

SIEAC REVIEW OF “ONE LESS NUCLEAR POWER PLANT, PHASE 2” PLAN



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III. Promotion Plans by Program

1. A City of Decentralized Energy Production

Goal: Expansion of decentralized power supply through increased new and renewable energy and cogeneration

Citizens' participation	Decentralized power supply	Production of new and renewable energy	Local specific energy
40,000 micro PV power plants	61MW non-utility cogeneration	300MW solar power and fuel cell	1.65 million Gcal cooling heat and incineration heat

III. Promotion Plans by Program

1. A City of Decentralized Energy Production

- Has the expansion of decentralized energy been planned against a Decentralized Energy Master Plan? If not, SMG will have no way of knowing whether their goals are capable of delivering or contributing towards a decentralized energy city.
- Has SMG taken into account the reduced energy requirements brought about by energy efficiency and passive design techniques? If not, there could over investment in decentralized energy generation.

III. Promotion Plans by Program

1. A City of Decentralized Energy Production

- Energy from all forms of waste, provides a great opportunity for decentralized energy city.
- SMG should adapt the existing citizen and building owner programs into community renewable energy programs.
- SMG should adopt a “Seoul Plan” for new development similar to the London Plan that has increased the deployment of energy efficiency, decentralized energy and renewable energy in London.

III. Promotion Plans by Program

1. A City of Decentralized Energy Production

- SMG should massively increase spending on energy efficiency in the BRP to reduce the need for energy generation.
- SMG should establish a Seoul Better Buildings Partnership similar to Toronto, London and Sydney.
- SMG should implement Environmental Upgrade Agreements similar to Sydney.
- Converting renewable gas from waste beyond Seoul into substitute natural gas and injecting it into the gas grid for transport into Seoul is more economic and recovers more renewable energy at end use than exporting renewable electricity into the electricity grid or building long distant district heating networks.

III. Promotion Plans by Program

2. Energy Efficient, Low Energy Social Structure

Goal: A low-energy city using energy efficiently

BRP	LED Distribution	Eco-friendly Transportation	Urban Planning
Systematic energy diagnosis ('15) Disclosure of energy efficiency ('15)	Public 100% ('18) Private 25% → 65% ('18)	Increase of congestion charge EV 14,000 cars	Publication of energy maps Enhanced environmental reviews

III. Promotion Plans by Program

2. Energy Efficient, Low Energy Social Structure

- Publishing electricity maps only may reinforce the status quo centralised energy system against SMG's goals. SMG should utilize electricity (and gas and heat) maps to develop their own Energy Efficiency and Decentralized Energy Master Plans.
- SMG should identify the range of measures in the BRP and significantly improve the thermal energy performance of buildings. Energy efficient appliances should also be included.
- SMG should include solar water heating and solar thermal heating and cooling in their programs since this will reduce electricity and gas consumption.
- Impressive LED lighting program but natural daylight measures should be prioritised in buildings to reduce the need for artificial lighting.
- LED lighting should be designed for illumination rather than 'like for like' lamp replacement and be the next generation of controlled LEDs.

III. Promotion Plans by Program

2. Energy Efficient, Low Energy Social Structure

- SMG should should prioritise walking/cycling by providing safe pedestrian routes and cycle-ways, followed by low and emission public transport to reduce the need for personal mechanical transport.
- SMG should target electric and hydrogen transportation from renewable energy programs, eg, the Ecotricity scheme in the UK and Euro HyFive project in Europe.

III. Promotion Plans by Program

2. Energy Efficient, Low Energy Social Structure

- SMG should develop a '*biogaspartner*' project similar to Germany's renewable gas grid injection program.
- SMG should continue to make a detailed inventory of CO₂ emissions, together with noxious emissions from fossil fuel plant and the waste heat evaporated into the atmosphere and water used by fossil fuel and nuclear energy power stations so that citizens can see the full environmental impact of centralised energy power generation and what would be displaced by energy efficiency and decentralized energy.

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

Goal: Seoul, Green Special City! Cultivation of Green Industries

Green Industry Clusters	Citizen Energy Business	Local Energy Service	Green Industry Support
6 green clusters	70 social enterprises & co-ops	25 energy hub centers	Support for 234 startups

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

- BEMS can be integrated with energy metering, control and smart grids operation.
- Electricity smart metering and smart grids are out of date compared with Europe. For example, Denmark integrates electricity, gas and district heating grids into a common smart metering and smart grid system allowing the interchange and storage of different forms of energy.

