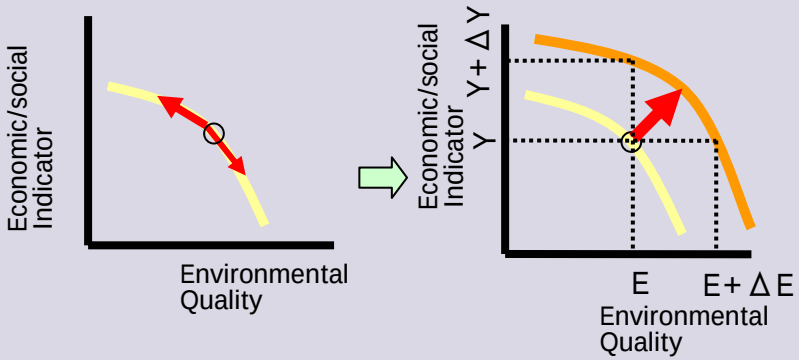
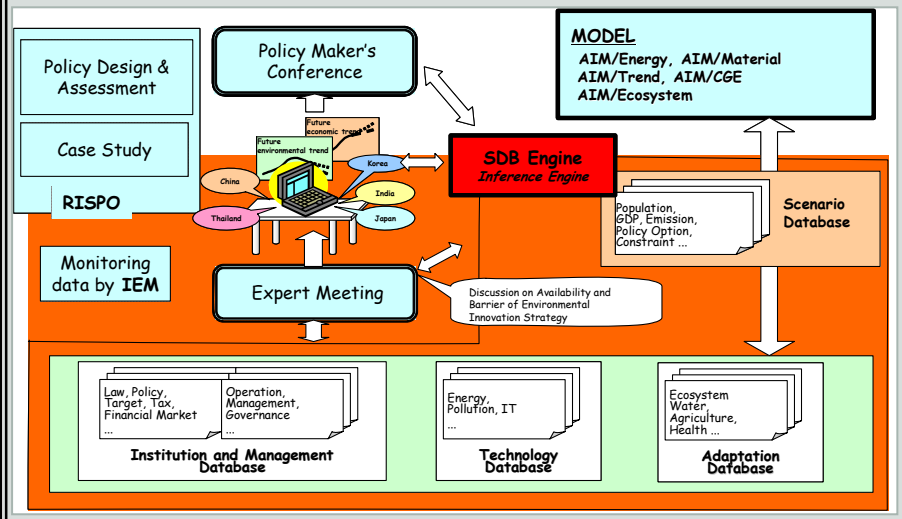
Environmental Innovation Strategies & Strategic Database

Environmental Innovation Strategies



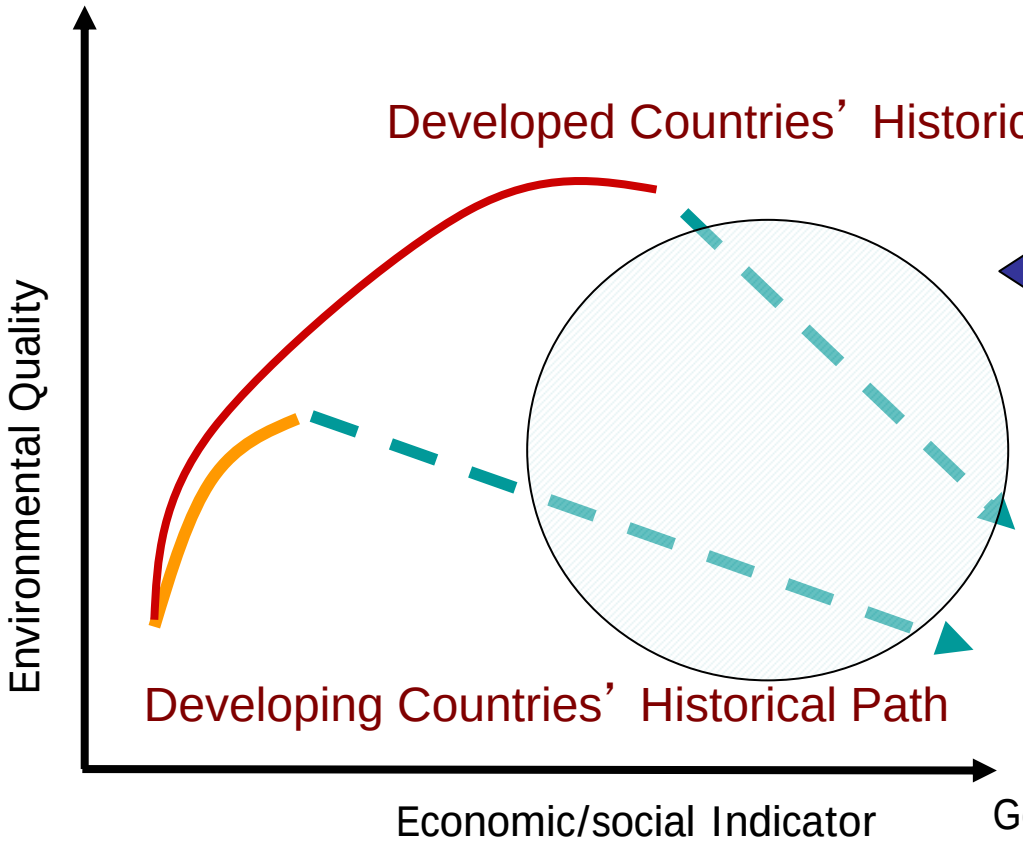
- Incorporate environmental innovation strategies into fundamental policies for Asian countries covering the fields of economy/industries, science/technology, national land utilization, social infrastructure improvement, and international cooperation, among other areas

Strategic DataBase (SDB)



- Strategic database for the environmental policy decision is composed of tables of technologies, management institutions, and scenarios, etc. and an integrated module part (Inference Engine, SDBE) where this information are integrated and analyzed.

Environmental Innovation Strategies & Strategic Database



Innovation Strategies

- **Innovative Environmental Market**
- **Innovative Environmental Technology**
- **Innovative Environmental National Land Conservation**
- **Innovative Environmental Infrastructure**
- **Innovative Environmental International Cooperation**

Environmental Innovation Strategies & Strategic Database

A: Activation of New Environmental Markets

= Introduction of new vitality through markets and changes to economic systems

B: Research and Development of New Environmental Technologies

= Fund and brain investment in the new technology paradigm

C: Introduction of National Land Conservation Strategies

= More efficient national land conservation and globalization of national land policies

D: Development of New Environmental Infrastructures

= Development of new infrastructures for shift to environment-friendly social systems

