Considering the New Energy introduction target

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New energy group

What we are going to say･･･

CO_2 reduction by new energy in 2010 (annual)

34million t-CO2

New energy target

No !!

What we are going to say･･･

Because of･･･

- excessive CO2 reduction
- not cost effective

Our proposal

① lower target than the original

② consider cost factor

structure

Chapter 1 What new energy is

Chapter 2 Current situation in Japan

Chapter 3 Our trial calculation

Chapter 4 Our proposal

What is new energy ?

Definition

Energy that are…

1. technically available
2. not marketable
3. the alternative energy resource to oil

What is new energy ? ～Kinds of new energy～

marketable

- Solar energy
- Wind-power
- Solar thermal
- Cryogenic power by snow ice
- Temperature differences
- Biomass energy
  - generation
  - thermal
  - fuel
- Waste combustion
  - generation
  - thermal
  - fuel

not technically available

Classification of new energy

Power generation field

- solar energy
- wind-power
- waste combustion energy
- biomass energy

Thermal utilization field

- solar thermal utilization
- unutilized energy
- waste combustion utilization
- biomass thermal utilization

Merits and Demerits

Merits

domestically produced

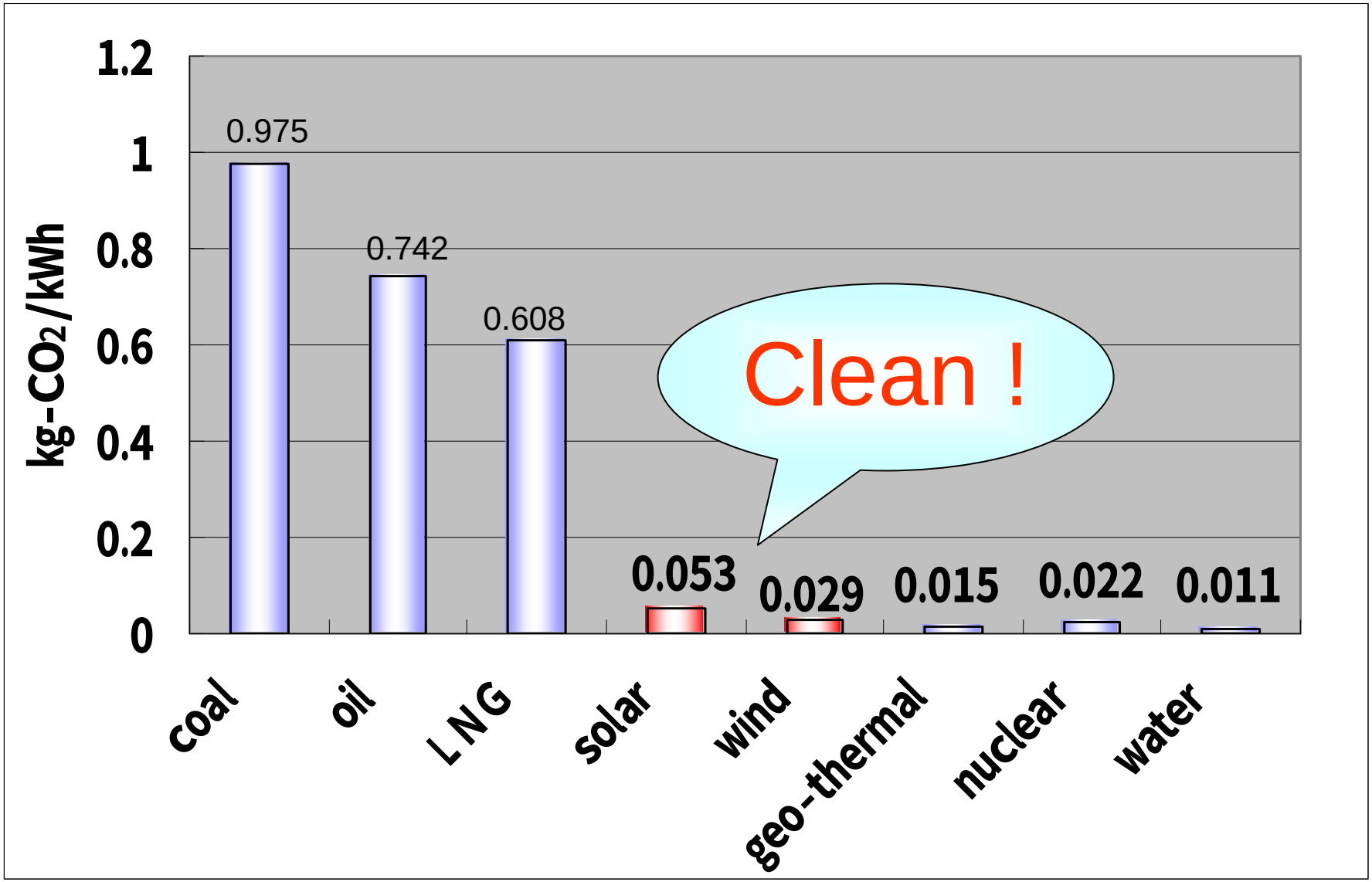
no exhaustible resource

less CO_2 emissions

Demerits

- Unstable electrical output
- energy conversion efficiency is low
- cost is high

The amount of CO_2 emissions of every resource



Merits and Demerits

Merits

domestically produced

no exhaustible resource

less CO_2 emissions

Demerits

- Unstable electrical output
- energy conversion efficiency is low
- cost is high

