

# Renewable Energy Future in Japan



## *Green Energy Movement and the Changes in Renewable Energy Policy*

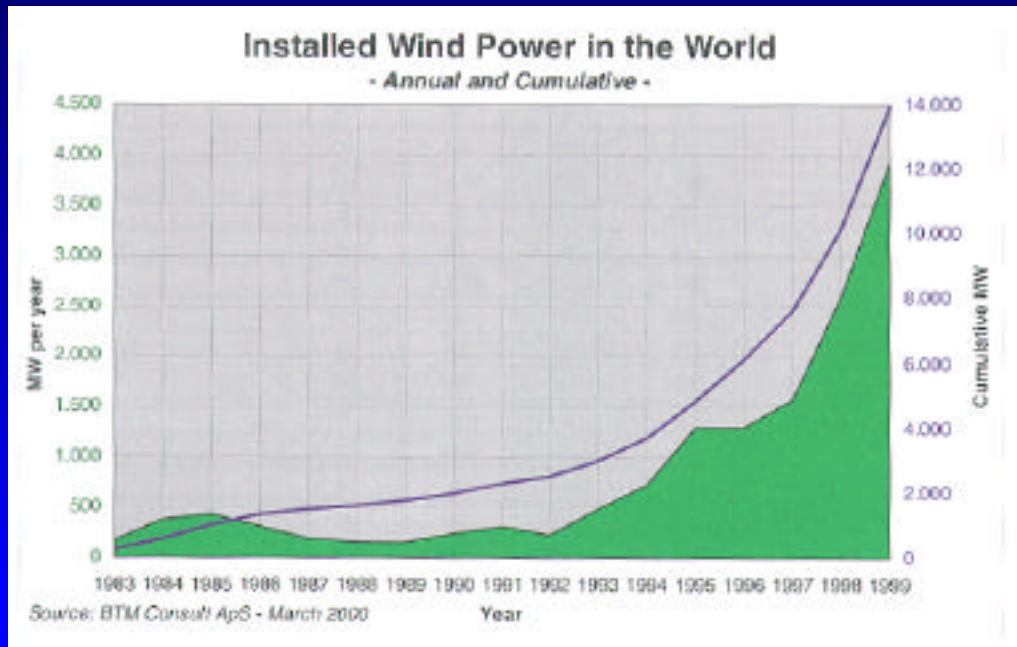
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# Renewable come to age

Success story in Europe during 1990s'

