Japanese Fuel Cell & Hydrogen Programmes and Initiatives

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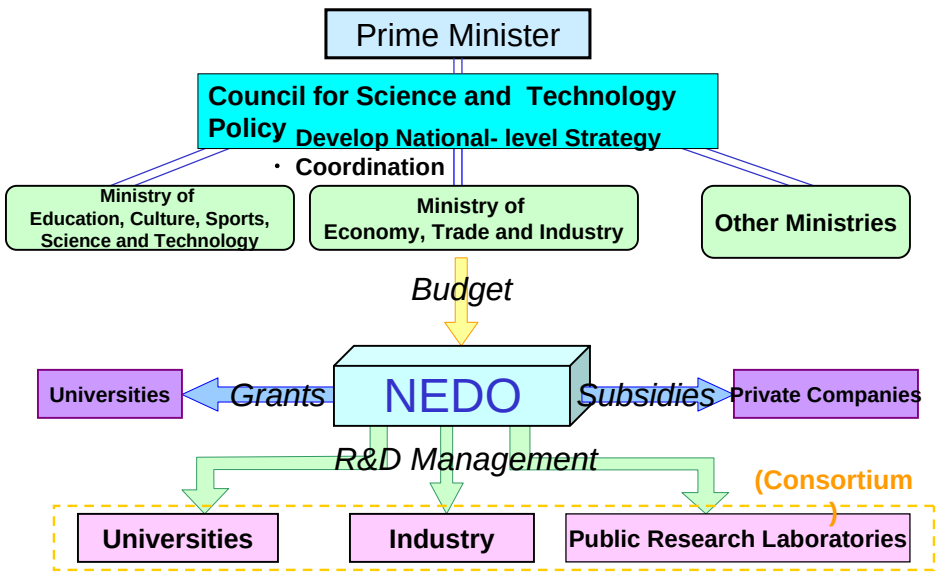
History of NEDO

1980 : Established (New Energy Development Organization)
1988 : Added industrial technology R&D (New Energy and Industrial Technology Development Organization)
1990 : Added global environment R&D
1993 : Added promotion of new energy and energy conservation
2000 : Added support for private companies to strengthen international competitiveness
2003 : Re-organized as an "Incorporated Administrative Agency"

Mission of NEDO

- Promote R&D to Enhance
- Japan's Industrial Competitiveness
- Promote New Energy and Energy Conservation
- to Strengthen Japan's Energy Security and to address Global Environmental Problems
- International Cooperation

Japan's R&D Promotion Scheme



1. Significance of Introducing Fuel Cells

- **High Efficiency (Energy Conservation Effect)**
- **Diversification of Energy Supply**
- **Reducing Impact on the Environment**
- **Creation of New Industry and Jobs Enhancement of Industrial Competitiveness**
- **Distributed Energy Resources**

Fuel Cell Vehicle
Stationary Fuel Cell

Hydrogen can be obtained from not only petroleum, but also natural gas, photovoltaic, wind and bio-mass, etc.

Reducing CO2, Zero NOx , SOx , PM

Fuel cell requires a wide range of technology from various industries.

Reducing energy loss in transmission
Serve as backup energy at emergency

2. Fuel Cell Commercialization and Diffusion

1) **Inter-ministries,**

- **"Official Taskforce of Ministries and Agencies Concerned with Practical Application of Fuel Cells"** was established in May. 2002
  - Director General - level supervisory committee established in the Cabinet Secretariat
  - Decided a plan on reviewing regulations to ensure safety of fuel cells
    by 2004 (Oct. 2002)

2. Continued Fuel Cell Commercialization and Diffusion

2) METI - NEDO, Academia, Private Sector
"Policy Study Group for FC Commercialization"
was established in Dec. 1999.

- As a private study group for the Director General of the Agency of Natural Resources and Energy.
- Chair-person; Prof. Yohich KAYA (Keio Univ.)

2. Continued Fuel Cell Commercialization and Diffusion

3) **Private sector,**

- **"Fuel Cell Commercialization Conference of Japan(FCCJ)"**
  was established in Mar. 2001.
  - As a voluntary organization in industries.
  - President; Taizo NISHIMURO(Toshiba)
  - Examinations and discussions on the commercialization and diffusion of fuel cells.

