

# CAN THE ENERGY MANAGEMENT AND THE WASTE MANAGEMENT BE HARMONIZED?

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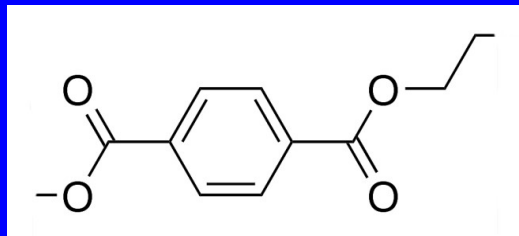
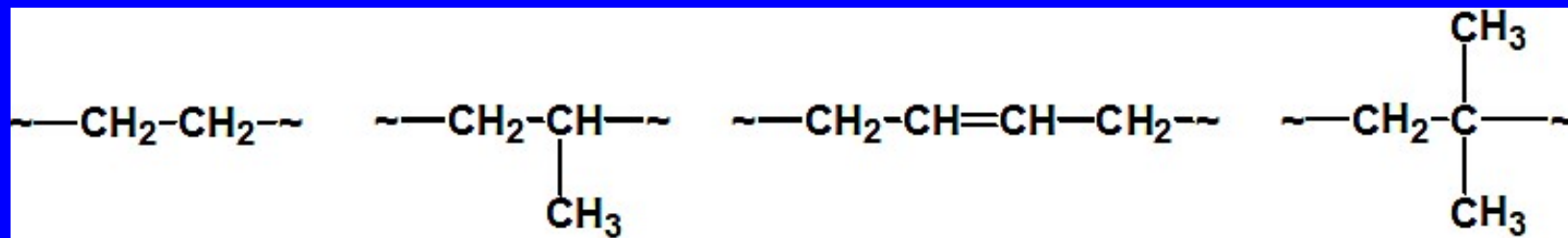
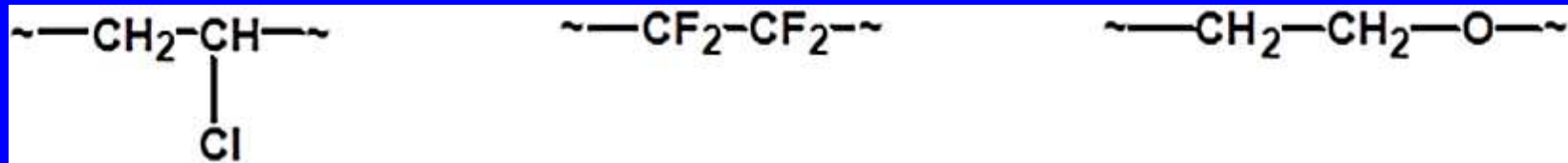
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# Polymers

A polymer is a substance or material consisting of very large molecules, or macromolecules, composed of many repeating subunits. Synthetic polymers are called plastics.

