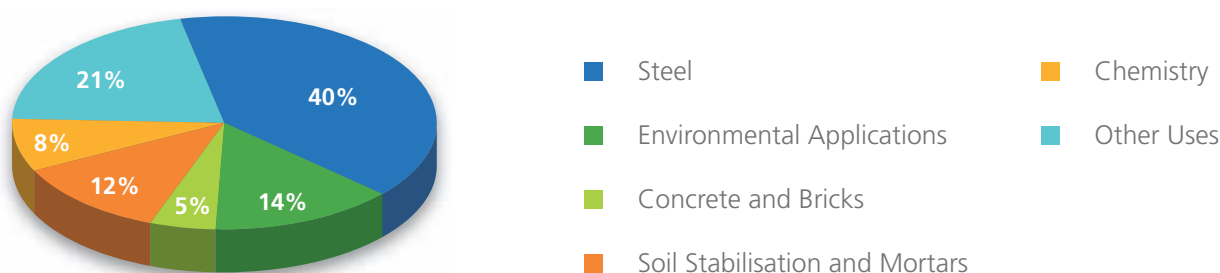


European (EU-28) annual production of lime is estimated at approximately 28 mio tonnes. Lime is a natural product and is incomparable - no other chemical compound can do all what lime can: cleaning waste water, preparing our drinking water and absorbing the pollutants from the air. Lime enhances soil quality and is therefore used in agriculture, ensuring a richer harvest. Lime is also used for disinfection in animal husbandry, preventing the outbreak of diseases. Lime is an essential ingredient in the iron and steel industry, in construction (building and civil engineering), agriculture, environmental protection and in numerous chemical manufacturing processes. Its widespread use has supported our civilisation for millennia.

EUROPEAN LIME CONSUMPTION BY MARKET



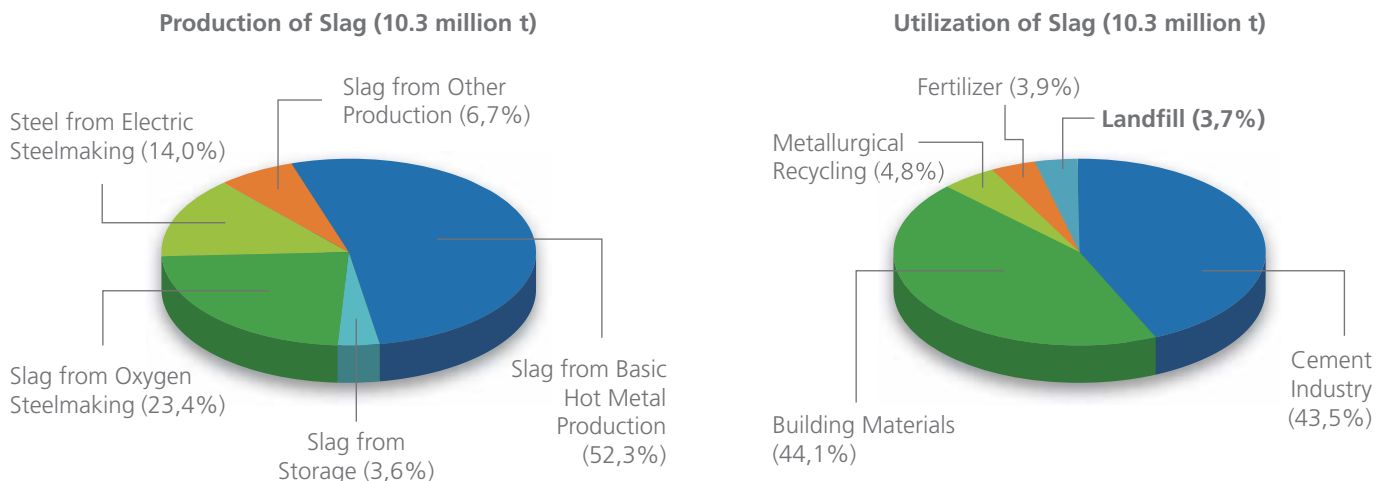
Lime market by use category [Industry estimate]

RECYCLING RATES BY APPLICATION

STEEL

Lime is most commonly used as a flux in purifying steel in the electric arc furnace (EAF) and basic oxygen furnace (BOF). Lime is particularly effective in removing phosphorus, sulphur, and silica, and to a lesser extent, manganese. Lime also has important uses in secondary refining of steel and in the manufacture of steel products. The lime flux removes impurities and forms a slag that can be separated from the steel and poured from the furnace as a liquid. End of life for lime in these applications in the large majority is as part of the slag, and to a lesser extent as dust. Slags are reused almost completely and dust to a large extent. Therefore, the recycling rate of lime in steel application is estimated to be around 95%.

