APEC EGNRET 37, Chinese Taipei

Current New and Renewable Energy Priorities in Japan

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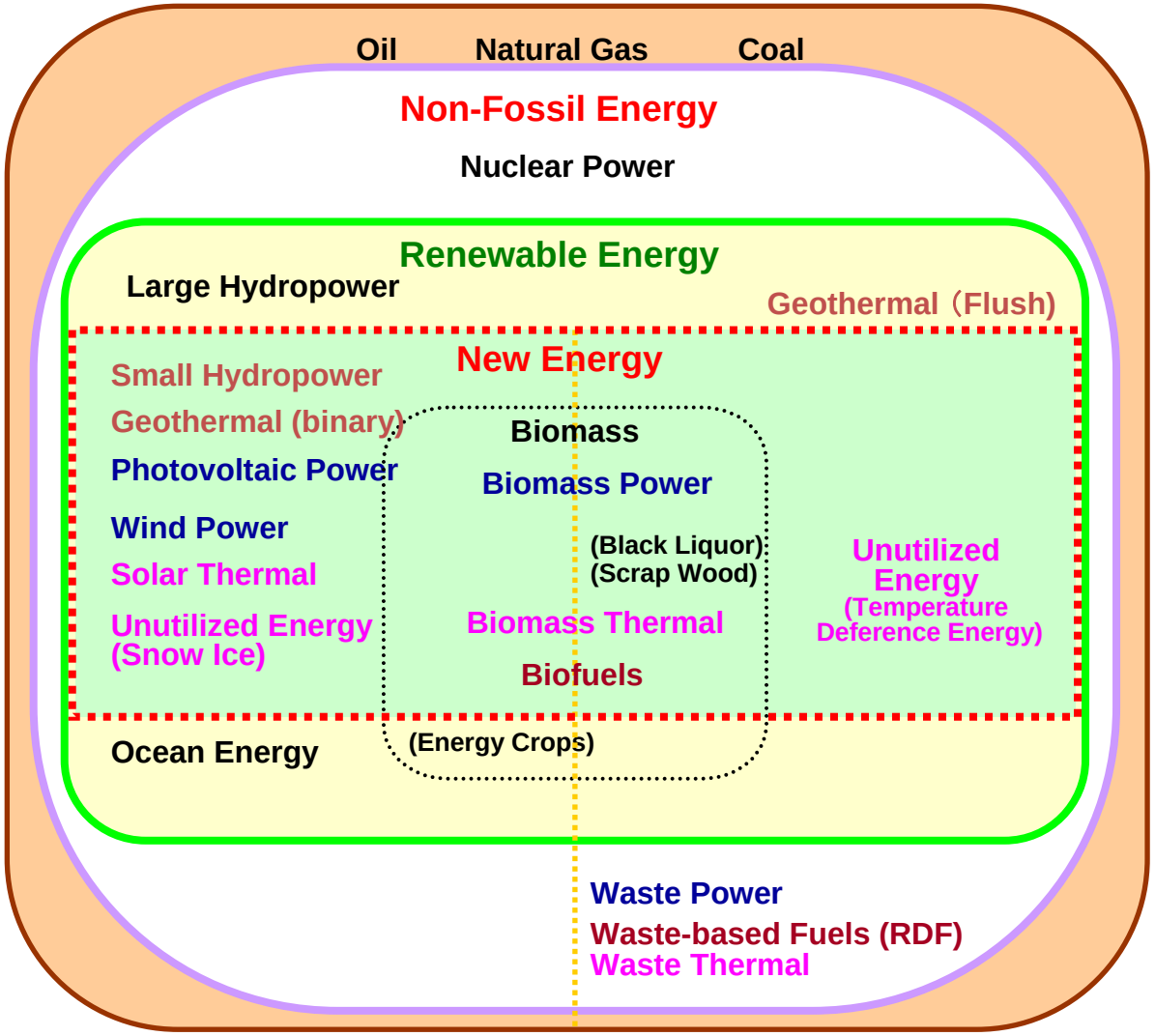
Definition of “New and renewable Energy” in Japan



Innovative High-level Energy Utilization Technology

Development of Renewable Energy

PV（High Efficiency, New Materials）, Battery for PV and Wind in parallel including capacitor, Ethanol Production Technology from lignocellulosic biomass,
BTL（Biomass to Liquid）Production Technology, Gasification Power Generation from Biogas

Rapid Advancement of Energy Efficiency

Stationary Fuel Cell, Hybrid Auto, Natural Gas Cogeneration, Heat Pump, Oil Residue Gasification Technology (IGCC, IGFC, etc), Clean Coal Technology

