

## International mobility of the highly skilled

### Rationale and objectives

The international mobility of highly skilled individuals plays an important role in shaping national innovation systems. It is widely acknowledged that mobile talent contributes to the creation and diffusion of knowledge, particularly tacit knowledge as it is often shared through direct personal interactions (OECD, 2001, 2008 and 2010). Business and academia seek out abroad for specific knowledge or abilities or for drawing upon an expanded pool of talents. They also create or integrate international knowledge networks through their foreign staff. For talented individuals, mobility provides a means to exploit opportunities abroad, overcome barriers and resource constraints experienced at home, and fulfil their vocations.

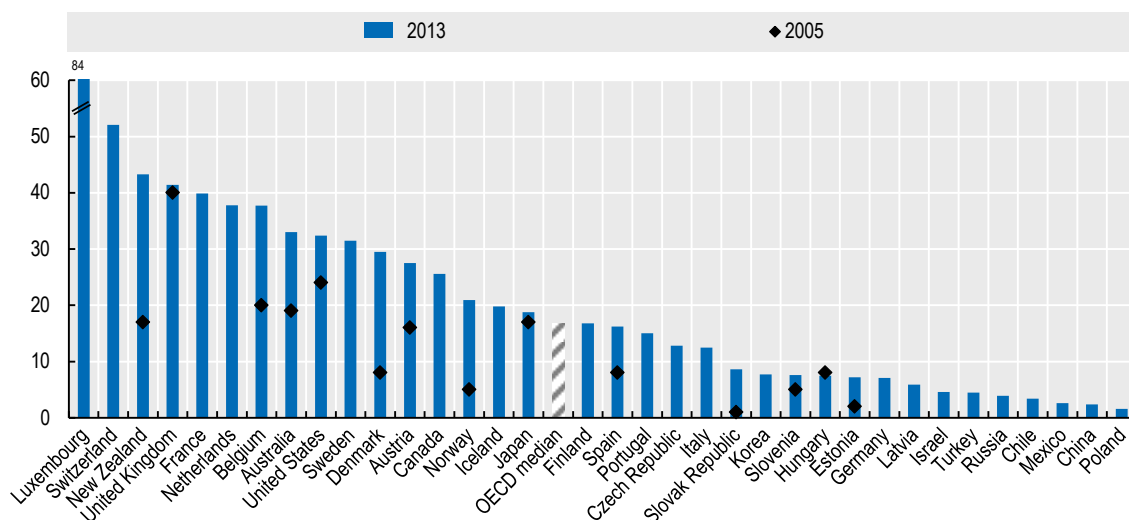
The world economy has witnessed a steady increase in the global flows of highly qualified individuals, students, scientists and engineers over the past two decades, both in absolute terms and as a percentage of total flows (Freeman, 2010; Docquier and Rapoport, 2012). Economic (e.g. costs of international flights), technological (e.g. the spread of the Internet and social media to maintain contacts across borders) and cultural (e.g. use of English as a common working and teaching language) factors have contributed to making international mobility substantially more affordable and less irreversible than in the past. In 2010-11, there were 35 million migrants with tertiary education entering the OECD area; their number increased by 70% in the past decade, compared with an increasing of total numbers of 38% (Arslan *et al.*, 2014).

While they account for a small share of world population, international migrants have a disproportionate impact on economic and science and innovation systems. Recent migrants are more educated than those who emigrated earlier. This is by and large a consequence of the expansion in higher education witnessed worldwide (see also the *Policy Profile on the Internationalisation of Universities and Public Research*). International mobility is particularly marked among tertiary-level students and at upper levels of tertiary education. During 2005-12, the number of foreign tertiary students enrolled worldwide increased by 50% (OECD, 2015a). In 2013, international students accounted for nearly a quarter of all students enrolled in OECD doctoral or equivalent programmes, against an average of 9% in all levels of tertiary education (Figure 1) (OECD, 2015b). Although their proportion in doctoral programmes varies considerably across countries, partly owing to geographical location or language, it is significant everywhere. For the majority of countries with available data, the proportion of foreign nationals in doctoral programmes actually increased between 2005 and 2013.

International migrants shape skilled labour forces. Foreign skilled workers are more overrepresented than in the past in the active working age group of 25-64. There is already evidence of massive inflows of foreign talents in specific professions and countries. For example, skilled migrants from Asia have been playing a critical role in bridging the skills gap in science, technology, engineering and mathematics fields in the OECD area. Foreign-born doctors and nurses account for a significant and growing share of the healthcare professionals working in the OECD area (OECD, 2015b).

Governments have encouraged international recruitment as to address expected pressures on health and healthcare services, as both population (demand) and medical and nursing workforce (supply) age. In fact, inflows of migrant workers will be an important factor to mitigate ageing in most OECD economies (Westmore, 2014) (see also the *chapter on "Megatrends for STI"*).

