CSTP/TIP Workshop on the OECD STI Outlook and the Innovation Policy Platform

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Summary notes of the "forward looking" breakout session 5:
The future of research careers.

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Background

The *OECD Science, Technology and Industry Outlook* (STIO) is a biennial publication that provides policy makers with the latest information on recent and expected trends in the global science, technology and innovation (STI) landscape and identifies potential implications for national policies. The STI Outlook is produced under the aegis of the OECD Committee for Scientific and Technological Policy (CSTP) with input from its Working Parties, notably the Working Party of Innovation and Technology Policy (TIP).

The OECD has undertaken a "Forward Look" exercise on future STI policy trends in preparation for the STI Outlook 2016 with a view to improve the "outlook" dimension of the next edition. The exercise seeks to project current STI and policy trends into a 10-15 year future and identify challenges and implications for STI policy makers. The approach is mainly desk-based, complemented by interviews and a small number of mini-workshops in various parts of the world. The exercise started in mid-2015 and should be completed by the end of the year.

The afternoon sessions of the June CSTP/TIP workshop aimed to scope topics of interest to CSTP/TIP that should be prioritised in the framework of this forward looking analysis. This scoping exercise has been conducted through five interactive breakout sessions during which participants were asked to present, comment and/or report on a specific topic of interest to them.

The future of research careers

Breakout session n°5: summary note

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The opinions expressed and viewpoints herein are those of the participants and do not necessarily reflect the official view of OECD member countries and non-OECD economies. All participants were invited to contribute under the Chatham House Rule, i.e. they are free to use the information received and gathered, but neither the identity nor the affiliation of the participants may be revealed.

I. Strengths and weaknesses of national research careers

Part I. Identifying national strengths and weaknesses.

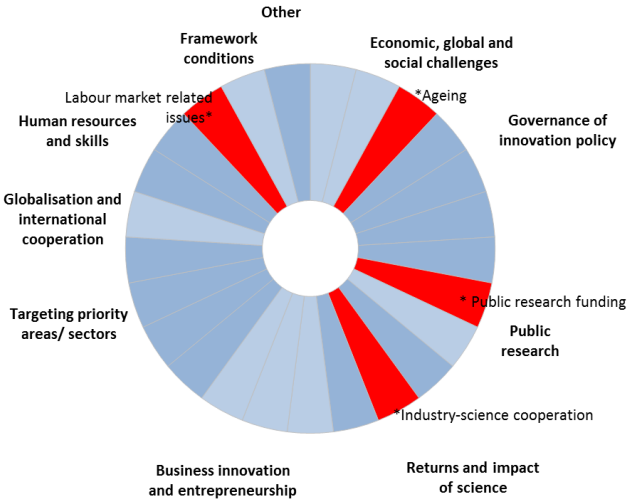
As a first exercise, participants are asked to present the major strengths and weaknesses of their respective national research careers (maximum 3 strengths and 3 weaknesses for each participant), and try to identify common issues and assets across countries. Participants were divided in 2 groups of about 3/4 persons each.

Strengths	Weaknesses
ESTONIA	
- Good research infrastructures due to high level public investment in the past few years - Good working environment - Enthusiasm: people in Estonia have been working with passion for ages.	- Low efficiency of doctoral training - Brain drain: Ph.D. graduates are leaving Estonia to work abroad. - Issues of communication around career perspectives for Ph.D. holders: there are also too many stereotypes and not enough competition, people don't know what they can realise with a Ph.D. and what they can use it for. - High level of project-funding, i.e. less visibility for longer term project. However temporary positions are not so common.
HUNGARY	
- Tax incentives to encourage companies to hire researchers and people with Ph.D. degrees. - Momentum Programme (Hungarian Academy of Science) which aims to encourage a dynamic renewal of the research teams of the Academy and to support university participation by attracting outstanding young researchers back to Hungary. - Increasing number of PhD students, particularly in STEM topics	- Low recruitment in humanities field - Weak collaboration between companies and research centres

