

# **Application of the Kyoto Mechanisms to the Northeast Asian Electricity Grid**

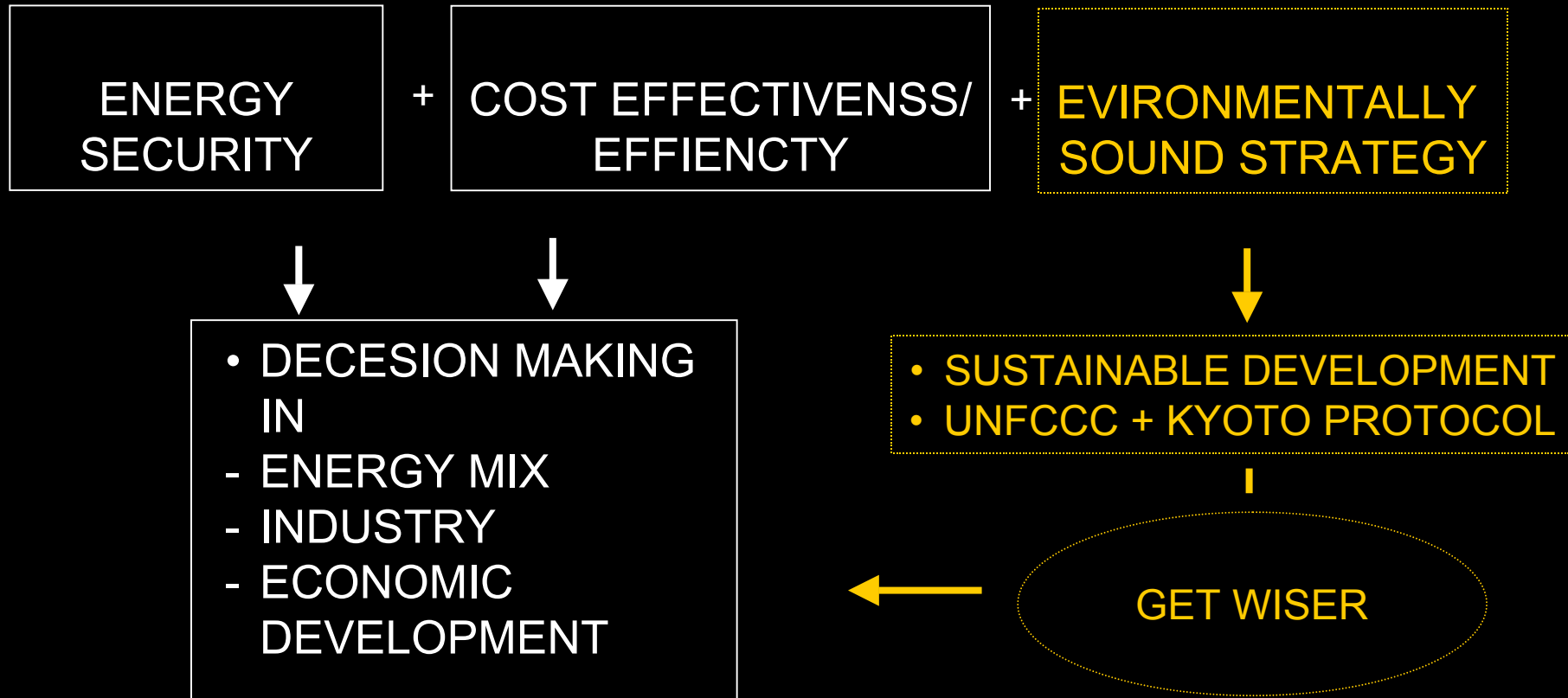
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**Prepared for Workshop on International Power Grid Interconnection  
in Northeast Asia**

**May 14-16, 2001, Beijing**

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# The scope of the presentation



# Agenda

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- Overview of the climate change negotiation and the role of Northeast Asia
- Applications of the Kyoto Mechanisms on electricity grid in Northeast Asia
- Risk identification and management
- Financing structure and funding within/beyond the Kyoto frame
- Conclusions and recommendations