## Monomers



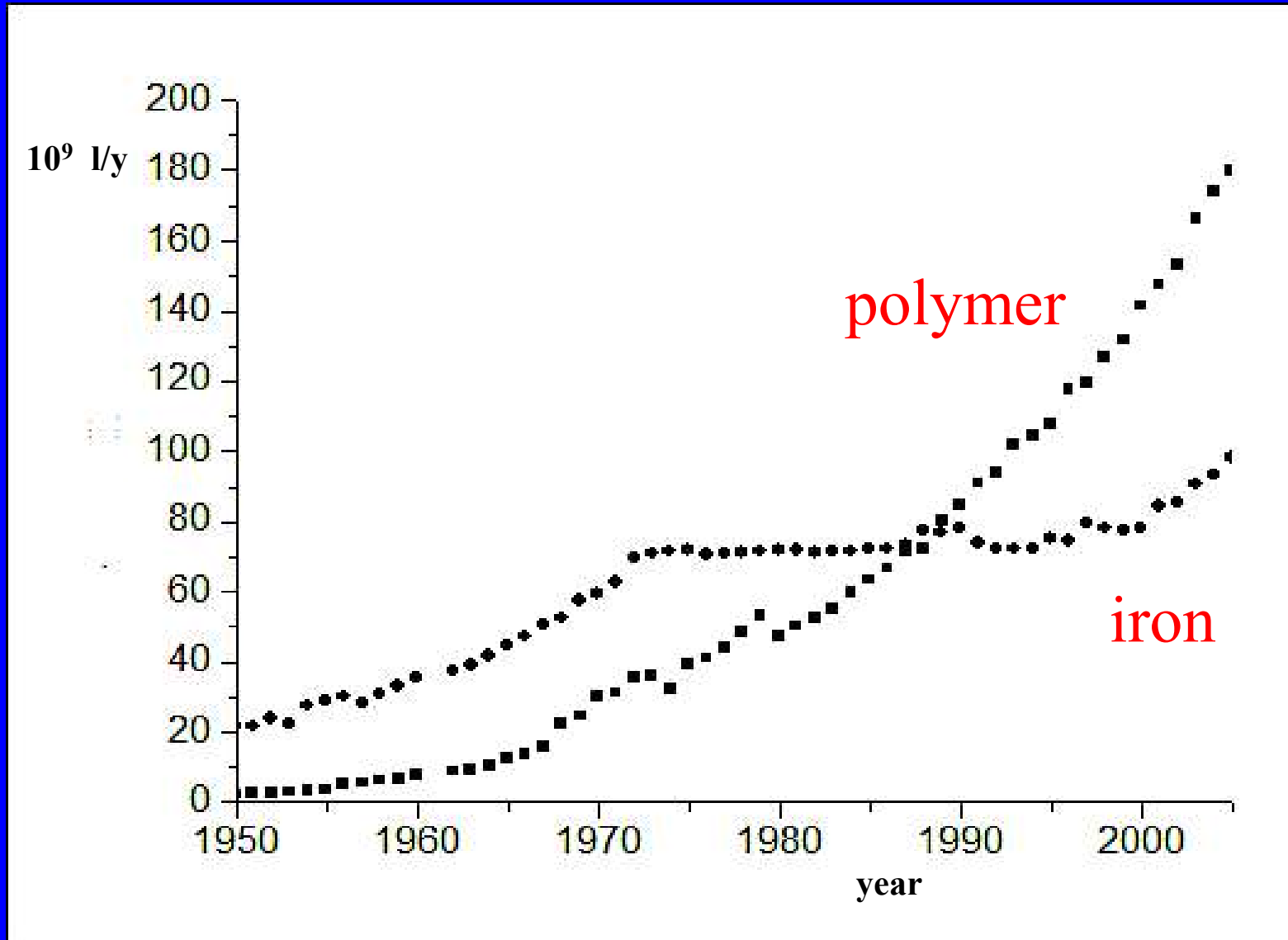
**ethylene terephthalat (PET)**

# Plastics are used for many purposes



Today's life is impossible without plastics.

Recently we are living in polymer age.



# Used plastic volume of Europe in 2018



35.4 M tons plastic become waste from the 61.2 M tons produced plastic in Europe (2018).

Polymers do not pollute the environment, but people pollute it.



# One of the most dangerous pollution is the plastic pollution of the oceans.

## The pathway by which plastic enters the world's oceans

Our World  
in Data

Estimates of global plastics entering the oceans from land-based sources in 2010 based on the pathway from primary production through to marine plastic inputs.

**Global primary plastic production:**  
270 million tonnes per year



**Global plastic waste:**  
275 million tonnes per year

It can exceed primary production in a given year since it can incorporate production from previous years.



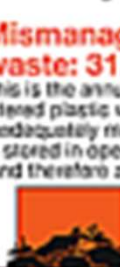
**Coastal plastic waste:**  
99.5 million tonnes per year

This is the total of plastic waste generated by all populations within 50 kilometres of a coastline (therefore at risk of entering the ocean).

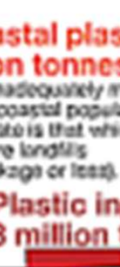


**Mismanaged coastal plastic waste:**  
31.9 million tonnes per year

This is the annual sum of inadequately managed and littered plastic waste from coastal populations. Inadequately managed waste is that which is stored in open or insecure landfills (and therefore at risk of leakage or loss).



