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TECHNOLOGY TRANSFER IN JORDAN

2019-2020

SCIENCE, TECHNOLOGY, INNOVATION

Joint Research Centre

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Contact information
Competence Centre on Technology Transfer
European Commission, Joint Research Centre, Brussels – Belgium
Email: EC-CC-TT@ec.europa.eu

EU Science Hub
https://ec.europa.eu/jrc

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AUTHORS

Prof. Dr. Abdelhamid El-Zoheiry President of the Euro-Mediterranean University, Slovenia and Professor at the Cairo University School of Medicine, Egypt

James Hudson Director of Belfairs Consulting, Associate Consultant with Oxentia

María Jesús Barrada Beiras Science and Innovation Director, Estratega Consulting Global S.L.

CONCEPTION, PROJECT COORDINATION AND EDITING

EC Competence Centre on Technology Transfer

Eva Baltar European Commission, Joint Research Centre (JRC)

Melissa Rodríguez Martínez European Commission, Joint Research Centre (JRC)

Joseph Mosca Independent expert

CONCEPTION, COORDINATION OF EXPERTS AND EDITING

Andrea Basso Advisor - Progress Tech Transfer Fund, IT - Affiliate Professor University of Victoria, CA

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Introduction

The present report contributes to the European Commission's commitment of bringing the EU and its neighbours closer. The EU's European Neighbourhood Policy was launched in 2004 to help the EU support and foster stability, security and prosperity in its closest neighbourhood, and it governs the EU's relations with 16 of its closest Eastern and Southern Neighbours.

The EU is committed to supporting the economic development of its partner countries. Technology transfer represents a central area where distinct sections of society including academia, private research, government and public and private enterprises interface with one another to improve the overall economic and social conditions for those involved and the communities around them. By investing in the facilitation of technology transfer, governments can direct policy and funds to ensure the greatest outcome for society. With this process in mind, the ultimate objective of the present study is to inform policymaking in technology transfer and build stronger cooperation between the EU and its Eastern and Southern neighbours.

Methodology

The Competence Centre on Technology Transfer of the Joint Research Centre launched this study to conduct a brief diagnostic analysis and comparative overview of the state of Technology Transfer in twelve Eastern and Southern neighbouring countries, including Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine, Algeria, Egypt, Jordan, Lebanon, Morocco and Tunisia.

The study describes the main characteristics of the landscape, including relevant stakeholders, players and technology transfer models, identifies strengths and weaknesses of the ecosystem, and provides conclusions and recommendations for each country, with the aim of informing policymaking in this domain.

To achieve this objective, the Expert Group commenced with a desktop review to gather, examine and understand relevant policies, laws and literature concerning technology transfer in the respective study countries. This preliminary phase was employed in order to characterise the status of the technology transfer in the region, to identify the key stakeholders, crucial issues and possible areas of improvement.

Secondly, the identified issues served as guiding material in the design of questionnaires for relevant stakeholders. The list of stakeholders included: Government bodies (Ministries with role in intellectual property and innovation, i.e. Ministry of Science, Education, Economy, etc., Innovation Agencies), Universities, Academies of Sciences (management, technology transfer offices, researchers), Industry (incubators, science and technology parks, companies), and private investors.

On-site interviews with stakeholders took place in some of the study countries before March 2020, however, in order to respect health and safety concerns of the Coronavirus disease (COVID-19), all interviews that took place after March 2020 were online via video conferences. Both the information from questionnaires and interviews helped as source data for the diagnostic country reports – an analysis of the technology transfer ecosystem and country specific recommendations.

Lastly, the study will conclude with a benchmark report to detail some of the similarities and differences between the countries to give relevant comparisons.

Executive summary

Government

A number of line ministries are engaged in policy setting, whether through provision of resources and funds, participation in decision-making bodies or exerting control over resources and their ministerial mandates. These are the Ministry of Planning, Ministry of Trade and Industry (MIT), Ministry of Higher Education and Scientific Research (MHESR). The Scientific Research Support Fund (SRSF) created in 2007 under MHESR, has – by virtue of its control of the majority of Jordan's public funding for academic research exercises – a de facto policy role, particularly in terms of the priorities of research funding and Information and Scientific Technology (IST) foresight research. The Higher Council of Science and Technology (HCST) has the responsibility for the ratification of the National Science and Technology Policy for the Hashemite Kingdom of Jordan as it defines its priorities as well as establishing related programmes and plans.

Although there has been no dedicated innovation and technology transfer (TT) policy in Jordan, elements of programmes dealing with enterprise transformation, human resource development and other more recent initiatives encourage innovation and are all contributing to the overall goal of developing an innovative society. Moreover, the government has introduced a system of awards not only for excellence in industry, but also for transparency and good governance in public administration. National innovation policies are also implicit in national policies for industrial transformation, small and medium enterprises (SMEs) development, administrative reform, education and research (Batum, 2017). Recently, the HCST established a National Centre for Innovation with funding from the European Bank for Reconstruction and Development (EBRD) and the European Union (EU).

Universities and Research organisations

There are around 30 universities in Jordan, the majority of which are private institutions, depending mostly, if not entirely, on tuition fees paid by students. Consequently, universities are geared mostly towards education and not research. Faculty members experience a heavy workload that leaves them little or no time for research. Most of the research of Jordanian faculty members is aimed at reaching promotions rather than cooperative research with the industry. This said, more than half of the Jordanian universities have established technology transfer offices (TTOs), however, most are not active and they suffer from lack of funding as well as dedicated and skilled staff, and have weak links with each other and with the business sector. With the exception of maybe one or two universities, there is very little, or absent, TT and commercialisation activities in Jordanian universities.

Industry

Private companies in Jordan do not generally engage in innovation and are not likely to undertake significant levels of R&D. Exceptions to this rule exist mostly in the service sector and particularly in Information and Communications Technology (ICT). Perhaps the most notable absence of investment in R&D and innovation is in the industrial sector.

