

June 1, 2005; JCAP Conference

JCAPの意義

Mission of JCAP

JCAP研究委員会, Chairman

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21世紀の課題

Challenges of 21th Century

- Environment/Health/Safety (*EHS*)
- Supply of Energy and Materials
For Sustainable Society

JCAP : Energy and *EHS*

with respect to transportation/mobility

20th Century;

Population and Life Span from 1900 to 2000

- *Population;*

World; 1,700 to 6,000 million (*x3.5*)

Japan; 44 to 125 million (*x2.8*)

- *Life span;*

World; (30) to 66 years (*x2*)

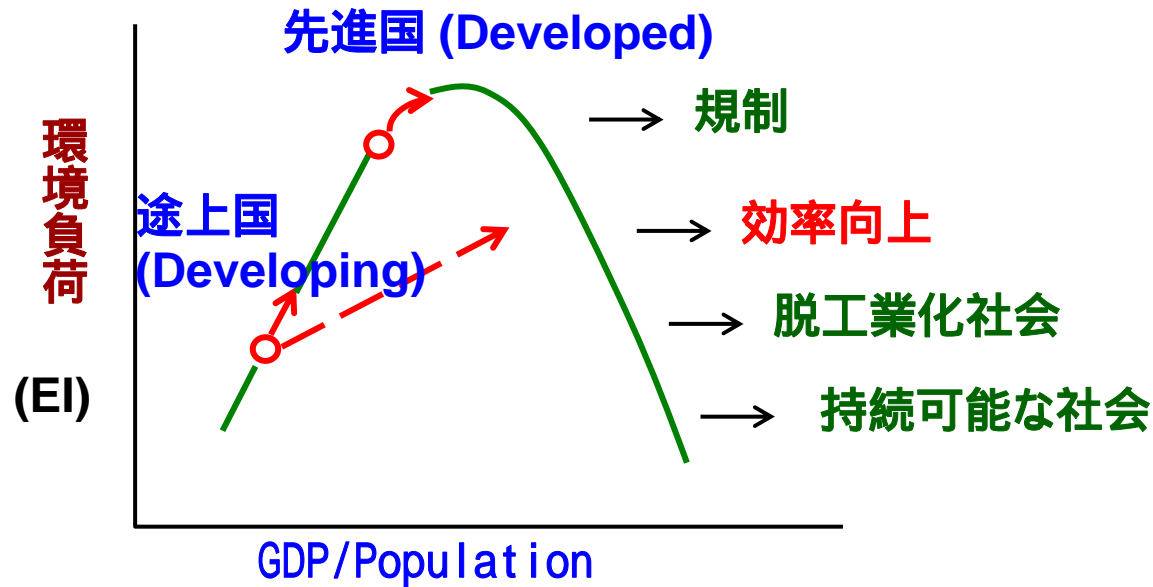
Japan; 44 to 82 years (*x1.9*)

