Solar Cities and Renewable Energy

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Cities and fossil fuel

1. Modern cities have mushroomed on their rich fossil nutrient supply. The very logic of their global rise and regional spread is founded on the availability of powerful, centralized and inexpensive fuels: coal, petroleum and natural gas-yielding fossil urban structures

2. Urban development depends on fossil fuel. Fossil fuels supply 85% of the world commercial energy – 75% of this is used to support cities

2. Fossil fuel use increased from 8 billion TOE in 2002 to over 10 billion in 2010, paralleling the rise in global urbanization.

Renewability of Cities

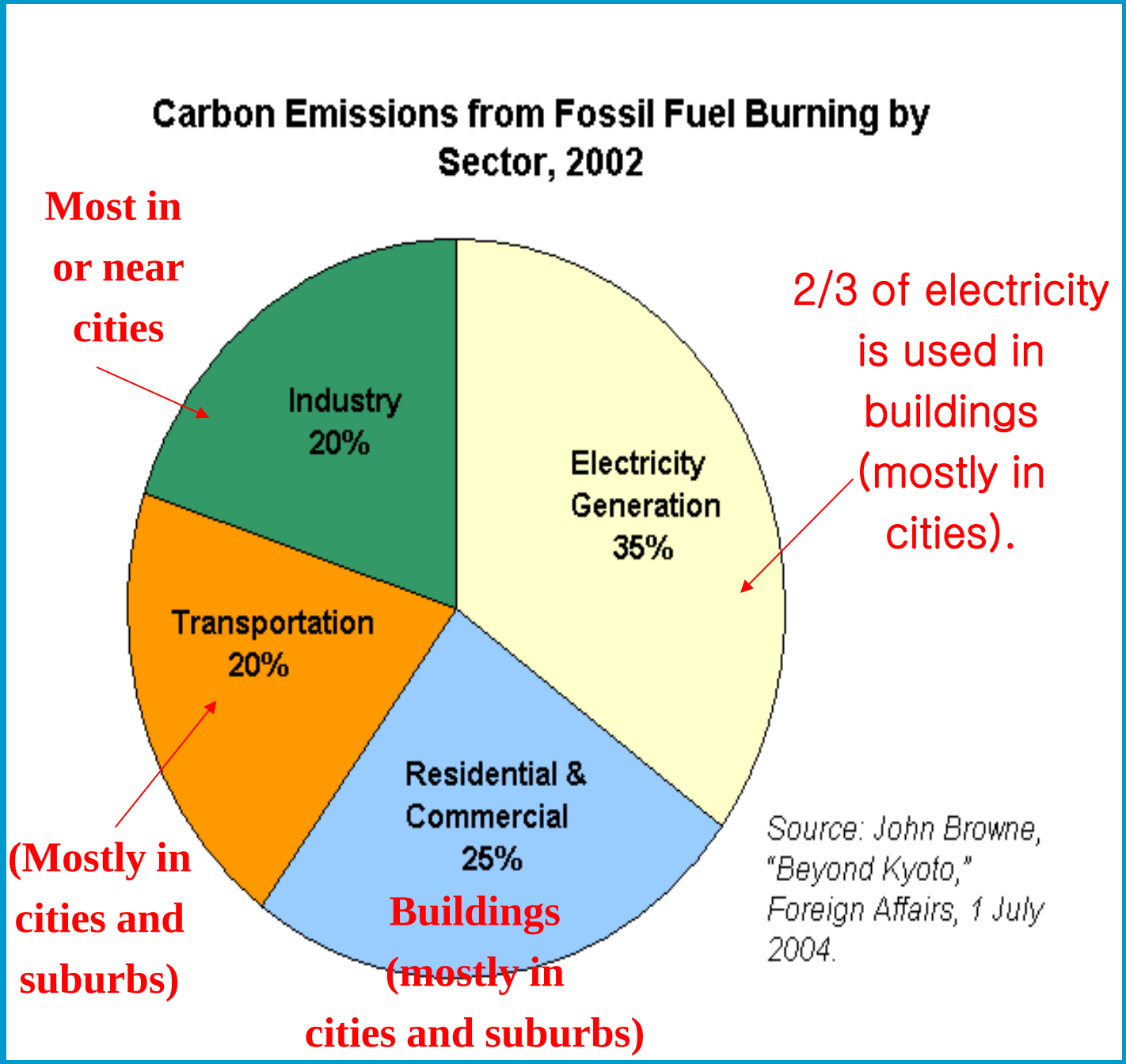
1. The only viable option to secure the continuity of urban civilization is a system-wide turn to a broad portfolio of renewable energy sources

2. A global and open escalation of the simmering war over fossil resources is inevitable without a broad and world-wide introduction of renewable energy sources (P. Droege, the Renewable City, 2006)

3. The vision of renewable city requires a rethinking of urban-regional alliances as well an adoption of increasingly firm industry promotion practices.

4. Daegu city is in the process of investing in renewable energy producers with the dual aim to reduce its fossil fuel dependency and to promote the development of more advanced industries.

