Policies for Transitioning to a Green Economy: Experiences from Taiwan

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蕭代基 / 中央研究院 經濟研究所
Daigee Shaw
Research Fellow, Institute of Economics, Academia Sinica
President, Taiwan Association of Environmental and Resource Economists

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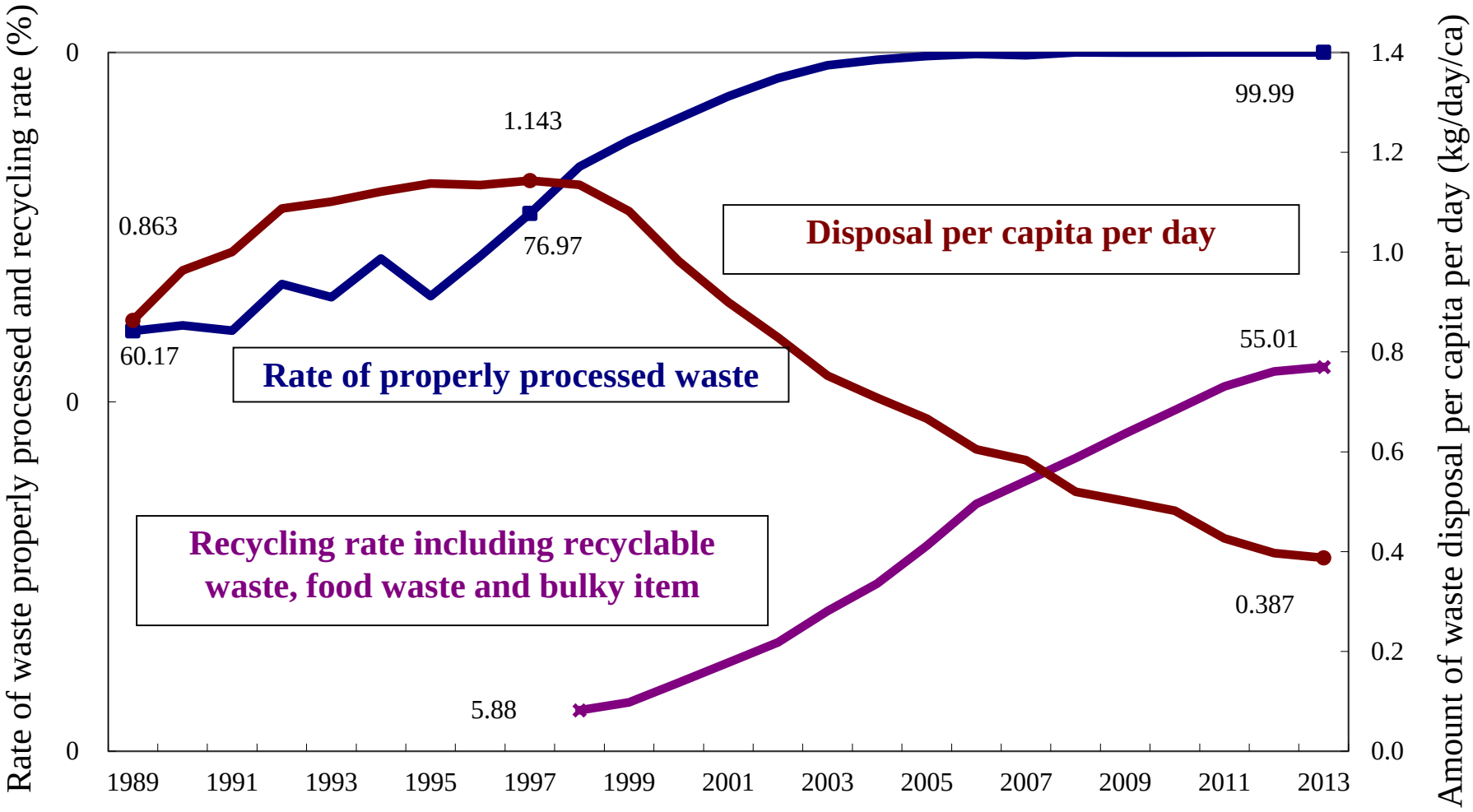
  - Some important policy recommendations

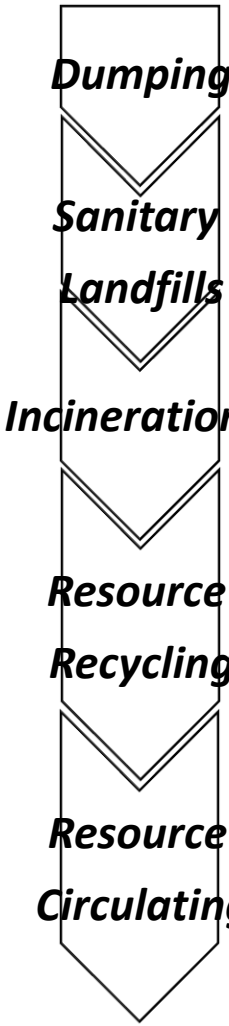
Taiwan experiences in greening the economy