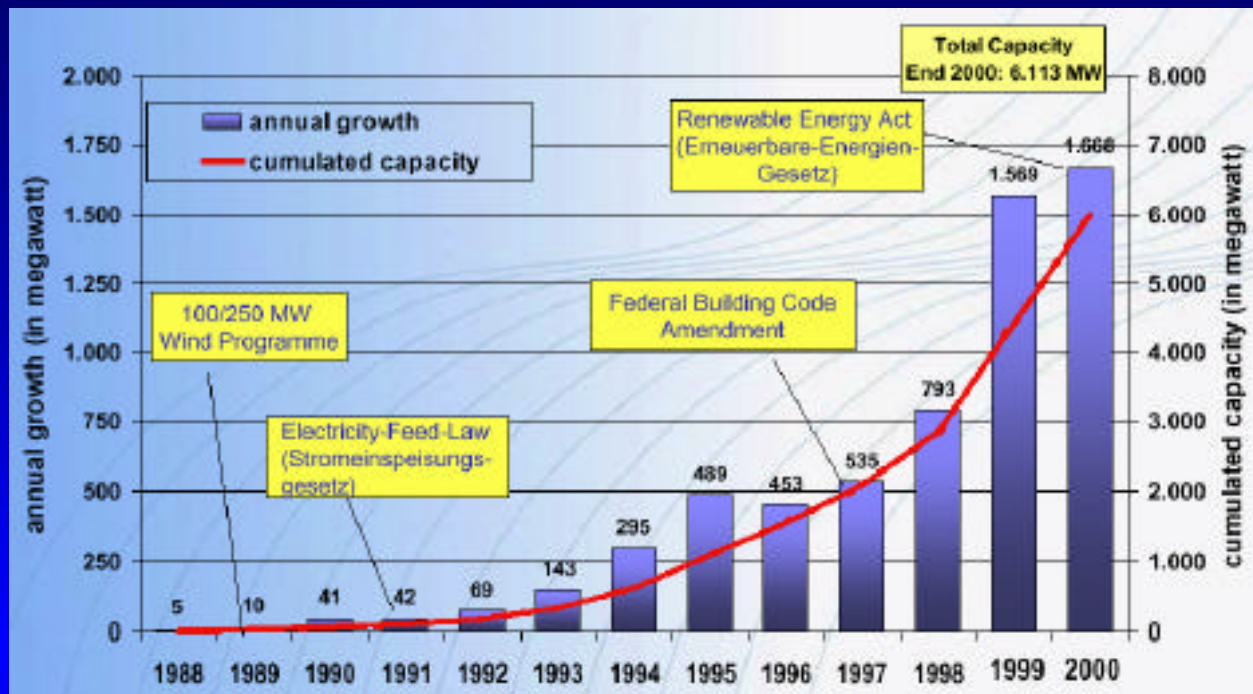
- Wind booming, mostly in Europe



# Renewable come to age

## Success story in Europe during 1990s'

### ■ Wind blow from Germany



# Renewable come to age

## Success story of biomass

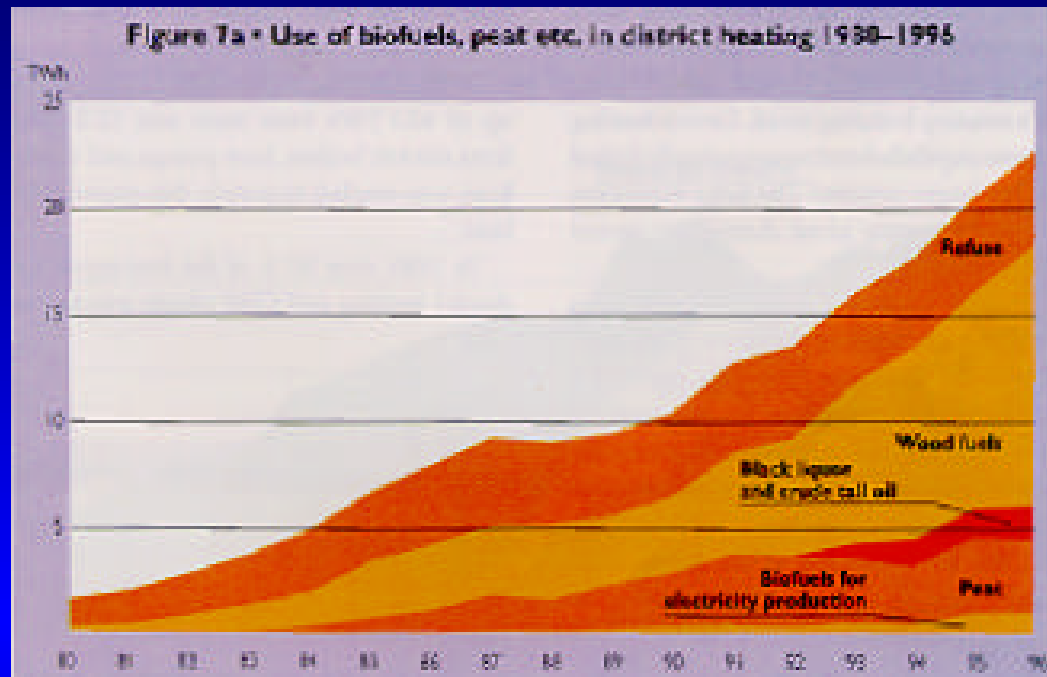
- Biomass energy as a promised future resource




# Renewable come to age

## Success story of biomass

- Biomass energy use for district heating in Sweden



# Trend in renewable energy (RE) policy in Europe 1990s'




## Modernization of energy policy

### ■ Strong political commitment

- ▶ Denmark : Energy 21 (1990),
- ▶ Sweden : New Energy Policy Bill (1997)
- ▶ UK : "New & Renewable Prospect" by Blair (1998)
- ▶ Germany : New Government (1998) and New REL (2000),
- ▶ EU : "Doubling RE by 2010" (White paper 1997, Directive 2000)
- ▶ etc...

