CASE STUDY

Developing Sustainable Society From Material Flow Aspect: An International Comparison Study on Municipal Waste Management

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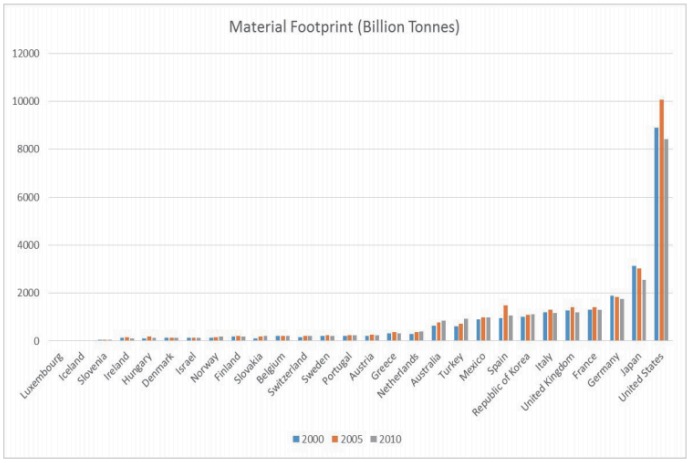
This case study focuses on Material Flow but pays particularly attention to Municipal Waste Management. The aim of strategy is to develop a sustainable society by making a circular Material Flow. This study follows Material flow order from Input, Production, Consumption to Disposal to obtain a better understanding on Material Flow and its significance to economics. In this study, around 30 countries are selected to be done a comparison to recognize the different conditions of Municipal Waste Management in different countries.

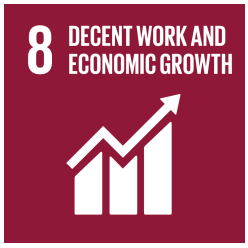
I. Input

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

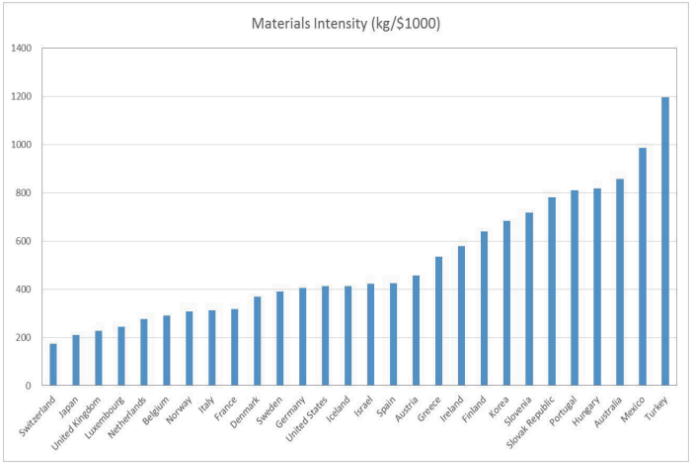


Material Footprint (MF) is a consumption-based indicator to assess raw materials productivity. There is a huge difference from country to country. The reason might be the different industry structure in different countries.

II. Production

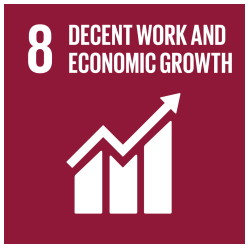


8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead



Materials Intensity (MI) which calculates from Domestic Material Consumption (DMC) and Gross Domestic Product (GDP) meatuses technological coefficient. The higher MI means a more efficient use of materials.

