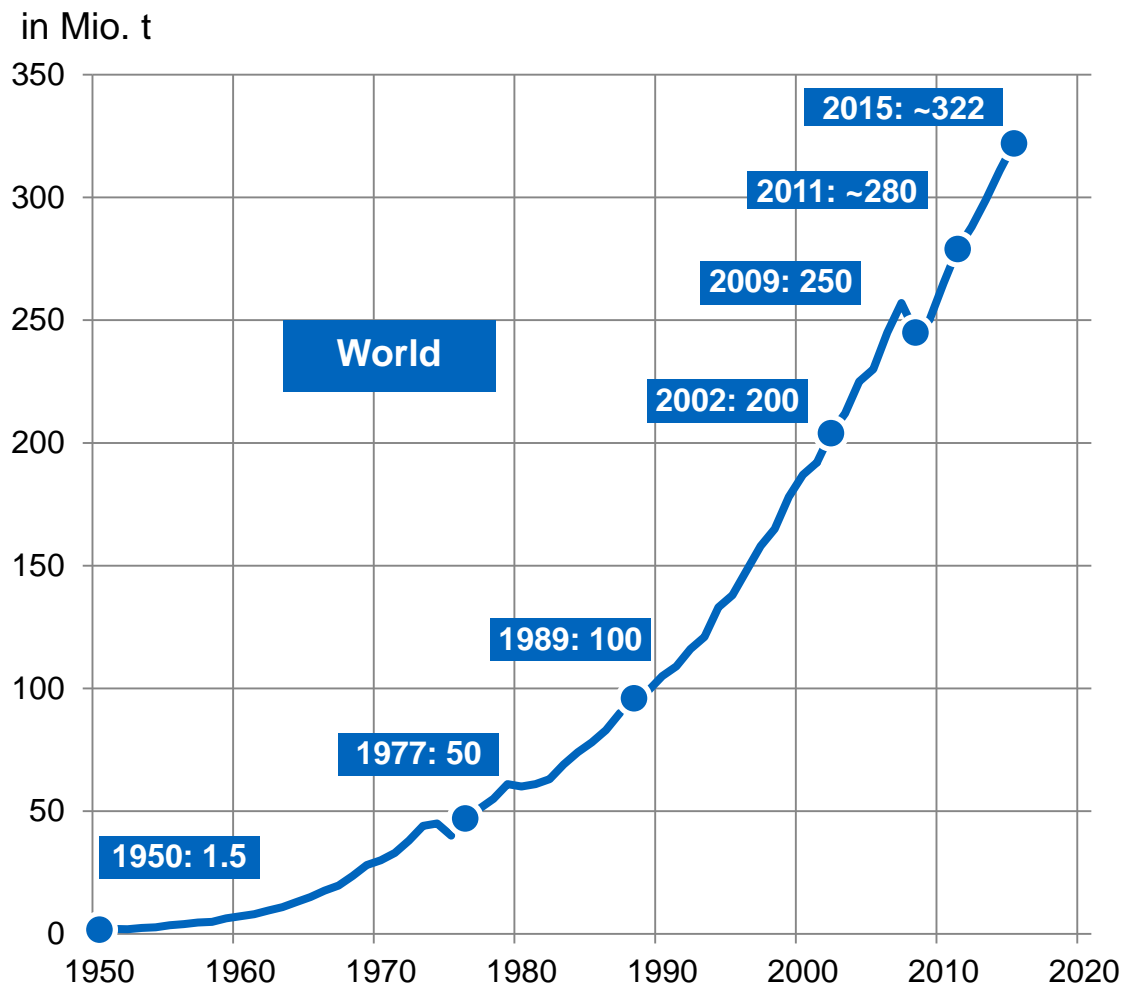
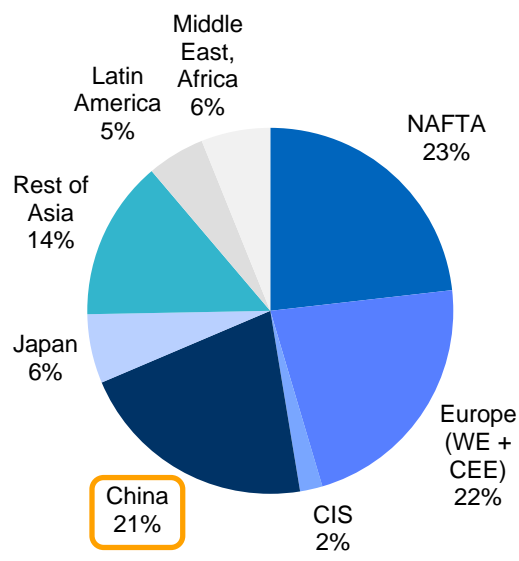


