

**Beyond the Limits to Growth**  
— New Ideas for Sustainability from Japan —

**Hiroshi Komiyama**

**President, Platinum Society Network**

**Chairman of the Institute, Mitsubishi Research Institute, Inc.**

**President emeritus, University of Tokyo**

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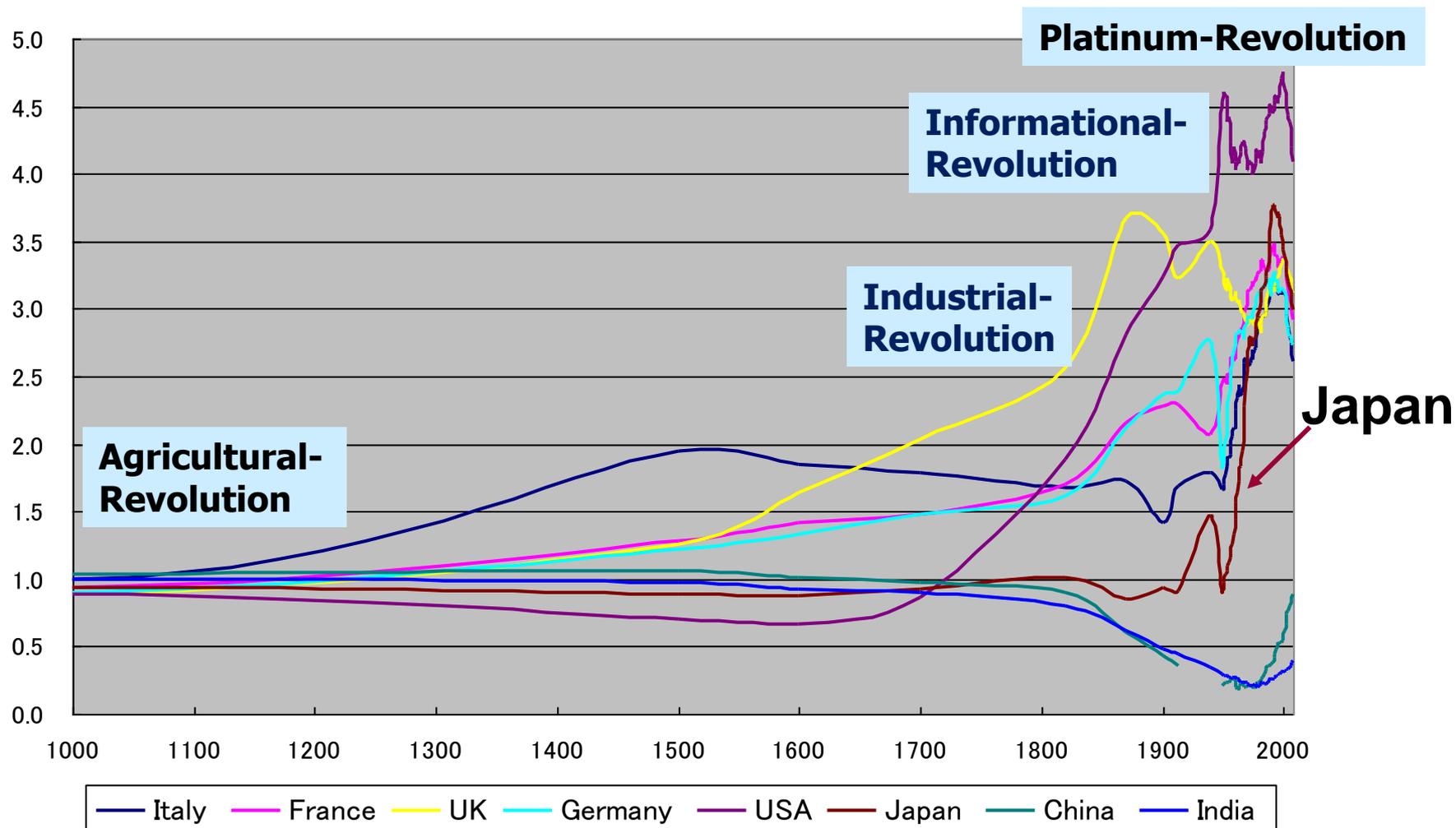
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- 1. What is the 21<sup>st</sup> century?**
- 2. What is Japan?**
- 3. Platinum Society as a Vision of 21<sup>st</sup> century**
- 4. We need Platinum Revolution**

# 21<sup>st</sup> century is a turning point

## Towards equally rich countries

Per-capita GDP of a country normalized by that of the world.



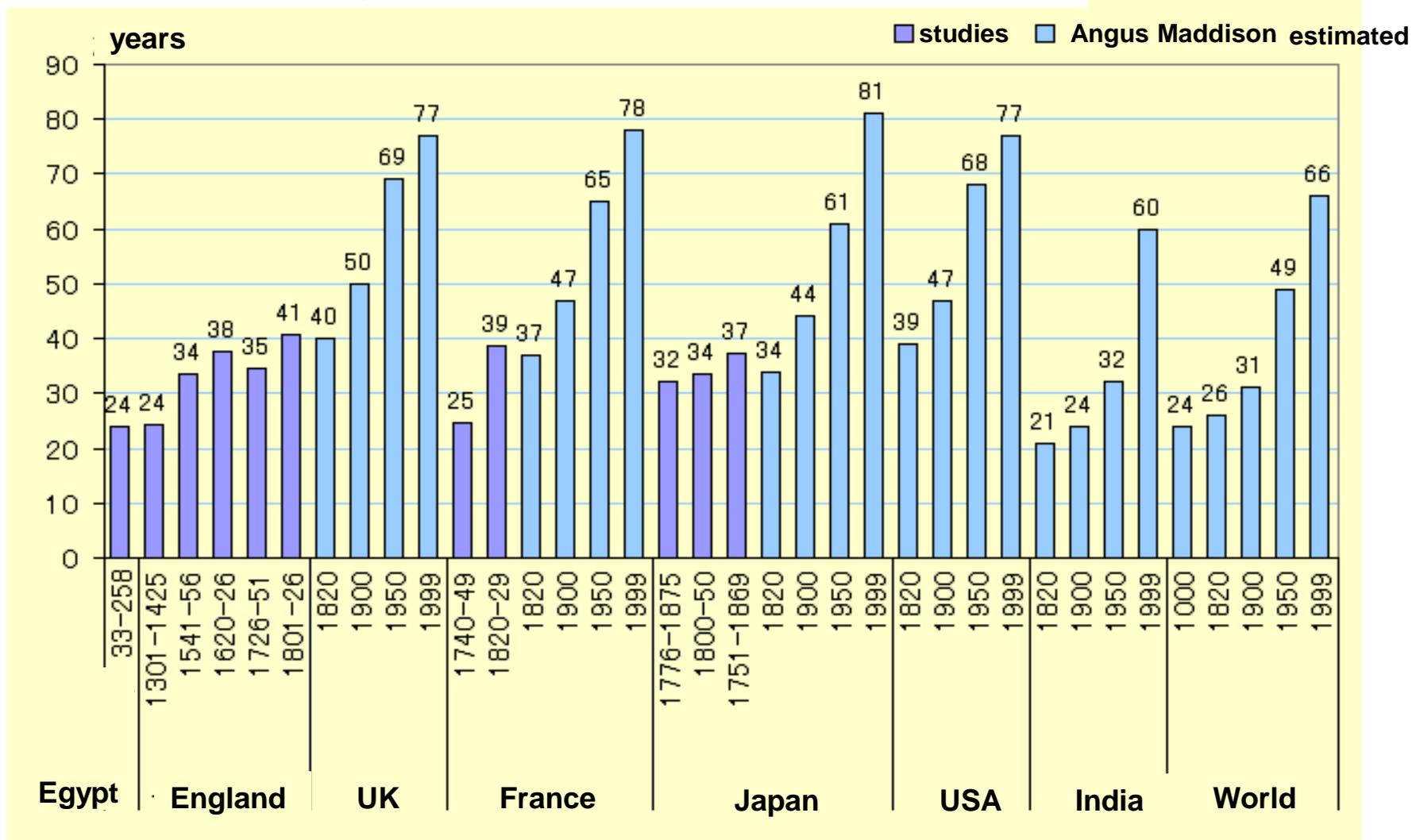
source: Angus Maddison : [Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD](#)