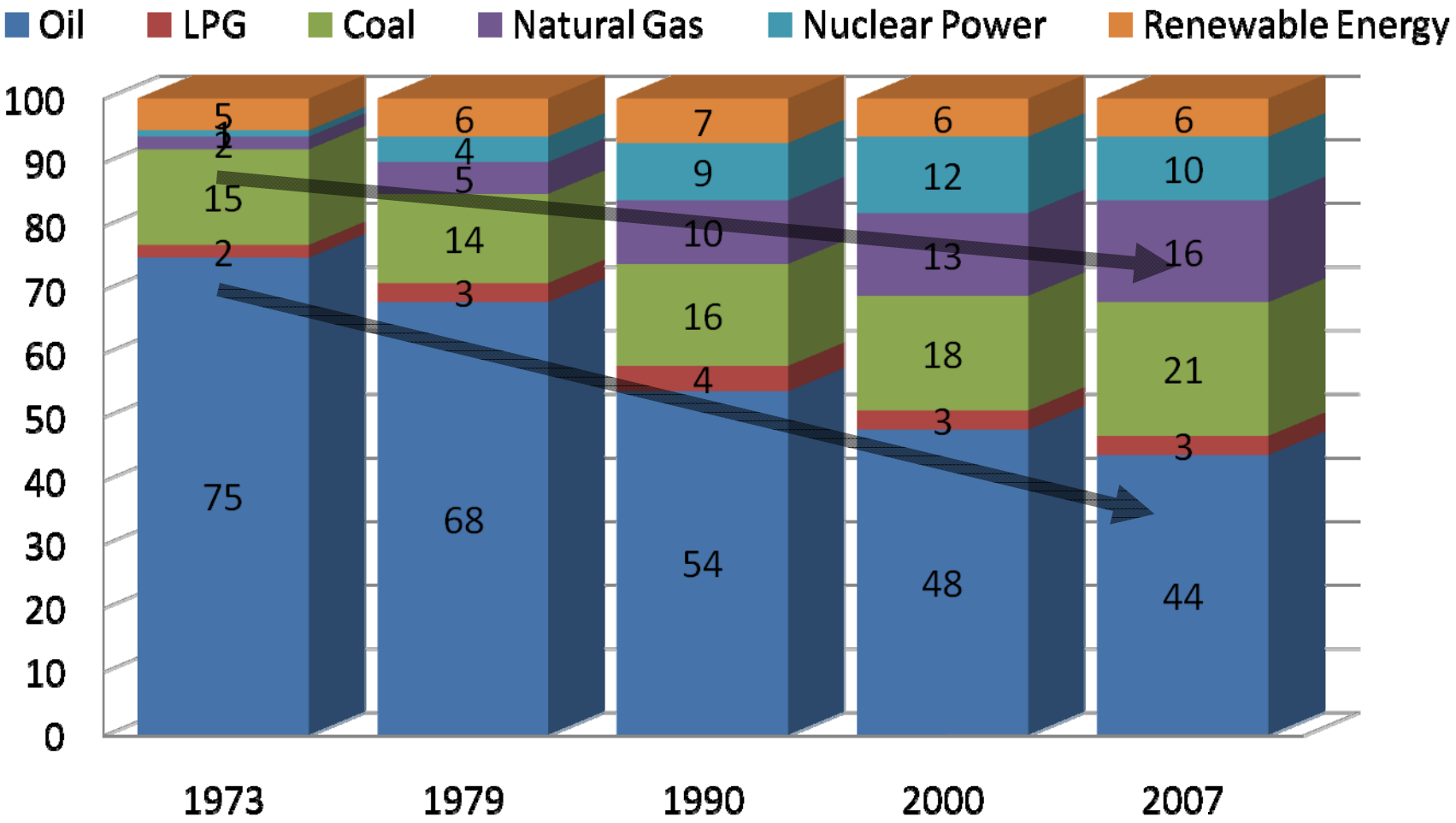
Diversification of Energy Source

Fuel Cell Vehicle, Electric Vehicle, Plug-in Hybrid Vehicle, CNG Vehicle, Diesel-substitute LP gas Vehicle, Hydrogen Vehicle, High Concentration Bio Fuel Vehicle, GTL Production Technology, DME Production Technology, Non-traditional Fossil Fuel Usage Technology (Methane Hydrate, Oil Sand, etc)

*(**Source**) Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), Japan (modified by IEEJ)*

Primary Energy Supply Rate

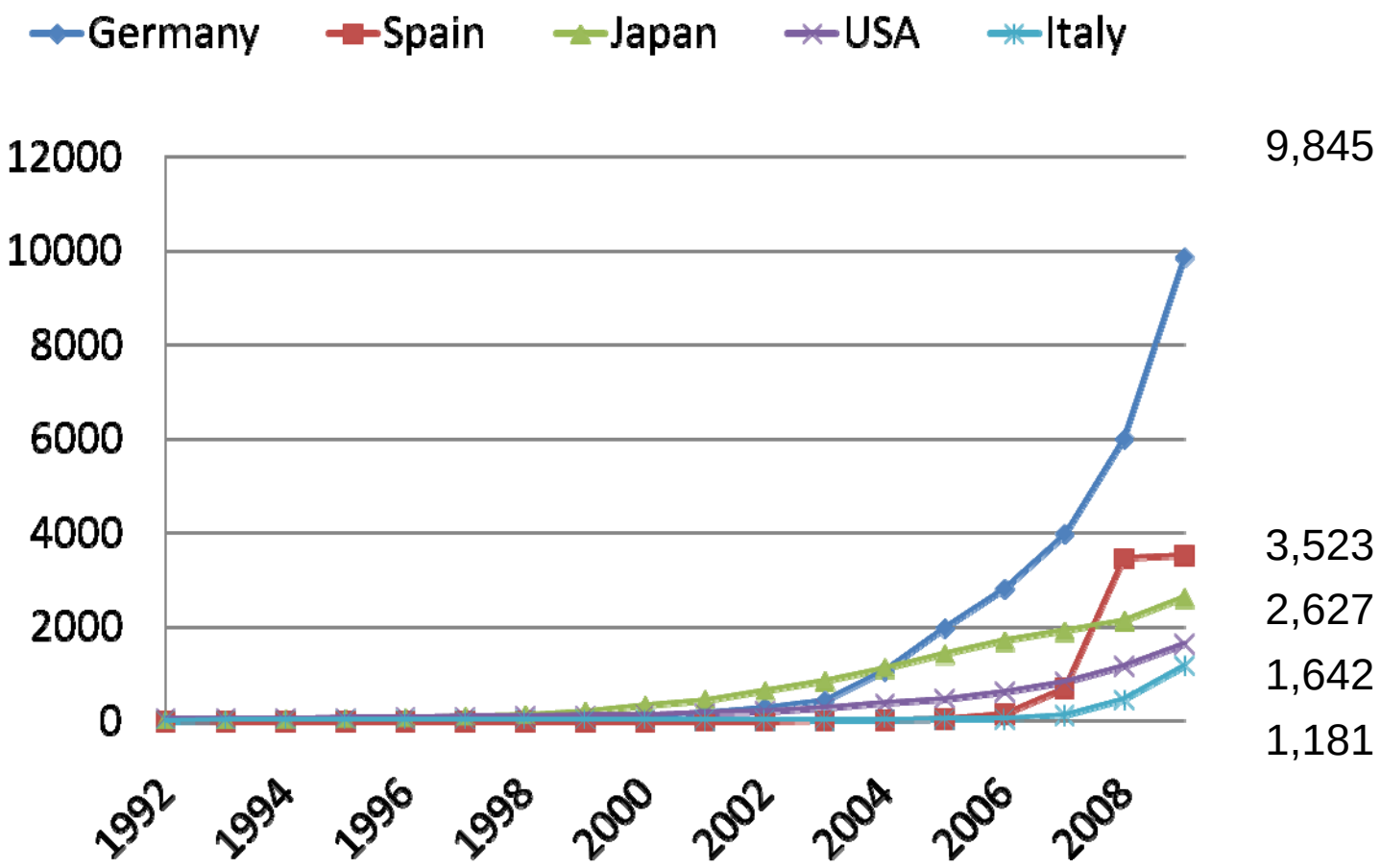
- Oil Dependence has declined since 1973's oil crisis.
- Fossil fuels dependence has been still high.



Source: Agency for Natural Resources and Energy "Comprehensive Energy Statistics"

Cumulative Installation (PVs)

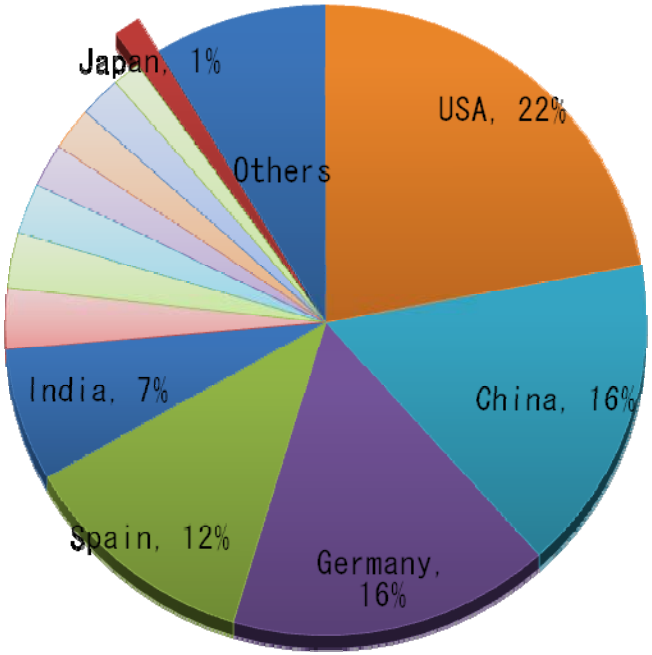
- Japan ranks 3rd in 2009.
- The increasing rate became twice as well as last year.