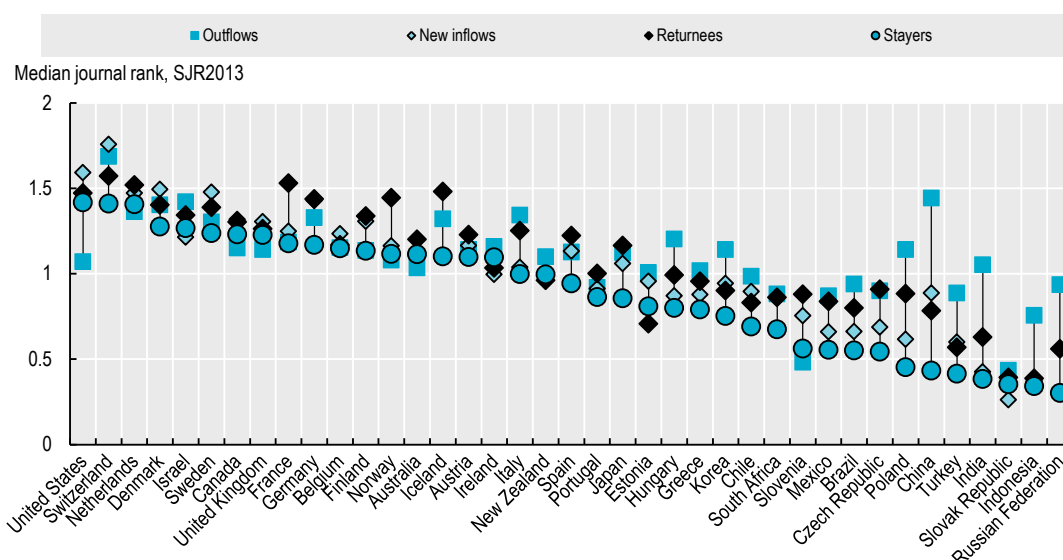
**Figure 1.** International students at doctoral or equivalent level, 2005 and 2013  
As a percentage of all students (international plus domestic) at doctoral or equivalent level



Source: OECD (2016), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2016-en>, <http://gpseducation.oecd.org/Home>, UNESCO Institute for Statistics, Education databases, June 2016. Data retrieved from IPP.Stat on 29-September-2016.

StatLink <http://dx.doi.org/10.1787/888933434237>

**Figure 2.** Mobile scientists have also higher impact in publishing  
Impact of scientific authors by type of mobility, Median Scimago Journal Rank (SJR) scores for 2013



Note: This is an experimental indicator. Impact factor is based on the median source-normalized impact per paper (SNIP).

Source: OECD (2015), "Scientists on the move", in OECD Science Technology and Industry Scoreboard 2015: Innovation for growth and society, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_scoreboard-2015-en](http://dx.doi.org/10.1787/sti_scoreboard-2015-en). OECD, calculations based on Scopus Custom Data, Elsevier, version 4.2015, and on Scopus journal title list, accessed May 2015, <http://oe.cd/scientometrics>, June 2015.

StatLink <http://dx.doi.org/10.1787/888933434240>



International migrants also appear to have a positive effect on entrepreneurship and innovation. They are more likely to create firms, tend to file more patents, publish more research articles and are more inclined to commercialise and license research results (OECD, 2014). Patent data suggest that 10% of inventors worldwide showed a migratory background in 2005 (Miguélez and Fink, 2013). Bibliometrics data show that, although large differences are noticeable across countries, mobile scientists tend to have also higher impact in publishing (Figure 2). **“Stayers” who are less exposed to leading scientists and institutions tend to publish in journals with lower average citation impacts (OECD, 2013a).** A lack of mobility could be a drag on the scientific performance of an individual, institution and country.

From an individual perspective, benefits of international mobility are many fold: opportunities for better pay, career advancement, working with “star scientists” or in prestigious institutions and accessing the associated social networks, accessing higher quality research facilities, increased autonomy, benefiting from more transparent systems of recruitment and reward, and freedom to debate etc. (OECD, 2008).

Global competition for talent has increased reflecting the selective nature of migration, i.e. the propensity of the more skilled or more highly educated to be more mobile. Integrating international open networks and attracting foreign talents have become strategic to capture knowledge flows and effectively reduce skills scarcities. This is particularly true for the smaller or lower-income countries. The global landscape of international STI migrations has therefore been more complex. Growing policy attention has been paid worldwide to offer the most attractive conditions, and more and more OECD and non-OECD economies have increased policy support to inward, outward and return migrations. Whereas global migration flows of highly skilled have long originated from Asia, and to a lesser extent from Africa and Latin America, towards the OECD area, more recently, growing numbers of migrants have inflated South-South migration flows, reflecting the polarisation and South-East shift of STI activities (OECD, 2014).

Although policy plays a lesser role in influencing choices related to lifestyle and family, policy action can reduce political, technical and legal barriers to mobility in areas such as immigration legislation, administrative obstacles or language barriers (OECD, 2008). Likewise, potential rigidities in the labour market can discourage cross-border mobility. Data from the OECD/UNESCO/Eurostat study on doctorate holders show some significant and unexpected gaps between international mobility and income, the former being associated with lower earnings in a number of countries (Auriol *et al.*, 2013). Similarly, the ability of innovative businesses to tap into foreign labour will be affected by the costs of hiring and firing associated with employing foreigners (IPP, 2016a).