# Trend in renewable energy (RE) policy in Europe 1990s'

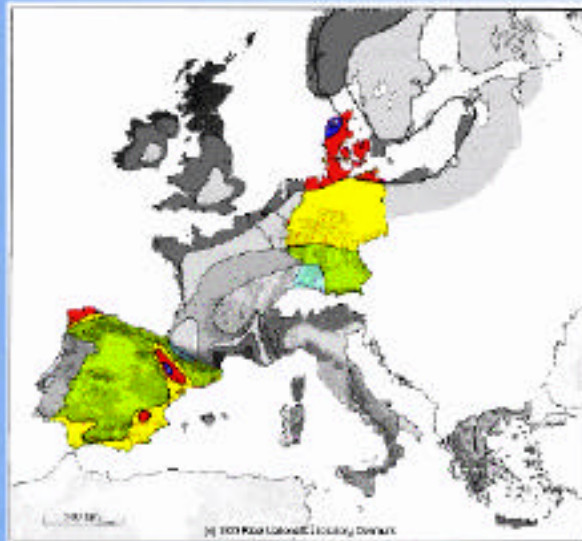


## Modernization of energy policy

- Strong political commitment
- New and effective policy measures
  - ▶ Wind :
    - fixed tariff scheme for renewable (Germany, Spain, etc.)
    - RPS: Renewable Portfolio Standard under proposed
  - ▶ Biomass : environmental tax (Sweden)

