Japan's Hydrogen Vision

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Toward Hydrogen
IEA Renewable Energy Working Party Seminar
3 March, 2003

1. Significance of Introducing Fuel Cells

High Efficiency **(Energy Conservation Effect)**	Fuel Cell Vehicle Stationary Fuel Cell
Diversification of Energy Supply	Hydrogen can be obtained from not only petroleum, but also natural gas, photovoltaic, wind and bio-mass, etc.
Reducing Impact on the Environment	Reducing CO_2, Zero NOx, SOx, PM
Creation of New Industry and Jobs **Enhancement of Industrial Competitiveness**	Fuel cell requires a wide range of technology from various industries.
Distributed Energy Resources	Reducing energy loss in transmission Serve as backup energy at emergency

2.Framework for Fuel Cell Commercialization and Popularization in Japan

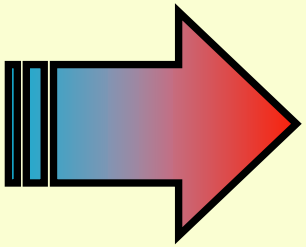
"Policy Study Group for Fuel Cell Commercialization"
was established in Dec. 1999.

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

Cooperation

"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 widespread use of fuel cells.



Drawing up Program on Polymer Electrolyte Fuel Cells and Hydrogen Energy Utilization Technology (Aug. 2001)

3. Fuel Cell Commercialization and Popularization Scenario

1: Now to 2005(Basic work and technology demonstration stage)

- Drawing up FC R&D Strategy and its Implementation
- Soft-infrastructure/Codes & Standards (Millennium project)
- Demonstration
- Establishment of Fuel Standards

2: 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

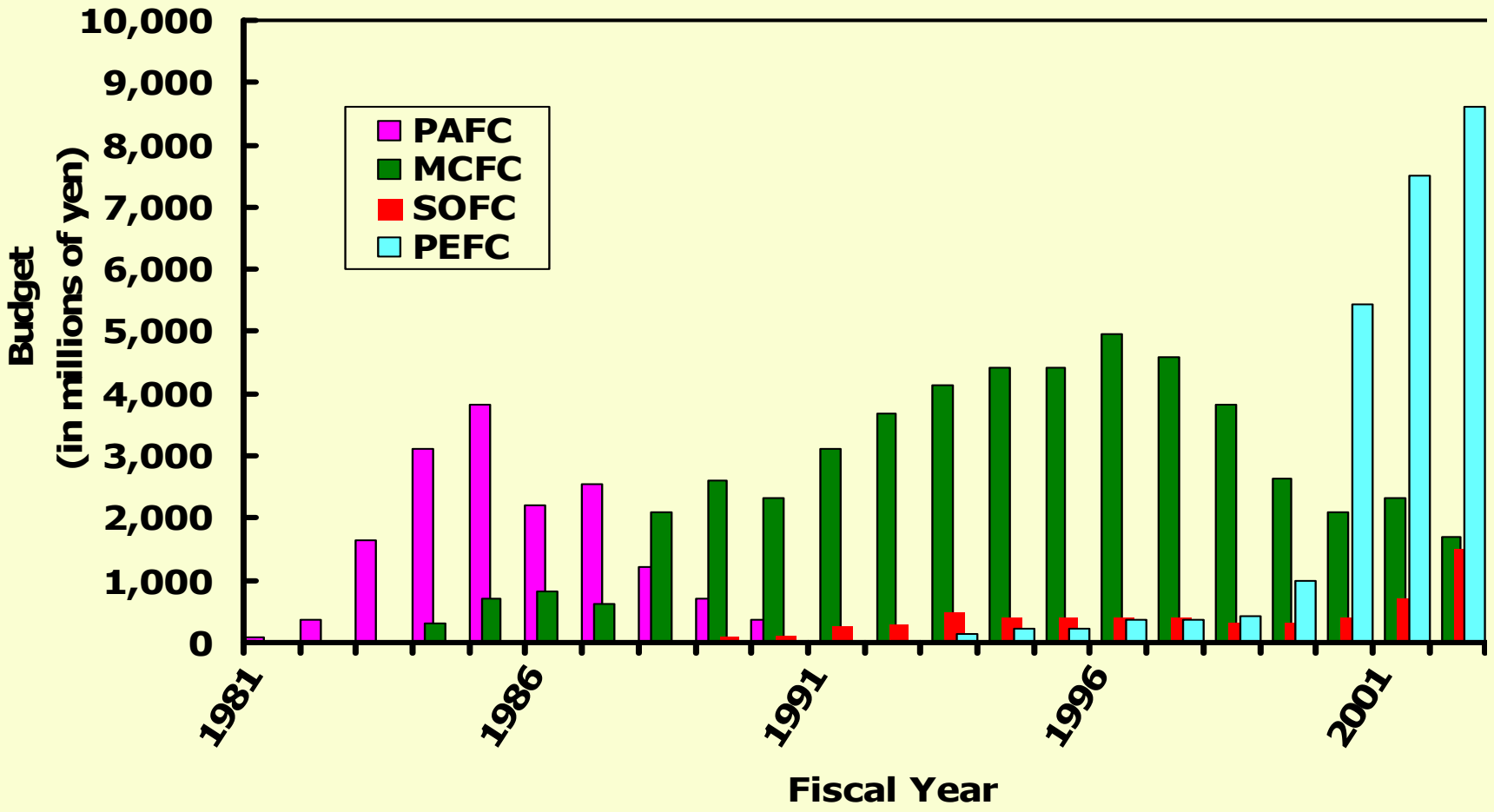
3: After 2010(Diffusion stage)