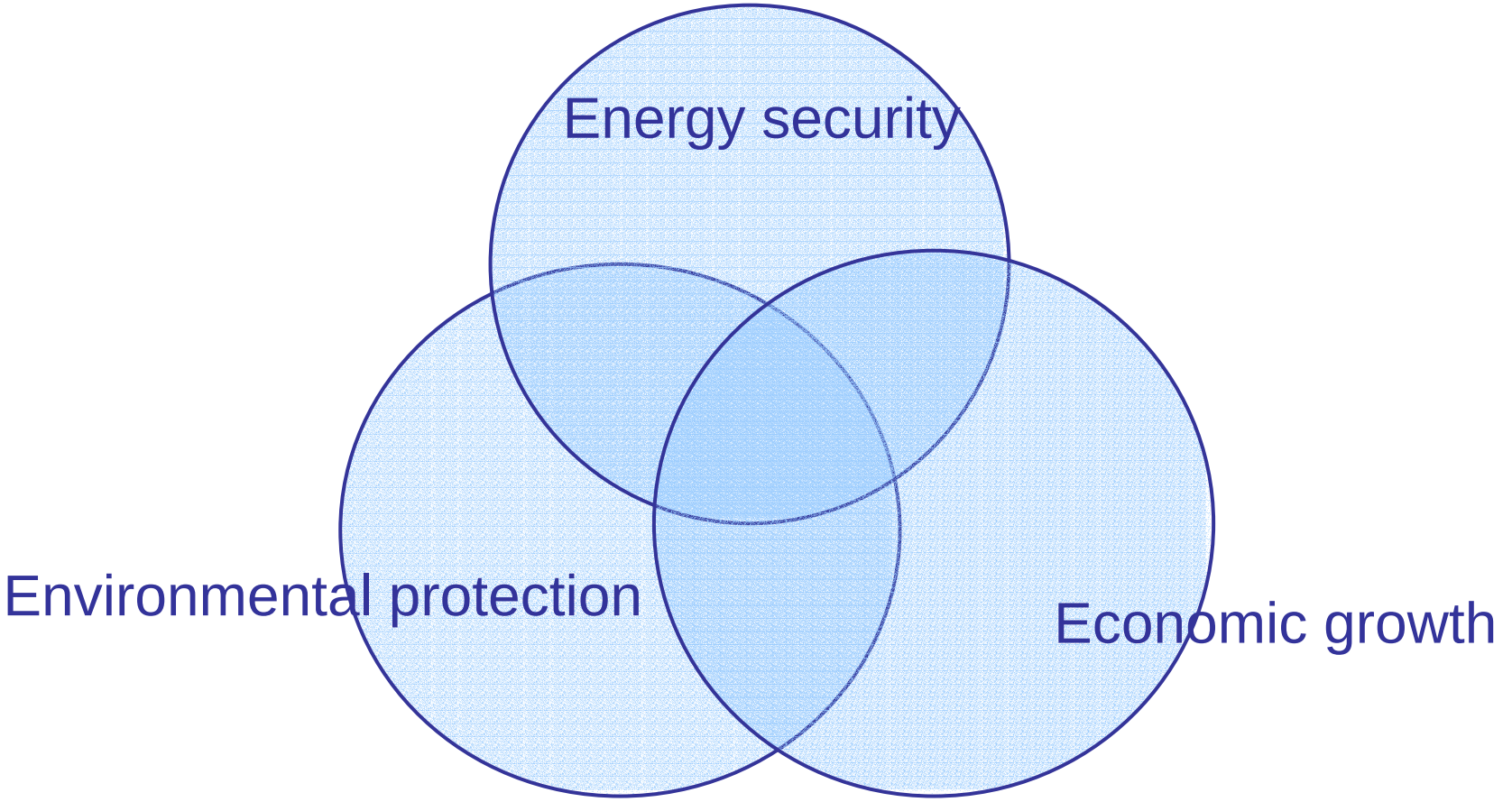
cost comparison

JS$/kWh)

cost of new energy is high!

The necessities of new energy

the image of accomplishing 3 targets of energy policy

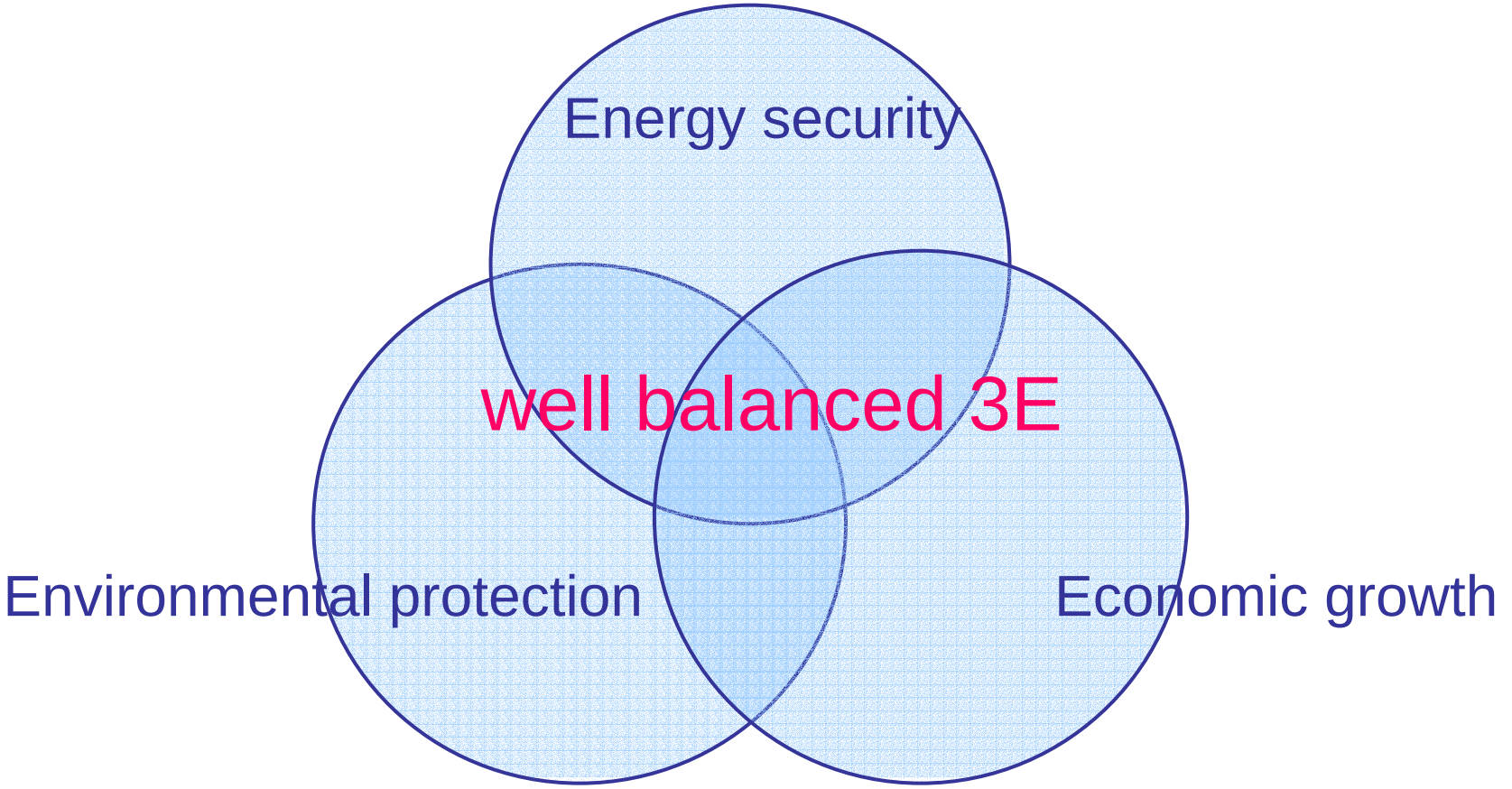


Current situation of primary energy in Japan

energy security problem!