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## 21<sup>st</sup> century is a turning point

# Majority of people enjoy Longevity

The change of life expectancy in the world

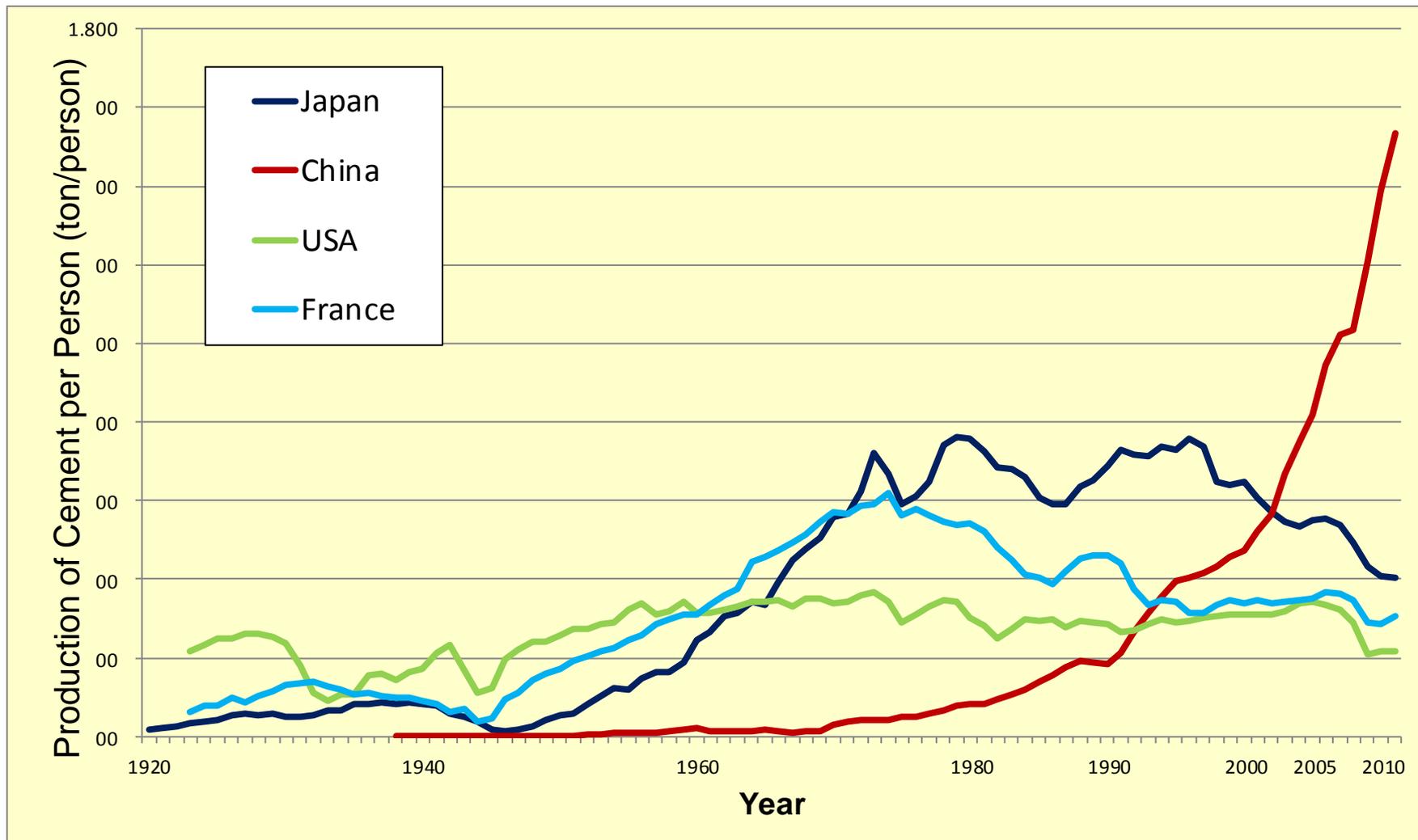


source: <http://www2.ttcn.ne.jp/honkawa/1615.html>

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21<sup>st</sup> century is a turning point

# Annual Cement Production per-capita



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## *21<sup>st</sup> century is a turning point*

### **Saturation of artifacts**

#### **The number of automobile ownership (2007)**

	<b>No. of automobiles (million)</b>	<b>No. of automobiles per population</b>
<b>Japan</b>	<b>58</b>	<b>0.45</b>
<b>USA</b>	<b>138</b>	<b>0.45</b>
<b>Britain</b>	<b>31</b>	<b>0.51</b>
<b>France</b>	<b>31</b>	<b>0.50</b>
<b>Germany</b>	<b>41</b>	<b>0.49</b>
<b>China</b>	<b>32</b>	<b>0.08(2012)</b>
<b>India</b>	<b>13</b>	<b>0.01</b>

