

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN AND FABRICATION  
WASTE COLLECTOR  
PROTOTYPE**

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## **ABSTRACT**

In this era, rivers are an important aspect in an ecosystem. This is because rivers are the main source for humans to get clean water. Despite environmental regulations that protect the quality of the river, solid waste in the form of trash, litter and garbage often ends up in these surface waters. Currently, over 23,000 tonnes of waste are produced each day in Malaysia. However, this amount is expected to rise to 30,000 tonnes by the year 2020. The amount of solid waste generated continues to increase due to the increasing population and development and only less of the solid waste is being recycled. A clean environment is the basic life supporting system and pure water plays a prominent role in balancing the ecosystem. Therefore, this study identifies to overcome the increase of solid waste in a river by the construction of a waste collector prototype. In addition, this prototype will significantly contribute since the solid wastes will flow in the same direction as current of a river.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

A waste collector prototype, one of the most common appliances needs to be clean usually. We can understand the fundamental knowledge of design, analysis and fabrication using mechanism properties in this project such as wheel and conveyer. This project is about a mechanical machine that will make human easy to clean a river and prevent water pollution. It will ensure all the solid trash in the river such as plastic bottles, shoes, and polystyrene will be removed. The current system involves the wheel and a conveyer to clean the solid trash from the river. However, this project is operated by a wheel that connected to the water source that can move with force. The force will move the wheel and a shaft that connect to a conveyer and make sure all the solid trash in the river will be removed easily. It also will help humans to clean the river faster because it is a good machine. This machine can be used everywhere if have a water source.

The idea may seem to be simple, but this project involves various mechanisms to be done. Thus, this project gave me an idea as an engineering student to help humans clean a river easily and quickly. The purpose of this project is to develop a successful design and fabrication of a waste collector prototype. This waste collector prototype machine will help humans clean rivers because it is a useful machine.

The waste collector will have a wheel. The wheel will run automatically due to river water flow. Next, the wheel will connect to a conveyer by using a shaft. These will make the conveyer move and pull out the trash from the water to a rubbish bin at the back of the conveyer. Besides that, to ensure this project is running smoothly, structural elements will be used to prevent any accident from happening.