

# Draft Report

## Business plan on Disaster Waste management : Material Recovery Facility Centre (MRF)

Lalitpur, Nepal 2019



## Acknowledgements

Disasters are becoming more frequent and more intense around the world. Kathmandu valley is at the highest risk in terms of impact on people out of 21 cities around the world that lie in similar seismic hazard zones, More than 80 percent of the total population of Nepal is at risk of natural hazards such as floods, landslides, windstorms, hailstorms, fires, earthquakes and Glacial Lake Outburst Floods (GLOFs) (MOHA2017). When the disasters occur, not only are human life and wealth affected, but a large amount of waste might generate at the one time leading to many issues in terms of preserving living environments.

In order to restore the reconstruct from disasters, this Pilot project is commissioned by reusing Disaster waste for natural resource conservation and reducing the amount of waste. The project is funded by UNEP/IETC and Privet sector for establishing Material recovery facility center. The expert consultant prepared the Business plan. We are very much thankful to Mr. Mahesh Pradhan from UNEP/ IETC for his continuous support and encouragement to establish the DWM Pilot project in Nepal.

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**LEAD Nepal, Kathamandu**

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>II</b>
<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>CHAPTER 1 – INTRODUCTION</b>	<b>3</b>
1.1 State and trend of Disaster Waste in Nepal	3
1.2 Need of the Pilot project	4
1.3 Major Objectives of MRF	5
1.4 Scope of work	6
<b>CHAPTER 2 – SITE SELECTION AND DESIGN OF MRF BUSINESS PLAN</b>	<b>7</b>
2.1 Concept of MRF	7
2.2 Site selection for MRF	8
2.2 Design and operation of MRF	13
2.3 Long term planning for MRF	14
2.4 Organization Structure and operation model	20
2.5 SWOT Analysis-MRF	23
2.6 Socio economic analysis	23
2.7 Investment Model	24
2.8 Ownership and Management plan	24
2.9 Operation Plan	24
2.10 Implementation	24
<b>CHAPTER 3 – FINANCIAL ANALYSIS</b>	<b>25</b>
3.1 Financial Analysis	25
3.2 Pay back period	25
3.3 Cost benefit analysis:	26
3.4 Final accounts	28
<b>CHAPTER 4 – CONCLUSION &amp; RECOMMENDATION</b>	<b>31</b>
4.1 Conclusion and Recommendations	31
<b>APPENDICES</b>	<b>32</b>
Appendix I – Land Lease Agreement	32
Appendix II– MoU	32
Appendix III – Field visit reports	32
Appendix V – Photos	33

Nepal is one of the most disaster prone countries in the world because of its topography and climate conditions. It ranks 4<sup>th</sup>, 11<sup>th</sup> and 30<sup>th</sup> in terms of climate change, earthquake and flood risks. Other major disasters in Nepal are landslides, fires, droughts, epidemics, storms, hailstorms, avalanches and the Glacial Lake Outburst Flooding.

Nepal experienced a 7.8 Richter scale of earthquake in April 2015, which killed nearly 9,000 people, injured 30,000 and destroyed over 800,000 buildings. Nearly 14 million tons of waste was generated within a couple of days, 4 million tons of waste alone from Kathmandu, which is equal to waste generated over 11 years under normal conditions (PDNA 2015). Mixed with hazardous wastes, this large amount of disaster related waste resulted in adverse impact to public health and the environment. (REA, MoEST, 2015).

Although, many seismologists had predicted a major earthquake in view of the Himalayan fault line, Nepal still did not have a contingency plan to deal with disaster related waste. Because of the absence of this contingency plan, clearly identifying who does what and how, the emergency rescue and recovery process was uncoordinated. There was no thought given to the impact of the mixed waste on the soil, water, health or the environment. Furthermore, the handling of hazardous waste was totally neglected. Even today, Nepal does not have a facility for waste segregation or a treatment plant, whereas the application of the 3R strategy is still weak in its application.

The new Constitution of Nepal 2015 includes formulation of national policy to protect, promote and maintain natural resources in order to minimize environmental deterioration. Therefore, in an attempt to address the current Disaster Waste Management challenges and keeping in mind Nepal's SDGs 2030 targets the project has been developed with the support of UN Environment IETC and LEAD Nepal. This has been prepared after extensive field study followed by two stakeholder workshops. Based on the recommendation of this document there was some actions taken and above all the recognition from the Government that DWM is an important element of the rescue and recovery process.

The generation intensity of the disaster waste depends on the types and intensity of disaster event. The amount of disaster waste produced in small interval of time is equivalent to the amount which the town or metropolitan has been managing in more than a decades. Disaster Waste Management will be challenge in future for the government if the action has not taken immediately as the disaster occurrence is in rising trend. It also requires special skills and technology by the government to manage it efficiently.

The proposed pilot project attempts to address the above issues and will focus on three key areas: disaster waste management, a tangible demonstration disaster recycling unit at the municipality level, and public awareness, which will showcase the 3R model on a smaller scale. When an organization has selected a new technology, product, process or concept, a pilot project best demonstrates the potential in the opportunity. Pilot projects assist with new technological advancements, new environmental initiatives, new product launches, and new process deployments.

The primary effect of an earthquake is shaking of a building or infrastructure and this is when the saying "earthquake doesn't kill people, but the buildings do!" comes true. It has different effect on different types of buildings and its parts. i) Structural layout, ii) Quality of materials and construction practices and iii) Lack of earthquake resistance features is the most common

These concerns raised the need to produce CSEB bricks in order to contribute in constructing earthquake resistant buildings and also contribute in building green economy. As a part of contribution to the green economy and construction of earthquake resistance buildings, CSEB project has been initiated with the

## MRF on DWM

target to partially replace Fire-burnt clay molded brick that is considered as a massive source of Greenhouse Gas (GHG).

The machine / Technology has been chosen as per budget allocation and available skilled human resources. Basically, cement, Sand and clay are mixed roughly in the ratio 10:50:40 and then were pressed with a hand press to provide compaction and a definite shape in solid form. Drying and curing was done before the blocks were tested for strength. Although the strength yielded by the blocks was not uniform comparable to that of fired clay brick, it produced rewarding results regarding the reduction of GHG emission, energy consumption, overall cost of production and construction of earthquake resistant buildings with few alterations and innovative approaches in the conventional building forms.

The MRF pilot project can play vital role to showcase for large scale MRF plant, decreasing the direct economic losses relative to gross domestic product caused by disaster. The main goals of the MRF are promotion of the 3Rs, technology-equipment, and development of local skill levels for DW treatment reducing public health and Environmental Risks.