

**Carbon Flows in waste  
management  
in terms of type of waste  
and type of material**

Dr François Schneider  
Dr Andreas Windsperger



INSTITUT FÜR  
INDUSTRIELLE  
ÖKOLOGIE

# Introduction

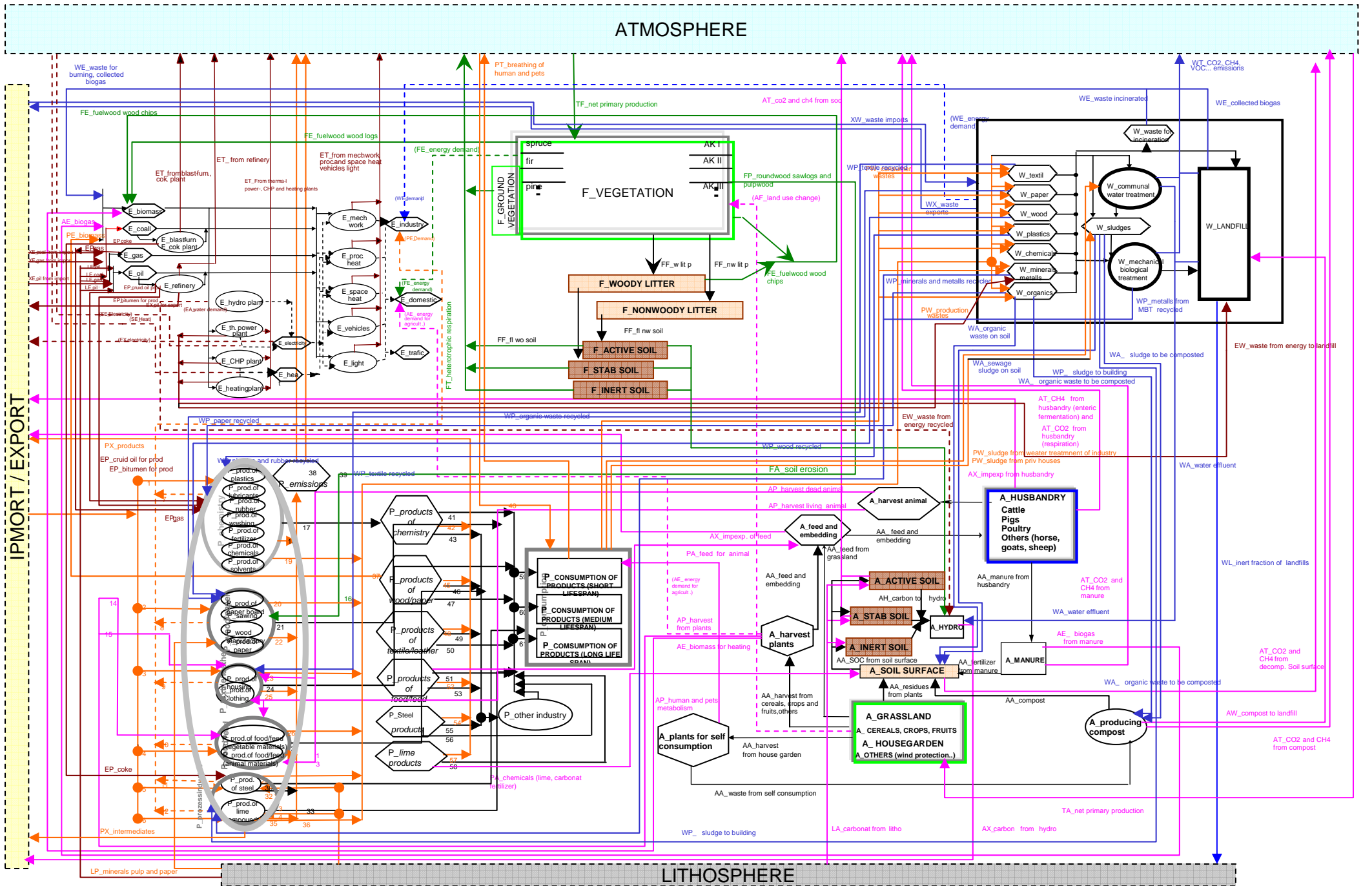
- Good availability of data in Austria on waste management
- Different studies that analysed waste composition
- Possibility to follow the flows of waste in waste management
  - per type of waste
  - per type of material

# Plan of presentation

- I- ACBM project
- II- Waste Module
- III- Method
- IV- Description per type of waste
- V- Description per type of material
- VI- Total Flows
- VII- Example of Organic waste
- Conclusion