Source: TREND IN PHOTOVOLTAIC APPLICATIONS Survey report of selected IEA countries between 1992 and 2009

Cumulative Installation (Wind power)

- Japan ranks 13rd in 2009.
- Increased ten-fold for two decades.



Source: “Global Wind 2009 Report”

Target

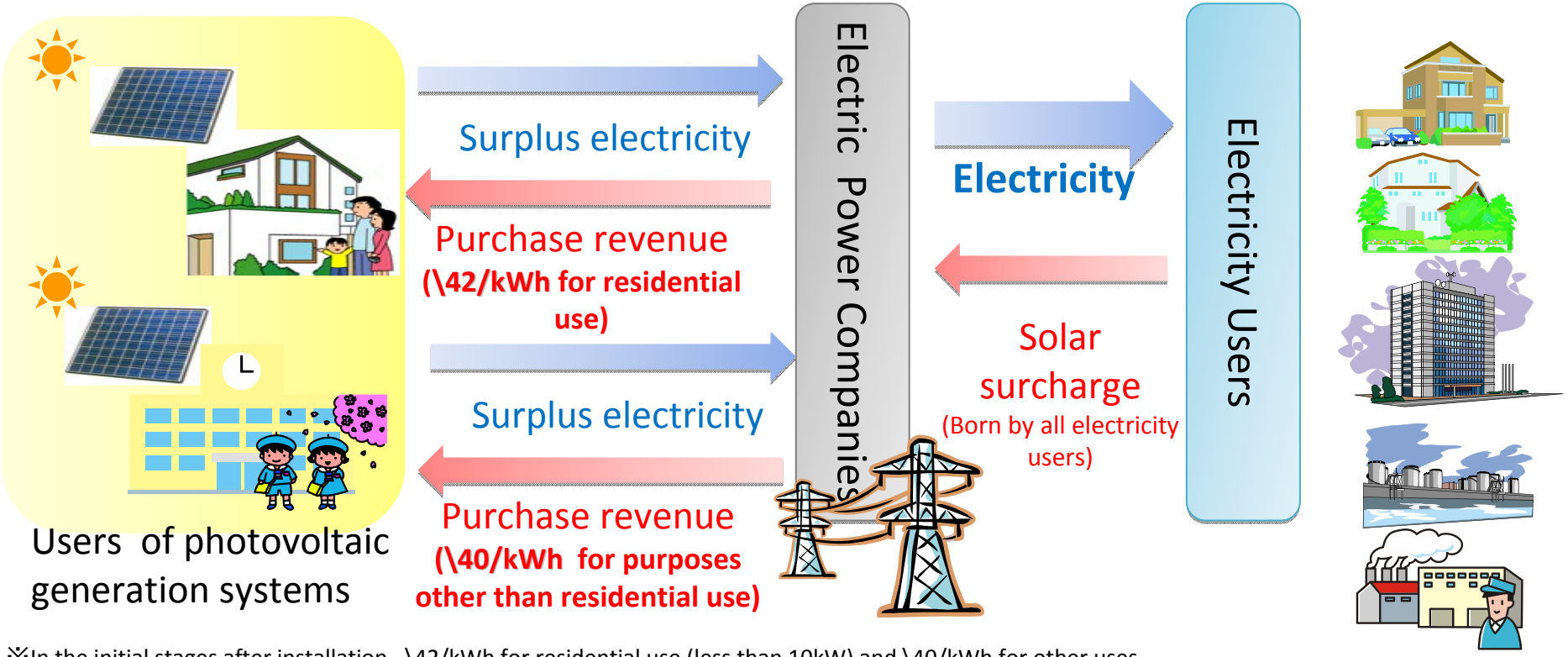
“Strategic Energy Plan” (revised in 2010)

Renewable energy rate of Primary energy supply should be achieved **10% by 2020**.

Buyback System (1)

Major points of the buyback system

○Of the electricity generated by photovoltaic generation systems, surplus electricity will be purchased.
○ The buyback period is within the 10 years from the start of the program. The buyback price is fixed.
(※The buyback price may differ depending on the fiscal year in which a panel is installed. In the initial stages, it is \42/kWh for residential use [less than 10kW].)
○ Expenses will be born by all electricity users.



※In the initial stages after installation, \42/kWh for residential use (less than 10kW) and \40/kWh for other uses.
In the case where a private electric generator is also installed, \34/kWh and \32/kWh, respectively.

Buyback System (2)

	November 2009 - March 2011	April 2011 -March 2012 (FY2011)
Residential Use Under 10kW	48 JPY/kWh (39 JPY/kWh)	42 JPY/kWh (34 JPY/kWh)
Non Residential Use and Residential Use Over 10kW	24 JPY/kWh (20 JPY/kWh)	40 JPY/kWh (32 JPY/kWh)

Rate inside the brackets are for the houses/ facilities using private generation system (photovoltaic generation plus fuel cells, etc.)

Buybacks rate will be decide each year and the rate continues for 10 years after the start of the program.

Deployment Measures ("New FIT" Scheme)

- In order to enlarge to install renewable energy, "New FIT" are being set.
- "New FIT" is the system to obligate electric power companies to purchase **full amount** of electricity generated by **PVs (expansion to non-residential), Wind Power, Biomass, Small and Medium Hydraulic Power and Geothermal**.
- All consumers bear the cost of this system by paying the surcharge.
- RPS plan to be abolished in principle when "New FIT" launched.

Feed-in Tariff　*under consideration

■Emphasize the Balance of “Promotion of Introduction”, “Social Burden” and “Stable Operation of Grid”

Overview of Japanese FIT

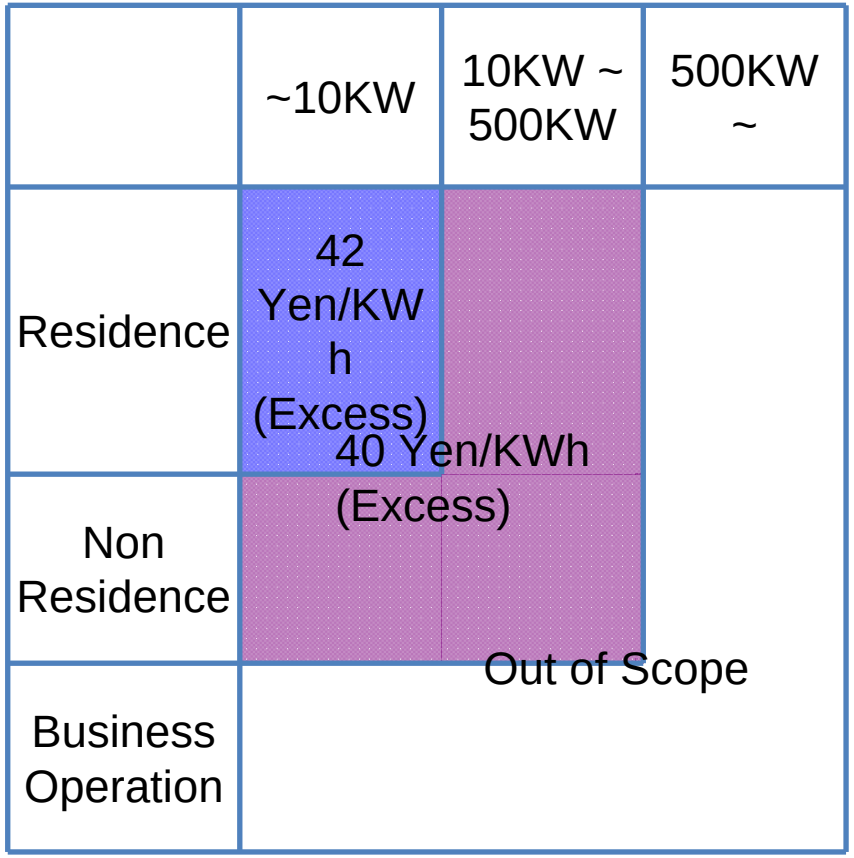
Coverage Technology	•Commercialized Technology：PV (Household Use, Commercial Use), Wind, Hydro Power (less than 30MW), Geothermal and Biomass (with Conditions)
Buyout Coverage	•PV (Household Use: surplus electricity / Others: All electricity generated
Equipment Coverage	•Newly Installed Equipment
Purchased Price	•Other than PV: 15~20 yen/kWh in a single uniform way
Purchasing Period	•Other than PV 10 years / Others: 15~20 years
Purchasing Cost Burden	•Burden of Customers according to consumed amount of electricity