# Fixed tariff (REFIT) brought wind booming in Europe 1990s'

**REFITs (RE Feed in Tariffs)**

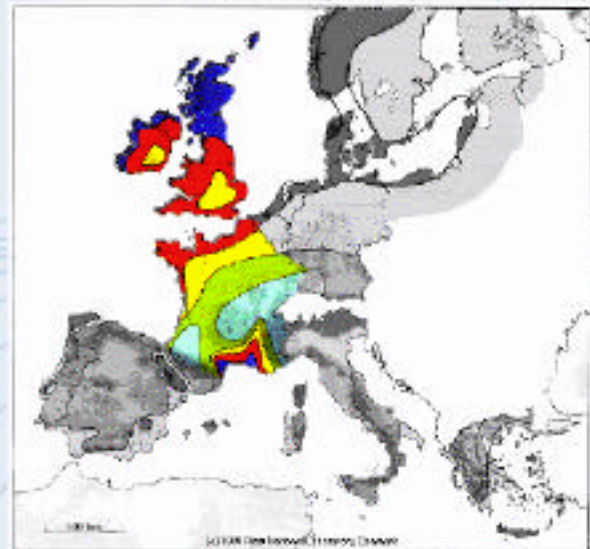


**Total installed capacity**

by 2000 **10,648 MW**

Growth in 2000 **2,934 MW**

**Tendering**

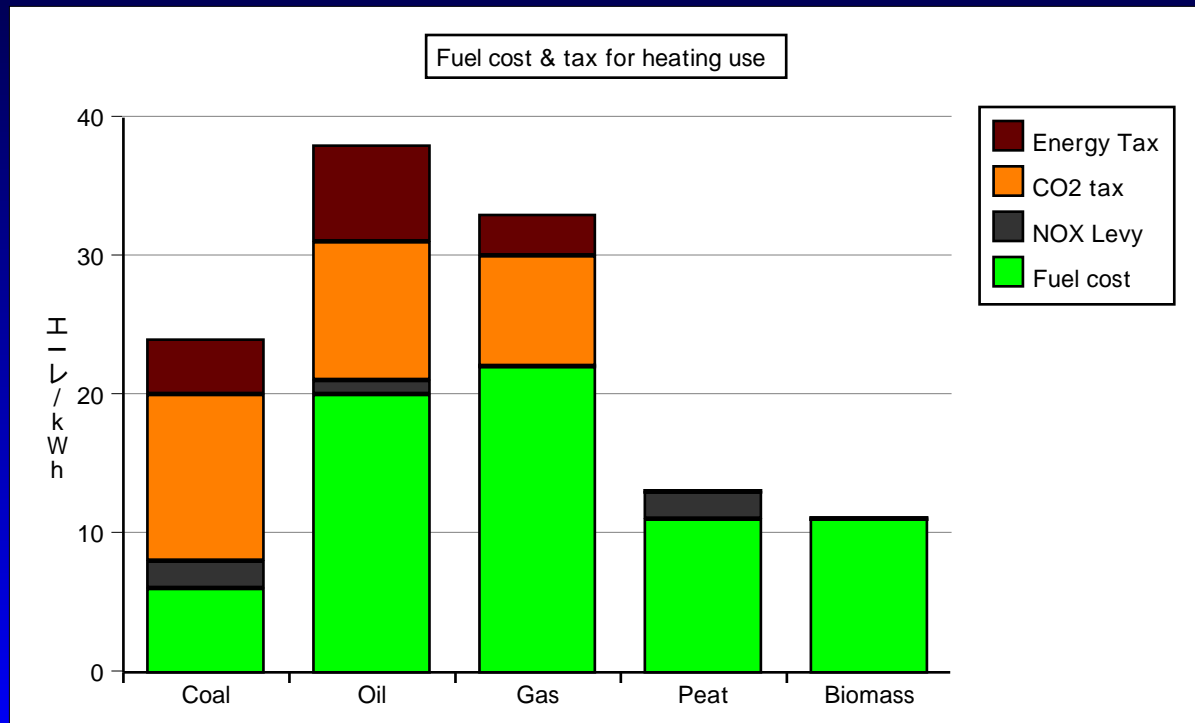


**590 MW**

**160 MW**



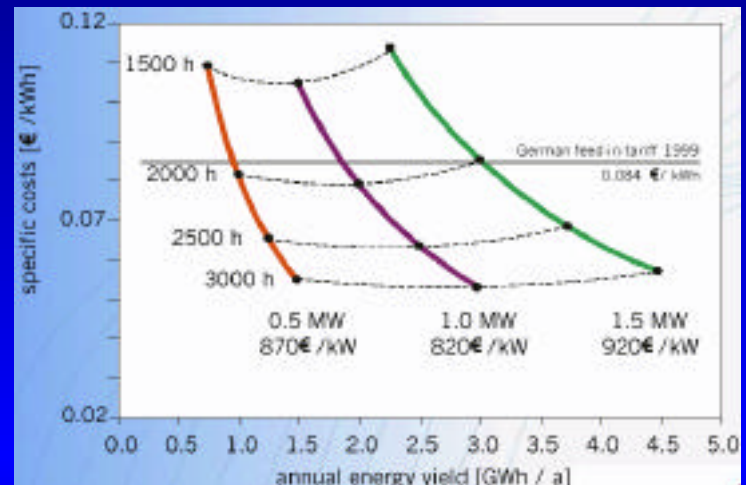
# Effective environmental tax for biomass in Sweden



# Trend in renewable energy (RE) policy in Europe 1990s'

## Modernization of energy policy

- Strong political commitment
- New and effective policy measures
- Competitive technology development
  - ▶ competitive wind power technology development



# Trend in renewable energy (RE) policy in Europe 1990s'

## Modernization of energy policy

- Strong political commitment
- New and effective policy measures
- Competitive technology development
- Harmonization and co-evolution with electricity market restructuring
  - ▶ Market oriented policy tool :Green certificate or RPS
    - Denmark, UK, Netherland, Italy, Belgium .....
  - ▶ Green power marketing evolution
    - Sweden, Germany, Switzerland, UK, ...

# Trend in renewable energy (RE) policy in Europe 1990s'

## Modernization of energy policy

- Strong political commitment
- New and effective policy measures
- Competitive technology development
- Harmonization and co-evolution with electricity market restructuring
- Multiple benefit of renewable
  - ▶ CO2 reduction, indigenous resource, and energy security
  - ▶ Economic benefit, market growth technology innovation, and employment
  - ▶ local development, and integration for local environmental program