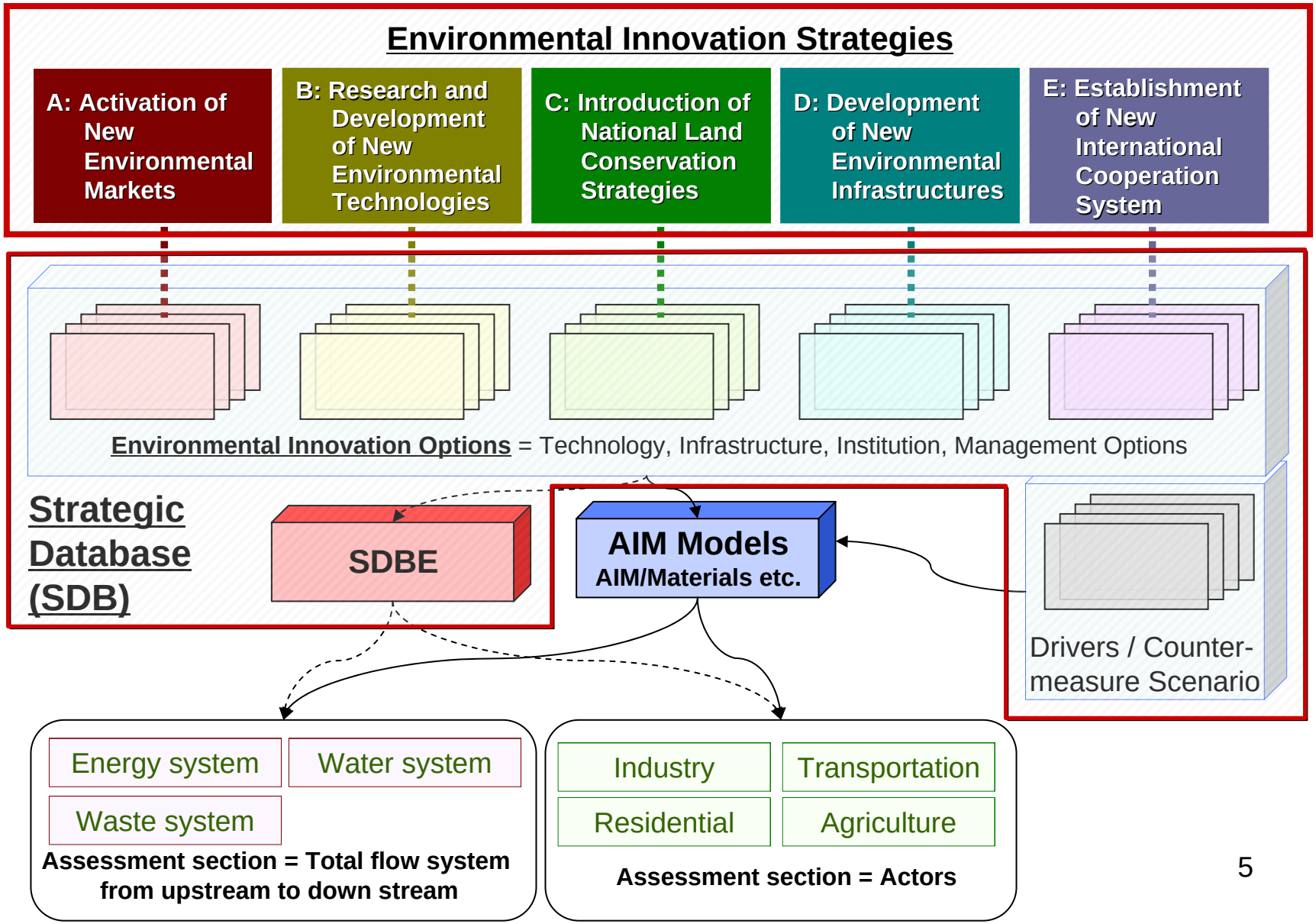
E: Establishment of New International Cooperation System

= Establishment of an Asia-Pacific environmental community and enhancement of international cooperation in innovation

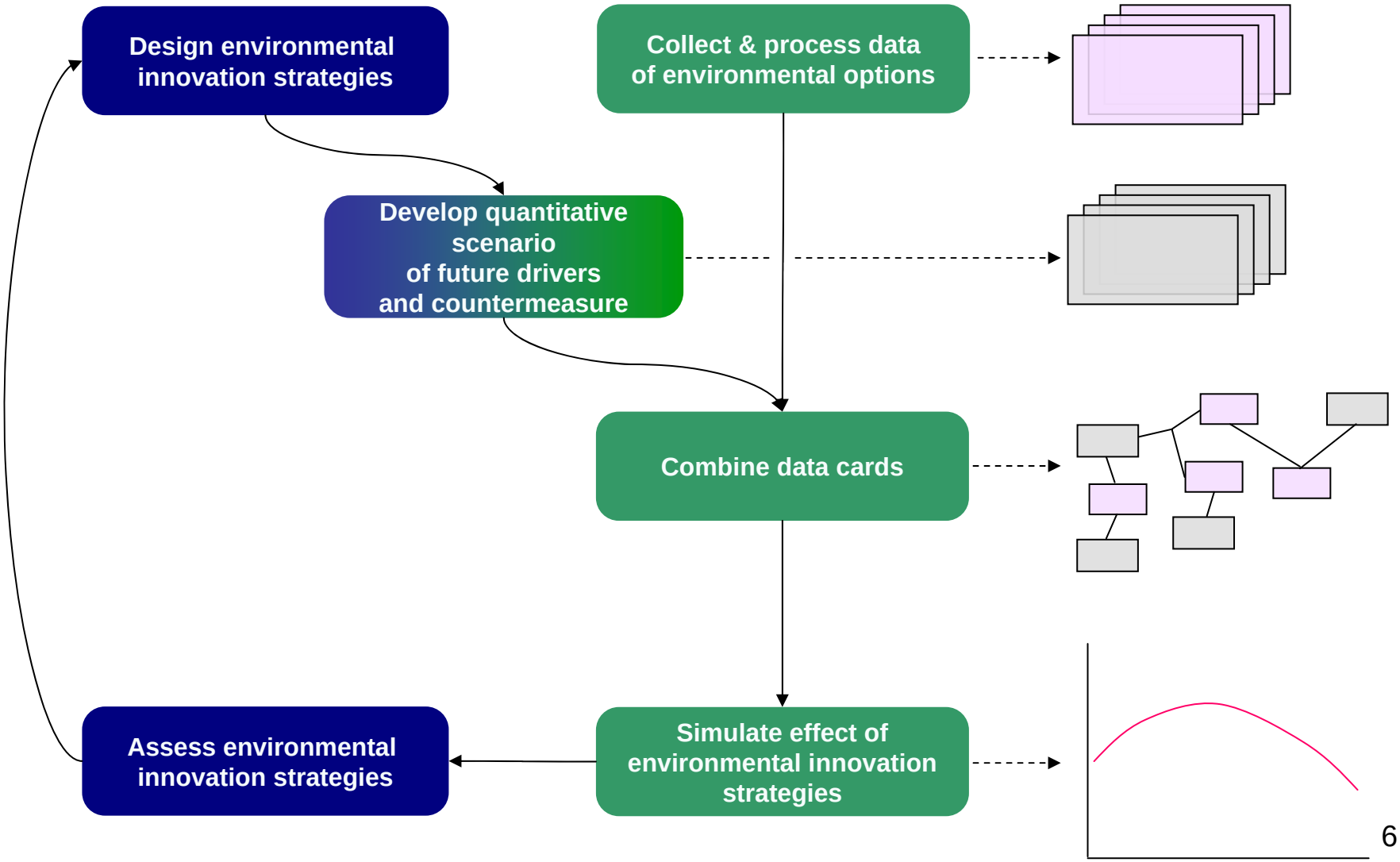
Environmental Innovation Strategies & Strategic Database

A: Activation of New Environmental Markets	**A1: Development of Environmental Industries** **A2: Shifts to Sustainable Consumption** **A3: Creation of Environmental Financial Markets** **A4: Greening of Markets**
B: Research and Development of New Environmental Technologies	**B1: Development of Zero emissions technologies** **B2: Development of Resource/Energy Saving Technologies** **B3: Development of Environment-friendly Information Technologies** **B4: Development of Environment-friendly Biotechnology** **B5: Development of Environment-preserving Nanotechnology**
C: Introduction of National Land Conservation Strategies	**C1: Comprehensive Control of Ecosystems** **C2: New Investments in Agriculture, Forestry, and Fisheries** **C3: Development of New Combined Transportation Systems** **C4: Compact cities and decentralization**
D: Development of New Environmental Infrastructures	**D1: Development of Cross-enterprise Infrastructures** **D2: Development of Cross-area Infrastructures** **D3: Development of Cross-country Infrastructures**
E: Establishment of New International Cooperation System	**E1: Crystallization of Asia-Pacific Environmental Community Concept** **E2: Implementation of International Joint Promotion Project for Environmental Innovation Strategies** **E3: Promotion of International Joint Research on Environmental Innovation Strategies**

Environmental Innovation Strategies & Strategic Database



Environmental Innovation Strategies & Strategic Database



Assessment of Environmental Innovation Strategies by SDB

Scope

Country/Region

- Individual countries of, and whole of Asia-Pacific region
- Priority countries: China, India, Japan, Korea, Thailand