Cities **are keys in the reduction of energy and global warming gases** —*energy efficiency* and the use of *non-carbon energy resources*



Solar Cities mission

1. is to introduce new and renewable energy sources in cities and towns

2. is to lower greenhouse gas emissions and fossil fuel dependency

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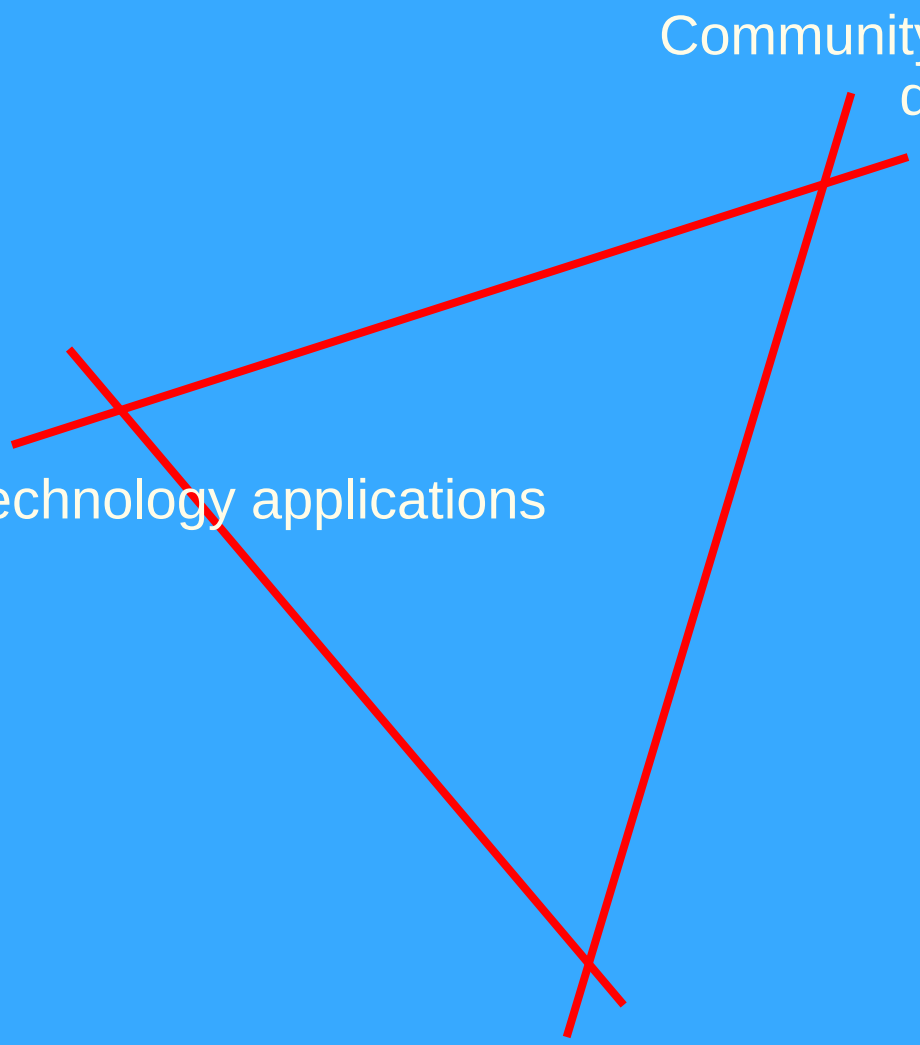
Solar City's scope



Local generation and convergence

1. From centralized single source supply to regional resources, micro power and distributed energy management systems
2. Convergent innovational technologies: ITT&E (information technology, telecom and energy management).

Solar Cities subtasks

1 City strategies and planning tools

2 Baseline studies, targets and scenarios

3 Renewable energy technology and business

international best practice / learning in action

Sustained Actions for SC

Legal & Educational Framework	Ratification of the Basic Act on Solar City Developing Academic Curricula for New and Renewable Energy
Strategic Approach	Systematic approach covering Industrialization(SCRM/PRM), Larger Deployment(demo projects Infrastructure(code/DB), Markets(commercialization)
Green Budget & Fund	Re-orientation of private-public finance toward green (policy, R&D, SOC)