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

Promotion Directions for Seoul Type Green Energy Clusters

STEP 1 (14~15) Pilot Operation	STEP 2 (15~17) Expansion	STEP 3 (17~18) Outcomes
Creation of pilot cluster	Expansion of clusters	Cluster convergence
<ul style="list-style-type: none">▸ G-Valley New & Renewable Energy Pilot Cluster	<ul style="list-style-type: none">▸ Public contest-based selection of areas with a concentration of green businesses▸ Consortium of district offices, colleges, research institutions, and local civic organizations	<ul style="list-style-type: none">▸ Joint R&D and production of convergence products such as solar panel and LED▸ Cultivation of self-reliant global clusters

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

- SMG should include the industry sector as well as the residential and commercial sectors in the program plans since energy efficiency and decentralized energy in the industry sector can not only reduce centralized energy generation and emissions it can also provide opportunities for interconnecting community with district heating/cooling and power.

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

Creation of Local Jobs in the Area of Energy Services

Northern Seoul Green Consumer Alliance	Eastern Seoul Green Consumer Alliance	Eco-Hub	Seongdaegol Village
 A storefront for the Northern Seoul Green Consumer Alliance. The entrance is decorated with a white tablecloth and various items. A sign above the entrance features a green circular logo and Korean text.	 A storefront for the Eastern Seoul Green Consumer Alliance. The building has a prominent green facade and large glass windows. A sign above the entrance is visible.	 The interior of an Eco-Hub. Two people are standing in the space, which has a clean, modern look with white walls and a large map of Korea on the wall. The word 'ecohub' is visible on a wall panel.	 A storefront for Seongdaegol Village. The building has a brick facade and a large glass entrance. A sign above the entrance is visible.

III. Promotion Plans by Program

3. Innovation Based, Better Energy Workplaces

- SMG should include education and training (universities, colleges and vocational) as one of its promotion plans by program to maximise local jobs capacity. Education and training is key if SMG's goals are not be held back by a lack of education and training in the clean energy sector.

III. Promotion Plans by Program

4. Energy Sharing, Warm Communities

Goal: Presentation of Basic Rights to Energy Welfare and
Realization of Sharing through Communities

