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UNDERSTANDING VIETNAM'S INNOVATION SYSTEM

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Disclaimer: Information and data collected in July 2018.

1.
COUNTRY PROFILE

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1.1 INTRODUCTION

Between 2011 and 2020, science, technology and innovation (ST&I) has been playing an increasingly important role in Vietnam's socio-economic development.

The Government of Vietnam has been focusing on the following strategic tasks:

- Reforming the management and operational mechanisms of science and technology (S&T) organisations;
- Increasing state expenditure levels and prioritising expenditure on national S&T initiatives and national products, including promoting firms investing in S&T development;
- Linking the development of an S&T market with the enforcement of a law on intellectual property, boosting technology research and development (R&D) results and encouraging S&T innovation.[1]
- Enhancing the international integration of Vietnamese science and technology.

The annual government expenditure on S&T for 2011-15 was about 1.7% of the national budget, equivalent to 0.4% of GDP, lower than other countries in the region (Thailand at 0.48%; Malaysia at 1.26%; and Singapore at 2.2% of GDP).[2]

The state is the biggest funder of research in Vietnam, with the majority of the budget going to government R&D institutes. The national gross expenditure on R&D (GERD) in 2016 was about 0.21% of the GDP (with nearly 80.99% of that spend accounted for by the public sector).

This is a lower rate than its neighbours, and much lower rate than most developed countries. This R&D intensity rate partly explains Vietnam's low ranking in R&D and higher education categories in the 2016 Global Innovation Index.

1 Prime Minister, 2012
2 World Bank, 2016

1.2 HIGHLIGHTS OF KEY INNOVATION PROGRAMMES

Here we highlight some of the most important recent government programmes on science, technology and innovation in Vietnam:

- The 2011 - 2020 'Programme for National Technology Innovation':
  Aims to develop the quantity and quality of companies and human resources engaged in the management of firms in technology innovation, advanced technology acquisition and creation.[3]

- The 2011 - 2020 'National Product Development Programme':
  Seeks to support the development of new Vietnamese trademarked products which utilise advanced and highly competitive technologies. Focus categories include high quality, high yield rice; network information security products; and human and animal vaccines.[4]

- 'Program 592':
  A programme granting greater autonomy to arms-length government agencies for the creation of mechanisms and policies that: encourage and support the formation and development of S&T firms; mobilise social resources for the development of S&T firms and markets; and support the performance improvement of public S&T organisations by encouraging their autonomy and self-regulation.[5]

- The 'National Startup Ecosystem Development Programme':
  This programme aims to support the development of an innovative startup ecosystem in Vietnam by the year 2025, creating a favourable environment for the formation and development of startups with high-growth potential, based on new technology or business models.[6]

3 Office of National Science and Technology Programs
4 Ibid.
5 Ibid.
6 Ibid.

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1.3.1 INSTITUTIONAL MAP OF THE INNOVATION SYSTEM

Note: Departments of S&T at provincial level are not included in this mapping since they are not within the scope of the project.