Despite the hurdles that currently stand in the way of entrepreneurs and innovation in Jordan, evidence suggests that the government, industry and academia are increasingly recognising the need to foster a culture of innovation, creativity and entrepreneurship. To this end, measures are being progressively implemented to encourage the creation of innovation and technology-based businesses.

Support organisations

Jordan has around 14 support organisations, in the area of incubation, acceleration, and venture capital (VCs) (Batum, 2017). Two stand out playing an effective role in the Jordanian innovation and TT ecosystem: iPARK and Oasis 500.

iPARK was established as an ICT incubator in 2003 and later it was transferred to the Royal Scientific Society (RSS), where it is currently hosted. However, it also provides patent support through its affiliated office, the Intellectual Property Commercialisation Office (IPCO), which is also the de facto central TTO in Jordan. Oasis 500 is a VC/business accelerator focusing mainly on ICT. It offers entrepreneurship training, mentorship and guidance, business incubation and acceleration, and follow-on investment and funding.

Technology transfer

Under the scope of the Support to Research, Technological Development and Innovation Programme (SRTD), a TT network was created by the HCST in 2008. Fourteen TTOs were established during the first phase, followed by six additional TTOs during the second phase of the programme. The TT network comprises various TT officers allocated in a wide range of institutions, such as public and private universities, the RSS, and the Chamber of Commerce.

There is little interaction between the HCST and the MHESR which leads to a lack of coordination among both institutions. The funds for TT as well as for cooperative research are limited. Lack of Intellectual Property (IP) regulations and policies at universities, lack of staff to support TT at universities and lack of trust among academia and industry have also been identified as hindrances for research collaboration and commercialisation.

GENERAL FINDINGS

Government

Relation of technology transfer (TT) with the national economic strategy

According to the general population and housing census in 2015, Jordan hosts a population of about 9.5 million people (Department of Statistics, 2016) and of those, approximately 2.9 million are foreigners (guest workers or refugees) (Department of Statistics, 2017). Unlike neighbouring Arab states to the south and east, Jordan has no oil of its own. Its resources are limited to phosphates and agricultural produce. The economy depends largely on services, tourism and foreign aid, of which the US is the main provider.

In the face of scarce natural resources, Jordan's economic prosperity has always depended upon its ability to effectively develop and utilise its human capital. Accordingly, Jordan is pinning much of its future hopes on developing the country's service economy, including ICT, tourism, medical services, pharmaceuticals, biotechnology and the renewable energy sector. The government acknowledged that Science, Technology and Innovation (STI) provide the key to the successful development of these industry sectors. Therefore, recognising the valuable asset provided by its relatively young population (34% under the age of 15 years in 2019), Jordan has established education (especially higher education), scientific research and the development of a culture of innovation and entrepreneurship as priorities within its 2006–2015 National Policy Agenda and the 2013-2017 National Policy and Strategy for STI. King Abdullah II, by launching one of the region's largest seed investment companies – Oasis500 – in 2010, demonstrated government support for the start-up scene. However, concerning innovation and TT, with the exception of the ICT sector which has some success stories, the government's efforts are yet to yield noticeable results.

ACCORDING TO THE WORLD BANK (2016), JORDAN'S GROSS DOMESTIC EXPENDITURE ON RESEARCH AND DEVELOPMENT (GERD) WAS 0.71%.

The public sector in Jordan has the highest percentage of expenditure on R&D of about EUR 13 260 000 (58% of GERD) as compared to EUR 8 308 000 (36% of GERD) of the private sector. Within the latter, manufacturing activities account for the highest share of R&D with an estimate of EUR 5 149 000 (62%) followed by business services (17.2%) and private education (13%) (Smadi & Tsipouri, 2012).

In November 2016, the Ministry of Information and Communication Technology (MoICT) recently renamed as the Ministry of Digital Economy and Entrepreneurship (MoDEE), unveiled the REACH 2025 initiative, which aims to turn Jordan into a regional ICT centre and to increase its "relevance in global value chains". As part of the initiative, MoDEE and the ICT Association of Jordan (int@j) will work in conjunction with the private sector to bolster competitiveness, human resource development, access to finance, investor incentives, and ICT development. The MoDEE expects total sector revenues to increase by 25-30% until the end of the programme, from approximately US Dollar (USD) 2 billion in 2014.

Although Jordan's ICT sector has been built on a solid foundation, industry stakeholders have voiced their concerns regarding certain shortfalls, such as access to finance, investor incentives and tax exemptions. Historically, the country's ICT sector has faced a heavy tax burden, which was exacerbated by the decision to double industry taxes in 2013.

The government has since moved to ease the tax burden by announcing a series of incentives to boost the sector in April 2016, including a sales tax and customs duty exemption for all services related to software development, mobile applications, website portals, outsourcing, digital content and electronic games, ICT training and e-learning. Under this new series of reforms, goods and service taxes for ICT-related services will have a sales tax rate of zero, while income tax on the same services will be lowered from the current 20% to 14%. As part of this move, the government also lifted all minimum capital requirements for foreign investors eyeing the ICT sector, making the country more appealing.

REACH 2025 builds upon the country's National ICT Strategy, which ran from 2013 to the end of 2017 and focused on using ICT as a tool to encourage economic growth and job creation.

The National ICT Strategy identified four strategic targets, which included achieving USD 450 million in ICT investment, reaching USD 3.15 billion in revenues with a 30% expansion over 2012, increasing ICT-specific employment by 30% from 2012 levels to hit 20 000 and bolstering Internet penetration to 85%. The Kingdom expects that with its recently enacted tax