# Overview of the Convention on Climate Change

UNFCCC / Kyoto Protocol / Action Plan of Buenos Aires / COP6 and beyond

## DE JURE

- Common and differentiated burden sharing
- Leading role of Annex I countries
- Based on environmental concerns

## DE FACTO

- Juggling carrots and sticks of the parties
- Increasing regional demand of developing countries
- Conflicting national interests

1992

1997

1998

2000

2002

# Facing obstacles for building consensus

## MAJOR HUDDLES

- Ratification process
- EU vs. Umbrella group
- Fund vs. Demand of recipients
- Diverse groups of developing countries

**US(36.1%)**

**JAPAN(8.5%)**

**CANADA(3.3%)**

**AUS, NZ(2.3%)**

**RUSSIA(17.4%)**

**EIT(7.4%)**

**EU(24.2%)**

**G77 +CHINA  
KOREA, MX**

 ANNEX I

 NON-ANNEX I

## Issues involved with Kyoto Protocol

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- Policy efficiency vs. market efficiency
- Options on the table vs. reality check
- Global environmental issues vs. national interests
- Role of public sector vs. role of private sector

# The characteristics of Northeast Asia in the climate change negotiation

## KEY FEATURES

- Growing concerns on insecure frame and adverse effect
- Large population of non-Annex I parties
- Increasing regional demand for economic and social development
- Lack of regional governance



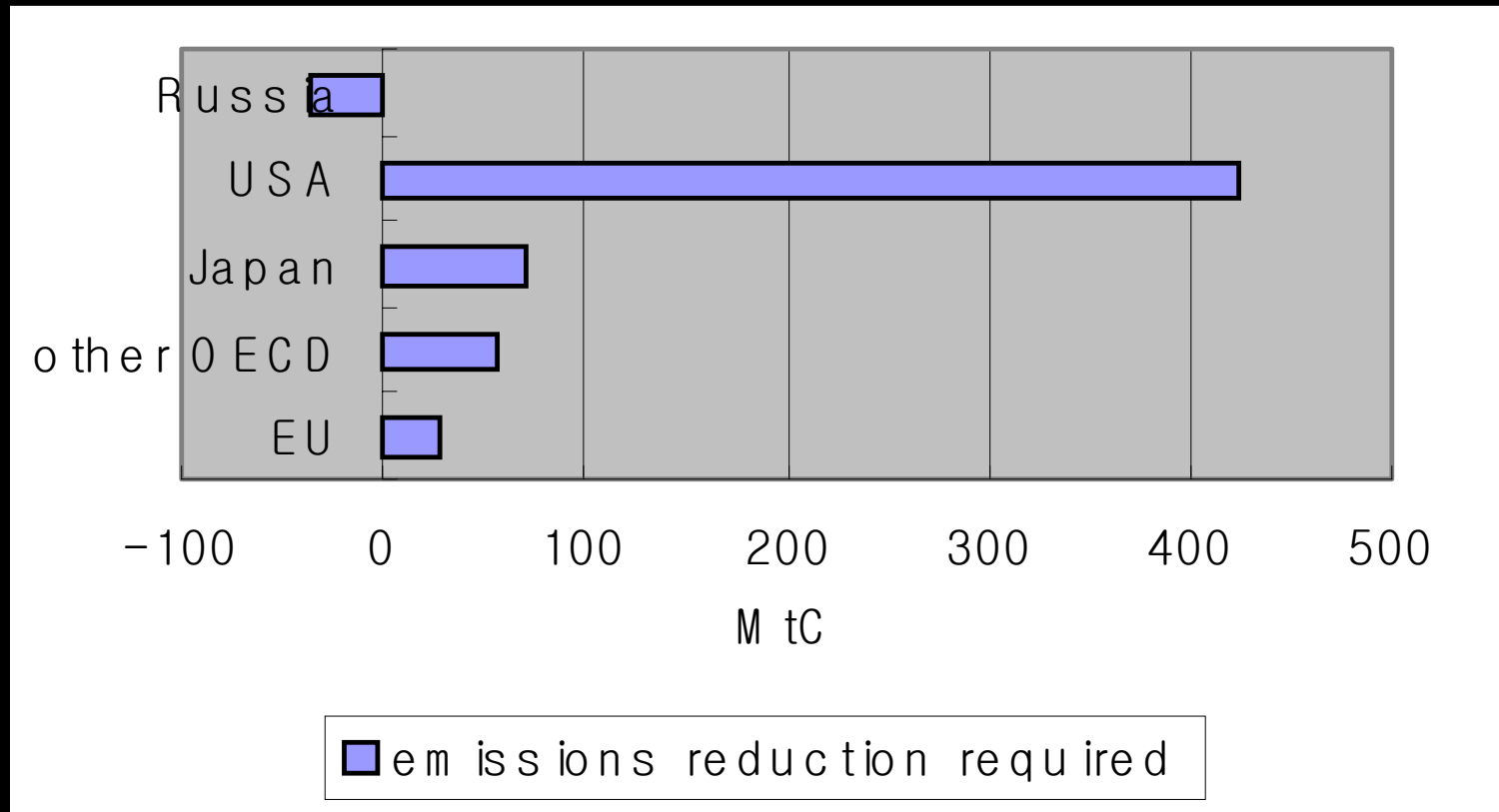
# Status of NEA in 3E(economy, electricity, and emissions)