World Plastics Production 1950 – 2015

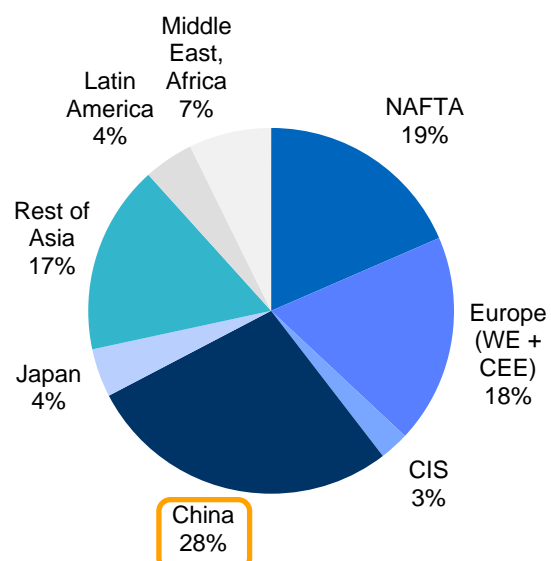


- Plastics are a global success story.
- Continuous growth for more than 50 years.
- Plastics production ramped up from 1.5 Mio. t in 1950 to ~322 Mio. t in 2015. In 2015 global plastic's production grew by 3.4% compared to 2014.
- Compound Annual Growth Rate (CAGR) from 1950 to 2015 is about 8.6%.

World Plastics Production 2006 - 2015



2006
205 Mio. t*



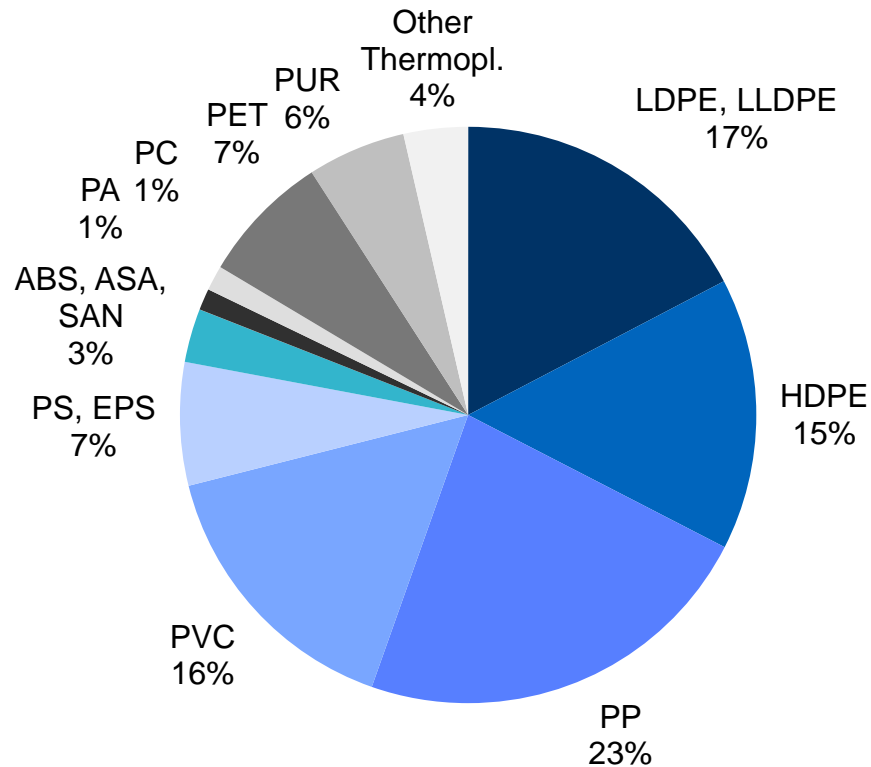
2015
269 Mio. t*

- Asia with the leading country China (28%) mean-while accounts for more than 49% of worldwide production.
- Europe and NAFTA are on a similar level each with a share of around 18%~19%.
- Within a few years, China has risen to the most important plastics producer. All other regions lost global production shares

*w/o Other Plastics (ncludes Thermosets, Elastomers, Adhesives, Coatings and Sealants and PP-Fibers. Not included PET-, PA- and Polyacryl-Fibers), 2014 = ~53 Mio. t