International mobility of talent has long been seen as a competitive process in which **one side’s win (brain gain) is another’s loss (brain drain).** More recent considerations on brain circulation have helped reframe the debate and give a more nuanced view on the circularity of knowledge flows. Some recent findings show a strong relationship between scientist and student flows, with individuals going to a country to study and then moving back to the original country (Appelt *et al.*, 2015). This suggests brain circulation takes place within wide complex networks of mobile highly educated and skilled individuals and provides rationale for early international training and the design of STI migration policies in a collaborative approach.

## Major aspects and instruments

Public policies can play an important role in stimulating the demand for and supply of internationally mobile talents. Indeed, mobility can be positively influenced by convergence in better economic conditions, lower regulatory restrictions, including immigration visa-related restrictions, and more attractive STI environment, for instance due to larger resources or higher quality capacity available. Past evidence suggested that some distinction should be made between the incentives for migration in general and the particular incentives dedicated to STI talents. While general migration has strong economic incentives, and **often moves in conjunction with countries’ relative economic performance, STI mobility has additional, and complex, aspects relating to research opportunities, work conditions, and access to infrastructure (OECD, 2008).** In addition the reasons for moving abroad may differ according to the profession and the type of work (Mahroum, 2001). Engineers and technicians seem to be attracted by salary and labour market conditions, whereas researchers and scientists are motivated by the nature of the work and the research environment, including the prestige of the institution.

Consequently, major policy initiatives to foster international mobility focus on building attractive ecosystems and offering favourable working and living conditions for mobile talents on the one hand, and targeting particular individuals for their specific or potential abilities, on the other hand. A broad range of policy instruments could be mobilised, ranging from horizontal schemes aiming to reinforce the overall attractiveness of STI ecosystems, to more focused initiatives aiming to improve capacity of STI actors (universities, public research institutes or firms) to connect to global knowledge networks and host







international talents, to targeted programmes to migrants themselves (Table 1). Policies may offer incentives to attract and retain highly-skilled foreigners, and incentives to encourage mobility and return of national talents. In practice, both types of incentives can also be closely entrenched.

Various factors contribute to reinforce the overall attractiveness of STI systems, including national public research capacity, access to world-class infrastructures and knowledge platforms, funding available and better working conditions in STI careers (see the *Policy Profiles on Public research missions and orientation, on Financing Public Research and on Research careers*). Most publicly-funded research programmes have actually a component of international mobility and are designed to support mobility costs.

In some countries international mobility of researchers and highly skilled is raised as a national priority. Ireland just released its Innovation 2020 strategy that aims to ensure a continued inflow of top research talent. In Austria the National Strategy for Research, Technology and Development encourages the immigration of highly qualified scientists. The Colombian National Development Plan provides guidelines for international mobility and proposes the creation of a programme of internships and work exchanges to attract highly qualified staff to the country, especially to its least developed regions. Within its new Operational Programme Research, Development and Education (2014-20), the Czech Republic encourages larger inflows of students, teachers, academics and research, technical and administrative staff. Slovenia also intended through its medium-term National Programme for Higher Education to increase inward student mobility by facilitating teaching in foreign languages.

Reflecting the large contribution of international students to STI migration flows and their future role in labour force, policy action has been taken in many countries to encourage the internationalisation of universities and higher education (see the *Policy Profiles on the Internationalisation of Universities and Public Research and Cross-border Arrangements for S&T*). Several countries have revised their governance arrangements to support further internationalisation of higher education, e.g. by adopting dedicated national strategy or **integrating internationalisation criteria into universities' performance agreements**. Double degrees, foreign campus, massive open online courses (MOOCs), new admission rules for foreign students, or the revision of curriculum to encourage teaching in foreign languages are various policy initiatives recently observed in OECD and non-OECD economies. In addition financial support has been provided to universities and public research institutes to increase participation in international R&D projects (e.g. EU Horizon 2020) and fund internationalisation activities, including travel costs (e.g. New Zealand Catalyst Fund). Non-financial support is provided through promotion activities (e.g. information campaigns abroad), training and networking services (e.g. information portal), or support on how to participate in international research programmes (e.g. national contact for H2020). Another channel for promoting international migration is the research and education agreements that countries or institutions conclude on bilateral or multilateral basis.

Governments adopt immigration policy-oriented approaches to ease entry of knowledge workers and simplify visa procedures. While restrictive immigration and visa policies have obvious negative effects on the inflows of workers, generic visa restrictions that apply to short term visits can hinder the most basic forms of collaborations. Some countries have reformed their immigration laws and introduced special amendments to favour highly skilled individuals. The European Union Blue Card Directive provides a favourable framework for the admission of skilled and educated migrants to the EU and the Scientific Visa Package facilitates the procedure of admitting non EU researchers into the EU area for the purpose of scientific research.