	GNP		ENERGY/ELEC.		CO2 EMISSIONS		
	Billion\$	%	Quad. btu	Bill. kwh	mtc	Mtc/\$1990	Mtc/pop
<b>CHINA</b>	1130	7.5-8.0	31.8	1178	668.7	0.72	0.53
<b>JAPAN</b>	4800	1.5-2.0	21.7	1018	306.6	0.09	2.4
<b>S. KOREA</b>	406.7	8.2-10	7.4	221	107.5	0.25	2.3
<b>N. KOREA</b>	21.8	6.2	1.5	32	33.4	1.7	1.5
<b>RUSSIA</b>	593.4	3.2-5.0	26.0	772	400.1	1.1	2.7

Source: [www.eia.doe.gov](http://www.eia.doe.gov), *International Energy Trend 2000*



# Kyoto mechanisms vs. potential ghg market



Source: IPCC(2000), National communication, Zhang(1999)

## Kyoto frame urges

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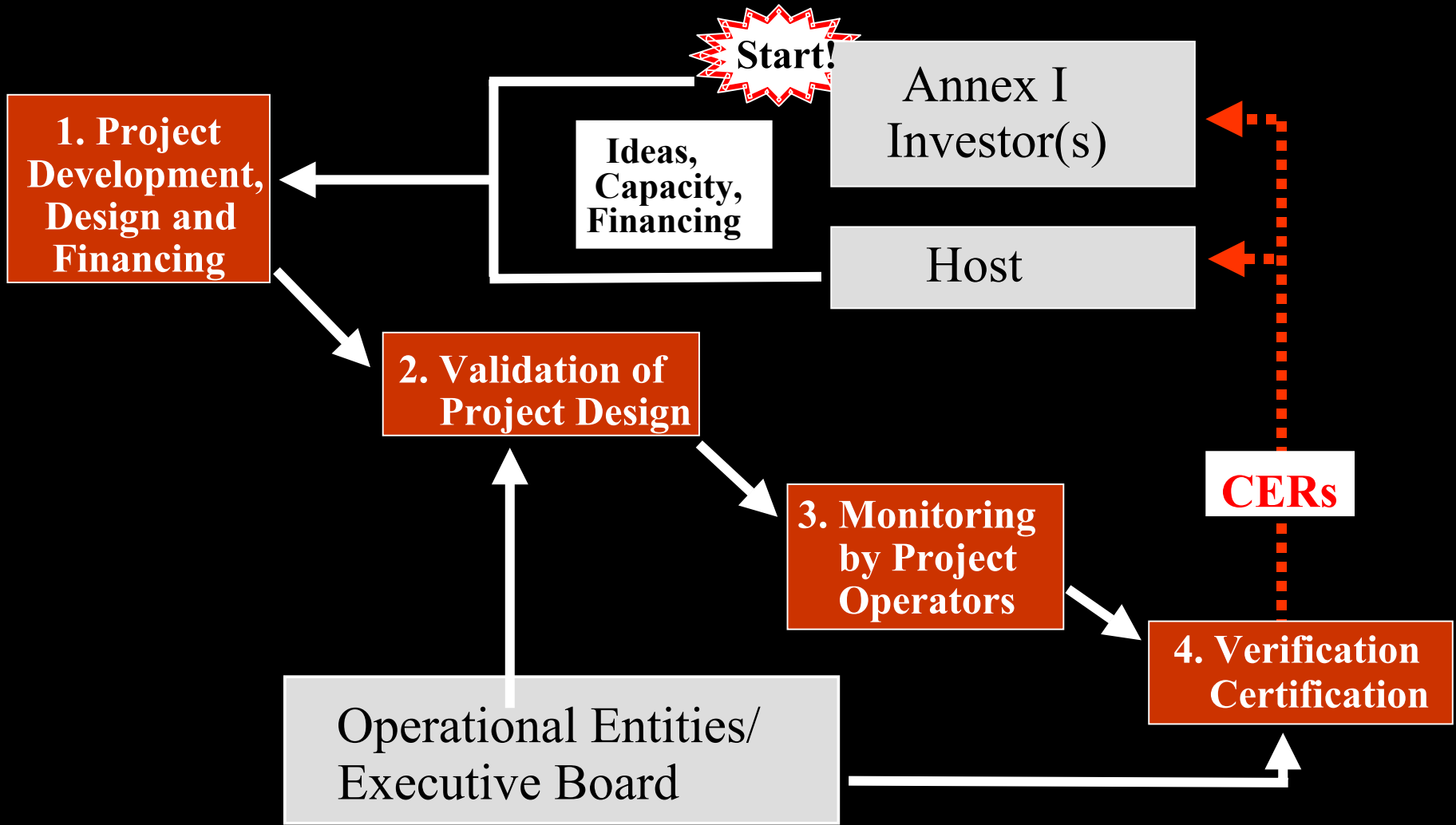
- Small scale power project in accordance with CDM(>5, 15MW)
- To resolve cross-border issues (taxation, subsidy, and regulatory gap)
- To refrain nuclear power under the Kyoto Mechanisms
- To prevent overselling and domino effect caused by obscure boundary of liability
- To promote CDM in least developed countries with climate tax(resource) exemption

# Fundamentals for implication of the KP on NEA energy and environmental policy

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- Capacity building for sustainable development
  - indicate SD priorities in economy
- Energy-environment policy integration by internalising externalities
- Cost-effective reduction through market instrument
- Promoting voluntary commitment with financial incentives
- Technology transfer under the Kyoto frame