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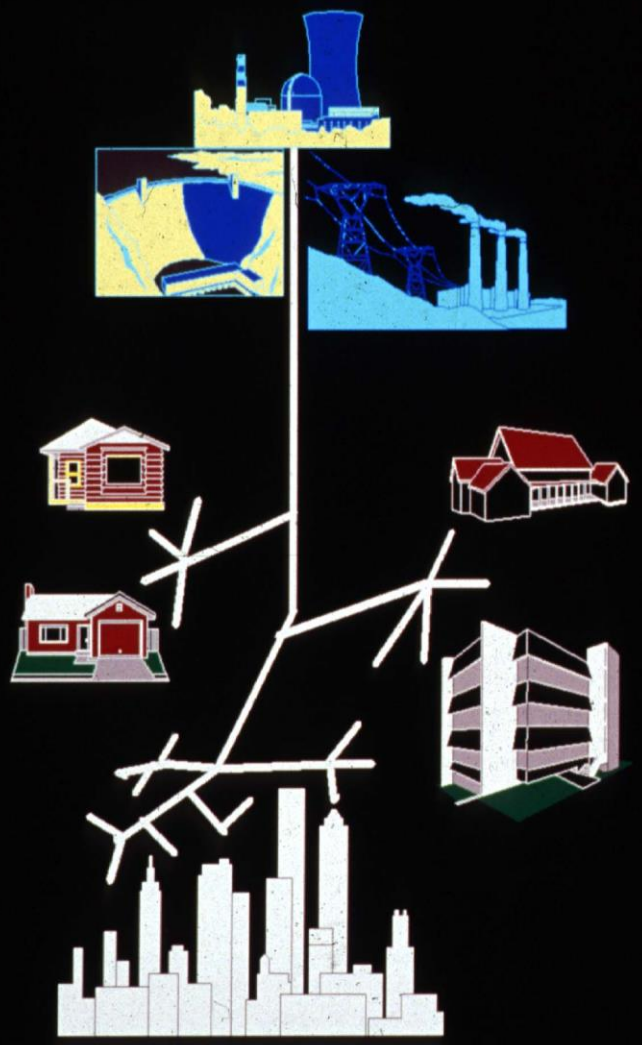
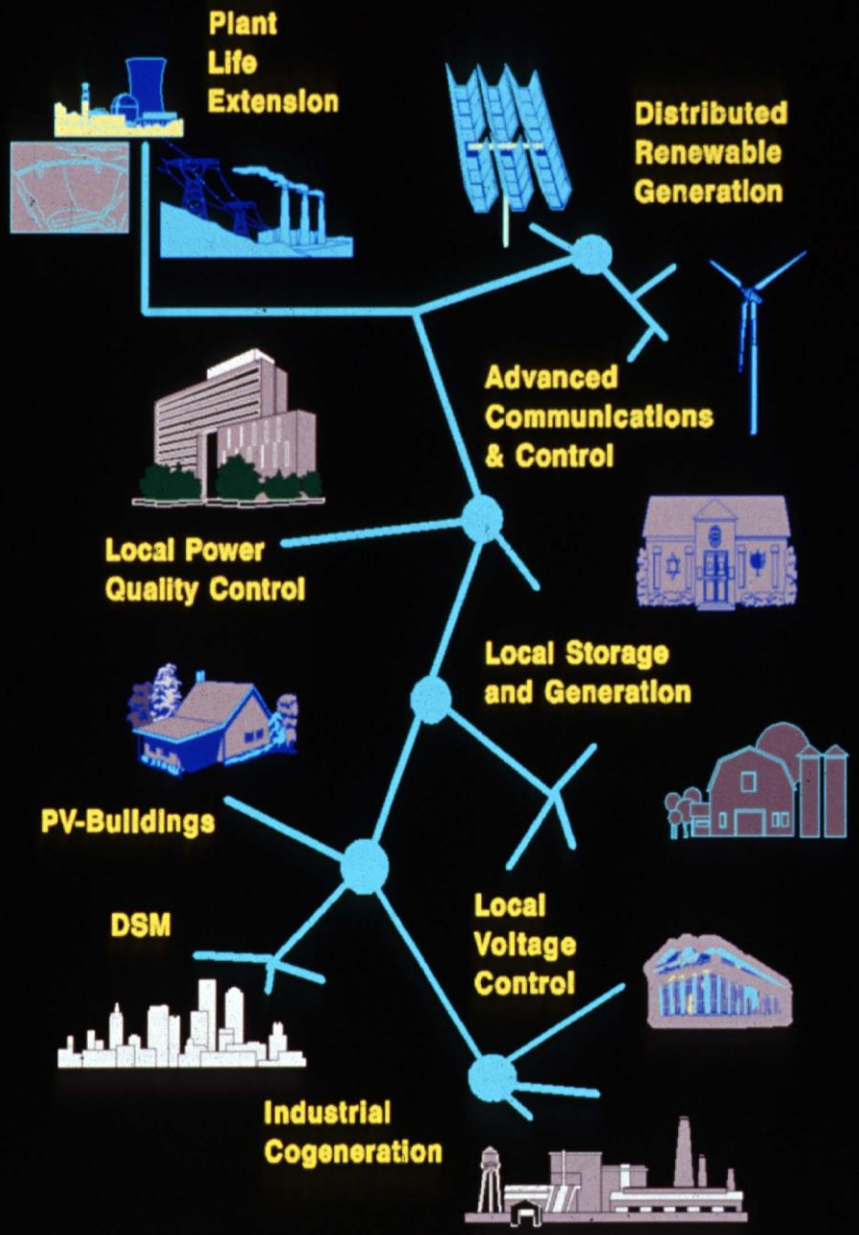
Central Supply



Distributed Utility



Overview Solar City Daegu

1. to introduce energy efficiency and renewable energy technologies in cities and towns
2. to lower greenhouse gas emissions and fossil fuel dependency
3. to continue 2000's Solar City Daegu Plan through the first ISCI Congress(2004.11), SCD 2050, and Green City Plan(2009.9)
4. Deginated as PV and Hydro/Fuelcell special city by Central government(2009)
5. World Energy Congressy Special City(2013)

Solar City Daegu Project, 2000

	Major Projects
Institution Building	**Project 1**: Center for Solar city Daegu **Project 2**: Enacting Solar City Code **Project 3**: Solar City Daegu 2050 Plan
Solar City Tour	**Project 4**: Solar Tour Program **Project 5**: Solar Techno EXPO
Solar Thermal Utilization	**Project 6**: Solar Thermal System for Residential Buildings **Project 7**: Solar Thermal System for Public Facilities **Project 8**: Solar Heating System in Greenhouse
Solar Power System	**Project 9**: PV Street Lights **Project 10**: PV System for Residental Buildings **Project 11**: PV System for Commercial Buildings
Solar Energy Complex	**Project 12**: Green Village **Project 13**: Solar School
Other Renewable Energy	**Project 14**: Wind Power **Project 15**: Small Hydro Power **Project 16**: LFG
Greening City	**Project 17**: Planting Tree for Life **Project 18**: Vehicle Fuel Switch

International Solar Cities Congress 2004

Develop energy science complex.

PV, Solar thermal power, small hydro etc. by utilizing sewage disposal facilities

Eco-Energy Complex

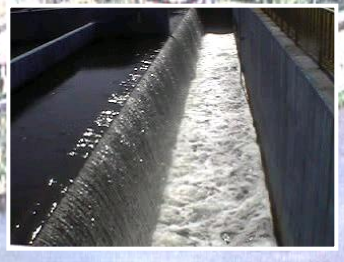
Solar Thermal Power (plan)

PV 600kW, $ 7.5 mil.