Environment issues

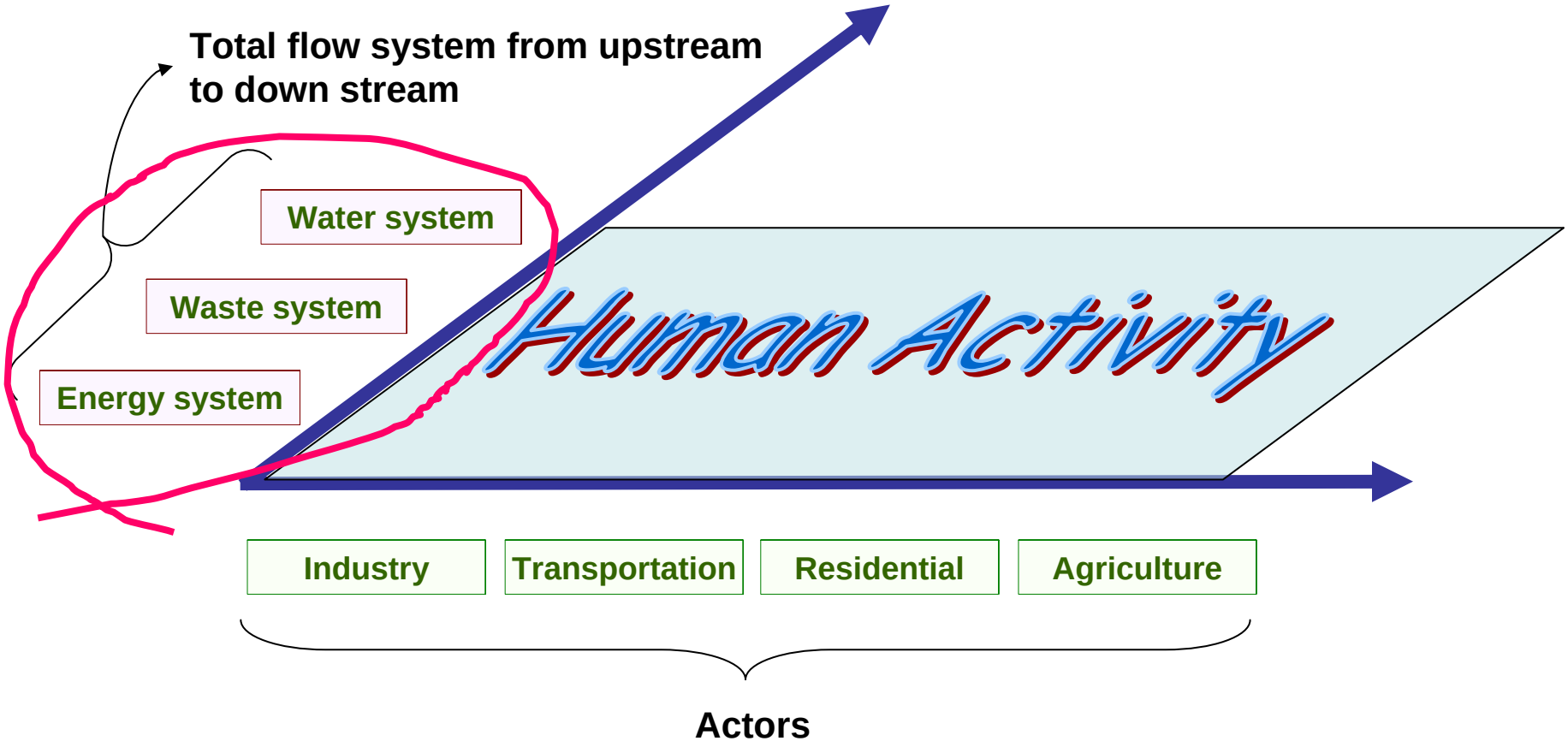
- Global environment and domestic environment issues
- Priority countermeasure:
  - Reduction of GHG emissions,
  - Reduction of air pollutant emissions
  - Improvement of energy efficiency
  - Securing of safe water
  - Waste management

Term

- Present ~ 2030

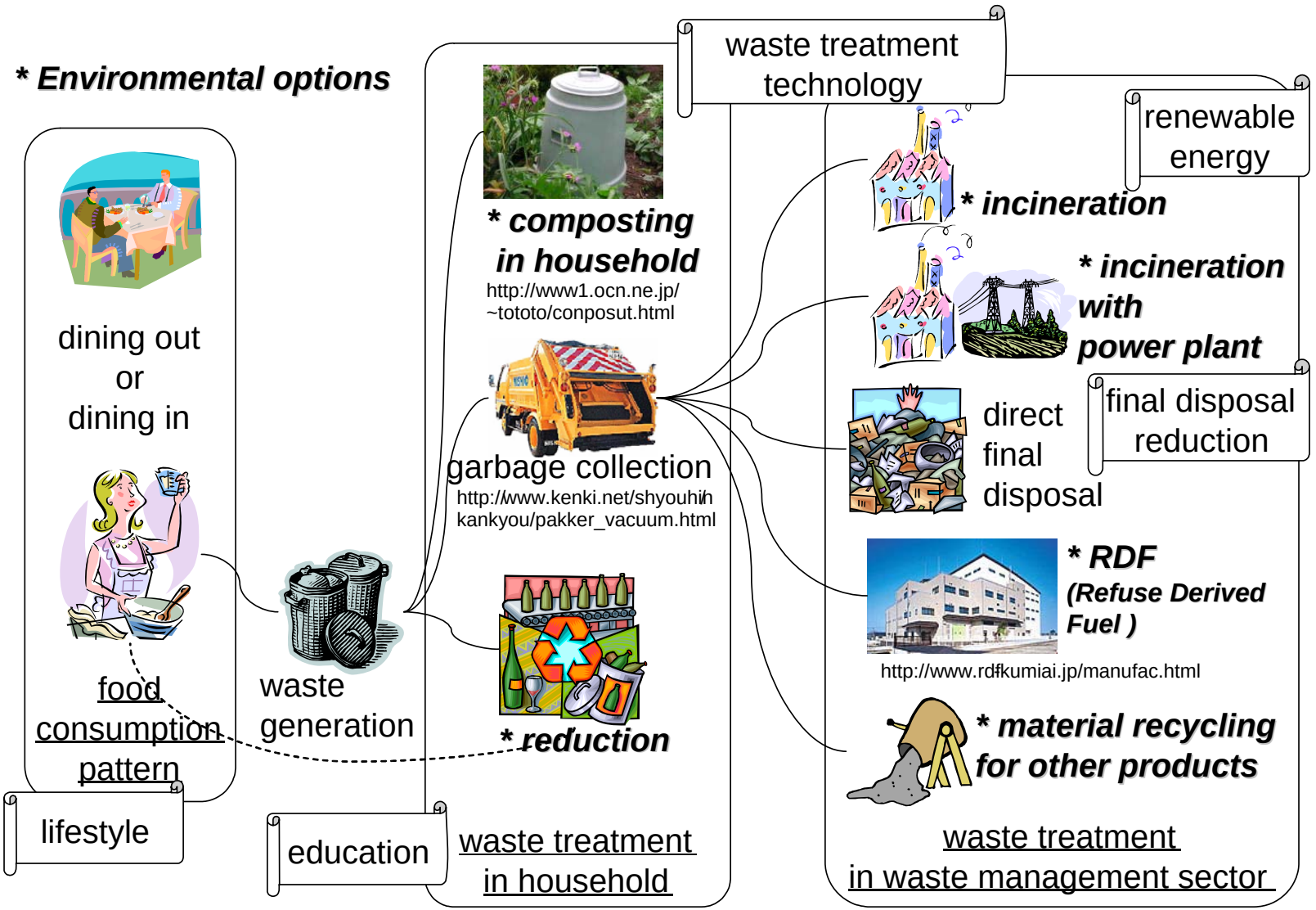
Assessment of Environmental Innovation Strategies by SDB