# Mapping the feasibility of CDM in Northeast Asia

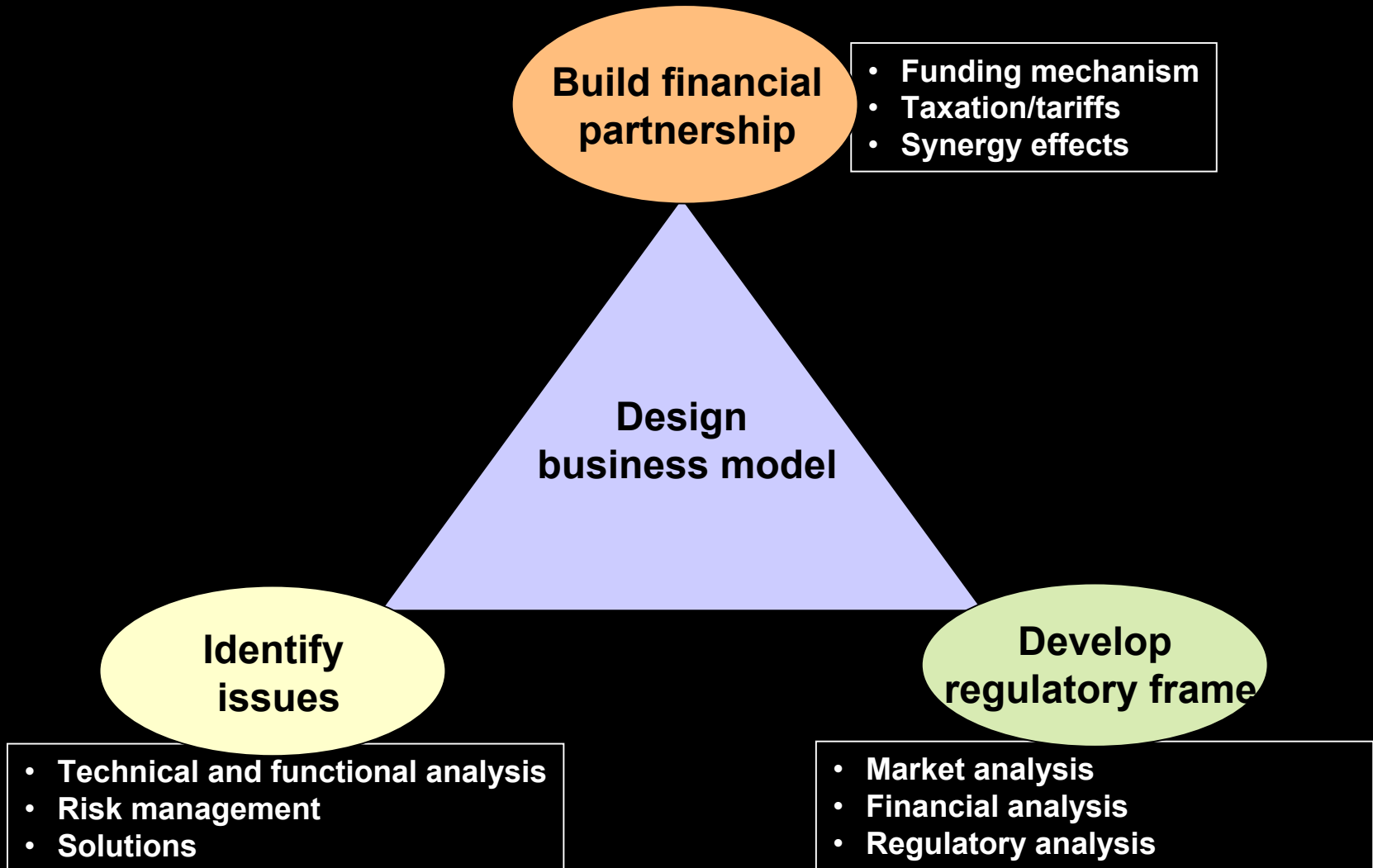