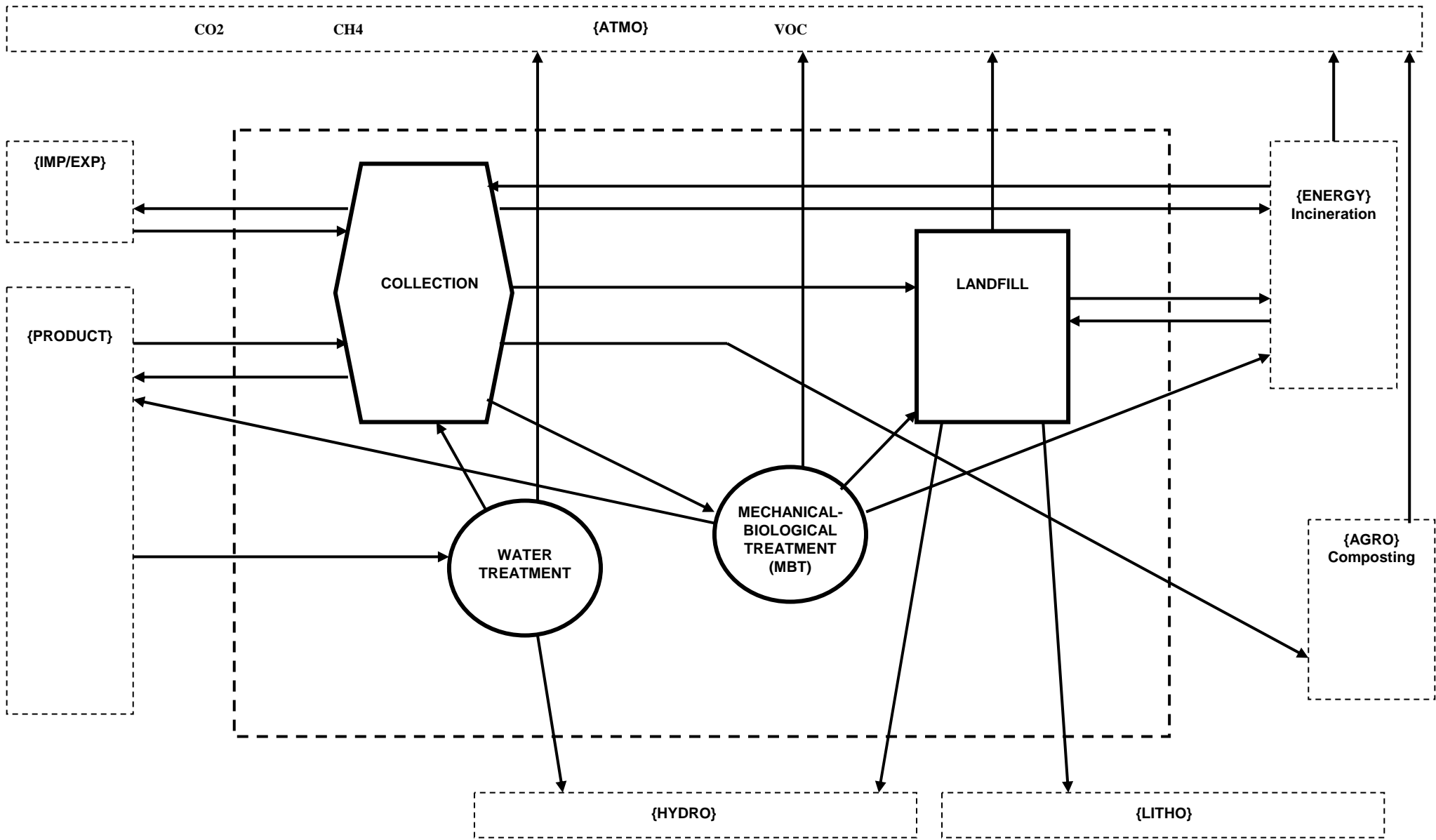
# I-ACBM Project

- 3 institutes: IIE, Joanneum, Seibersdorf
- Carbon Flows in Austria
- National modules: AGRO, FOREST, PROD, WASTE, ENERGY
- External modules: IMP-EXP, ATMO; LITHO
- Modelling for the years 1990-2010



## **II-Waste Management module**

- Link with production sectors
- Modelling in the landfill
- Waste collected is usually described per types of waste
- Necessary description per type of material



# III-Method

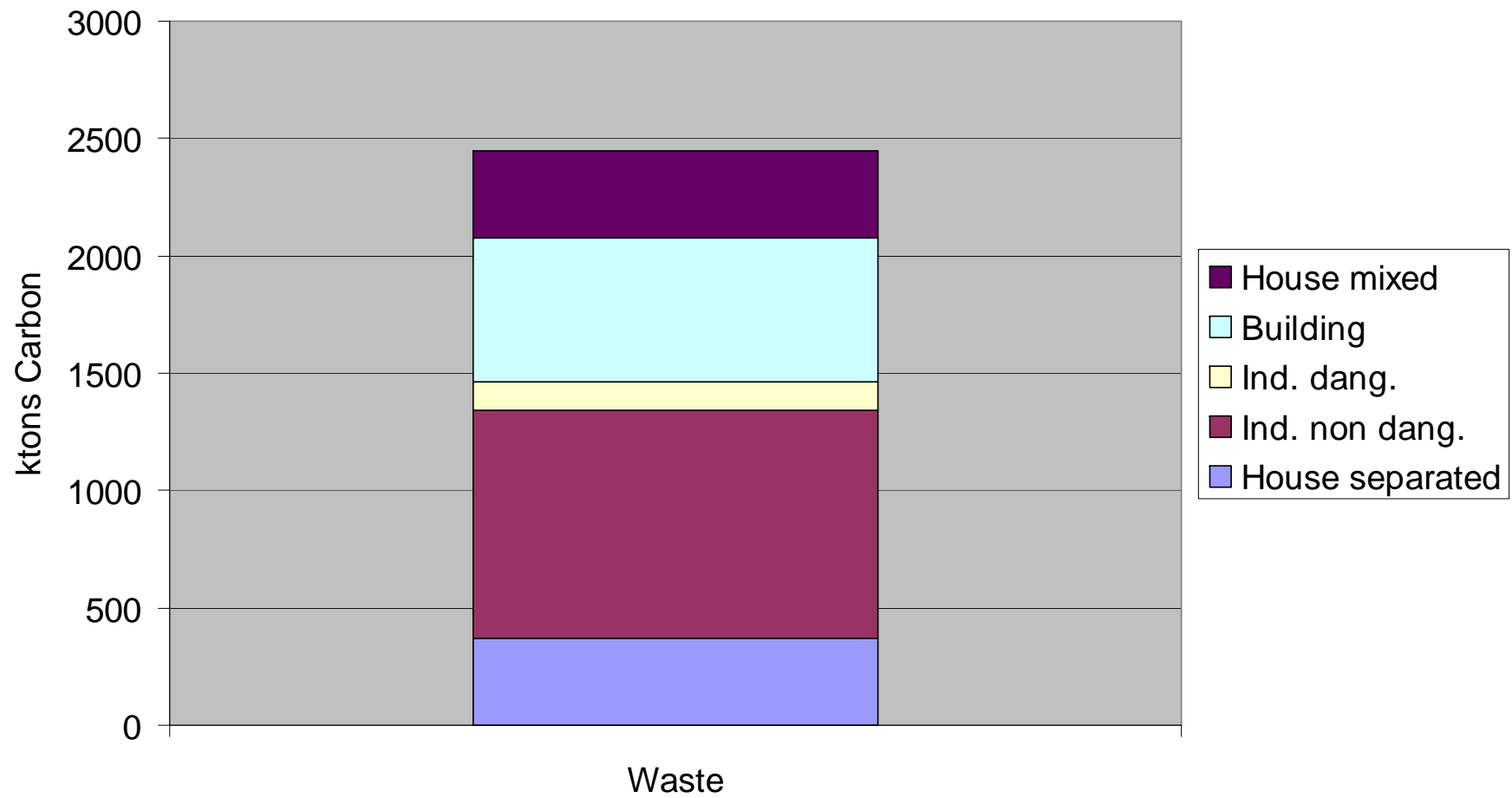
- Data from the Austrian Environmental Agency (UBA)
- For each waste, carbon content, water content are compiled
- Separate analysis of mixed waste with data compiled
- 20 year time horizon for the landfill model, based on the behaviour of different organic molecules
- Only imports-Exports of dangerous waste are dealt with from the waste module