**Plastic inputs to the oceans:**  
8 million tonnes per year

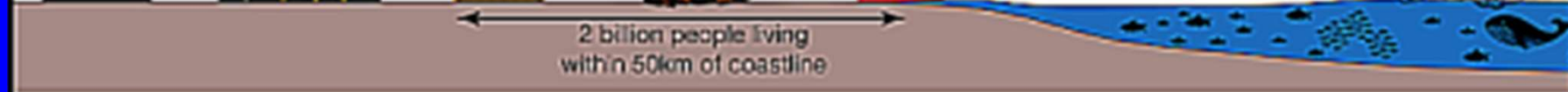


**Plastic in surface waters:**  
10,000s to 100,000s tonnes

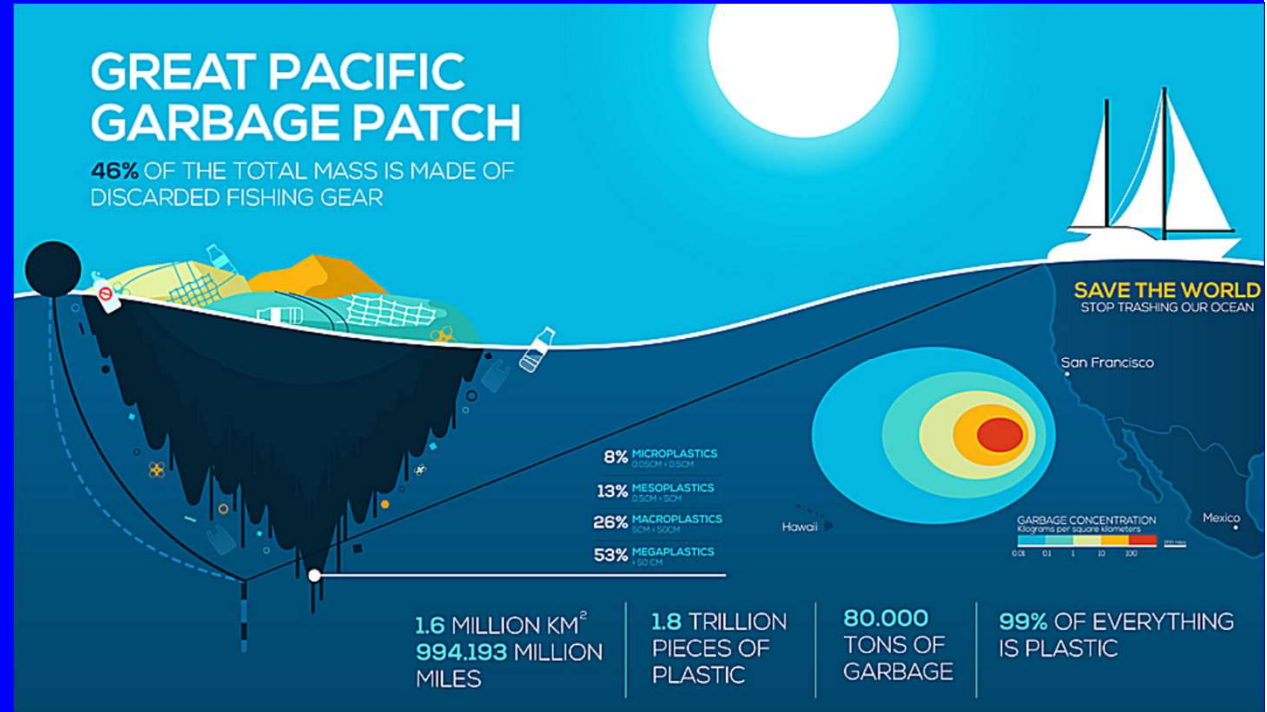
There is a wide range of estimates of the quantity of plastics in surface waters. It remains unclear where the majority of plastic inputs end up — a large quantity might accumulate at greater depths or on the seafloor.