→ *Much better life (!?),*
Sharp increase in Energy and
Materials consumption

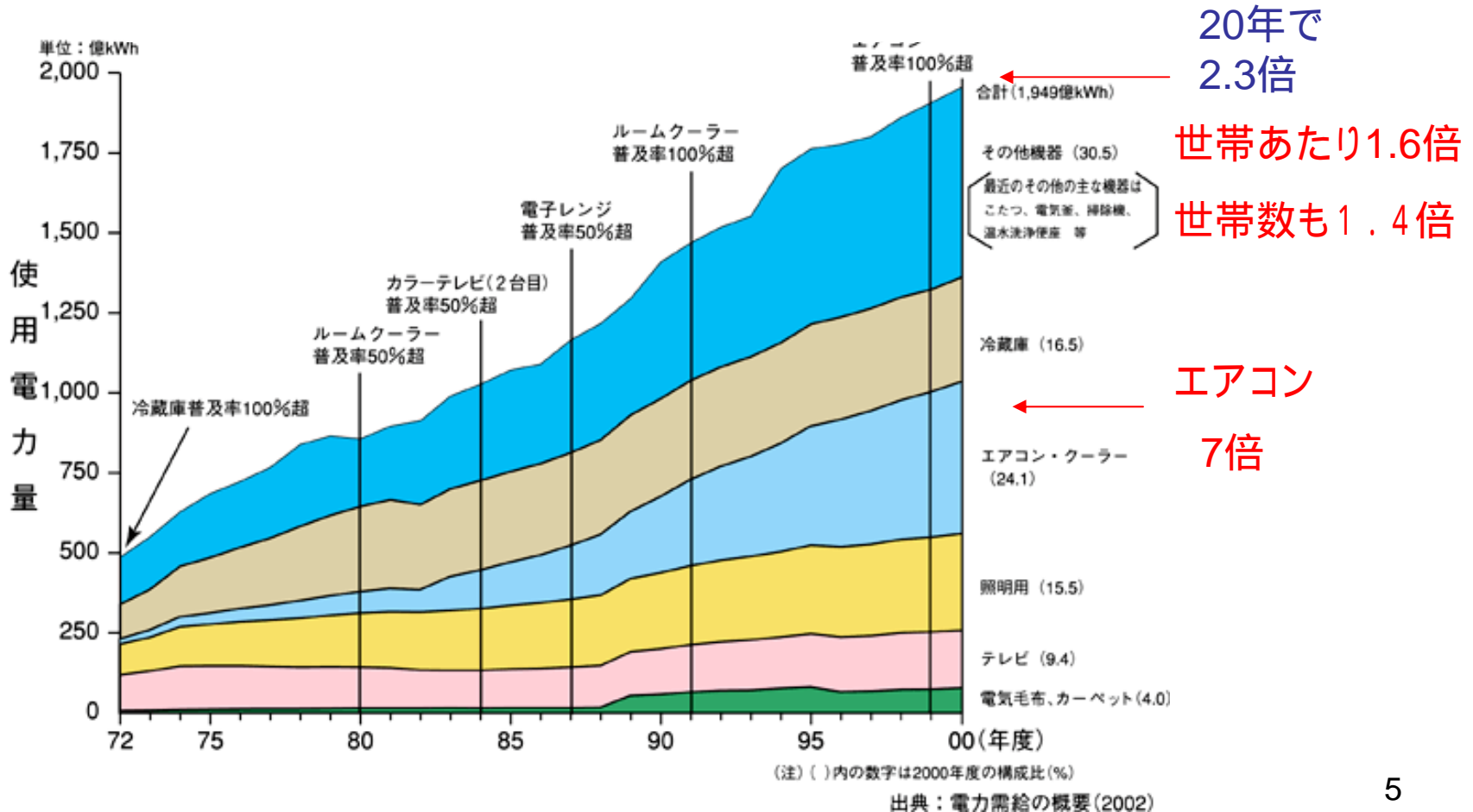
環境クズネッツ曲線

(Kuznets, 1955)

Environmental Kuznets curve



省エネ家電の普及と電力消費量の激増 (効率の落とし穴; 全体を見る必要がある)