Source: WRI, 2000

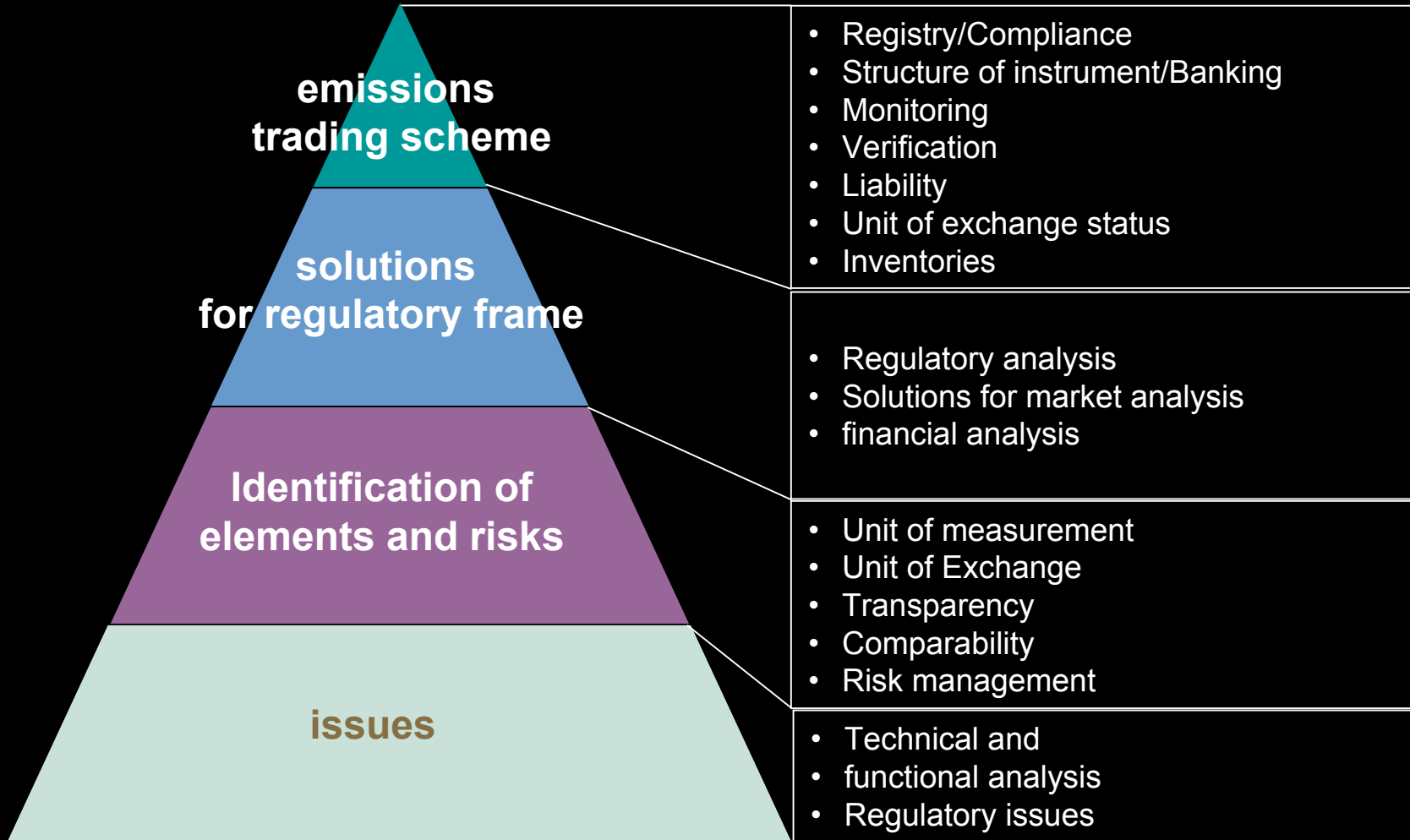
# Mapping the feasibility of CDM in Northeast Asia