Recognition of foreign qualifications and diplomas also aims to facilitate international migrations. Educational accreditation standards and information play an important role in removing barriers for mobility and supporting the global market for advanced skills. International co-operation in this field is essential, e.g. the Bologna Process in the European Union.



**Table 1.** International mobility: typology of non-financial support instruments and country examples

Types of instrument			Target population	Country examples
Institutions and governance	Guiding documents	Dedicated strategy or plan		Netherlands (Make it in the Netherlands Action Plan)
		As part of broader national strategy or plan		Austria (National Strategy for Research, Technology and Development), Colombia (National Development Plan), Czech Rep. (Operational Programme for R&D and Education), Ireland (Innovation 2020), Slovenia (National Most countries, US (Fulbright Fellowship Programme).
	Bilateral/ multilateral agreements			
Reform and regulation	Visa and immigration law	Amendments and simplified procedures	For all migrants	Iceland (Legislation on foreigners), Ireland (Immigration, Residence and Protection Bill).
			For highly skilled, researchers and/or students	Austria (Aliens Act), Czech Rep. (Czech Immigration Act), France (Scientific Visa, draft law on the rights of foreigners), Ireland (streamlined procedures), Italy ( <i>Destination Italy</i> ), Netherlands (Modern Migration Policy Act), South Africa (Immigration Act and Exceptional Skills Work Permit), EU Scientific Visa, EU Blue Card.
	Qualification recognition			Germany (Recognition of Qualifications Act 2012), Switzerland.
	Remuneration and social benefits		Civil servants	Slovenia (amendment to the Act on Foreigners to allow funding of foreigners).
			All workers	Sweden (social and health benefits for foreign researchers).
Non-financial support	Social and cultural assistance	Relocation assistance (e.g. housing, childcare facilities etc.)		Austria (Dual Career Service), Belgium (mobility centres), Germany (Qualified Professionals Initiative), EU (EURAXESS).
	Networking and information services	Professional networks (diasporas)		Argentina (RAICES Network), Belgium (Scientific Research Network), Colombia (Diaspora Programme), Germany (GAIN network).
		R&D funding and job opportunities		Austria (Job Exchange), Germany (Research in Germany), Japan (Euraxess Links Japan), EU (EURAXESS).
		Pensions systems		Germany (pensions portal for mobile researchers).
	Promotion activities	General information		Germany (Qualified Professionals Initiative, Welcome to Germany Portal)
				France (Campus), Germany (Research in Germany), Ireland (Education in Ireland).
	Marketing and strategic support		For entrepreneurs and investors	Ireland (Enterprise Ireland international programme), Spain (Invest in Spain).

\* see also the policy profile on the Internationalisation of Universities and Public Research.

*Note:* This table draws upon recent analytical works on the innovation policy mix carried out for the OECD STI Outlook under the aegis of the OECD Committee for Scientific and Technological Policy. Country information is drawn from the EC/OECD International Science, Technology and Innovation Policy (STIP) Database, edition 2016, <https://www.innovationpolicyplatform.org/topic-menu/sti-policy-database>.

*Source:* Kergroach, S., J. Chicot, C. Petrolli, J. Pruess, C. van Ooijen, N. Ono, I. Perianez-Forte, T. Watanabe, S. Fraccola and B. Serve, (forthcoming), "Mapping the policy mix for innovation: the OECD STI Outlook and the EC/OECD International STIP Database", OECD Science, Technology and Industry Working Papers.

Reforms can also take place in civil servants' employment regulation, or pension and social safety net systems. Indeed, in some countries, migrants do not fully benefit from local social welfare and pension systems. Sweden for instance recognizes social and health benefits to foreign researchers living and working on the long-term run in the country, entitling them to medical care and allowance on the same terms as Swedish citizens. Similarly, recruitment practices in the publicly-controlled research system can have adverse effects on mobility, e.g. by favouring incumbents. The internationalisation of careers can therefore be enhanced through different governance arrangements such as performance evaluation of institutions and staff. The lack of pension portability across frontiers is another major obstacle to international mobility, especially at later stages in a research career, and is still ill-addressed.

Governments are active in promoting national STI careers and inward mobility. Germany operated the Research in Germany initiative since 2006 and organised regular events to present German innovation and research in key international markets. One key element of "Research in Germany" is an Internet portal that provides an overview of the research and funding opportunities in Germany and that delivers the latest science and research news from Germany and upcoming events.

Similarly, governments provide non-financial support to individuals (e.g. students, researchers, engineers etc.). A wide range of social, cultural, information and networking services and facilities are deployed to assist highly skilled migrants and provide them with the most general information on immigration conditions to the very targeted assistance their professional or family situation may require (e.g. administrative support, housing, childcare, networking/ contact assistance etc.). Belgium and Germany



operate mobility centres. Argentina, Belgium, Colombia and Germany have implemented platforms for diaspora to connect and maintain linkages.