Source: PlasticsEurope Market Research Group (PEMRG) / Consultic Marketing & Industrieberatung GmbH

World Plastics Materials Demand 2015 by Types



2015
269 Mio. t*

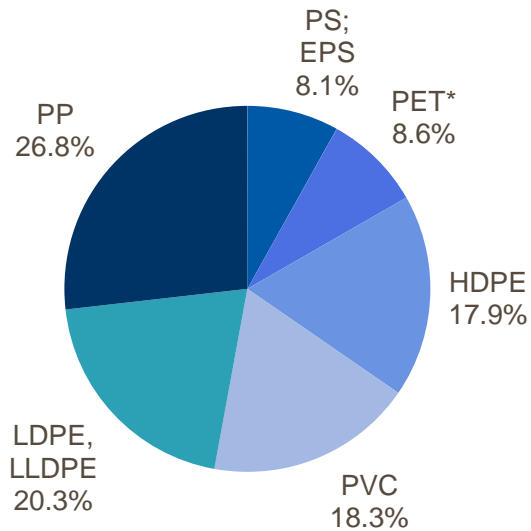
- Polyolefins account for more than 55% of global Plastics Materials demand.
- PVC is the second largest resin type following Polyolefins.
- Standard Plastics (Polyolefins, PVC, PS & EPS, PET) account for approx. 85% of the total demand.

*w/o Other Plastics (includes Thermosets, Elastomers, Adhesives, Coatings and Sealants and PP-Fibers. Not included PET-, PA- and Polyacryl-Fibers) = ~53 Mio. t

Source: PlasticsEurope Market Research Group (PEMRG) / Consultic Marketing & Industrieberatung GmbH

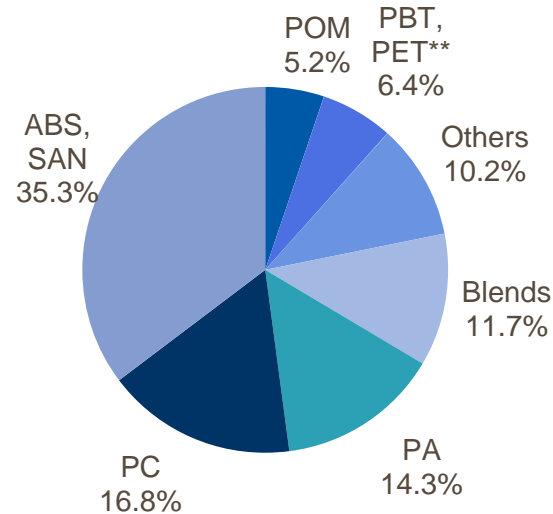
World Thermoplastics Demand by Types 2015

