

# The superiority of circular economy solutions in the main sectors of an innovative and prospering economy— a case study from Iceland

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## 1) Introduction

Circular economy solutions reuse and upcycle waste streams in order to minimize the use of resources and mitigate the creation of waste and emissions. Accordingly, circular economy solutions are an essential tool to tackle the imminent challenges of depleting resources and the emerging environmental crisis. In this presentation, we explore the circular solutions for resource recovery in waste streams in a country with one of the highest Gross Domestic Product (GDP) and Human Development Index (HDI) in Europe, Iceland. The economy of Iceland is mainly based on renewable energy, fishery, farming, metallurgy, and tourism.

## 2) Methods

To assess the benefits of circular economy solutions we examine four relevant case studies from the following industrial sectors in Iceland: i) a geothermal energy plant, ii) fisheries, iii) municipal solid waste processing and iv) aluminium production. By describing the processes, the opportunities and the market potential of the circular economy solutions in the four case studies we identify the superiority of circular recovery of resources in a modern society.

## 3) Results

In the figures 1-4 the main results from the four investigated sectors are illustrated. Figure 6: A flow scheme showing material flow in primary aluminium electrolysis

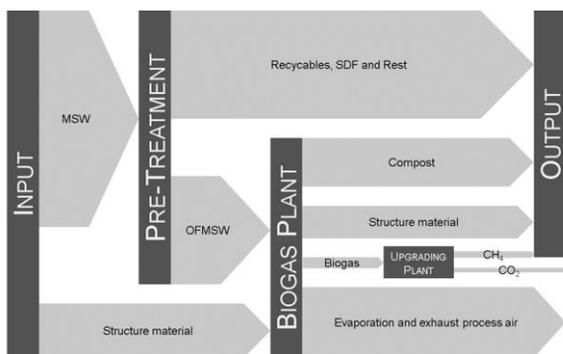


Fig. 1: Estimated mass flow of the waste treatment in the biogas and composting plant

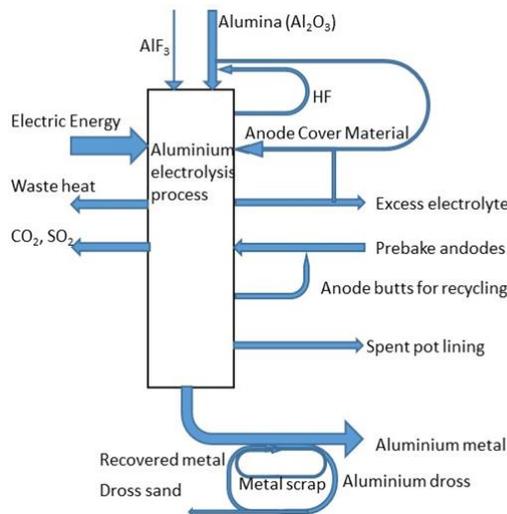


Fig. 4: A flow scheme showing material flow in primary aluminium electrolysis

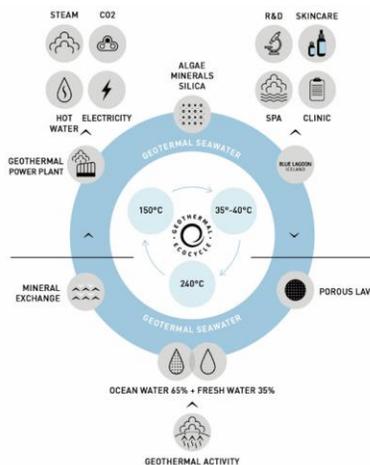


Fig. 2: Schematic overview of the circulation recovery from geothermal resources

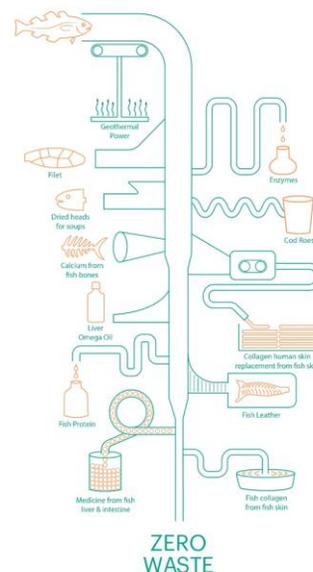


Fig. 3: Schematic representation of the different value streams from fish and their utilization (ref: Iceland Ocean Cluster).

## 4) Conclusions

The results reveal that the recovery of resources reduces the environmental impacts, increases the economic output and enhances the resilience of the local economy. While our results are based on the examples in Iceland the described processes of resource recovery can be applied in any other country with similar resources. We conclude that the presented circular solutions could lead to a more sustainable world while preserving vital resources for the next generations.

More information: <https://en.ru.is/sif>