2 billion people living  
within 50km of coastline

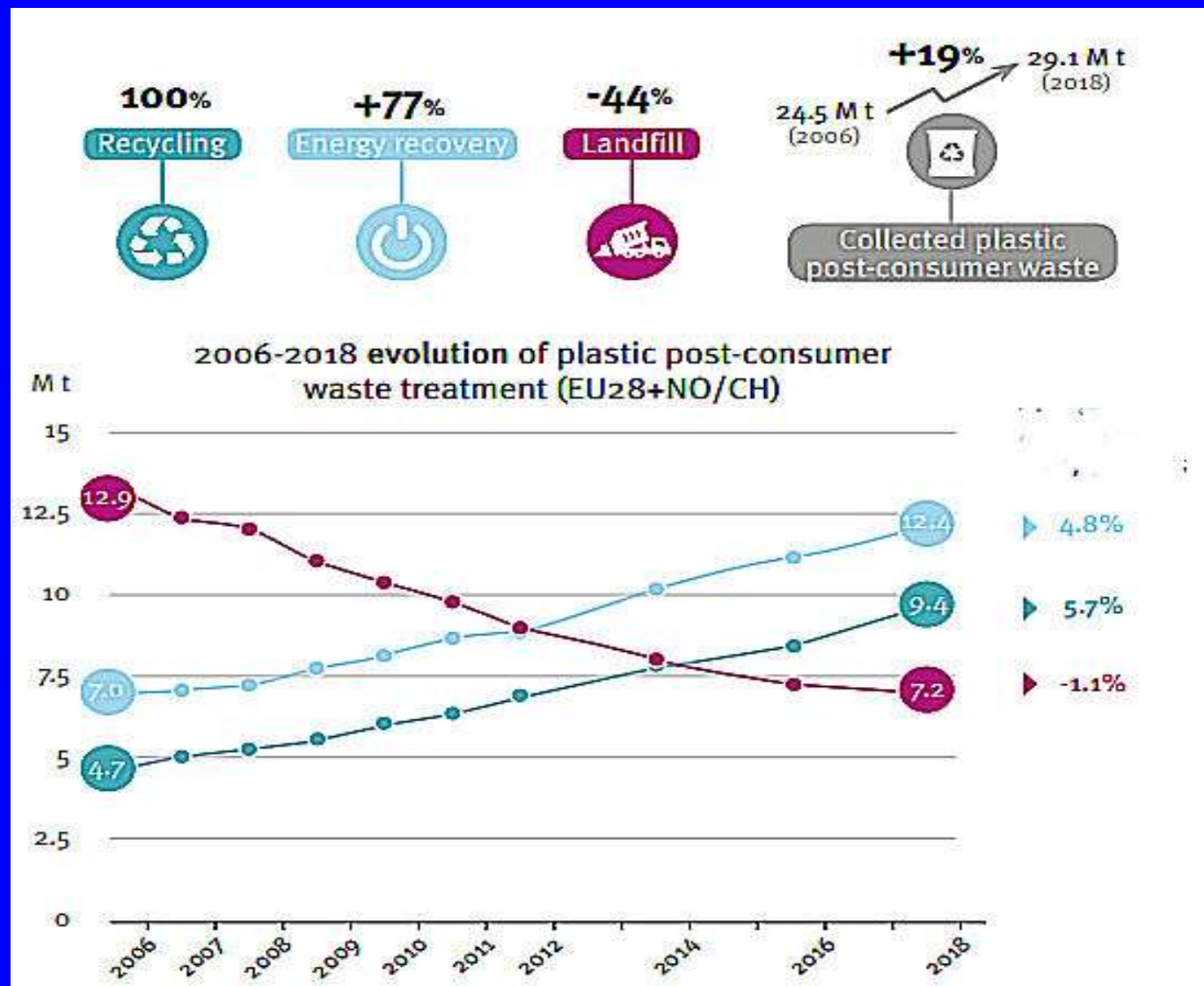


# Great Pacific garbage patch is possible raw materials for energy production.



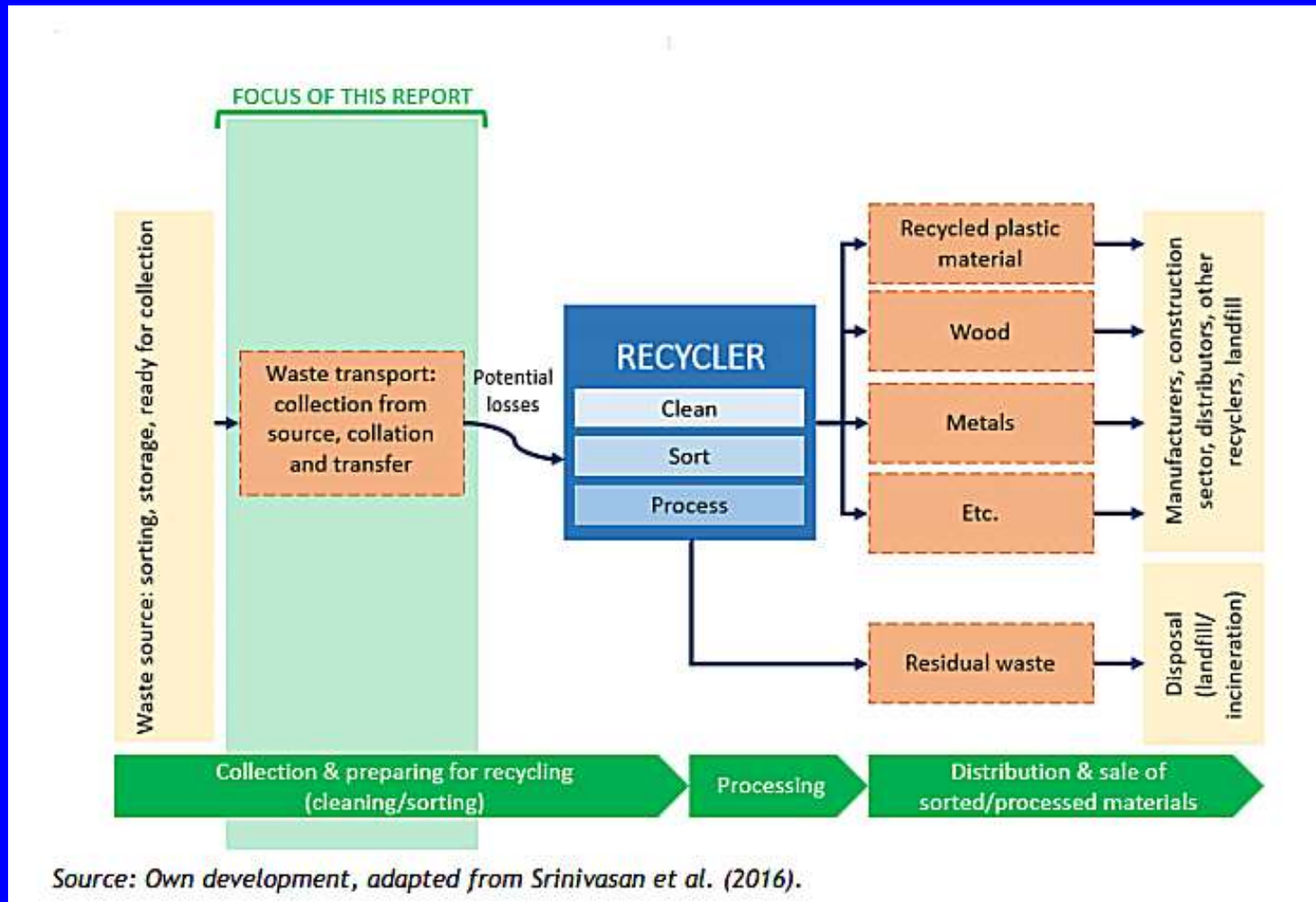


# Tendency of plastic waste treatments



Only 76% of collected waste are recycled or energy recovered.

# Selective waste collection is required.



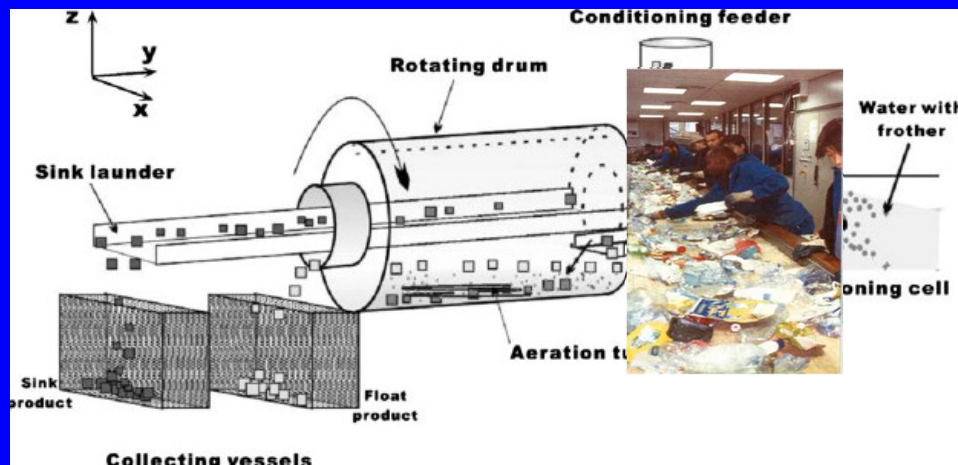
The plastic waste is 35.4 Mt, which is 12% of the whole waste. The plastics have 70% recycling potencial.

# Separation of plastics from other trash



The selections of the plastic are made mostly manually from other types of waste.

The instrumental separations of different types of plastic are unsolved in the everyday practice.



# The home treatments of PET bottles



Good practices are grinding and compression.



Bad practice is the sinking with molding.

