

## CHAPTER I

### INTRODUCTION

#### 1.1 Background

The 70th General Assembly of the United Nations (UN) in New York, become a new historical point in global development. 193 leaders of state and world governments attended to agree on the new universal development agenda contained in the document entitled Transforming Our World: the 2030 agenda for Sustainable Development contains 17 Goals and 169 Targets that apply from 2016 to 2030 (UN, 2015). This document is known as Sustainable Development Goals or SDGs.

SDGs are the continuation of the Millennium Development Goals (MDGs) which agreed upon by UN member states in 2000 and most recently at the end of 2015. Both of them have fundamental differences, both in terms of the substance and the process of its preparation. The MDGs agreed to more than 15 years ago only included 8 Goals, 21 Targets, and 60 Indicators (UN, 2015). The aim is only to halve each of the development problems contained in the goals and objectives.

In contrast to its predecessor, the SDGs accommodate development problems in a more comprehensive manner both qualitatively (by accommodating development issues that are not in the MDGs) or quantitatively targeting a complete resolution of each goal and target. SDGs are also universal in providing a balanced role to all countries - both developed

countries, developing countries, and less developed countries to contribute fully to development so that each country has the same roles and responsibilities between each other in achieving the SDGs. The goals and targets that are composing the SDG agenda cover the ecological, economic, and social dimensions of sustainability, thereby providing principles and a reference for national and local policy (Mancini, 2018).

The Paris Agreement, product of and adopted at the Conference of Parties 21 (COP 21), the climate conference under the UN Framework Convention on Climate Change (UNFCCC), held at Paris in 2015, represents the historic and main international legally binding reference framework for climate change and related impacts (Rogelj et al., 2016). It thus substantially contributes to and is aligned with the SDG 13 'Climate Action'. The Paris Agreement aims to ensure global average temperature will remain "...well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change" (Hodgkinson, 2018).

Climate change will affect many aspects of exploration, extraction, and production of industrial commodities. It presents significant risks to primary industries. Extreme weather events such as high temperatures, droughts, floods, and wildfires are likely to decrease both the security of the energy supply and the reliability of industrial and transport infrastructure. Primary industries may also be affected by the reduced availability and accessibility of natural resources necessary for production.

While mitigation measures often require an additional investment, they are also associated with enhanced competitiveness, reductions in running costs, new business opportunities, better environmental compliance, improved work conditions, and reduced waste. They also present opportunities to improve innovation in industrial processes and stimulate investment in more efficient production techniques. Measures that facilitate cross-sectoral collaboration within and across industries, such as eco-industrial parks and regional eco-industrial networks, can help primary industry sectors to optimize material and energy use.

Intergovernmental Panel on Climate Change Fifth Assessment Report mentioned that primary industry is responsible for the high contribution of GHG and CO<sub>2</sub> emission for the last 40 years (IPCC AR5, 2014). IPCC AR5 proposed some mitigation strategies for primary industry geared to improve industrial process efficiency and reduce further impact. The strategies are Emission Efficiency, Energy Efficiency, and Material Efficiency. Other optional strategies are product-service efficiency and demand reduction strategies, which focused on reducing the overall use of product material by changing the demand for industrial product.

Both forums clearly specify the potential problem of climate change, which is rapid increase of emission. The cumulation of emission will intensify the average global temperature. Application of the right strategy has big influence in accelerating the mitigation process. Therefore, to be effectively accomplish this purpose, it is desirable to use Theory of Constraint system thinking.

Theory of Constraints comprise with complete series of tools that provide for change, guiding for decision making, problem structuring, problem identification, solution building and implementation of the solution. Tool used for problem identification called Current Reality Tree (CRT) which represent the probable chain of cause and effect. It constructed from top-down from observed undesirable effects. To search the solution to the root cause is accomplished by using Evaporating Clouds (EC). The purpose of EC is to identifies two opposing wants that represent conflict, the need to satisfy and common objective or goal that trying to fulfill. Once the solution or injection from EC is identified, it possible to build the Future Reality Tree (FRT). FRT identifies what to change to and considering its impact on the future.

