TrainERGY project

ZINCO Ltd

Good practice - Template

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1 Introduction

1.1 Good practice definition

Good practice is a method or technique that has been generally accepted as superior to any alternatives. It has been proven to work well and produce good results[1].

1.2 Good practice criteria

The following set of criteria will help you to determine whether a practice Is a 'good practice':

- ***Effective and successful***
  A good practice has proven its strategic relevance as the most effective way to achieve a specific objective; it has been successfully adopted and has had a positive impact on individuals and/or communities.
- ***Environmentally, economically and socially sustainable***
  A good practice meets current needs, in particular the essential ones of the world's poorest, without compromising the ability to address future needs.
- ***Technically feasible***
  Technical feasibility is the basis of a good practice. It must be easy to learn and implement.
- ***Inherently participatory***
  Participatory approaches are essential, as they support a joint sense of ownership of decisions and actions.
- ***Replicable and adaptable***
  A good practice should have the potential for replication and should therefore be adaptable to similar objectives in varying situations.
- ***Reducing disaster/crisis risks, if applicable***
  A good practice contributes to disaster/crisis risk reduction for resilience.

2 Good practice description

2.1 Objective

This report aims to suggest the good practice that ZIL should consider implementing in order to improve its environmental performance. Zinco Ltd (ZIL) is a manufacturing company based in the Yorkshire region which involves in the metal industry, particularly in the production of zinc foil. Due to zinc's electrochemical properties, it has a high electromagnetic shielding effect which makes it highly suitable to the building industry as well as aerospace, marine and automotive sector. The firm is a subsidiary of a global company which engages in the design and manufacturing of architectural

[1] Nash, J. and Ehrenfeld, J., (1997), "Codes of environmental management practice: assessing their potential as a tool for change." Annual Review of Energy and the Environment 22, pp. 487-535; Bretschneider, S., Marc-Aurele, F.J., Jr., and Wu, J. (2005), "Best Practices" Research: A methodological guide for the perplexed, Journal of Public Administration Research and Theory , (15) 2, pp. 307-323.

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aluminium systems. Zinco is a large firm having more than 300 employees. On the zinc supply chain, ZIL plays a central role as manufacturer and connects upstream and downstream several actors in the network. The proposed good practice is related to the topic of environmental objectives and performance indicators.

2.2 Introduction

SCEnAT analysis identified two carbon hotspots, namely electricity and cardboard inputs. Specific actions were proposed with regard to alternative, environmental friendly inputs, namely wind energy and recycled cardboards. Simulation of proposed scenarios revealed a relationship among suggestions which was inversely proportional. In addition, the simultaneous implementation of both suggestions shifted the focus on zinc input. Therefore, ZIL should pay more attention to the evaluation of end-of-life options for its final product, zinc foil. Due to the non-disclosure agreement with the company, there is no information regarding its reverse flows. The extent to which zinc foil is recyclable could lead to some emissions credits, improve its corporate social responsibility and subsequently enhance its public image. Existing literature has revealed that zinc is a significant contributor to the circular economy. Recycling used zinc foil and redirecting it into production process could be an approach to excellence. The objective of the aforementioned circular economy practice will be to propose a method for waste minimisation.

2.3 Actors and Stakeholders

For the effective adoption of circular economy practice, three stakeholders have been identified that should be involved in the process.

1. The focal firm (ZINCO Ltd) – To increase the proportion of recycled zinc foil in the production process (zinc foil recycling process)
2. Recycling company – Who have the capability to recycle zinc foil and forward it to ZINCO Ltd

2.4 Methodological approach

The implementation success of this good practice is based on the buyer-supplier relationship. Particularly, the aim is to enhance suppliers' capability to extract the maximum amount of zinc from scrap in order to maximise the ability of the focal firm to increase the amount of zinc foil production while decreasing its environmental impact. To ensure the relationship success, a mutual agreement should be reached. The focal firm is responsible to assess the recycling capability of supplier with a view to schedule its production, avoid the risk of disruption and maximise its environmental efficiency.

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2.5 Validation

First, a recycling company partner should be identified, ideally in a close proximity to the focal company, maximising also distribution efficiency. As soon the recycling partner has been identified, a report should be compiled related to the method of zinc recycling – most widely applied recycling procedure is Electric Arc Furnace (EAF) – as well as a list of their suppliers of used zinc in order to ensure transparency. Secondly, data related to their production rate should be provided to allow ZINCO Ltd to plan their production and evaluate the potential improvement of their operations. Following a contractual agreement between the two sides, periodical reports (monthly) should be developed and subsequently reviewed from the management board of both companies to assess the level of implementation.