3. Fuel Cell Commercialization and Diffusion Scenario

1: 2005 to 2010 (Introduction stage)

- **Acceleration of the Introduction and Gradual Establishment of Fuel Supply System**
- **Leadership of Public Sectors as well as FC Industries in Promotion of FCV and Buses**

3. Continued FC Commercialization and Diffusion Scenario

2: 2010 to 2020 (Diffusion stage)

- **Establishment of Fuel Supply System and Self-sustained Growth of the Market**
- **Private Sector's Promotion of the Introduction**

3. Continued FC Commercialization and Diffusion Scenario

3: 2020 to 2030 (Penetration stage)

- **Hydrogen Supply Infrastructure across the Country with 8500 Fuelling Stations**
- **Combined Cycle Fuels Cells in Practical Stage**

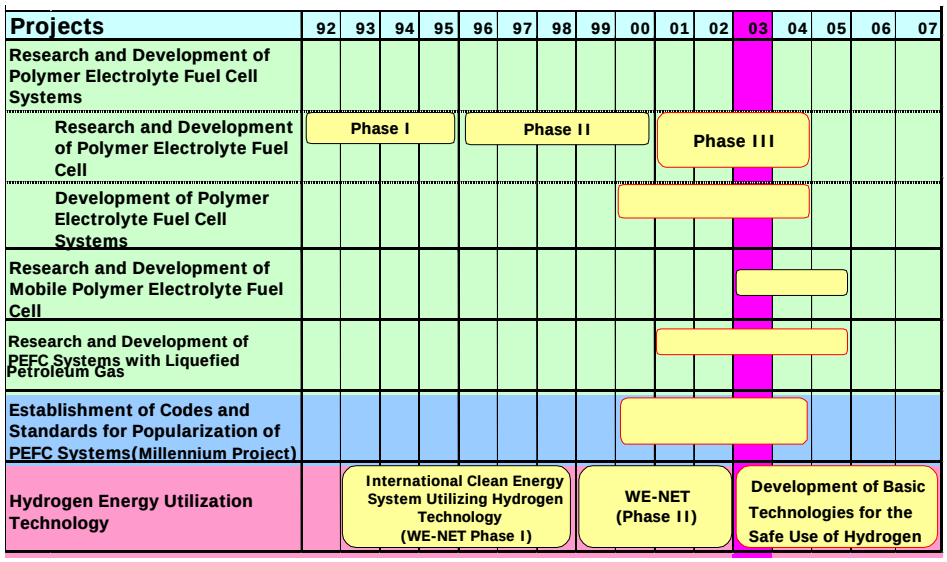
4. Forecast of Fuel Cell Introduction

	2010	2020	2030
FCV(#)	50K	5M	15M
Stationary FC Output(MkW)	2.2	10	12.5

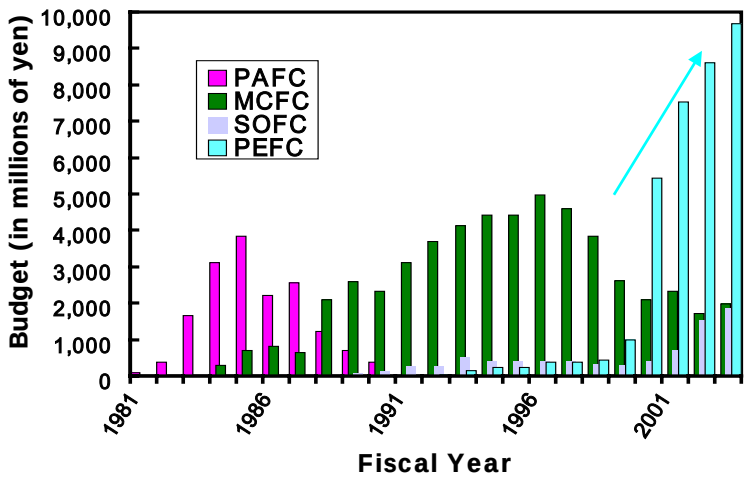
5. Promotion of FC System R&D Target for FCV and Stationary FC

	FCV	Stationary FC
Power generation efficiency of stack	65%(LHV) @25% of rated output	55%(HHV) @ rated output
Cost of stack	\ 4,000/kW	\ 80,000/kW
Efficiency of system	60%(LHV) Pure H2	40%(HHV,net)
Economy	\ 5,000/kW	\ 300,000/unit