- A success story: solid waste reduction and recycling
- A failure story: pricing of water, petro and electricity

MSW Quantity and Disposal Rate



History of MSW Management



1984

1987 Extended Producer Responsibility introduced in the law

1990

1991 Large Incinerators

1997 1997 Four-in-One Recycling Program

2000 Per-Bag Trash Fee in Taipei

2001 Food Waste Recycling

2002 Reducing at Source

2004 2004 Zero-Waste Policy

2005~6 Garbage Sorting/Recycling

2011 Sustainable Material Management

Waste reduction

Waste Minimization

Restriction on Plastic Bags and Disposable Tableware

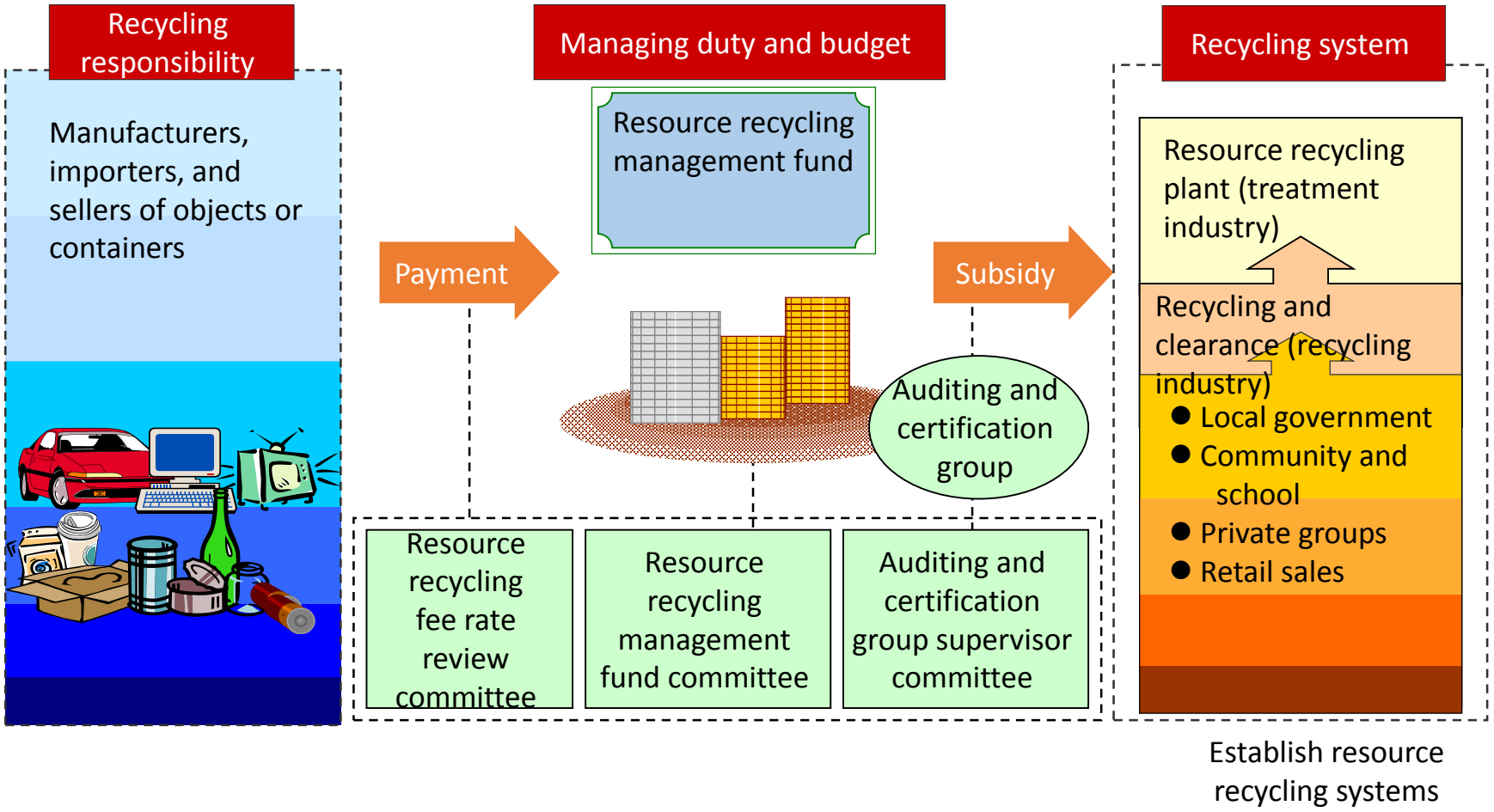
Restriction on Excessive Packaging

Toxicity Minimization

Restriction on mercury-containing batteries

Banned Mercury Thermometers

Extended Producer Responsibility Program since 1987



Establish resource recycling systems

Mandatory Recycling Category

Vehicles

automobiles, motorcycles, tires and car batteries

Batteries

dry cell, button cell battery

E-waste

electronic products and household appliances

Light bulbs

Containers

iron, aluminum, glass, paper, plastic and pesticide containers

Food Waste Recycling

- 70% for pig feed after thermal treatment
- 30% composting at private or public facilities

Mandatory Garbage Sorting/Recycling

- Separating garbage into 3 categories
- Keep trash off the ground
  - A warning will be issued for the first non-compliance. A penalty of NT$1,200 -6,000 will be imposed on the second violation.