7 Modified from Nguyen Thu Oanh & Braun, M. 2016

Attached to

Provides funds

Political influence

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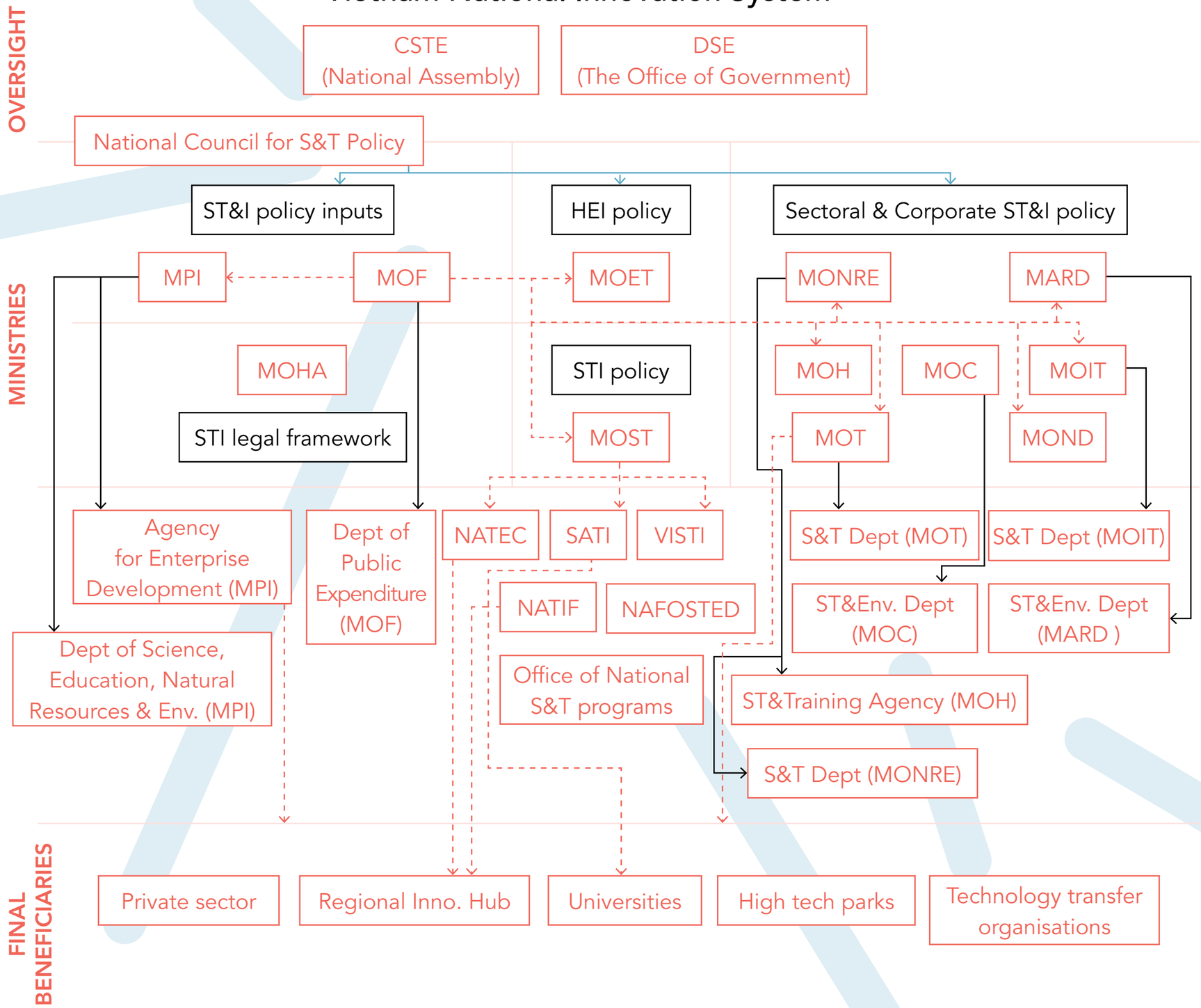
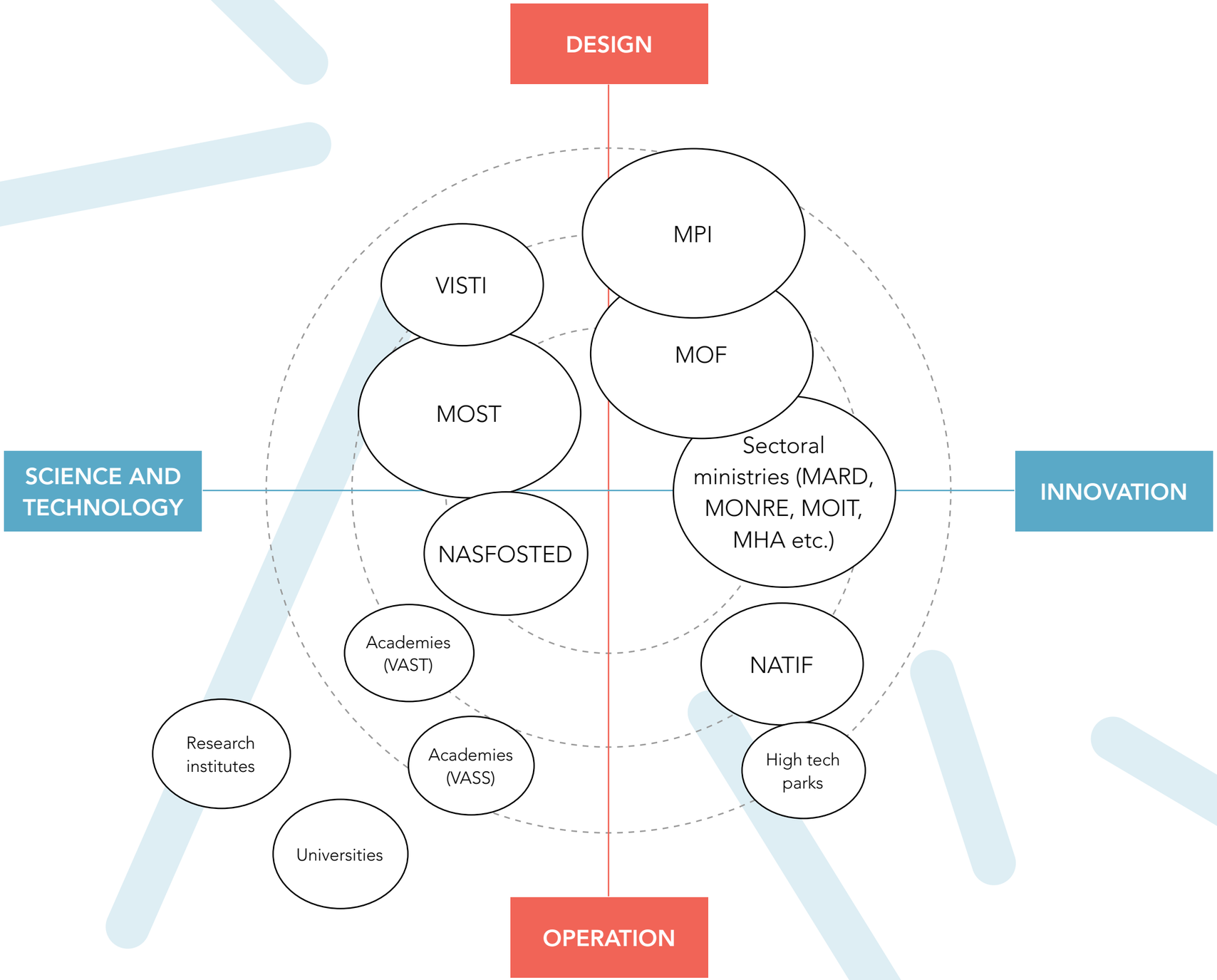
Vietnam National Innovation System [7]



