four main steps of hydrolysis, acidogenesis, acetogenesis and methanogenesis⁽⁹⁾. The first step of anaerobic digestion involves hydrolysis of complex organic matter into much simple compo-

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tion potential. Aegean region has shown the highest energy generation potential from olive residues in Turkey. Biogas can be an effective solution especially in rural areas in Turkey to support green energy sector, the agricultural development and public prosperity.

Keywords: Biomass, renewable energy, carbon dioxide emissions, sustainable development, waste management, Turkey.

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