This approach is beneficial to determine the core problem or the root cause of emission contribution from industry. Resolving the problem from the root cause will loosen the restraint of constraints of surface problem. Eventually when all constraints are cleared up, it will resolve the surface problem

Moreover, the perspective of Islam from Al Quran and Hadiths about protecting the earth and environment will give good insight. Integration of TOC and Islamic perspective could bolster the offered solution to achieve SDG 13 targets.

## **1.2 Problem Formulation**

This paper aims to systematically collect and analyze the relation between Sustainable development goals, Climate Action, and Islamic perspective using the methodology of Theory of Constraint, here are the questions that need to be answered:

- a. What is the main problem or root cause of the hampering industry to help achieve SDG 13 targets?
- b. What is the proposed alternative or solution for industry to accelerate the process of climate action and achieving SDG 13 targets?
- c. How are the Islamic perspective and thinking could relate to the problem and how it can bolster the solutions to solve this issue?

## **1.3 Research limitation**

The research is conducted under the following scope and limitation:

- a. Topic discussed on this paper is limited to SDG 13 and not explain the other SDGs' goals.
- b. Journals collected are published internationally on online publisher by the time frame of 2011 to 2019.
- c. The scope of research is limited by the utilization of emission efficiency strategy in industrial field, not in other field as such transportation or agriculture.
- d. From total of 71 journal papers collected, 38 are journals about Theory of Constraints, and 33 are journals about SDG 13 in industry.

## **1.4 Research Objective**

Based on the problem from the question above, some objectives need to be achieved:

- a. Develop Current Reality Tree, to identify the core problem related to Emission on industry or manufacturing
- b. Propose solutions and resolve conflicts from selected alternative using Evaporating Clouds
- c. Analysis of Future Reality Tree using Islamic thinking toward achieving Emission Efficiency in primary Industry.

## **1.5 Research Benefit**

This research is aimed to provide benefits in the aspect that need the new founding as mentioned below:

- a. Help to understand the development and contribution in Emission Efficiency in Major industry to achieve SGD 13 "Climate Action."
- b. To gain a deeper understanding of Islamic knowledge by integrating and applying Islamic thinking and perspective to solve Sustainable Development Goals.

## **1.6 Systematical Research**

## **CHAPTER II LITERATURE REVIEW**

This chapter will be the elaborations of the literature studies in the form of inductive and deductive study. There will also be a general description of the research framework. Inductive study is the previous studies which will be the basis of research. While the deductive study is the theoretical basis for supporting the problem-solving in the research. The inductive study obtained from the journal and proceedings is published periodically. While

the deductive study obtained from the study of textbooks related to the theory.

### **CHAPTER III RESEARCH METHODOLOGY**

This chapter will describe the methodology applied in the study. This review consisted of five steps of Thinking Process (Theory of Constraints): (1) Identify the system's constraint; (2) Decide how to exploit the system's constraint; (3) Subordinate everything else to the above decision; (4) Alleviate the system's constraint; and, (5) Prevent inertia becoming the constraints.

### **CHAPTER IV DATA COLLECTING AND PROCESSING**

This chapter will present the elaboration of whole processing aspects in the visual of Current Reality Tree (CRT), Conflict Resolution Diagram (CRD, also known as the Evaporating Cloud and Conflict Diagram, and Future Reality Tree (FRT) using the studies that have been collected based on the research. It consists of studies selection, evaluation, and analysis of selected journals.

### **CHAPTER V DISCUSSION**

Chapter five is going to discuss the results of the literature review and the analysis. It will also elaborate on the recent agenda of Sustainable Consumption and Production in Sustainable Development Goals.

### **CHAPTER VI CONCLUSION AND SUGGESTION**

The final section will describe the overall conclusions from the results of the study and the suggestion for future research.