## What is Japan?

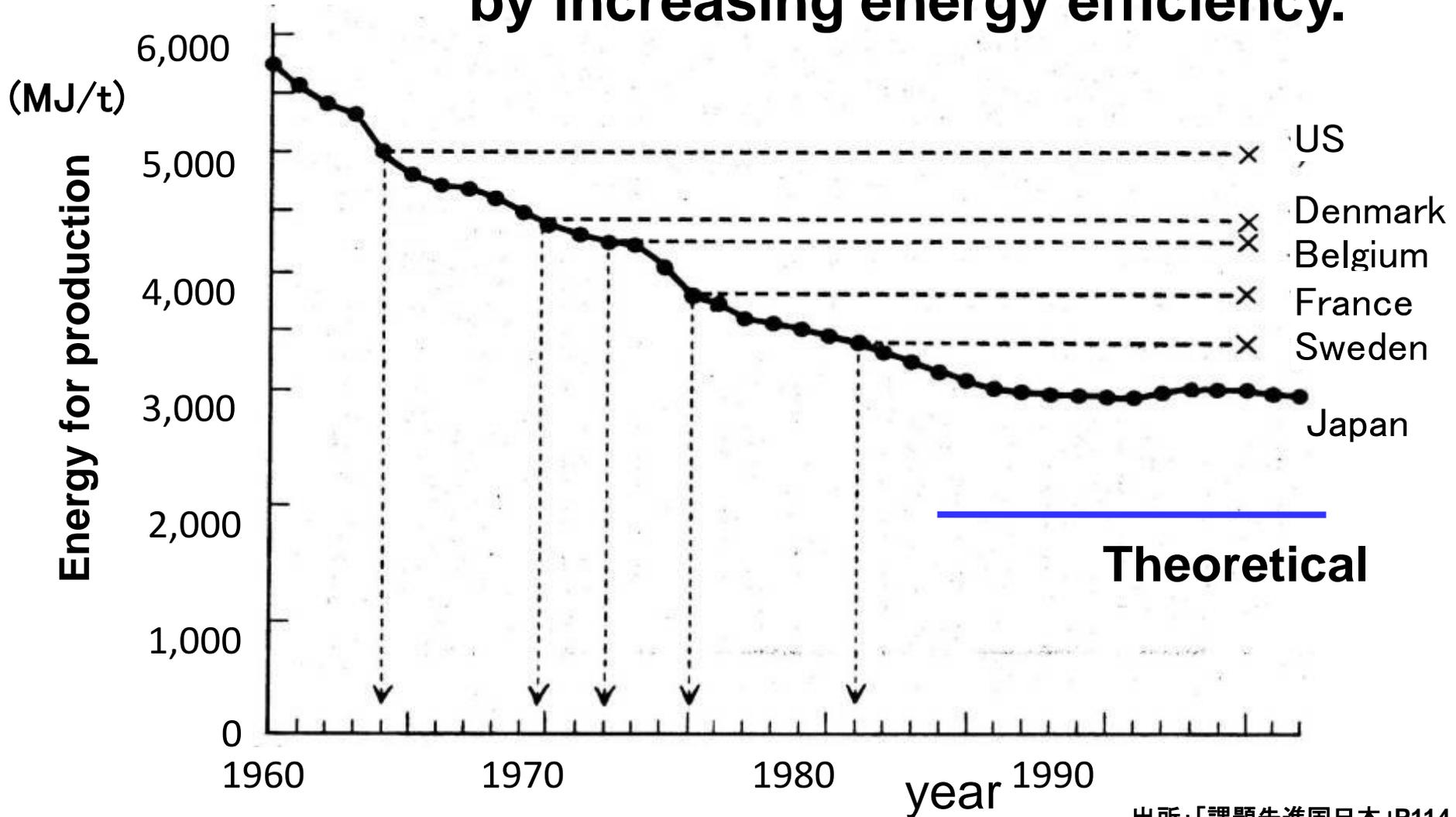
# Japan overcame environmental pollution



出所:「課題先進国日本」P27(北九州市提供)

## What is Japan?

# Japan overcame energy crises by increasing energy efficiency.



Source: Japan Cement Association

出所:「課題先進国日本」P114

©komiyama

# What is Japan?

One of the peaks in the world

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**Closed in Edo**

**Meiji  
restoration**

Ind. Revolution in Europe vs. Spiritual Culture in Japan

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Achieving high economic growth (1868~)

Answering the pollutions by innovation (1960~)

Answering the energy crises by innovation (1970~)

Realizing the world longest lifespan by innovation (1970~)

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**2000**

Global issues caused by finite earth

Aging of society

**Japan faces challenges ahead of the world  
and needs innovations.**

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# **Platinum Society as a Vision of 21<sup>st</sup> century**

**Now, majority of regular citizens in developed countries own food, clothing, shelter, mobility, information, and longevity**