Production and use of metallurgical slags (Germany, 2009)



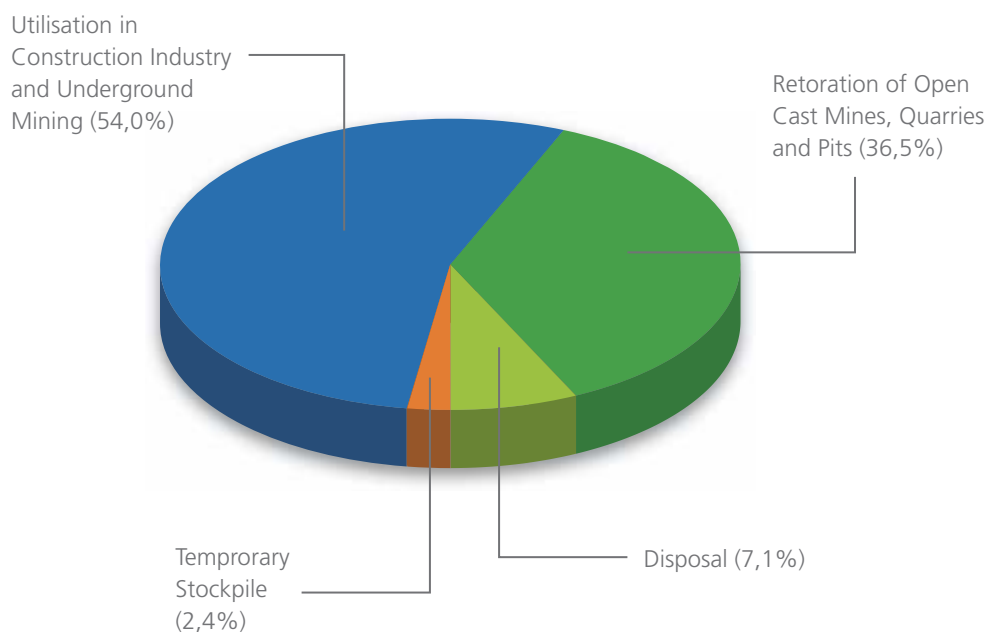
Clean Tech 2011 conference [VDEh]



ENVIRONMENTAL APPLICATIONS

Lime is used in significant volumes as a reagent in Flue Gas Treatment, where it will most commonly reach end of life as gypsum which is widely reused in construction markets (e.g. plasterboard). Sludge treatment is another common application where bio-solids are treated with lime and often used in agricultural applications. Thus, the recycling rate of lime in environmental applications is estimated to be around 90%.