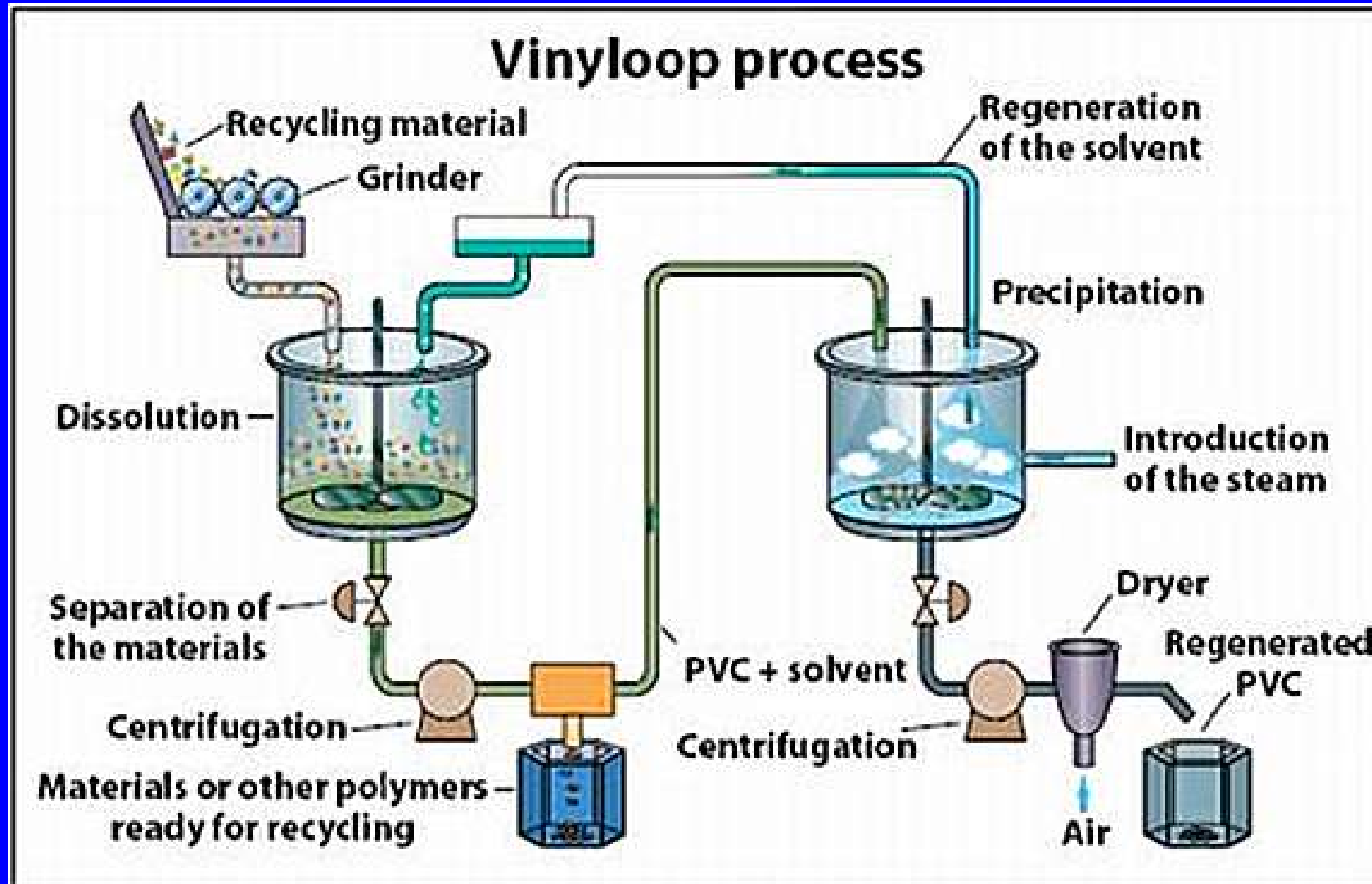
# Reuses of PET bottles



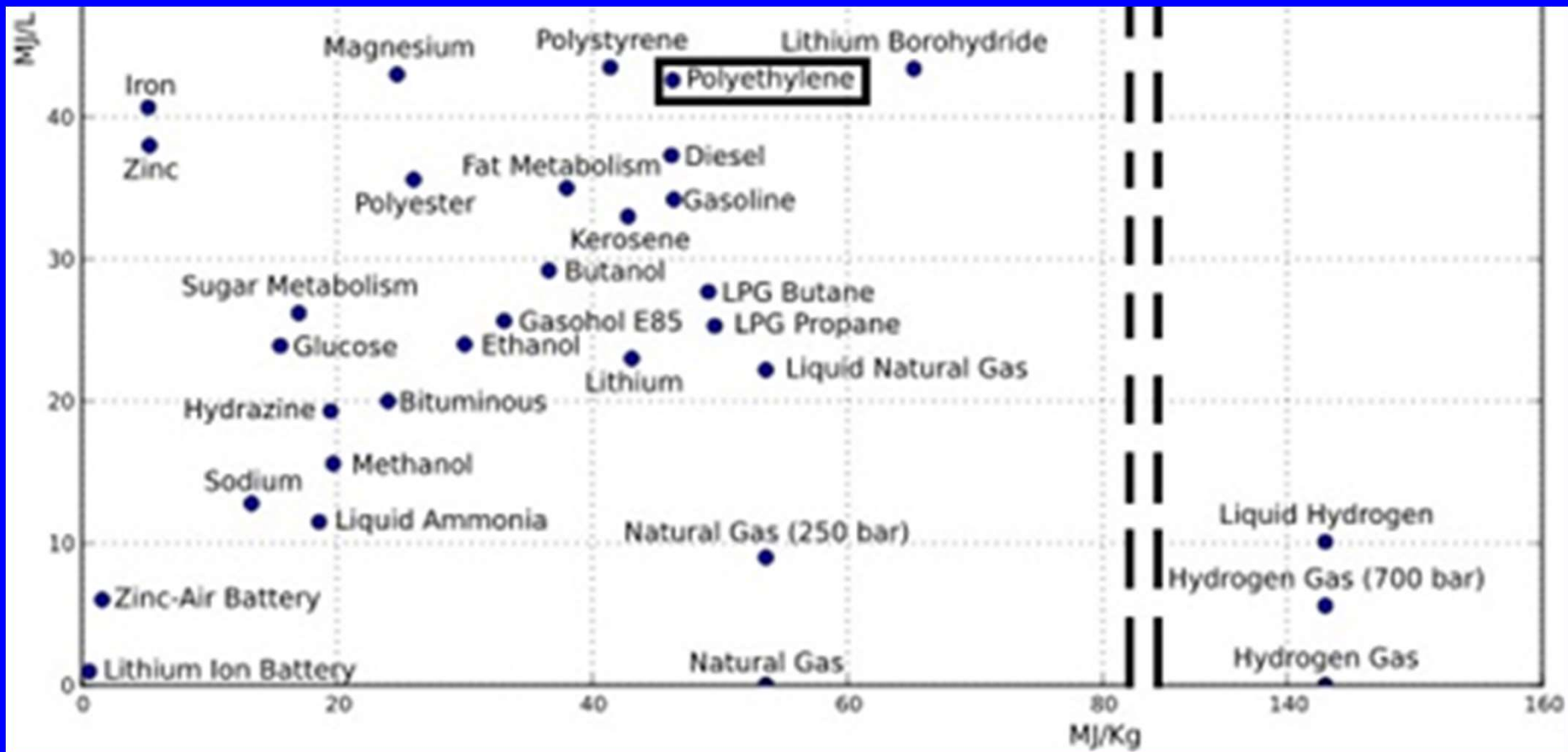
# Reuses of PET bottles



# Recycling