Assessment section

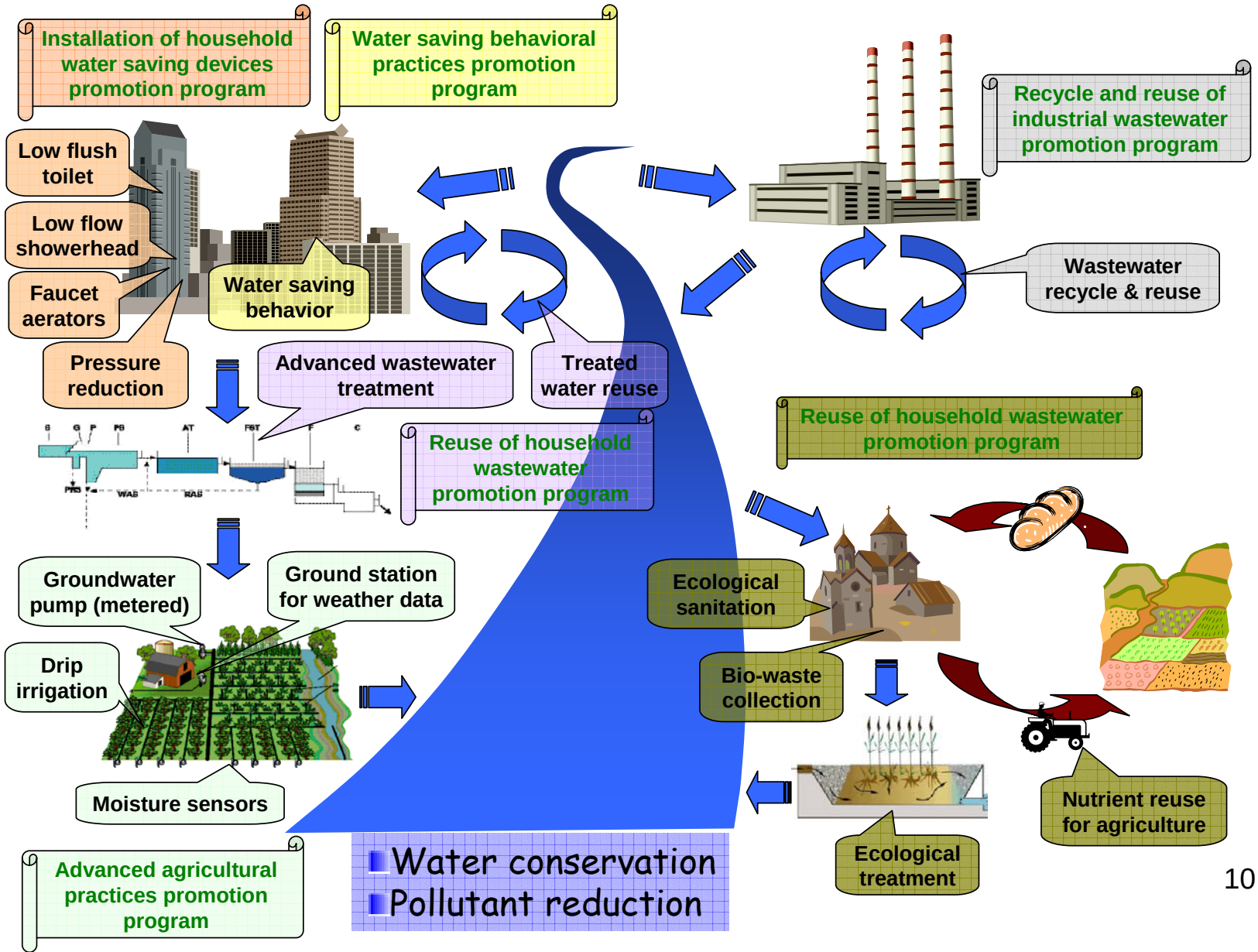


Ex. Illustration of Strategies - Waste System

Program for managing garbage from household food consumptions/cooking



Ex. Illustration of Strategies - Water System (1/2)



Ex. Illustration of Strategies - Water System (2/2)

Installation of household water saving devices promotion program (http://www.epa.gov/water/you/chap3.html)

Faucet aerator

- Break of the flowing water into fine droplets and entrain air while maintaining wetting effectiveness
- Installation in sinks to reduce water use

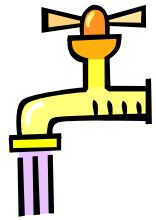
Low flush toilet

- Conventional toilets use 3.5 to 5 gallons or more of water per flush, but low-flush toilets use only 1.6 gallons of water or less
- Low-flush toilets use less water and reduce the volume of wastewater

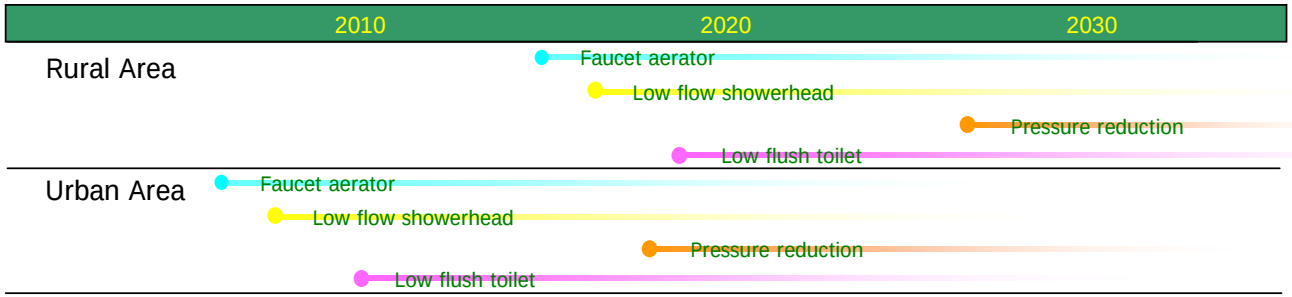
Low flow showerhead

- By replacing standard 4.5-gallon-per-minute showerheads with 2.5-gallon-per-minute heads, which cost less than $5 each, a family of four can save approximately 20,000 gallons of water per year