Per-Bag Trash Collection Fee

- **Per-Bag Trash Collection Fee in several cities**
  - Taipei, New Taipei, Taichung
  - Pay as you throw
  - Per-Bag trash collection fee (NT$ 0.36/L)
  - Waste volume 67%down, recycling volume 48%up

"Pay-by-Household Water Usage Trash Collection Policy" is implemented in other districts: NT$4/ton of household water consumed.

Cradle to Cradle

- Redesign products for complete recycling, technically or biologically

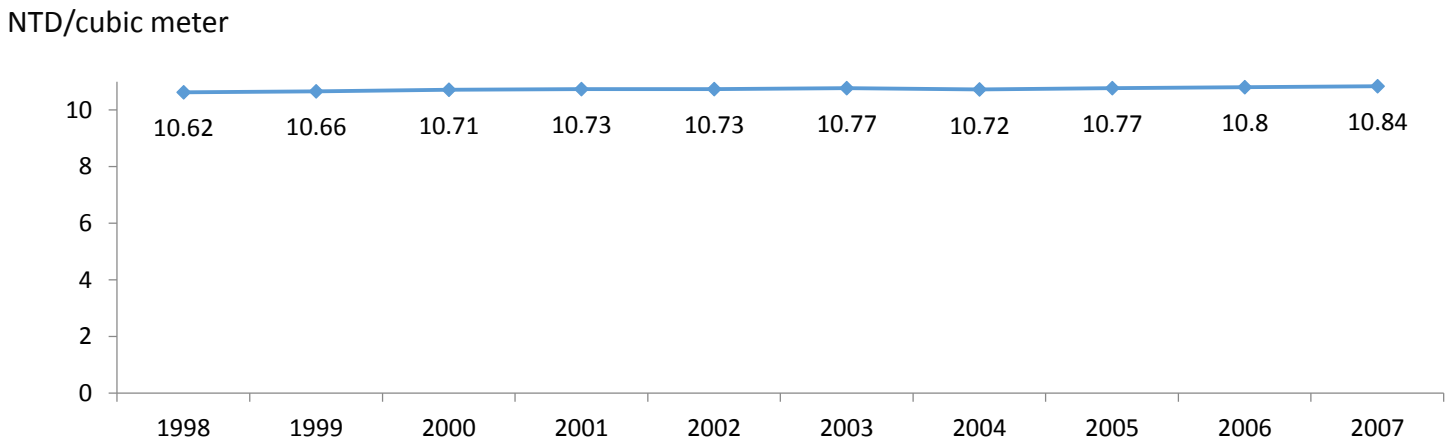
- Redesign, a crucial factor for achieving zero waste and complete resource recycling

Taiwan experiences in greening the economy

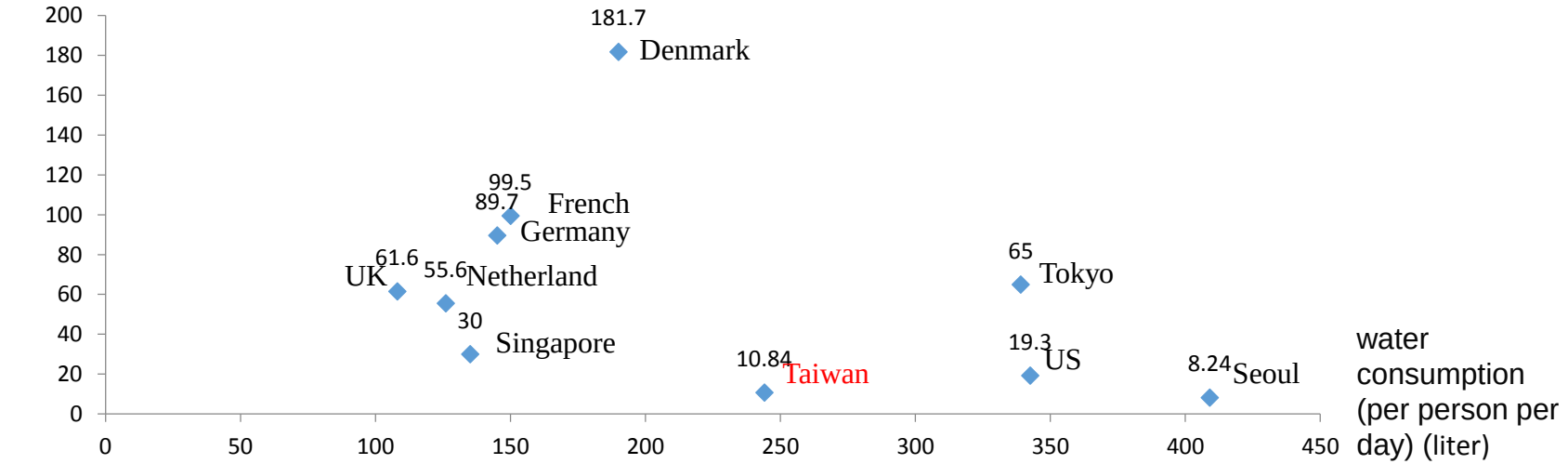
- A success story: solid waste reduction and recycling
- A failure story: pricing of water, petro and electricity