Standard Plastics



229 Mio. t

Engineering Plastics

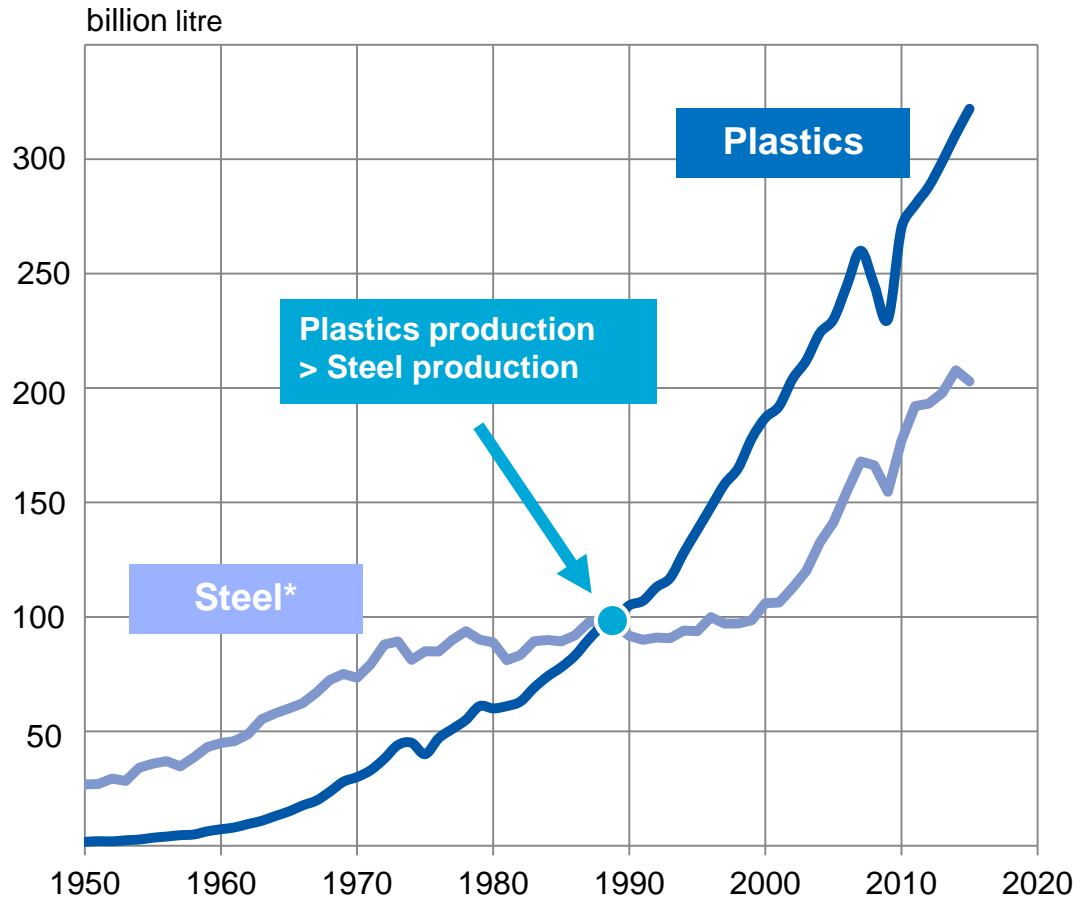


~ 25 Mio. t

- Standard Plastics dominate the global market in tons
- Around 10 % of the globally demanded plastics are Engineering plastics

*PET Bottle grade **PET Injection grade

World Benchmark Plastics / Steel 2015

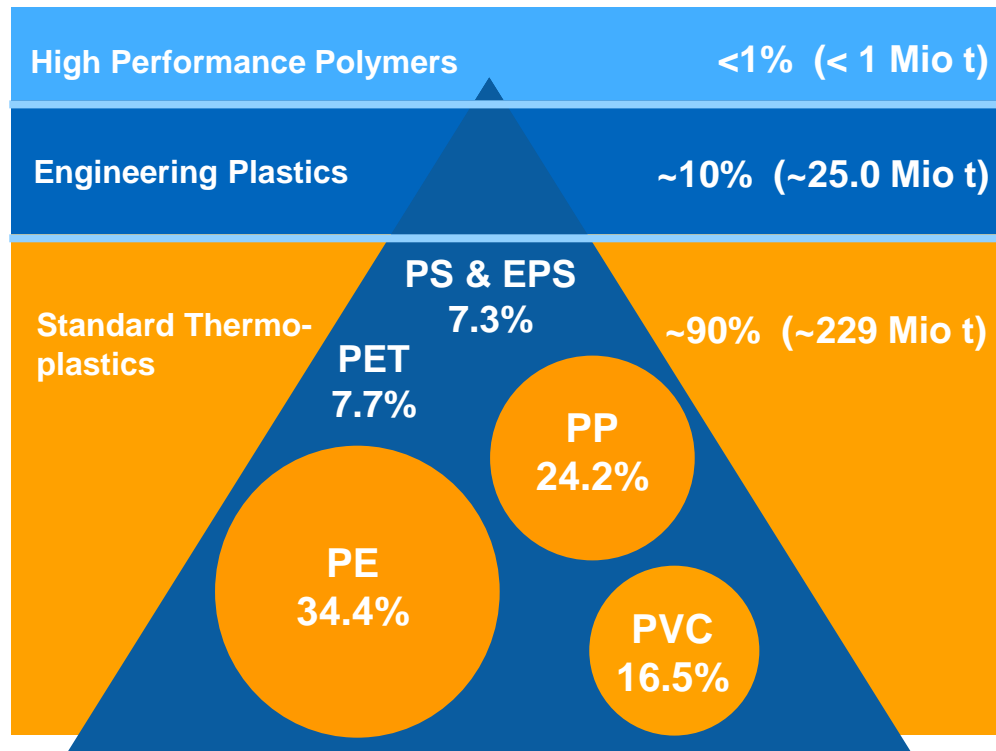


- Plastics in 1989, passed steel production by volume

Global Production 2015 :

- Plastics:
322 Mio. t =
322 billion litre
- Steel:
1,623 Mio. t =
203 billion litre
- Calculation Model:
1 kg plastics = 1 litre
8 kg steel = 1 litre