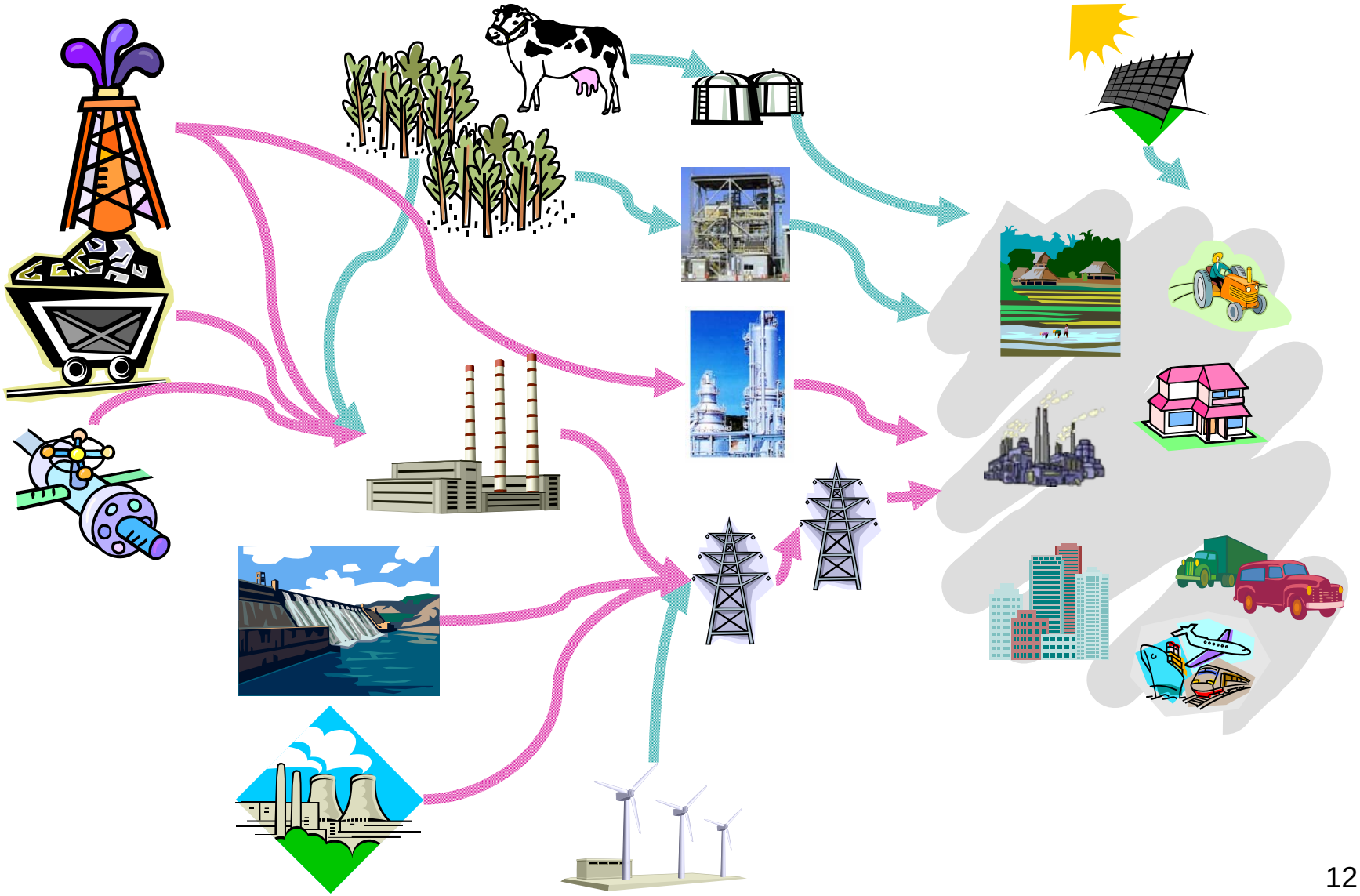
Pressure reduction



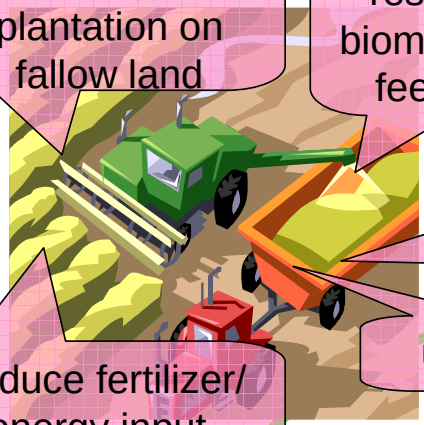
- Flow rate is reduced if the water pressure is reduced
- A reduction in pressure from 100 pounds per square inch to 50 psi at an outlet can result in a water flow reduction of about one-third



Ex. Illustration of Strategies - Energy System (1/3)



Ex. Illustration of Strategies - Energy System (2/3)



energy plantation on fallow land

residue agri-biomass use for feed/energy

farming experience for urban people

use biofuel

Reduce fertilizer/ energy input

efficient feed/energy recovery using livestock manure

enhance productivity and reduce CH4/N2O emission

e-leaning for effective and environmental production method

good quality and security with traceable tip

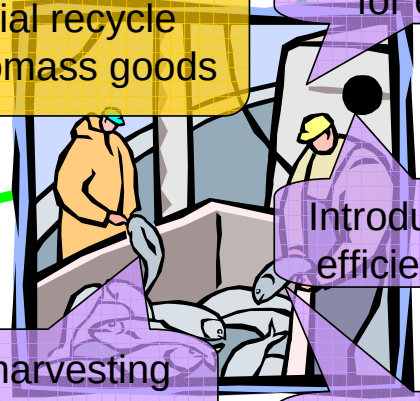
large-scale energy plantation

develop IT-enabled network for biomass technician

material recycle with biomass goods

efficient culture for export

voluntary forest management



Introduce high-efficiency ship

effective use of thinned wood

effective wood harvesting

control harvesting for sustainable fishery

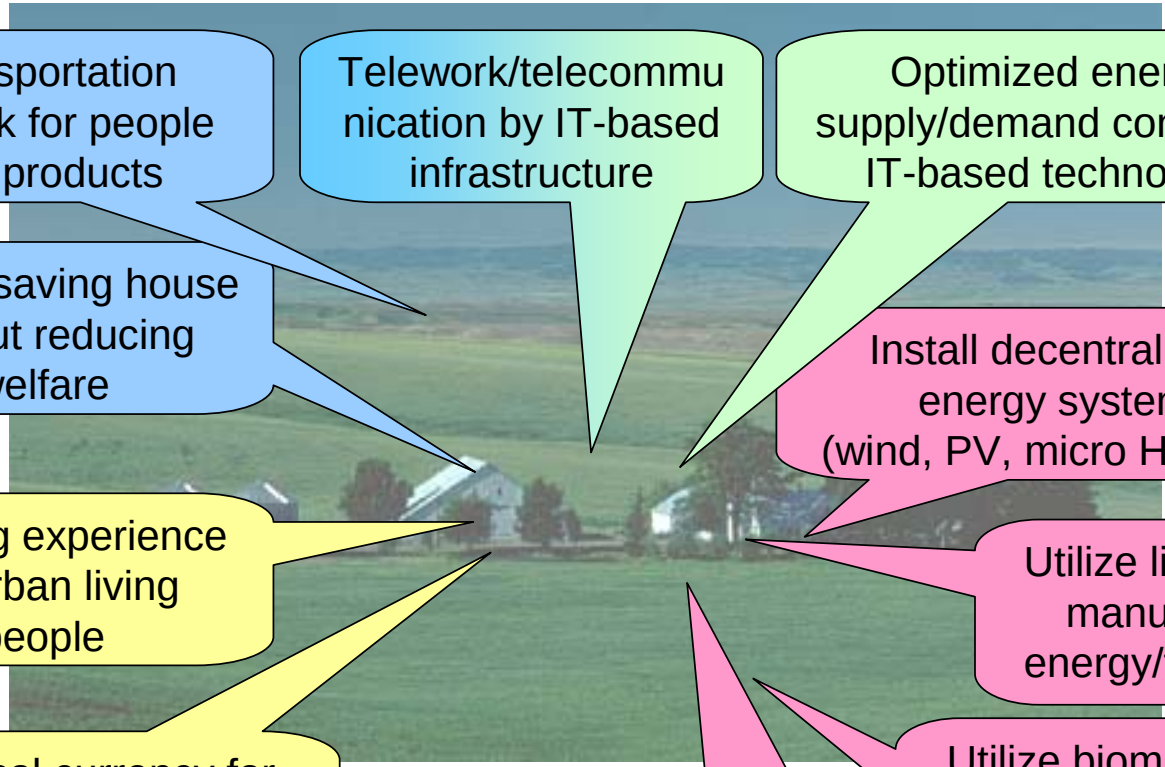
marine bioenergy use

Ex. Illustration of Strategies - Energy System (3/3)

Modern rural/farming

Infrastructure

IT technology



Transportation network for people and products

Telework/telecommunication by IT-based infrastructure

Optimized energy supply/demand control by IT-based technology

Energy-saving house without reducing welfare

Install decentralized energy system (wind, PV, micro Hydro..)