**It will not be later than mid 21<sup>st</sup> century that majority of the people in the world will own them.**

**What do we want under this satisfaction?**

**“Quality of Life”**

**What is the quality that we desire ?**

# Platinum Society Network

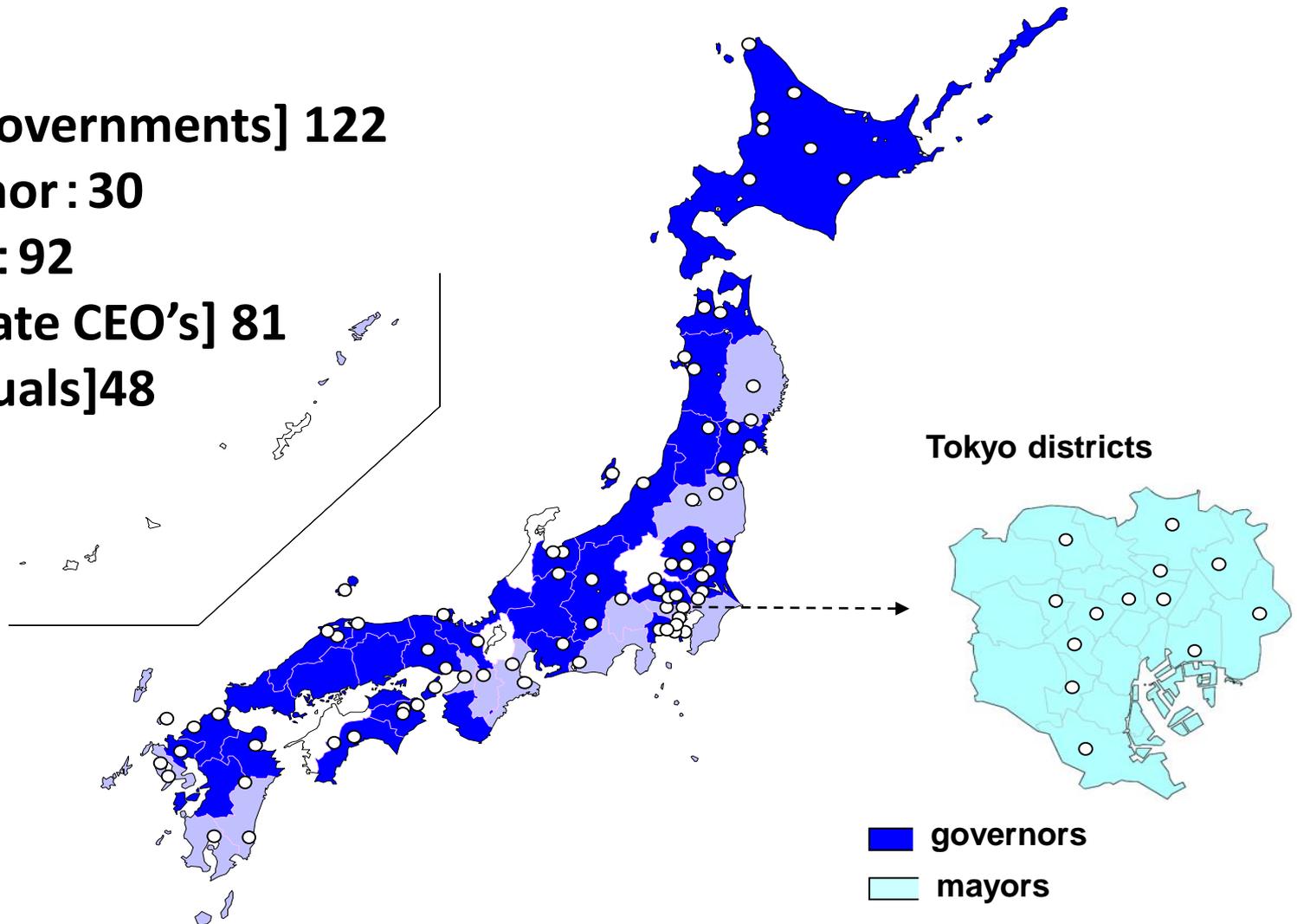
**[Local Governments] 122**

▪ **Governor : 30**

▪ **Mayor : 92**

**[Corporate CEO's] 81**

**[Individuals] 48**



Necessary condition for platinum society

## Society in Harmony with Nature

Yokkaichi at 1950s



present



©Yokkaichi City

<http://www.city.yokkaichi.mie.jp/kankyo/kogai.htm>

## Beyond pollution control

# Smart Agriculture in Japan



Vegetable plant by textile company



Vegetable plant by convenience store company

Innovative agriculture with ICT, engineering, private company



Vegetable Plants Area

Kashiwa-no-ha Smart City

(Photo)Plant Factory Association of Japan

# Smart Forestry in Japan



Land slide after heavy rain

Scale expansion

Mechanization

Supply chain restructuring



Self-sufficient

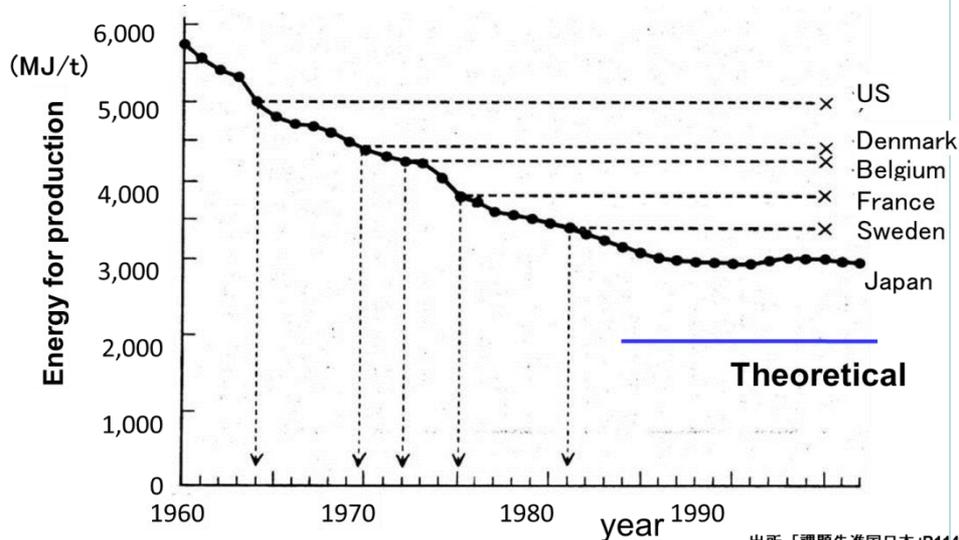
Environmental conservation

Job creation

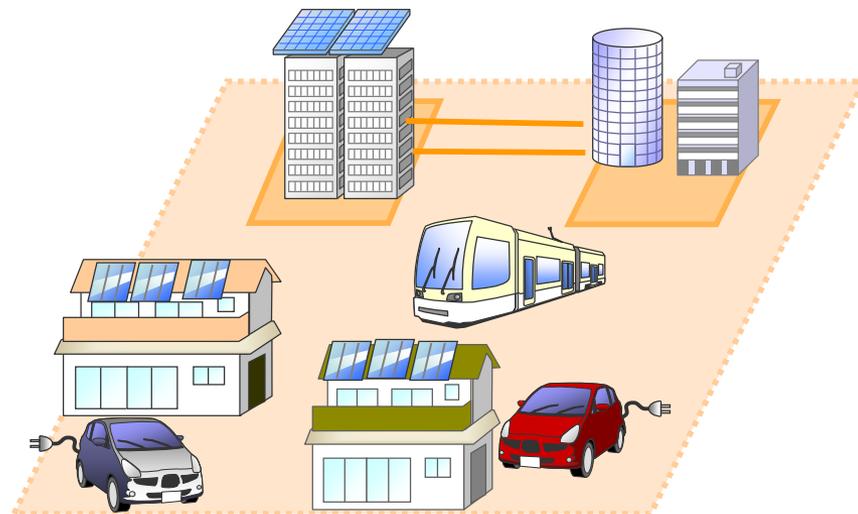


# Necessary condition for platinum society

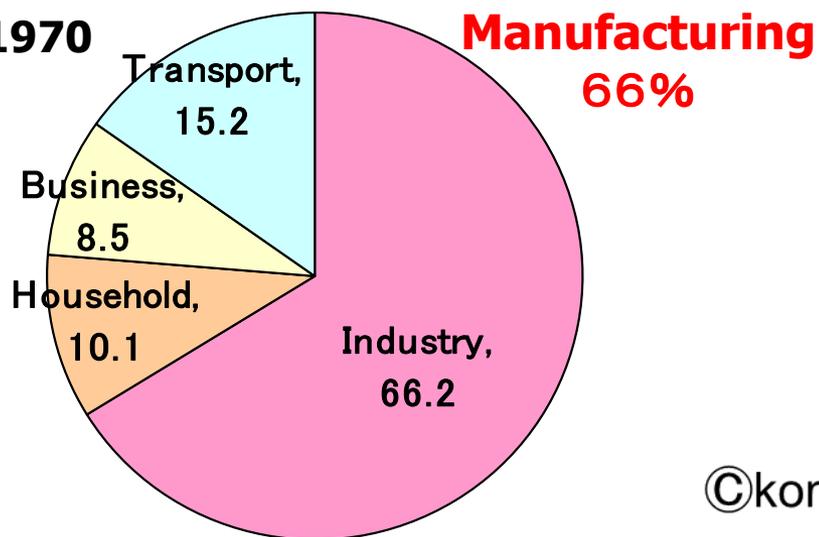
## Energy Efficiency was improved in manufacturing in 1970s