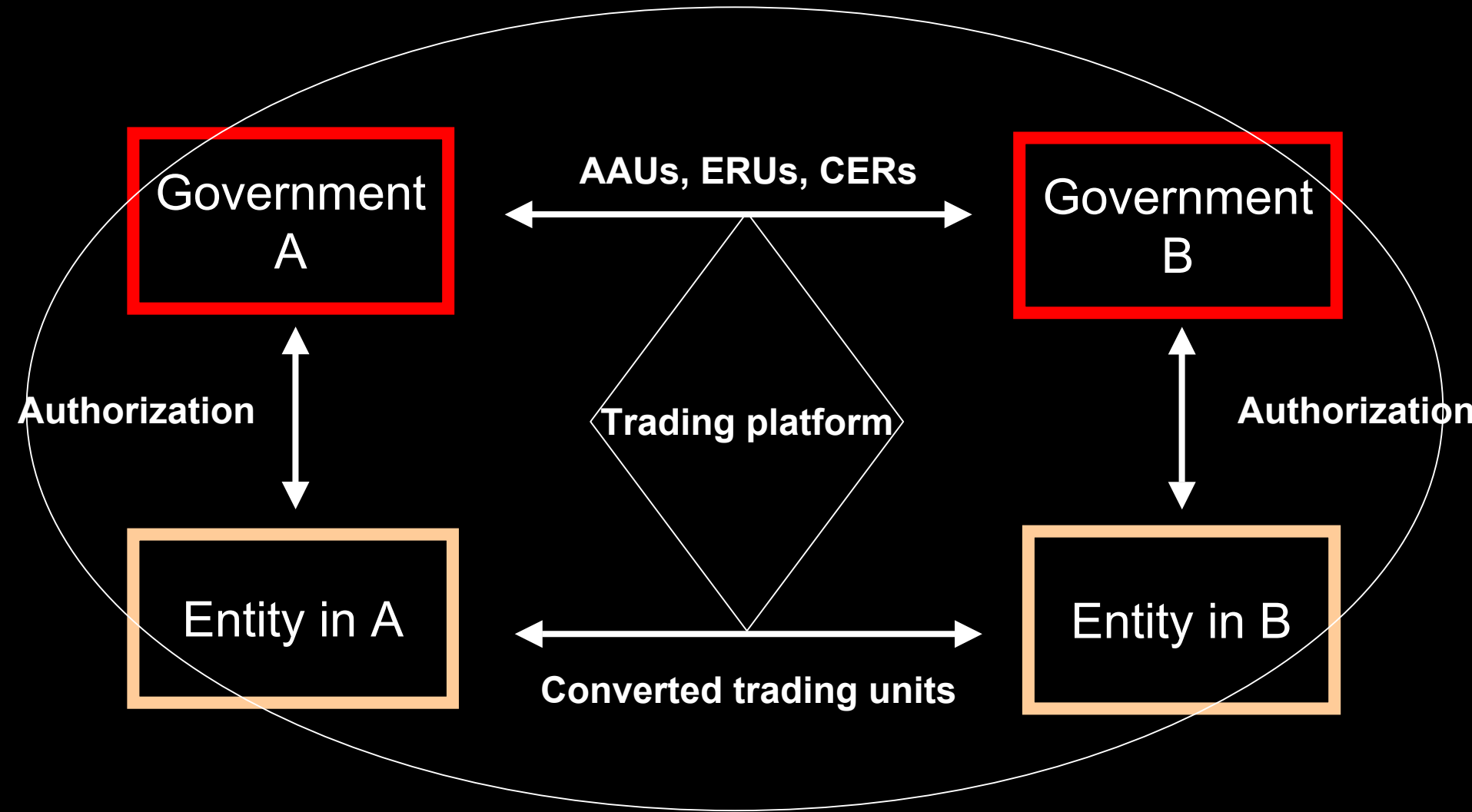
# Mapping the feasibility of CDM in Northeast Asia