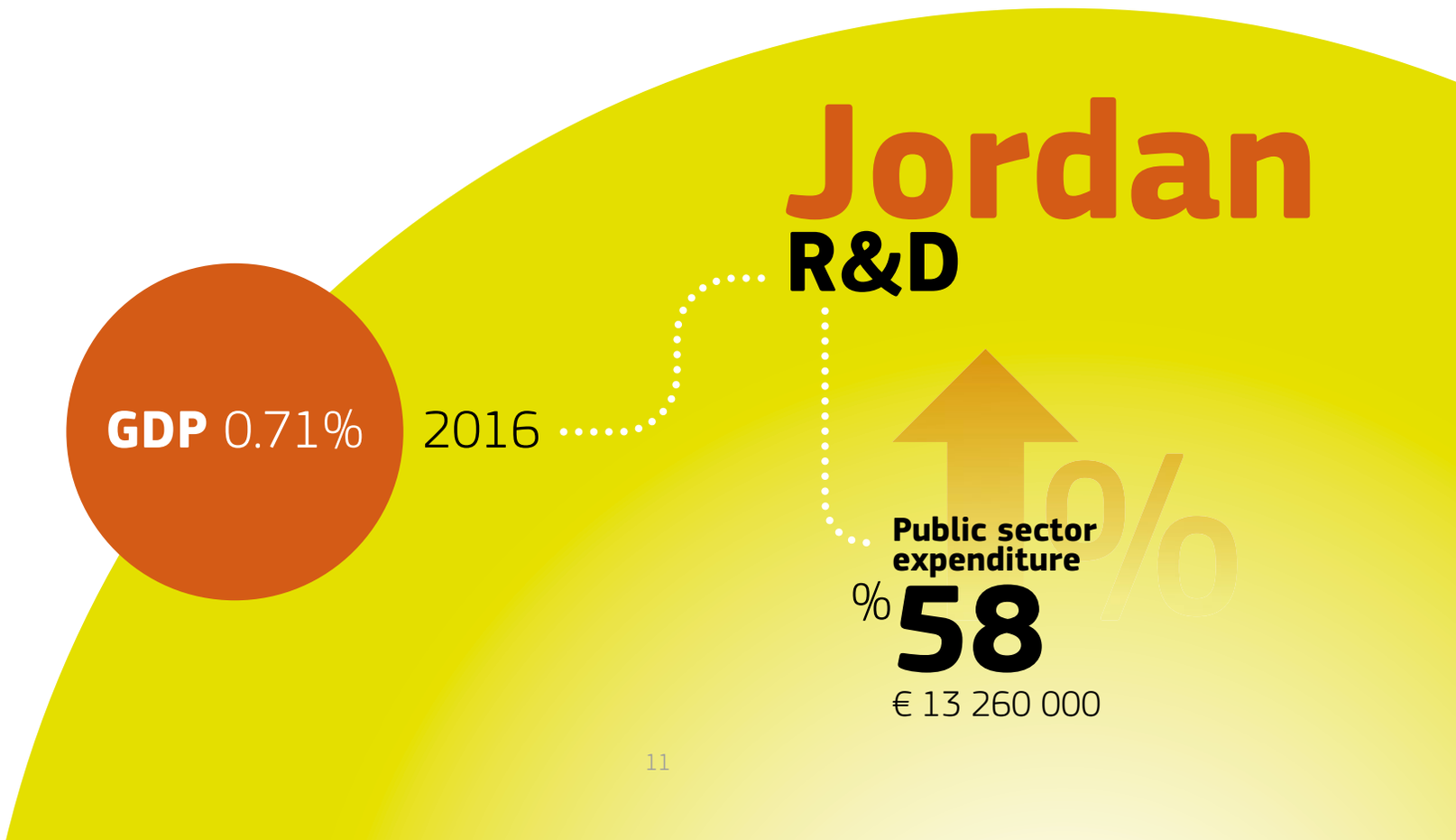
incentives, the National ICT Strategy and REACH 2025 will further encourage both domestic and foreign investment. This should in turn attract private sector expertise to the industry and help Jordan begin to re-establish itself as a regional technology leader (Jordan looks to revitalise its digital economy as an engine of growth, 2017) (Venture, 2017).

Jordan has always been a regional leader in entrepreneurial activity. Several start-up support programmes were already launched in the 1990s ahead of other countries in the region. However, in the last two decades, mostly due to local and regional economic difficulties, Jordanian start-ups have been encountering major challenges. According to a 2019 World Bank survey, start-ups face numerous barriers to establishing their business in Jordan, including inadequate policies, access to finance instruments and limited access to talent. Despite these challenges, Jordanian Technology Based Startups (TBSs) enjoy high performance potential in terms of export intensity, female employment, high-wage job creation, and TT and diffusion. According to a recent study by the German Agency for International Cooperation (GIZ), TBSs contributed 0.5% of Jordan's nominal Gross Domestic Product (GDP) in 2016, of which 0.3% constituted a direct value added (Kalaldeh & Al-Homsi, 2019).

Jordan's start-up sector is poised for major growth in the coming years, supported by government policy and, increasingly, private sector investment into tech entrepreneurship. Jordan has more than 600 tech companies, one of the leaders among Arab countries, of which more than 300 are start-ups. Active across a host of sectors, including software development, business solutions, finance, health and games, the kingdom's start-up culture benefits from broader growth within the ICT industry and tech exports.

Relation of technology transfer with the national regulatory framework of IP

Jordan joined the Patent Cooperation Treaty (PCT) in March 2017 and started to receive international applications in December 2018. The Jordanian Patent Office used to receive on average 200-250 applications per year, 20% of which were local applications. Since joining the PCT, the applications have been steadily increasing (the office received 163, mostly international, applications in the first semester of 2019) and mostly in the fields of pharmaceuticals (60-70%), renewable energy and ICT. It usually takes 2-12 months for examination to commence because the process requires an affidavit, followed by approximately three years for substantive examination of novelty and inventiveness. However, this period is shorter if the patent is granted in the US or by the European Patent Office.



The Jordanian Patent Office has recently joined the World Intellectual Property Organization (WIPO) Technology and Innovation Support Center (TISC) programme, which provides innovators in developing countries with access to locally based, high-quality technology information and related services, helping them to exploit their innovative potential and to create, protect, and manage their IP rights.