Utilization and Disposal of Coal Combustion Products in Europe (EU 15) in 2008

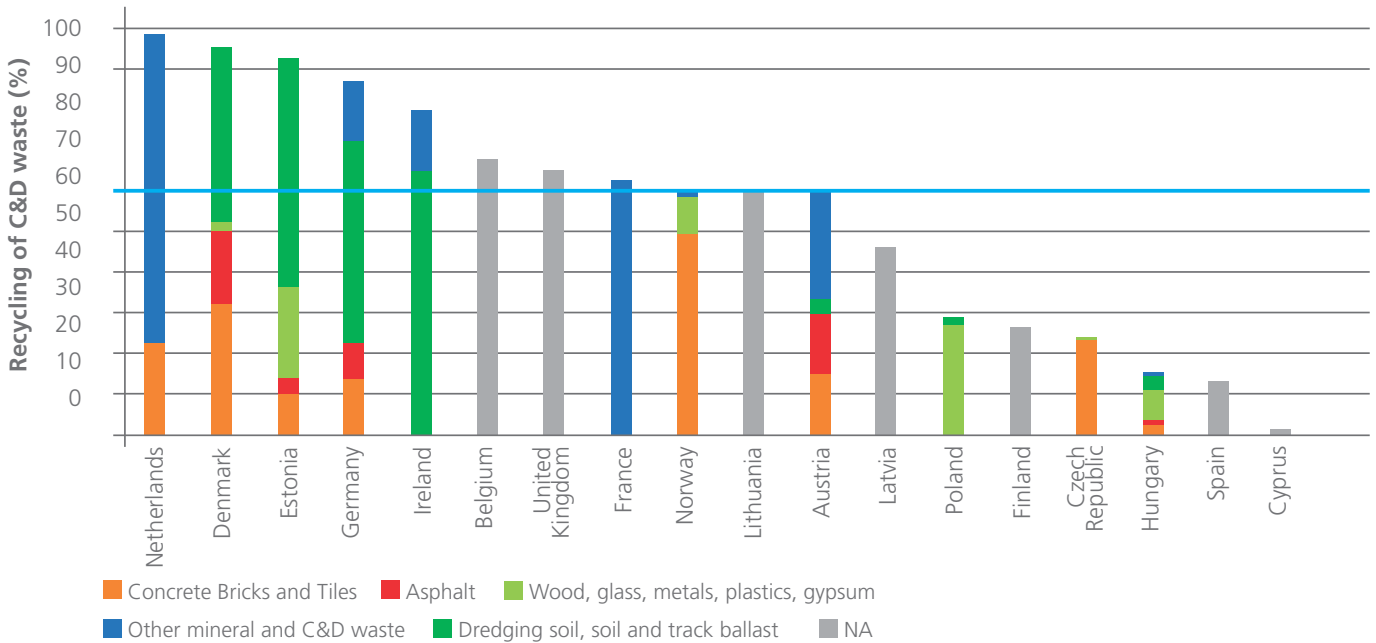


[ECOPBA – European Coal Combustion Products Association, 2012]

CONCRETE AND BRICKS

Lime is used in significant volumes within concrete (in particular AAC – autoclaved aerated concrete) as well as other bricks. These bricks will often find an end of life reuse as aggregates used for other construction processes. The average recycling rate of lime in concrete and bricks is estimated to be about 60%.

Recycling of construction and demolition waste in %



Europe as a recycling society. European recycling policies in relation to the actual recycling achieved [ETC/SCP 2/2011]

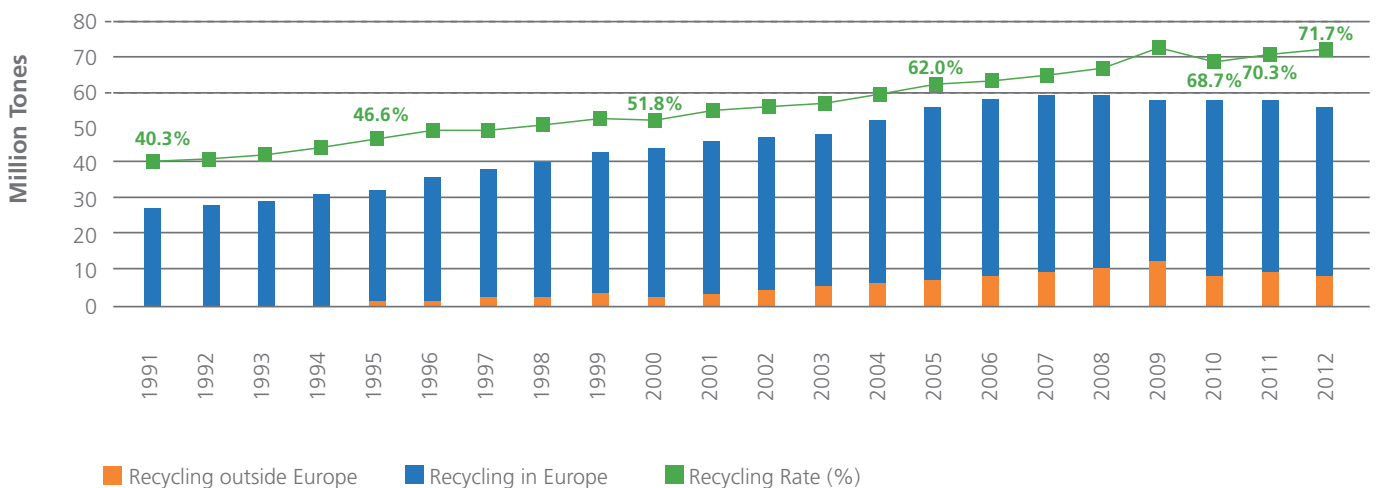
SOIL STABILIZATION AND MORTARS

Lime is used in significant volumes to give strength to soil for construction applications. The end of life for such applications will see the soil return to other uses (e.g. Agricultural) so a very high recycling rate is achieved. Mortars and other construction related applications will often find an end of life reuse as aggregates used for other construction processes. The average recycling rate of lime in soil stabilization and mortars is estimated to be about 65%.