Public support is also provided to mobile entrepreneurs and investors willing to migrate. Enterprise Ireland assists newcomers in designing a marketing strategy, leveraging social media technologies, and identifying business channels, including Trade and Knowledge events and venture capital.

Financial incentives are major policy instruments for international mobility. They are broadly used across OECD countries and non-OECD economies, especially at individual level as they can be more easily targeted to specific skills, migrant profiles or migration types (Table 2).

Most countries operate funding programmes to support inward, outward or return mobility and these programmes differ on the conditions of migration (e.g. short-term and visit travels, doctoral programmes, long-term settlement) and the target populations (the most common target populations being pre-doctoral students, early stage -including doctoral or postdoctoral- researchers, experienced researchers, and world 'star' researchers). The density of the policy portfolio, i.e. the relative concentration of policy initiatives, indicates however that many countries tend to favour outward mobility of young researchers and inward-return mobility of more experienced researchers, signalling efforts for appropriating external knowledge spillovers (Kergroach et al., forthcoming).

Some countries have also implemented particular funding schemes for entrepreneurs (Ireland, Turkey), academics and teaching staff (Czech Republic, Germany, Peru, Portugal, Turkey), research managers and heads of laboratories (Poland) or **researchers' spouses in their professional career (Austria)**. Austria, Colombia and France have adopted an inclusive approach by targeting women researchers, minorities and disadvantaged people.

Several countries combine direct financial incentives with tax relief for key foreign employees. Tax relief is usually based on personal income (Denmark, Ireland, Italy, Slovenia, Sweden, South Africa), but could also be granted on local taxes (Italy). These schemes can be open to executives, researchers and specialised staff. However, scheme design can become complex, imposing substantial compliance and administrative costs relative to the potential gains in terms of employment or innovation (OECD, 2011).

More occasionally, specific public support is provided to universities and firms to host international workers or encourage their staff to move abroad. Such initiatives include the creation of academic positions for world-class researchers (France, South Africa), and multilateral agreements for R&D grant portability (DASH agreement, "Money follows research" initiative). **Firms are eligible to corporate income tax incentives (Italy)** or benefit from intra-company transfer permits for transnational staff (Ireland).

Finally, in addition to national policies, many countries promote international mobility through various regional programmes. The EURAXESS portal shares information on R&D funding opportunities and job vacancies for researchers in Europe and similar online services are offered beyond the EU, e.g. Euraxess Links Japan. The ERASMUS programme focuses on university students. In the Nordic and Baltic countries, the Nordplus Higher Education Programme includes grants for student and teacher mobility.