Wind Power (plan)

Solar Village Model (renewable energy) $ 691,667

Small Hydro 200kW, $ 416,667



Eco Park

Eco Park

Sin-Cheon Eco-Energy Park, PV 479kW

Land Mark of Solar City Daegu

Solar Heat Power Plant(200Kw)

Solar Campus

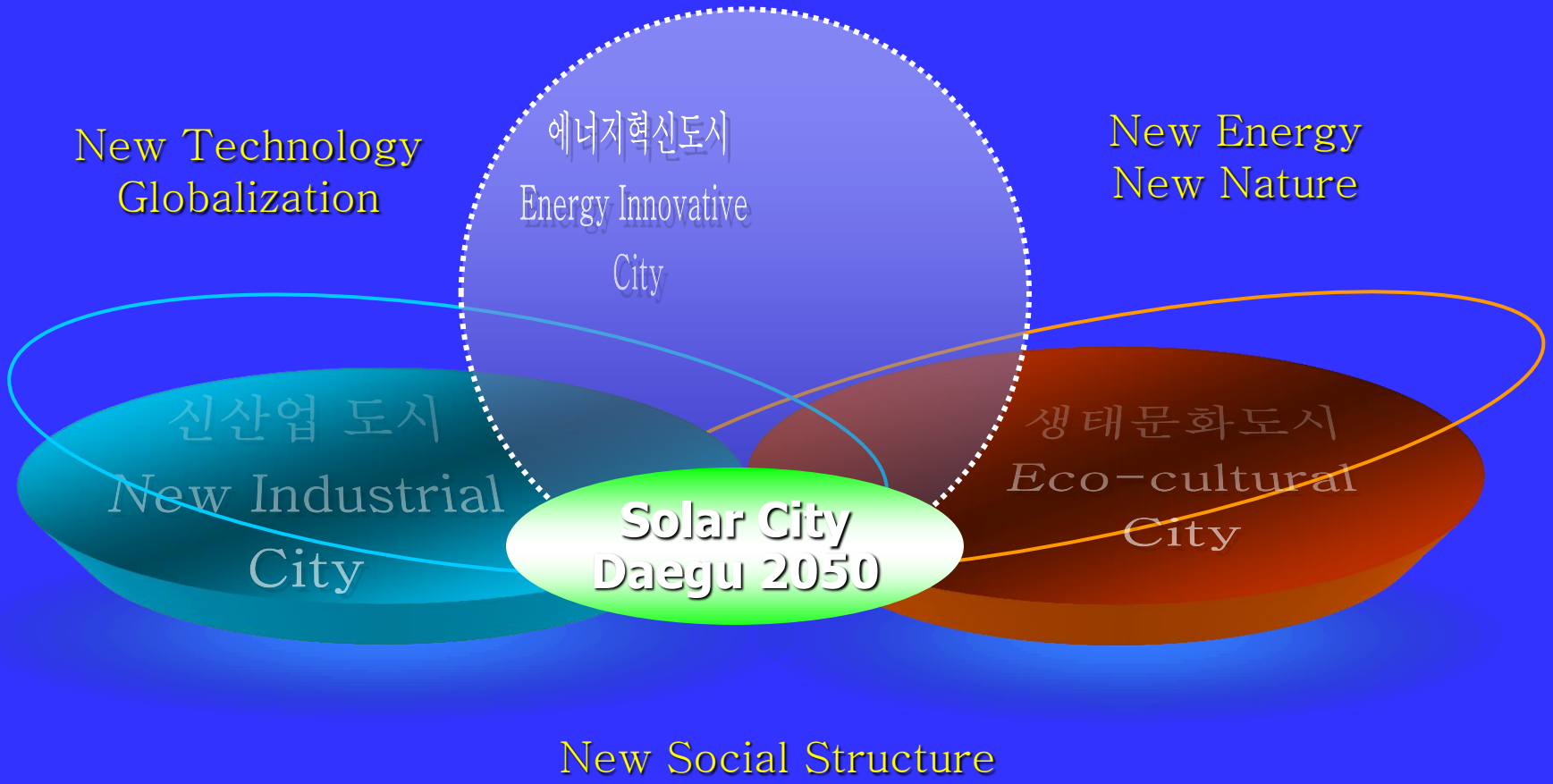
KNU Solar Thermal System, no. 120

KNU Dormitory PV, 50kW

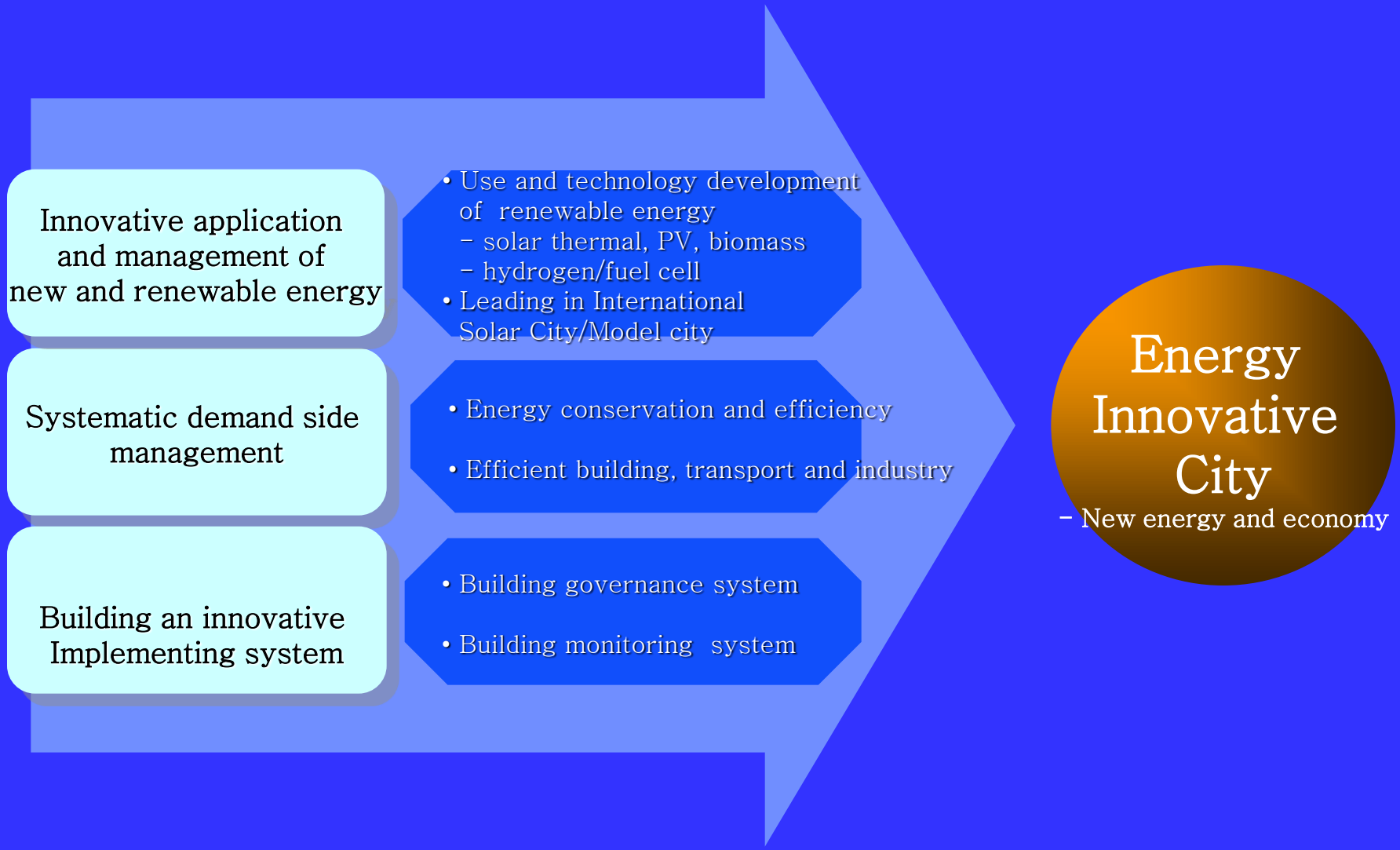
Kye-myung Univ. PV, 20kW

KNU Fountain , PV,3kW

Solar City Daegu 2050 Creating A Green and New Econom



Energy Innovative City



New Industrial City

Solar Economy

- Production of raw materials
- Manufacturing of module and system
- Installation and management of system

Hydrogen Economy

- Production of hydrogen
- Transportation/Storage of hydrogen
- Fuel cell(vehicle, residential and commercial use and utility)