The necessities of new energy

the image of accomplishing 3 targets of energy policy



New energy & 3E

1. diversification of energy supply

Energy security

2. clean energy

Environmental protection

3. competitiveness in future

preventing CO2 emission

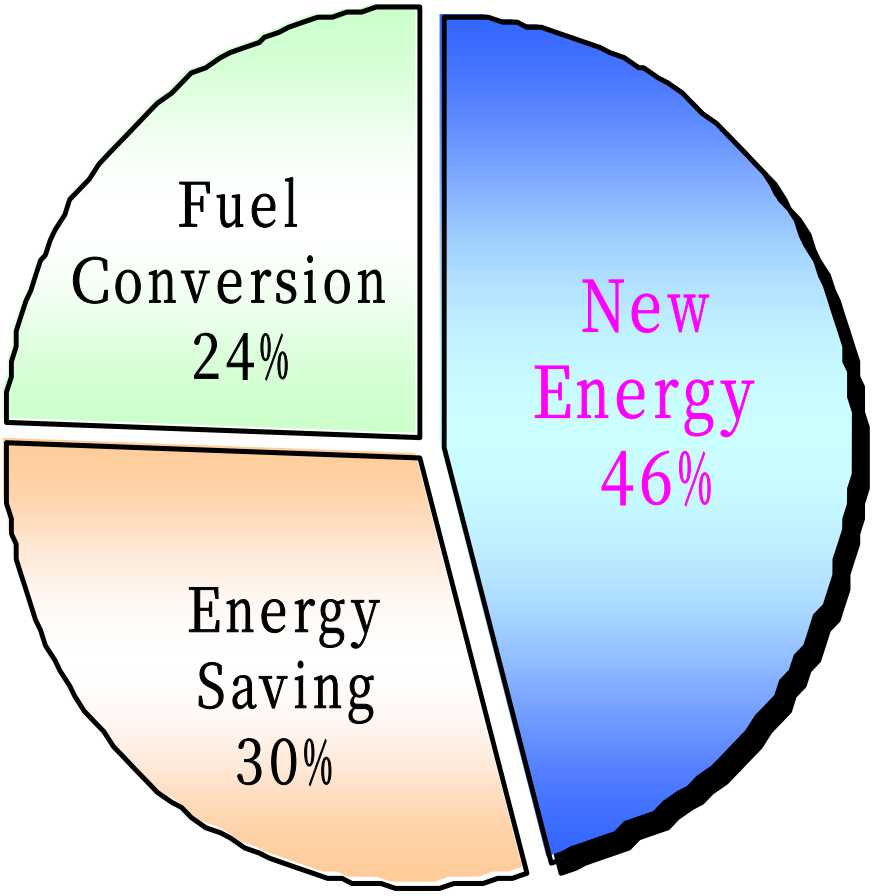
Unless additional measures are taken・・・

exceeds about

74 million t-CO2

additional measures
Energy saving ▲**22** million t-CO2
New energy ▲**34** million t-CO2
Fuel conversion ▲**18** million t-CO2

The CO2 reduction target of each Energy sector



Made by presenter,

based on the data by Ministry of the Environment (2002

New energy & 3E

New energy matches 3E !!

structure

Chapter 1 ***What risk society is*** ***Finished !!***

Chapter 2 ***Current situation in Japan***

Chapter 3 ***Our trial calculation***

Chapter 4 ***Our proposal***

Classification of new energy

Power generation field

- solar energy
- wind-power
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- biomass energy

Thermal utilization field

- solar thermal utilization
- unutilized energy
- waste combustion utilization
- biomass thermal utilization

Actual figure and Target
power generation field

	Actual figure of 1999		target case of 2010
	Convert into oil		Convert into oil
	1000kl		1000kl
Solar energy	53	23 times	1180
Wind power	35	38 times	1340
Waste combustion energy	1150	5 times	5520
Biomass energy	54	6 times	340

RPS (Renewables Portfolio Standard) in Japan

What is RPS system ?

The system to introduce new energy certainly and cost-effectively

Issued in June 2002
Put into force in April 2003

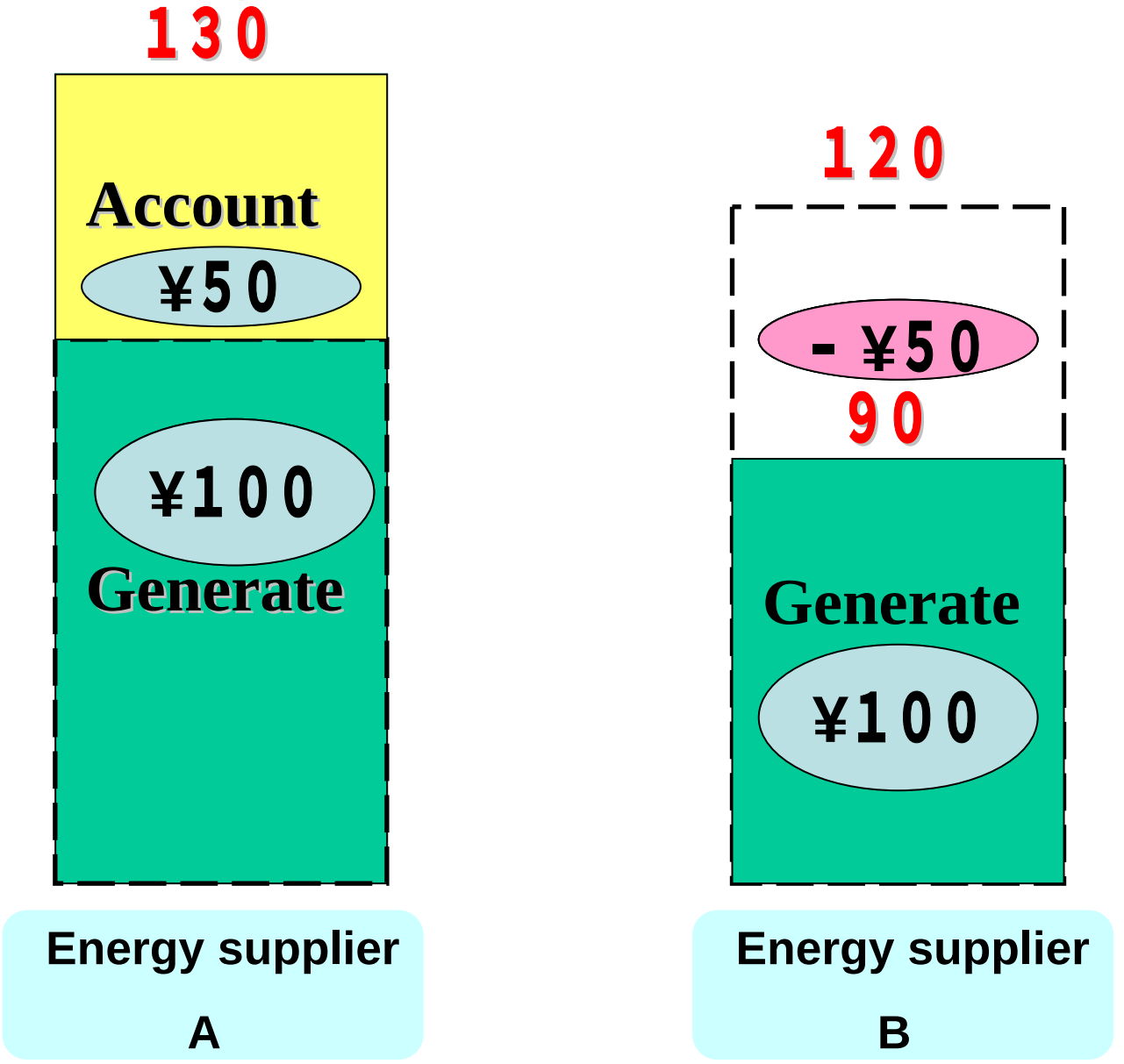
Eligible energy sources of RPS

- Wind-power generation
- Solar energy generation
- Geo-thermal generation
- hydraulic power generation (small and medium)
  (✕hydroelectric dam)
  (○hydraulic turbine)
- Biomass
- waste combustion energy generation
  (only the biomass incineration)