1.3.2 ROLE AND INFLUENCE DIAGRAM OF KEY MINISTRIES AND AGENCIES



Level of influence: the bigger the size of the bubble, the more influence in the innovation system.

This influence map is indicative and reflects the insights of the project team rather than a formal statement of roles and structures.

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1.4 GLOSSARY OF INSTITUTIONAL ABBREVIATIONS AND ACRONYMS

- **CSTE:** Committee of S+T and Environment (National Assembly)
- **DSE:** Department of Science, Education, Culture and Social Affairs (The Office of Government)
- **MARD:** Ministry of Agriculture & Rural Development
- **MOC:** Ministry of Construction
- **MOET:** Ministry of Education & Training
- **MOF:** Ministry of Finance
- **MOH:** Ministry of Health
- **MOHA:** Ministry of Home Affairs
- **MOIT:** Ministry of Industry & Trade
- **MOND:** Ministry of National Defense
- **MONRE:** Ministry of Natural Resources & Environment
- **MOST:** Ministry of Science & Technology
- **MOT:** Ministry of Transportation
- **MPI:** Ministry of Planning & Investment
- **NAFOSTED:** National Foundation for Science and Technology Development
- **NASATI:** National Agency for Science and Technology Information
- **NATEC:** National Agency for Technology Entrepreneurship and Commercialization Development
- **NATIF:** National Technology Innovation Fund
- **ST&I:** Science, technology and innovation
- **S&T:** Science and technology

1.5 STRENGTHS AND WEAKNESSES ANALYSIS

HUMAN CAPITAL/KNOWLEDGE ASSETS

STRENGTHS

The Government has recently made additional efforts to boost the national performance in education:

- Sizeable labour force and favourable demographics: Vietnam is in a demographic 'golden age', with 25% of its 90 million people aged between 10 and 24 years old.
- Good performance in secondary education performance indicators (PISA).
- Special programme for university and college lecturers to complete a PhD degree during the period 2010-2020 (Project 911).
- The number of researchers per 10,000 people (in full time equivalent - FTE) has increased continuously in recent years: from 5.2 researchers in 2011 to 6.86 in 2015.[8]

WEAKNESSES

The skills supplied through the formal education and training system do not meet the demands of the labour market:

- Quality of education did not follow the quantitative growth: Vietnam's labour productivity reached $3,660, roughly equivalent to 5% of Singapore, 20% of Malaysia, 35% of Thailand, 50% of the Philippines and Indonesia.
- Now a relatively large number of researchers, but producing a low level of outputs at an international level (in 2015 Vietnam had 167,746 researchers but produced only 4,015 international publications).[9]
- Brain drain is a significant challenge, owing in part to low salaries and limited opportunities at home. Evidence suggests that the brain drain among S&T researchers is a greater problem for Vietnam than for Malaysia, Thailand, China or Indonesia.[10]

8 MOST, 2016
9 MOST, 2016
10 OECD/World Bank, 2014

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1.5 STRENGTHS AND WEAKNESSES ANALYSIS

FUNDING

STRENGTHS

Both government and non-government expenditure on R&D has increased in recent years:

- Public funding of science and technology in Vietnam is increasing as a percentage of GDP. From 2001-05, it accounted for 0.53% of GDP, and from 2006-10 it accounted for 0.67%. At the same time, the number of R&D projects designated by the state has also increased.[11]
- Non-government expenditure for R&D has been increasing over recent years (as the Vietnamese Minister for Science and Technology reported to the National Assembly in March 2018).
- The Government has launched several new programmes to support the development of national products, high technology and technology innovation (with a 2020 horizon).
- A National Foundation for Science and Technology Development was established in 2003 and a National Innovation Fund in 2013.

WEAKNESSES

R&D expenditure, both public and private, is low in comparison to the OECD average. A substantial portion of public R&D funding is non-competitive and non-merit-based:

- In 2016, R&D expenditure represented only 0.44% of GDP.
- The private sector has little motivation to invest in innovation, and Vietnam's business sector still accounts for only a small share of R&D expenditure.[12]
- Allocation of basic funding to S&T institutions is not performance-based but staffing-based. Project funding derived from submitted proposals appears to be a mixed process with some projects being 'earmarked' for selected institutes (non-competitive) while other projects' funding decisions are competitive in nature.
- The state agencies responsible for research are often seen as paying more attention to strict adherence to financial procedures than to the research outcomes.[13]

11 MOST, 2016
12 MOST, 2016
13 OECD, no date

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1.5 STRENGTHS AND WEAKNESSES ANALYSIS

BROADER ENVIRONMENT

STRENGTHS

Vietnam has favourable conditions for the development of the economy:

- Since 1990, the growth of Vietnam's GDP per capita has been among the fastest in the world, averaging 6.4% a year in the 2000s. Despite uncertainties in the global environment, Vietnam's economy remains resilient. The country's medium-term outlook remains favourable, with GDP growing by 6% in 2016[14].
- Vietnam is located in one of the world's most dynamic regions.
- Mass volume of exports in some sectors like electronics, textiles and agriculture. According to the Food and Agriculture Organisation of the United Nations (FAO) report, Vietnam reached the top five countries with the largest rice production in 2016 and according to the WTO 2017 World Trade Statistics, Vietnam ranked among the top 10 countries in world textile export in 2016.
- In 2015, Vietnam recorded USD22.75 billion in committed foreign direct investment (FDI), representing a 12.5% increase from the previous year.[15]

WEAKNESSES

Vietnam's economy still very much depends on natural resources and abundant, cheap, mostly unskilled labour; science and technology (S&T) infrastructure is inadequate:

- Vietnam's export structure is based too heavily on raw materials like rice, coffee, and oil.
- Few firms perform R&D, the level of innovation activity is overall low. A vast majority of companies do not engage in technology adoption or R&D activity, with only 8% of firms undertaking one or both forms of investment in innovation.[16]
- Laboratories and research equipment are outdated.
- There is still a high dependency of the Vietnamese manufacturing sector on investment from foreign-owned enterprises.

14 World Bank and MPI, 2016
15 MPI, 2015.
16 CIEM, DOE and GSO, 2014.

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1.5 STRENGTHS AND WEAKNESSES ANALYSIS

INSTITUTIONAL FRAMEWORK

STRENGTHS	WEAKNESSES
Steps are being taken to reform state S&T policy management, and to increase capacity building for S&T policymaking to meet the demands of social and economic development:	**Current S&T system is weak, fragmented and lacking effective commitment, coordination and implementation of government policies:**
• The S&T policy system is focused on addressing the needs of Vietnamese socio-economic development.	• Four different core ministries (MOST, MPI, MOF, MOIA), a range of other ministries, and provincial governments across Vietnam all bear some responsibility for management of S&T policy.[20]
• There has been a welcome recent shift in policy formulation: from centralised and internal debate among government policymakers, to more open policy dialogue which aims to involve many different stakeholders.[17]	• The policy framework and systems of incentives for innovation are inadequate. While a range of laws and regulations relate to S&T in Vietnam, there is no single coordinating body.
• Some progress in recent years in creating and sustaining the set of institutions which support innovation.[18]	• R&D statistics and other relevant data and information are often fragmentary, out of date or not internationally comparable.
• Progress on linking across the innovation system, with a focus on strengthening technology transfer and developing enterprises' capabilities to absorb and apply new scientific knowledge and technologies.[19]	• R&D is still a peripheral activity, both in the business and the public sector.

17 Prime Minister, 2012
18 MOST, 2016
19 National Assembly, 2017
20 National Assembly, 2013
21 OECD/World Bank, 2014

1.5 STRENGTHS AND WEAKNESSES ANALYSIS

ECOSYSTEM CONNECTIONS

STRENGTHS

The Vietnamese Government is making efforts to create a supportive ecosystem for innovation:

- There are now some complementary support mechanisms for S&T development in Vietnam, including improved international support, and a move from project-oriented approaches to dedicated longer-term joint activities such as the Vietnam-Finland Innovation Partnership Program.
- There are a range of new initiatives to promote firm-level innovation, in areas such as pilots of public-private partnership co-financing for implementation of science and technology projects, or broader support for the national entrepreneurship and innovation ecosystem by 2025.

WEAKNESSES

Weak cooperation between the different actors in the Vietnamese national innovation system:

- Little collaboration on innovation, either among firms or between firms and public research actors (the most recent Global Competitiveness Report ranks Vietnam 55/137 countries in industry research collaboration).[21]
- Among firms that innovate, few work with other firms and even fewer with universities. The foreign investment sector does not appear to be connected to the local research system.
- Public resources in support of business R&D and innovation are low in absolute terms and in relation to GDP.[23]
- Tax incentives have proliferated in recent years but little information is available on their effectiveness; tax regulations and rates are the most challenging factors for 'ease of doing business' in Vietnam.