Responsibility for
Energy Welfare

Energy Welfare
Ordinance -
Korea's first

Citizen
Engagement

100,000 citizens
participating in the
Welfare Fund

Transfer &
Efficiency

Insulation work for
1,100 low-income
households

Communities

200 energy
self-reliant villages

III. Promotion Plans by Program

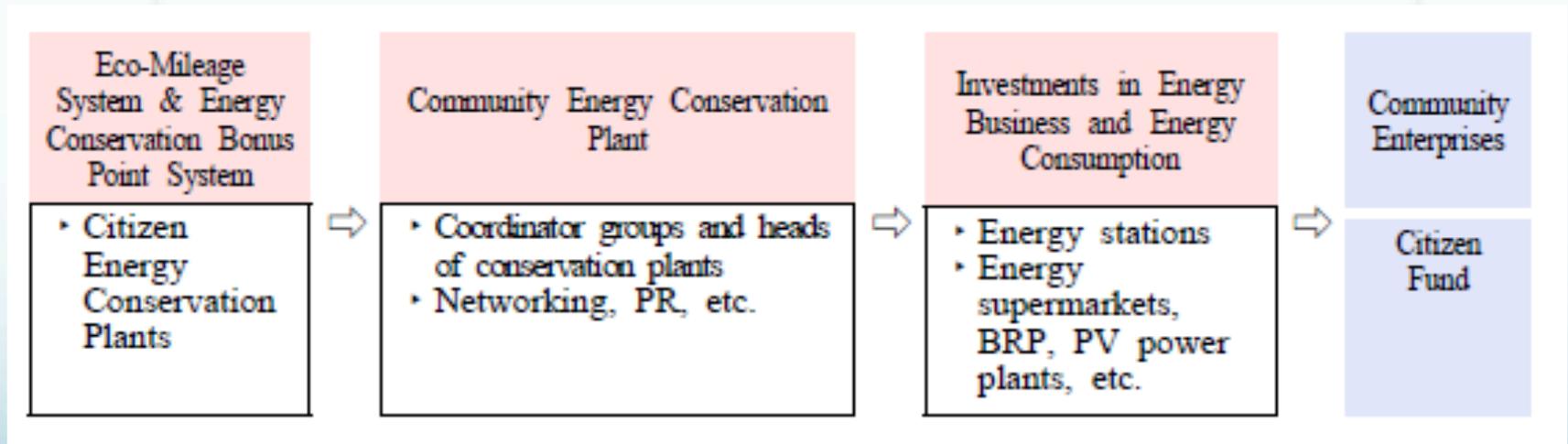
4. Energy Sharing, Warm Communities

- SMG should adopt a fuel poverty definition and target similar to the UK where a home spending more than 10% of total income on heating is deemed to be in fuel poverty.
- SMG should implement a comprehensive tackling fuel poverty program similar to the Woking model where the energy efficiency of the public and private sector housing stock as a whole was improved by 33% from 1996 to 2006 and Woking's ESCO supplied both low cost electricity and heating to residents.
- SMG should extend the range of stakeholders to capitalize on citizen-donated funds for community renewable energy, etc.
- SMG should adopt 100% renewable energy programs similar to the Jühnde Bioenergy Village project.
- SMG should establish a Business Council for Sustainable Seoul, chaired by SMG and comprising city business leaders and others to ensure matched funding.