# **IV-Types of wastes**

- **Separate collection from households**
- **Other Non dangerous waste**
- **Dangerous waste from industry**
- **Building waste**
- **Household waste not separated**

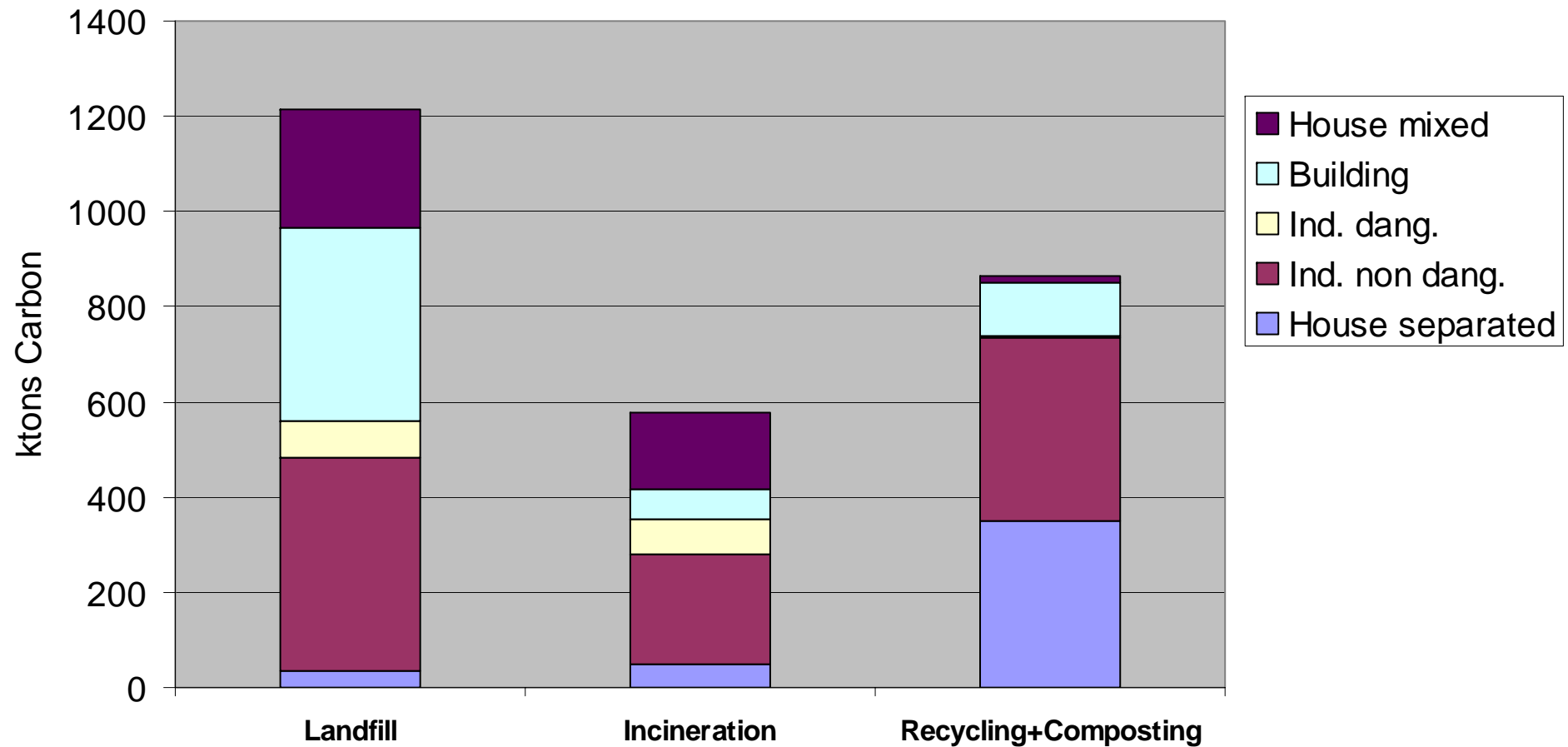
# Austrian carbon Flows in 1995 in waste management