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

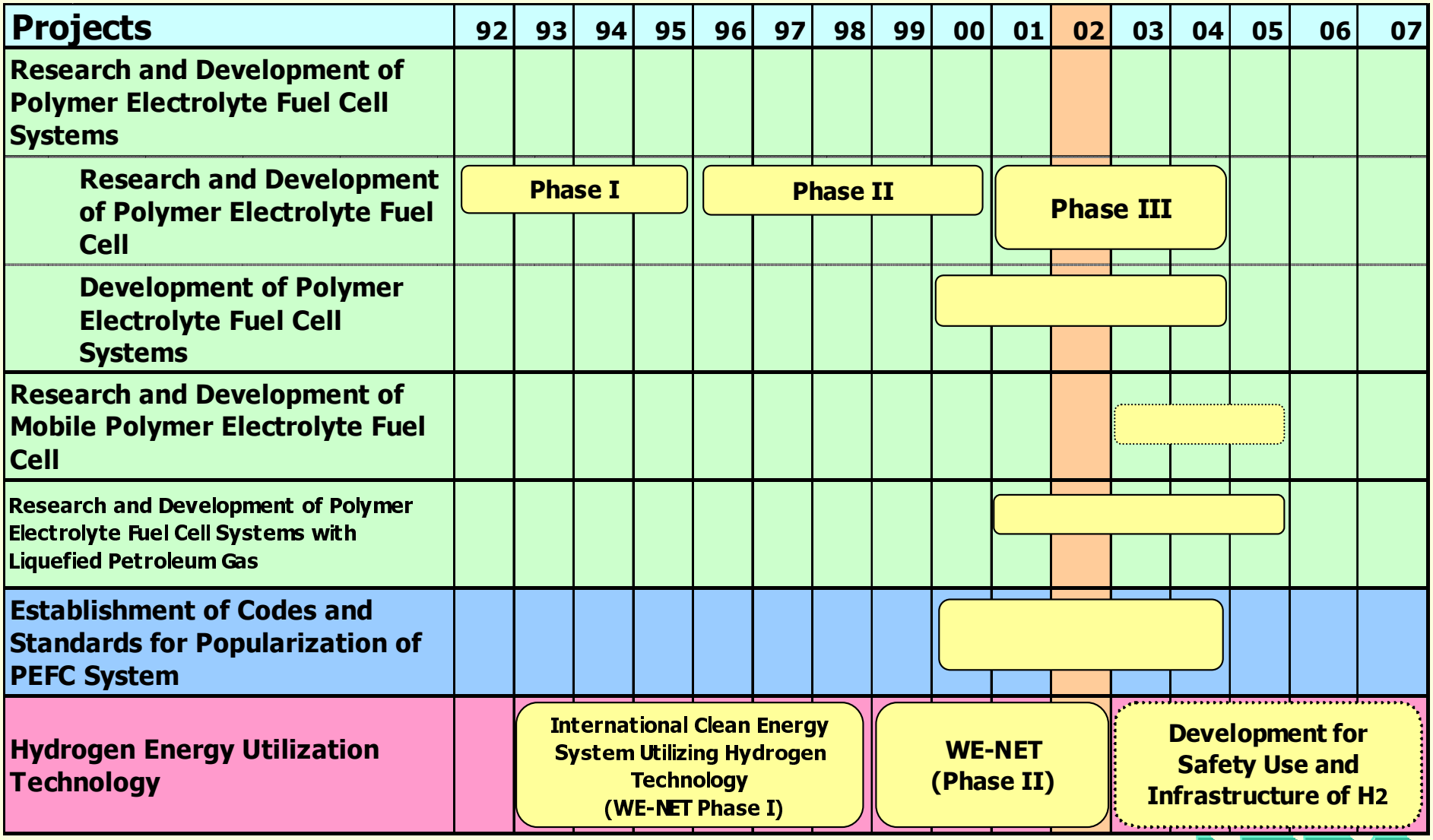
Forecast of Fuel Cell Introduction

	2010 FY	2020 FY
FCV	50,000 vehicles	5,000,000 vehicles
Stationary FC	2.1 million kW	10 million kW

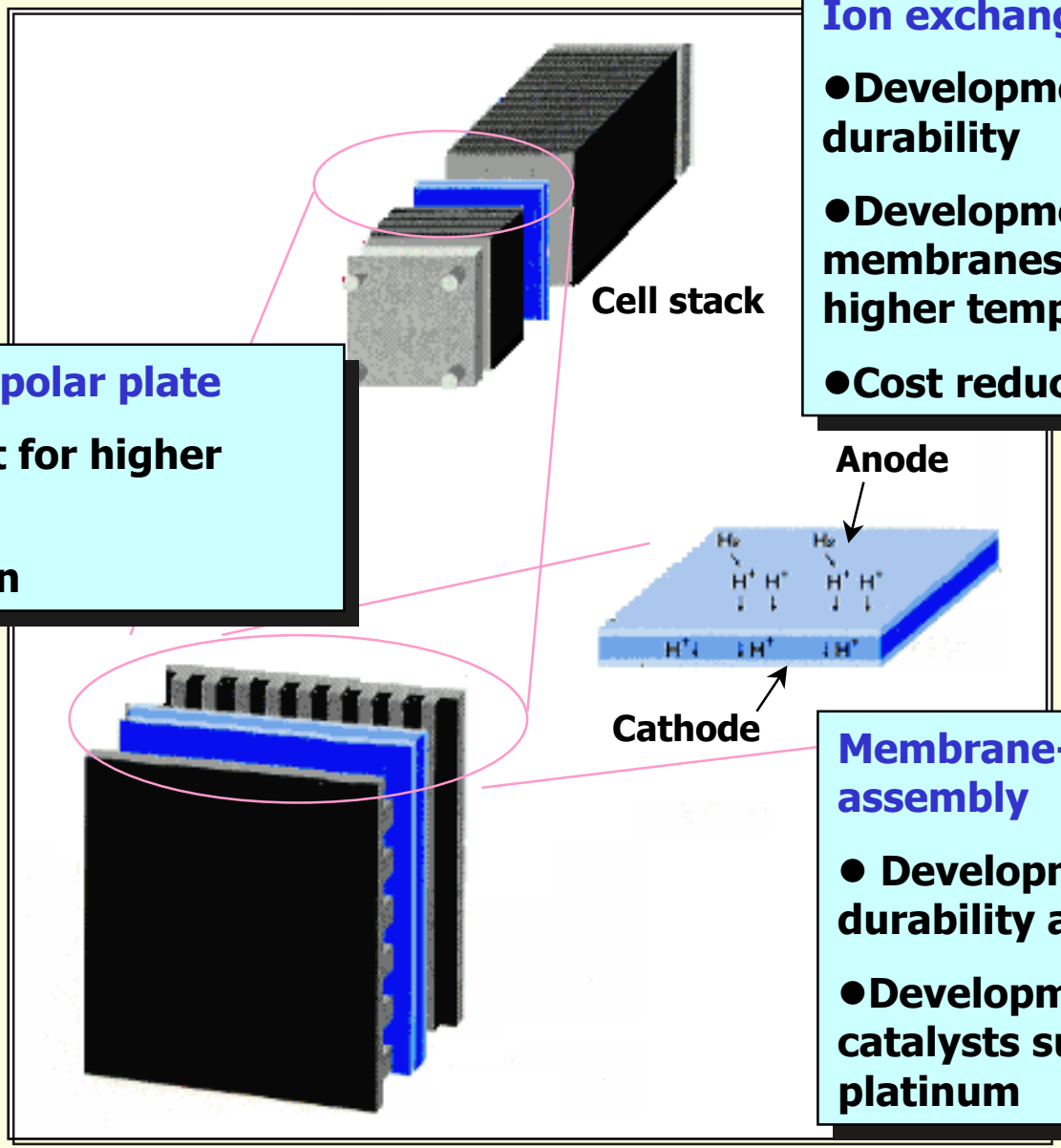
4. Budget of Fuel Cell Project in NEDO



5. PEFC/Hydrogen Energy Utilization Projects of NEDO



6. Component R&D



Ion exchange membrane

- **Development for higher durability**
- **Development of new membranes performing at higher temperature**
- **Cost reduction**

Separator or bipolar plate

- **Development for higher durability**
- **Cost reduction**

Membrane-electrolyte assembly

- **Development for higher durability against CO**
- **Development of new catalysts substituting platinum**