# Political culture change in background

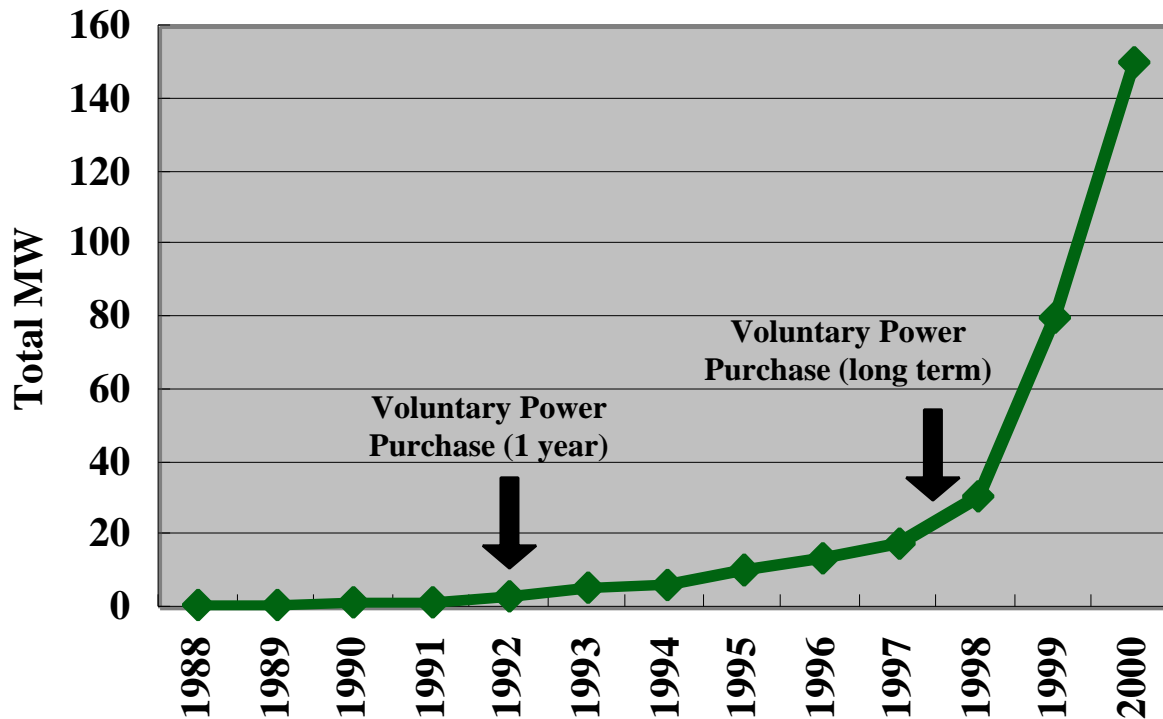
## "Ecological Modernization" as a new environmental discourse

- Common agreement toward "sustainable development"
  - ▶ PPP : Polluter Pay Principle
  - ▶ academic - industry interaction
  - ▶ flexible, or soft regulatory regimes
  - ▶ economizing ecology
  - ▶ faith in advancement of science and technology
  - ▶ dialogue and consensus in decision making
  - ▶ international cooperation
  - ▶ ... bring socially shared value toward SD/SS

# Recent RE policies changes in Japan



# Recent RE policies changes in Japan



# Recent RE policies changes in Japan

## A short review

- Parliament, took initiative for RE promotion
  - ▶ 1999.11 : Supra-partisan coalition of MPs for RE
    - over 270 MPs out of 750 joined
  - ▶ 2000.4 : Draft law for renewable promotion proposed
  - ▶ 2001.6 : Ruling party coalition agreed RE legislation
- Governmental RE policy committee
  - ▶ 1999.12 : METI set "the advisory committee for RE policy"
  - ▶ 2000.5 : "RPS/Green Certificate" idea by METI
  - ▶ 2001.6 : Committee concluded "new policy tool need"
- Electric utilities, from "emergency response" to ...
  - ▶ 1999.6 : Hokkaido set the limit "150 MW"
  - ▶ 2000.10 : All electric utilities start bidding