# Mapping the feasibility of emission trading scheme in Northeast Asia



# Market Structure: How it works in trading pool





# Consequences of the emission trading scheme in NEA

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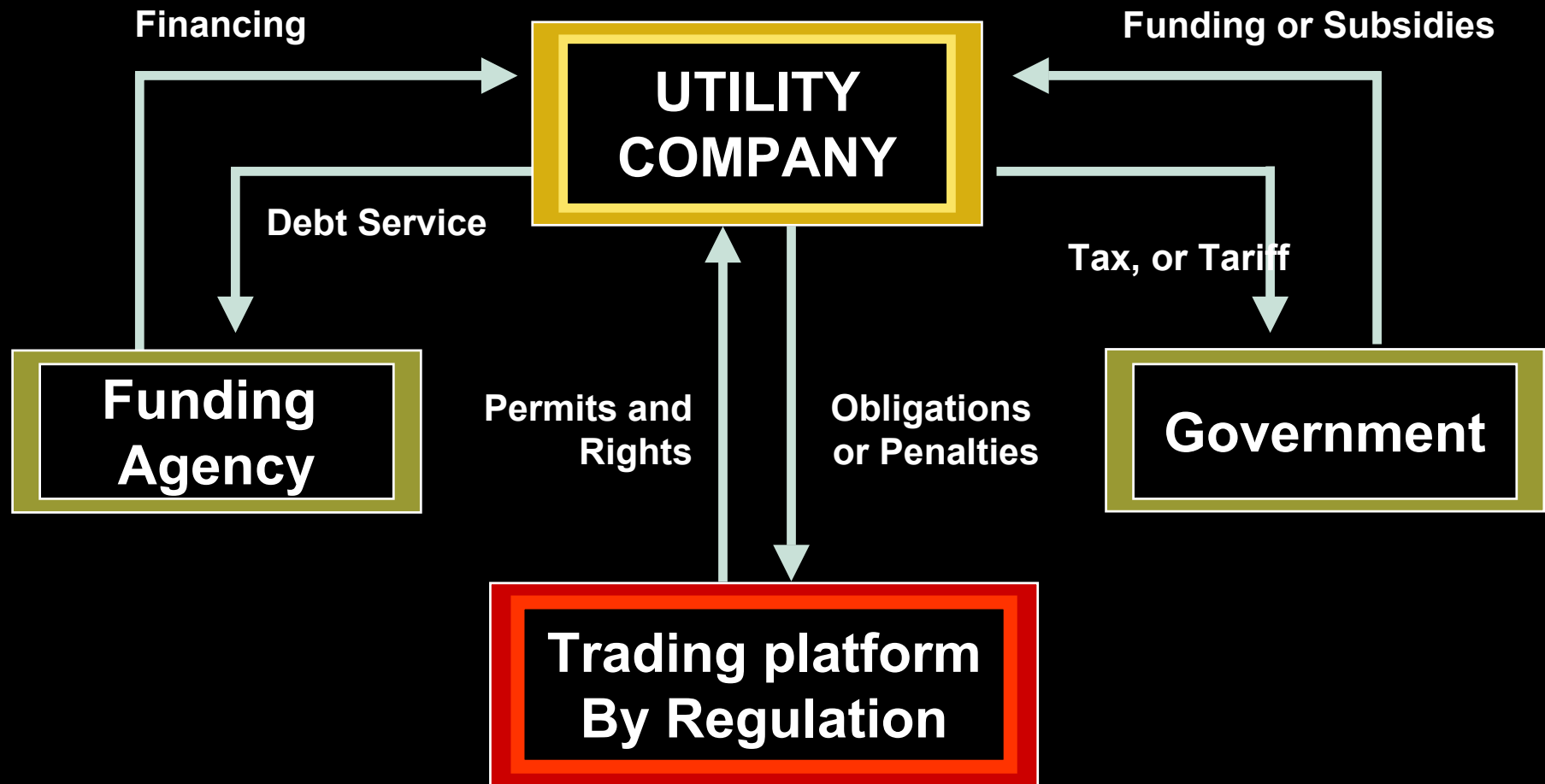
- Cost-effective reductions
- Private sector involved
- Policy efficiency

# Risk management for implementation of emission trading and CDM in Northeast Asia

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- Financial risk management
  - Insurance/Reinsurance
  - Derivatives and risk transfer mechanisms
- legal definition and nature of the tradable credits: agreements with governments ensuring compliance units can be transferred cross border
- Fungibility in both the primary and secondary markets
- Alliance or public-private partnership on building baseline through certification

# Conventional financing structure



# Funding and financing NEA electricity grid within Kyoto frame

- Utilizing UNFCCC & KP resources (according to new proposal by Pronk)
  - Climate Special Fund (  $AAU * X\% + VC + ODA$ ), Resources (1B\$/y)
  - Promoting CDM tax exemption in NEA LDCs
- Bilateral arrangement with private sector involvement
  - Design bilateral Clean Development Mechanism
- Multilateral commitment in accordance with national registry
  - Establish and run multilateral carbon fund with financial instruments(options, futures, banking, etc)
  - Coordinate public-private partnership(IOs, NGOs, academia)
  - Build electricity-emission trading platform

# Financing NEA electricity grid beyond Kyoto frame

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- Co-financing by IFC climate program, World Bank, and ADB
- Multilateral fund
  - A part of Northeast Asian Development Bank
  - Link with natural gas pipeline grid

# Conclusion and Recommendations

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- Acknowledging the barriers
  - Lack of market experience
  - Imbalance between supply and demand in ghg market
  - Government-oriented process in many developing countries
  - Risks associated with different fiscal and legal system
- Implement fundamentals
  - Offering market liquidity with unilateral and multilateral CDM
  - Being realistic to definition of baseline and additionality
  - Building partnership between south and north with local experts involved
  - Ensuring governance with legal foundations in national and international framework: Northeast Asia needs attentions

## Closing Remarks

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***“No challenge is more momentous than the threat of global warming.”***



By Jimmy Carter