



A Suggestion of a Procedural Method for the Management of Post-War Waste

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Abstract

The increasing number of disasters (natural or man-made) worldwide has made post-disaster waste management an essential aspect of disaster recovery. This is obvious in Iraq where the Iraqi government faces an important challenge regarding the events of 2014 (ISIS gang conflict) and the accumulation of huge volumes of construction and demolition (C&D) waste resulting from military operations and terrorist destruction. Field surveys by the specialist teams estimated the amount of waste at about 10 million tons in the Nineveh governorate only, much of which comprises potentially useful materials that could be reused or recycled in the reconstruction process. This paper investigates the obstacles to the sustainable management of such waste in the Nineveh governorate. A pilot questionnaire survey of 76 experts working in the waste management sector was carried out to identify the obstacles to the sustainable management of accumulated waste in the Nineveh governorate. Data analysis was carried out using SPSS version 23.0. Based on the identified obstacles, a procedural method of managing post-war waste that accumulated in Iraq has been created. The paper illustrates several conclusions in the strategic, economic, social, and environmental sectors to address identified gaps in sustainable waste management in Iraq. It is hoped that this study's results will support post-disaster sustainable development goals in Iraq.

Keywords: Post-disaster Waste; Sustainable Waste Management; Iraq.

1. Introduction

"A disaster is a non-routine event that surpasses the ability of the affected area to deal with it in different aspects such as save lives, maintain property, and protect the social, ecological, economic and political stability." [1]. Disasters come in two types, natural (earthquakes and floods) and man-made (conflicts and wars), and these disasters have a considerable effect on the environment such as the destruction of buildings and infrastructure as well as social and physical effects [2]. All types of disaster create large volumes of waste that vary according to the nature and severity of the disaster [3]. The volume of waste generated by disasters in a short period exceeds twice the volume of annual waste generated in peacetime [4]. The presence of this huge volume of waste affects all aspects of an immediate response or recovery effort [5]. This waste represents, in many cases, a risk to human health from biological sources (flies, rodents, rotting carcasses), chemical sources (asbestos, oils, solvents), and physical sources (cuts, abrasions, collapse) [6]. In the long term, poor management of a clean-up can cause a slow and costly recovery [7]. However, the same waste could be a worthy source of materials in the reconstruction process and have a positive economic impact if an effective waste management strategy is adopted [1]. There may be valuable materials, such as metals and concrete, in the waste, which can represent a source of raw materials used in the reconstruction process [8]. Disaster waste management is an important

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