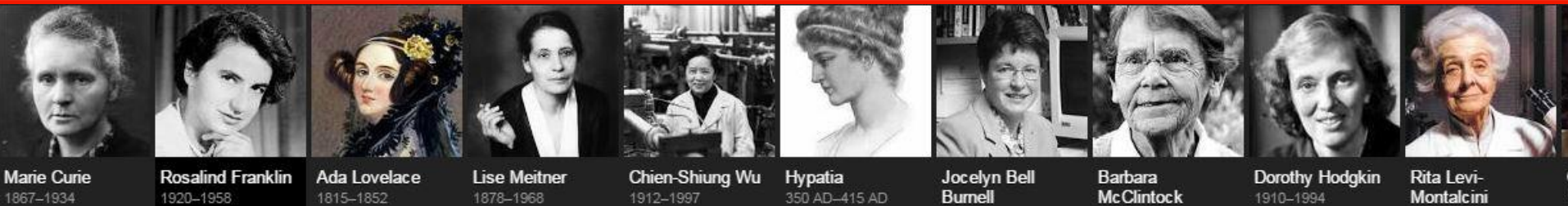




# Disseminating the KIST Model : A Case of V-KIST

Dr. Yang, Eun Gyeong  
Director, International Affairs Division  
KIST

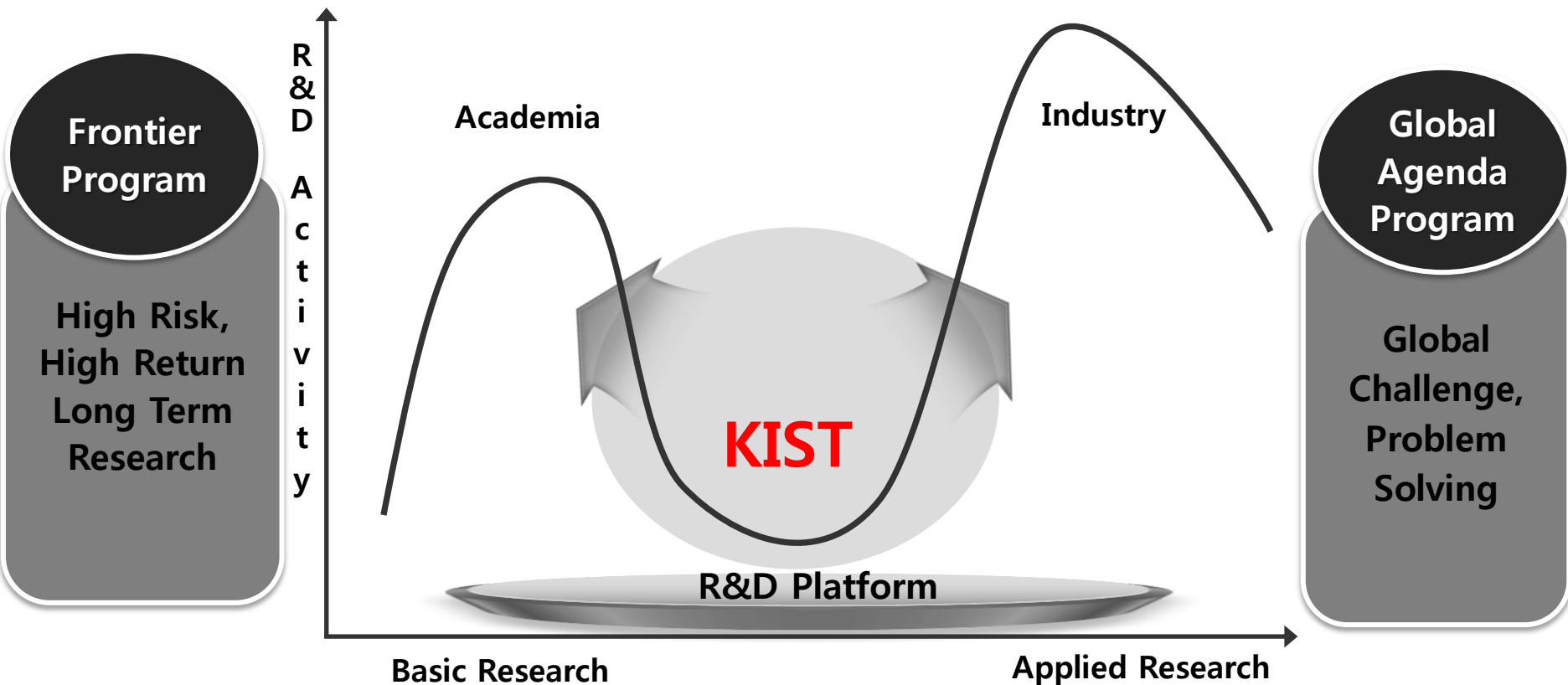
August 28, 2015





# KIST Mission & Role

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

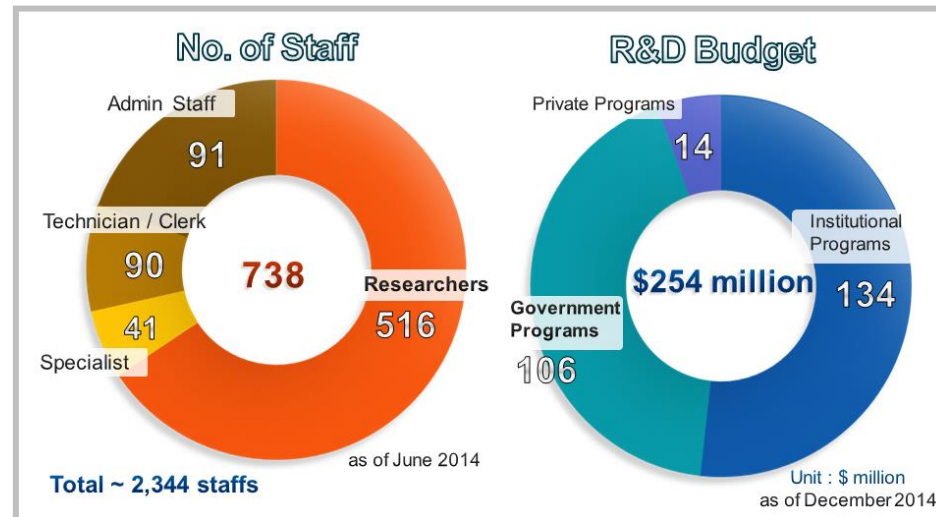
Green City  
Technology Institute

Post-Silicon  
Semiconductor  
Institute

Robotics and Media  
Institute

Materials and Life Sci.  
Research Division

National Agenda  
Research Division



# KIST, Birthplace of S&T in Korea

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



Joint Communique 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

# 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

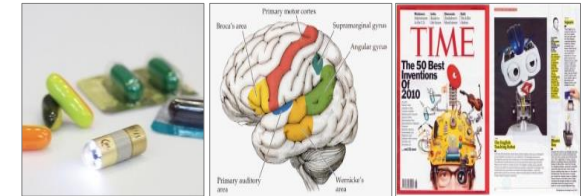


Synthetic Diamond

Doping Analysis

Lyocel

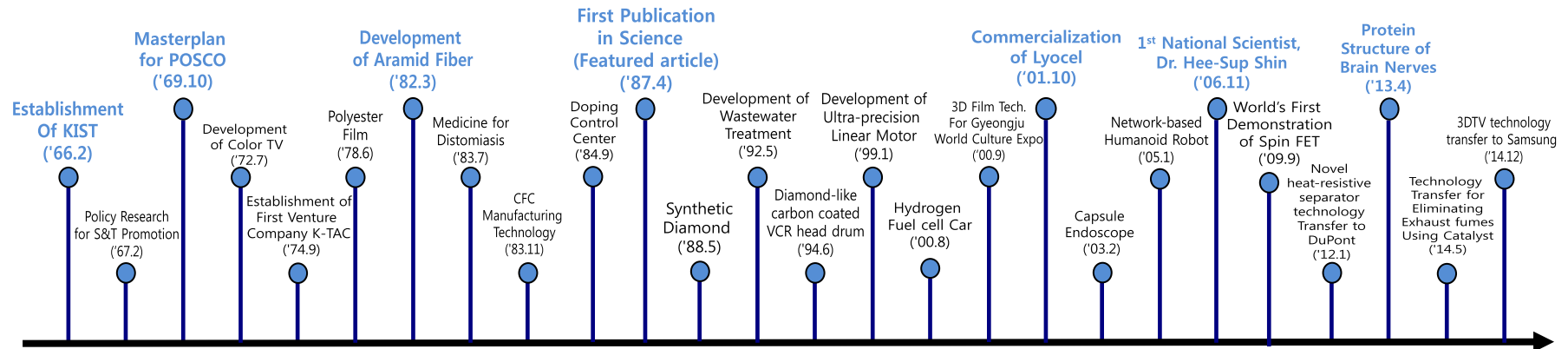
2000s  
Leader in Frontier Research



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

NEWS AND COMMENT

## Korean Science Institute: A Model for Developing Nations?

The Korean peninsula, a rugged, mountainous land that juts off the coast of northeast Asia toward Japan, has been a battleground and a pawn in Asian power struggles throughout most of its recorded history. The Koreans spent long years under Chinese and Japanese domination, and from 1910 to 1945 they were occupied by the Japanese. With the military collapse of Japan in 1945, the peninsula came under the sway of the superpowers. Soviet troops occupied the northern half, above the 38th parallel, while American troops occupied the southern half. The dividing line, at first drawn arbitrarily to facilitate the surrender of Japanese troops, soon hardened into one of the most impenetrable barriers in the world. Not much is known of conditions in the Communist North. But South Korea, an Indiana-sized territory of some 33 million people, has in recent years become one of the world's most rapidly developing nations.