RPS system

RPS is a way to
attain the obligation cost-effectively

Image of the account trade



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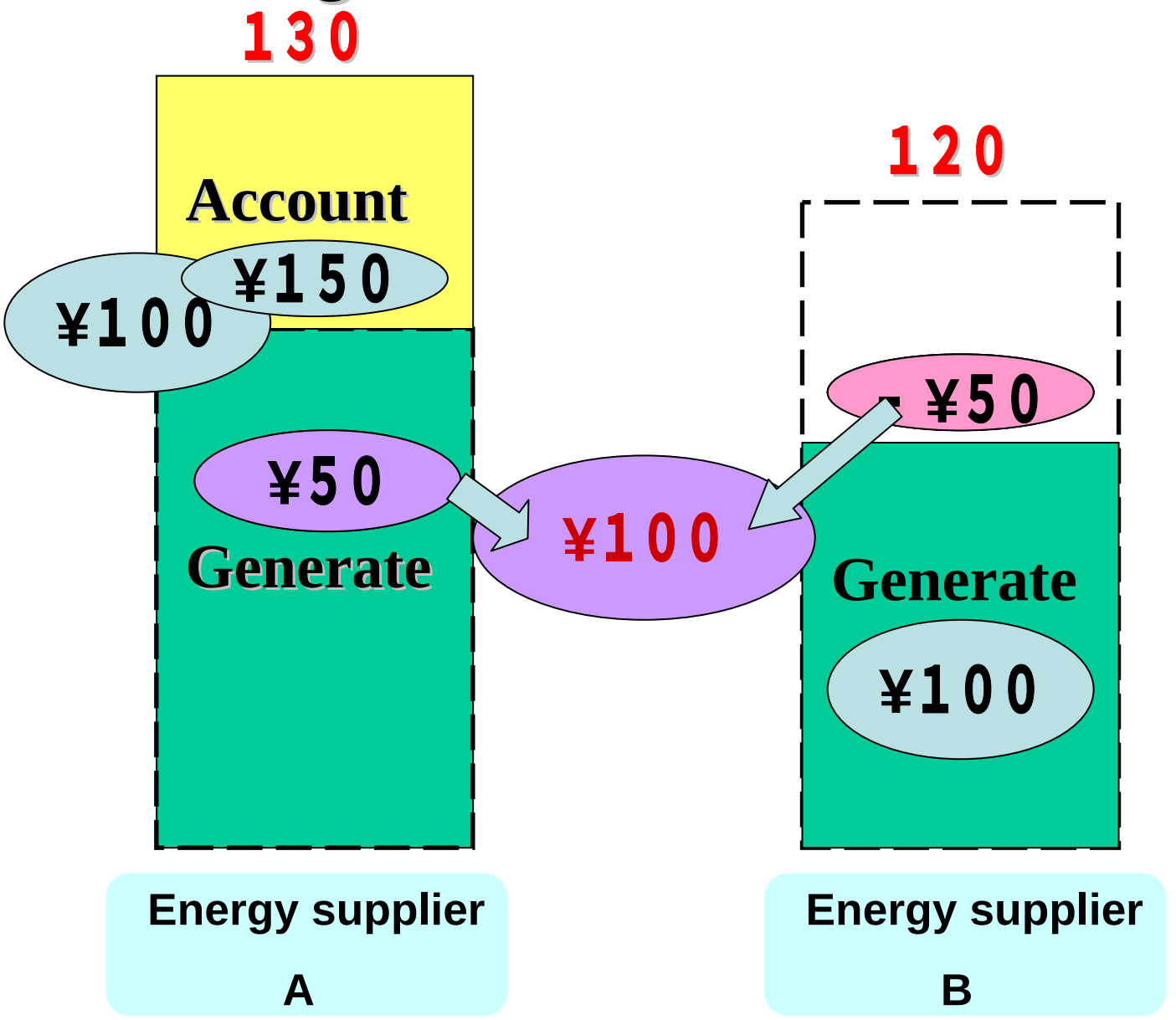

Classification of new energy

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Thermal utilization field

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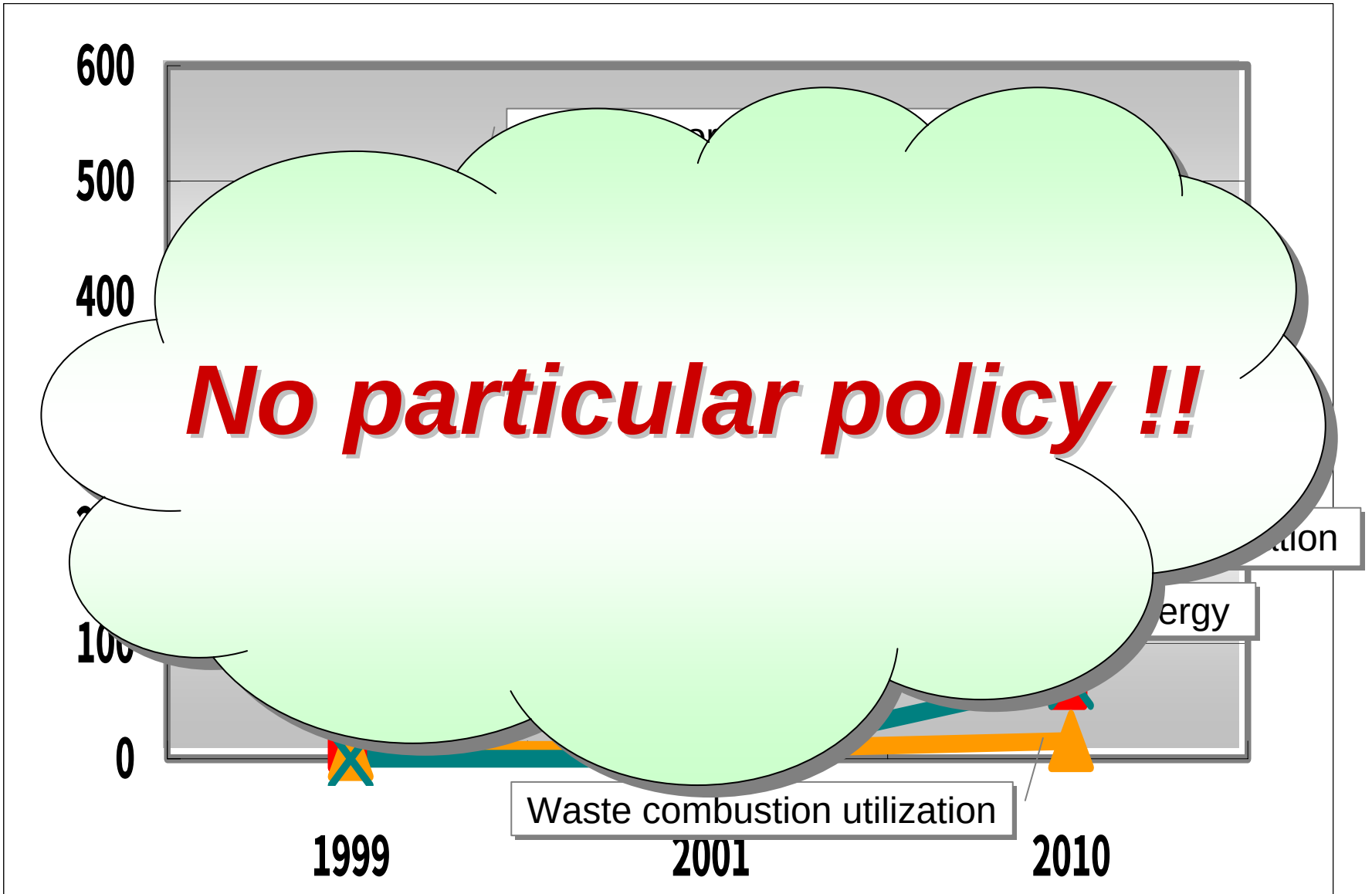
Actual result and Target