21 WEF, 2017
22 MOST, 2016

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2.
CAPACITY BUILDING FOR INNOVATION IN VIETNAM

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2.1 UNDERSTANDING THE RANGE AND SPREAD OF INNOVATION POLICYMAKERS

Who are innovation policymakers?

An innovation policymaker is responsible for or involved in formulating public policies which seek to support innovation – whether through seeking to improve supply, demand, connection or direction of policy. That term is used to identify innovation policymakers across related ministries.

Where are innovation policymakers based in Vietnam?

To discover the needs of innovation training in the country, innovation policymaking organisations are grouped into four categories, including:

- Overarching decision-making or advisory bodies: Office of Government; Committee of Science, Technology and Environment, the National Assembly; National Council for Science and Technology Policy.
- Core national government departments relating to innovation: Ministry of Science and Technology; Ministry of Planning and Investment; Ministry of Finance; Ministry of Education and Training.
- Other national government departments with significant innovation roles and agencies: Ministry of Industry and Commerce; Ministry of Information and Communication; Ministry of Agriculture and Rural Development; Ministry of Health; Ministry of Transportation.
- Decision-making body in local governments (provincial/central/city): Departments of Science and Technology (DOST).

2.2 MAPPING INNOVATION POLICYMAKERS: ASSESSING THE SIZE OF THE CORE AUDIENCE

Policymakers from both 'Overarching' and 'Core' innovation policy departments and agencies listed previously are targeted for capacity building. They are categorised into four levels of seniority, namely: 'Level 1' - Junior politician, 'Level 2' - Senior or Director, 'Level 3' - Senior Director of Funding Agencies, 'Level 4' - Programme Director. These four categories will help to articulate potential demand for training and development opportunities.

POLICYMAKER SENIORITY	CHARACTERISTICS
'LEVEL 1' JUNIOR POLITICIAN	Examine and approve national strategies and legislation for S&T
'LEVEL 2' SENIOR OR DIRECTOR	Policy-setting strategy, including budget allocation, possibly across multiple areas of the innovation system
'LEVEL 3' SENIOR DIRECTOR OF FUNDING AGENCIES	Design, implement and manage programmes (NAFOSTED, NATIF, NATEC, Office of National S&T Programmes...)
'LEVEL 4' PROGRAMME DIRECTOR	Programme implementation

The table below is an estimate of the overall numbers and levels of seniority of innovation policymakers in Vietnam. The numbers estimated are based on organisational structures of innovation-related ministries.

POLICYMAKER SENIORITY	NUMBER OF CORE INNOVATION POLICYMAKERS
L1	6
L2	25+
L3	20
L4	30
TOTAL OF CORE INNOVATION POLICYMAKERS	81

2.3 INNOVATION POLICYMAKER 'PERSONAS'

Director of Science & Technology

DEPT. MINISTRY OF INDUSTRY AND TRADE

'So far Vietnam has developed many policies to promote innovation but policy implementation is still a challenge.'

'Based on Vietnam's performance in the Global Innovation Index, there are still difficulties with institutions, infrastructure and human resources, and the level of development of firms.'

KEY INDIVIDUAL AND COLLECTIVE CHALLENGES

- The development and formulation of new policies fails to be informed by evidence.
- Information sharing and communication among actors in the national innovation system is still limited.
- Procedures for SME support programmes are too slow and trigger a loss of opportunities for businesses. For example, in 2011 a business submitted a proposal through the High Technology Programme to develop a taxi application (similar to Uber, Grab) but was only approved in 2015, by which time Uber and Grab had become very popular in Vietnam.

