

**REVIEW ON DIFFERENT METHODS OF BIOFUEL  
PRODUCTION FROM BIOMASS AND PLASTIC**

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## **ABSTRACT**

### **REVIEW ON DIFFERENT METHODS OF BIOFUEL PRODUCTION FROM BIOMASS AND PLASTIC**

The rising usage of fossil fuels, which are non-renewable and unsustainable, has contributed to environmental contamination. Therefore, a different approach has been developed to replace the heavy reliance on fossil fuels with sustainable and renewable resources. The use of renewable energy can help to cut CO<sub>2</sub> emission. This is because biomass is a renewable energy source, it is a different technique to manufacture biofuel. The plant-based material known as biomass is used as fuel to generate heat or power. However, due to the massive amount of garbage generated by many everyday living sources, plastics are also frequently used to make fuel. In addition to allowing plastic to breakdown over time, which is beneficial for oil production, this method aids in recycling this material to prevent environmental damage. Therefore, this leads to the study of mixing biomass and plastic to see the efficiency of the involved method. This review is focusing on producing liquid fuel which are pyrolysis and hydrothermal liquefaction. The mixture of biomass and plastic give many benefits in term of the cost, the increase of product yield, enhancement in heating value, viscosity and acidity. These present study attempts to review the potential biomass and plastic as biofuel and also to compare the methods on producing biofuel.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Background of the study**

The increased number of fossil fuels has caused environmental pollution because it is non-renewable and unsustainable. An alternative way has been created to replace the extensive use of fossil fuels with renewable and sustainable sources. Switching to renewable energy can partially reduce the emission of CO<sub>2</sub>. Therefore, biomass is an alternative way to produce biofuel because it is renewable energy. Biomass is the plant-based material that is used as fuel to produce heat or electricity. The examples of biomass used to produce bio-oil are wood, crops, mill sawdust, and palm oil waste. Malaysia is the second leading producer of palm oil worldwide, which shows that the oil palm plantations have produced the most amount, such as trunks, fronds, empty fruit bunches (EFB), palm kernel shells (PKS), and fibres.

However, plastics have also been widely used to produce fuel because of the enormous waste from different daily living sources. This way helps to reuse this waste to avoid environmental pollution, and plastic also needs time to