2.6 Results/outputs

- Product efficiency: Zinc foil production is increasingly based on scrap zinc as raw material increasing the efficiency of production.
- Eco-efficiency: Using scrap zinc will reduce significantly the environmental impact of production process.
- Supplier relationship management: A good relationship between supplier and focal firm can be formed and benefit both sides in the long-term. This would allow both sides to strategically plan their operations and maximize the value of their interactions.

2.7 Impact

By promoting the implementation of closed-loop options such as recycling of end-of-life products, namely including scrap zinc as raw material, attention will be shifted towards energy efficiency issues. Given the energy-intensive nature of the company, relocation to an Industrial Eco-Park could be a long-run option.

2.8 Success factors

- Focal firm commitment: The commitment of focal firm to adjust the raw material input to scrap zinc. In addition, in the case of not finding an optimal supplier, it should consider the probability of investing to vertically integrate the recycling process of zinc.
- Supplier commitment: The commitment of the suppliers of scrap zinc is crucial in order to ensure that this technology investment is at the core of their operations. This will ensure the timely supply of scrap zinc to ZIL minimising the risk of operations disruption.

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- Government: Government legislation should promote the use of recycled raw materials in production processes either by offering financial aid or tax relief. By introducing these measures, firms will invest on green technologies in order to adhere to existing policies while improving their investment capability.
- Consumer Associations / NGOs: In several cases, consumers and NGOs constitute the driving force behind sustainable practices by increasing the awareness of the public towards environmental issues.

2.9 Constraints

- Poor commitment: Poor commitment could stem both from ZIL or suppliers' side. Lack of commitment could have a major impact on the efficiency of operations. For instance, the proportion of recycled zinc utilised could be insignificant, making no difference in terms of environmental footprint. In addition, poor suppliers' commitment could put at risk the continuity of ZIL's operations and reputation by either delaying the delivery or engaging in unethical procurement respectively.
- Cost: The cost of vertically integrate the recycling process of zinc foil if no recycling company can be found in the proximity which could accommodate the needs of the focal company.
- Government legislation: Current legislation should enable the implementation of environmental friendly practices. At the same time, at certain occasions, legislation revisions are required in order to harmonise existing regulation framework and safety guidelines with new technological operations' circumstances.

2.10 Lessons learned

Zinc is 100% recyclable meaning that it can be recycled without losing any of its chemical of physical properties. Currently, approximately 70% of the zinc produced comes from mined ores and 30% from recycled zinc scrap. This is attributed to its long service life (>40 years) and its upward consumption trend over time. In view of the high demand of recycled zinc, ZINCO Ltd should take into consideration this issue and plan their production accordingly without relying solely on one supplier. In addition, in terms of environmental impact, CO2-eq emissions are a prominent measure, but not the only one. To achieve its environmental objectives, certain KPIs should be taken into account with regard to the measurement of both inputs and outputs. Specifically, inputs measurements should focus on percentage (%) of raw materials coming from recycled sources and % of energy inputs coming from renewable sources. On the other hand, outputs measurement should emphasise on % of waste

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sent to landfill, % of waste sent to third-party recycling and % of waste reincorporated in the production process.

2.11 Sustainability

The introduction of recycled zinc in the production process could significantly assist ZIL to achieve environmental, social and economic sustainability. The use of recycled zinc as raw material combined with the implementation of renewable energy sources and recycled cardboard could significantly improve the environmental performance of the firm. These practices will be an exemplar of model company which not only complies with the consumer demand for sustainable practices but also promotes their adoption among entrepreneurs and informs the public regarding the benefits of circular economy. In addition, as analysis indicated in the case study report, the adoption of sustainable practices will have significant economic benefits for the firm as it will lead to a substantial cost reduction. Additional savings could be used to vertically integrate the recycling process into the firm, and potentially expand its market.

2.12 Demonstration

https://www.youtube.com/watch?v=lcvsT3VrlYc

https://www.youtube.com/watch?v=goCMuTsWEkQ

2.13 Related website(s) / resources

AGA. 2017. *Zinc Recycling*. [ONLINE] Available at: https://www.galvanizeit.org/hot-dip-galvanizing/what-is-zinc/zinc-recycling. [Accessed 1 July 2017].

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