III. Consumption



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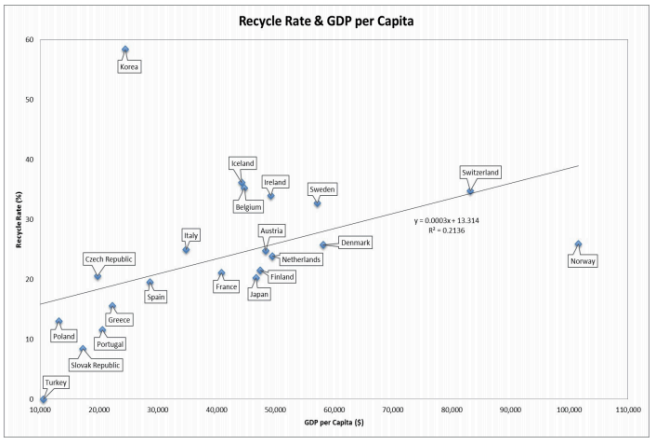
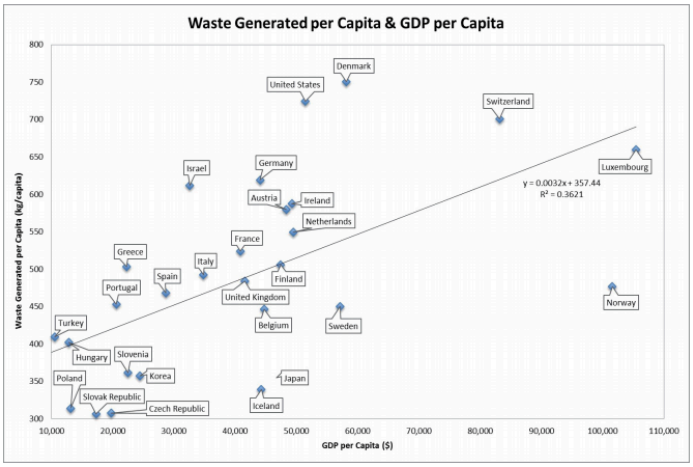


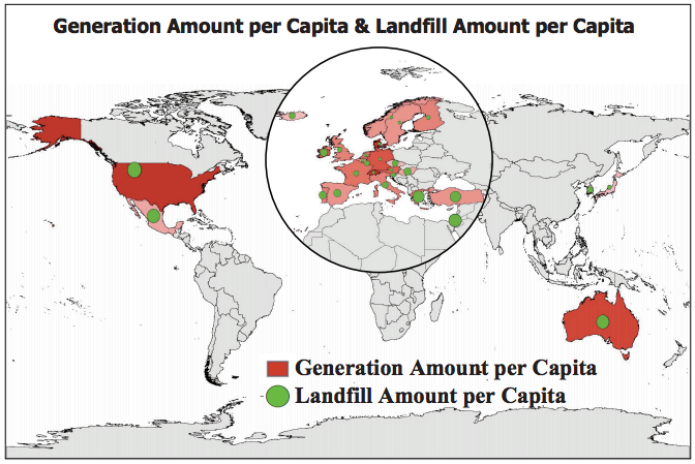
Recycle Rate has a stronger relationship to GDP per Capita more than to GDP. A better environmental education in higher GDP per Capita (well-developed) countries might be the reason causes this result.

IV. Disposal

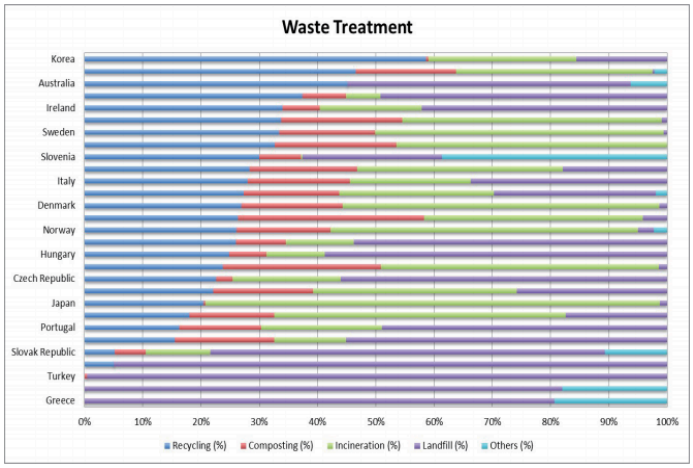
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse



There is a tendency that higher GDP per Capita countries generates more Municipal Waste than lower GDP per Capita countries. An abundant supply of both productions and services can be conjectured in those countries.



Darker Red base color shows more Waste Generation per Capita, bigger green point shows more Landfill Amount per Capita. Basically higher generation leads to a higher landfill since the awareness thought to be different.



The various structures of waste treatment indicates dissimilar conditions in these countries and brings a great difference of material circulation. Only South Korea achieved 50% recycle rate among these countries.

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References

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[3] The World Bank: http://data.worldbank.org/

[4] OECD: https://data.oecd.org/

[5] UN DATA: http://data.un.org/Default.aspx