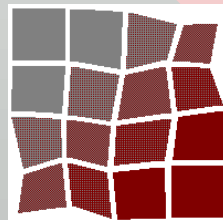


ISCOWA

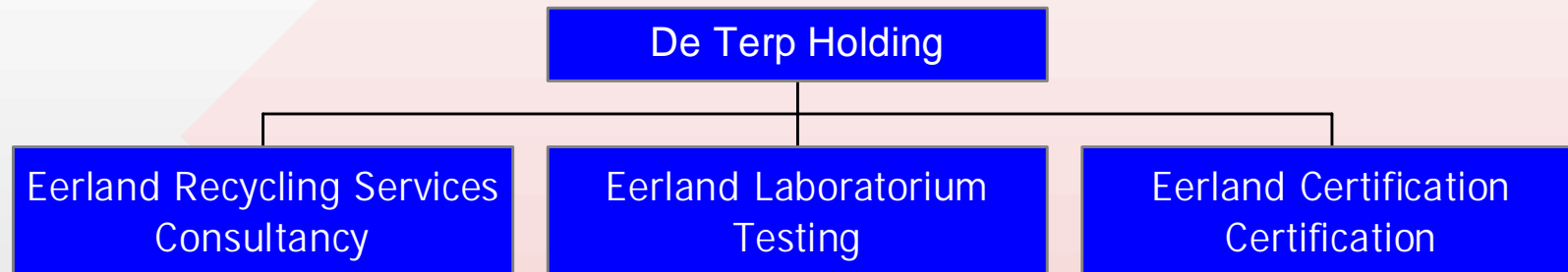
The Recycling of Construction & Demolition Waste

Peter Broere



Eerland
Recycling
Services

Introduction



Contents

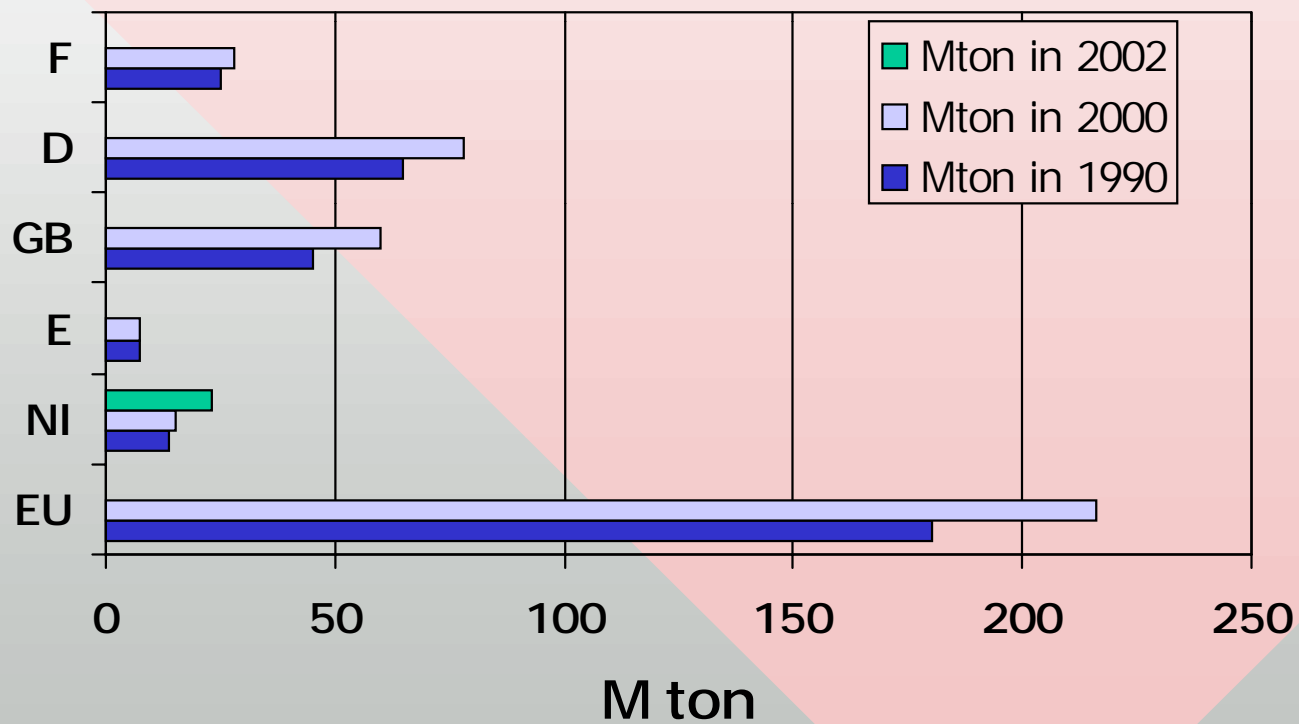
- Definition of C&D waste
- Recycling in Europe
- Recycling in The Netherlands
- Origin of C&D waste
- Processing
- Products and Applications
- Recent developments
- Conclusions