## Waste per type

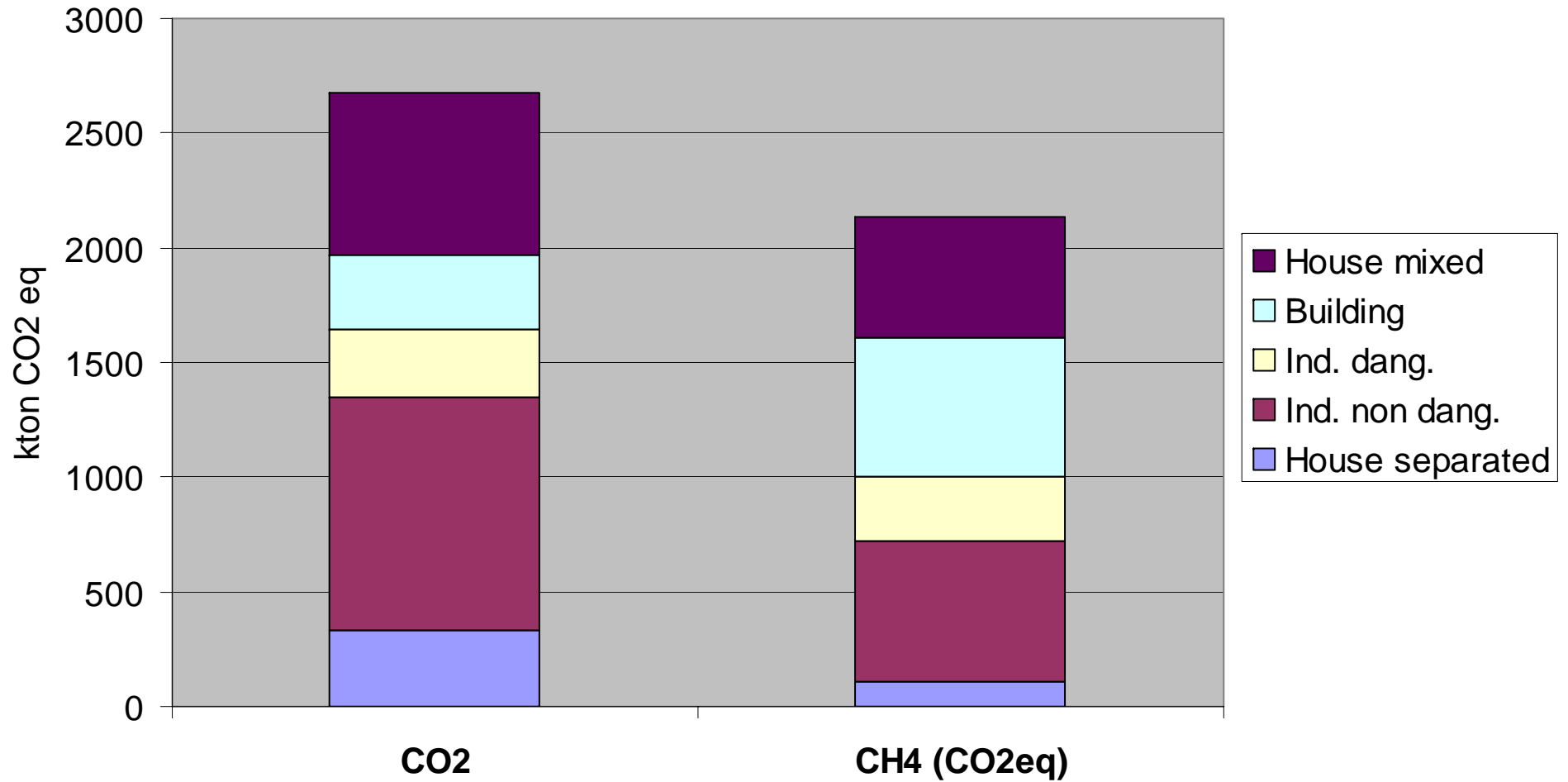


# Austrian Carbon Flows in 1995 in waste management

## Types of treatment per type of waste



**Austrian Carbon flows in 1995 in waste management  
air emissions in CO2 eq allocated per type of waste**

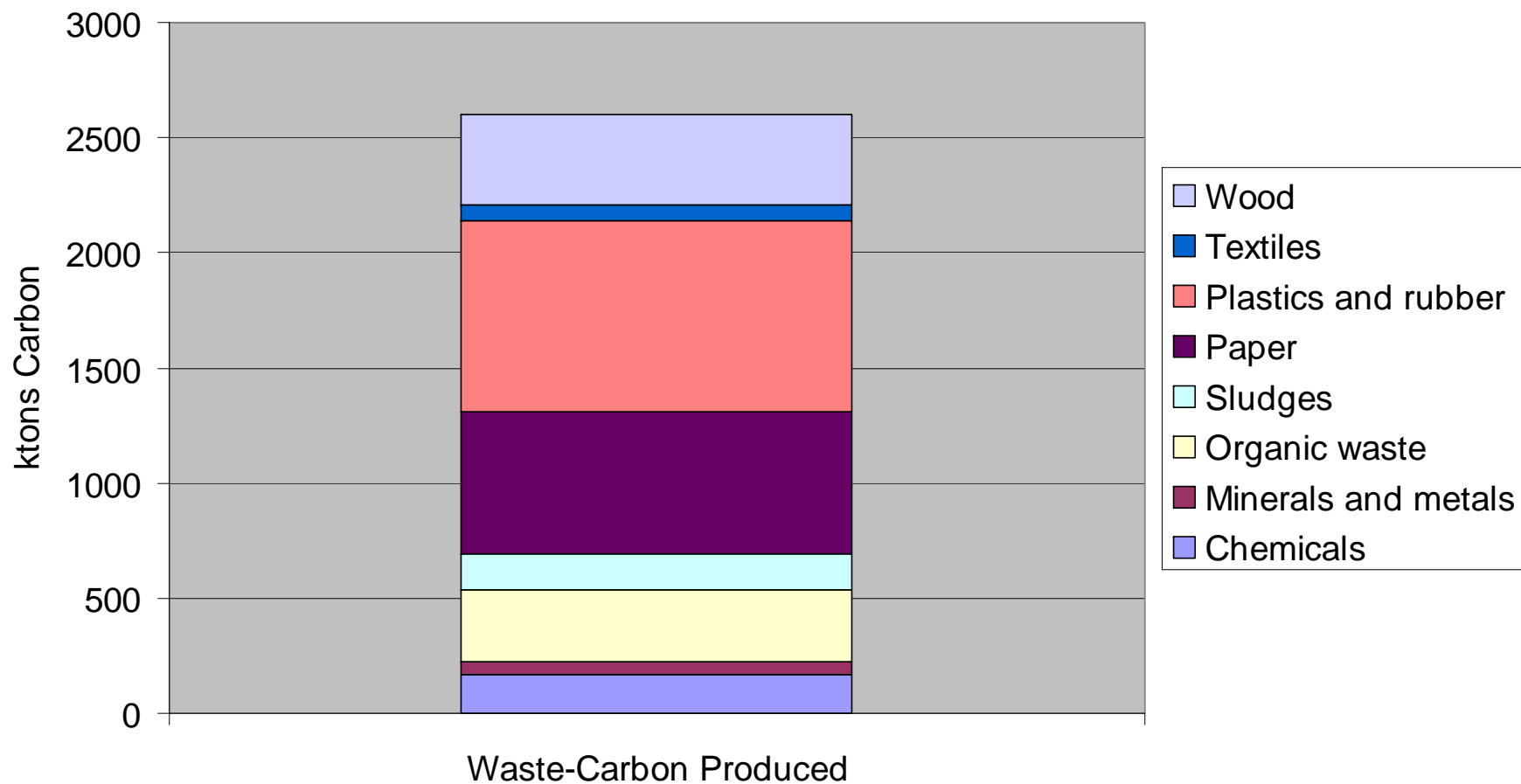


# **V-Types of materials**

- **Chemicals**
- **Metals and Minerals**
- **Organic matter**
- **Paper (cellulose materials)**
- **Plastics and Rubber**
- **Textiles**
- **Wood**
- **Sludges**

