

A low-angle, upward-looking photograph of several tall, white industrial towers or chimneys. The towers are made of metal and have various pipes, ladders, and structural elements attached to them. The background is a clear, light blue sky. The text 'Waste Management' is overlaid in large, white, sans-serif font across the middle of the image.

Waste Management



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Waste Management Introduction

According to the EEC directive 75/442 all municipalities are obligated to make a strategic plan on waste management. Mannvit has actively participated in waste management planning for various municipalities including Reykjavik and many others in Iceland.

The first common waste management plan for all the municipalities in South Western Iceland, was issued at the end of 2005. In 2006 Mannvit was hired to compare the cost and benefits of aerobic composting, anaerobic digestion, incineration and new landfill sites. After the comparison was finished in early 2007 the results were used in a revised waste management plan that was issued in 2009 (www.samlausn.is).





Geographical information

The participating areas were:

- Western Iceland, consisting of 10 municipalities with total of 15.000 inhabitants. The quantity of waste was estimated 29 thousand tonnes including 14 thousand tonnes organic waste.
- Reykjanes, which is close to the international airport in Keflavik, consisting of 5 municipalities with total of 19.000 inhabitants. The quantity of waste was estimated 22 thousand tonnes including 14 thousand tonnes organic waste.
- The Capital Area, covering the capital and 7 neighbouring communities with 192.000 inhabitants. The total quantity of waste was 270 thousand tonnes including 150 thousand tonnes of organic waste.
- Southern Iceland, consisting of 11 municipalities with total of 18.000 inhabitants. The quantity of waste was 33 thousand tonnes including 22 thousand tonnes of organic waste.

The number of inhabitants is estimated to increase to 290 thousand in 2020. The total quantity of waste is estimated to increase to 480 thousand tonnes in 2020 including 270 thousand tonnes of organic waste.

The main concern is the organic waste with potential greenhouse gas emissions. According to EEC directives the landfilling of organic waste must be reduced considerably

in the near future and eventually be phased out. The waste companies are running out of landfilling space and are having problems obtaining permission to open new landfills.







Waste Management Plan

During 2006 and 2007 several treatment methods for organic and combustible waste were compared from environmental and economic point of view. All the methods were defined as "best available technology" according to IPPC. The different treatment methods, different plant sizes and various possible sites were used in a cost optimization model to calculate the most cost effective solution for the area as a whole. This has resulted in a waste management plan based on the following premises:

- All landfilling of organic and combustible waste will be terminated no later than 2020
- The hierarchy of waste treatment has been based on the European waste hierarchy
- There are available landfill sites for the next 12 years operation
- Milestones for the next three years have been set

The waste treatment hierarchy is as follows:

In a recycling stage reusable and recoverable waste is removed from the waste stream to avoid wasting valuable raw materials and to reduce the amount of waste for treatment.

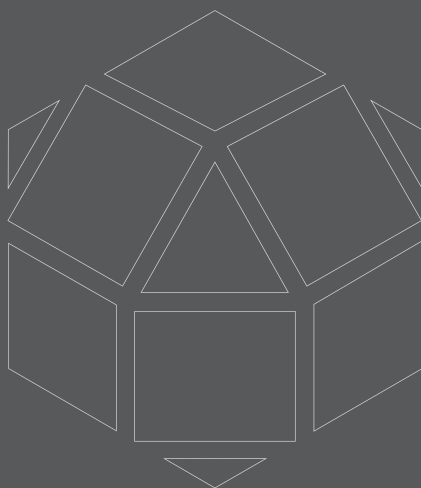
From the recycling stage suitable waste is fed to an anaerobic digestion step to make as much biogas as practical from the organic fraction. The biogas is purified to >92% methane and used as vehicle fuel to replace fossil fuel.

The remaining waste from the AD step plus another incoming stream of suitable waste is composted in an aerobic composting step. Depending on selected technology for the composting re-usable and recoverable waste is removed from the waste stream before or after the composting step.

From the recovered waste like plastics, rubber, wood etc. solid recovered fuel (SRF) will be produced if economically viable. This fuel can be used to replace coal with subsequent carbon emission reduction.

Some types of waste are combustible but not suitable for anaerobic digestion or aerobic composting. Furthermore, after 3 years there will be more than 2 million tonnes of accumulated waste in the Álfsnes landfill from the beginning of operation there. Therefore, a feasibility study will be done for a waste incineration plant in Álfsnes to incinerate the combustible waste stream to use the energy and to reduce the volume before landfilling. To further reduce allocation of new space for landfilling, the oldest part of the landfill site will be opened, when the landfill gas production falls off, to burn the remaining combustibles. The bottom ash might be usable for construction purposes, top cover layer or at least reduced in volume before landfilling again.





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DEDICATED TO THE DEVELOPMENT OF GREEN ENERGY

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