Life Cycle Assessment (LCA), Bottom-Up model (BU) and Computable General Equilibrium (CGE) model

LCA: Focused on one product and traces the environmental load occurred upstream and down stream in production / disposal. Good for calculating a perturbation effect of usage / preference change of the product

Usually ignore the substitution effect among production factors, intermediate goods for production.

Focused on the material chain cycle of good's production and disposal.

BU: The quantities to be produced /consumed are prescribed. Calculates the effect of improvement of production technology, required amount of product and so on. The reduction efforts of energies / products are not reflect to the prescribed quantities to be produced

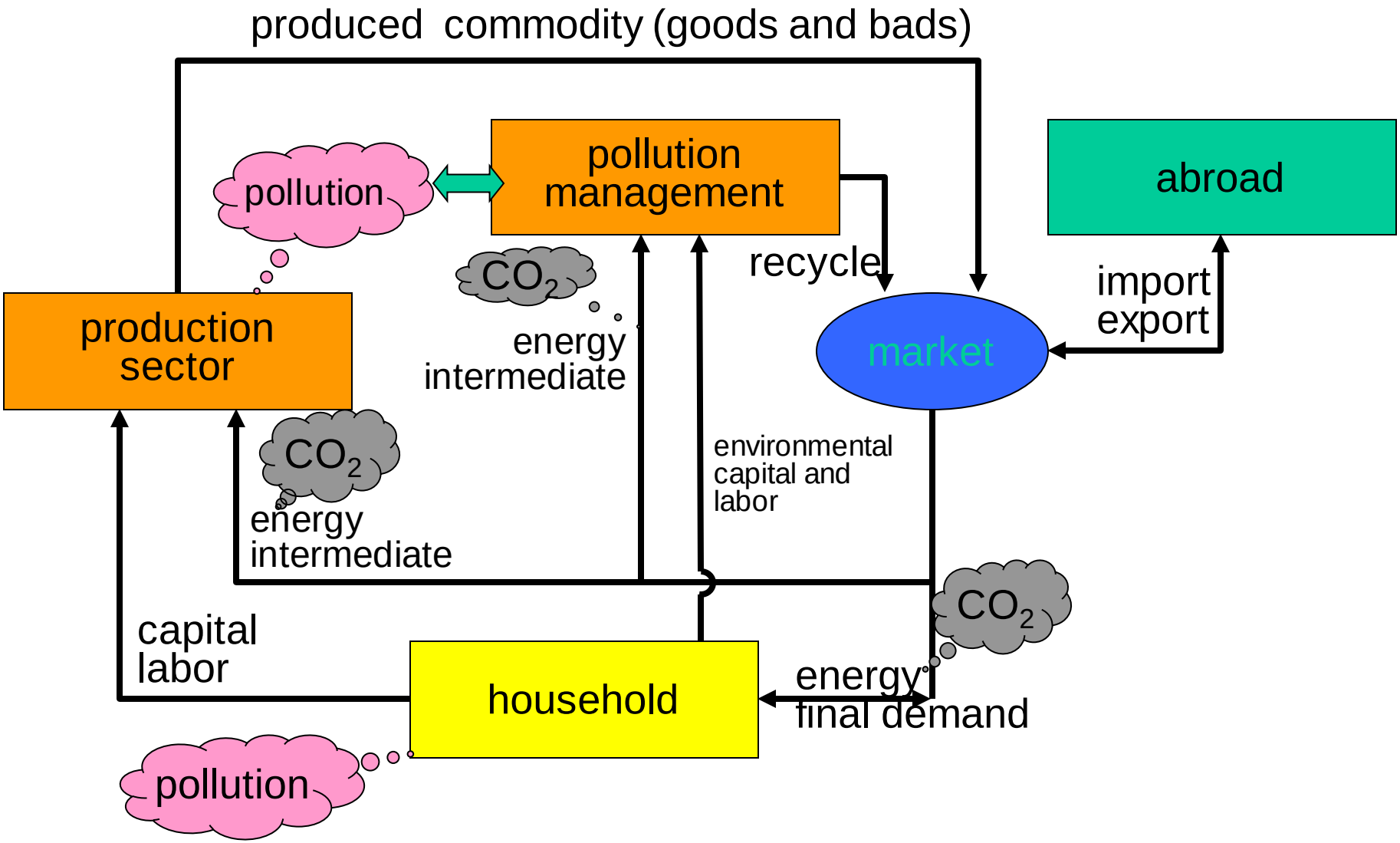
Life Cycle Assessment (LCA), Bottom-Up model (BU) and Computable General Equilibrium (CGE) model

CGE: Focused on the mutual interaction on economic sectors, and calculate the interactive effects among technology improvement, change of consumer preference, economic policies.