The United States has invested heavily in the military and economic development of South Korea. On the military side, American troops played the key role in rescuing South Korea from defeat in the Korean War of the early 1950's. The United States still maintains some 55,000 troops in South Korea, and American assistance has

helped the Koreans build their armed forces up to some 600,000 men, the third largest military force among non-Communist nations. On the economic side, the United States has poured some \$4 billion into South Korea since the armistice which concluded the Korean War in 1953.

Now, in one of the latest chapters of the effort to build a viable nation in South Korea, the United States is helping to establish a high-quality scientific institution, known as the Korea Institute for Science and Technology (KIST). With American financial and technical assistance, modern laboratory facilities have been built on a choice piece of ground on the outskirts of Seoul, the capital city; a talented staff has been recruited from among Korean expatriates; and the institute has already begun to perform contract research for the government and for industry. The goals of the \$24 million project are ambitious: to bring science and technology into a developing nation quickly; to spur economic development by applying science to local industrial needs; and to reverse the "brain drain" that takes so many talented individuals away from the struggling nations that need their services. One Western observer describes the project as "a Minerva operation," likening KIST to the Roman



goddess who sprang full-grown from the brow of Jupiter.

The institute faces an uphill struggle to prove its worth. Some pessimists question whether a developing nation really needs a high-class scientific facility, and warn that the project may turn into an expensive boondoggle, a useless frill that pleases the Korean ego but does little to contribute to the nation's growth. The success of the experiment probably can't be assessed for at least a decade. But most initial signs are hopeful, and there is some feeling that KIST may serve as a prototype for similar institutions in other developing nations. Says Donald F. Hornig, science adviser to former President Johnson, who originated the idea of KIST and was the driving force in getting it started: "I don't know of anything else quite like KIST. We may have stumbled onto something that could be a model."

The partitioning of the peninsula left North Korea with most of the industry and natural resources and South Korea with most of the people and agriculture. But South Korea has rapidly expanded its industrial capacity and its manufactured exports. The nation's gross national product increased by 13.3 percent in 1968 and 15.5 percent in 1969—one of the highest rates in the world. South Korea today is reminiscent of Japan in the 1920's—rich in human resources, poor in natural resources, and poised on the verge of an economic takeoff.

Like other developing nations, however, South Korea lacks a strong scientific base. The government, which supports the bulk of the nation's research and development effort, budgeted only about \$8.7 million for R & D in 1969. Industrial research is almost nonexistent, and consists almost entirely of testing and quality control. One Western observer notes that there are 80 or more scientific institutions in South Korea but claims that "few, if any, are worth the powder to blow them up." There is also a tremendous shortage

## Science magazine article about the KIST Model

(Vol. 167, March 1970)

First Case  
in Assimilation of KIST Model

⇒ V-KIST Project



KIST's research facilities lie in a forest preserve on the outskirts of Seoul, one of the world's largest cities, with more than 4.3 million inhabitants.