What is C&D waste?

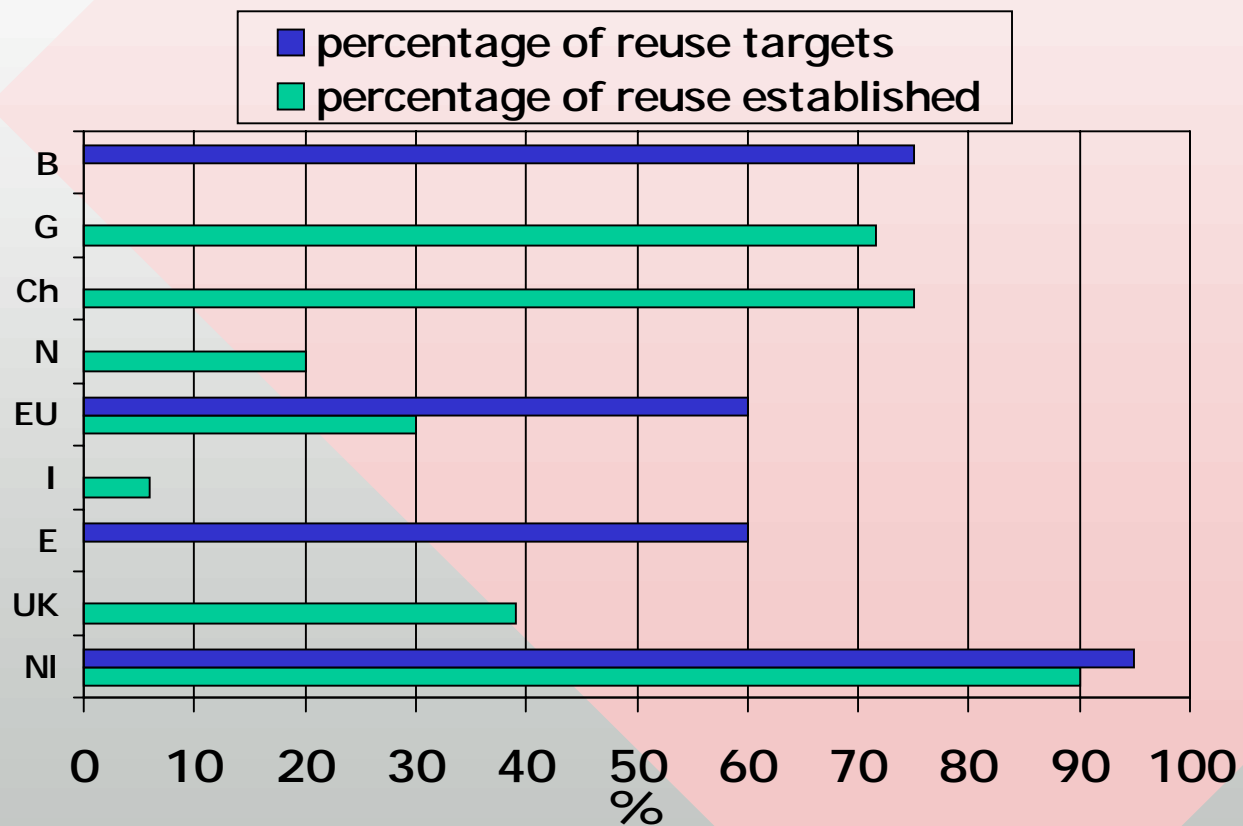
- Waste material resulting from constructing and demolishing:
 - Roads
 - Buildings
 - Bridges, fly-overs
 - etcetera

