AIM/Enduse Model: An Overview

Go Hibino (Fuji Research Institute, Japan)
Manmohan Kapshe (IIM, Ahmedabad)

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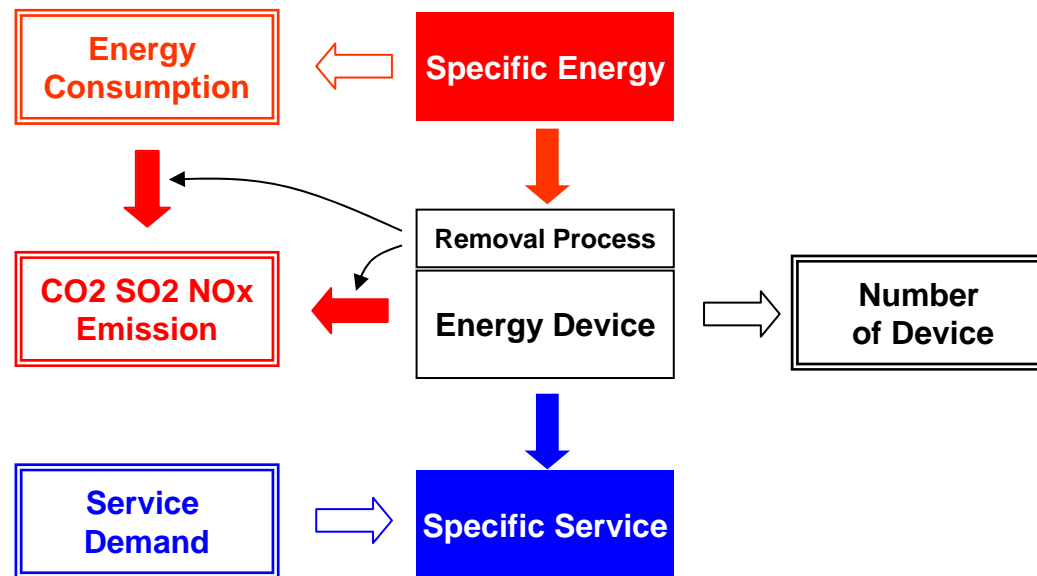**24-26 October 2002**