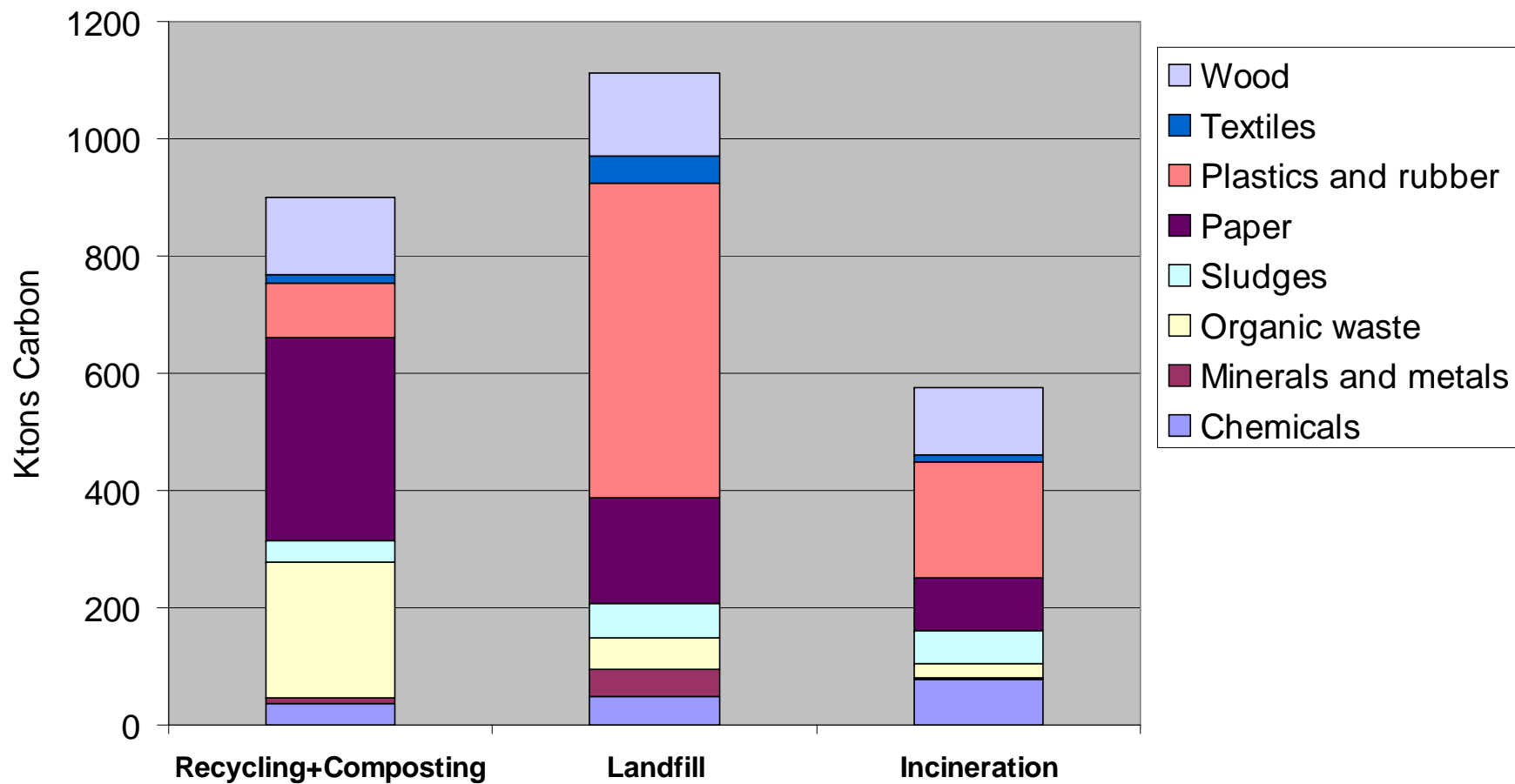
# Austrian Carbon Flows in 1995

## Amounts of waste per type of material

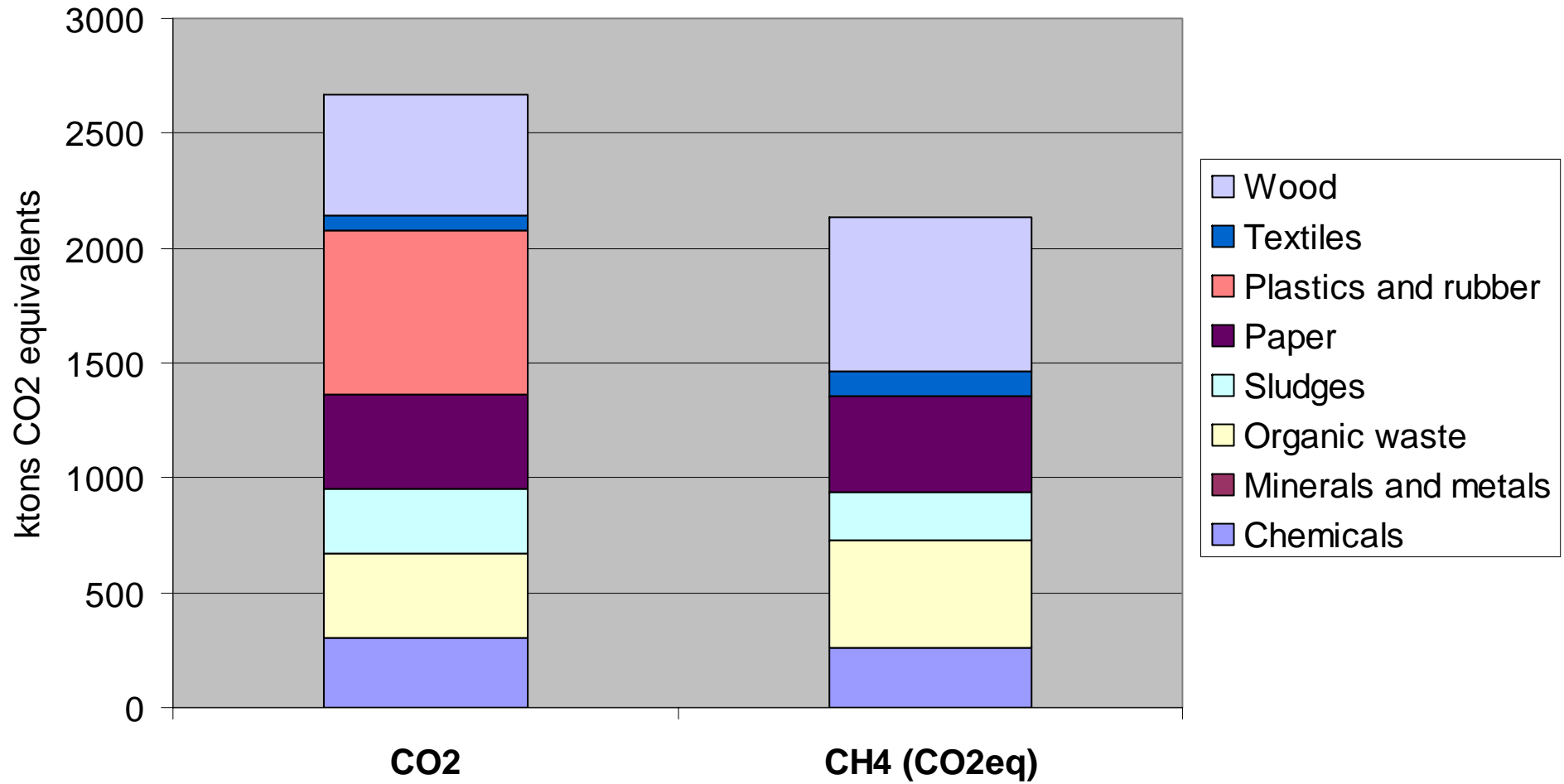


