FACT SHEET

Innovation and technology industry in Finland

1. Introduction

1.1 Finland is now recognized as an innovation leader in Europe and a high-tech hub in the world.[1] Nevertheless, it had been a resource-based economy relying on forest industry until the traditional industrial core was challenged in the 1980s amid economic slowdown. Since then, Finland has been committed to transforming itself into an innovation-driven economy.

1.2 The innovation and technology ("I&T") success of Finland is characterized by: (a) the government's policy of encouraging the interactions among private companies, universities and academic institutes in research and development ("R&D") activities, (b) a high level of R&D intensity, and (c) the dominant role of private sector in I&T development. The talented labour force educated under the Finnish world-renowned education system[2] also contributes to Finland's success.

1.3 In 2012, Finland's gross expenditure on R&D accounted for 3.6% of its Gross Domestic Product ("GDP"), being high in international standard when compared with other advanced economies such as Japan (3.3%) and the United States (2.8%).[3] After years of R&D investment, in addition to its traditional telecommunications industry, Finland has become strong in a number of industrial sectors: (a) game industry in particular Rovio Company with its "Angry Birds", (b) clean technology in the fields of renewable energy, wastewater treatment, waste management and emission reduction, and (c) biotechnology (e.g. biomedical and gene technology).

1.4 To enhance Members' understanding of Finland's I&T industry, this fact sheet discusses the organizational structure of the national innovation system and the government's policy to promote its development.

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1 For example, Finland ranks first in the World Economic Forum's Networked Readiness Index in 2014, an index to measure the performance of an economy in leveraging information and communications technology to boost competitiveness.

2 Please refer to FSC40/13-14 for details of the Finnish education system.

3 In comparison, the corresponding figure of Hong Kong was about 0.7% of its GDP in 2012.

2. Organizational structure of the national innovation system

2.1 Finland is the first country in the world to adopt the concept of national innovation system as a basic element of I&T policy as early as in 1992. The concept refers to the adoption of a broad-based approach spanning from education and science to innovative activities of private companies and commercialization of technological innovations when formulating I&T policy. At present, the Finnish national innovation system comprises four levels:

(a) the highest-level decision-making takes place at the Finnish Parliament and the government.

At the parliamentary level, the Committee for the Future evaluates issues relating to innovation and the impact of technological development on society.[4] For the government, it seeks advice from the Research and Innovation Council[5] on I&T-related matters. The Council is also tasked with the strategic development of I&T and co-ordination of the national innovation system;

(b) the second level consists of a number of I&T-related ministries. Among others, the two most important ministries are the Ministry of Education and Culture (for innovation education and training) and the Ministry of Employment and the Economy (for industrial and technology policy);

(c) the third level refers to the following three R&D funding agencies with a clear division of labour among these agencies in respect of the funding targets:

(i) the Academy of Finland provides public funds for scientific research carried out in universities and research institutes. It is an agency within the administrative branch of the Ministry of Education and Culture;

[4] Chaired by the Social Democrat Päivi Lipponen, the Committee for the Future comprises one Vice Chairperson and 15 Members.

[5] The Council is chaired by the Prime Minister and consists of seven other Ministers, as well as 10 unofficial members representing the interests of I&T industry.

(ii) the Finnish Funding Agency for Innovation ("Tekes") is responsible for providing public funds for R&D activities in private companies, research activities conducted in universities and research institutes that create new business opportunities for the Finnish companies, and public service providers to offer quality services. Tekes works under the Ministry of Employment and the Economy;

(iii) the Finnish Innovation Fund ("Sitra") is an independent fund operating under the supervision of the Finnish Parliament [6] to support R&D activities for promoting Finland's development, economic growth, international competitiveness and co-operation; and

(d) the fourth level is made up of organizations such as universities, academic institutes and private companies (see **Appendix**) for conducting researches.

3. Government's policy to support the development of industry

Formulation of national development strategy

3.1 Being the responsible authority for the strategic development of I&T, the Research and Innovation Council sets out three main themes for I&T development in its *Research and Innovation Policy Guidelines for 2011-2015*, namely (a) prioritizing the resources in designated areas (e.g. promotion of scientific research and patent applications); (b) creating a supportive innovation environment through upgrading the research infrastructures and improving the teaching and research quality of the higher education sector; and (c) strengthening human capital via developing a career path for researchers and attracting international students and experts to study and work in Finland.

3.2 In addition, the Research and Innovation Council together with the Finnish government set the national goal of raising the R&D expenditure to 4% of Finland's GDP by 2020 as a further step to strengthen the innovation capacity of the country.

[6] The Supervisory Board of Sitra is made up of nine Members of Parliament for monitoring the performance of Sitra's management and making decisions on operational principles.

Implementation of cluster-based industrial policy

3.3 In Finland, the government has adopted a cluster-based approach to bring together regionally dispersed R&D activities into network of innovation communities through collaborations among universities, research institutes and private companies. Two such initiatives to foster I&T development and regional competitiveness are the defunct Centre of Expertise Programme ("OSKE") and the current Innovative Cities Programme ("INKA").