III. Promotion Plans by Program

4. Energy Sharing, Warm Communities

Laying the Foundation for Local Energy Communities

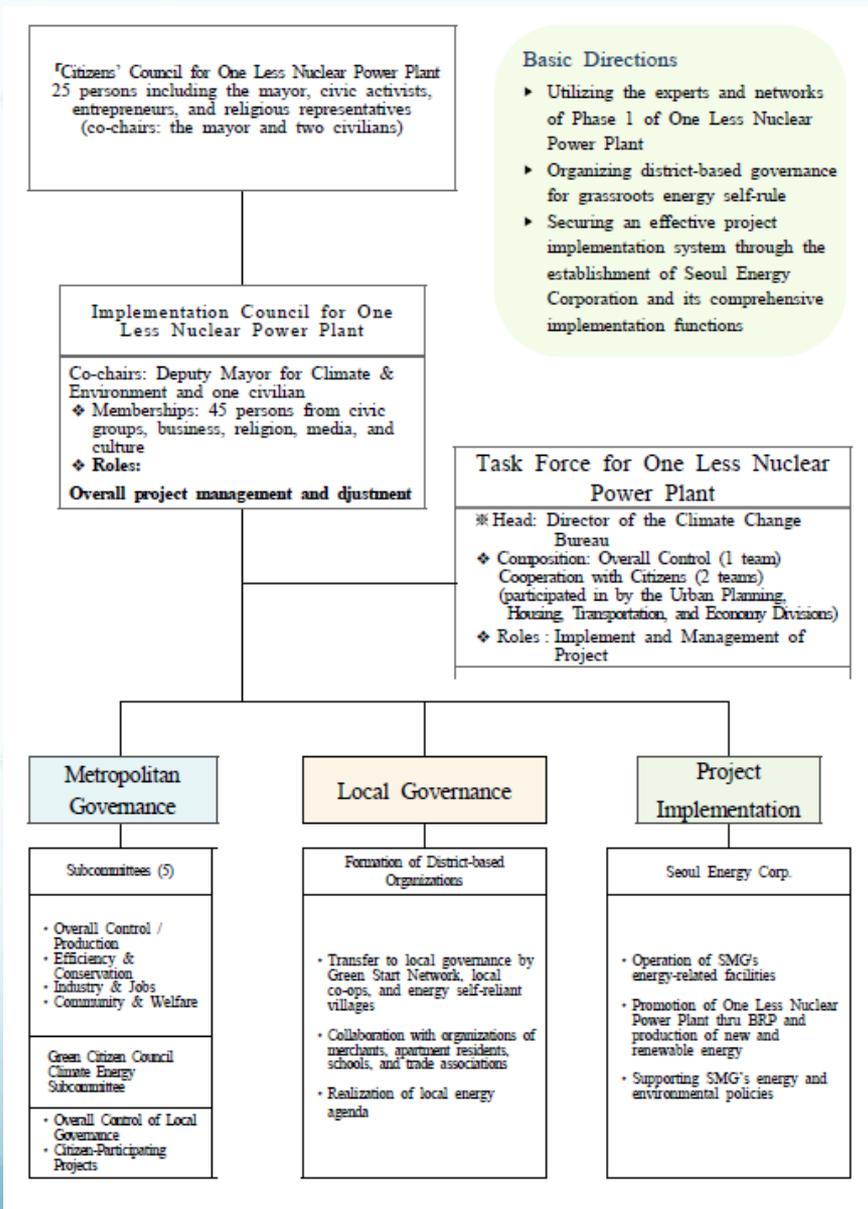


III. Promotion Plans by Program

4. Energy Sharing, Warm Communities

- SMG should include climate change adaptation measures to not only protect the community against extreme climate change events but also to ensure the resilience of the decentralized energy infrastructure so that it can operate in island generation mode in the event of the failure of the national grid.

IV. Implementation Systems



IV. Implementation Systems

1. Establishment of Energy Collaboration System Through “Seoul Energy Governance”

Establishment of Energy Collaboration System through “Seoul Energy Governance”

Stage 1: Development of Local Hubs

- Discovering and training local leaders for the development of energy policies

Stage 2: Local Agenda Setting

- Presenting the energy code of conduct considering the local characteristics
- Identifying suitable specialization projects like solar energy and LED

Stage 3: Networking

- Enhancing local leaders' competency through public programs
- Activation of networking with resident organizations, schools, etc.

IV. Implementation Systems

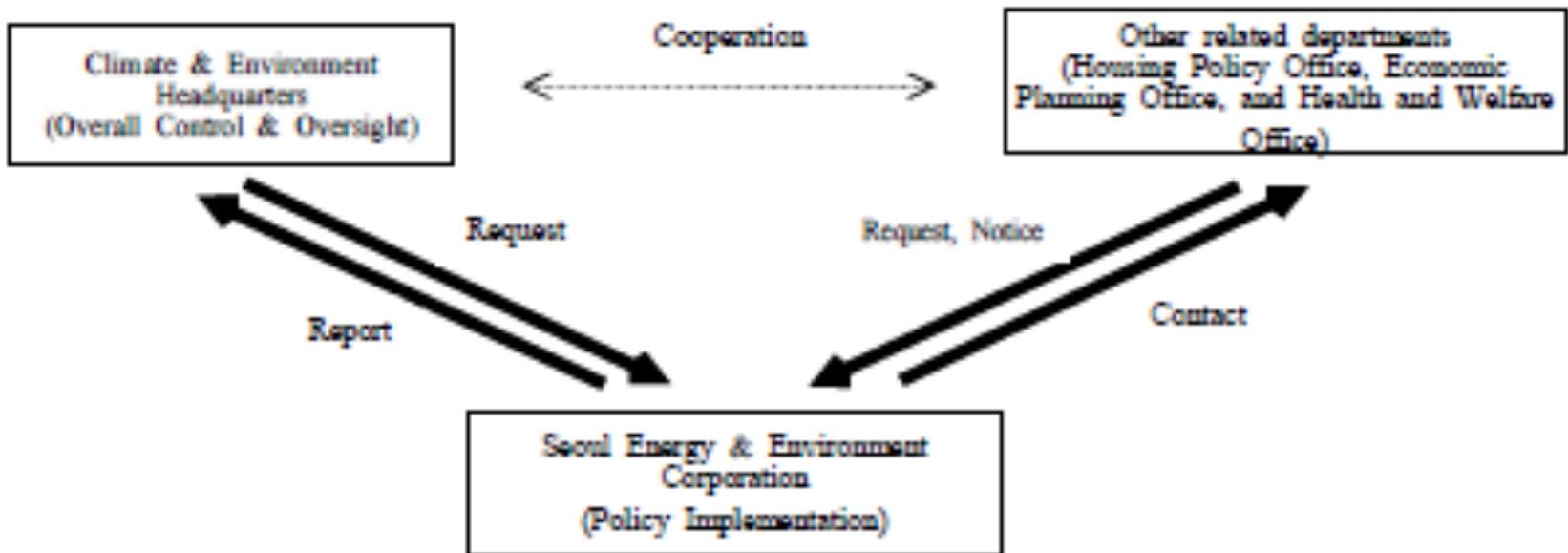
1. Establishment of Energy Collaboration System Through “Seoul Energy Governance”

- SMG should include SIEAC in the governance structure.
- SMG should consider organizing the Implementation Council into Sub-Committees by energy service.