A DESIRE TO BRING EVIDENCE FROM PRACTICE INTO INNOVATION POLICY DEVELOPMENT

- Interested in opportunities of analysing successful and unsuccessful examples of formulation and implementation of innovation policy from other countries.
- Vietnamese policymakers in general are eager to learn lessons from other countries, including specific information, evidence and figures showing and underpinning successes and failures.
- Keen on understanding how to assess the impact of innovation policy.

Deputy Director of the Office of National Programs on Science & Technology

MINISTRY OF SCIENCE AND TECHNOLOGY

‘Supporting and boosting innovation is not strong enough, we are still lacking tipping point policy tools.’

‘I like the comprehensive design of training programmes that bring a good combination of mentor support and learning mechanisms.’

KEY INDIVIDUAL AND COLLECTIVE CHALLENGES

- The results from research institutes have not met the requirements of industry.
- Enterprises are not interested in innovation. Enterprises in Vietnam are small and very small, so their R&D capacity is weak.
- Collaboration and coordination on innovation policy among ministries is weak, causing function overlapping and policy implementation difficulties.
- Innovation policies should be formulated based on practical evidence, but they currently are not.

A DESIRE TO DEVELOP SKILLS WHICH CAN BE APPLIED IN DAILY WORK

- Opportunity to update advanced management knowledge and skills.
- Share and learn experiences from the UK and other countries taking part in training programmes.
- Improve coordination among stakeholders in the development process of innovation policies.
- Looking to take part in tangible training programmes, with lessons and methods applicable to daily work.

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3.
ASSESSMENTS OF CURRENT AVAILABLE RANGE OF SUPPORT AND TRAINING FOR INNOVATION POLICYMAKERS IN VIETNAM

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TOPICS	POTENTIAL TOPICS FOR AN INNOVATION POLICY CAPABILITY BUILDING PROGRAMME
INNOVATION AWARENESS AND KNOWLEDGE	Innovation is a new concept in Vietnam so it is important to provide basic information on concepts related to innovation: innovation definition, innovation management, network of innovation agencies, building innovation ecosystems.
INNOVATION COORDINATION AT MINISTERIAL LEVEL	MOST is responsible for innovation in Vietnam but there is little coordination between MOST and other ministries especially on sharing information on innovation initiatives and programmes. It is important to know what others are doing in terms of innovation, in order to coordinate between ministries to enhance synergy, avoid duplication and ensure the innovation system operates effectively.
SMES SUPPORT	The role and linkage between government, public research/academia and industry, how to engage actors effectively in technology transfer and building innovation capacity for SMEs.
(INNOVATION) POLICY IMPACT ASSESSMENT	How to evaluate the impact of a policy in general and innovation policy in particular.
DATA FOR INNOVATION POLICY FORMULATION AND MEASUREMENTS	Evidence and data-based policymaking, global good practice.
DEVELOPMENT OF INNOVATION POLICY	Understanding mechanisms for top-down and bottom-up innovation policy formulation.
INNOVATION FINANCE	Understanding how to manage public venture capital funds, and encourage private investment in the Vietnamese economy.
ENTREPRENEURSHIP PROMOTION/BOOST	Management and implementation of entrepreneurship policy/programmes.

Improving policymakers' capacity to design, implement and manage good S&T policies is one of the Vietnamese Government's priorities, and is mentioned in important documents like the Party's Central Committee Resolution on Science and Technology, the Science and Technology Law of 2013, and the S&T strategy for the period 2011-2020. There are many training programmes aiming to improve the capacity of managers and policymakers in science, technology and innovation, including:

1. Postgraduate training programmes in science and technology management.

2. The Leadership Training Program 165 of the Party Central Committee's Organisation Commission.

3. Short-term training courses on the establishment, management and administration of scientific and technological enterprises under Program 592.

4. Capacity building and service development for innovative startups under Program 844.

5. Programmes strengthening innovation, entrepreneurship and ecosystem development in Vietnamese universities and other educational institutions under the IPP Program.

6. Training programmes on S&T management for local S&T managers, Ministry of Science and Technology officials, as well as junior and senior researchers.