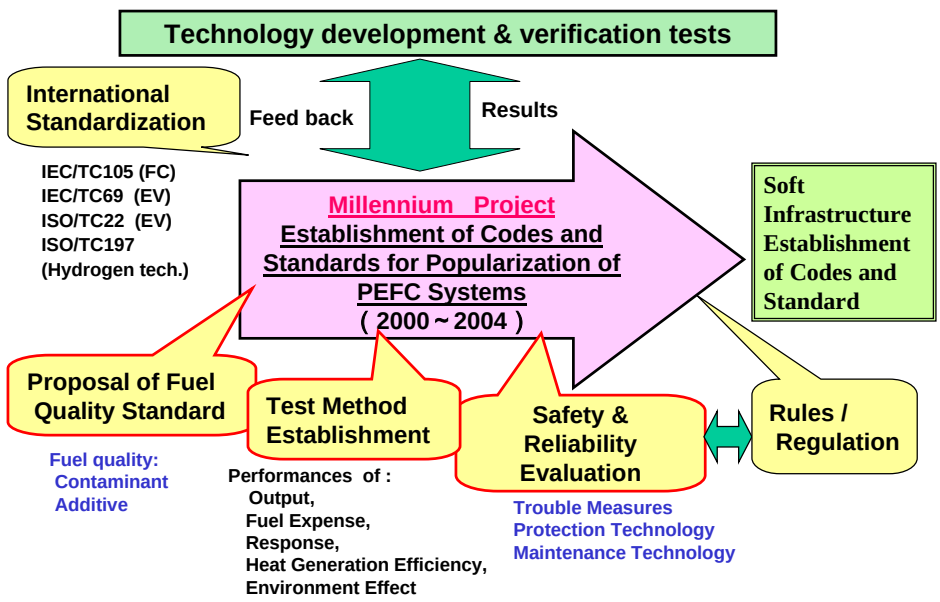
6. PEFC/Hydrogen Energy Utilization Projects of NEDO



7. Budget of Fuel Cell Project in NEDO



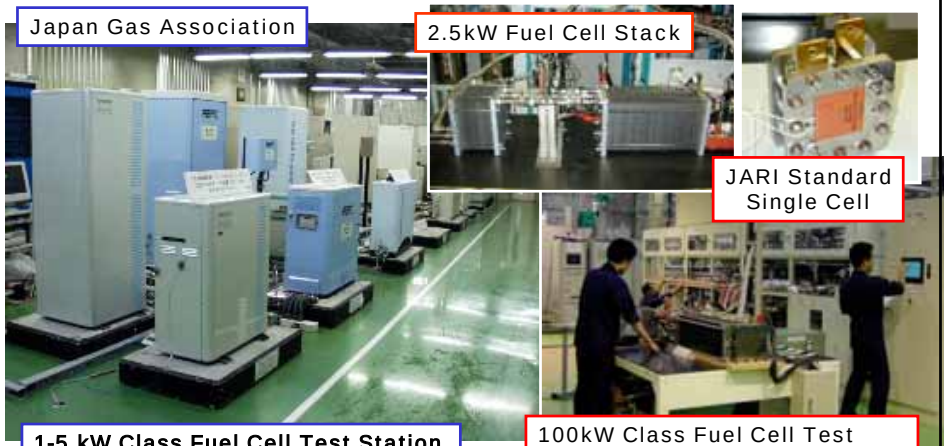
8. PEFC Codes and Standards Establishment