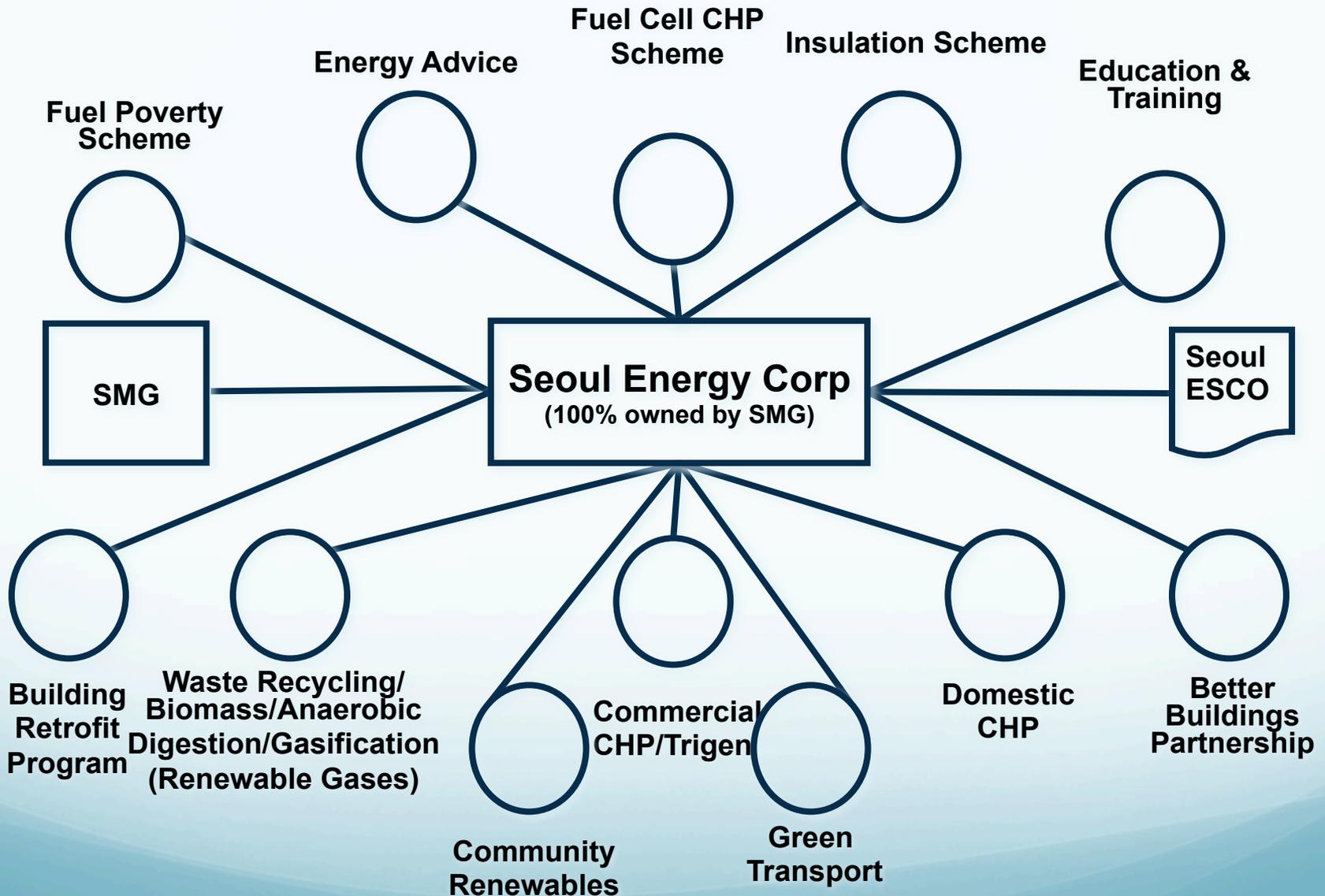
IV. Implementation Systems

1. Establishment of Energy Collaboration System Through “Seoul Energy Governance”

Establishment of “Seoul Energy Corp. To Improve Performance



Seoul Energy Corporation



Seoul ESCO Company Structure

