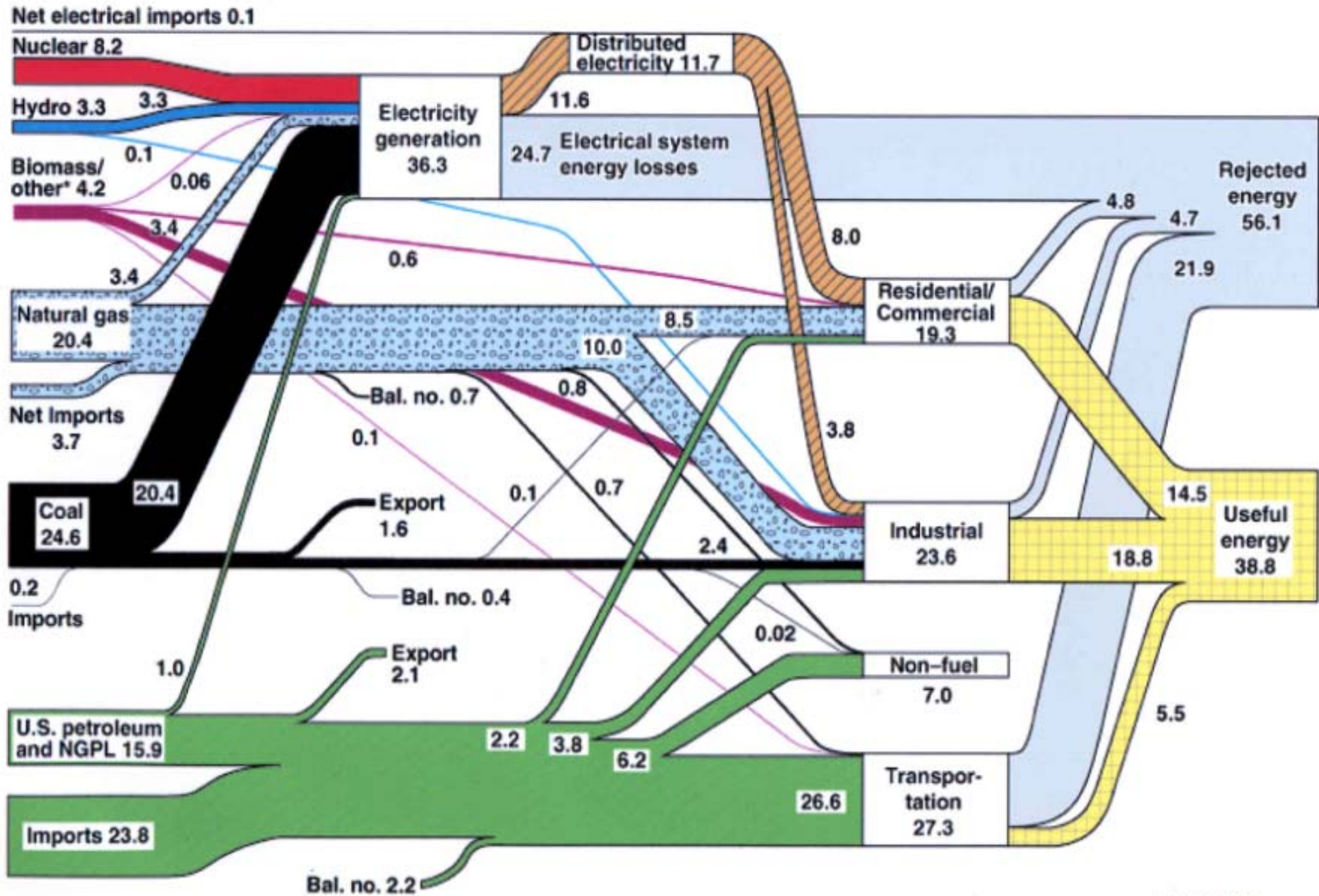


4°)energy efficiency and energy storage

how to manage the futur of EEC energy dependence for a sustainable development ?

- Main parameters
- 1) primary energy ressources and **efficiency**
- 2) energy consumption and **energy storage**
- **3)water consumption** for energy production
- **4)energy density** per different kinds ofsynfuel

- *****European decision nov 2008:**
- **set plan 20/20/20 : *CO2 : reduction of emission**
- ***ENR :renewable energy sources**
- ***Energy efficiency of processes**



Source: Production and end-use data from Energy Information Administration, *Annual Energy Review 1999*
 *Biomass/other includes wood and waste, geothermal, solar, and wind.
 European Parliament STOA 22 /3/2011
 EMRS/UPMC

Energy efficiency

- **Primary energy sources**
- Combustion car engine : 22% max 10%
- Coal power plant : 33% --57% 10%
- Photovoltaic pannel :15% to 32% 7%-16%
- photosynthesis for corn : 3% 1.8%
- Photosynthesis for microalgae: 9% 5%

The main challenge in the Field of
energy is:

how to manager the energy storage

just an exemple

60 kg of battery=15KWh max

60 kg of syndiesel=660KWh

we have to rebuild hydrocarbons
molecules from
carbon dioxide and electricity

- *we call that carbon recovery*
- *or sustainable development*
- *with energy storage*