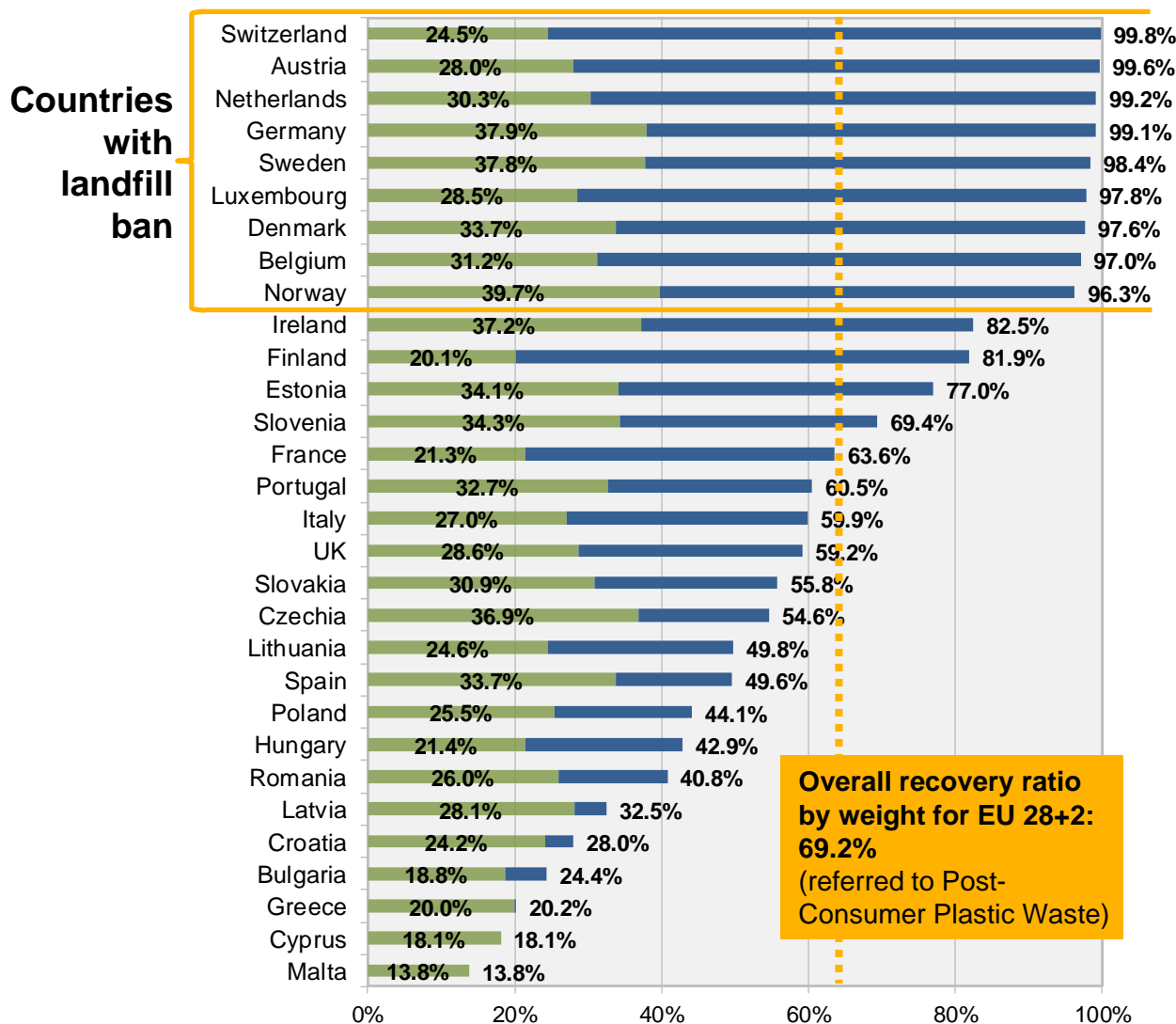
Triangle of Thermoplastics Classified by Market Share



- **Standard Plastics** are the basics materials.
- **Polyolefins** are the largest product group.
Polyethylene: 34%
Polypropylene: 24%
- **Engineering Plastics** are a small but valuable part of the market.
- **High Performance Polymers** are specialized for very demanding applications.

Europe (EU 28 + 2)

Recovery of Plastics Waste 2014



9 countries in Europe reached a recovery ratio of more than 95% of the Post-consumer Plastic Waste.

These countries have a landfill ban.