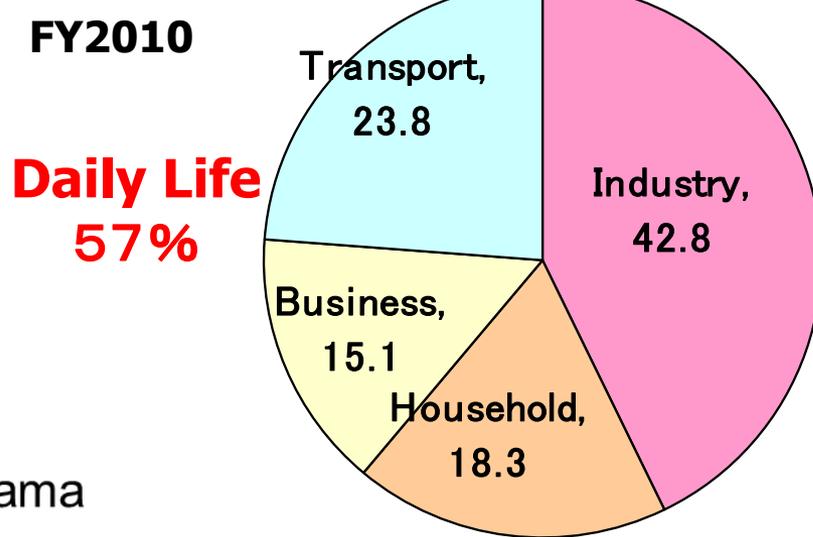
## Energy Efficiency should be improved in daily life now



**FY1970**

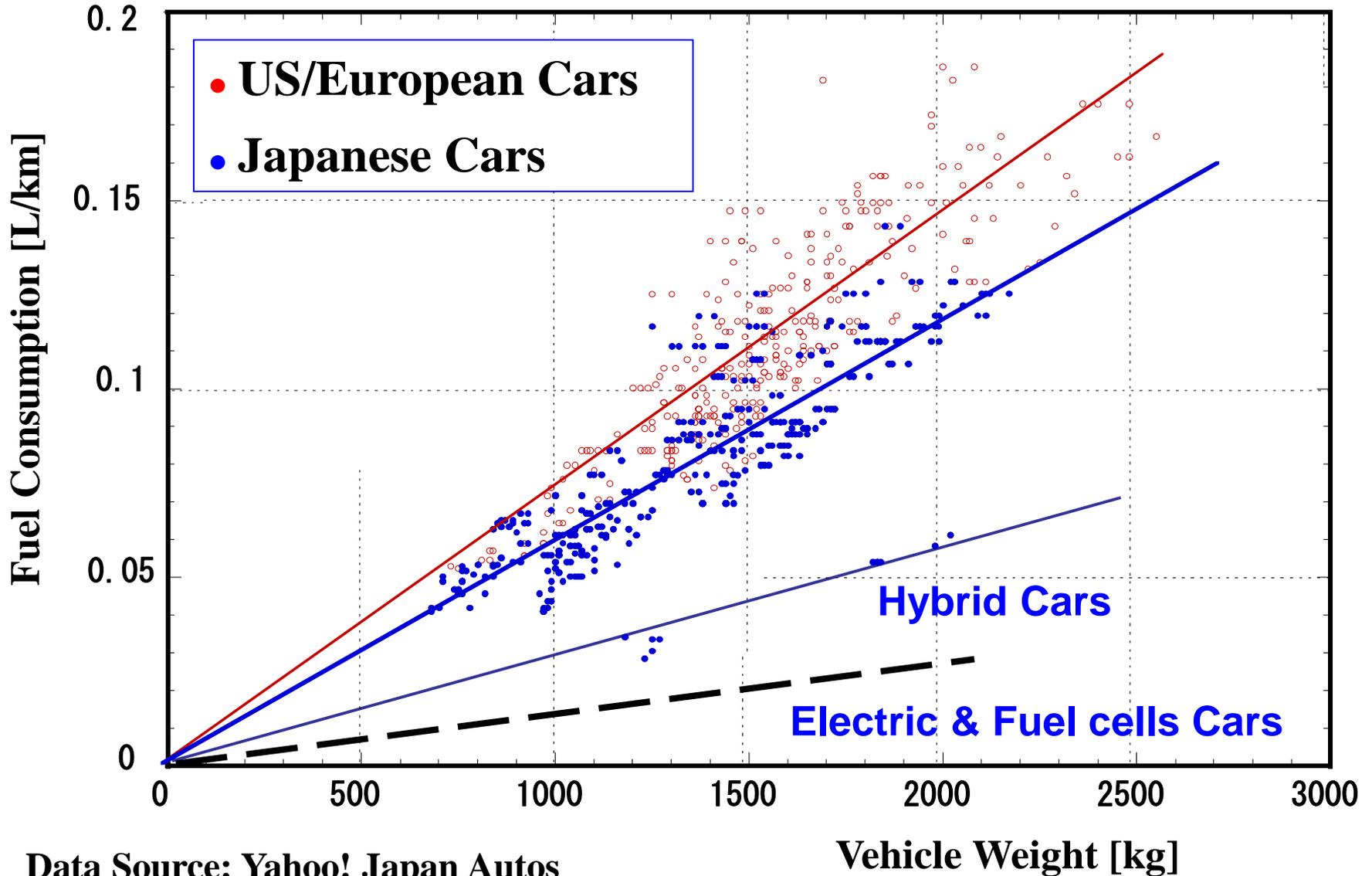


**FY2010**



# Necessary condition for platinum society

## Energy Efficiency of Automobiles to 10 times



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# Energy Efficiency as well as QOL

## Komiyama Eco-House



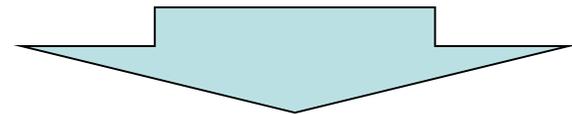
Heat Pump Water Heater: COP=4

High Insulation:  $K=1.6 \text{ W/m}^2\text{K}$

New air conditioners & refrigerator

LED & efficient fluorescent lamps

Solar Power Generation: 3.6kW



**81 % Energy Reduction**  
refundable in 12 years

# Small Hydro Development & Dissemination In Asia

- Grasp Potential of Small Hydro Development in Each Countries
- Disseminate Small Hydro by Volume Production and Technology Transfer for O&M

## Scale of Small Hydro

- ✓ **Less than 30MW**

## Possible sites of Small Hydro

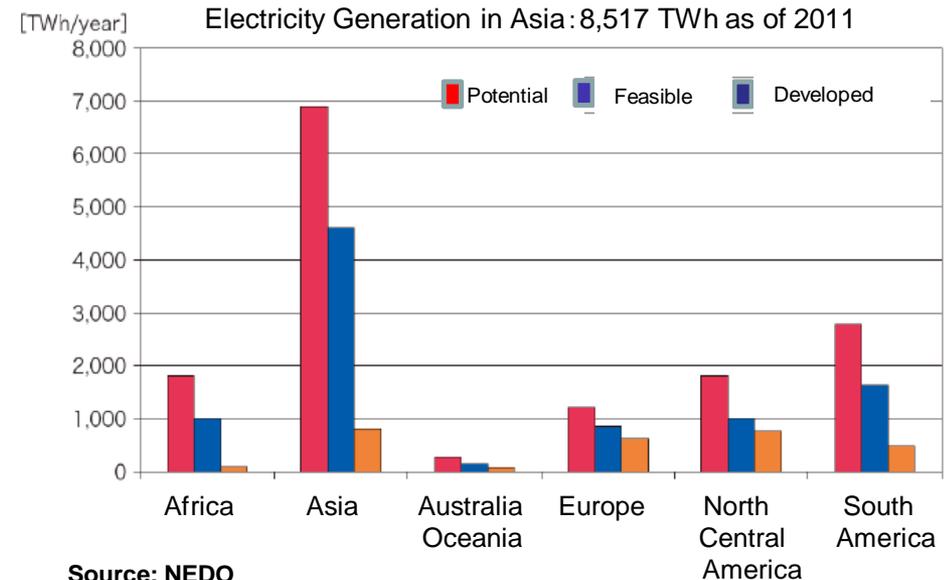
- ✓ **Rivers**
- ✓ **Agricultural Waterways**
- ✓ **Water and Sewerage**
- ✓ **Factories**