Prospects of Renewable Generation by FIT

	TOTAL	PV	Wind	Small Hydro (<30MW)	Geo-thermal	Biomass
Accumulated Installation in 2009	1,470	210	220	990	50	0
Additional Installation by 2019	**3,200-3,500**	2,780	280-530	30-70	20-50	50

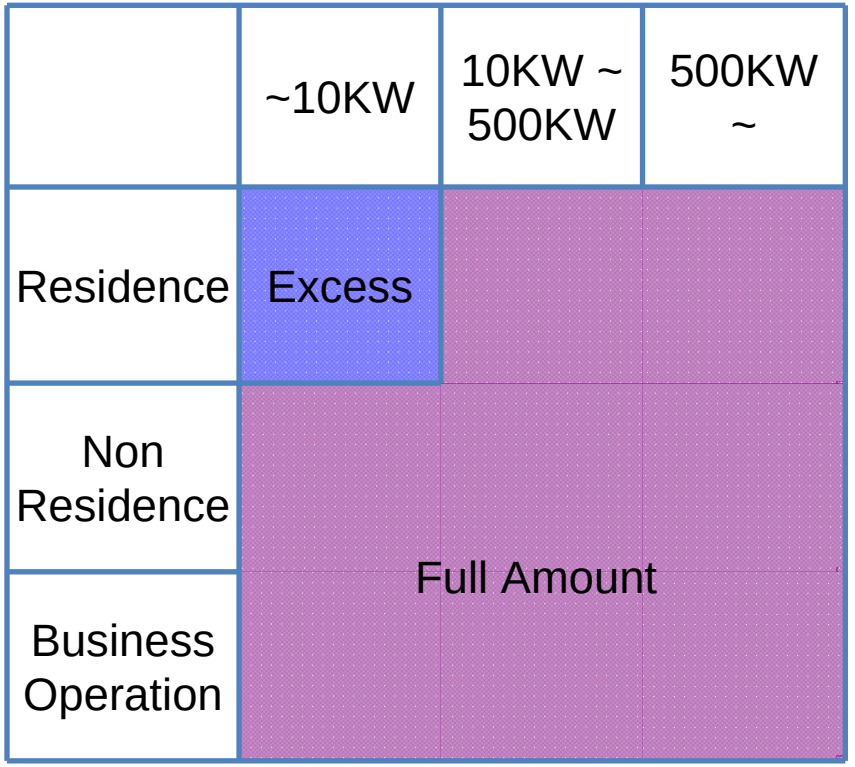
Deployment Measures ("New FIT" Scheme)

Current



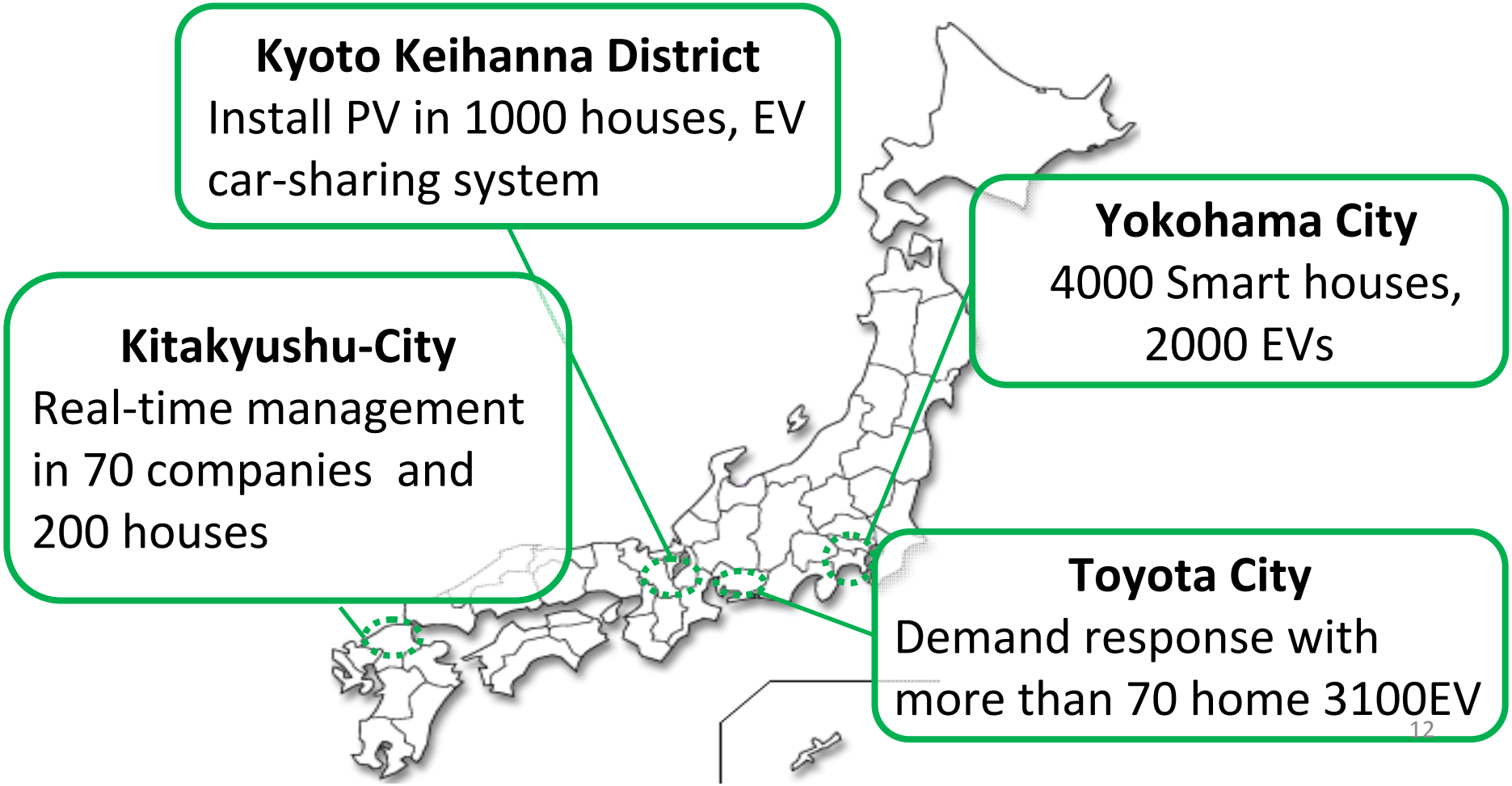
New

(Purchasing Price: Under consideration)