Water Bill and Consumption

- Annual water bill trend

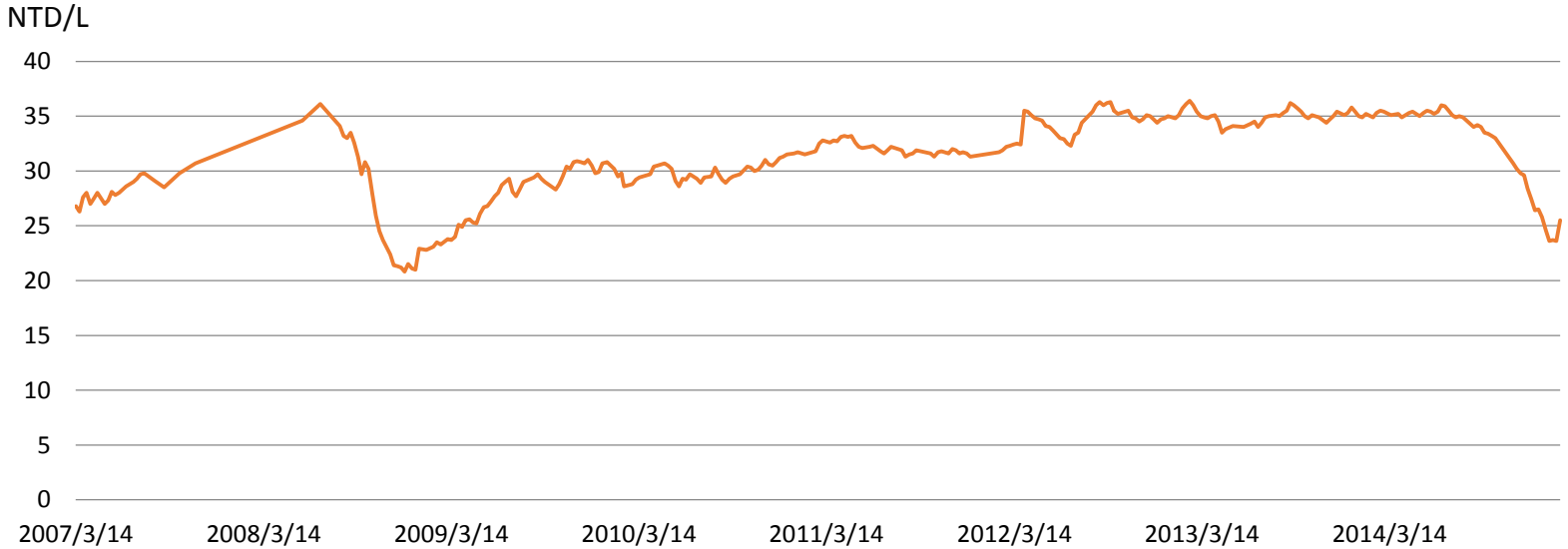


- Water bill and water consumption (per person per day) (2006)