IRELAND	
- Balanced labour market for researchers (demand and supply)	- Individual job conditions and job security are poor. - There is a large number of highly skilled individuals who do not work in research
NORWAY	
- Gender balance is good although it may vary across scientific fields. - Some targeted measures in place to support young researchers.	- Ageing researcher population that has a negative impact on productivity. Senior researchers have permanent position but publish less. - Large population of researchers under temporary contracts or assignments and looking for a permanent position. - Low intersectoral mobility between academia and industry.
SLOVENIA	
- A large pool of Ph.D. students. - There are pockets of excellence in certain research fields. - Public research organisations provide permanent and stable employment.	- Ageing researcher population holding permanent positions. - Lack of public R&D funding - Weak collaboration between companies and research centres
SOUTH AFRICA	
- How the best universities work as research chairs and centres of excellence. - Strong partnership between academia and industry	- Competition for talents between industry and public sector. - Racial and gender imbalances in research careers. - Lack of funding for Master and PhD programmes, both emerging and established.
UNITED KINGDOM	
- Good incentives to integrate research careers - Good integration into international scientific networks	- Quite competitive career path with large amounts of money spent. - Most post-doc enter the labour market instead of working in the public sector. Banking is an attractive place.

Part II. Clustering national strengths and weaknesses.

Overall, the factors most recurrently identified as key strengths / weaknesses of national innovation systems may be clustered as follows. The diagram below is based on the standard "hot" STI policy issues used in the STIO 2014 policy questionnaire and country profiles.

Strengths	Weaknesses
	
Policy awareness and some policies in place - Some policy focus and policy instruments in place to support research education and careers (e.g. tax incentives, doctoral programmes)	**Weak industry-science cooperation** - Low cooperation between academia and industry - Low public-private mobility

Sound science and education systems - Competitive labour market - Large pools of research skills, pockets of excellence and sound research infrastructures - Improved gender balance at Ph.D. level	**Low attractiveness of research careers** - Poor working conditions, issues around the labour contract (temporary positions, job security). - Better training and life-long learning are required, notably to seize opportunities raised by new technologies (e.g. big data, analytics) - Some lack of public funding. - Gender unbalance: Women still under-represented in scientific careers. - Ageing research population. **Labour market failures** - Large population of Ph.D. holders out of research positions. - Competition for talents between industry and academia which offer two different career paths.

Part II. Drivers of change

Participants were invited to discuss possible drivers of change of the current situation that might reshape / transform national innovation systems towards 2030.

The OECD Secretariat proposed the following drivers of change:

- Technology convergence
- Shifting economic gravity
- Globalisation (research internationalisation) and GVCs
- The changing nature of innovation (new business models, non-tech innovation)
- Grand challenges (Ageing, pressure on strategic resources, climate change etc.)
- 21th century society (interconnected, mobile, urban)

No additional major drivers of change have been identified in this breakout session.

Part III. In 2030

Participants were invited to discuss how current drivers of change may lead to new opportunities / threats for national innovation systems on the long term (to 2030).

Opportunities	Grey areas	Threats
Open science - Global knowledge transfer in Open Access - Shift in the research methodology. OS and OD tools can support this change **New emerging technologies and the changing nature of innovation** - Growing demand from new fields of research (e.g. space, biotechnology, nanotechnology, particularly for health care). - New careers opportunities - Opportunities for soft sciences as computers are performing more tasks - Interdisciplinarity	**Internationalisation of STI activities** - Pool of talent coming from developing countries - Inter-disciplinary and global research teams supported by ICT - Push for more collaborative work - Global demand for research skills supported by e-learning and MOOCS. - Social economic and private costs of training youth that move abroad	**Short-termism in research funding** - Industry-led research funding with companies focusing on short-term developments and rapid returns on investments - Changing model of public research funding with more competitive project-based funding. - Companies focusing on success. **Fiscal constraints** - 2030 is not a long term perspective (only 2 Ph.D. generations away) while training researchers requires a long-term policy planning. - Lack of funding and risk of instability of research careers. **Education and training** - Shifts in the skills set required from individuals and teams to perform research and to perform in modern societies. With a risk that the right skills lack. - Exploiting the opportunities raised by ICTs (e.g. big data) would require new generation of specialists that do not exist.

		- Competition between the public and private sectors for talents. **Society** - Cultural conflicts and tensions (between generations, between the private and public sectors)