# Austrian Carbon Flows in 1995

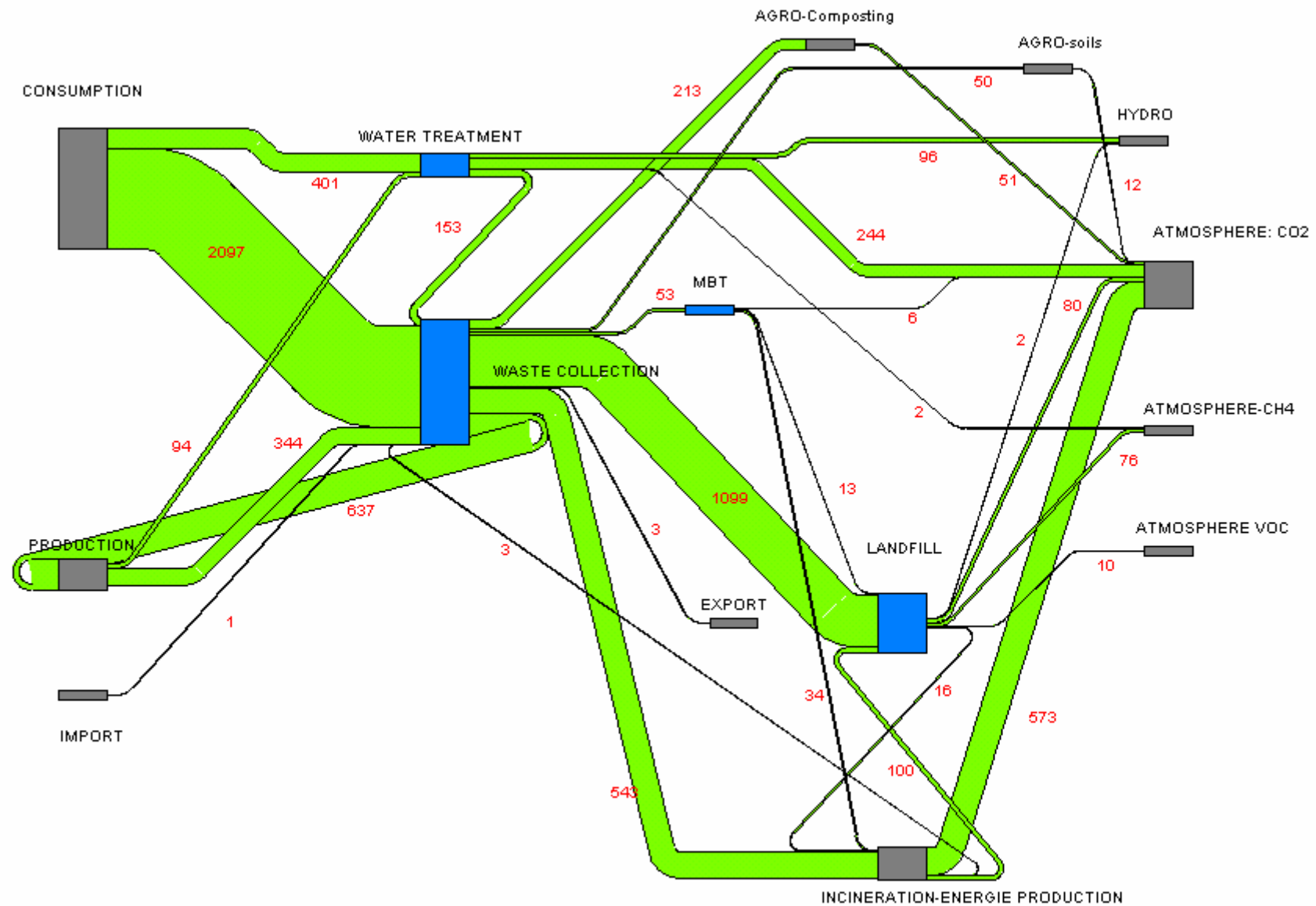
## Types of waste treatment per type of