3.4 OSKE had been in operation for about 20 years since 1994, featuring the adoption of the traditional sector-based approach for I&T development, in which 13 competence clusters were formed with each cluster specializing in a particular field such as clean technology and digital business. Nevertheless, the traditional approach might not be sufficient to cope with the multi-faceted technological problems facing local communities.[7] Against this, INKA which replaced OSKE from 2014 onwards adopts a multi-sectoral approach by pooling resources from education, business and the public sectors across different areas of expertise.

3.5 Five national themes have been identified under the new INKA: bio-economy[8], cyber security, innovative city development and industrial regeneration, future health care and sustainable energy solutions. Tekes is responsible for the operation of INKA and the programme is mainly funded by the Finnish government and the regions concerned.[9]

Encouragement of private sector participation and investment

3.6 The private sector in Finland has played a crucial role in I&T development, accounting for 69% of the gross expenditure on R&D in 2012. Against this, the Finnish government has initiated measures to create a favourable business environment for private companies and ensure a successful interplay of private and public sectors, including:

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7 For instance, an intelligent transport project may involve not only information and communications technology, but also expertise in design, mechanical technology and sustainable development.

8 Bio-economy encompasses the sustainable production of renewable resources from land, fisheries and aquaculture environments and their conversion into food, feed, bio-based products and bio-energy.

9 To strengthen economic and social cohesion in the European Union by correcting imbalances between its regions, the European Commission provides public funds to the member states for undertaking innovation and research projects.

(a) the establishment of the Strategic Centres for Science, Technology and Innovation ("SHOKs"), which are public-private partnerships for speeding up innovation processes. Six SHOKs are currently in operation, covering the fields of bio-economy, energy, health, information technology and mechanical engineering. As for individual SHOK, some €40 million - €60 million (HK$412 million - HK$618 million) are invested in R&D activities annually with half of the funds coming from the government and the other half from participating companies; and

(b) the provision of two new tax incentives starting from 2013 to boost private investment in R&D activities:

(i) a tax break up to a maximum of €100,000 (HK$1.3 million) per year for companies hiring new R&D personnel; and

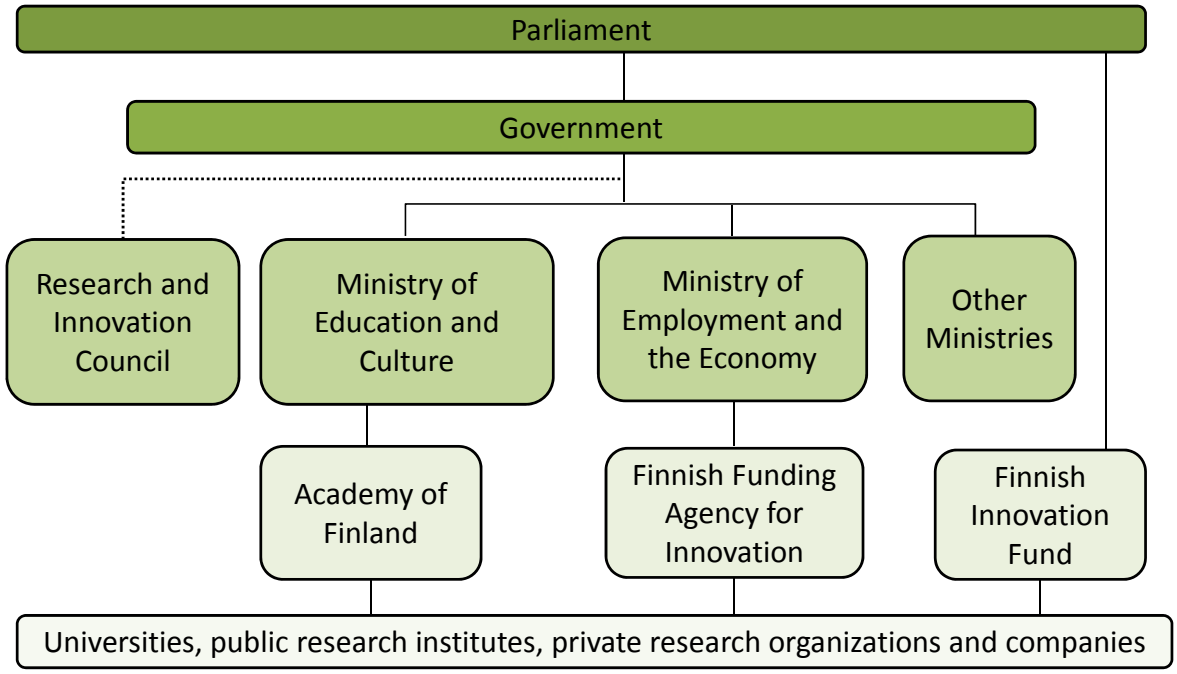
(ii) a 50% capital gains tax deduction for private investors if they provide capital for start-ups.

Funding support for research and development activities

3.7 To encourage the development of I&T industry, the Finnish government provides substantial funds to support R&D activities, amounting to €1.96 billion (HK$20 billion) in 2014. Of the total government funding, about 30% is allocated to university research, 26% to Tekes, 17% to the Academy of Finland and the remaining 27% to research institutes and university hospitals.

Appendix

Organizational structure of the Finnish national innovation system



Source: ERAWATCH (2014).

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