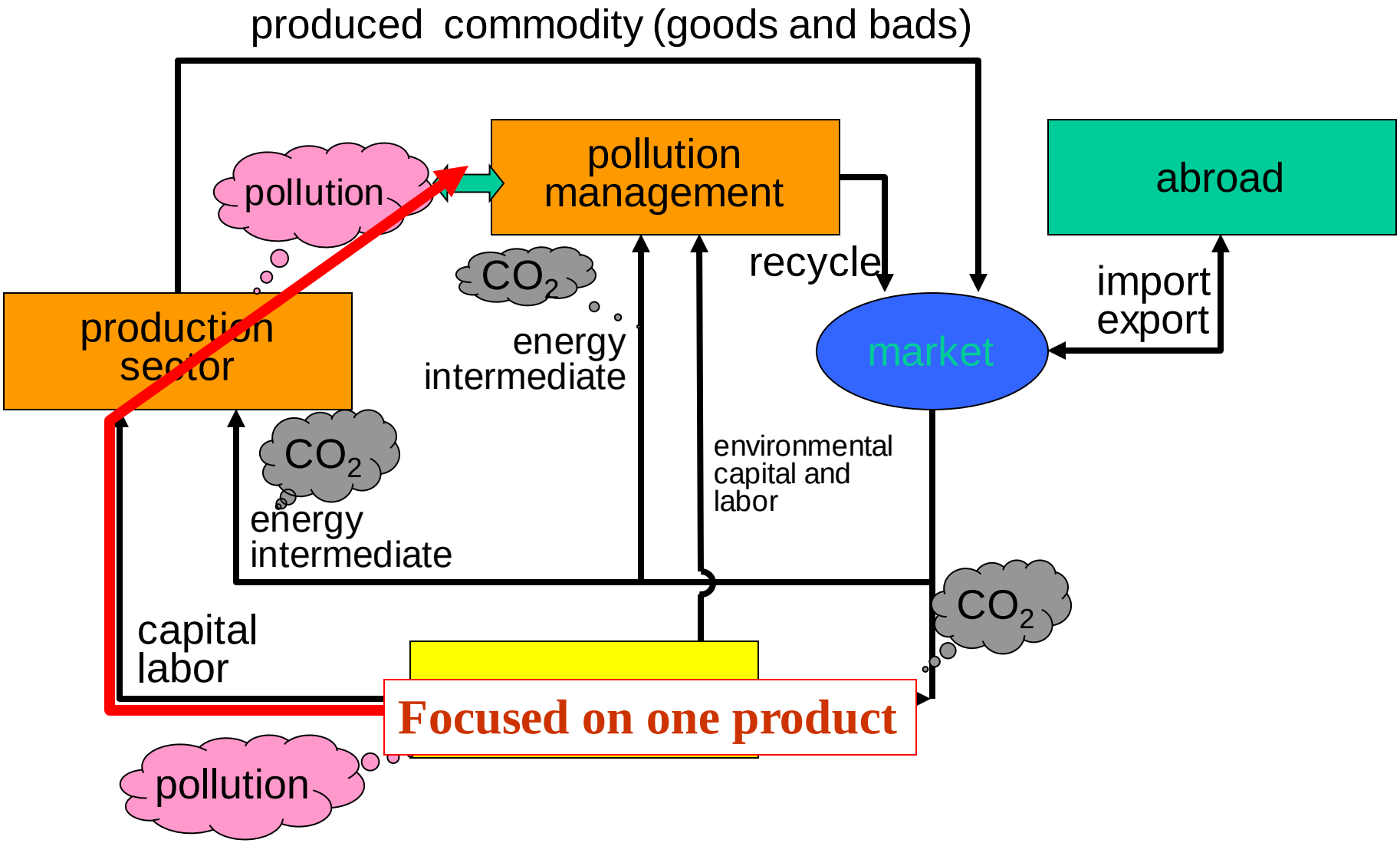
Focused on the financial /economic chain cycle of good's production and consumption

AIM/Material : Coupling of LCA and CGE strong-ness, the model describes environmental loads from the view point of material chain cycle and financial /economic chain cycle.