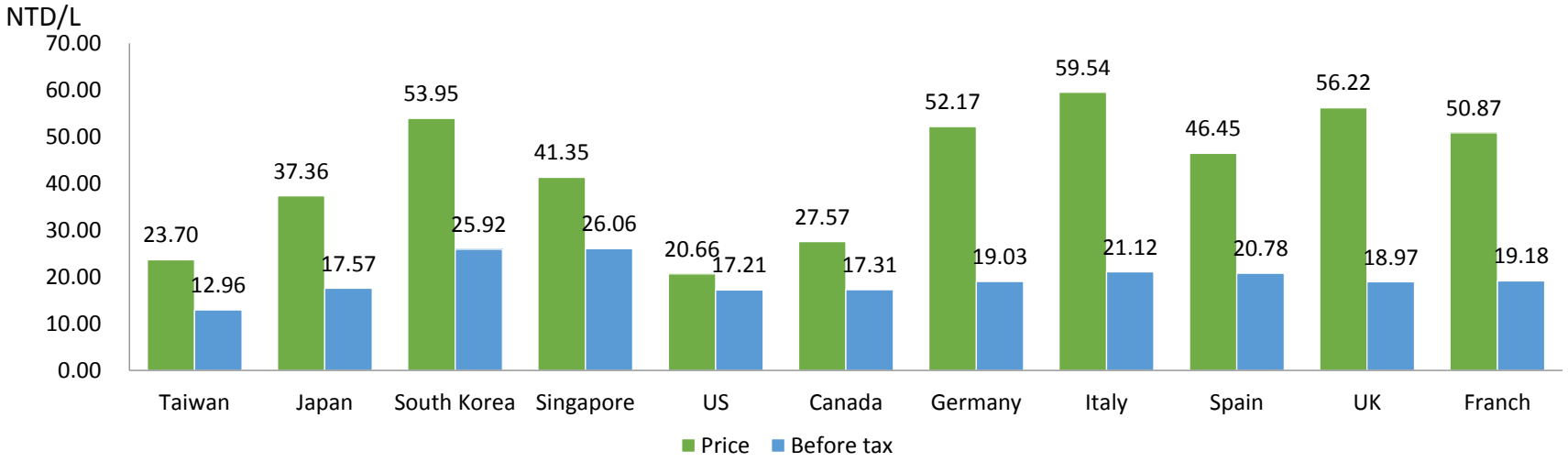


Petrol Price

- Annual petrol price trend

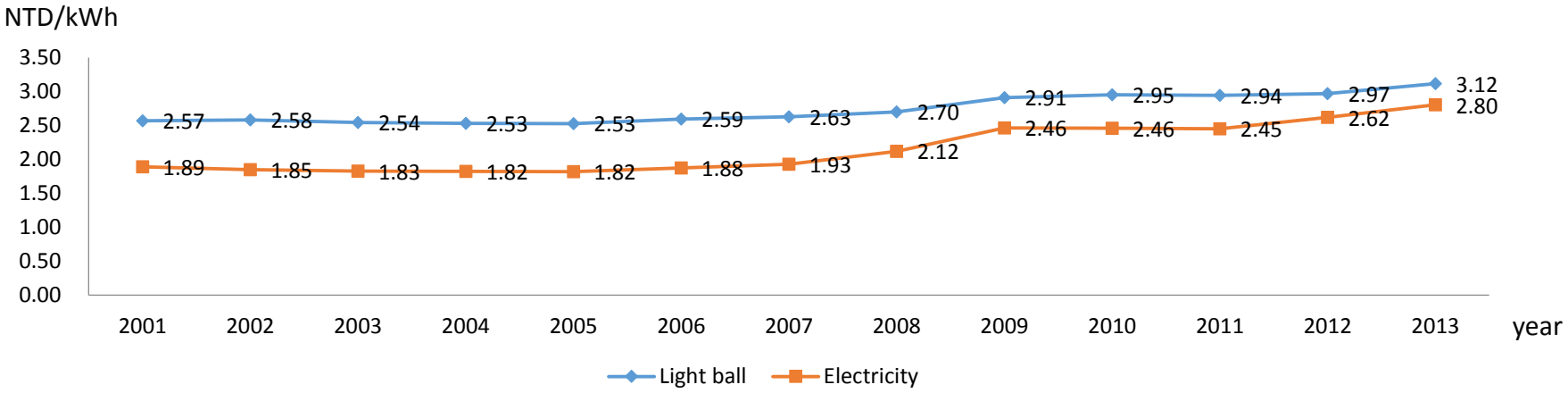


high-grade petrol price (March, 2015)