Thermal utilization field



Summary of current situation

Is this new energy target appropriate ?

ther utilization field ⇒ difficult to attain

structure

Chapter 1 ***What new energy is*** ***Finished !!***

Chapter 2 ***Current situation in Japan*** ***Finished !!***

Chapter 3 ***Our trial calculation***

Chapter 4 ***Our proposal***

Point of our trial calculation

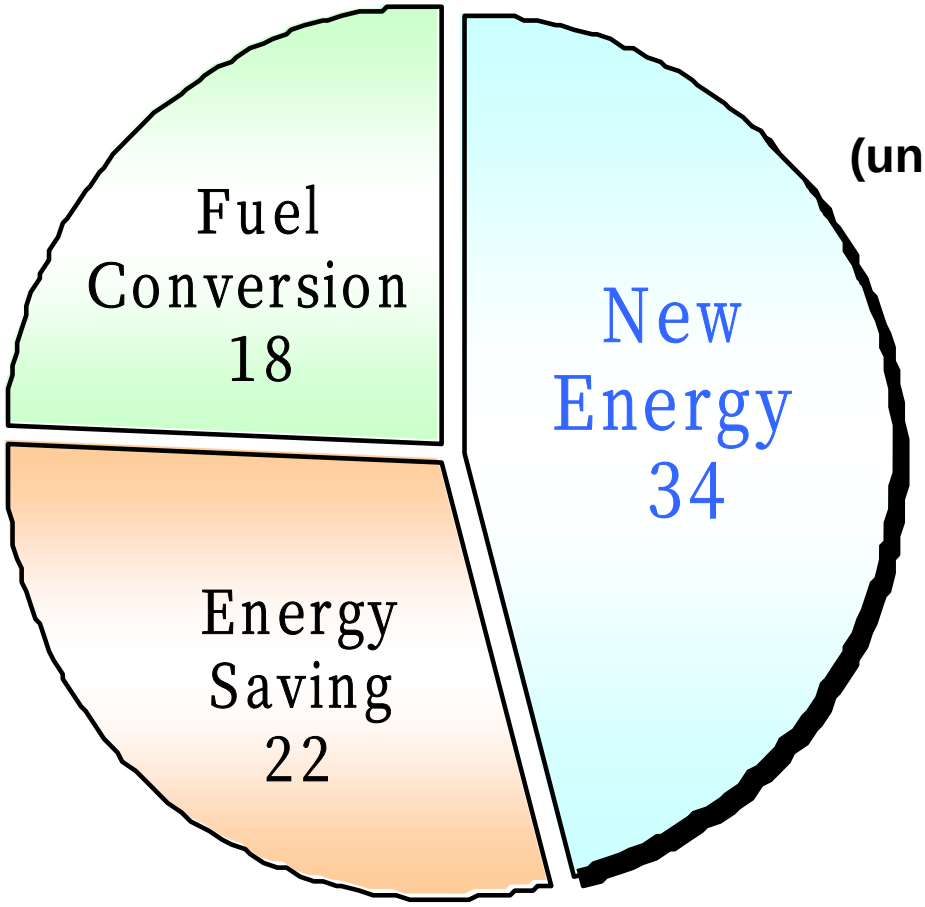
1.Consistent ?

⇒CO2 reduction…

2.Cost-effective?

⇒the cost…

Reduction target of New energy



(unit: million t-CO2)

Made by presenter,

based on the data by Ministry of the Environment (2002

Alternative of…

∗Power generation field…

Oil case⇒0.742kg-CO2/kwh

All power sources case⇒0.419kg-CO2/kwh

∗Thermal utilization field…

Kerosene case⇒68.5g-CO2/MJ

City gas case⇒58.6g-CO2/MJ

What is new energy ?

Definition

Energy that are…

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Alternative of…

∗Power generation field…

Oil case⇒0.742kg-CO2/kwh

All power sources case⇒0.419kg-CO2/kwh

∗Thermal utilization field…

Kerosene case⇒68.5g-CO2/MJ

City gas case⇒58.6g-CO2/MJ

Amount of CO2 reduction

∗Power generation field…

23.95 million t-CO2

∗Thermal utilization field…

28.07 million t-CO2

Amount of CO2 reduction

Total reduction of New energy…

- **Excessive reduction!!**

⇒ Not consistent!

Point of our trial calculation

1.Consistent ?

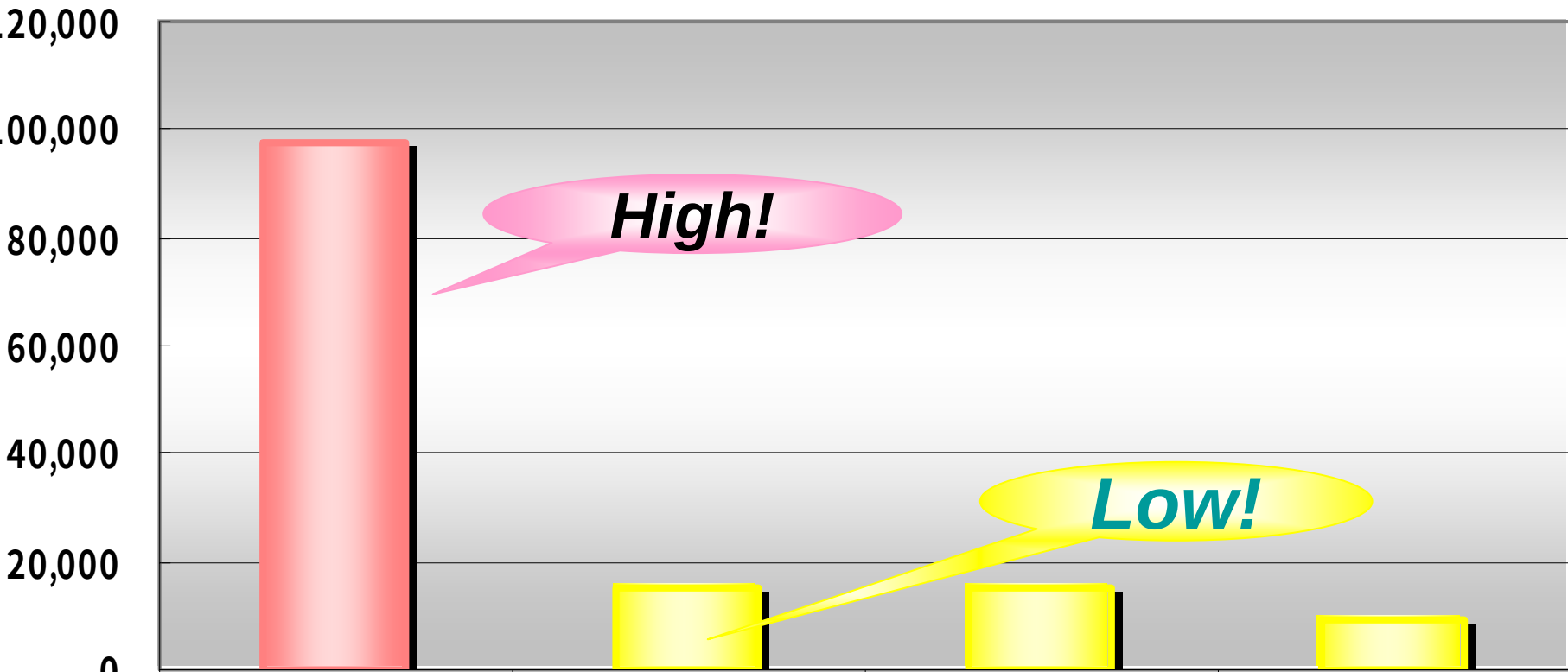
⇒CO2 reduction… **No!!**

2.Cost-effective?