# 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](http://www.worldbank.org)

## Achievements

**High economic & social development**

⇒ 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

Source: OECD Science, Technology and Innovation in Viet Nam, 2014.

➔ **Industrial technology R&D will further develop the Vietnamese economy**



## 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 **70<sup>th</sup>** among 148 countries

**For Innovation,** Vietnam is ranked at **76<sup>th</sup>**

**For technical readiness,** Vietnam is ranked at **102<sup>nd</sup>**

### 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

### R&D Organizations

Type	Number	%
Ministries and other state organization	953	43.3
Higher education	88	4.0
State-owned enterprises	33	1.5
Collective sector	893	40.5
Foreign	7	0.3
Individuals	182	8.3
Other	46	2.1
<b>Total</b>	<b>2,202</b>	<b>100</b>

# Analysis on S&T in Vietnam

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▶ <b>Sizeable labor force and favorable demographics</b></li> <li>▶ Substantial national education effort and good secondary education performance</li> <li>▶ Attractive for investment to multinational enterprises</li> <li>▶ <b>Reputation for strong performance in S&amp;T fields such as mathematics and specialization in agricultural research &amp; biology</b></li> </ul>	<ul style="list-style-type: none"> <li>▶ Low level productivity and income</li> <li>▶ Inadequate framework conditions and disincentives for innovation</li> <li>▶ <b>Low level of sophistication in production and exports</b></li> <li>▶ Little innovation and even less R&amp;D capacity in the business sector</li> <li>▶ <b>Weak public sector research</b></li> <li>▶ Weak S&amp;T infrastructure</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▶ <b>To further develop the human capital and skills base involving the sizeable Vietnamese diaspora</b></li> <li>▶ <b>To improve the effectiveness of the innovation system</b> in terms of economic and social impact</li> <li>▶ To diversify and upgrade the economy</li> </ul>	<ul style="list-style-type: none"> <li>▶ Unfavorable macroeconomic developments and a slowdown in growth</li> <li>▶ <b>Increasing brain drain</b></li> <li>▶ <b>Failure to prepare for increased international competition</b></li> <li>▶ A looming middle-income trap</li> </ul>

Source: OECD Science, Technology and Innovation in Viet Nam, 2014.

## 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

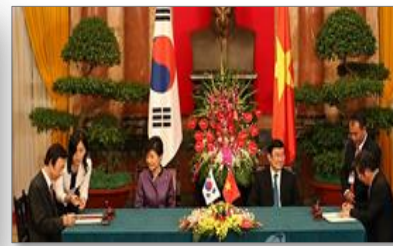
- **Location** : Hanoi, Vietnam
- **Period** : 2014.12~2019.6
- **Budget**
  - USD 70 million (50% from Korean gov't & Vietnamese gov't respectively)
- **Content**
  - Consultation, building construction, training program, research equipment, industrial survey, and joint research.



