CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

All through history, concrete as a building material has been broadly utilized and contributed significantly to the built environment. In its simplest form, concrete is a mixture of paste and aggregates. The paste is a composed of Portland cements and water which it coats the surface of the fine and coarse aggregates. As the basic civil engineering compound, the quality of concrete is determined by the quality of mix. The wide range of applications is not the only one that concrete offers, but also its durability, versatility, affordability and good strength. According to Obilade, I.O. (2014), concrete is the world’s most consumed man made material (Naik, 2008).

Nowadays, due to the rapid construction development and increasing demand of houses, the demands of concrete are growing quickly and indirectly lead to the shortage of customary building materials. Cement, sand, brick and wood are currently becoming in short supply materials. Concrete is not only being used in building construction but also in bridges construction, road construction and others. According to Obilade, I.O. (2014), concrete production is not only a valuable source of societal development, but it is also a significant source of employment (Naik, 2008). The public and related industries had come into concern due to increasing demand of the construction materials. Although these materials and method have traditionally been considered “primitive” and therefore inferior to more highly processes materials in terms of safety, durability, performance, occupants health, and comfort with respect to environmental issue, consumption of environmental
products and energy within the construction industry has created a significant demand for raw materials and for production thereby contributing to the many environmental problems associated with diverse ecosystem (Tomas U. Ganiron Jr, 2013).

The issue is not only the interminable lack of building materials but it also immense effect to environment. These days, solid waste management and pollution problems have been considered as a crucial issue for Malaysian government which is caused by industrial and agricultural wastes. As the consequence of alarming rate of waste generated and shortage of natural resources for construction material due to the increase in population and construction development in Malaysia, there are several strategies to overcome this issue. One of it is to reuse the waste by-product generated from agricultural and industrial production activities. The utilization of industrial and agricultural wastes to complement other conventional materials in construction gives both practical and prudent preferences. The waste by-product generated from agricultural and industrial production which can be found in Malaysia are such as rice husk, coconut shell, wood dust, glass wastes and etc. Sustainable construction materials can be remade by using this waste by-product while pollution problem and shortage of natural resources for building materials can also be overcome.

By reuse the waste by-product generated from agricultural and industrial production activities to decrease the environmental issues, Malaysia has a significant potential to achieve the objective of sustainable development.
1.2 PROBLEM STATEMENT

Rapid development in the construction industry these days was led by globalization and urbanization. Malaysia is well known as a developing country, increase in population growth, rising standards of living and increasing of urbanization which led to massive demand of construction materials. Due to the growth of population and the numerous construction activities nowadays, there is a lot of demand for these natural sources and they will be running low.

Concrete is generally utilized for the construction of most of the buildings. To meet out this rapid construction development, a massive quantity of concrete is required. For every concrete structure basically required tons of sand and gravel coated together with cement. Only some sands are suitable to use for making concrete. In fact, the properties of the sand utilized as a part of concrete can affect its quality. For example, desert sand generally not suitable to use for construction because the wind erosion of sand in the desert results in smooth and desert grains are too round which do not bind well. Furthermore, desert sand is mono-grained which means similar size. This sand is absolutely makes it unsuitable to use in concrete because concrete required sand which is small, intermediate, and coarser particles to prevent voids between grains to reduce the amount of water necessary. Generally, sand which is use for concrete was obtained by mined from land quarries and riverbeds. Natural sand is being extracted at an increasing rate due to growing global population which leads an expanding demand for building and housing. This action has caused the expansion of mining to coastal areas and dredging of the seafloor and indirectly increasing the possibility of flooding, affect the marine and river biodiversity, causing coastal and inland erosion, exacerbating the risk of drought and lowering the water table in some areas.

Agriculture is considered as a crucial sector to the economy of Malaysia. By advancing the agricultural sector, development was bringing to rural areas to reduce imbalance in urban rural development especially in the less developed states. In this case, the demand of food resources is absolutely increase due to the rapid growth of population