⇒The cost…

Cost of CO2 reduction/t-CO2

power generation field



	Solar energy	Wind-power	Waste combusiton	Biomass energy
yen	97,614	15,474	15,442	9,130

Unit: yen　1yuan＝about 15 ye

The viewpoint of the target

	Actual figure of 1999		Target case of 2010
	Convert into oil		Convert into oil
High!	1000kl		1000kl
Solar energy	53	23 times	1180
Wind power *Low!*	35	38 times	1340
Waste combustion energy	1150	5 times	5520
Low! Biomass energy	54	6 times	340

Cost of CO2 reduction/t-CO2

thermal utilization field

High cost

&

difficult target

yen


not
cost-effective !
easy target

Point of our trial calculation

1.Consistent ?

⇒CO_2 reduction…**No!!**

2.Cost-effective?

⇒The cost…**No!!**

structure

Chapter 1 What new energy is **Finished !!**

Chapter 2 Current situation in Japan **Finished !!**

Chapter 3 Our Hydrogen station **Finished !!**

Chapter 4 ***Our proposal***

Considerations

Not appropriate!

Set lower new energy target
with taking cost into consideration!!

If considered only about cost

Reduced about

170 billion yuan !!

The factor of cost is very important !

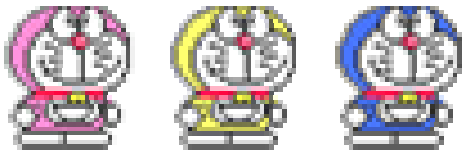
Our proposal

The Japanese government should…

① set lower target than the original

② consider cost factor

謝謝！



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- Agency for Natural Resources and Energy, Energy Conservation and Renewable Energy Department Mr. Yasuhiro Nagami
- Agency for Natural Resources and Energy,Energy Conservation and Renewable Energy Department Ms. Eri Nakajima

Internet Resources

- Ministry of Environment http://www.env.go.jp/index.html
- Ministry of economy, trade and industry http://www.meti.go.jp/
- New Energy Foundation http://www.nef.or.jp/
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- Green Energy “law” Network http://www.jca.apc.org/~gen/
- New Energy and Industrial Technology Development Organization (NEDO) http://www.nedo.go.jp/
- The Federation of Electric Power Companies of Japan http://www.fepc.or.jp/index-f.html
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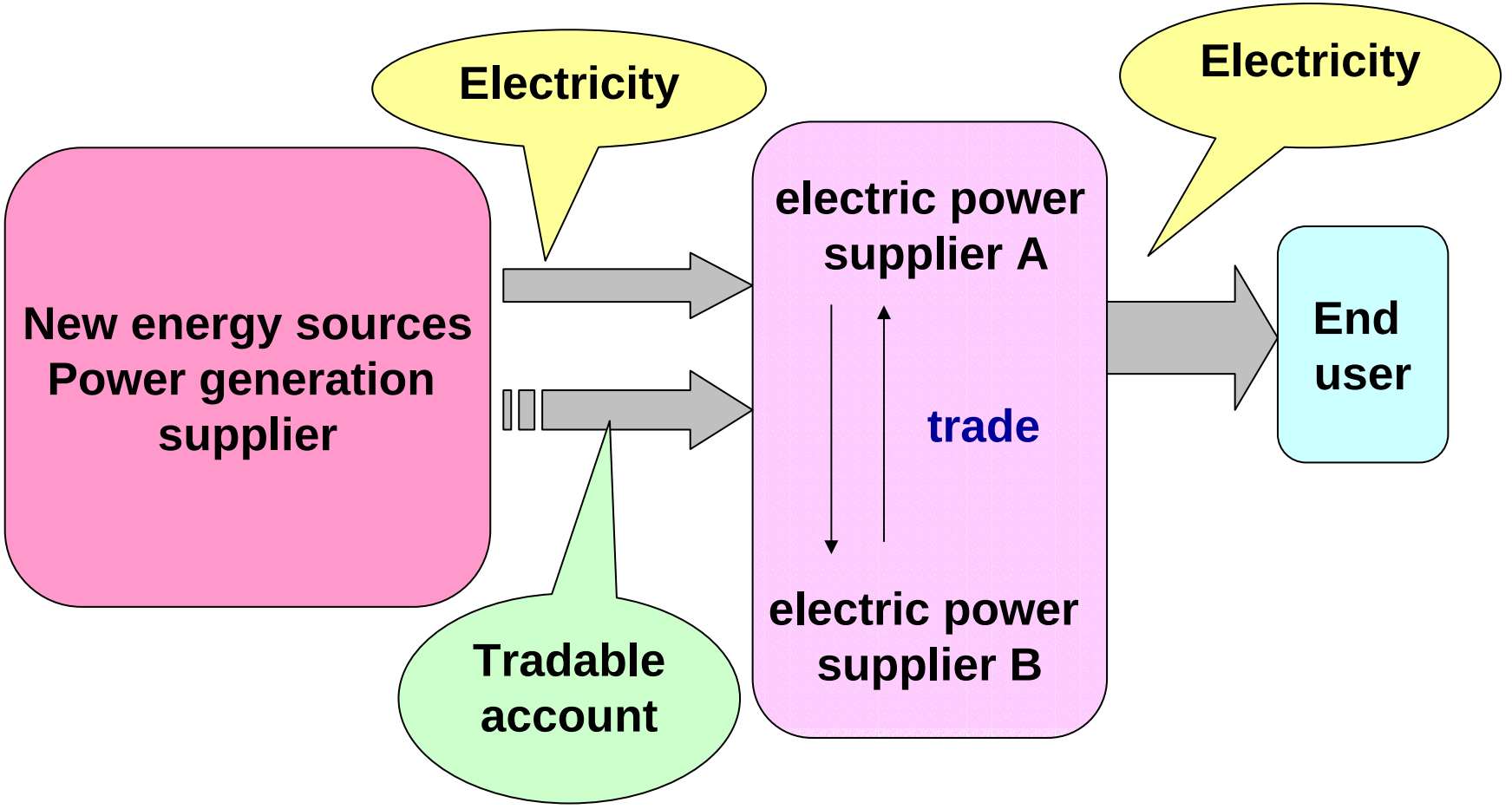
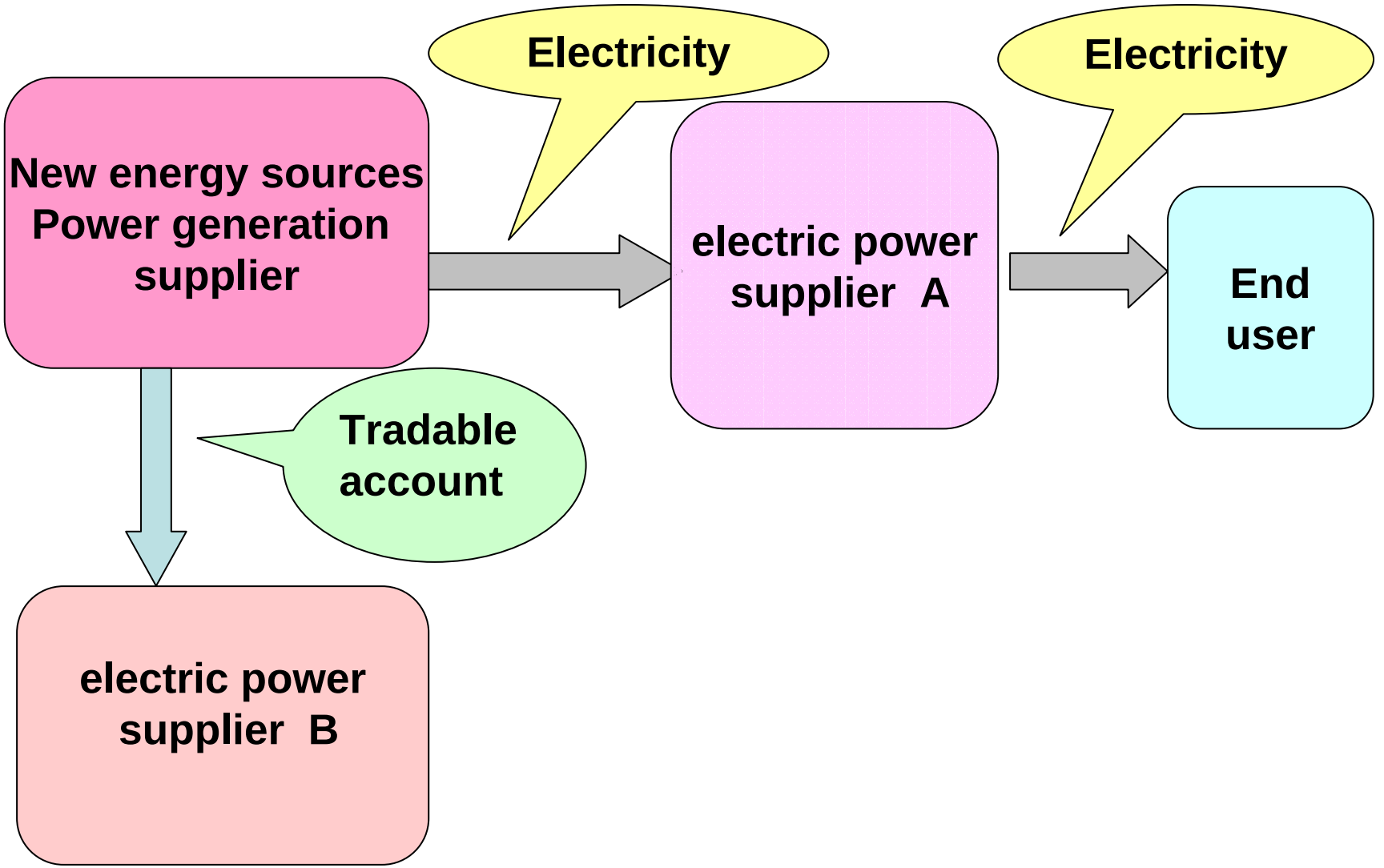
The image of Japanese RPS system (1)