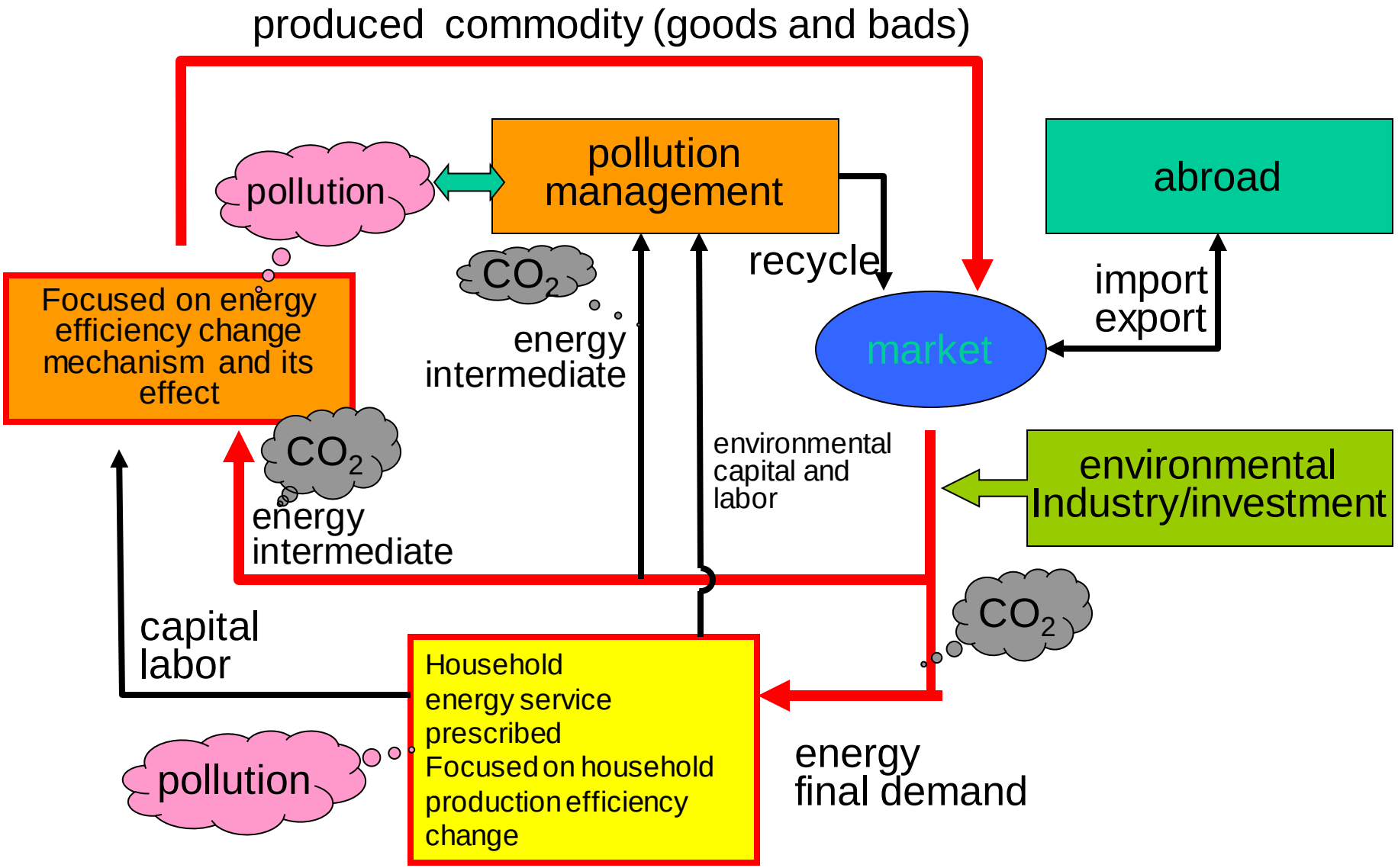
Energy and Material Chain Cycle



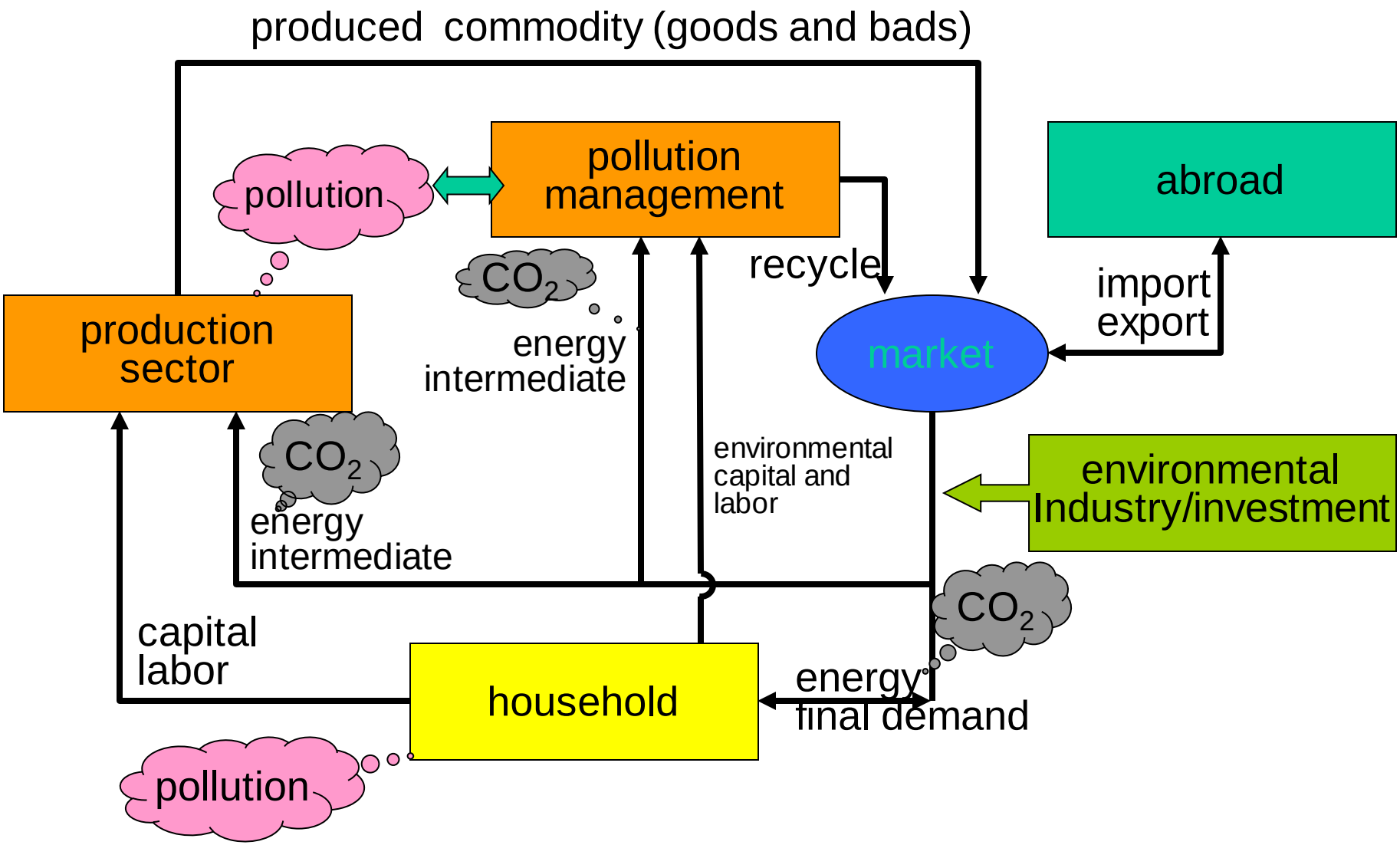
LCA approach



Bottom up approach



AIM/Material



Summary

approach	characteristics
LCA	Good for estimating the effect of one product introduction and retreat to/from society, effect of change of alternative production methods. Good for comparing environmental loads of a product with a same survice kind/amount
BU	Easy to apply regional/national environmental policy, easy to have consistency with economic plans. Easy to calculate the effect of detailed energy technology improvement
AIM/Material	Good at to estimate social costs and social benefits and mutual interaction of environmental and economic policies, clearly taken account of price change effects