Farming experience for urban living people

Utilize livestock manure for energy/fertilizer

Local currency for enhancing the value of rural nature

Use biofuel for liquid energy demand

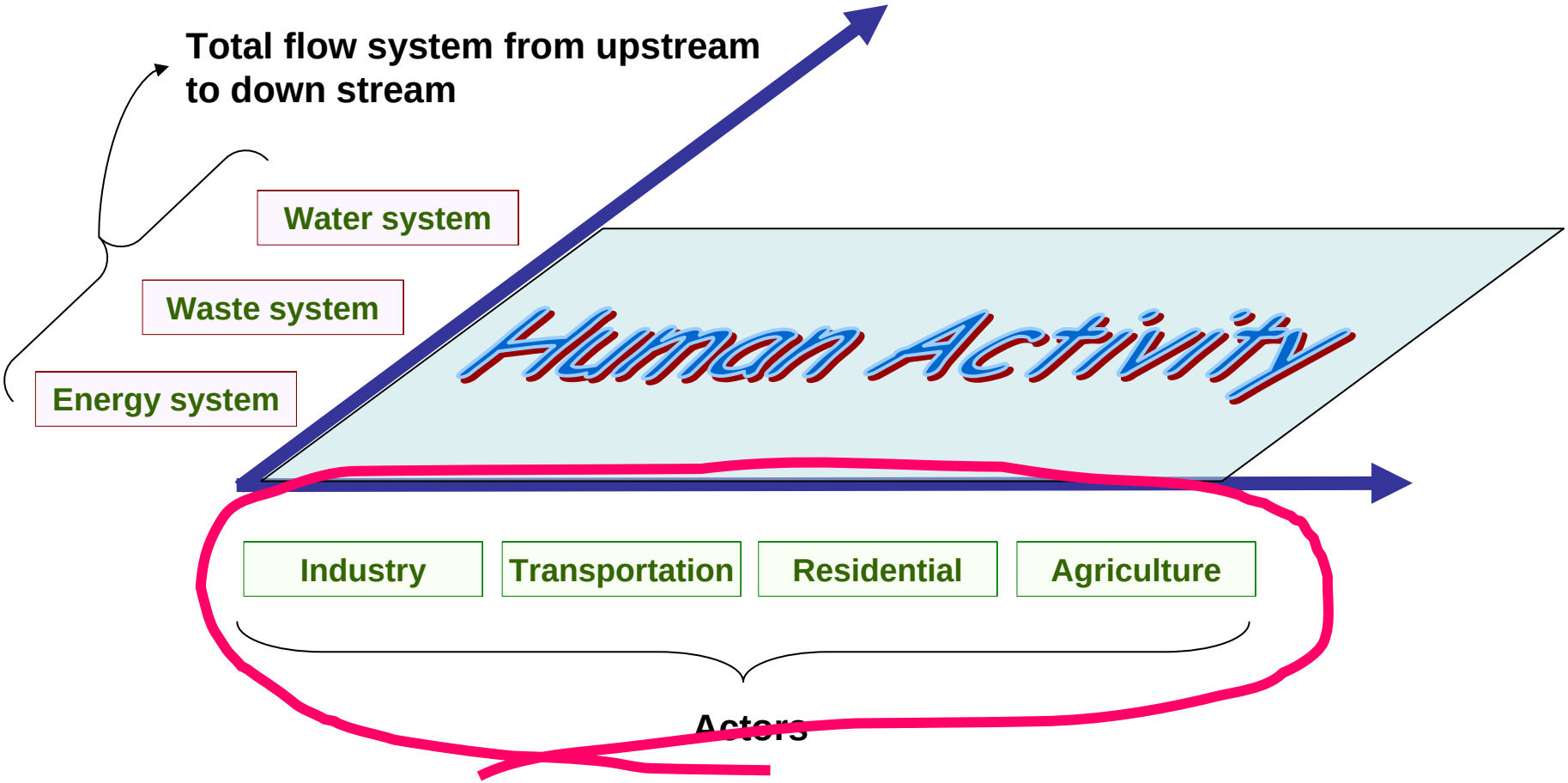
Utilize biomass residue for energy/fertilizer

institution

Decentralized energy use

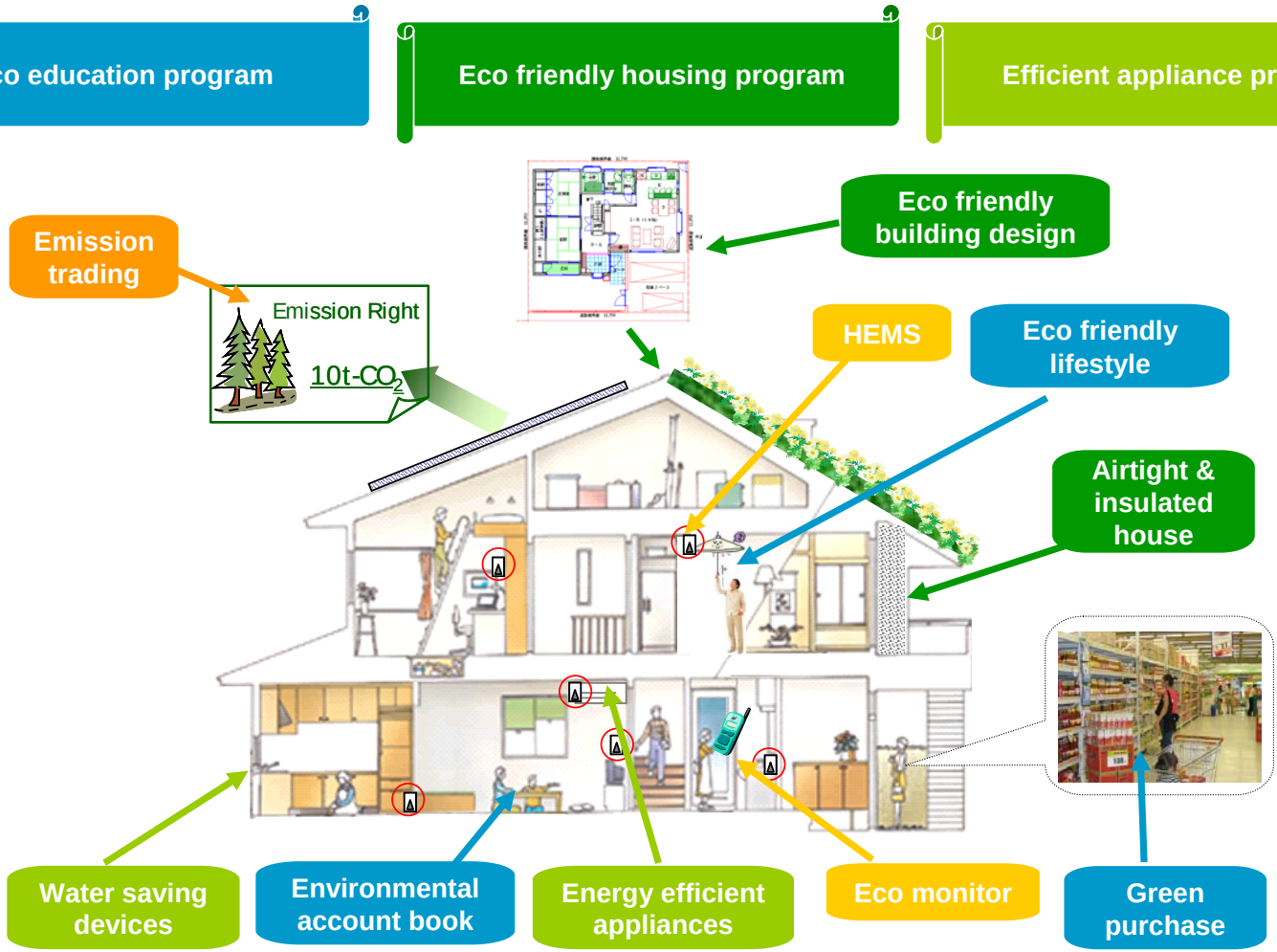
Assessment of Environmental Innovation Strategies by SDB

Assessment section



Ex. Illustration of Strategies – Residential (1/3)

Programs for promoting innovational strategies in household (Urban area)



Ex. Illustration of Strategies – Residential (2/3)

Programs for promoting innovational strategies in household (Rural area)