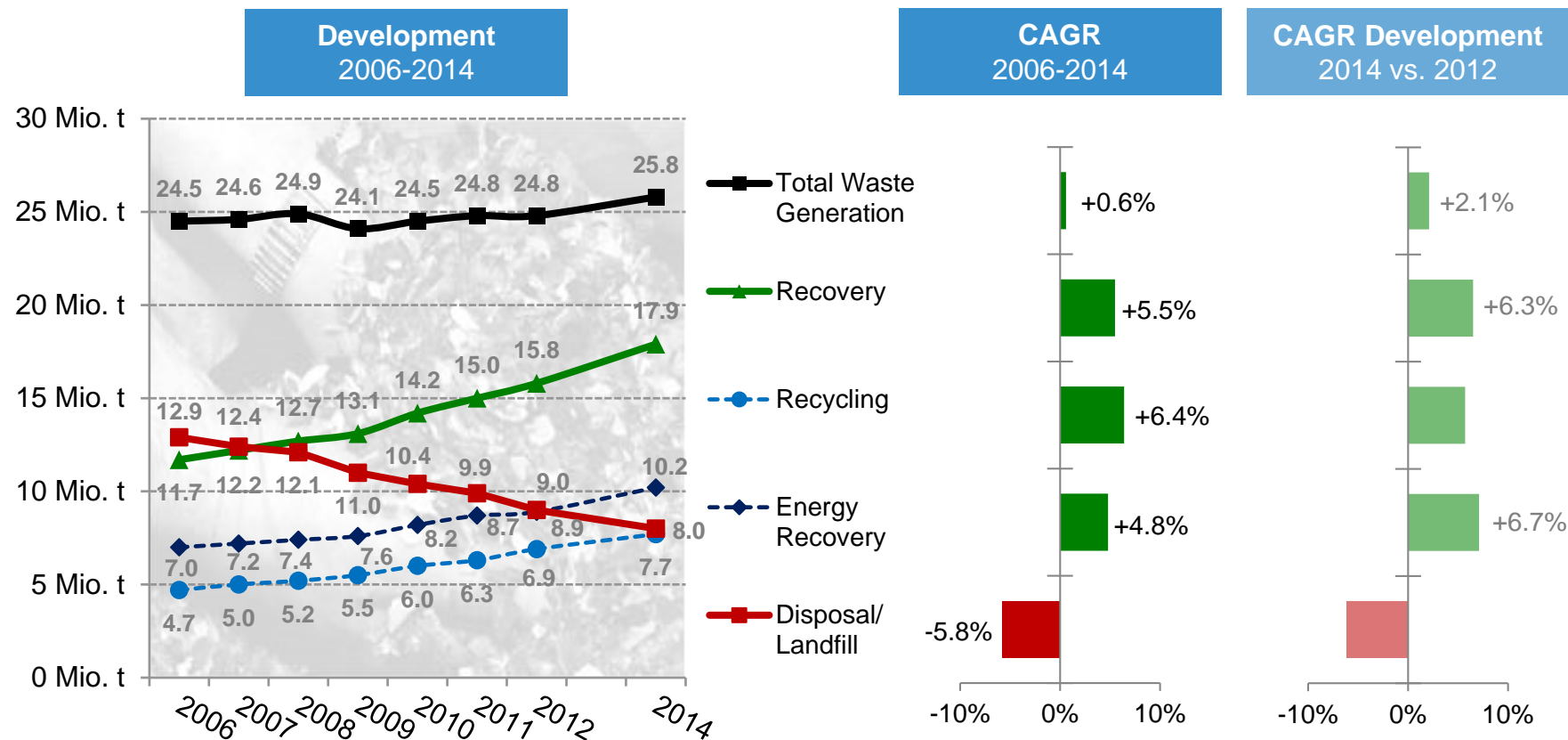
Also 6 of these countries are amongst the 11 countries with the highest recycling rates (>30%).



Therefore „divert from landfill“ boosts higher recovery and recycling quantities, also of waste streams, which have not been recovered so far.

Europe (EU 28 + 2) Recovery of Plastics Waste 2014

Total plastics waste and recovery 2006 - 2014



In the period 2006-2014 the analysis of waste generation shows a slight growth. Besides economical impacts, plastic parts with lower weight (e.g. plastic bottles) play a significant role in that process. After the economical crisis, the waste quantity rose from 2009 to 2014 by about 1.7 mill. tons during the last five years. While disposal quantities decreased by ~4.9 million tons in the last eight years, recovery quantities rose by 6.2 mio. tons up to 17.9 mio. tons.