Disseminating the KIST Model:
A Case of V-KIST

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Content

1. Introduction to KIST
2. KIST’s Contributions to Korea’s Economic Development
3. V-KIST Project
4. V-KIST & Gender Equality
KIST focuses on **Frontier and Global-Agenda Research** by concentrating on large-scale, long-term, and interdisciplinary R&D projects, thereby strengthening its role as a public research institute and differentiating itself from academia and industry.
KIST at a Glance

Research Institutes & Divisions

- Brain Science Institute
- Biomedical Research Institute
- Green City Technology Institute
- Post-Silicon Semiconductor Institute
- Robotics and Media Institute
- Materials and Life Sci. Research Division
- National Agenda Research Division

[Map of global locations with KIST locations highlighted]

Seoul Headquarters
Indo-Korea S&T Center
KIST Europe
KIST Gangneung
KIST Jeonbuk
CANADA UBC On-site Lab
USA DFCI (GIRC)

No. of Staff

- Researchers: 738
- Technicians/Clerks: 90
- Specialists: 41
- Admin Staff: 91

Total ~ 2,344 staffs

R&D Budget

- Institutional Programs: $134 million
- Government Programs: $106 million
- Private Programs: $14 million

Total R&D Budget: $254 million as of December 2014

as of June 2014
KIST, Birthplace of S&T in Korea

- **KIST is the first government-funded research institute in Korea**

  - Joint Communiqué by Presidents of Korea & USA (’65. 5)
  - Agreement between Korea & USA (’66. 2)

- **Benchmarking Battelle Institute**
  - Industry-focused R&D is a more effective way to catch up for developing countries

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**Battelle**

*The Business of Innovation*

- Technology based
- Industry oriented

**VS.**

**Bell Laboratories**

- Research based
- Basic science
KIST’s Contributions to Korea’s Economic Development

1960s ~ 1970s
Think-tank for Industrialization

- Copper Covered Steel
- Masterplan for POSCO
- Development Plan for Heavy Chemical Industry

1980s ~ 1990s
Advanced Technology Research

- Synthetic Diamond
- Doping Analysis
- Lyocell

2000s
Leader in Frontier Research

- Capsule Endoscope
- Brain Science
- English Robot

KIST contributed to Korea’s economic development
Many developing countries are requesting KIST to share its experiences
The KIST Model Drawing Attention

Korean Science Institute: A Model for Developing Nations?

Science magazine article about the KIST Model
(Vol. 167, March 1970)

First Case in Assimilation of KIST Model

⇒ V-KIST Project
Why Vietnam?

**Socio-economic Facts**
- **Income level**: Lower middle income
- **GDP**: $186.2 billion (2014)
- **GPI per capita**: $1,890 (2014)
- **Population**: 90.73 million (2014)

Source: www.worldbank.org

**Achievements**
- **High economic & social development**
  - Solution: rise in per-capita income and reduction in poverty

**Challenges**
- **Middle-income trap**
  - Solution: stronger reliance on productivity gains driven by innovation
- **Low value-added economic activities**
  - Solution: structure change towards high technology for more sophisticated goods


Industrial technology R&D will further develop the Vietnamese economy
S & T in Vietnam

Current Status

- Science, technology and innovation (STI) capabilities are weak
- R & D is still a peripheral activity, in both the business and the public sectors
- There are great demands for technologies from the industry, but technology supply by public research institutes is insufficient

Global Competitiveness Report 2013-2014

Vietnam is ranked at 70th among 148 countries
For Innovation, Vietnam is ranked at 76th
For technical readiness, Vietnam is ranked at 102nd

R&D Budget

- Total R&D Budget : 0.6% of GDP
  (Korea case : 3.57% of GDP)
- 80% of total R&D budget is from Gov't
- Budget by Gov't : US$ 624 million in 2012

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministries and other state organization</td>
<td>953</td>
<td>43.3</td>
</tr>
<tr>
<td>Higher education</td>
<td>88</td>
<td>4.0</td>
</tr>
<tr>
<td>State-owned enterprises</td>
<td>33</td>
<td>1.5</td>
</tr>
<tr>
<td>Collective sector</td>
<td>893</td>
<td>40.5</td>
</tr>
<tr>
<td>Foreign</td>
<td>7</td>
<td>0.3</td>
</tr>
<tr>
<td>Individuals</td>
<td>182</td>
<td>8.3</td>
</tr>
<tr>
<td>Other</td>
<td>46</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>2,202</td>
<td>100</td>
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</table>
## Analysis on S&T in Vietnam

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Sizeable labor force and favorable demographics</td>
<td>▶ Low level productivity and income</td>
</tr>
<tr>
<td>▶ Substantial national education effort and good secondary education performance</td>
<td>▶ Inadequate framework conditions and disincentives for innovation</td>
</tr>
<tr>
<td>▶ Attractive for investment to multinational enterprises</td>
<td>▶ Low level of sophistication in production and exports</td>
</tr>
<tr>
<td>▶ Reputation for strong performance in S&amp;T fields such as mathematics and specialization in agricultural research &amp; biology</td>
<td>▶ Little innovation and even less R&amp;D capacity in the business sector</td>
</tr>
<tr>
<td>▶ Weak public sector research</td>
<td>▶ Weak S&amp;T infrastructure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ To further develop the human capital and skills base involving the sizeable Vietnamese diaspora</td>
<td>▶ Unfavorable macroeconomic developments and a slowdown in growth</td>
</tr>
<tr>
<td>▶ To improve the effectiveness of the innovation system in terms of economic and social impact</td>
<td>▶ Increasing brain drain</td>
</tr>
<tr>
<td>▶ To diversify and upgrade the economy</td>
<td>▶ Failure to prepare for increased international competition</td>
</tr>
<tr>
<td></td>
<td>▶ A looming middle-income trap</td>
</tr>
</tbody>
</table>