Automobiles in Japan; past 20 years

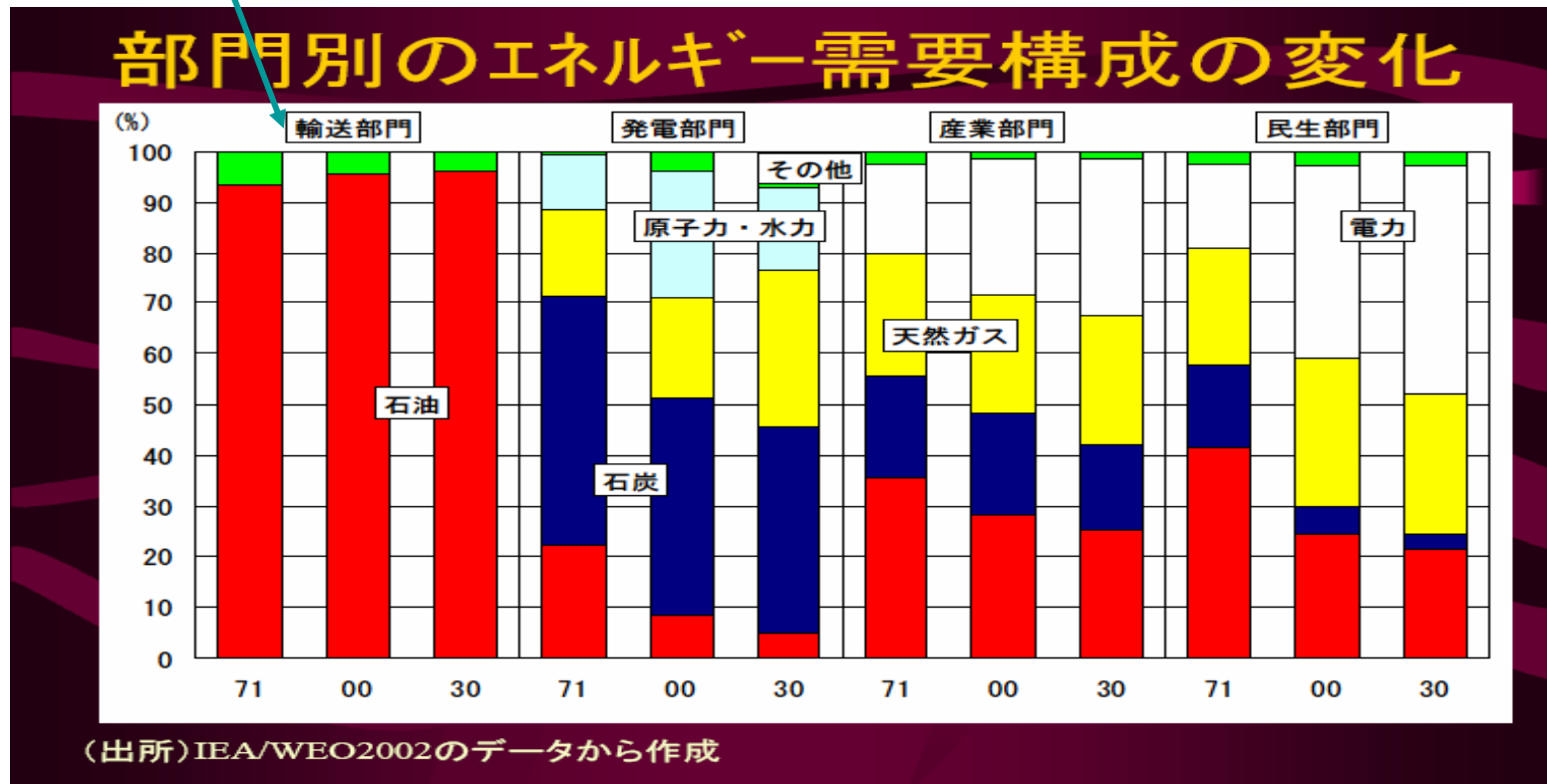
- Number of cars; *x1.9*
- Fuel efficiency; *x1.3*
- Energy consumption (all transportation);
x1.8
- NOx, PM;
Increased in the past.
Expected to diminish significantly in future.

Prediction of Energy demand and supply
is the prerequisite of
all Policies of Sci. & Tech.

- Keys for prediction
 - Quantity (供給量)
 - Timing (供給時期)
 - Cost (経済性)
 - Environment (環境調和性)

Energy supply and demand in 2030 (IEA 2002)

1. Total consumption: 70% increase (share of oil; 40 → 38 % !)
2. Transportation (share of oil; 96% to 97%)
3. Increase of natural gas, nuclear, and coal in other areas)



JCAP-Future

As automobiles are convenient tools for transportation, and oil is dominant energy source for them at least until 2030, the mission of JCAP shall not diminish at least for that period.

Full utilization of oil > of other fossil fuels
> new energies

Many Trade-off's

- Risk-Risk comparison, Risk-Benefit comparison
 - *Hazard assessment to Risk assessment*
 - Global warming(CO₂) vs. Health (NO_x, PM)
 - Emissions from automobiles and from others
- Necessity of rational *overall* assessment and of communication with citizens
- Necessity of measures including *all* technical and non-technical ones

Past and Future of JCAP

- *JCAP 1* (clean air)

Oil \longleftrightarrow Automobile \longrightarrow Government

- *JCAP 2* (clean air)

Oil \longleftarrow Automobile \longleftrightarrow Government

- *JCAP Future* (taking into account all risks)

Oil \longleftarrow Automobile \longleftarrow Society/Citizens

\longrightarrow (Government, etc.) \longrightarrow Health/Safety