From Fragmentation to Integration: Development Process of Innovative Clusters in Korea

KONG-RAE LEE

SCIENCE & TECHNOLOGY POLICY INSTITUTE (STEPI)
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Introduction

- Concept: “Networks of production of strongly interdependent firms, including specialized suppliers, linked to each other in a value-adding production chain.” (Roelandt, 1999)
  - Encompass strategic alliances with knowledge producing institutions, knowledge-intensive business services, bridging institutions and customers
Innovative clusters respond more quickly to changing market dynamics so as to achieve higher economic performance.

Policy tools to promote innovative clusters are likely to vary depending upon the development stage of countries or regions.

My presentation introduces the development process and some policies for promoting of innovative clusters.
Development Process: Formation Stage

- **Construction of industrial complexes**
  - Built in green farm fields from 1962
  - At least one industrial estate in every province
  - Provided at greatly discounted prices

- **Major related policies**
  - “Regional Industrial Development Law” (1969)
  - “Heavy and Chemical Industry Development Plan” (1973)
Selected Production Clusters

- Inchon
  - Transportation equipment
- Suwon
  - Electronics
- Ichon
  - Electronics
- Asan
  - Motors
- Kwangju
  - Motors
- Kumi
  - Electronics
- Yochon
  - Chemicals
- Kwangyang
  - Iron and steels
- Koeje
  - Shipbuilding
- Cangwon
  - Machinery parts
- Pohang
  - Steels, New materials
- Ulsan
  - Motors, Chemicals, Shipbuilding

Selected Cities:

- Ulsan
- Inchon
- Suwon
- Ichon
- Asan
- Kwangju
- Kumi
- Yochon
- Kwangyang
- Koeje
- Cangwon
- Pohang
Development Process: Extension Stage

- Local governments recognized the importance of science, technology and the function of R&D
  - Wishes to locate not only business firms but also R&D institutes concurrently
  - Added the word "science" to the industrial parks: “Science and Industrial Park”

- R&D clusters add production function and
  - Production clusters extend to R&D function
Development Process: Integration Stage

- Private firms recognized importance of knowledge in the creation of new products and processes
  - interested in local knowledge-creating institutions

- Firms have deepened both vertical and horizontal networks including universities and public research institutes around their hub companies

- Government also provided incentives for
Korean Model of Innovative Clusters

- **Formation**
  - Traditional clusters
  - Production clusters
  - R&D clusters

- **Extension**
  - Establishment of in-house R&D

- **Integration**
  - Networks with public R&D institutes
  - Creation of spin-off companies
  - New entries
  - Networks with firms outside clusters

- Innovative clusters
Cluster Policies

- **National advantage model**: improve the national advantage of certain sectors by identifying competent clusters.

- **Inter-firm networking model**: increase the strengths of small and medium sized firms through networking.

- **Regional development model**: improve the attractiveness and economic performance and development of specific regions.

- **Industry-R&D clustering model**: intensify industry-R&D
## Policy Tools to Promote Clusters in Korea

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<td>- Commercialization of R&amp;D results NTBF supports</td>
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RRC Policy Program in Korea

- **Initial objective:** establish a regional research network among research agents having a common interest
  - A consortium to do a cooperative research and supported by the MOST

- **Novelty:** integration of community, national and regional through a trilateral relationship
  - 104 universities (37 RRCs) have participated by 1999

- **RRCs have been playing an important role for both**
  production clusters and R&D clusters to evolve into innovative clusters
Regional boundary of an innovative cluster

U1–U3: User firms
S1–S6: Supplier firms
RU1–RU3: Regional universities
P1–P3: Public research institutes
CNA: Central network agent
RRC Policy Program in Korea

- A university composes a trilateral relationship among local firms, government and other R&D agents makes proposal
  - MOST composes a special committee to examine proposals

- MOST initially supports RRCs for the first three years, then evaluates their performance
  - RRCs can be supported by the MOST up to nine years

- On average, private firms accounted for 26%, universities for 23.4%, MOST for 34.4%, local government for 16.1%
Conclusions

- Korea is in the integration stage in the development of innovative clusters.

- The government pursued networking policies in the recognition that clusters with fragmented functions are vulnerable to changes in the external environment.

- RRC policy program has been one prominent example to establish a regional research network and greatly contributed to the formation of...