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

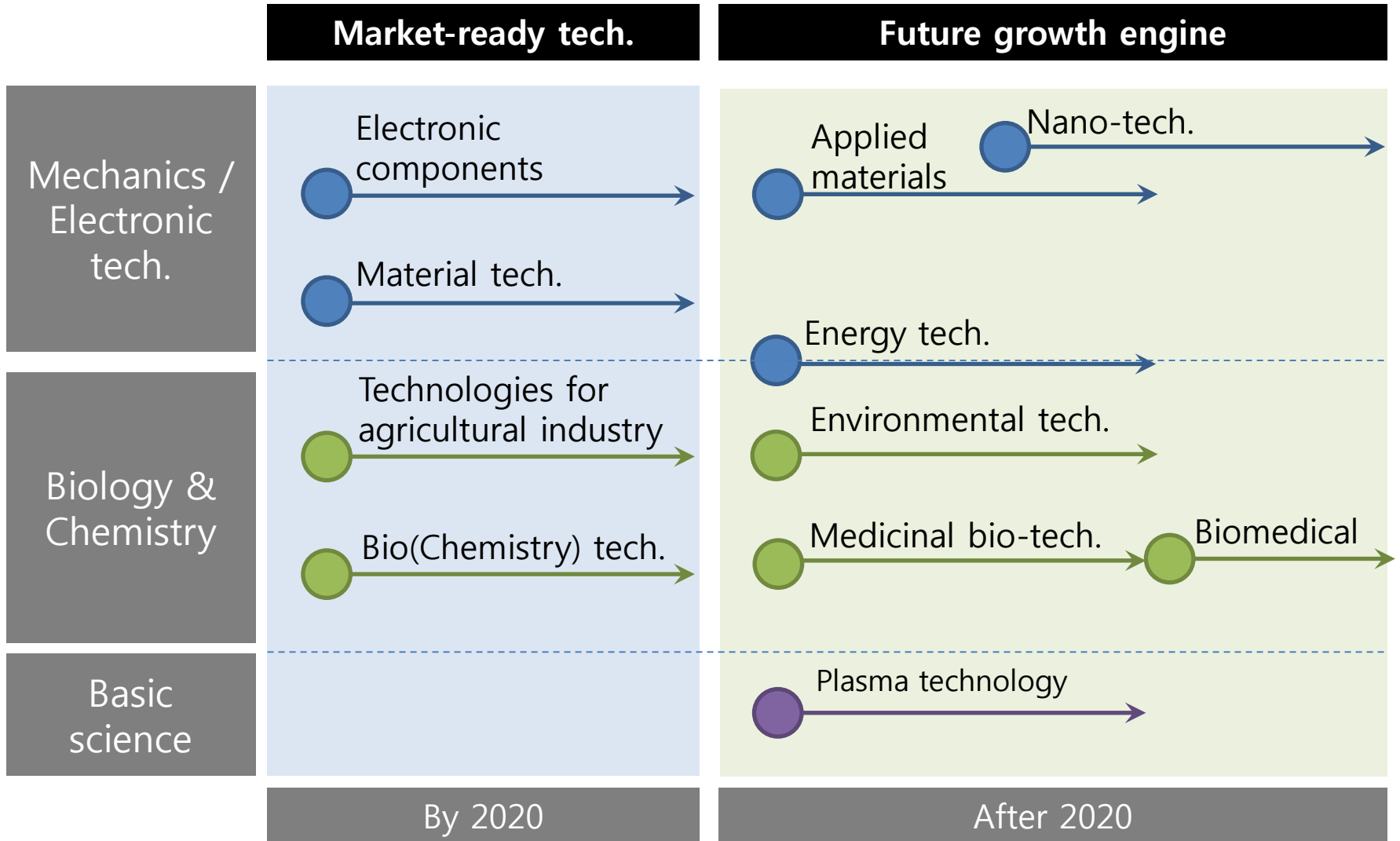
## Leadership

- **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



# V-KIST Time Plan

		2015	2016	2017	2018	June, 2019
<b>Common</b>		Kick-off ceremony (Hanoi)	Ground-breaking Ceremony (Hanoi)		Building completion ceremony (Hanoi)	Completion briefing session
<b>Korea</b>	<b>KIST</b>	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					
	<b>KOICA</b>	Building design and construction				
<b>Vietnam</b>	<b>MOST &amp; HHTP</b>	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](http://www.un.org)  
<http://www.un.org.vn/en/component/content/article/1083-national-structures-for-gender.html>

### Gender Gap in Vietnam

Country	Rank
Iceland	1
Finland	2
Philippines	9
Singapore	59
<b>Vietnam</b>	<b>76</b>
Indonesia	97
Korea, Rep.	117

Source: The Global Gender Gap Report 2014, World Economic Forum

### Female Science Staff at VAST

Category	No.		% of Female
	Total	Female	
Prof.s	44	0	0%
Assistant Prof.	158	30	19%
Doctors	658	140	21%
Masters	500	200	40%
Bachelors	848	322	38%
<b>Total</b>	<b>2208</b>	<b>692</b>	<b>31% in Average</b>

\*VAST: Vietnam Academy of Science and Technology  
 Source: OECD Science, Technology and Innovation in Viet Nam, 2014.