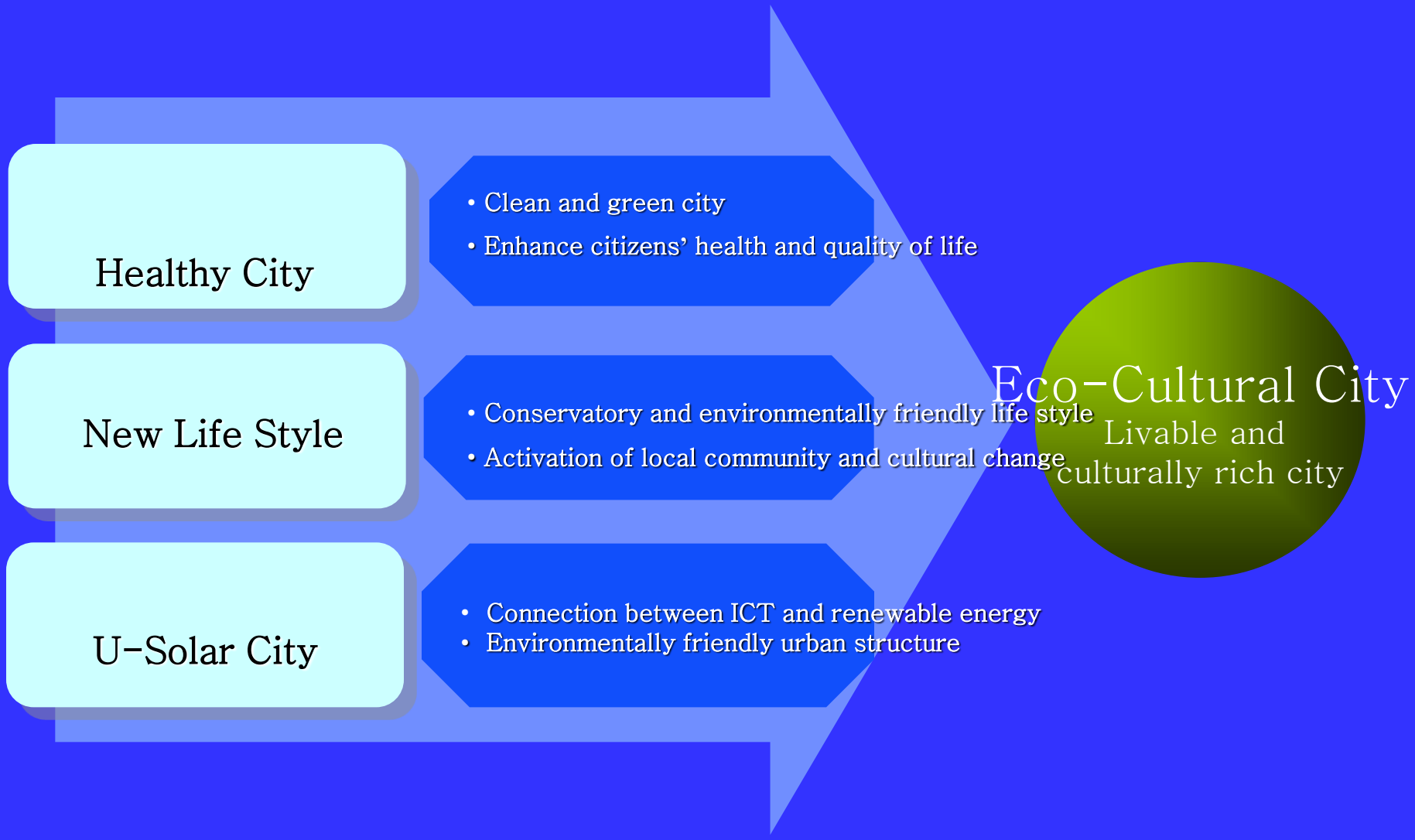
Industrial Cluster for Renewable Energy

- R&D research institute and industry (renewable energy, IT, BT, NT)
- Connection to public building and innovative city development