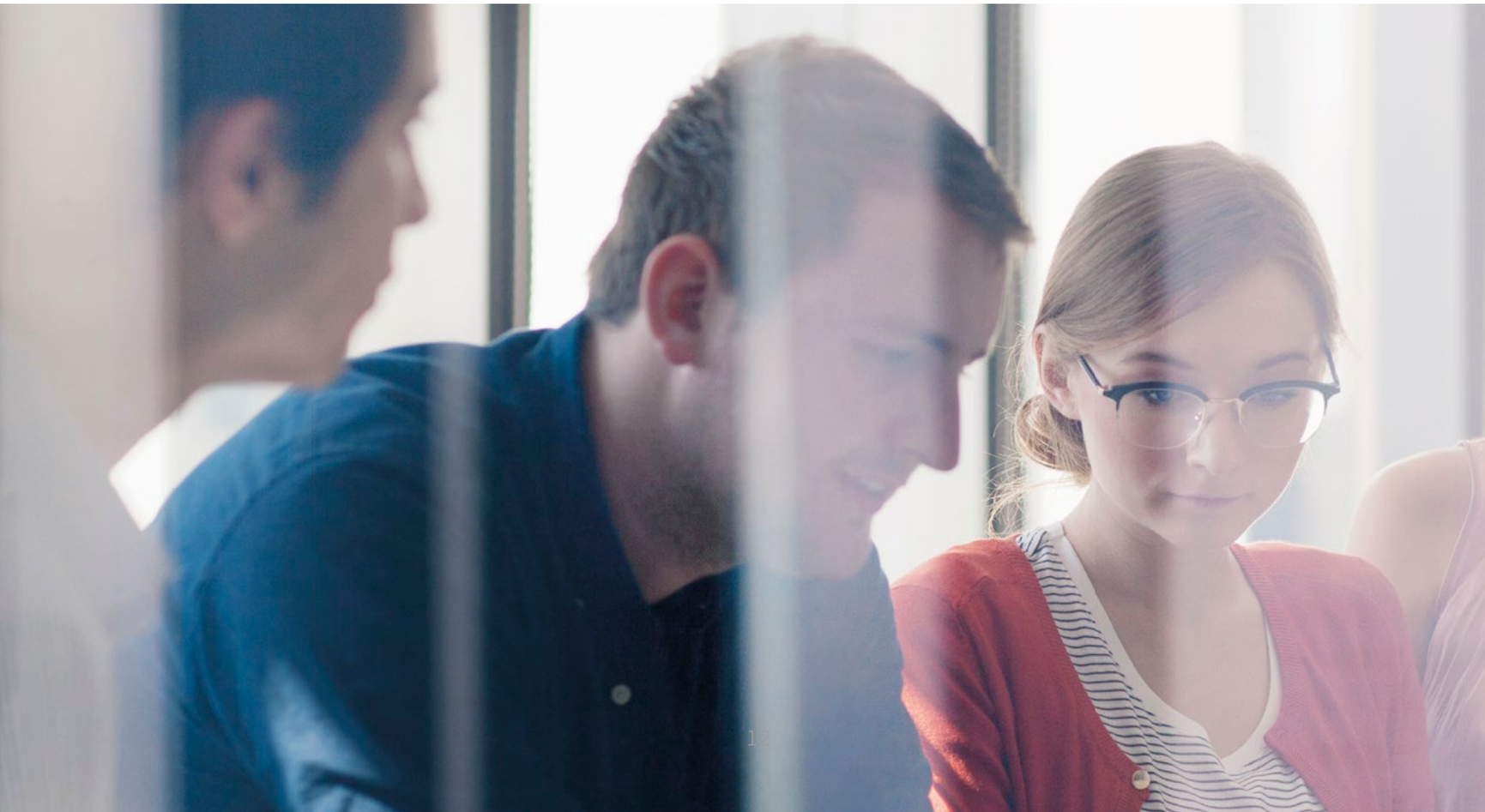
With the support of WIPO, the office has established a structured patenting system (procedures, awareness, activities…). The patenting procedure is fully developed and it is accessible via the website (The Hashemite Kingdom of Jordan, 2019). The office has patent examiners, which are specialised by areas, and patenting statistics are published on the Patent Office's website.

WITH THE SUPPORT OF WIPO, THE IP OFFICE IS WORKING ON STRENGTHENING THE PATENTING CAPABILITIES OF THE COUNTRY: PROVIDING ADVICE TO THE UNIVERSITIES TO DEVELOP IP REGULATIONS, TRAINING THE TT NETWORK POINTS IN PATENT FILING PROCEDURES, ORGANISING AWARENESS AND OUTREACH ACTIVITIES, ETC.

According to the directorate's point of view, the main needs are the professionalization of IP advisors, training, and legal improvements.

In the future, the directorate intends to help universities in drafting their IP policies and also in drafting a national IP strategy.

The Royal Scientific Society hosts the IPCO, which was established in 2010 under the EU-funded programme "Support to Research, Technological Development and Innovation Programme Phase I" (SRTD I) to support innovators and inventors by providing services for patent registration and protection. Since then it has become the central TTO by default. IPCO's main activity is to help universities draft their IP policies.



Relation of technology transfer with national IP and innovation strategy

Within the current National Innovation System (NIS), the following government bodies are involved in formulating R&D and innovation policies in Jordan:

- Ministry of Planning—the department's main input into the STI system is through the funding of the Industrial Research and Development Fund (IRDF) and the National Fund for Enterprise Support (NAFES);
- Ministry of Industry and Trade (MIT);
- Ministry of Higher Education and Scientific Research (MHESR)—through the funding and administration of the SRSF;
- The Higher Council of Science and Technology (HCST), on behalf of the government, develops national Science & Technology (S&T) strategies. According to the interviews conducted at the HCST, the HCST has developed a recent National Innovation Strategy organised around innovation clusters in the following areas:
  - Pharmaceutical and medical services;
  - ICT sector (employs 1% of the population with a return on investment of 15% of GDP (Gross domestic product));
  - Engineering sector;
  - Water, food and energy (clean tech) nexus;
  - Education cluster;
  - Banking and financial services.

However, it is worth mentioning that no published documents were found about this strategy. Thus, even if the strategy was developed, it seems that it was not properly communicated to stakeholders and not publicly disseminated.