Large Scale Pilot projects on Smart Grid and Smart Community in

On April 2010, we selected 4 sites in Japan to run large scale pilot projects on smart grid and smart community （2010-2015）

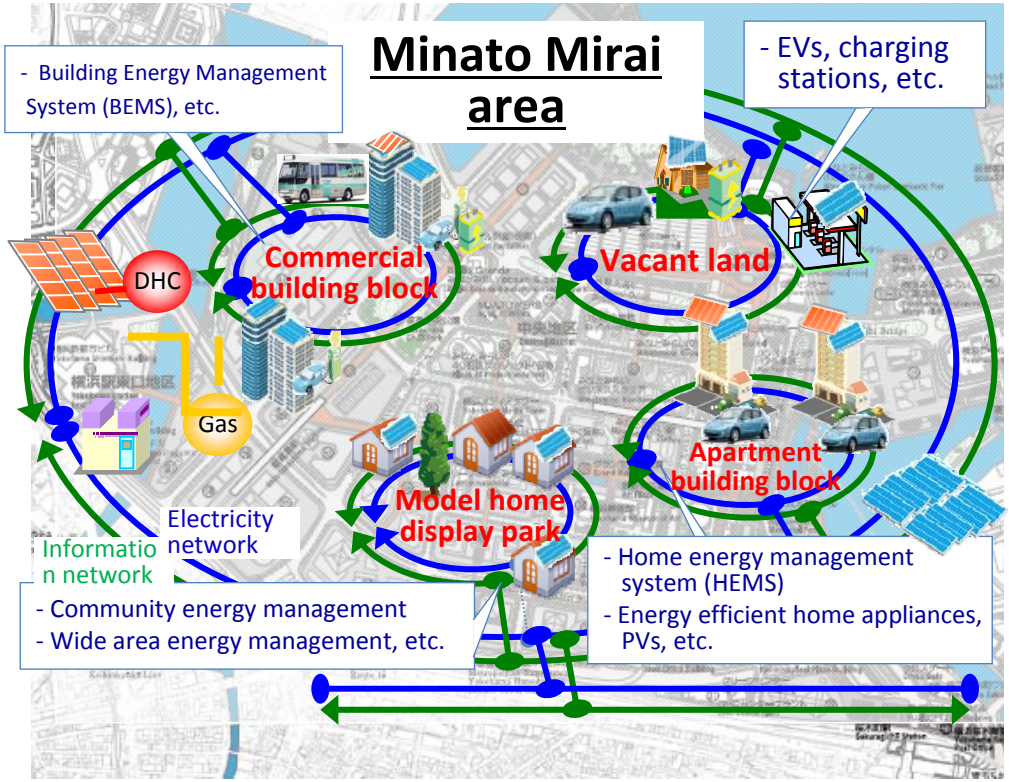


Yokohama City, Kanagawa: Large-scale Demonstration in a Large City

Minato Mirai 21

Kohoku New Town

Kanazawa area



Participating Companies

TOSHIBA Leading Innovation >>>

accenture

Tokyo Gas

NISSAN

Panasonic

MEIDEN

Yokohama City, Kanagawa: Large-scale Demonstration in a Large City

Program Goals: Pioneer a cutting-edge, world-leading smart city model in a major metropolis and export the Yokohama-model solution overseas

Key Systems: AMI, DR, Customer displays, PV, HEMES, BEMS, CEMS, EV
Timeline: 2010-14 **Budget:** ￥74,000 mil.

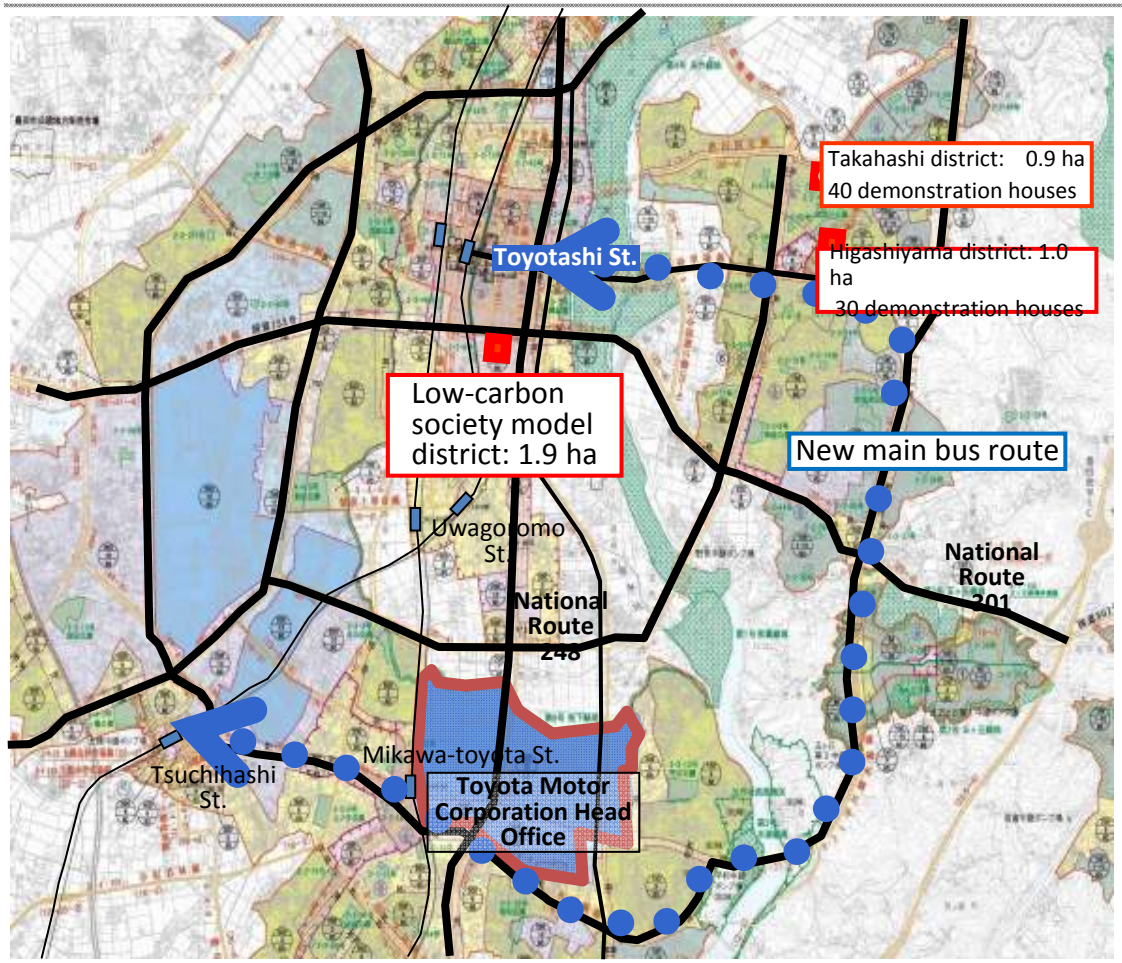
Overview:
Community energy management system integrating 3 areas (suburbs, urban, residential area)., HEMS,BEMS,EV,PV (27MW), Use of heat and unused energy
4500 Smart houses, 2000 EVs