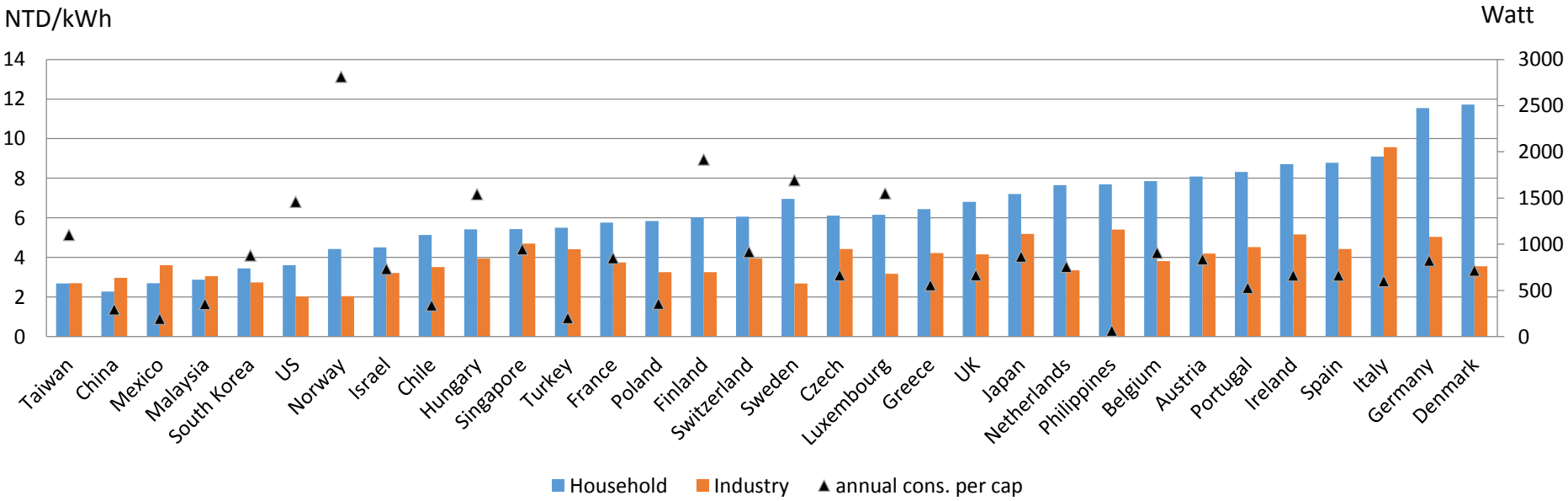


Electricity Bill and Consumption

- Annual electricity bill trend



- Electricity bill comparison, 2013



Why Low Input Prices and Macroeconomic Instruments?

- All of those utility firms are government-owned
  - Easy to yield to popular demand for lower cost of living
- Government's policy
  - To enhance the competiveness of the goods and services made in Taiwan
  - To reduce citizens' cost of living
- Low input prices and low rates of macroeconomic instruments
  - Labor, Water and Energy (Electricity, Petro)
  - Macroeconomic Instruments
    - Tax rate
    - Interest rate
    - Foreign exchange rate

Why Low Input Prices and Macroeconomic Instruments?

- Consequences: A vicious circle
  - Low price level:
    - Exchange rate / PPP(purchasing power parity) ≈ 2

  → Low cost of living

  → Low cost of production

  → Low prices and quality of goods and services produced

  → Low value-added of goods and services produced

  → Low wage and income level

The Green Economy Policy for Taiwan

- Sustainable transition to a green economy – Why and How?
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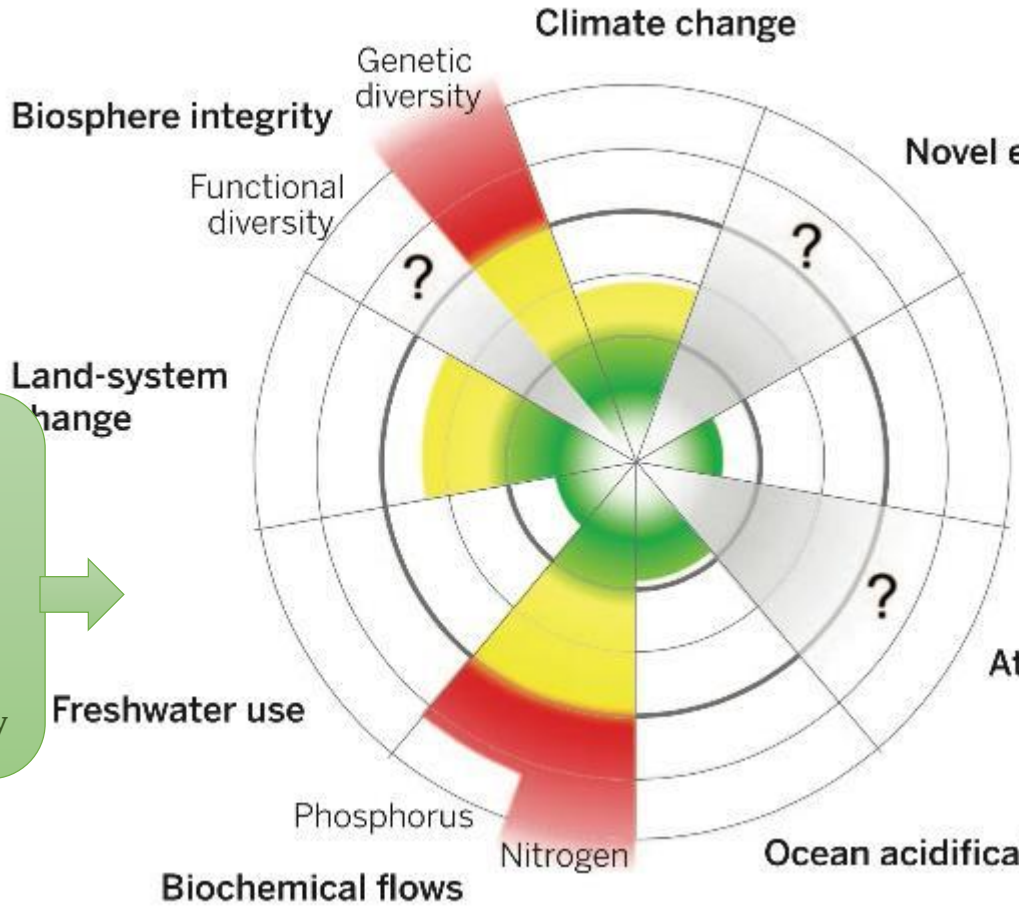
Planetary Boundaries