## Four Issues & Measures

Issues	Measures
Water Rights	Need to Develop or Improve Legal Framework
Profitability	Need to Reduce Initial Costs by Volume Production
Operation & Maintenance	Need to Develop Sustainable Framework by Technology Transfer
PPA/FIT	Need to Develop Policy and Legal Framework

## World's Potential: 150~200GW

### High Potential in Asia



# **Energy: Renewable energy is abundant**

**Solar**

**Wind**

**Hydro**

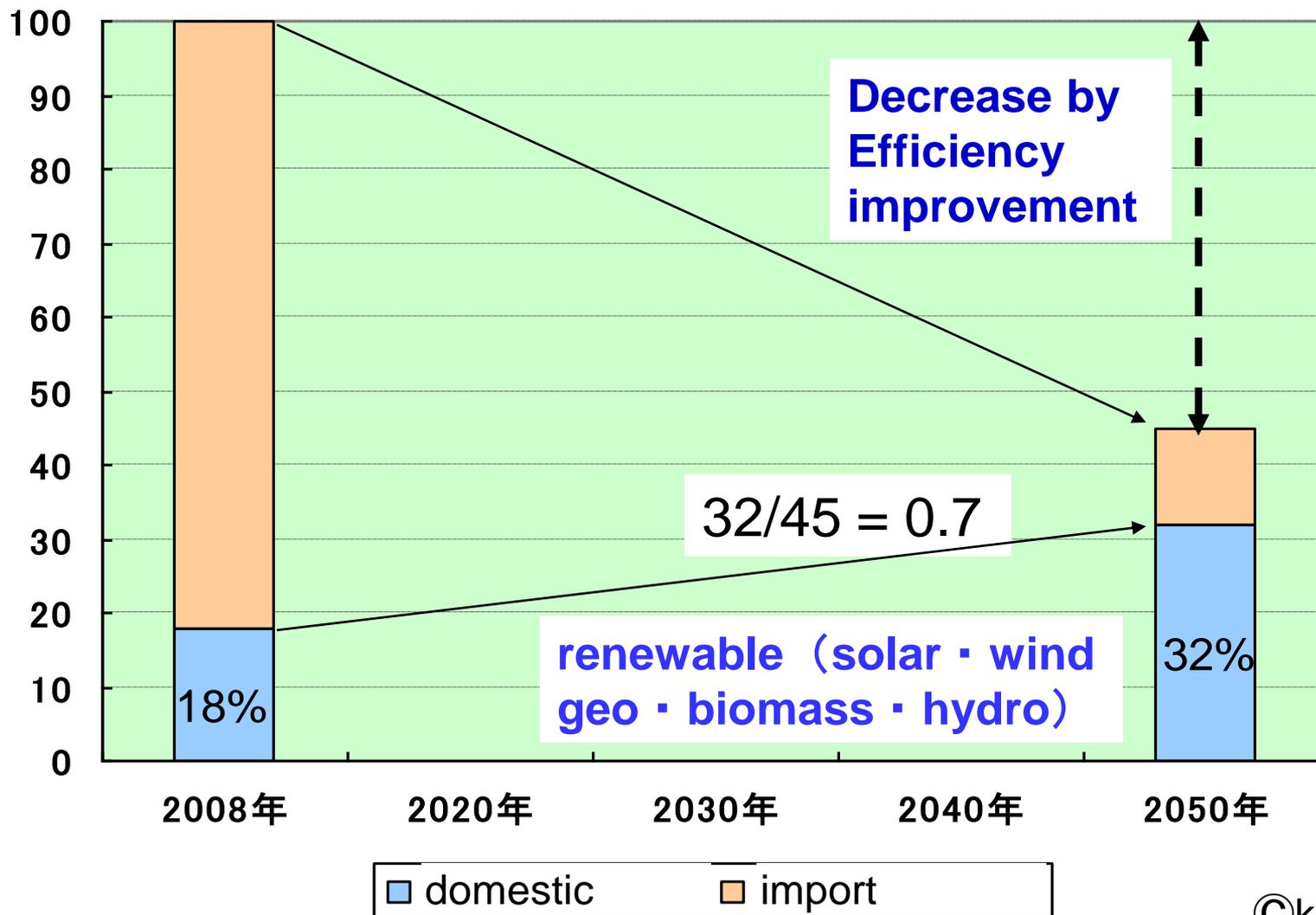
**Biomass**

**Geothermal**

**Invest Now and Enjoy Later**

## Necessary condition for platinum society

# Energy is Self-Sufficient artifacts saturate and efficiencies improved



## Necessary condition for platinum society

### **Urban mines from Natural mines artifacts saturated and energy saved**

ratio of energy for  
reduction and melting