The National Centre for Innovation (NCI) is a recently established structure closely affiliated with the HCST and it was created to reduce the redundancy in the innovation ecosystem. It initially received USD 2.2 million of funding by the MENA Transition Fund, implemented by the EBRD. Its activities include capacity building of researchers, enhance their international exposure, promote innovation and provide innovation awards. The NCI is currently working on a policy to provide tax incentives for R&D. As it develops, the NCI will also be involved in developing an Innovation Strategy for Jordan.

In 2020, it will operate a marketplace platform and innovation hub, the Jordan Open Innovation Platform (JOIP), to serve both public and private stakeholders in Jordan and beyond. JOIP will connect organisations, researchers and entrepreneurs active in R&D and science and technology.

Universities and research organisations

Technology transfer and universities

There are 10 public and 20 private universities in Jordan. Around half of these universities have, or at least had at one point in time, a TTO, yet most of them, with the exception of three, are not active. It was mentioned in the interviews that 60% of universities have some sort of IP policy; however, the two universities that were visited did not have one in place. As mentioned by one interviewee, "in the absence of an IP policy, patent law does not clearly apply to public universities because researchers are not employed to invent".

ALTHOUGH MANY UNIVERSITIES HAVE INDUSTRIAL LIAISON OFFICES, THEY MAINLY FOCUS ON INTERNSHIPS AND STUDENTS JOBS AND NOT COMMERCIALISATION.

Interviews with one of the universities have shown that there have been some isolated cases of licensing, also with international companies. Generally, these have been related to joint project activities and are based on personal contacts, rather than a structured policy. Otherwise there is not much commercialisation. However, the Jordan University for Science and Technology (JUST) has both an active TTO and a functional IP policy; they have an equity approach and had several instances of spin-offs from the university.

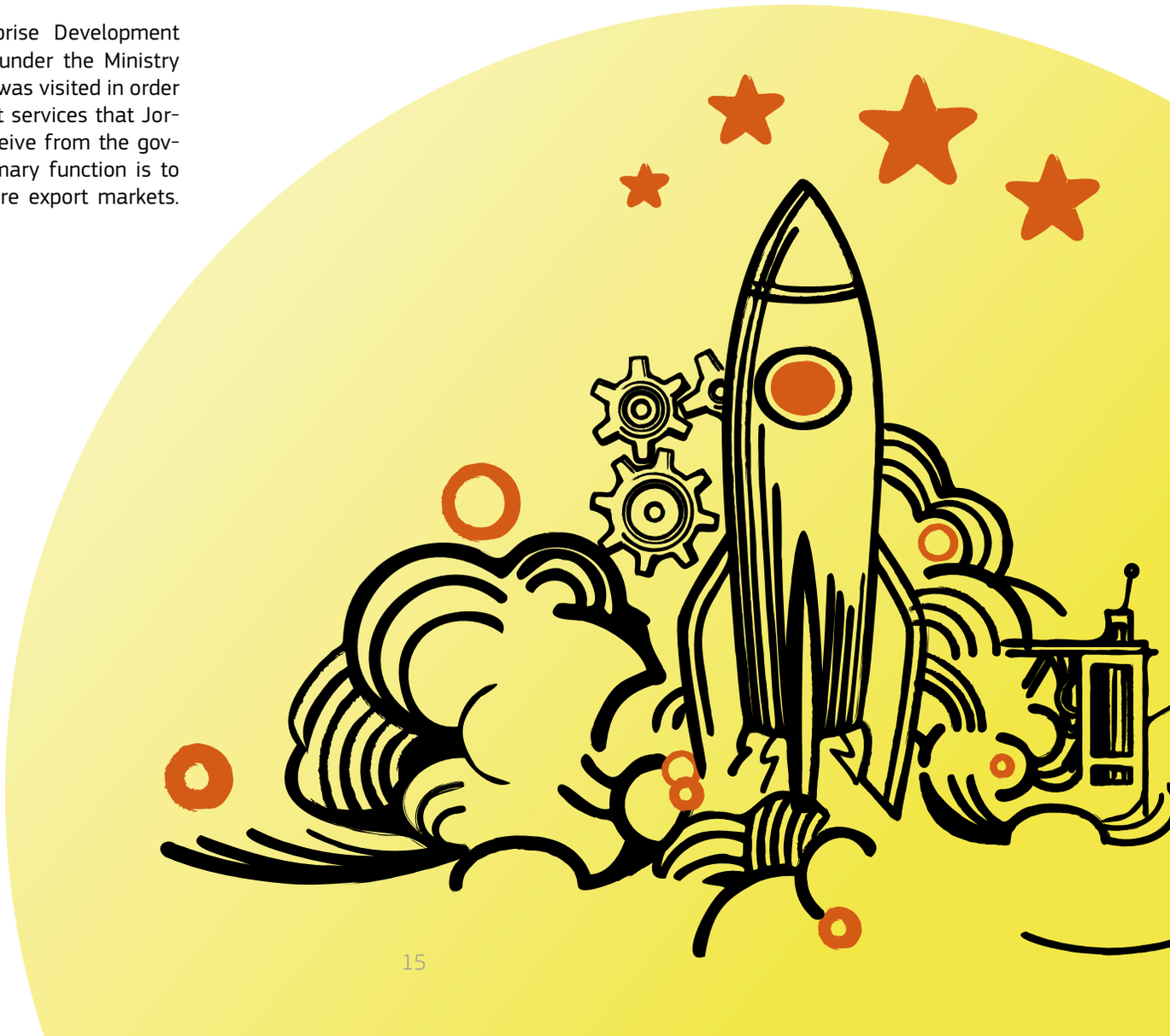
Concerning expenditure on research, there is a regulation that is not really implemented whereby 4% of the university's budget should be allocated to R&D activities. The two visited universities have confirmed that since private universities (constituting two thirds of Jordanian universities) are entirely dependent on tuition fees, their focus is mostly on teaching and not on research. The teaching workload could be up to five courses at a time for lecturers. It was also acknowledged that the concept of research laboratories is simply absent in the majority of universities. However, some universities have recently developed more interest in research, such as Princess Sumaya University of Technology (PSUT), which has recently established a new post of Vice-President for Research, as well as a PhD programme in computer sciences. PSUT has also established a centre of excellence on cybersecurity in conjunction with an enterprise.

