IPHE Steering Committee Meeting

Hydrogen & Fuel Cell Activities in Korea

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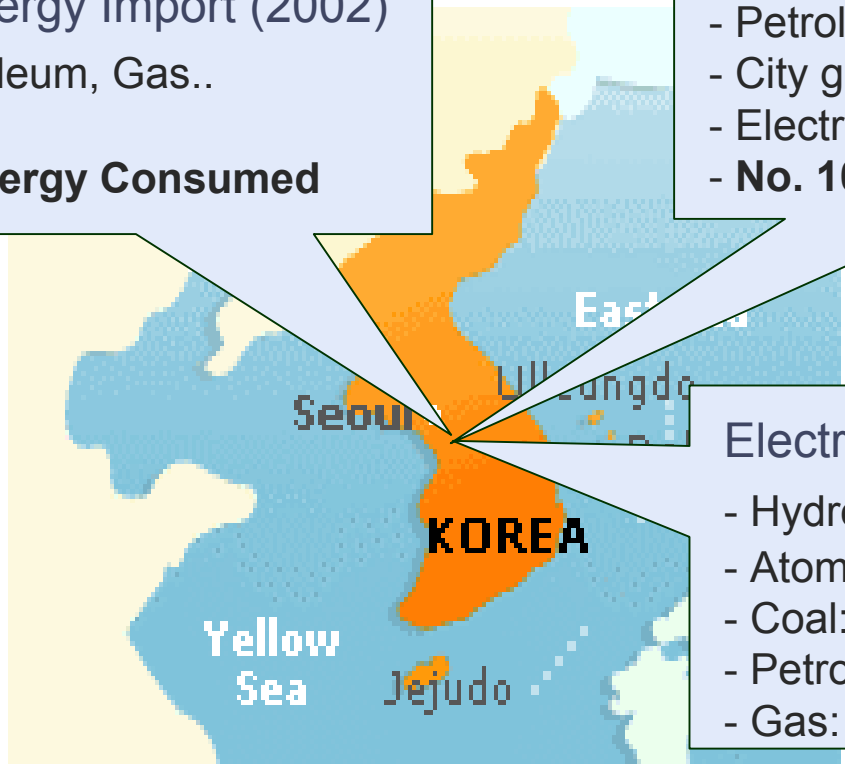
Energy Situation in Korea

Primary Energy Import (2002)

- Coal, Petroleum, Gas..
- $ 32 B
- **97 % of Energy Consumed**

Energy Consumption (2002)

- Coal: 33 B M/T
- Petroleum: 722 M bbl
- City gas: 14 B m^3
- Electricity: 280 TWh
- **No. 10 in World**



Electricity Production (2002)

- Hydro: 1.7 %
- Atomic: 38.9 %
- Coal: 38.5 %
- Petroleum: 8.2 %
- Gas: 12.7 %

Brief History

Period		’88 ~ ’94	’95 ~ ’99	’00 ~ ’02
Objectives		Fundamental Technology	Scale-up	System Engineering
Budget	Hydrogen	Government: $ 5 M Private Sector: $ 1.5 M		
	Fuel Cell	Government: $ 35 M Private Sector: $ 34 M		

Government Policy

- Increase portion of alternative energy in national energy consumption
  - From 1.4 % in 2002 to 5 % by 2011
- Select Hydrogen and Fuel Cell as one of 10 economy growth engines for next decade
- Strong support for R&D : Cooperation between MOCIE and MOST
  - National RD&D Organization for Hydrogen and Fuel Cell (MOCIE)
  - 21st Frontier Hydrogen Energy R&D Program (MOST)

	Government Budget for next 8 years (Tentative)		
	MOST	MOCIE	Total
R & D for Hydrogen	$ 80 M	$ 94 M	$ 174 M
R & D for Fuel cells	$ 40 M	$ 197 M	$ 237 M
Demo. & Dissemination		$ 175 M	$ 175 M