**Iron**

**27 times**

**Aluminum**

**83 times**

ratio of concentration of  
mines and mobile phones

**Gold**

**50 times**

**Human will become free from excavation.**

Necessary condition for platinum society

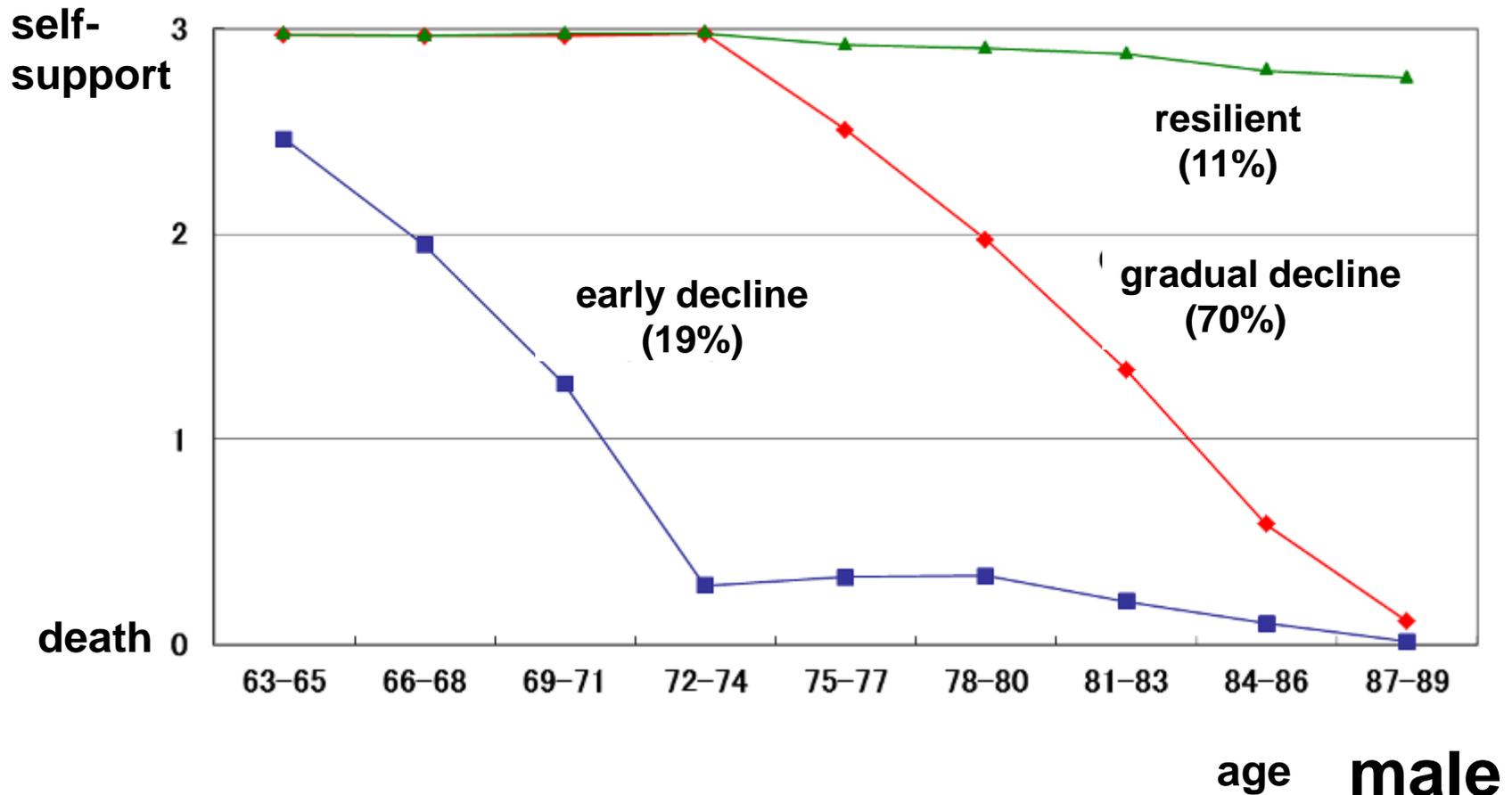
## Toward Resource Self-Sufficient Japan at 2050

<b>Energy</b>	<b>70%</b>
<b>Mineral</b>	<b>70%</b>
<b>Food</b>	<b>70%</b>
<b>Wood</b>	<b>100%</b>
<b>Water</b>	<b>100%</b>

**20<sup>th</sup> century low cost resources**

**21<sup>st</sup> century low price artifacts**

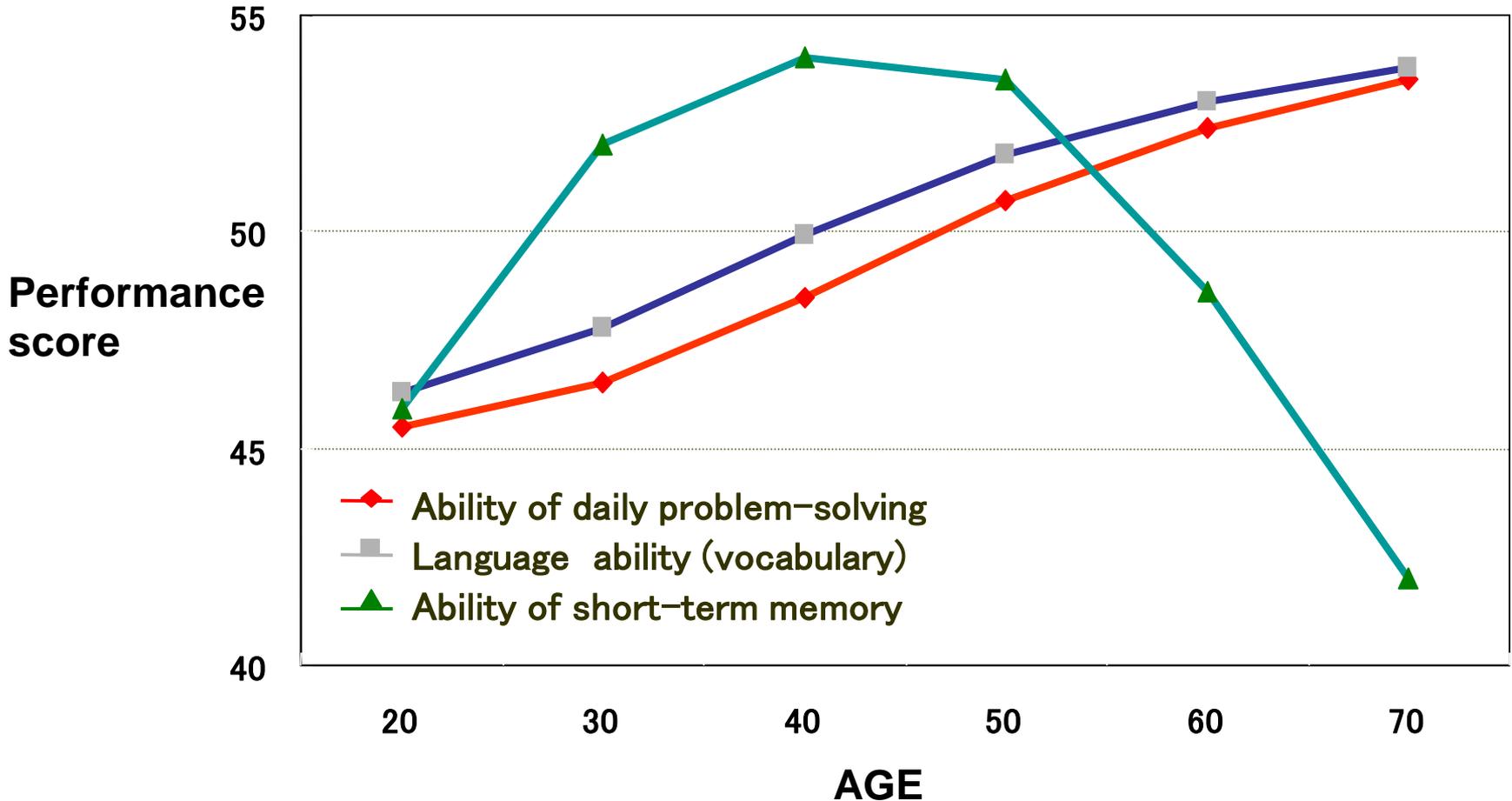
# Aging: Most seniors can be independent until 2~3 years before death



## Necessary condition for platinum society

# Physically weaker but Intellectually stronger

### Change of Cognitive Ability



Source) Cornelius and Caspi(1987, p150)