material



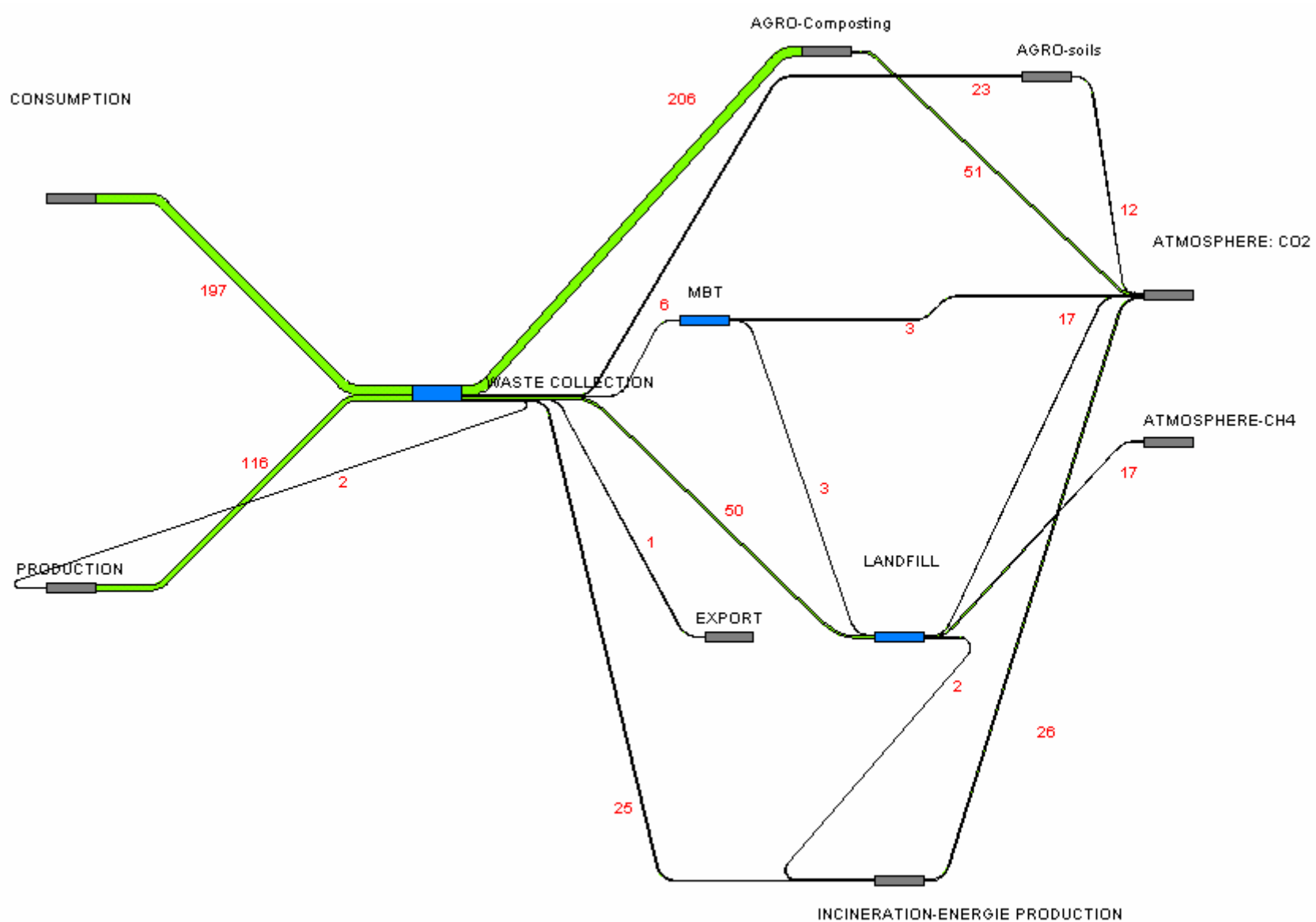
**CO2 and CH4 Emissions from the 1995 waste flows  
allocated per type of material**