The image of Japanese RPS system (2)



The cost of each new energy

Solar energy generation	Residential	average：66 yen/kWh
	Non-residential	average：73 yen/kWh
Wind power generation	Large scale	10～14 yen/kWh
	Smaller scale	18～24 yen/kWh
Waste combustion energy generation*	Industry	9～11 yen/kWh
	General	11～12 yen/kWh
Solar thermal utilization		28 yen/Mcal
Unutilized energy		10 yen/MJ

*including biomass energy generation

(source: report of new energy subcommittee

Cost of power generation

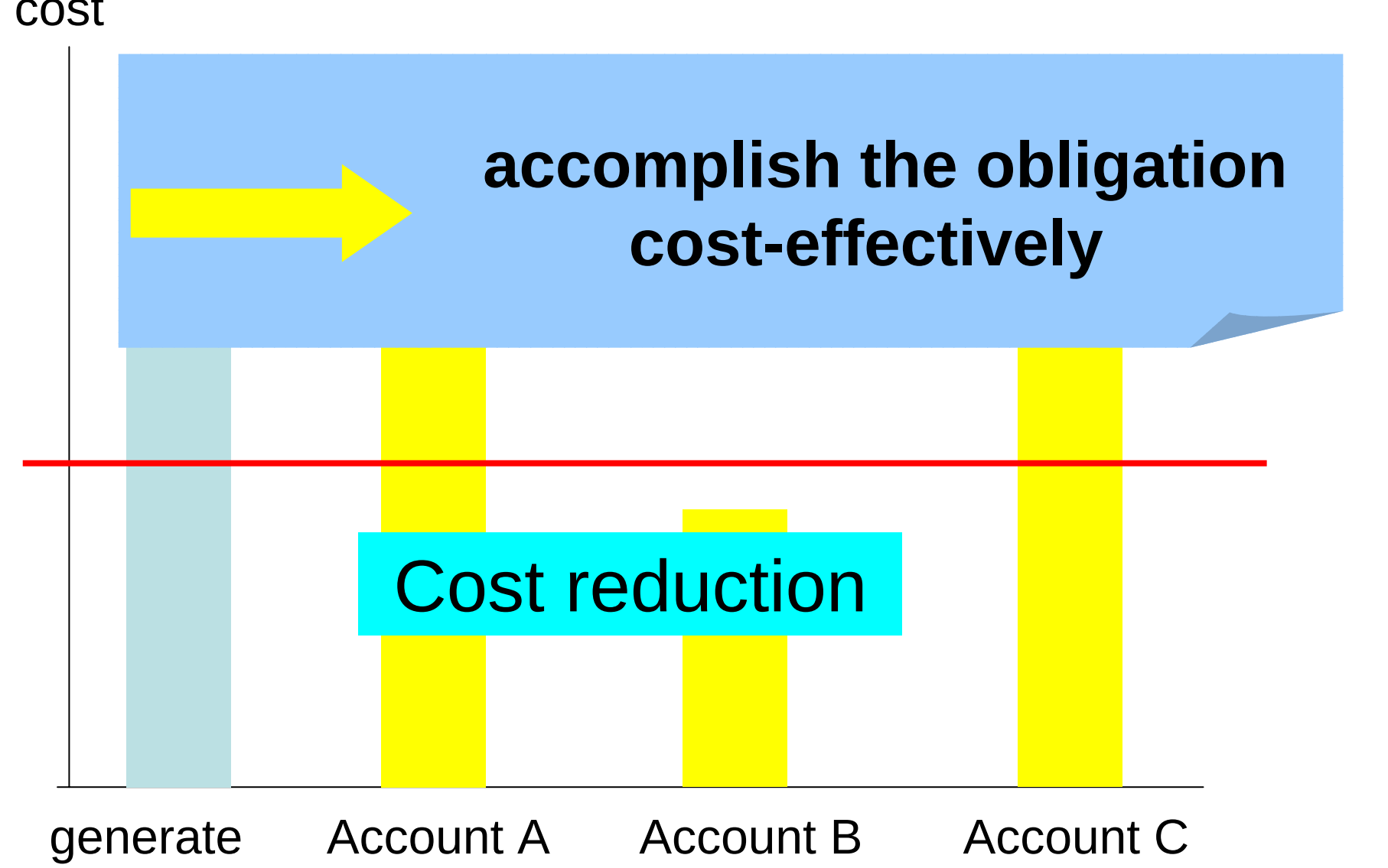
Solar energy generation	Residential	270.6
	Non-residential	73
Wind power generation	Large scale	51～71.4
	Smaller scale	12.6～16.8
Waste combustion energy generation	Industry	108～132
	General	129.8～141.6
Biomass energy generation		12.6~16.8