Background:
City Statistics (2010): 1.6 million households

Key Benefits and Numerical goals:
Reduced Greenhouse Gas Emissions
CO2▲30% by 2025（from 2004）

Key Challenges:
Consumer Behavior, Install large-scale RE sources, Integrate CEMS mutually compatible for power and heat

Toyota City, Aichi: Community-based Demonstration in a Provincial City

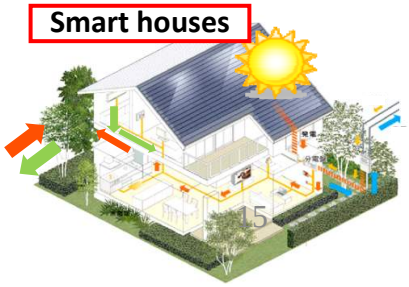


Participating Companies

ハイブリッド・シティとよた
TOYOTA
TOSHIBA Leading Innovation
TOYOTA HOME
SHARP
TOHO GAS
Drive@earth MITSUBISHI MOTORS
DENSO
中部電力
CircleKSunkus

Supply power from vehicle batteries to houses and the grid.

Smart houses



Toyota City, Aichi: Community-based Demonstration in a Provincial City

Program Goals:
Understand different needs between countries and regions and build low carbon society systems for more widespread domestic use, as well as for export
Key Systems: AMI, DR, PV, HEMS, CEMS, EV

Timeline: 2010-14 **Budget:** ￥22,720 mil.

Overview:
Demand side management at about 70 houses, 3100EV, V to H, V to G, Establishment of a low-carbon transport system by ITS

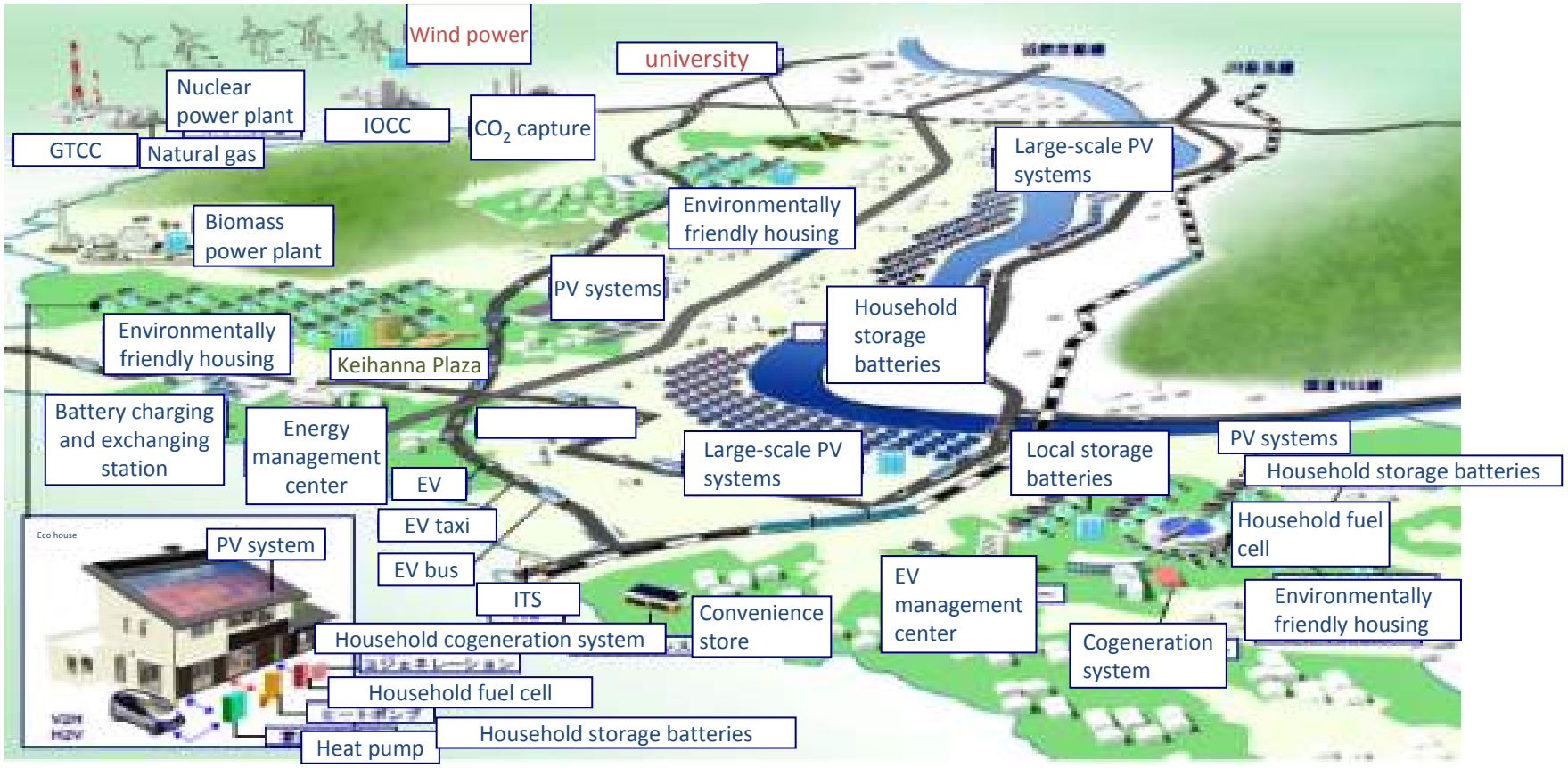
Background:
City Statistics (2010): 170 thousand households

Key Benefits and Numerical goals:
Reduced Greenhouse Gas Emissions: CO2 by 30% by 2025 (from 2005)
Improve quality of life

Key Challenges:
Consumer Behavior, Build a low-carbon transportation system (over 3,100 EVs, recharging infrastructure, higher quality ITS, etc.)

Kansai Science City in Kyoto: Demonstration of New Technologies in a Provincial City

Future Look of the Kansai Science City



Participating Companies

京都府 Kyoto Prefecture Web Site　関西電力　大阪ガス GROUP　MITSUBISHI Changes for the Better　三菱重工

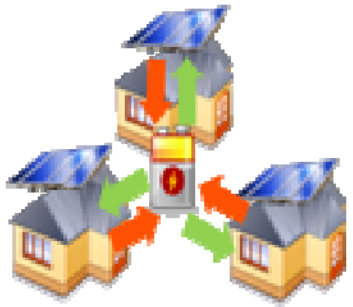
OMRON　Kansai Research Institute

Kansai Science City in Kyoto: Demonstration of New Technologies in a Provincial City

Program Goals:
Develop CEMS that minimizes CO2 emissions and use it as the core for building next generation energy society systems. Also, establish a new lifestyle without sacrificing QOL that makes “eco” a part of the residents’ “culture”

Key Systems: AMI, DR, PV, HEMS, BEMS, CEMS, EV
Timeline: 2010-14 **Budget:** ￥13,600 mil.