# V-KIST Project

## Establishing Vietnam-Korea Institute of Science and Technology (V-KIST) in Vietnam Based on KIST Model

### Progress

- **Request for V-KIST Establishment** by the Prime Minister of Vietnam (March 2012)
- **MOU signing** between MOST and KIST (Oct. 2012)
- **Agreement signing** between two governments (Sep. 2013)
- **V-KIST Masterplan Project** (Dec. 2013 ~ July 2014)

### Outline

- **Location**: Hanoi, Vietnam
- **Period**: 2014.12~2019.6
- **Budget**
  - USD 70 million (50% from Korean gov’t & Vietnamese gov’t respectively)
- **Content**
  - Consultation, building construction, training program, research equipment, industrial survey, and joint research.

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Prime Minister’s visit to KIST (March 2013)  
Workshop for V-KIST Mater plan (April 2014)  
Project Agreement Signing (Sept. 2013)  
V-KIST Aerial View
## Essential Project Components for V-KIST

### Purpose
- Develop **Industrial Tech.** to promote Vietnamese economy
- Secure **Future Growth Engine** through fundamental R&D

### Philosophy
- New Research Institute with **Autonomy** and **Sustainability**
- Pursuing **Global Open Innovation**

### S&T Manpower
- Utilizing **Overseas Vietnamese Talents**
- **Competent Compensation and Status** should be guaranteed
  - Housing, job security, autonomy & other additional benefits

### Leadership
- **A Celebrated Scholar** with leadership
- **Strong leadership** in research & management

### P.P.P.
- **Public – Private – Partnership**
  - Support Vietnamese SMEs with technology development
  - Cooperate with Korean enterprises in Vietnam
V-KIST Research Areas

**Market-ready tech.**

- **Mechanics / Electronic tech.:**
  - Electronic components
  - Material tech.

- **Biology & Chemistry:**
  - Technologies for agricultural industry
  - Bio(Chemistry) tech.

- **Basic science:**
  - Plasma technology

**Future growth engine**

- **By 2020:**
  - Applied materials
  - Energy tech.
  - Environmental tech.
  - Medicinal bio-tech.

- **After 2020:**
  - Nano-tech.
  - Biomedical
  - Biomedical

By 2020

After 2020
### V-KIST Time Plan

<table>
<thead>
<tr>
<th>Common</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>June, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-off ceremony (Hanoi)</td>
<td>Ground-breaking Ceremony (Hanoi)</td>
<td>Building completion ceremony (Hanoi)</td>
<td>Completion briefing session</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Korea**

- **KIST**
  - Consultation: Establishment, operation, industrial survey, and etc.
  - Research equipment and intranet
  - Training programs (Degree program, short & mid-term program, and local training)
  - Consultation on building design and construction

**KOICA**

- Building design and construction

**Vietnam**

- MOST & HHTP
  - V-KIST decree
  - President appointment
  - Recruitment of researchers and staffs
  - V-KIST organization
  - Building approval, infrastructure for building and etc.
Expected Outcomes of V-KIST

Contribution to Industries
- Import replacement & export increase
- High value-added product

Improvement in National Awareness for Science & Technology
- Increased S&T manpower

Upgrade of National Innovation System (NIS)
- Securing effectiveness in R&D

Economic Development of Vietnam
Gender Issue : Vietnam

Vietnam Country Gender Assessment by the World Bank

⇒ Vietnam made remarkable progress on establishing gender equality, however, there remain some issues. The below is the list of remaining issues:

1. Poverty and Well Being
2. Employment and Livelihoods
3. Political Participation

Source: www.UN.org

Gender Gap in Vietnam

<table>
<thead>
<tr>
<th>Country</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iceland</td>
<td>1</td>
</tr>
<tr>
<td>Finland</td>
<td>2</td>
</tr>
<tr>
<td>Philippines</td>
<td>9</td>
</tr>
<tr>
<td>Singapore</td>
<td>59</td>
</tr>
<tr>
<td>Vietnam</td>
<td>76</td>
</tr>
<tr>
<td>Indonesia</td>
<td>97</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>117</td>
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Female Science Staff at VAST

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>% of Female</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Female</td>
</tr>
<tr>
<td>Prof.s</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>Assistant Prof.</td>
<td>158</td>
<td>30</td>
</tr>
<tr>
<td>Doctors</td>
<td>658</td>
<td>140</td>
</tr>
<tr>
<td>Masters</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Bachelors</td>
<td>848</td>
<td>322</td>
</tr>
<tr>
<td>Total</td>
<td>2208</td>
<td>692</td>
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</table>


Retirement ages at VAST

<table>
<thead>
<tr>
<th>Category</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher without Ph.D</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>Researcher with Ph.D</td>
<td>60</td>
<td>65</td>
</tr>
<tr>
<td>Professor</td>
<td>65</td>
<td>70</td>
</tr>
</tbody>
</table>
V-KIST & Gender Equality

V-KIST will contribute not only to economic development, but also gender equality in Vietnam

- Recruitment of Female Scientists in V-KIST Research Fields
  - *Biology and chemistry

- Female Friendly Working Infrastructure, Environment, and Welfare Conditions

- Equal Retirement Age

- Equal Opportunities in Training and Promotion
Thank you!