# Summary of new recommendation for RE policy

## RE policy committee recommended ;

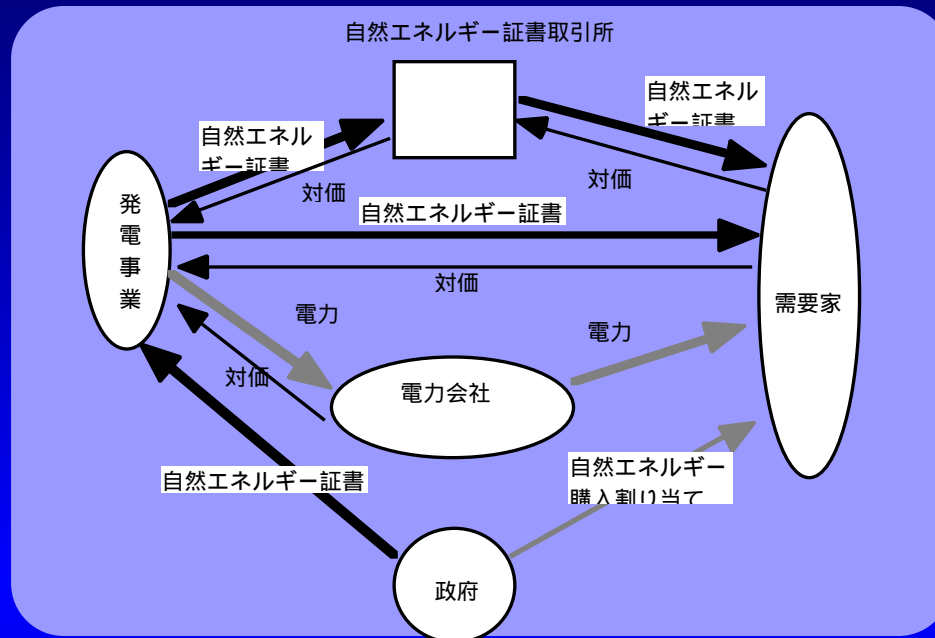
- triple "new" renewable by 2010
  - ▶ 693 Mtoe(1.2% ) in 1999 >>> 1910 Mtoe (3.2%) in 2010
- raise the target for wind power 10 times
  - ▶ from 300MW to 3000MW by 2010)
- encourage the use of biomass for heat and power
  - ▶ large investment subsidy planned
- new policy tool for RE promotion in electricity market
  - ▶ suggest RPS (Renewable Portfolio Standard) as an option
  - ▶ Supra-partizan coalition in Parliament support German type

# Summary of new recommendation for RE policy

RE policy committee recommended (cont.);

- RPS vs. REFIT

- ▶ separating "greenness" and make it tradable



# What made NGO/Politician alliance succeed

## Some factors in background

- COP3 held in Kyoto in 1997
  - ▶ ... raised politicians' awareness as well as public one
  - ▶ Env. NGO community came close to the Parliament
- A series of serious nuclear accidents
  - ▶ Monju accident(1995), Tokai explosion (1997), and finally Tokai criticality accident on 30/9/1999
  - ▶ ... made even some LDP politicians come to be anti-nuke
- Strategy of NPO as new style of "movement"
  - ▶ keep nuclear issue and ideology away from RE
  - ▶ stress economic & local benefit rather than environmental one

# Some outcome so far ...

## From "marginal" to "central" in energy policy

- Getting social attention for RE,
  - ▶ would lead to some integration of RE promotion with further electricity market restructuring
- New gaps within each section, and new trans-sectional alliances come up with,
  - ▶ "network of innovators" would inspire each other and create new initiative,
  - ▶ might lead to rethinking nuclear policy
- Green power under development