Industry

Technology transfer and innovation in the private sector

The majority of enterprises in Jordan (≈ 90%) are SMEs and private companies are not generally considered innovative nor likely to undertake significant levels of R&D. Although exceptions to this rule exist, mostly in the service and the ICT sector. Perhaps the most notable absence of investment in R&D and innovation is in the industrial sector. Unable to compete with low-cost countries in Asia, Jordan's industry leaders realise that they need to develop sustainable competitive advantages through innovation.

The Jordanian Enterprise Development Corporation (JEDCO), under the Ministry of Trade and Industry was visited in order to identify the support services that Jordanian companies receive from the government. JEDCO's primary function is to support SMEs to secure export markets. They provide technical and financial support for different stages of the business life cycle, from idea to market. JEDCO manages an export support programme with competitive grants up to Jordanian Dinar (JOD) 50 000 (EUR 63 500) to build manufacturing capabilities. They also have an acceleration programme providing technical assistance and capacity building to the business sector.



Moreover, JEDCO promotes the Faculty for Factory (3F) Programme, which is funded by the HCST to bring researchers and university faculty closer to industry for meaningful cooperation. However, this programme has resulted in limited success. JEDCO is also a consortium member in the newly launched EU-funded project, "Intellectual Properties Capacities for Smart, Sustainable and Inclusive Growth in the Mediterranean Region (IPMED)". The project seeks to enhance intellectual property rights (IPR), facilitate IPR access, spread IPR-related knowledge and provide various services for innovative young entrepreneurs.

Several challenges facing innovation and TT in the private sector in Jordan were identified during the interviews. They are the following:

- Lack of support for manufacturing and especially creative industries
- Deficient assessment of the level of innovation and technology readiness level (TRL)
- Insufficient financial support to enhance exports and limit imports
- Absence of tax incentives for R&D and manufacturing industries
- Difficulties in starting businesses and resolving insolvency issues
- Absence of mentoring and coaching programmes for entrepreneurs

However, there are a number of notable success stories within the ICT sector in Jordan. One of them is IrisGuard, which manufactures iris biometric and recognition camera systems for commercial and government clients, with the UN High Commission for Refugees adopting this technology to register Syrian refugees in Jordan. Another example is Globitel, a Jordanian telecom and contact centre solutions firm, now offering services in more than 35 countries. Other companies like sharia-compliant crowdsourcing platform liwwa have also chosen Jordan to establish their operations.

IT IS ALSO WORTH NOTING A RECENTLY LAUNCHED ROADMAP FOR THE DEVELOPMENT OF JORDAN'S ICT SECTOR THAT AIMS TO ATTRACT CAPITAL INFLOWS, BENEFITTING FROM RECENT GOVERNMENT POLICIES THAT REDUCE THE TAX BURDEN ON COMPANIES OPERATING IN THE INDUSTRY.

Despite the impediments that currently stand in the way of entrepreneurs and innovation in Jordan, evidence suggests that the government, industry and academia are increasingly recognising the need to foster a culture of innovation, creativity and entrepreneurship. To this end, measures are being progressively implemented to encourage the creation of innovation and technology-based businesses (The Royal Society, 2013).

Support organisations

There are several organisations and in the areas of incubation and VC the two more active are iPARK and Oasis 500.

iPARK

iPARK was established as an ICT incubator in 2003 and was later transferred to the RSS, where it remains today. It currently has five locations around Jordan and incubates 60-80 companies. It was mentioned in the interview that, since it was established, it has hosted more than 120 companies, providing more than 2 000 jobs. In addition, iPARK provides patent support services through IPCO and is involved in assessments of innovation and TRLs.

Oasis 500

Oasis 500 is a VC focusing mainly on ICT and since its creation in 2010, it has supported over 100 start-ups. It offers entrepreneurship training, mentorship and guidance, business incubation and acceleration, and follow-up on investment and funding.

Key points of technology transfer activity in the country

Technology transfer network

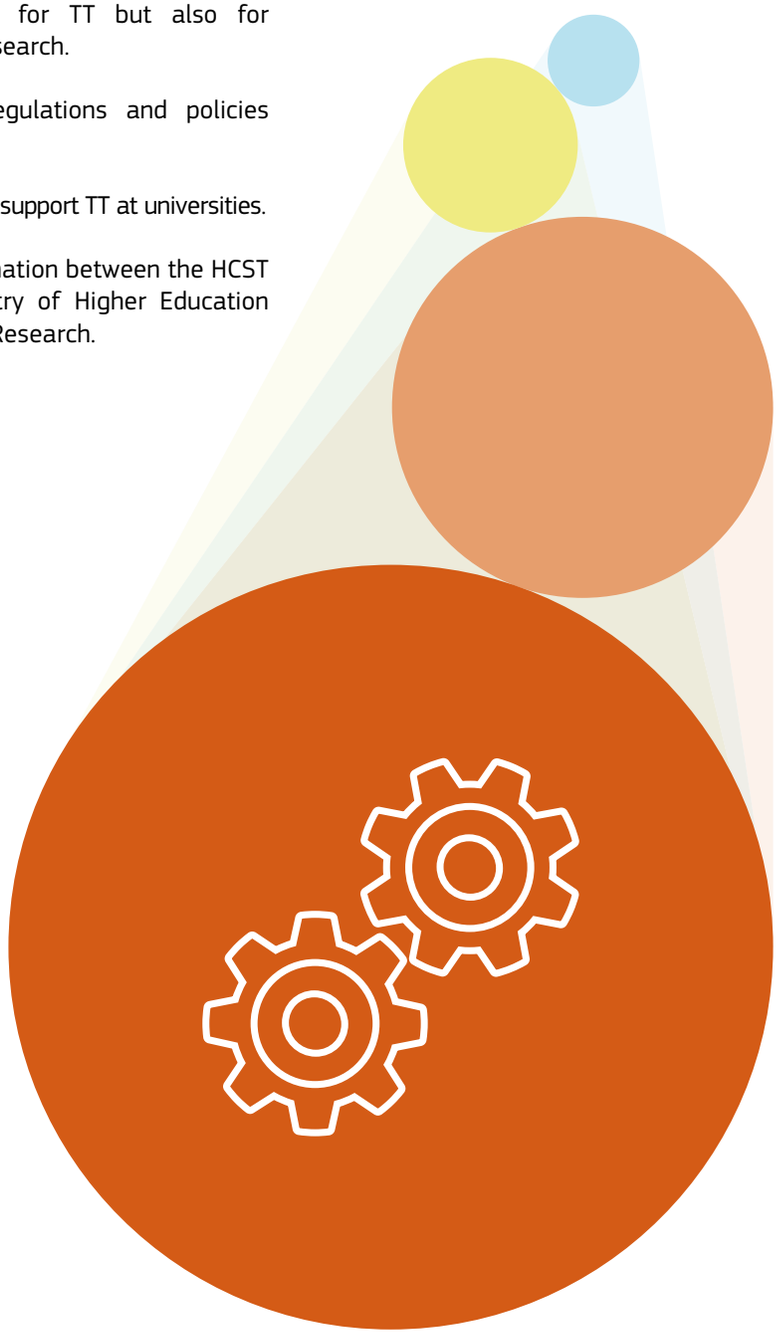
A TT network was created by the HCST through the EU-funded SRTD programme in 2008. TT officers were appointed in several institutions, including public and private universities, the Royal Scientific Society (RSS) and the Chamber of Commerce.