**Table 2.** International mobility: typology of financial support instruments and country examples

Types of financial instrument		Target population	Country examples
Revised public R&D funding mechanisms	New funding schemes		Russian Fed. (Federal Targeted Programmes), Slovenia (Grants for R&D projects lead by returning researchers), South Africa (International Research Grants).
	R&D grants portability		Austria-Germany-Switzerland (DACH Agreement), Austria (FWF Money follows researcher), Sweden (Money Follows Researcher).
Creation of special job positions	New educational programmes		Germany (IPID4all).
	Lead research positions		France (Chairs of Excellence), South Africa (South African Research Chairs Initiative - SARCHI).
Fellowships, scholarships and grants	Inward mobility	For students	Belgium (Wallonia-Brussels International grants), Czech Rep. (grants for HR development), Korea (Global Korea Scholarships), Lithuania (State Scholarships), Mexico (CONACYT Scholarships), Turkey (International Graduate Scholarships).
		For young researchers, incl. PhD and postdocs	Belgium (Postdoctoral fellowship), Ireland (International Scholarships), Italy (Montalcini), Japan (Postdoctoral Fellowships, JSPS Summer Program), Norway (mobility grants for RCN-funded PhDs and postdocs), Spain (Juan de la Cierva grants), Turkey (TUBA Academy Prizes).
		For senior researchers	Austria (Lise Meitner, Researchers Career Grants), Belgium (Odysseus), Finland (Academy Professors & Distinguished Professors), Germany (Alexander von Humboldt Professorship), Ireland (E.T.S. Walton Visitor Awards, Incoming Short Term Travel Fellowship, Research Professorships), Italy (OP Messaggeri della Conoscenza), Japan (Invitation Fellowships for research, Postdoctoral Fellowships for Overseas Researchers), Korea (Korea Research Fellowship), Latvia (Post-doctoral grants), Lithuania (Global Grant), Netherlands (Innovational Research Incentives), Portugal (FCT Investigator), Spain (Ramón y Cajal grants), Turkey (Science Fellowships and Grants).
		For spouses and family	Austria (Dual Career Grant, Researchers Career Grants).
		For entrepreneurs and investors	Ireland (Enterprise Ireland international programme).
	Outward mobility	For students	Chile (Becas Chile), Colombia (Young Engineering, Nexo Global pilot), France (ERASMUS scholarships), Germany (PROMOS, Go East-programme), Italy (Youth Fund "Fondo Giovani"), Mexico (CONACYT International scholarships and Mixed scholarships), Norway (State Educational Loan Fund), Peru (Scientific Generation ).
		For young researchers, incl. PhD and postdocs	Austria (Schroedinger, Marietta Blau Grant, FWF doctoral funding), Japan (Support for Advancing strategic international networks, Postdoctoral Fellowship For Research Abroad), Japan (Postdoctoral Fellowship For Research Abroad), Norway (Leiv Eiriksson mobility), Peru (Doctoral Scholarships Abroad), South Africa (DST Human Capital Development, Innovation Postdoctoral Fellowships, NRF mobility scholarships), Spain (Predoctoral mobility aids), Turkey (Science Fellowships and Grants), EU (ERASMUS).
		For senior researchers	Austria (ASCINA Initiative), Croatia (NEWFELPRO), Finland (Grants for international joint projects), Poland (Mobility Plus), South Africa (travel grants, Knowledge Interchange and Collaboration), Spain (Salvador de Madariaga grants), Turkey (Science Fellowships and Grants), US (NSF GROW).
		For teachers and academics	Czech Rep. (Mobility support), Germany (Bologna mobility package), Peru (Scientific Generation), Portugal (Faculty Exchange), Turkey (Training of VET teachers).
		For research managers	Poland (SIMS project).
		For entrepreneurs and investors	Turkey (Techno-Entrepreneurship Grant).
		For minorities and disadvantaged people	Colombia (ICETEX educational loans), France (international mobility support).
	Inward/Outward mobility	For highly-skilled	Czech Rep.-Hungary-Poland-Slovak Rep. (International Visegrad Fund).
		For young researchers, incl. PhD and postdocs	Austria (APART, Doctoral Fellowships), Belgium (Pegasus Marie Curie Fellowships), Colombia (Colciencias calls), Greece (Support for postdoctoral research), Netherlands (Rubicon), Slovenia (HR Development and Scholarship Fund), Spain (PRE-doc contracts for PhD training).
		For senior researchers in humanities and social sciences	Sweden (SSF mobility grants, VINNOVA Mobility for Growth programme).
	Return mobility programmes	For young researchers, incl. PhD and postdocs	Austria (Doctoral Fellowship programme, ROM Programme, OeAW – Pilot Programme Post-Doc Track), Germany (Anneliese Maier Research Award).
		For senior researchers	France (Return from Postdoc programme), Mexico (Institutional Consolidation Programme).
		For women researchers	Czech Rep. (NAVRAT), Finland (Distinguished Professor Programme), Germany (reintegration programme), Japan (Bridge Fellowship Programme), Mexico (Institutional Consolidation Programme), Peru (Fund for Innovation, Science and Technology), EU (return of expatriate researchers).
Indirect tax incentives	On personal income		Denmark (tax scheme for foreign researchers and key employees), Ireland (Special Assignee Relief), Italy (tax incentives to non residential researchers), Slovenia (fiscal incentives for foreign researchers), Sweden (tax relief of foreign experts), South Africa (tax free stipend for Russian academics).
	On local taxes		Italy (tax incentives to non residential researchers).
	On corporate income		Italy (tax credit for innovative start-ups)
Indirect tax incentives	On personal income		Denmark (tax scheme for foreign researchers and key employees), Ireland (Special Assignee Relief), Italy (tax incentives to non residential researchers), Slovenia (fiscal incentives for foreign researchers), Sweden (tax relief of foreign experts), South Africa (tax free stipend for Russian academics).
	On local taxes		Italy (tax incentives to non residential researchers).
	On corporate income		Italy (tax credit for innovative start-ups)

\* see also the policy profile on the Internationalisation of Universities and Public Research.



Note: This table draws upon recent analytical work on the innovation policy mix carried out for the OECD STI Outlook under the aegis of the OECD Committee for Scientific and Technological Policy. Country information is drawn from the EC/OECD International Database on Science, Technology and Innovation Policies (STIP), edition 2016, <https://www.innovationpolicyplatform.org/topic-menu/sti-policy-database>.

Source: Kergroach, S., J. Chicot, C. Petrolli, J. Pruess, C. van Ooijen, N. Ono, I. Perianez-Forte, T. Watanabe, S. Fraccola and B. Serve, (forthcoming), "Mapping the policy mix for innovation: the OECD STI Outlook and the EC/OECD International STIP Database", OECD Science, Technology and Industry Working Papers.

## Recent policy trends

Scholarships, fellowships and individual grants remain common financial instruments to encourage brain circulation. Croatia, Egypt, Ireland, Japan, Korea, Latvia, Spain and Turkey have created new international mobility scholarships and fellowships.