Current unsustainable socio-economic development model

Brown economy

The Green zone indicates the limit

The Red zone indicates the current situation

Transition towards a sustainable socio-economic development model

Green economy

Beyond zone of uncertainty (high risk)

In zone of uncertainty (increasing risk)

Below boundary (safe)

Boundary not yet quantified

Source: Steffen, Richardson, Rockström, Cornell, Fetzer, Bennett, Biggs, Carpenter, de Vries, de Wit, Folke, Gerten, Heinke, Mace, Persson, Ramanathan, Reyers, and Sörlin, 2015, Planetary boundaries: Guiding human development on a changing planet, Science, 347(6223).

Why the international efforts of sustainable development cannot succeed, but worsening instead?

- The sustainable development and green economy strategies developed by different countries up to now mainly treat the symptoms, but avoid dealing with the root causes of the problem
  - Temporary strategies, short-term First-aid strategies
    - Green Fiscal Stimulus in UNEP Global Green New Deal (2009), green growth in Korea
    - Still focusing mainly on raising GDP growth rate, investment, production, consumption, urban development and growth

Greener Approach
Enhancement of efficiency,
GDP growth,
Green Growth,
Weak sustainability

The Real Green Approach
Environmental constraints
GDP-alternative indicator
Strong sustainability

Why the international efforts of sustainable development cannot succeed, but worsening instead?

- Root Causes
  - **Neglecting intergenerational equity and externality**
    - **The limited supply of environmental resources is not taken into consideration**
      - Only use a 'greener approach' to achieve perpetual economic growth
  - **Contemporary political, economic and social institutions highly dependent on economic growth**
    - If economic growth slows down or turns negative, financial, insurance, social security, employment system, etc. will be ruined
      - More emphasis placed on current GDP than the well-beings of future generations

Greener Approach

Enhancement of efficiency,
GDP growth,
Green Growth,
Weak sustainability

The Real Green Approach

Environmental constraints
GDP-alternative indicator
Strong sustainability

Definition and Four Key Aspects of "Green Economy"

Respect planetary boundaries

- Society that lives within the self perpetuating limits of its environment (Coomer, 1979)
- Requires the conservation and enhancement of the resources base (Bruntland, 1987)

Inter-generational equity, justice and externality

- Concern of future generations (Bruntland, 1987)
- Desire to ensure lasting and secure livelihoods (Barbier, 2013)

Intra-generational equity

- Elimination of poverty and deprivation (Bruntland, 1987)
- Enhance the equity of income distribution
- Revive the middle-class

Improve human well-beings and life quality sustainably

- Seeks alternative indicators to measure human welfare in place of GDP

Basic Principles of the Green Economy Policy for Taiwan

1. Development must go beyond GDP
2. Give priority to creating an environment that enables the transition to a green economy
3. Propose policies that address underlying issues, not short-term strategies aimed at surface-level problems
4. Emphasize inclusive, democratic, participatory, accountable, transparent, and stable governance
5. Attach importance to the limits of its environment and natural resources and planetary boundaries and the internalization of externalities
6. Advance the greening of all industries
7. Create more decent jobs and rebuild the middle class
8. Take account of economic efficiency, social equity, and protection of the disadvantaged during the transition process