FOURTEEN TTOS WERE ESTABLISHED BY SRTD FOLLOWED BY ANOTHER SIX IN PHASE II (SRTD II).

In addition, an EU-funded project (Erasmus + capacity building) kicked off in 2018 with the objective of establishing TTOs at several Jordanian universities. Currently the network does not receive any funds from the HCST or other institutions.

TT officers meet once a year, usually along other events, but they do not work cooperatively on a regular basis. The TT officers, being faculty or staff members at their institutions, only work part-time and this task is supplementary to their functions at the institutions. Hence, technology transfer is rather a task and not a function, and the network is composed of part-time actors. As per the conducted interviews, the TTOs have not yet yielded the desired results due to some identified obstacles, namely:

- Scarcely applied research and innovation base with researchers prioritising academic promotion, hence focusing on publications rather than commercialisation.
- University professors are overburdened with the teaching workload, with little time for conducting research.
- Existing gap and lack of trust between academia and industry (due to different cultures, lack of awareness about common benefits from linkages, etc.).
- Limited funds for TT but also for cooperative research.
- Lack of IP regulations and policies at universities.
- Lack of staff to support TT at universities.
- Lack of coordination between the HCST and the Ministry of Higher Education and Scientific Research.




RESEARCH
COORDINATION
INNOVATION
TRUST

RECOMMENDATIONS

Redundancy in the innovation and TT ecosystem. Although the Jordanian STI ecosystem has most, if not all, of the required components, there is weak interaction among them, causing redundancy and poor coordination of the different components.

RECOMMENDATIONS

- Develop an inclusive innovation/TT strategy that is clearly communicated and co-owned by all stakeholders.
- Improve coordination between HCST and the Ministry of Higher Education and Scientific Research.
- Empower the newly established National Centre for Innovation (NCI) to act as the main coordinator of the ecosystem.

Lack of an innovation culture in academia and weak linkages/structured cooperation of academia and industry. Private universities depend solely on tuition fees, as such their main focus is teaching and not research. In addition, university faculty is burdened with teaching duties, which leaves them no time to perform research.

RECOMMENDATIONS

- Balancing the research and teaching activities to allow more research to be performed.
- Restructure university faculty promotion laws and regulations to encourage research and innovation that can lead to effective technology transfer and push the development of the university third mission where universities engage with societal needs and market demands by linking their activity with the socio-economic context.
- Introduce regulations to allow universities to establish spin-offs.
- Implement the national regulation of allocating 4% of university budgets to R&D.
- Support universities to develop and implement IP policies. WIPO provides support material (WIPO, 2020).

Inefficient national technology transfer network. The national TT network is fragmented and suffers from a lack of financial and human resources. TT officers are not dedicated full-time to this task, as they are faculty members who are mostly carrying out TT in addition to their already busy schedule.

RECOMMENDATIONS

- Allocate financial resources and appropriate infrastructure for the TTOs at universities.
- Hire dedicated, skilled TT officers and equip them with operational tools and a regulatory framework.
- Foster and defragment the network by enhancing coordination and cooperation between the different TTOs.
- Provide capacity building to TT officers, particularly in areas related to commercialisation activities. This can take the form of something similar to PROGRESS-TT out of Italy as a reference (Progress Tech Transfer, 2020).
- Promote good practices and success stories.

Deficiency of intermediary/support structures, such as incubators/accelerators. iPARK, the first incubator in Jordan, is mostly involved in patent and IP support through IPCO whereas Oasis 500 is active in the field of ICT and creative industries. Otherwise, Jordan suffers from a lack of efficient enabling structures and absence of effective coordination and synergies among the existing ones.

RECOMMENDATIONS

- Invest in establishing business incubators and accelerators in other fields than ICT, building upon the success of Oasis 500.
- Develop and implement capacity-building programmes for tech transfer managers and professionals to run these structures.
- Coordination and synergies among the different BSOs (Business Support Organisations).

Regulatory and legislative issues (business/industry). The industry has low absorptive capacity for innovation and technology transfer.

RECOMMENDATIONS

- Implement tax incentives for industries.
- Reduce administrative obstacles for start-ups.
- Implement legislation to facilitate the incorporation of businesses as well as insolvency and bankruptcy.
- Carry out an assessment of manufacturing industries with a view to limiting imports and encouraging innovation.
- Valorise research outputs through the adoption of a value chain approach to support SMEs.
- Support locally produced technologies.
- Introduce programmes/instruments to support “soft landing” for businesses.

Absence of a national IP strategy and IP policies. Lack of awareness on IP issues in universities. Limited number of industrial design registrations. The main applications for IPR (Intellectual Property Rights) are for trademarks.