AIM/Enduse

A bottom-up model that simulates flows of energy and materials through technology systems, from primary resources to satisfaction of final services, for analysis of country-level policies relating to GHG mitigation, domestic emissions mitigation, technology and energy selection
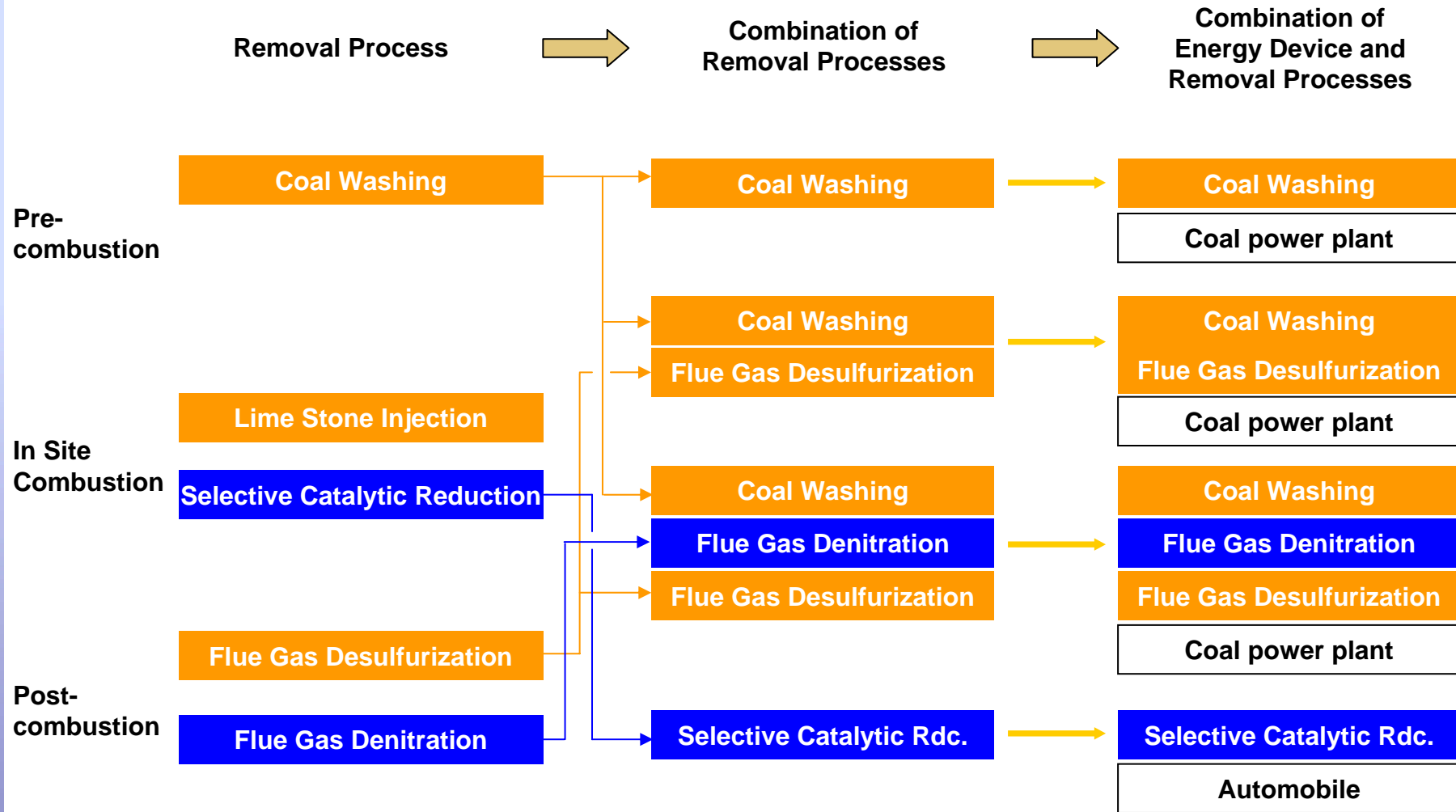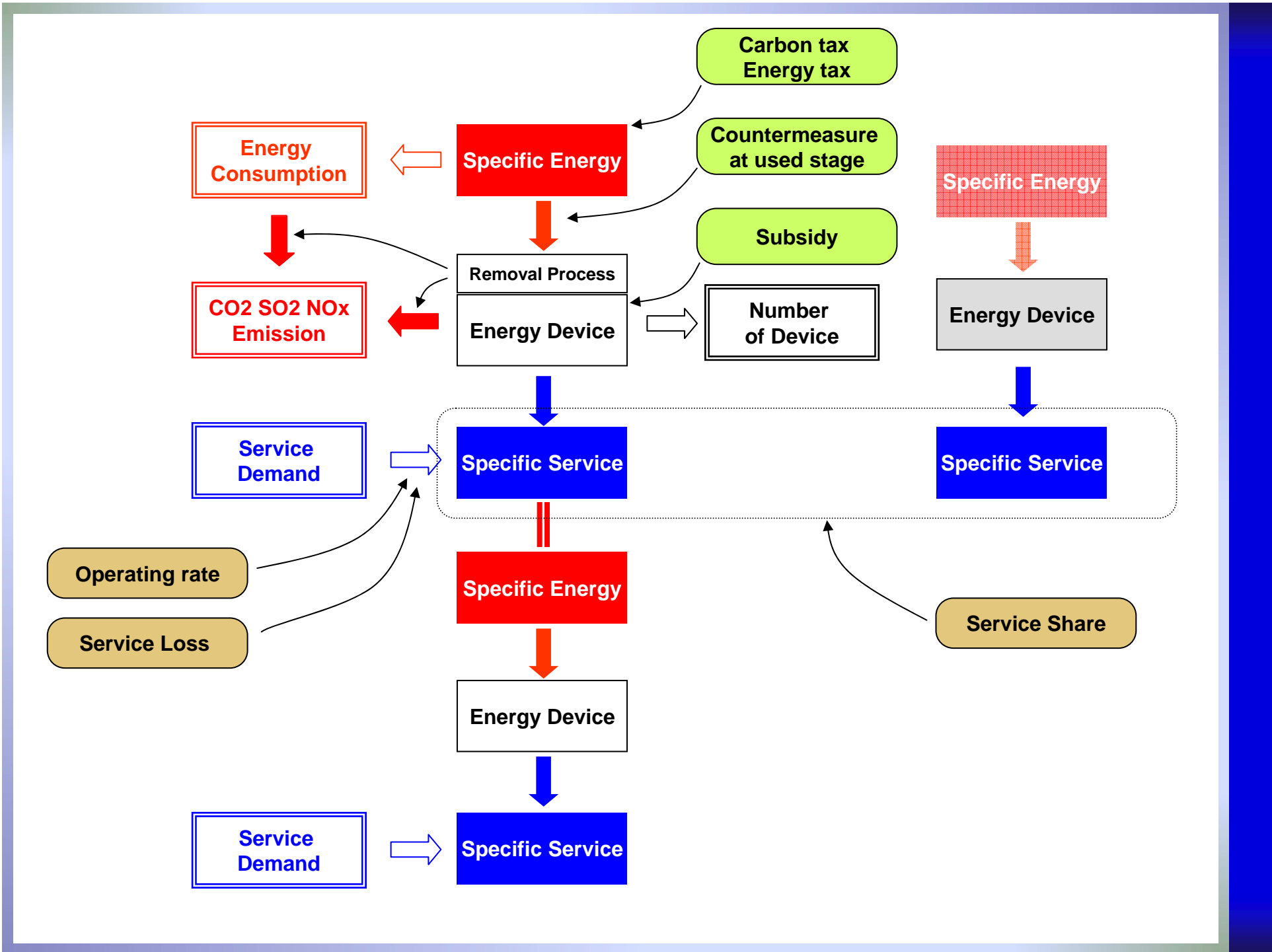
Key Features