CHEMISTRY

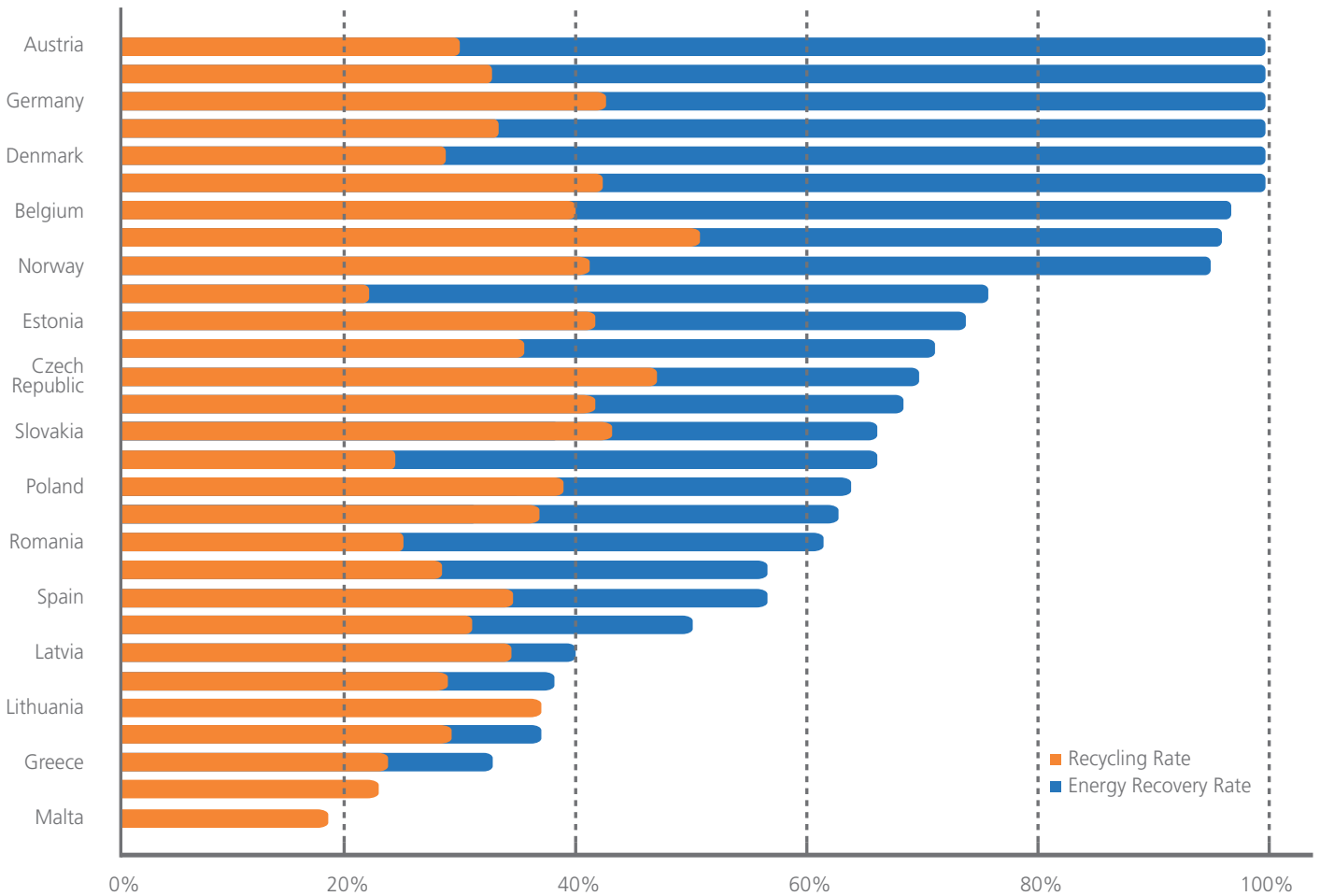
Lime is used in significant volumes in the production of PCC which is used primarily in paper, paper having significant recycling rates as well as some reuse as end of life. Significant amounts of the processes where lime is used in chemical application have applications in the plastics industry, especially in PVC. Europe wide, it is estimated that every piece of paper is recycled 3.5 times. This means that more than 70% of paper is recycled. This figure is split as follows: 40% of the paper is recycled into new paper grades, while 30% is incinerated and recovered in the form of fly ash which is reused in construction industries. From the remaining 30%, 22% is considered to be non-recyclable because of its use (burned, hygienic reasons). The remaining 8% are room for improvements. The recycling rate of lime in chemistry is estimated to be about 70%.

Recycling of Paper in Europe 1991-2012



European paper recycling rates 1991-2012 [European Recycled Paper Council]

European Plastic Recycling 2013



Total recovery ratio of plastics in EU countries in 2013 [Plastic Europe]

OTHER USES

Here, lime is used for instance as a feed material or in agriculture to correct the acidity of soils. It is therefore entirely consumed with the relevant products and returned to nature in the form of salts. These uses have therefore not been factored into results.

LIME RECYCLING RATE

The overall recyclability rate of lime can be evaluated as follows:

	Lime Markets	Application Recycling Rate	Lime Recycling Rate
Steel	40%	95%	38%
Environmental Applications	14%	90%	13%
Concrete and Bricks	5%	60%	3%
Soil Stabilisation and Mortars	12%	75%	9%
Chemistry	8%	70%	6%
Other Uses	21%		
Total	100%		68%

“Based on our current market analysis and estimated recycling rates, we can consider that about 68% of all lime used is recycled. As indicated above, this figure is an EU-wide average figure and regional disparities do exist.”