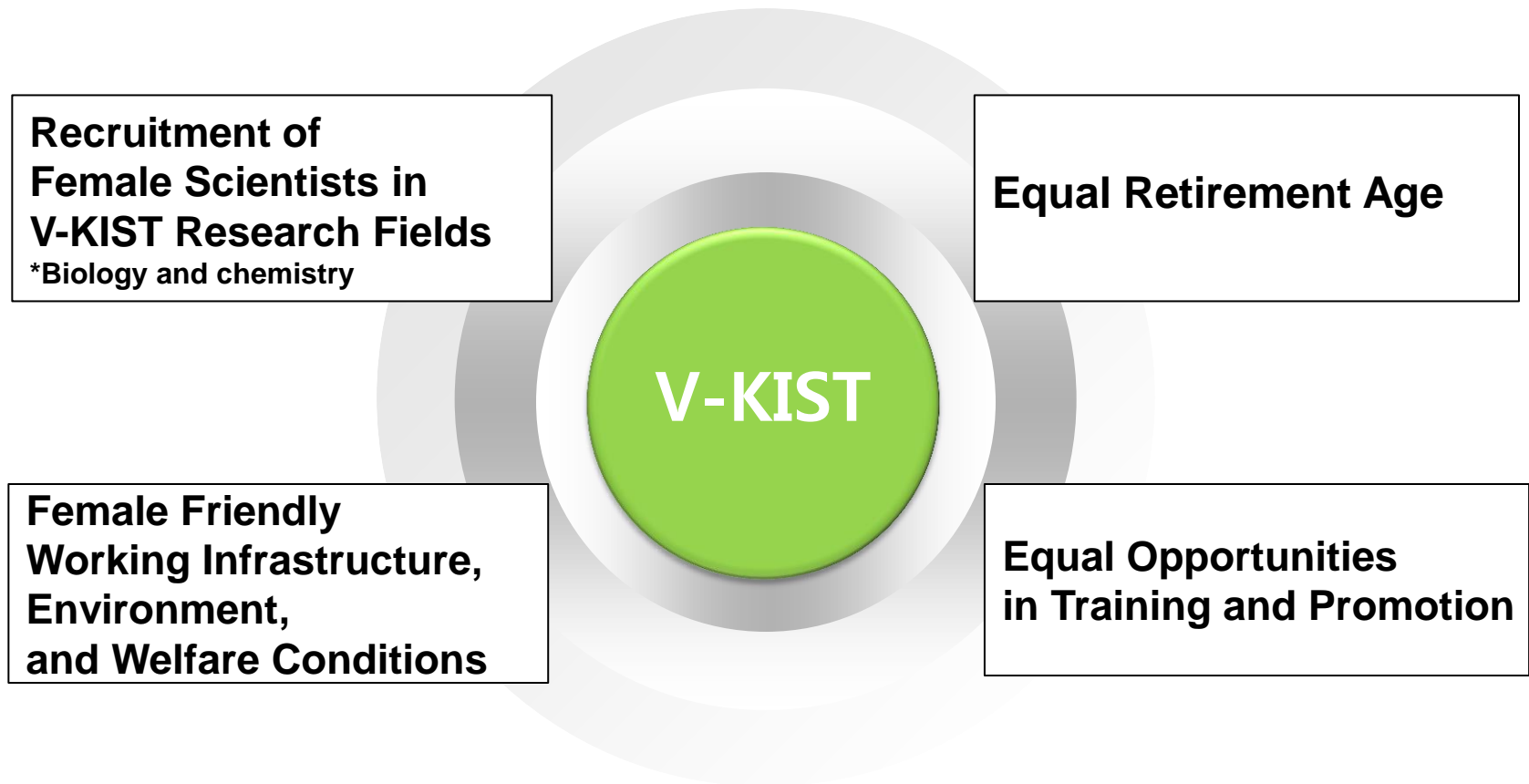
### Retirement ages at VAST

Category	Female	Male
Researcher without Ph.D	55	60
Researcher with Ph.D	60	65
Professor	65	70



# V-KIST & Gender Equality

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



# Thank you!