Eco education program

Eco friendly housing program

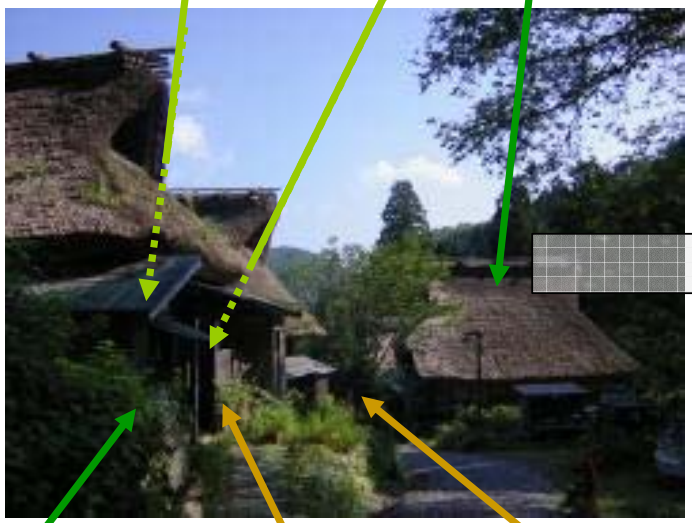
Efficient appliance program

2015

Efficient cook stove

village fridge

insulation



Ecological sanitation

Vermicompost

Regional biogas pipeline

2030

Environmental account book

Energy efficient appliances

Eco friendly lifestyle

Water saving devices

Green purchase

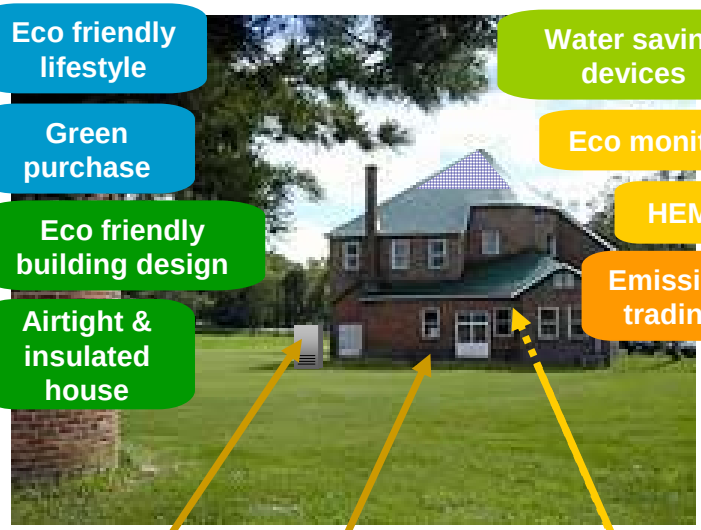
Eco monitor

HEMS

Eco friendly building design

Emission trading

Airtight & insulated house



Energy use of reside from agriculture

Regional biogas pipeline

Virtual communication system

Eco friendly information and transportation infrastructure program

Biomass promotion program

Environmental financial markets program

Assessment of Environmental Innovation Strategies by SDB

Ex. Illustration of Strategies – Residential (3/3)

Eco education program

Eco friendly housing program

Efficient appliance program

	2010	2015	2020	2025	2030
Eco education program				Green purchase Eco friendly lifestyle Environmental account book	
Eco friendly housing program	Ecological sanitation Insulation			Air tight house Eco friendly building design	
Efficient appliance program	Efficient cook stove Village fridge			Energy efficient appliances Water saving dev ices	
Eco friendly Information and transportation infrastructure program				Virtural communication system HEMS Eco monitor	
Biomass promotion program	Vemicompost Regional biogass pipeline			Energy use of residue from agriculture	
Environmental financial marlets program					Emission trading