- Croatia has deployed a range of policy initiatives to encourage mobility at all ages with a view of reversing the brain drain process and developing a labour market for researchers in Croatia. The Action Plan for the Internalisation of Education (2015) includes incentives on student mobility while the new International Fellowship Mobility Programme for Experienced Researchers (NEWFELPRO) offers fellowships to foreign experienced researchers.
- Japan aims to attract overseas young postdoctoral researchers, researchers and professors while Korea intends to incentive long-term stays of foreign researchers.
- France through its ERASMUS + programme aims to double student mobility during the next 2014-20 period. Today, about 30 000 French students get an ERASMUS grant every year.
- Ireland has similar ambitions to double the number of international students studying in Irish higher education institutes and has set an "Education in Ireland" brand programme to market the Irish higher education and the English Language Sectors internationally. In addition, the Innovation 2020 aims to scale up both Research Professor and Future Research Leaders awards by an additional 3-5 to 10 per annum and plans to engage the Irish embassy network to promote the Science Foundation Ireland awards and Ireland as a destination for a research career.
- Spain has earmarked in 2016 USD 261 million PPP (EUR 172 million) to four-year PRE-doc contracts for PhD training that are open to all nationalities. Also, competitive mobility grants are awarded to research trainees and mainly to foreigners.
- Turkey has launched the TÜBA Academy Prizes, a three-year funding scheme open to all scientists, to encourage the set up of research groups in all disciplines.

Financial support for mobility is channelled through public research funding mechanisms and international joint research projects.

- Finland has introduced a new funding model for universities in 2013, with greater emphasis given to internationalisation. The new model includes internationalisation criteria, i.e. the number of degrees granted to foreigners, incoming and outgoing international student exchanges, international refereed publications, internationally competed research funding and foreign teaching and research personnel. In parallel, the Academy of Finland has implemented a grant programme for international joint R&D projects as to promote researcher's outbound mobility.
- Japan has earmarked USD 17 million PPP (JPY 1.9 billion) in 2015 to a new programme for advancing strategic international networks and accelerating the two-directional circulation of talented researchers through international joint research.

Mobility schemes focuses on S&T and hard sciences but some new initiatives also reflect shared preoccupations regarding the need to improve an interdisciplinary approach in science.

- Colombia has implemented in 2015 the Nexo Global pilot programme, an international mobility programme for science, technology, engineering and mathematics (STEM) undergraduate students to participate in international internships in universities, research centres or companies.





- The Brazil Scientific Mobility Programme provides 100 000 scholarships to STEM undergraduate and graduate students to study in the United States and return to Brazil after an academic year to complete their degrees.
- The Austrian Academy of Science has launched a Pilot Programme Post-Doc Track (2015-17) to encourage international mobility in the fields of the humanities, social and cultural sciences. This scheme complements existing ones: the ROM Programme for doctoral candidates and young postdocs in humanities and cultural studies to conduct research in Italy, and, the Doctoral Fellowship Programme for Teams from the Humanities, Cultural Studies and Social Sciences (DOC\_team programme) to conduct transdisciplinary research, each team member, from at least two different disciplines, having to spend at least half a year at a research institution abroad.

The legal environment is changing in France, Iceland and Spain.

- A new Law on the rights of the foreigners is under discussion at the French Parliament. It envisages the creation of a talent passport with a researcher mention. This title will be issued for active foreigners and their family for a maximum period of four years under the conditions that the beneficiary holds at least an equivalent to Master's degree or works in a young innovative enterprise.
- Iceland is also revising its Legislation on foreigners to include a clause for highly skilled personnel.
- The recently approved Spanish Law on Entrepreneurs and Internationalisation has been revised in 2015 as to extend the definition of entrepreneurial and business activities and to streamline and simplify procedures for residence and work permits for international investors, entrepreneurs and high skilled professional.

Greater policy focus has been given to more cross-country collaborative approaches, e.g. through international partnerships and multilateral agreements.

- **The Czech Republic's Operational Programme Research, Development and Education (2014-20)** supports the international mobility of research, technical and administrative staff through new or renewed strategic institutional partnerships, internships, trainings and the establishment of international graduate schools.
- In 2015, Germany and Italy earmarked EUR 400 000 to a new Joint Mobility agreement for graduate, post-graduate students, young researchers and academics. The same year, the governance rules of the intergovernmental Italian/French University have been revised in order to simplify its governance.
- As from 2016, Norway has repealed its Quota scheme that provided financial support to individual students from developing countries. The related budget has been transferred to a new partnership programme for cooperation with developing countries, as well as other initiatives that follow up the 2015 **"Panorama" strategy for cooperation in research and higher education with Brazil, China, India, Japan, the Russian Federation and South Africa**. Likewise, the INTPART programme funds long-term international partnerships between Norwegian higher education and research institutions and partners in prioritised counties outside the EU for an equivalent of USD 7.6 million PPP (NOK 70 million). Short- or long-term reciprocal mobility stays of students, researchers, managers and administrative staff; cooperation on curriculum development, joint degrees and joint courses, seminars and educational programmes; guest lectures and joint teaching and supervision of students and doctoral candidates are the activities eligible to this scheme.
- A noteworthy trend in terms of student mobility is the growing recognition of foreign degrees and the creation of double degrees. In 2012, the Russian Federation addressed this issue by streamlining the process for the recognition of foreign qualifications for graduates of 210 leading world universities.