of PVC



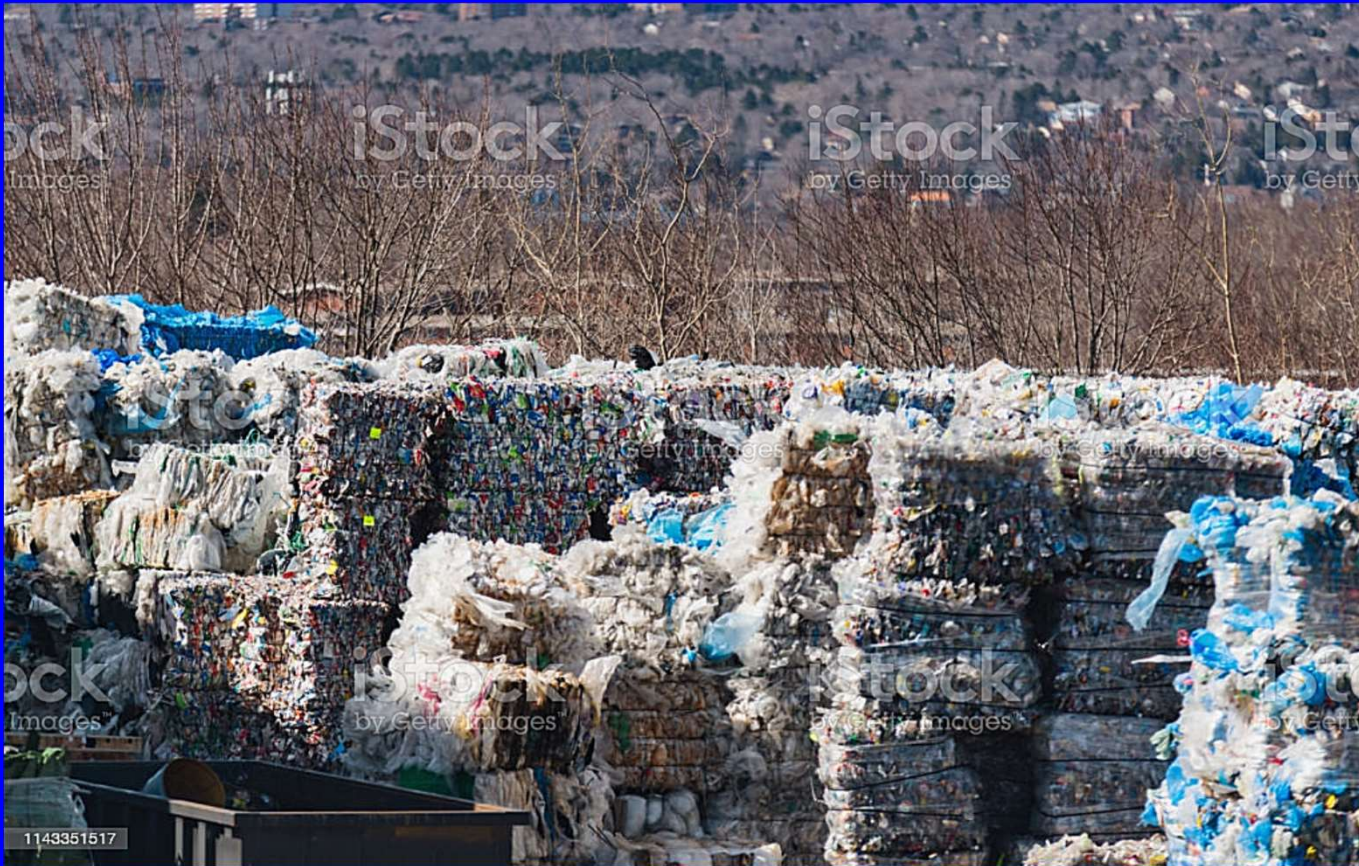
# Energy content of different materials



The plastics have high energy content per unit volume.