Overview:
‘Smart tap’ which visualizes energy consumption by home electronics.
‘Electric power virtual coloring’ technology actualizes total home energy management system synchronized with energy supply.



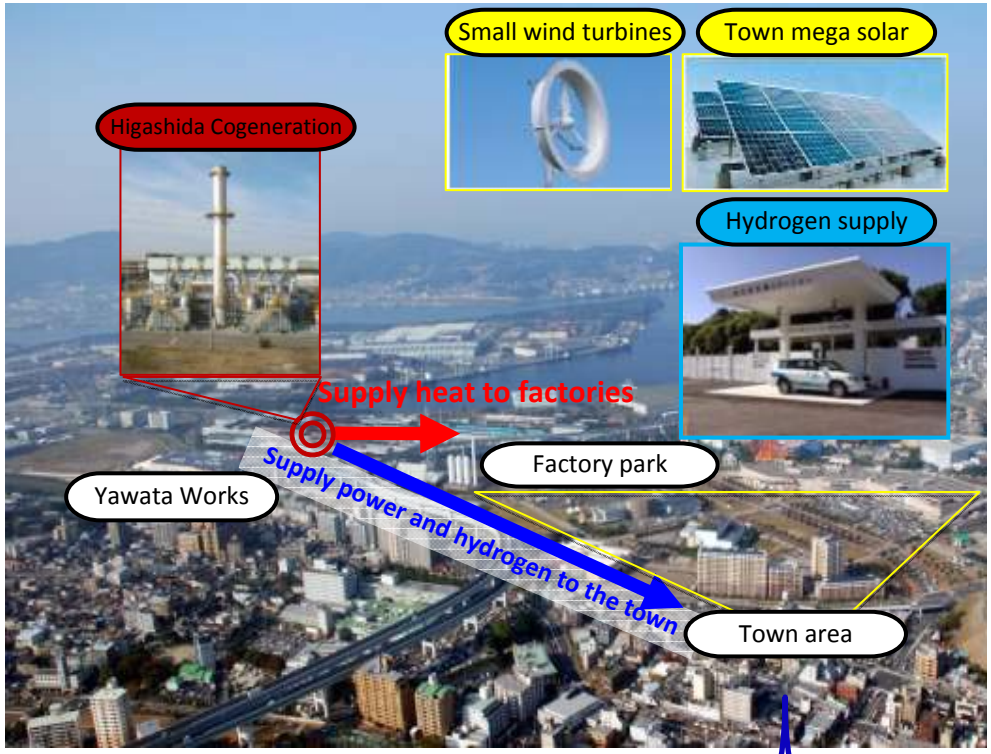
Background:
City Statistics (2006): 60 thousand households

Key Benefits and Numerical goals:
Reduced Greenhouse Gas Emissions (CO2▲30% by 2030（from 1990）)
By achieving CEMS, create new industry

Key Challenges:
Consumer Behavior, Integrate EMS with power storage devices

Kitakyushu City, Fukuoka: Demonstration in a Special Zone in an Industrial City

Higashida District, Kitakyushu City



Real-time Electricity Fee Fluctuations and Equipment Control

Participating Companies

北九州市 | imagination at work | intel | 新日本製鐵 | 富士電機 | NTT西日本 | YASKAWA | IBM

Kitakyushu City, Fukuoka: Demonstration in a Special Zone in an Industrial City

Program Goals:
Attain a smart grid-focused CEMS and build a society that can cut CO2 by 50% and market those results to the rest of Asia

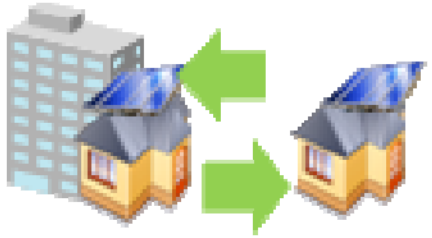
Key Systems: AMI, DR, PV, HEMS, BEMS, CEMS, EV

Timeline: 2010-14 **Budget:** ￥16,334 mil.

Overview:
70 companies and 200 households using smart meters, Real-time pricing and demand control, City block energy management through a regional energy saving station, Development of communities and transport systems based on energy infrastructure

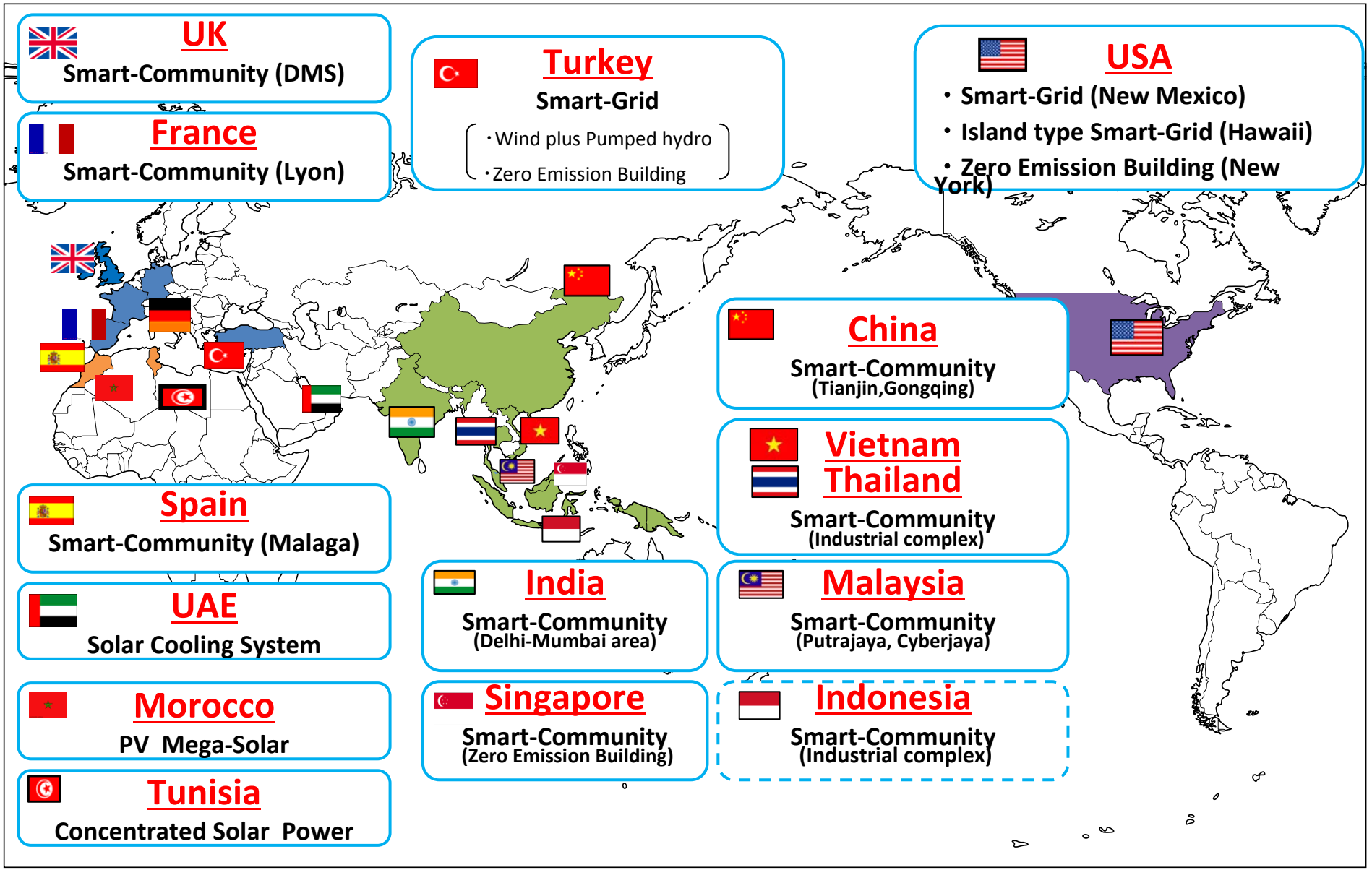
Background:
City Statistics (2005): 410 thousand households