# Green Power Development in Japan

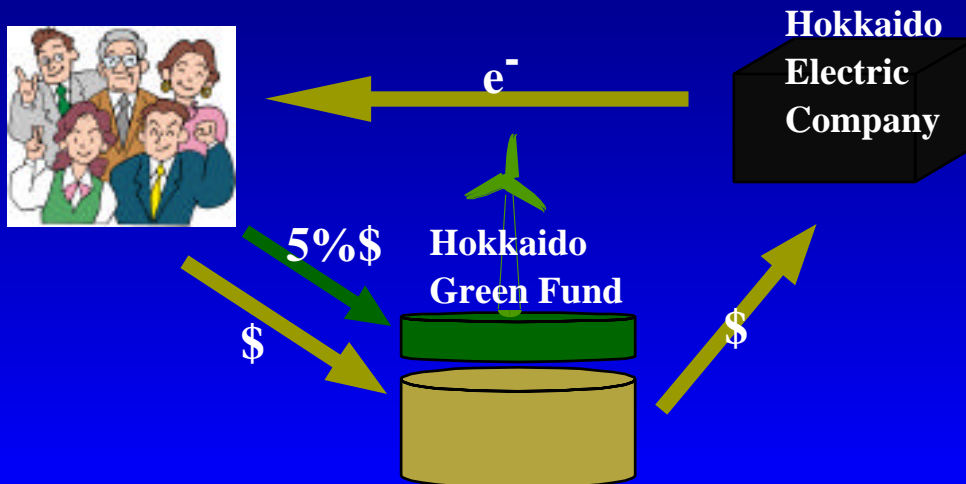


cultural change from "pro- and con-nuke conflict"

- Hokkaido Green Fund - the first green pricing program in Japan
- TEPCO Wind Certificate - the first green power program in Japan
- The Utilities' Green Fund - the first utilities green pricing program in Japan

# Hokkaido Green Fund

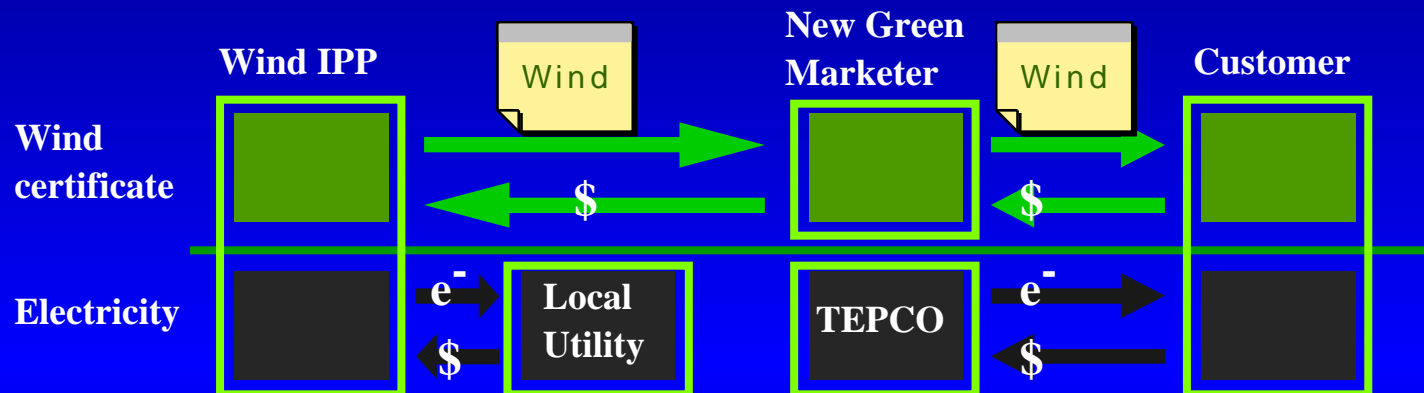
- the first green pricing program in Japan
  - initiative by anti-nuke consumer group
  - "collaboration" between regional Electric Company
  - ... now under preparation for 1MW wind power



# TEPCO Wind Certificate

possibly the first green power program in Japan

- initiative from "conservative" electric industry
- partially liberalized market starting on March 2000
- change in Japanese corporate culture, from "end-of-pipe" to "Ecology is key for success" for modern/international company



# Concluding remark

- toward greener and democratized energy future
  - RE is still small fraction in Japanese energy supply,
    - ▶ however, most rapid growth in wind and solar,
    - ▶ greatest public support among every energy resources, over 90%
  - those which bring both ecological and economical benefit to the society widely,
  - RE could be promoted under energy market restructuring
  - through enhancing public policy measure promoting RE,
    - ▶ such as fixed tariff in GE, or
    - ▶ Green Certificate /RPS in US, DK, US-like



# Concluding remark (cont.)

- toward greener and democratized energy future
  - RE also could change political culture,
    - ▶ from "confrontation over nuclear" toward "collaboration over renewal"
    - ▶ change "bureaucratic electric utilities" into "new venture culture"
    - ▶ from "centralized topdown approach" to "distributed local-oriented approach"
  - Energy saving/energy efficiency under energy market restructuring should be challenged further
    - ▶ needs "success story" similar with RE
  - Japan stands just at the entrance into "ecological modernization"