New Industrial City

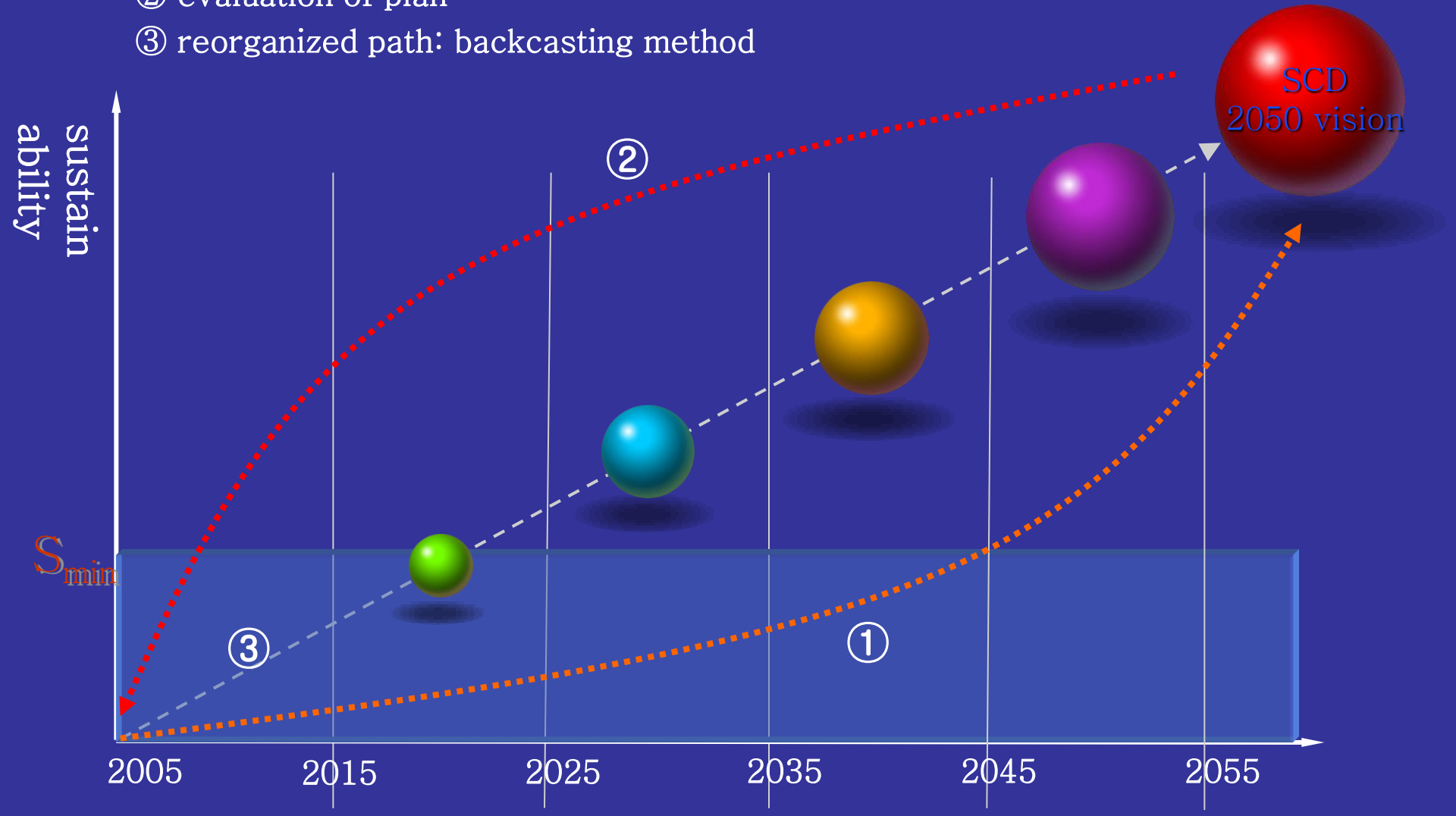
– Creating new industry and employment

Eco-Cultural City

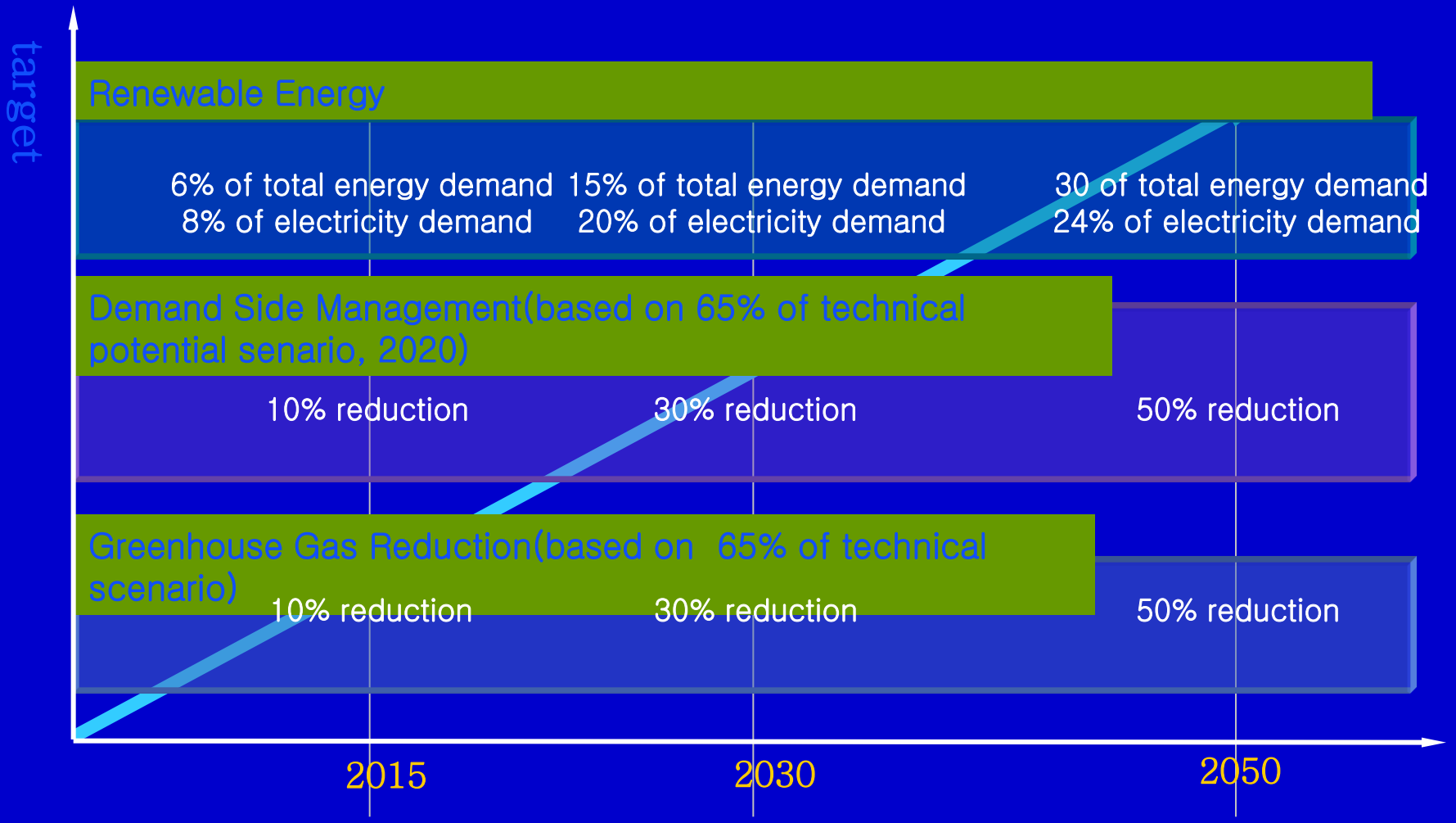