Programme content is usually built on specific topics, and not updated with state of the art knowledge and theory: Programs 165, 592, and 844 support staff to attend training courses designed by domestic or foreign organisations, but not designed by the programmes themselves. Teaching materials for postgraduate training programmes in science, technology and innovation are mainly synthesised from documents related to S&T management content, rather than a bespoke curriculum, and not up to date.

Except for the IPP Program, other programmes are not innovation-oriented in design and not publicly accessible for those who are developing innovation policy.

· TEACHING METHODS:
Primarily face-to-face, tutor-led, sometimes incorporating practical activities.

· PROVIDER:
Mostly large government agencies, with a smaller number of universities and international development agencies.

· SUBJECT:
Key areas include introductions to research, technology and innovation management and regulations, as well as public policy and evaluation.

· REACH:
Most programmes are aimed at mid-level entry, with low representation of senior government officials.

· OUTPUT:
Focus on improvement, leading to a qualification rather than specialist executive development.

· DELIVERY:
Postgraduate training programme in science and technology management and training certificates.

4.
ASSESSMENT OF LIKELY AREAS OF FOCUS FOR A GLOBAL INNOVATION POLICY ACCELERATOR TEAM FROM VIETNAM

The objective of this section is to identify important innovation policy topics and themes that teams might engage with through the Policy Accelerator, based on the priorities of the Vietnamese innovation system, previous assessments of strengths and weaknesses and the interests of innovation policymakers.

FOCUS AREA	TOPICS	RESULTS	FOR WHOM
Entrepreneurship promotion/boost	Transfer and implement state-of-the-art policies and approaches to foster entrepreneurship in Vietnam	Recommendations for enhancing entrepreneurship in Vietnam through international standards	L2, L3 of institutions responsible for entrepreneurship (e.g. agencies of MOST, MOIT, etc., regional/sectoral actors)
Innovation clusters and networks	Develop a concept for a pilot innovation cluster/network project in Vietnam	Piloting the development of an innovation cluster/network in Vietnam	L2, L3 of responsible ministries (MOIT, MOST, etc.) and regional authorities
SME support	Develop policies and approaches to enhance support for innovation in SMEs	Proposal for new/improved policies and approaches for innovation support for SMEs	L2, L3 of institutions responsible for entrepreneurship (e.g. agencies of MPI, MOIT, etc., regional/sectoral actors)
Inter-institutional coordination of innovation policies	Develop and propose solutions for improving coordination between innovation policymaking institutions	Recommendations for improved coordination of innovation policies in Vietnam	L2, L3 of institutions formulating innovation policies (e.g. ministries, responsible agencies)
Innovation awareness and knowledge	Awareness of and knowledge about innovation, S&T not sufficiently developed among stakeholders	Recommendations for improvements of innovation and S&T awareness in Vietnam	L2, L3 of institutions in charge of S&T awareness/promotion (e.g. MOST, NASATI, etc.)
Innovation policy and programme formulation	Improving the government's capability to develop and implement efficient innovation policies	Transfer of state-of-the-art knowledge to Vietnam; demonstration in pilot project	L1, L2 of institutions formulating and implementing innovation policies (e.g. ministries, responsible agencies)

5.
DIAGNOSIS AND RECOMMENDATIONS

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Based on the sections above, these are recommendations that could benefit capacity building of innovation policymakers in Vietnam, under the Policy Accelerator programme:

1. APPROACH

- Provide fundamental/background knowledge first, and then support the application of learning into the system.
- Provide advanced knowledge and good practice.
- Programme design should be customised to Vietnamese innovation conditions and current capabilities.

2. TARGET AUDIENCE

Focusing on levels 1, 2, 3 according to our four categories of policymakers.

3. CONTENT

Topics should cover at least the following themes:

- Innovation awareness and knowledge;
- Innovation policy and programme formulation;
- Intellectual property;
- Evaluation of science, technology and innovation policy.

6.
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