RECOMMENDATIONS

- Develop and implement a national IP strategy and policy, with a view to encouraging technology transfer Amend legislation concerning competition law, utility models and industrial design in order to join the Hague Agreement for Industrial Design Protection.

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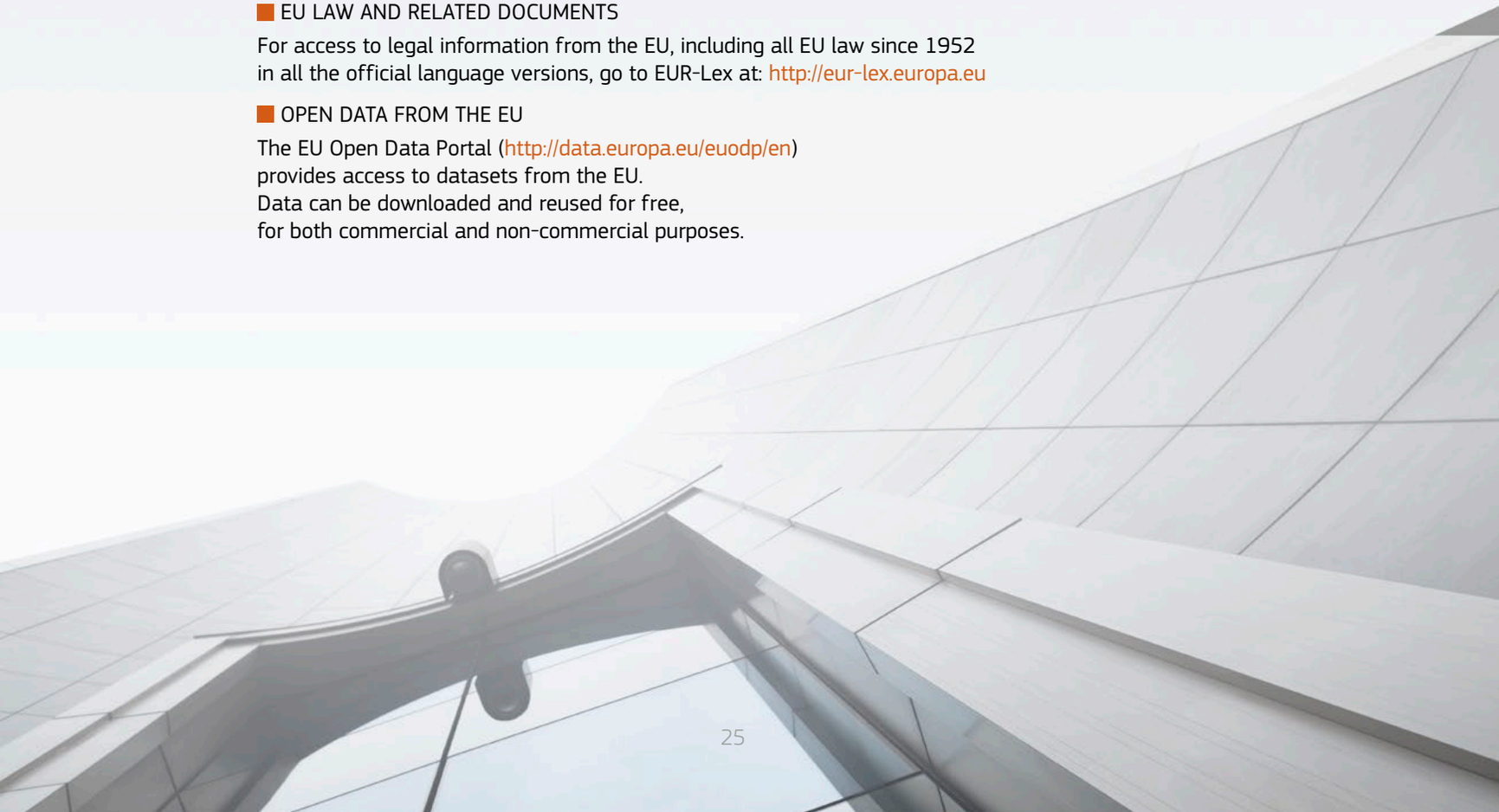

Acronyms

BSO	Business Support Organisations
EBRD	European Bank for Reconstruction and Development
EU	European Union
EUR	Euro
GDP	Gross domestic product
GERD	Gross domestic expenditure on research and development
GIZ	German Agency for International Cooperation
HCST	Higher Council of Science and Technology
ICT	Information and Communications Technology
IP	Intellectual Property
IPMED	Intellectual Properties Capacities for Smart, Sustainable and Inclusive Growth in the Mediterranean Region
IPR	Intellectual Property Rights
IRDF	Industrial Research and Development Fund
IPCO	Intellectual Property Commercialisation Office
IST	Information and Scientific Technology
JEDCO	Jordanian Enterprise Development Corporation
JOD	Jordanian Dinar
JOIP	Jordan Open Innovation Platform
JUST	Jordanian University for Science and Technology
MHESR	Ministry of Higher Education and Scientific Research
MIT	Ministry of Trade and Industry
MoDEE	Ministry of Digital Economy and Entrepreneurship
MoICT	Ministry of Information and Communication Technology

NAFES	National Fund for Enterprise Support
NCI	National Centre for Innovation
NIS	National Innovation System
PCT	Patent Cooperation Treaty
PSUT	Princess Sumaya University of Technology
R&D	Research & Development
RSS	Royal Scientific Society
SRSF	Scientific Research Support Fund
SME	Small and medium enterprise
S&T	Science & Technology
SRTD I	Support to Research, Technological Development and Innovation Programme Phase I
SRTD II	Support to Research, Technological Development and Innovation Programme Phase II
STI	Science, Technology and Innovation
TBS	Technology Based Startups
TISC	Technology and Innovation Support Center
TRL	Technology Readiness Level
TT	Technology Transfer
TTO	Technology Transfer Office
USD	US Dollar
VC	Venture Capital
WIPO	World Intellectual Property Organization

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