

CHAPTER I

INTRODUCTION

The development of industrial technology has enabled the transformation of the environment in different ways, changing the nature and extent of the environmental impacts of industrial activities. Resource depletion, air, water and land pollution, are examples of the environmental problems which have emerged as a result of intensified interventions into the environment. One of the main problems associated with these activities is that they may not have an immediate effect and some may have more global impact on the environment. This is becoming apparent with the increasing scientific awareness of the cumulative and synergistic effects of some of the environmental impacts over space and time. For instance, emission of greenhouse gases can occur locally, but the resulting greenhouse effect will have a global character. It is therefore not surprising that pressures on those responsible for the environmental interventions to improve their performance are rising and environmental sustainability is realized. Environmental sustainability is about making products that serve useful market and societal functions with less environmental impact than currently available alternatives. Moreover, environmental sustainability necessarily implies a commitment to continuous improvement in environmental sustainability is life cycle assessment.

The increase in society's awareness of environmental problems has sped up the development of assessment methods. An important method is Life Cycle Assessment (LCA) which is a tool for assessing the environmental impact of a product, process or service during its entire life cycle from the "cradle-to-grave". It may be used, for example, for product development and improvement, strategic planning, public policymaking and marketing. The LCA tool is e.g. used for finding the hot spots in the life cycle in order to be able to make the best decisions on minimizing the environmental burdens of the product, process or service. It is also used for comparisons between for instance different products regarding environmental impact. The main development of this method has taken place in the 1990 s and it has been standardized in ISO standards no. 14040 to 14043. At present, LCA is widely used by many industrial to develop the environmental performance of

product. Many sectors use LCA for their environmental assessment such as computer parts sector, electrical appliances sector, automotive sector, and textile sector. In this research the LCA tool is described with focus on the textile sector. Polyamide chip that used for fiber production (nylon6 fiber) is assessed by SimaPro 5.1, which is the LCA software. Assessing the environmental impact of product includes raw material, production process, use phase, waste and disposal phase during its entire life cycle that called “cradle-to-grave”