SCD 2050 Methodology

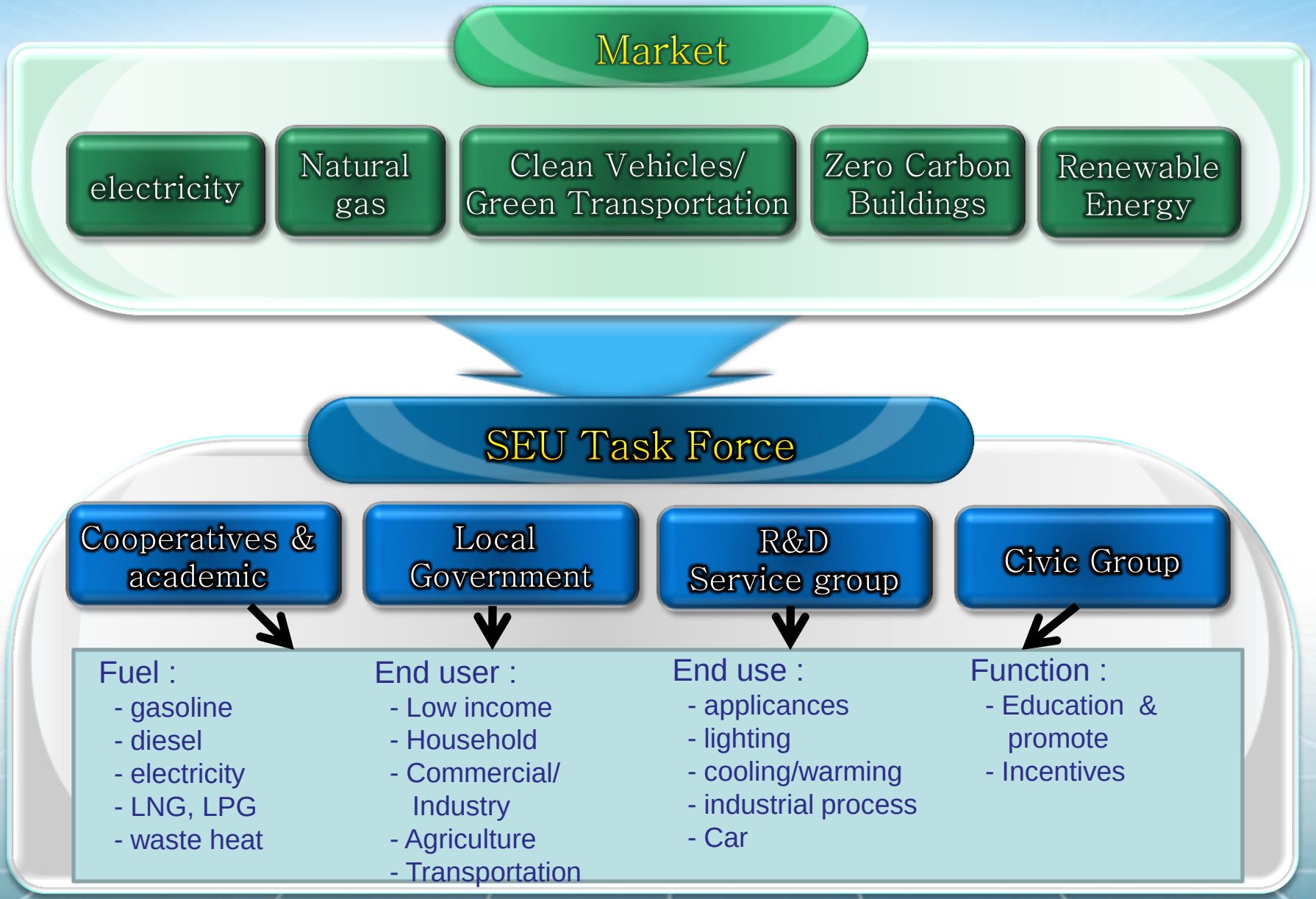
① planned path
② evaluation of plan
③ reorganized path: backcasting method