# VI-Total carbon flows in waste management in Austria, 1995

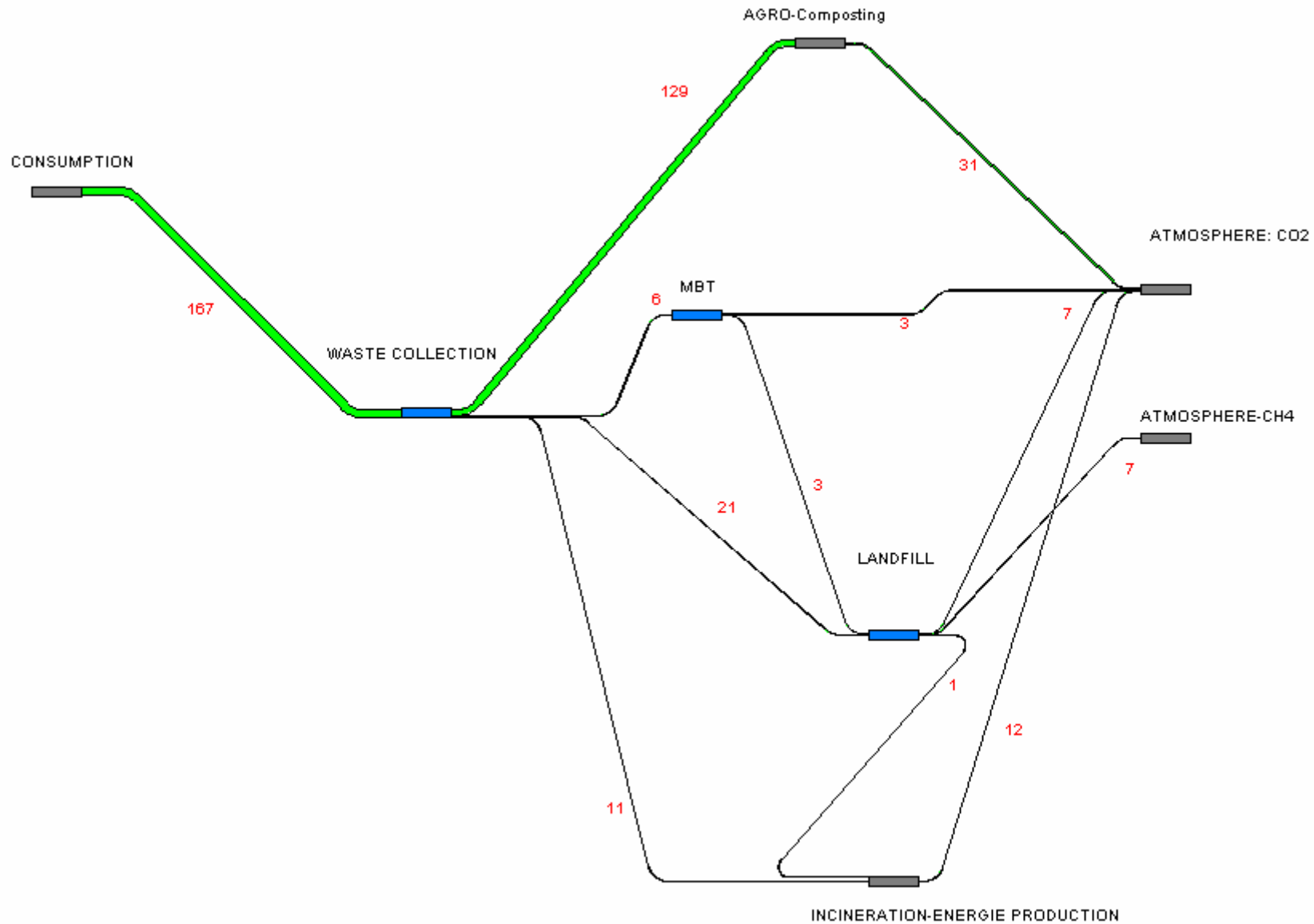


# VII-Example of carbon flows in Organic waste (Austria 1995)



# Organic waste from consumers, separate collection + mixed waste

## Flows in kt Carbon



# Conclusion

- Carbon flows seen under different angles, with added information
- Insights on possible waste management optimisations
- Check on data
- Global management of materials