- Technology and Energy/Material flows

- Technology selection (Linear programming)

- Energy saving device and desulfurization/denitration device

- Stock transfers and Multiple year simulations

- Extensive data requirement

- Outputs (Energy consumption, CO_2/SO_2/NO_2 emission etc.)

- Scenario/countermeasures analysis

- User-friendly interface

Energy-Technology-Service Linkage

Combination of Device and Removal Processes

Removal Process	→	Combination of Removal Processes	→	Combination of Energy Device and Removal Processes

Pre-combustion

Coal Washing → Coal Washing → Coal Washing / Coal power plant

Coal Washing / Flue Gas Desulfurization → Coal Washing / Flue Gas Desulfurization / Coal power plant

In Site Combustion

Lime Stone Injection

Selective Catalytic Reduction

Coal Washing / Flue Gas Denitration / Flue Gas Desulfurization → Coal Washing / Flue Gas Denitration / Flue Gas Desulfurization / Coal power plant

Post-combustion

Flue Gas Desulfurization

Flue Gas Denitration

Selective Catalytic Rdc. → Selective Catalytic Rdc. / Automobile

Object Function

Investment cost for recruited device

Investment cost for added removal process

$$TC = \sum_i \left(\sum_{(l,p) \in W_j} \left\{ \mathring{C}_{l,p} \cdot r_{l,p,i} + \sum_{p_1} \mathring{C}^x_{l,p_1 \to p} \cdot M_{l,p_1 \to p,i} \right. \right.$$

$$\left. \left. + \left(g^0_{l,p,i} + \sum_k (g_{k,i} + \varepsilon_{k,i}) \cdot (1 - \xi_{k,l,i}) \cdot E_{k,l,p,i} \right) \cdot X_{l,p,i} \right\} + \sum_m \zeta^m_i \cdot Q^m_i \right) \to \min$$

Operating cost

Energy cost

Tax for emission

Setup Tax and Regulation