C&D waste in Europe (1)

estimates



C&D waste in Europe (2)

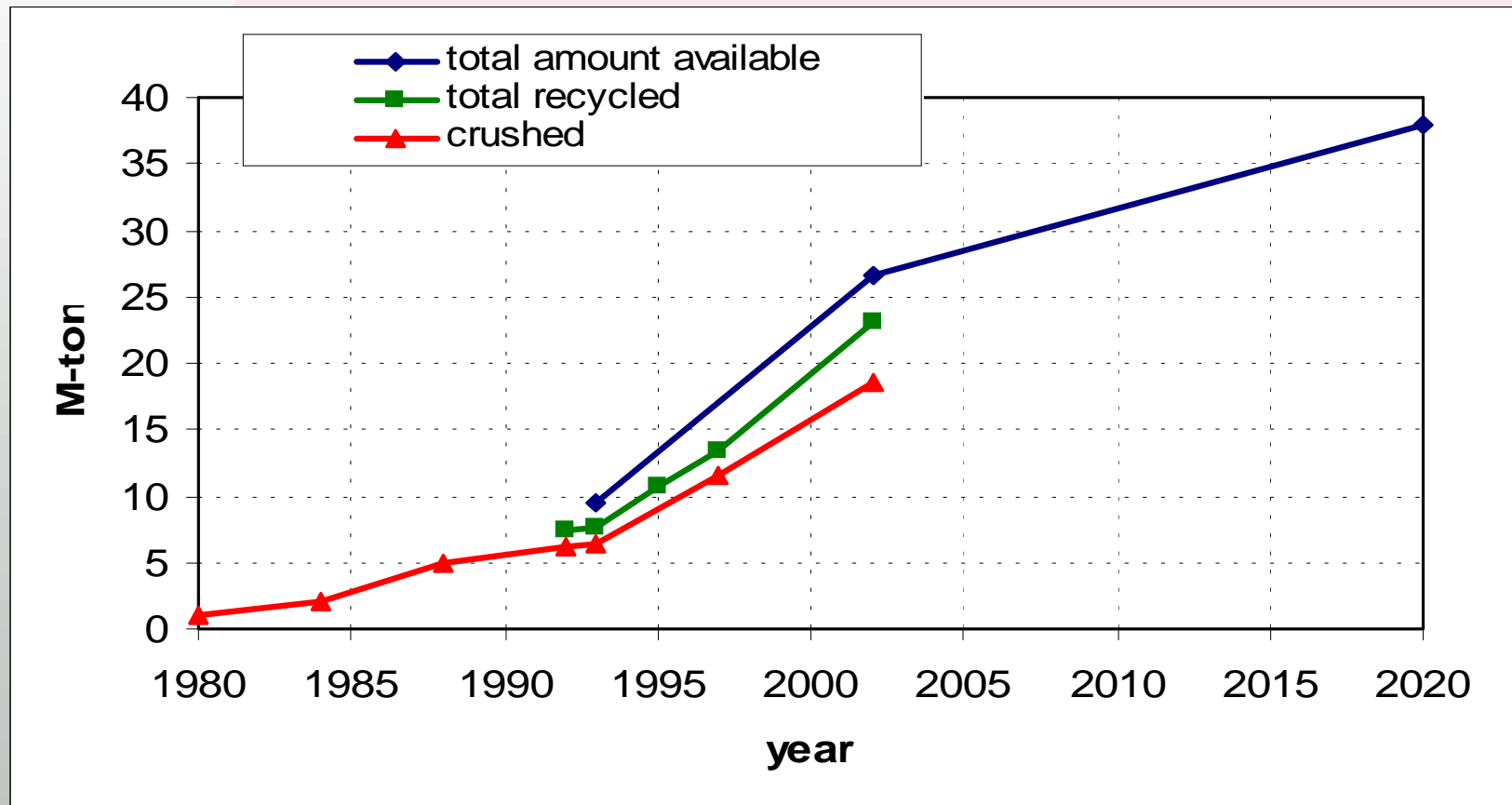


Netherlands

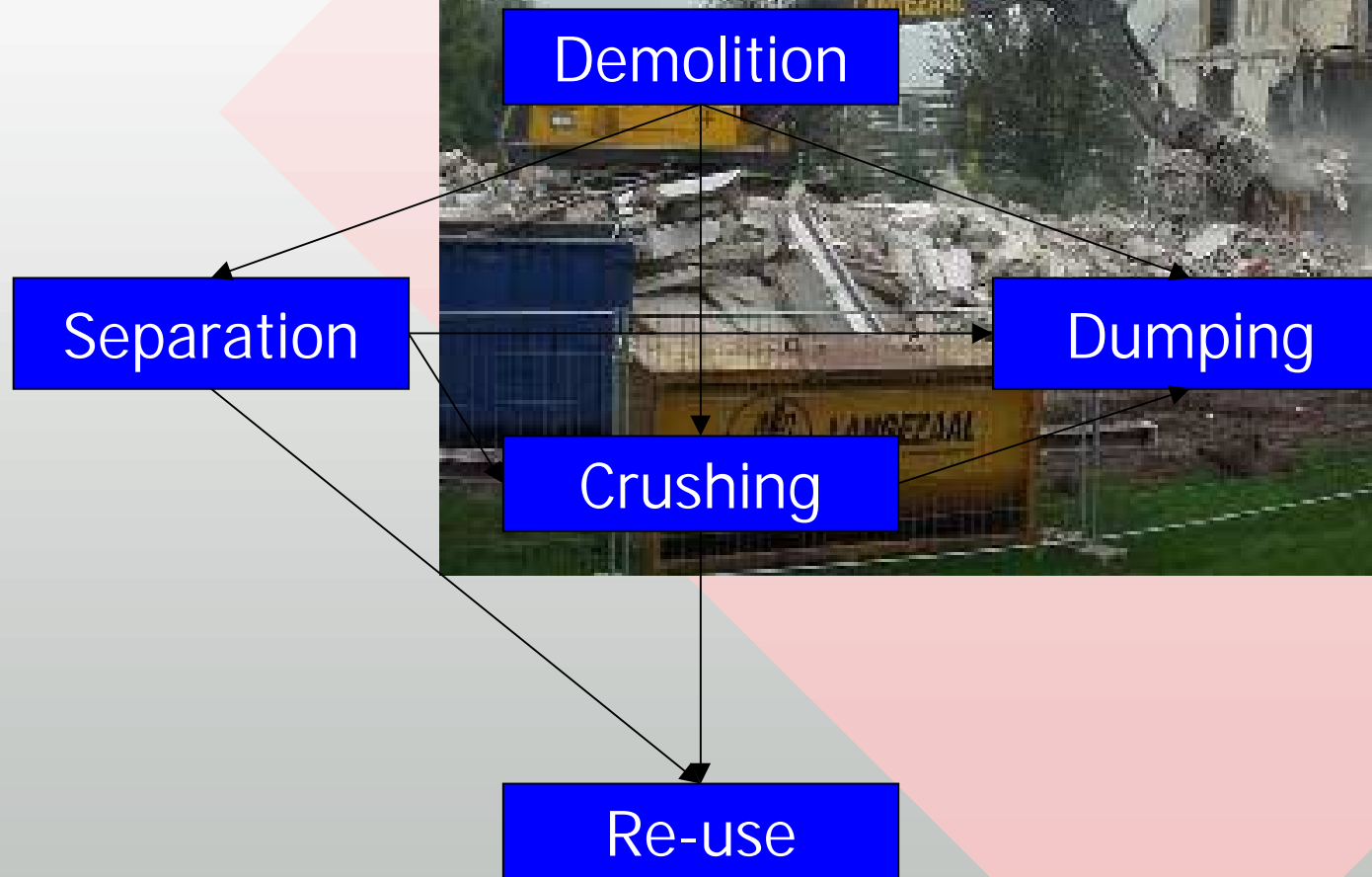
general information

Numer of inhabitants	Over 16 million
Inhabitants per km ²	400
Need for raw materials for construction	200 million tons
Quantity of C&D waste	26.5 million tons
% reuse	90 %
N ^o of recycling companies	150 crushing 90 separation