Necessary condition for platinum society

# Healthy and Independent Longevity

## Conditions for Happy Aging

- Nutrition
- Exercise
- Exchange
- Flexibility
- Positive Thinking



**HAL(for care)  
Produced by  
CYBERDYNE (JAPAN)**



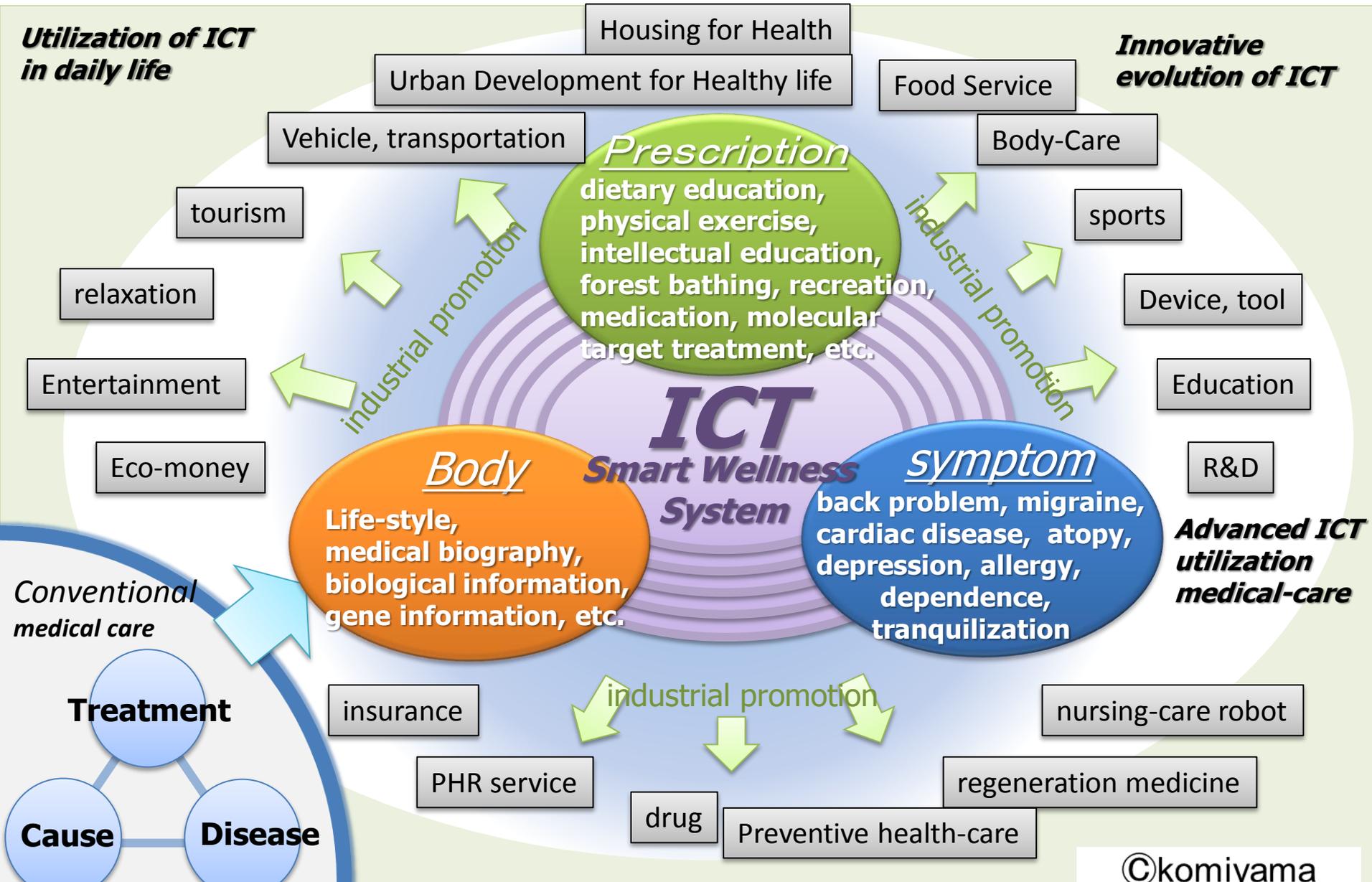
**Communication Robot - Giraffe  
Produced by Robot Dalen(Sweden)**



**Assistive eating  
device - Bestic  
Produced by  
Robot Dalen  
(Sweden)**

# Necessary condition for platinum society

## New businesses for Health and Independence



Necessary condition for platinum society

## **Industrial Revolution**

**Standardization, Mass Production, Supply-Side**



## **Platinum Revolution,**

**Diversity, Free Production, Demand-Side**

# **Necessary conditions for Platinum Society**

**ecology**

**renewable energy**

**urban mines**

**healthy and creative longevity**

**participated by all**

**rich spiritually as well as materially**

**abundant in job opportunities**

**We need Platinum Revolution!**

# **Two Crucial Demands for Economic Growth**

## **Diffusive Demand**

**Demands for quantitative wealth to saturate**

**Car/TV/house/appliances/ · · /Present Industry**

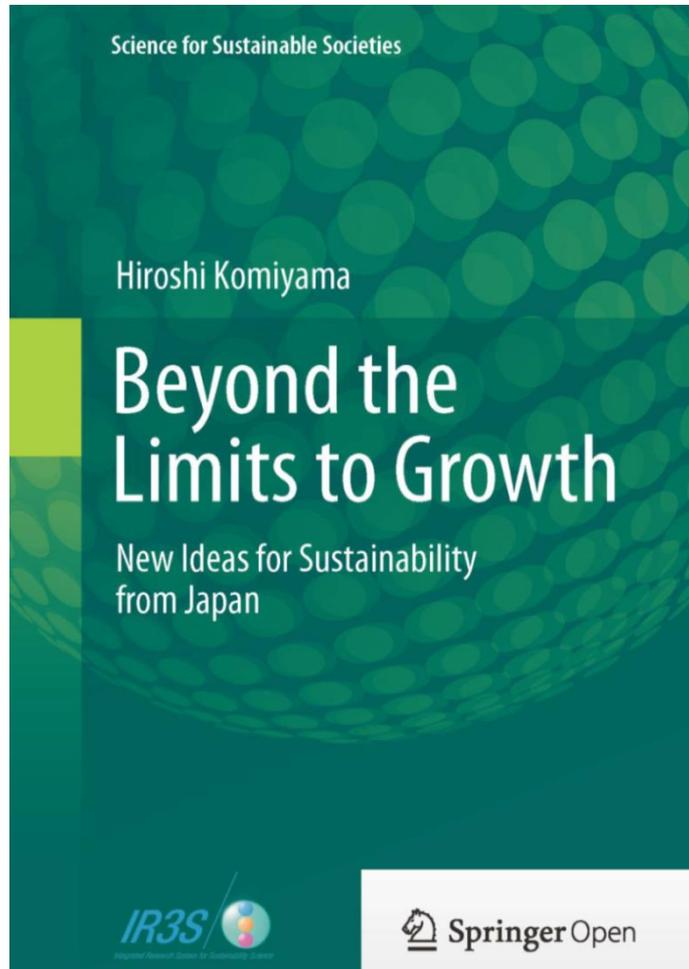
## **Creative Demand**

**Demands for QOL to create new industries**

**Health Care/New Energy/Eco-House/ · · /Platinum Industry**

**We need Platinum Revolution**

# Action with Vision is inevitable NOW!



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***Thank you!***