Key Benefits and Numerical goals:
Reduced Greenhouse Gas Emissions, CO2▲50%（from 2005）



Key Challenges:
Consumer Behavior, Build a next generation town mobility infrastructure

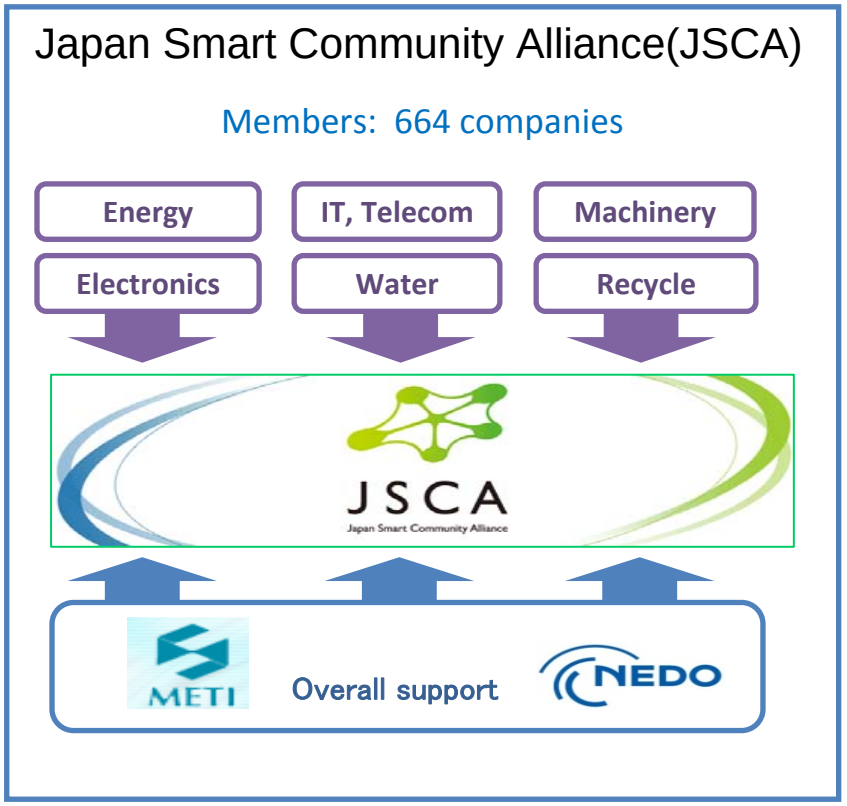
Japan's Joint Demonstration Projects on "Smart-Community" and "Renewable Energy"



Japan Smart Community Alliance(JSCA)

The platform for collaboration among businesses has been launched. A wide range of private sector players joined the JSCA (664 member companies (August,2011)). This platform is open to the world.

- A wide range of private sector players joined the JSCA as a platform for collaboration. The public sector supports their activities.
- The working groups of the JSCA are cooperating on policy issues such as standardization, road-mapping of technologies, etc.
- The JSCA is seeking further global cooperation and partnerships. (the JSCA agreed on MOU for a cooperative relationship with the Grid Wise Alliance(USA)).



East Asia Smart Community Initiative (EA-SCI)

- The concept of "Smart Community" plays an active role as a driving force toward the region-wide deployment of next-generation energy and social systems.
- IT integrates the following social needs and elements through efficient use of the IT network ; (i) maximum use of renewable energy (e.g. solar and wind) and unused energy (e.g. waste heat), (ii) transformation of regional transport systems, and (iii) transformation of people's lifestyles.
- Japan supports public/private efforts to establish Smart Communities globally.
- EA-SCI is the initiative to promote Smart Communities in ASEAN and East Asia, as was noted in the Chairman's Statement of the 13th ASEAN-Japan Summit and the Joint Media Statement of AEM-EAS last year.

Contribution from Japan

- The Japanese government and Japan Smart Community Alliance (JSCA) dispatch special missions to Asian nations to identify specific cooperation concerning the Smart Community Initiative.

◆ **Japan Smart Community Alliance (JSCA)**

The Secretariat: New Energy and Industrial Technology Development Organization (NEDO)

Members : 664 companies (as of August 2011)

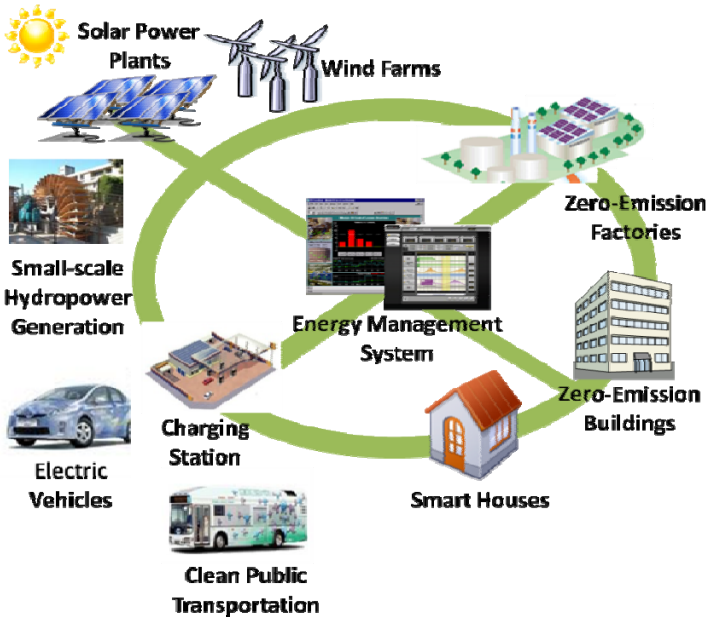
◆ **Special missions**

- Malaysia December 2010
- Thailand February 2011
- Vietnam August 2011
- Indonesia, Singapore, and etc. (to be planned)

- METI and JSCA will support the formation and activities of the project-based consortiums in private sector that have advanced technologies concerning the smart energy systems and social infrastructures.

Image of Smart Community

Japan will strengthen this initiative, recognizing the importance of the construction of the Smart Communities with resiliency and reminding of the experience of the Earthquake and Tsunami.



Thank you for your attention !