9. Performance Test for Fuel Cells

Japan Automobile Research Institute

Japan Gas Association



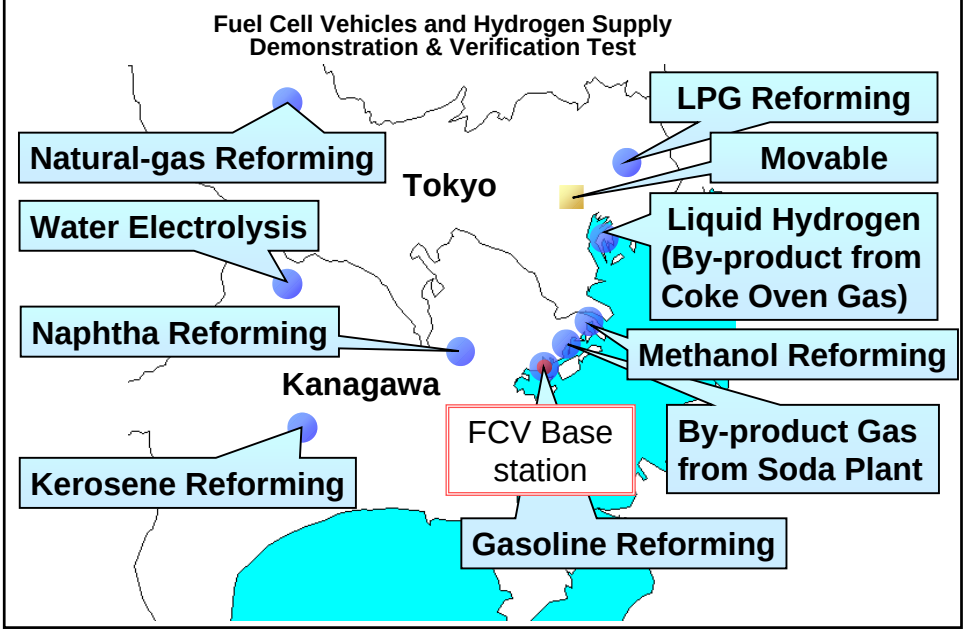
2.5kW Fuel Cell Stack

JARI Standard Single Cell

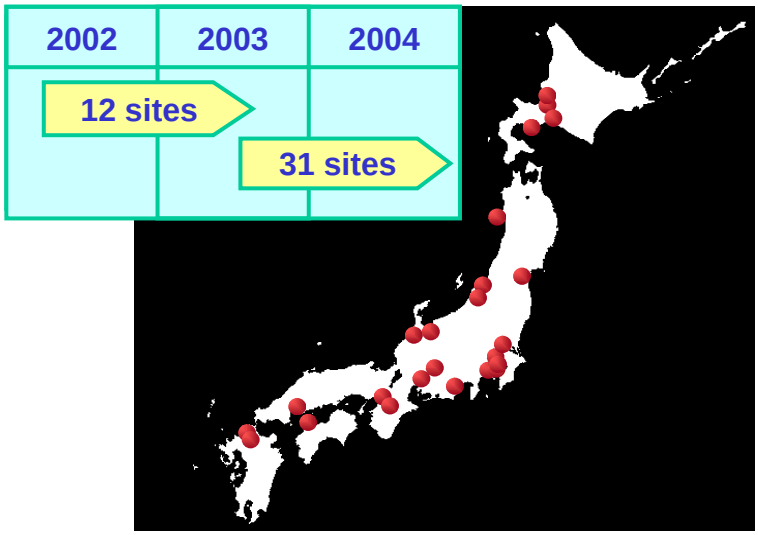
1-5 kW Class Fuel Cell Test Station for Residential Houses

100kW Class Fuel Cell Test Station with JARI Original Fuel Cell Stack for FCV

10. JHFC Demonstration Project



11. Stationary Fuel Cell Demonstration



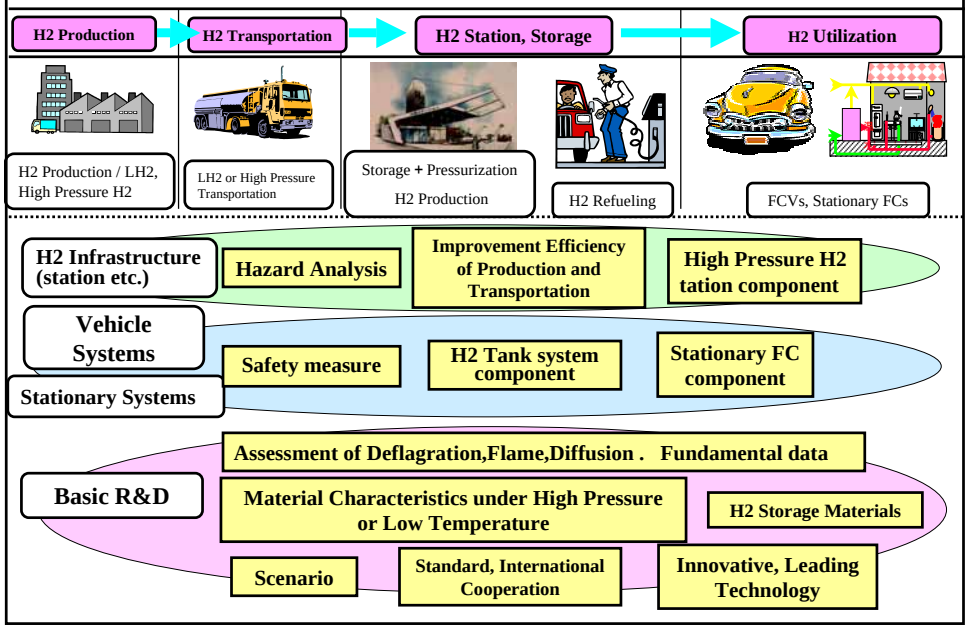
12. Hydrogen Projects in NEDO

Fiscal Year / Project	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
Hydrogen Project	WE-NET Phase-1						WE-NET Phase-2				Development of Basic Tech. for the Safe Use of H2				
Budgets(B. Yen)	7.8						8.1				4.5	(6.3)			

13. Development for Safe Utilization and Infrastructure of H_2

- Safety development of H_2 for practical use
- Development of high efficient, low-cost technology of H_2
- Infrastructure arrangement for H2 practical use (Basic research of H_2, standard)

14. Hydrogen Safe Use Technologies Development



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