Vision and Objective

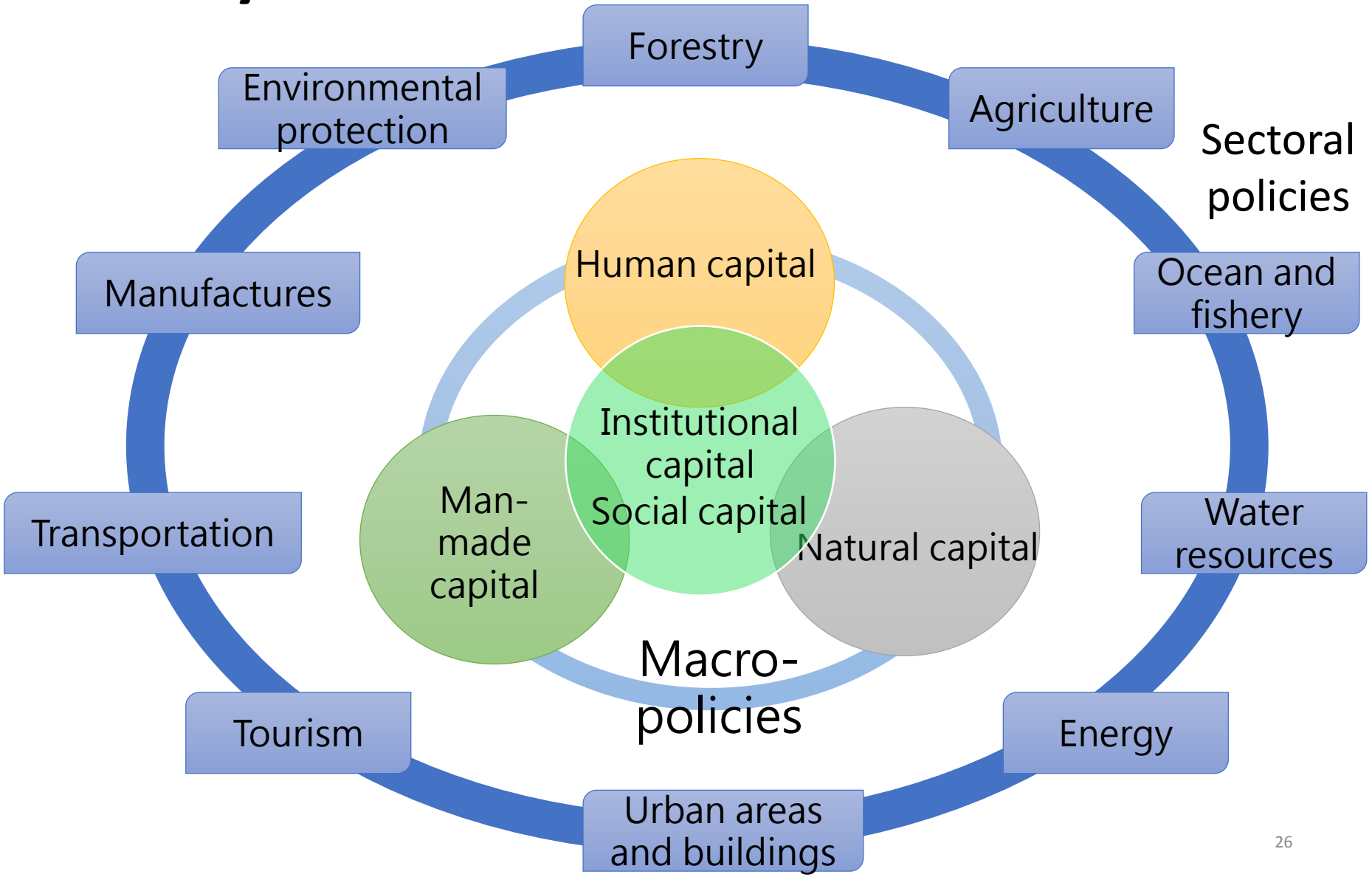
- **Vision**

- Toward a green economy that recognizing the limits of environmental resources, enhancing intergenerational and intragenerational equity, improving prosperity and happiness of the people.

- **Objective**

- To lay a solid foundation for the transition to a green economy through integrated policies addressing underlying issues.

The Structure of the Green Economy Policy for Taiwan



Some important policy recommendations for institutional capital

Establish an institution for promoting and protecting the rights of future generations, such as electing or appointing Ombudsperson for Future Generations, Commission for Future Generations who are representatives of future generations in the congress and various institutions

Enhance intergenerational justice through healthy national finance, and a system of exchange rate, tax rate and interest rate that does not bias against future generations

Green fiscal reform, including eliminating environmental-unfriendly subsidies in terms of macroeconomic policy instruments, i.e., exchange rate and interest rate

Some important policy recommendations for social capital

Encourage the formation of social networks

Popularize the concept of social responsibility

Promote green consumption and green production

Some important policy recommendations for natural capital

Establish a sustainability assessment system for policies and public projects

Require businesses to be responsible for the protection of environmental quality and labors' welfare, i.e., CSR

Establish systems of payment for ecosystem services (PES)

Extend producers' responsibility from cradle to cradle

Apply total quantity control in various fields, i.e., demand-side management, such as water, land, energy, infrastructure, etc.

Some important policy recommendations for human capital and innovation

Establish a unified national vocational training and employment counseling coordination mechanism

Schools and vocational training institutes must emphasize the education of basic knowledge and technology

Strengthen the employee career and lifelong education

Encourage the green economy knowledge and technology training

Promote the concept of green business enterprises, such as CSR (Corporate Social Reponsibility)

Some important policy recommendations for human capital and innovation

Establish an open platform for R&D and innovation

Participation in international scientific research on appropriate technology

International Cooperation

Some important policy recommendations for physical capital

Strengthen existing physical capital maintenance management and operational efficiency

Green physical capital planning, and Focus on demand-side management

Put sustainable assessment into the environmental impact assessment mechanism

Thank you for your attention !