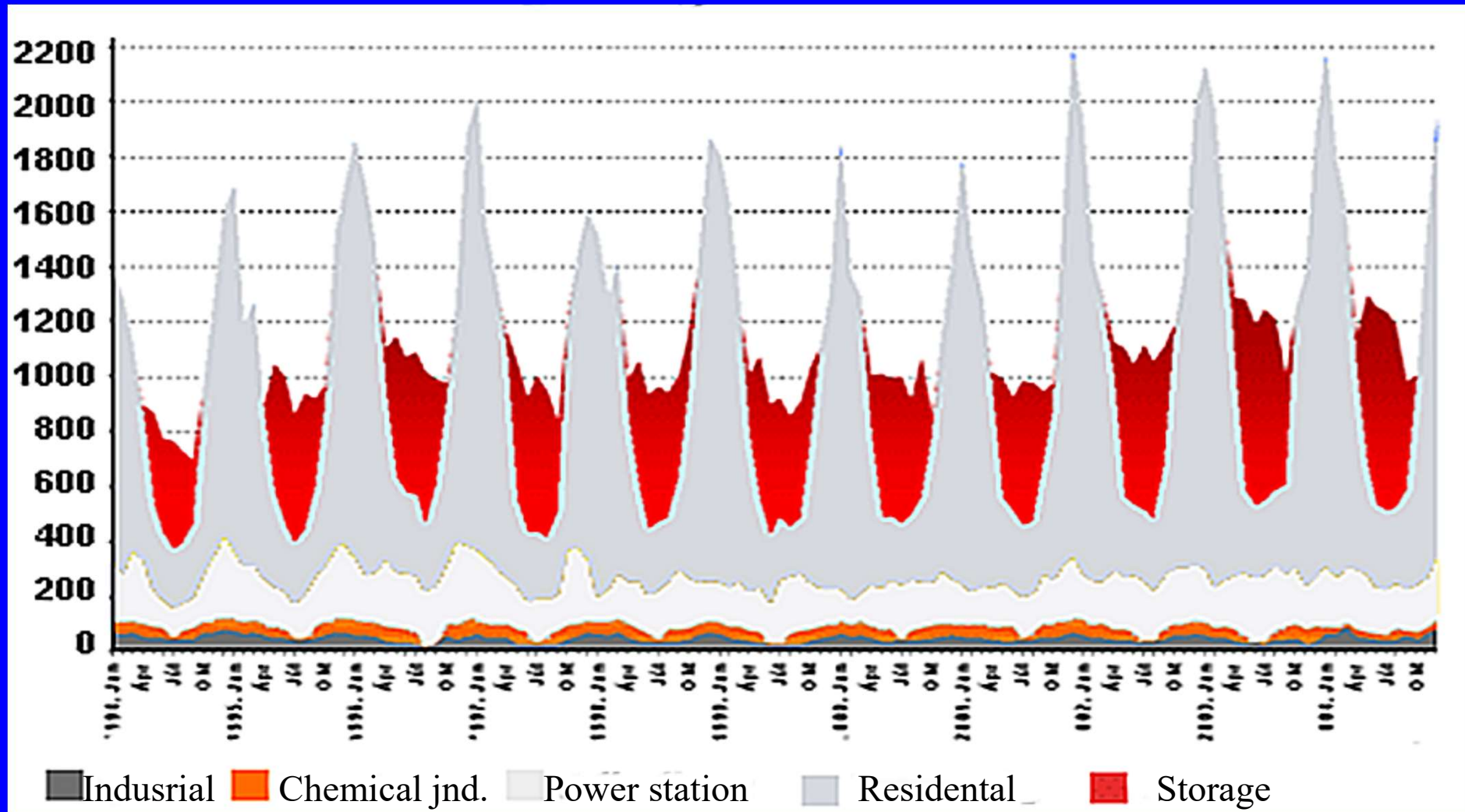


# Deponing the compressed plastic is potential energy raw materials



The plastic can be use in winter during the peak heating season , to nivellate fossil fuel consumptions.

# Natural gas consumptions among 1996-2004 in Hungary



# Hundertwasser's waste incinerator in Vienna



# Future outlook of the plastic waste management

- Legislation issues, banning, product fee, high fines for illegal deponation of wastes,
- Subsidy, tax realise, project support (in national and international levels),
- Increasing the rate of packing materials redemption, broader range of material with deposit fee,
- Technical and logistic impovements, inovation,
- Improved environmentally awarnes education.

Thank you very much for your  
attentions