## References and further reading

- Appelt, S.; Galindo-Rueda, F.; de Pinho, R.; and van Beuzekom, B. (2015). “Which factors drive the international mobility of research scientists?”, in Geuna, A. (ed.), *Global Mobility of Research Scientists: The economics of who goes where and why*. Elsevier, Philadelphia.
- Arslan, C. et al. (2014), “A New Profile of Migrants in the Aftermath of the Recent Economic Crisis”, OECD Social, Employment and Migration Working Papers, No.160, OECD Publishing, <http://dx.doi.org/10.1787/5jxt2t3nnjr5-en>.
- Auriol, L., M. Misu and R. A. Freeman (2013), “Careers of Doctorate Holders: Analysis of Labour Market and Mobility Indicators”, OECD Science, Technology and Industry Working Paper, 2013/04, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k43nxgs289w-en>.
- Docquier F and Rapoport H. (2012). “Globalization, brain drain and development”, *Journal of Economic Literature*, Vol. 50, pp. 681-730.
- EC (European Commission)/OECD (forthcoming), International Database on Science, Technology and Innovation Policy (STIP), edition 2016, [www.innovationpolicyplatform.org/sti-policy-database](http://www.innovationpolicyplatform.org/sti-policy-database).
- Freeman, R. (2010). “Globalisation of scientific and engineering talent: international mobility of students, workers, and ideas and the world economy,” *Economics of Innovation and New Technology*, 19(5), 393-406.
- IPP (Innovation Policy Platform) (2016a), “Migration”, accessed on 14 May 2016, <https://www.innovationpolicyplatform.org/content/migration?topic-filters=12155>.
- IPP (2016b), “Mobility of researchers and engineers”, accessed on 14 May 2016, <https://www.innovationpolicyplatform.org/content/mobility-researchers-and-engineers>.
- Kergroach, S., J. Chicot, C. Petrolí, J. Pruess, C. van Ooijen, N. Ono, I. Perianez-Forte, T. Watanabe, S. Fraccola and B. Serve, (forthcoming), “Mapping the policy mix for innovation: the OECD STI Outlook and the EC/OECD International STIP Database”, OECD Science, Technology and Industry Working Papers.
- Mahroum, S. (2001), “Europe and the immigration of highly skilled labour”, *International Migration*, 39(5), pp. 27-43.
- Miguélez, E and C Fink (2013), “Measuring the international mobility of inventors: A new dataset”, WIPO Economic Research Working Paper No 8.
- OECD (2001), *International Mobility of the Highly Skilled*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264196087-en>
- OECD (2008), *The Global Competition for Talent: Mobility of the Highly Skilled*. OECD, Paris. <http://dx.doi.org/10.1787/9789264047754-en>
- OECD (2010), *The OECD Innovation Strategy: Getting a Head Start on Tomorrow*. OECD, Paris. <http://dx.doi.org/10.1787/9789264083479-en>
- OECD (2011), *Taxation and Employment*, *OECD Tax Policy Studies*, No. 21, OECD Publishing. <http://dx.doi.org/10.1787/9789264120808-en>.
- OECD (2011), OECD Database on immigrants in OECD and non-OECD countries (DIOC-E), <http://www.oecd.org/migration/databaseonimmigrantsinoecdandnon-oecdcountriesdioc-e.htm>.
- OECD (2013a), *OECD Science, Technology and Industry Scoreboard 2013*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_scoreboard-2013-en](http://dx.doi.org/10.1787/sti_scoreboard-2013-en).



OECD (2013b), "Key findings of the OECD-KNOWINNO project on the careers of doctorate holders".  
[www.oecd.org/sti/cdh](http://www.oecd.org/sti/cdh)

OECD (2014). *OECD Science, Technology and Industry Outlook 2014*. OECD Publishing, Paris.  
[http://dx.doi.org/10.1787/sti\\_outlook-2014-en](http://dx.doi.org/10.1787/sti_outlook-2014-en)

OECD (2015a), "Indicator C4 Who Studies Abroad and Where?", in *OECD Education at a Glance 2015: OECD Indicators*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2015-27-en>.

OECD (2015b), *OECD International Migration Outlook 2015* OECD Publishing, Paris.  
[http://dx.doi.org/10.1787/migr\\_outlook-2015-en](http://dx.doi.org/10.1787/migr_outlook-2015-en)

Westmore B. (2014), "International migration: the relationship with economic and policy factors in the home and destination country", OECD Economics Department Working papers, No. 1140, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz123h8nd7l-en>.







**From:**

## **OECD Science, Technology and Innovation Outlook 2016**

**Access the complete publication at:**

[https://doi.org/10.1787/sti\\_in\\_outlook-2016-en](https://doi.org/10.1787/sti_in_outlook-2016-en)

### **Please cite this chapter as:**

OECD (2016), “International mobility of highly skilled”, in *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris.

DOI: [https://doi.org/10.1787/sti\\_in\\_outlook-2016-17-en](https://doi.org/10.1787/sti_in_outlook-2016-17-en)

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@cfcopies.com](mailto:contact@cfcopies.com).