Eco friendly information and transportation infrastructure program

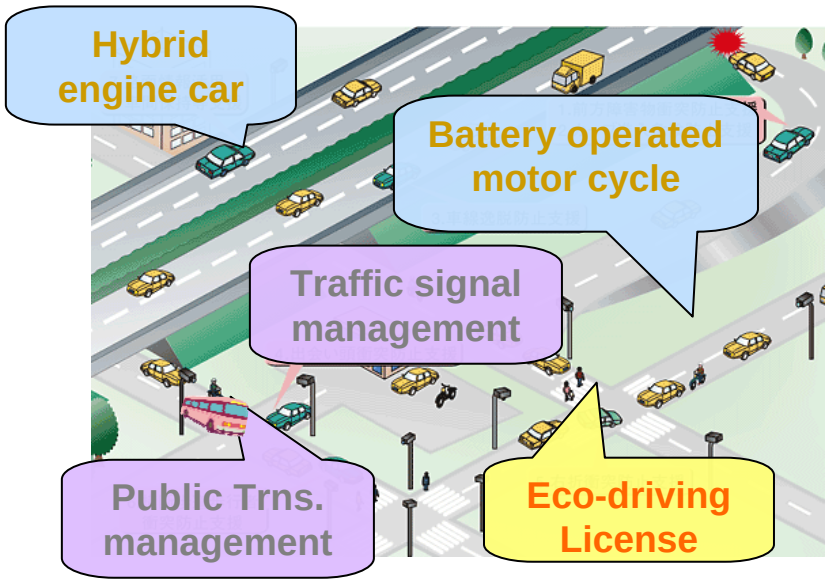
Biomass promotion program

Environmental financial markets program

Ex. Illustration of Strategies – Transportation

Biomass energy promotion program

Low emission vehicle Promotion program

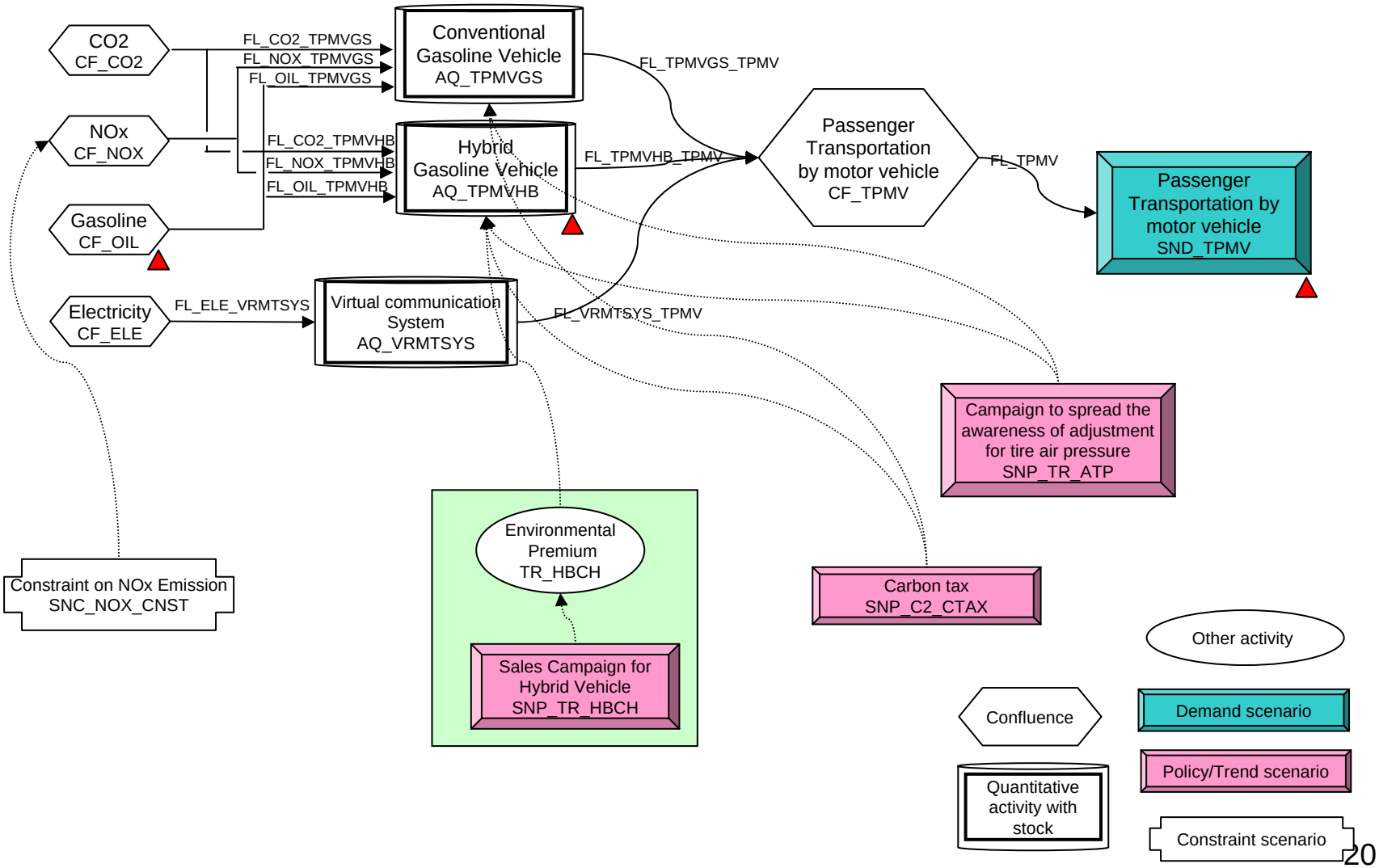


Bicycle promotion program

Eco-friendly ITS Promotion program

Eco-education program

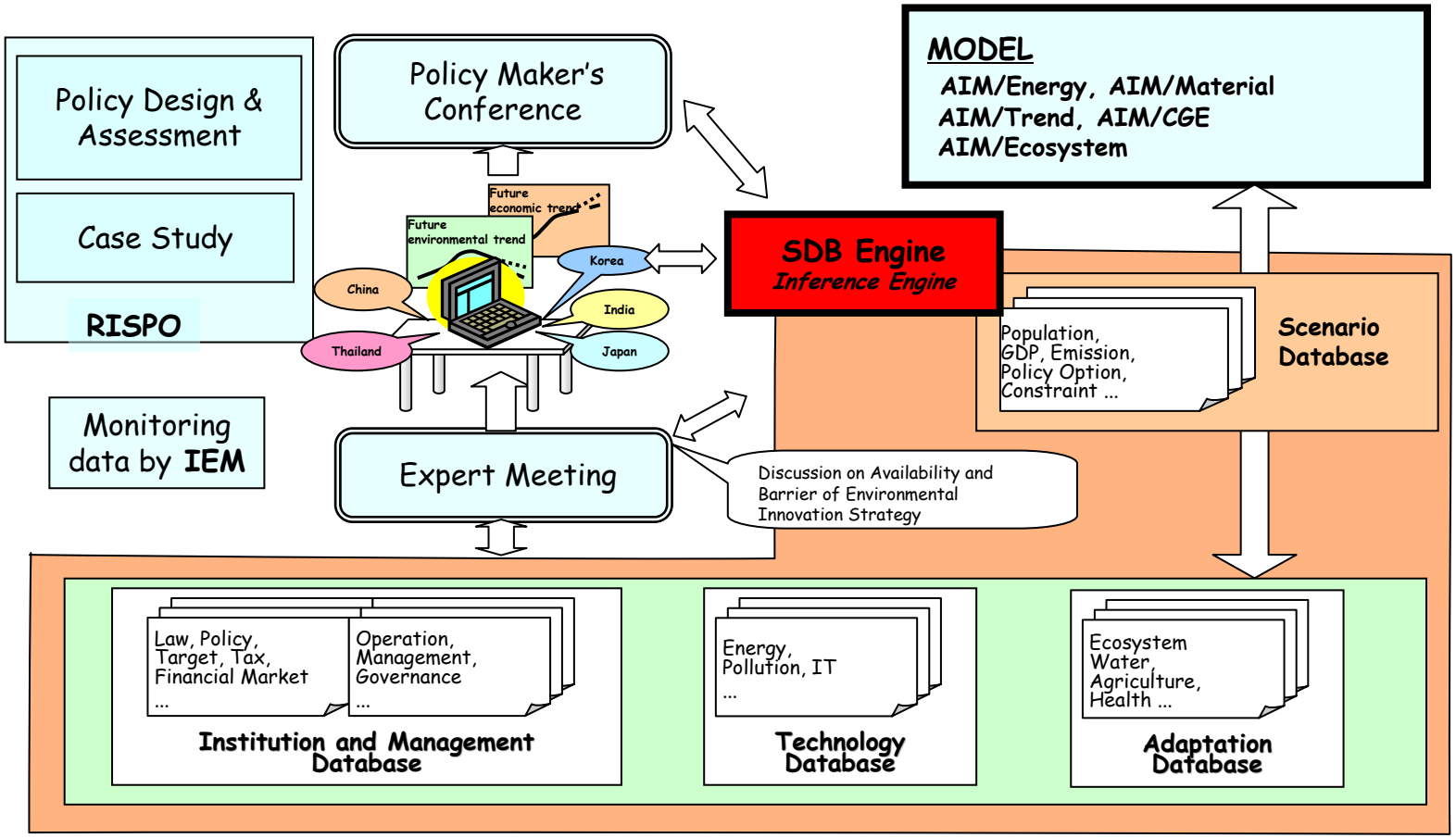
Ex. Illustration of Strategies – Transportation



Environmental Innovation Strategies & Strategic Database

Environmental Strategic Database Engine

Environmental Innovation Strategies & Strategic Database



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Sales Campaign for Hybrid Vehicle

Hybrid type gasoline vehicle

The hybrid system proven in Toyota's "PRIUS", the world's first mass-produced hybrid car, achieves its highly efficient operation through sophisticated energy management of a gasoline engine and secondary battery.
When the car stops, the gasoline engine stops too, instead of just idling and wasting energy. During start-up and at low speed, gasoline engine efficiency is low, so the car runs on its electric motor, which draws electricity from the secondary battery. At faster speeds, the gasoline engine propels the vehicle. But the system gives priority to operating the engine only within its most efficient rpm range, so engine power may not be sufficient when the car accelerates. At such times, therefore, the motor provides assistance to make up for the shortage, drawing electricity from the secondary battery. If, on the other hand, the car cruises at a steady speed, the engine, which operates with priority placed on efficiency, may produce more energy than is needed. In this case, such excess energy is used to generate electricity, which is stored in the secondary battery. If the accelerator is let up on to slow down, the engine stops automatically to avoid wasting energy. And during deceleration through braking and other means, the car's forward momentum is used to generate electricity, which is stored in the secondary battery.
Price is 2,150,000 yen and higher by 300,000 yen than conventional type. Fuel efficiency is 30km/l……

Item	Content	Format	Code	Value	Memo
Name of activity	Code of activity	(AN16)	AQ*	AQ_TPMVHB	Hybrid gasoline vehicle
Subject of activity	Code of subject	(AN16)	OBJCT	RES_TRMV	Family budget
Unit of activity	Code of unit	(AN16)	UNIT	KPKM	1000 person-km
Activity in reference year	Activity	(F)	QACT0	0	
Price per activity	Function of accompanying variables	(GAMS)	PACT	0	
Tax on activity	Function of accompanying variables	(GAMS)	TAX	0	
Start year of activity	Start year of activity	(I)	YSTAC	2000	
End year of activity	End year of activity	(I)	YEDAC	9999	
Inflow/Outflow (1)					
Name	Code of flow	(AN16)	FL*	FL_TPMVHB _TPMV	Passenger transportation
Confluence of In/Outflow ahead	Code of confluence	(AN16)	CF*	CF_TPMV	
Input/Output	IN/OUT	(I/O)	FLDIR	O	Output
Conductance in Reference Year	Conductance	(F)	FLCD0	15	
Conductance	Function of accompanying variables	(GAMS)	CDCHG		
Tax on flow	Function of accompanying variables	(GAMS)	TAX		
Inflow/Outflow (2)					
Name	Code of flow	(AN16)	FL*	FL_OIL _TPMVHB	Gasoline (toe)
Confluence of In/Outflow ahead	Code of confluence	(AN16)	CF*	CF_OIL	
Input/Output	IN/OUT	(I/O)	FLDIR	I	Input
Conductance in Reference Year	Conductance	(F)	FLCD0	-0.48	(25km/L)
Conductance	Function of accompanying variables	(GAMS)	CDCHG	1+ TR_ATP	
Tax on flow	Function of accompanying variables	(GAMS)	TAX		