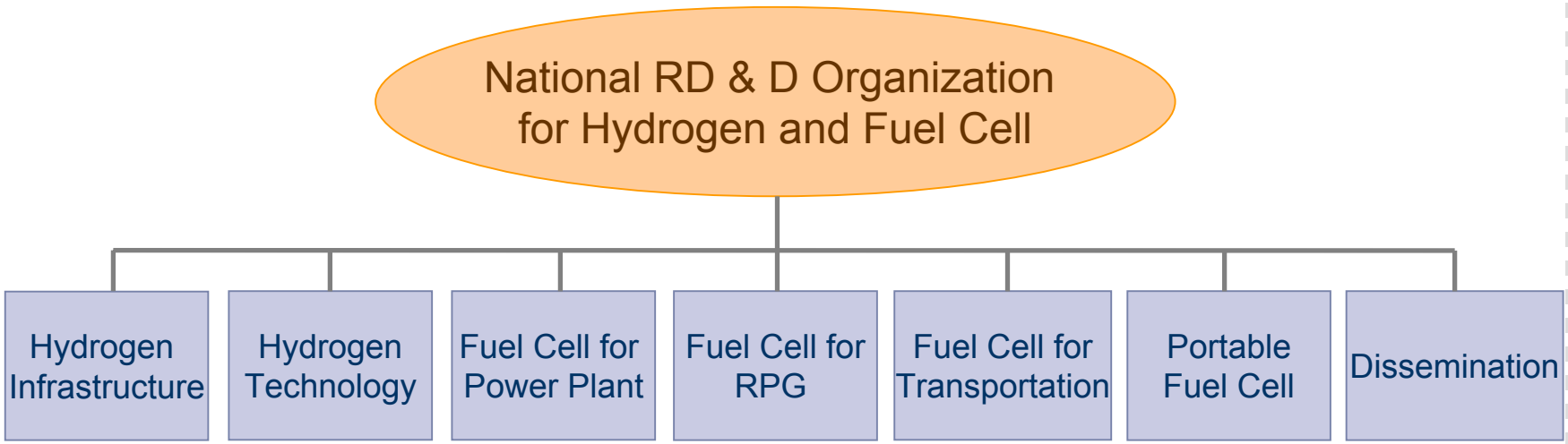
Target for Dissemination

Classification	Phase 1(‘03-’05) R&D for Reliability	Phase 2(‘06-’08) Dissemination	Phase 3(‘09-’12) Penetration and Enlargement of Market
Hydrogen Station	1	10	50
Distributed Power	Cumulative 300 units (250-1,000kW)		
Building	Cumulative 2,000 units (10-50kW)		
Residential Power	Cumulative 10,000 units (<3kW)		
Transportation	Passenger car 10 Bus -	Passenger car 1,000 Bus 100	Passenger car 10,000 Bus 5,000
Potable Power	Development of key tech. for commercialization	Commercialization of each item	

National RD&D Organization for Hydrogen and Fuel Cell

- Role
  - Established in 2003 to expedite the commercialization of hydrogen and fuel cell technology
  - Suggest vision to hydrogen economy
  - Develop a national plan and road map to create a new energy industry
  - Set up a detailed action plan to meet nation's dissemination target
  - Co-ordinate and allocate RD&D programs supported by government

- Subcommittee



Current Status of R&D

Hydrogen	- Hydrogen Energy R&D Program (Production/Storage/Usage) - Production from Nuclear Energy - Development and Demonstration of Hydrogen Station - High Pressure Vessel for Hydrogen Storage - Hydrogen Codes, Standards and Safety
Fuel Cell	- Development of100 kW class MCFC System for Stationary Application - Development of 80kW Class PEMFC System for Transportation - 3kW PEMFC System for Residential Power Generation - 50W class PEMFC, DMFC system for Portable Application - 3kW SOFC system for APU Application

Supports from Government

- Subsidy
  - To promote R&D and Dissemination of fuel cell systems by subsidizing
- A low-interest loan for fuel cell manufacturers and users
  - Interest rates : 3.5 % during 15 years
- Tax-reform
  - Tariff : 8.0 % → 2.8 % for all alternative energy equipments
  - Tax : reduce income tax or corporate tax
- Others
  - Mandatory installation in public building
  - Feed - in - tariff under considering