unit: billion yen　1元＝about 15 yen

Cost of thermal utilization

Solar thermal utilization	1,122.2
Unutilized energy	221.6
Waste combustion utilization	53.5
Biomass thermal utilization	255.9
Black liquor/scrap wood etc.	1,887.1

unit: billion yen　1元＝about 15 yen

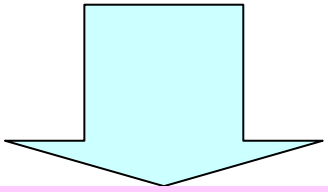


Equalize the marginal generation cost

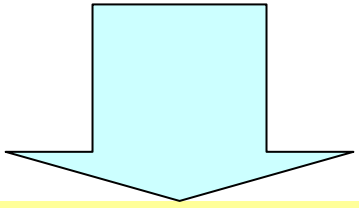
Minimize the social cost

Thermal utilization field

decreasing demand



No particular policy



difficult to attain target amount in 2010

Cost of CO2 reduction per t-CO2

power generation field

	alternative for oil	alternative for average of all power sources
Solar energy generation	97,614	183,743
Wind-power generation	15,474~21,460	28,018~38,855
Waste combustion energy generation	15,442~17,766	30,724~35,349
Biomass energy generation	13,696~18,261	26,250~35,000

High!

High!

Low!

Low!

Low!

Low!

Low!

Low!

Unit: yuan≒about 15 y

Cost of CO2 reduction per t-CO2

thermal utilization field

	alternative for kerosene	alternative for city gas
Solar thermal utiliz	93	130,448
[illegible]	[illegible]	932
Waste	[illegible]	932
Biomass therm[illegible]	985	194,932
Black liquor/scrap wood etc.	145,985	194,932

High Cost!

Unit: yen　　1元=about 15 yen

	Actual result of **1999**		Prospect /target of **2010**			
			Case of keeping the current measure		**Target case**	
	Convert into oil	Capacity of plant	Convert into oil	Capacity of plant	Convert into oil	Capacity of plant
	10000kl	10000kW	10000kl	10000kW	10000kl	10000kW
Waste combustion energy	**115**		**About 5 times**		**552**	417
Biomass energy	**5.4**		**About 6 times**		**34**	33
Solar energy	**5.3**		**About 23 times**		**118**	482
Unutilized energy	**4.1**		**About 14 times**		**58**	–
Solar thermal	**98**		**About 4 times**		**439**	–

Low!

High!

High!

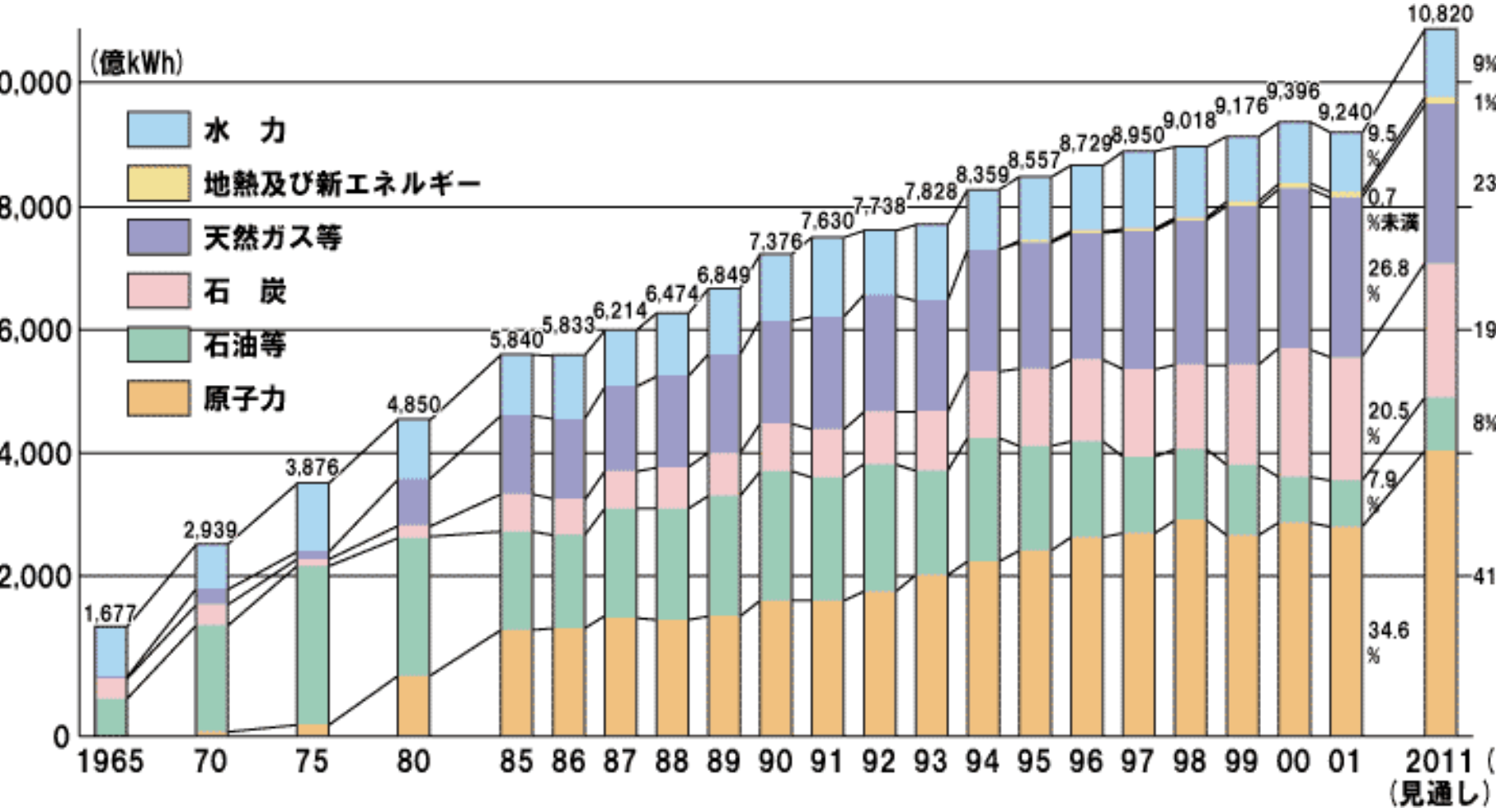
new energy ≠ renewable energy

- hydraulic power generation
- geo-thermal generation

are renewable energy, but are not new energy.
because they are not economically inefficient.

renewable energy
= natural energy + recycled energy
new energy
= renewable energy − hydraulic power generation −geo-thermal generation

排出原単位の話



図表　電源別発電電力量の実績および見通し(出典:「エネルギー２００３」「総合資源エネルギー調査会総合部会／需給部会報告書２００１．７」)

No!

"The target should include the maximum amount of new energy available."

source: report of new energy subcommittee

Government doesn't consider COST!