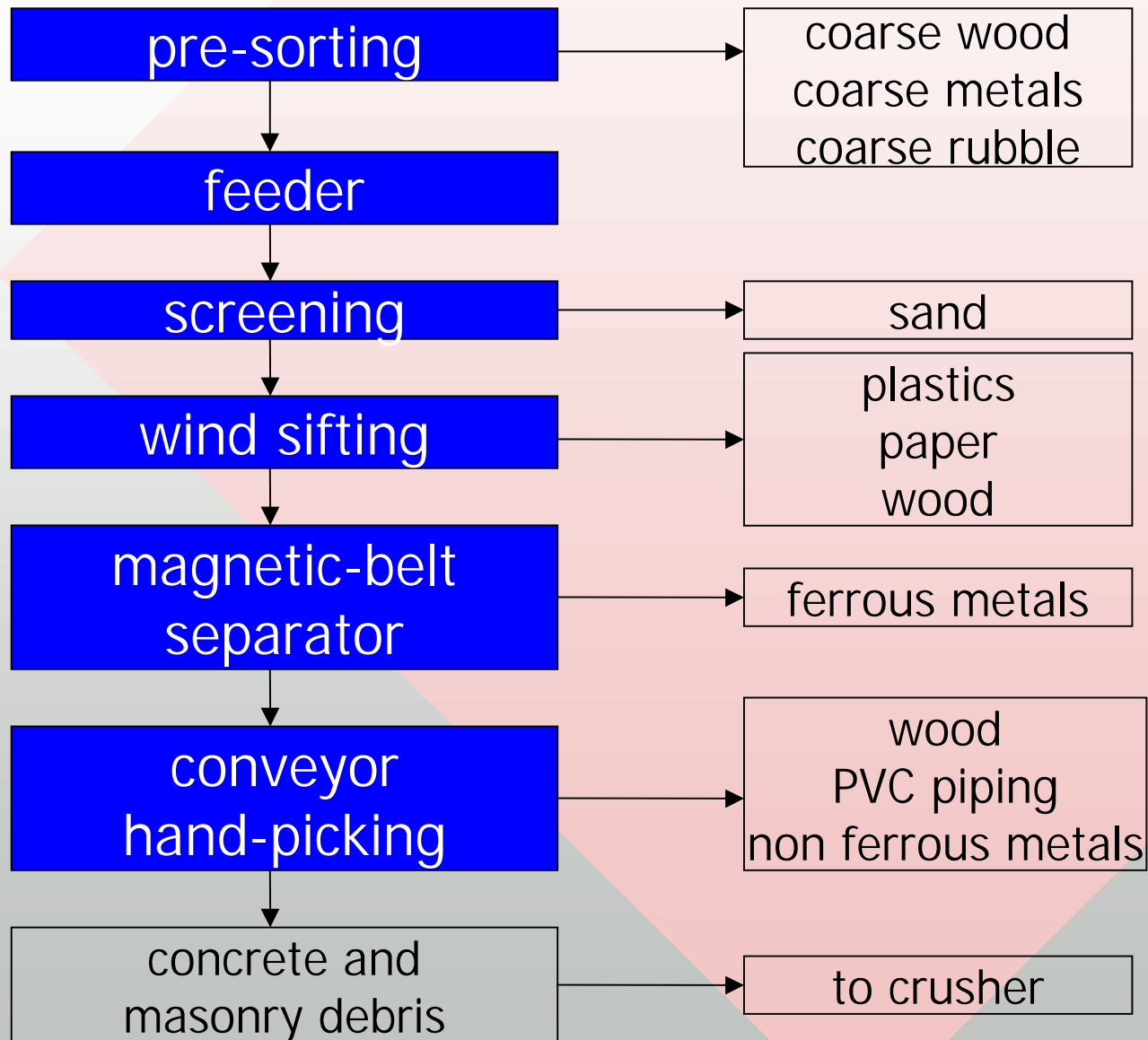
Development of reuse in the Netherlands



Sector flowchart

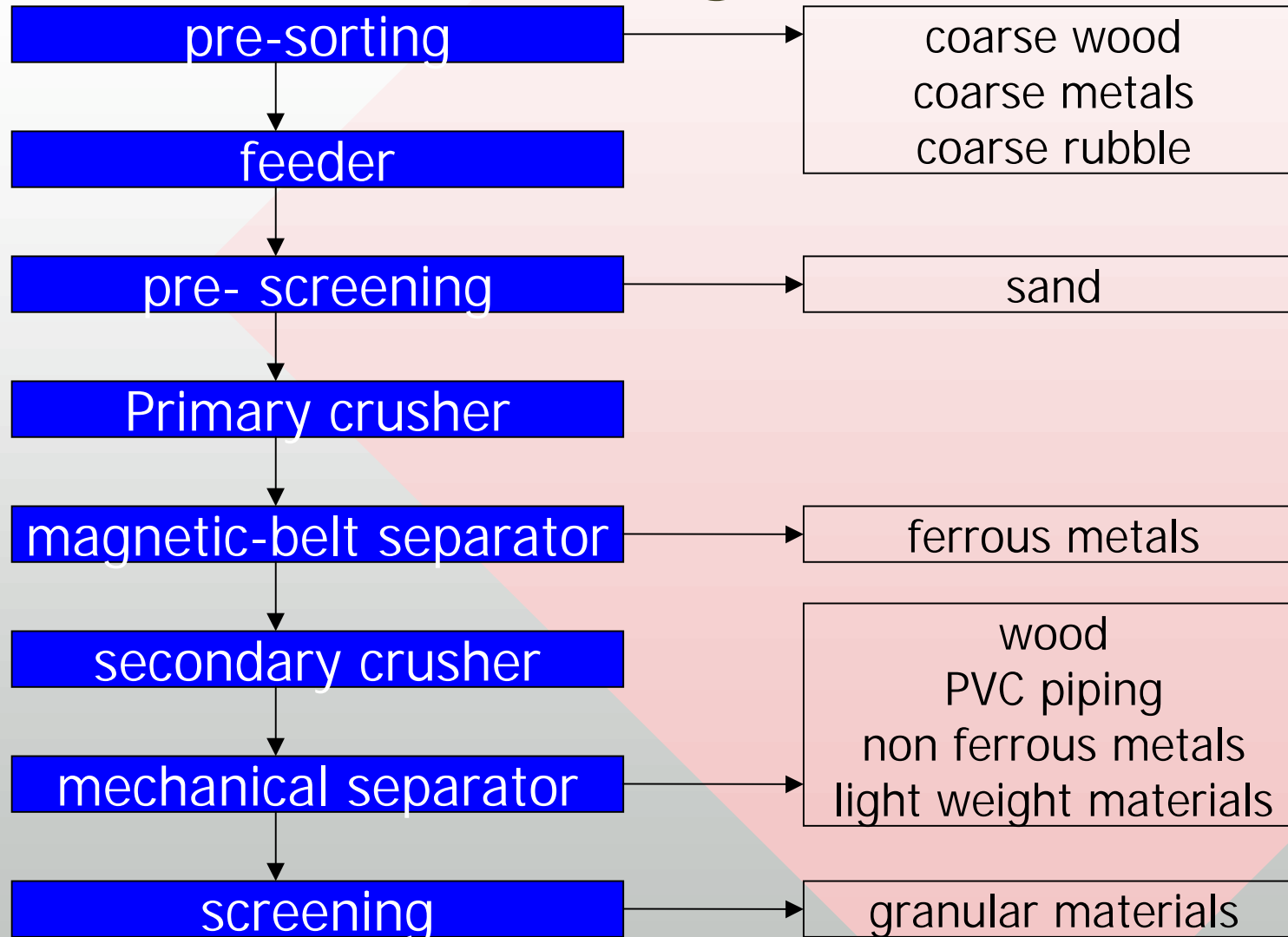


Separation-process





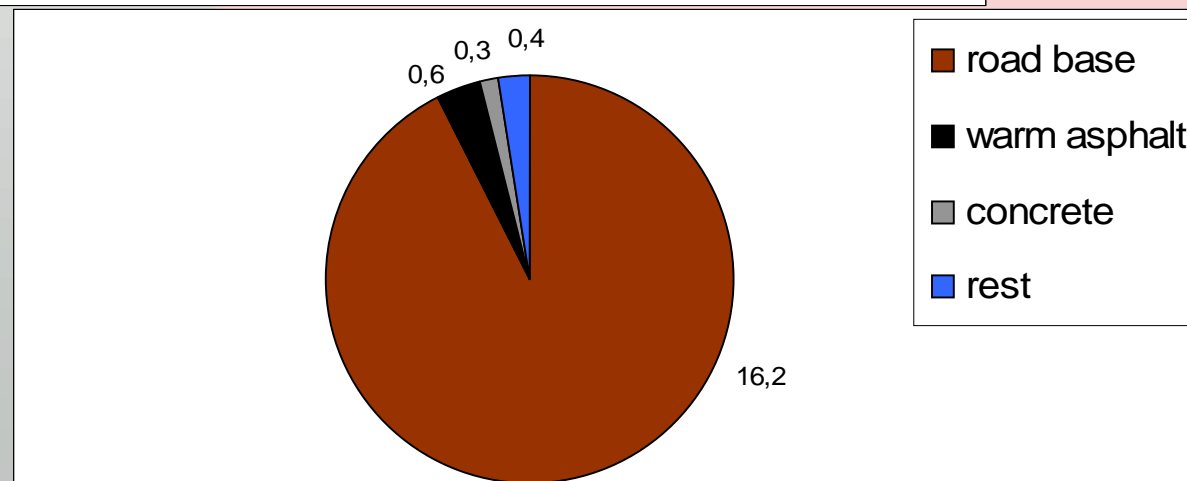
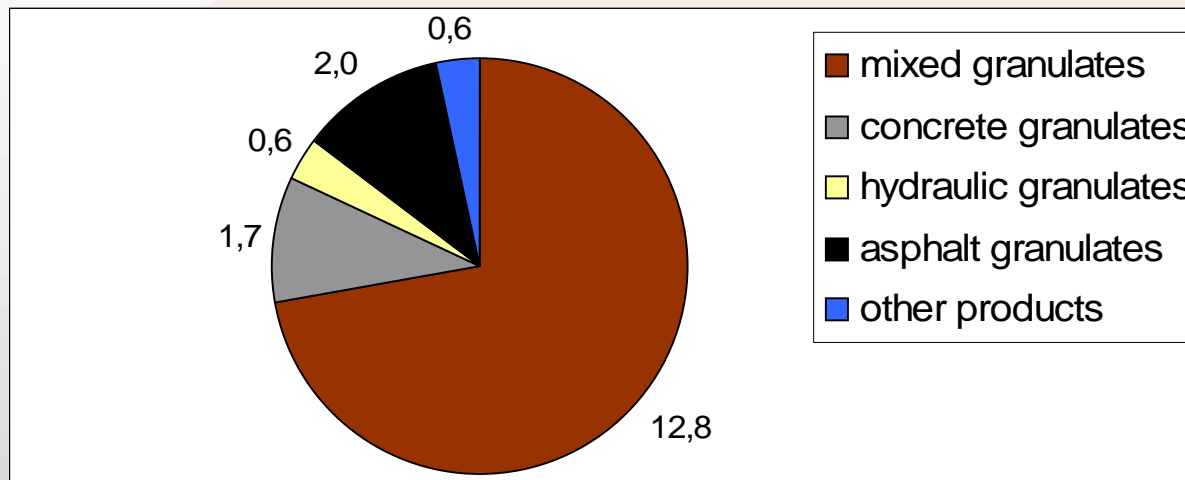
Crushing process



Main products and applications

- Secondary asphalt for reuse in hot mixtures
- Secondary aggregates for new concrete
- Cement bound asphalt granulate road base
- Cement bound granulates for road base
- Secondary aggregates for new road base
- Secondary sand for sub base

Products and applications



Netherlands application regulations

- Environmental standards (public)
 - Building Materials Decree
 - Environmental requirements for use
 - Marking by certification or research protocol
 - Testing by regulated tests
- Technical standards (Privat)
 - grain size distribution
 - composition
 - application specific requirements
 - CE-marking (2004)



Recent developments

- Market situation due to economic recess
- Secondary organic fuel
- Increment on export of separation materials
- Drive for new applications

Conclusions

- It is not only the quantity of reuse, also the quality is important.
- Other applications than road building are necessary for durable recycling.
- Special local government policy can rise the amount of recycling of C&D waste.
- CE marking will be the next step in the broad acceptance of secondary granulates.