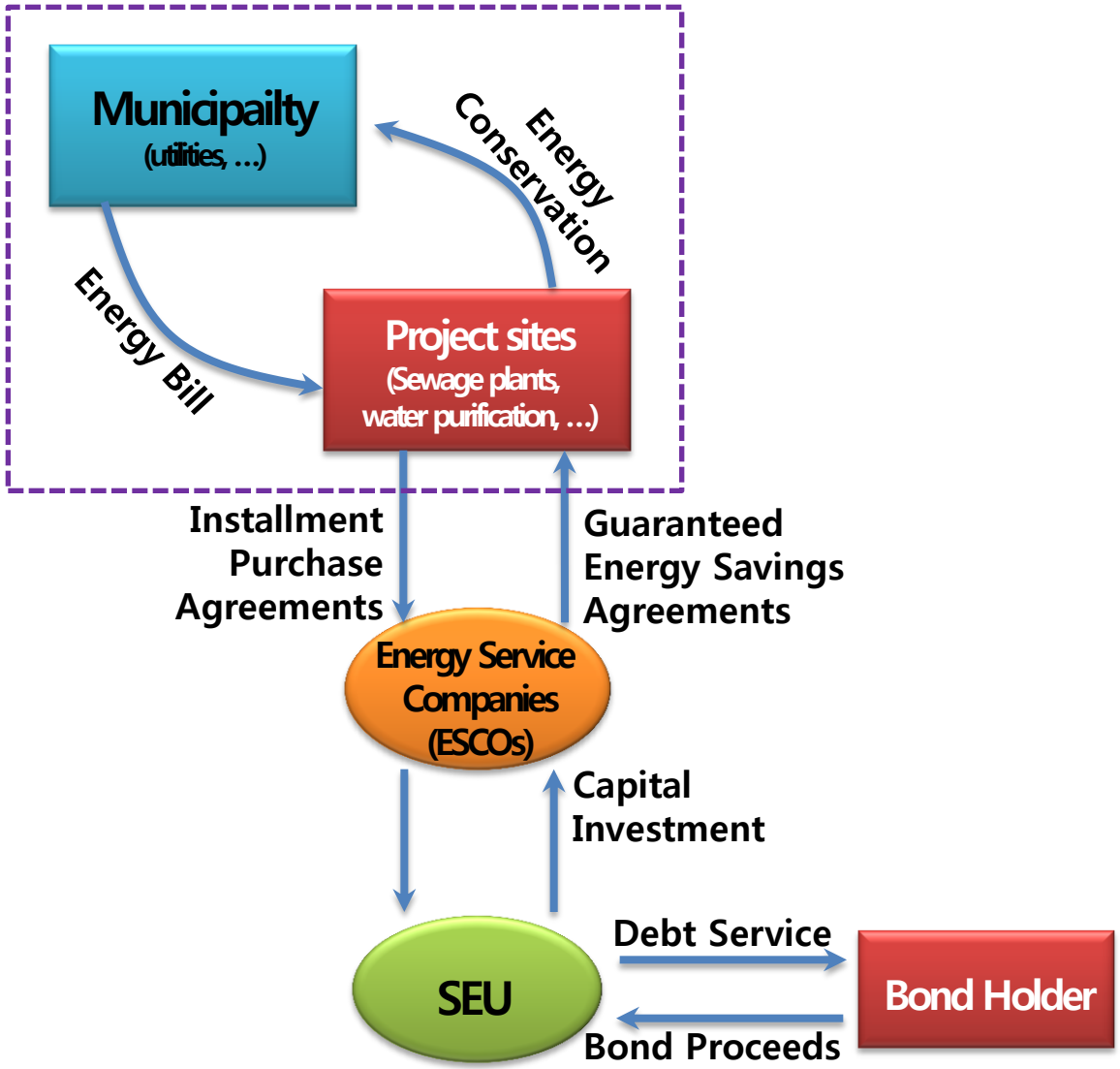
Major Targets for SCD 2050



Organization for SEU



Financial mechanism of SEU



Solar City Project can be simple extension of industrial development or real acceration of sustainable devopment.

That is dependent on energy and urban transition