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Chairperson

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Subject: **Strengthening Intellectual Property and Commercialization Efforts of HEIs in Pakistan**

Respected Sir/Madam, السلام عليكم ورحمة الله وبركاته

Intellectual Property (IP) protection plays an important role in encouraging innovation. It is a fact that commercialization of IP can lead to better investment conditions for a developing economy like Pakistan. The research ecosystem of Pakistan is facing issues related to IP especially its creation, ownership, and assignment. Furthermore, journey of research for innovation to commercialization relies on invention and its IP assemblage. Recognizing these facts, Higher Education Commission, through its multiple programs under research and innovation portfolio and linkages with stakeholders (i.e., government, society, and industry), strived to aware the academia about research, innovation, IP, and commercialization.

2. Keeping in consideration the above facts, the honorable President of Pakistan while furthering HEC's efforts, advised development of a comprehensive framework by identifying associated gaps in Pakistan's IP ecosystem, in collaboration with Lahore University of Management Sciences (LUMS) and other stakeholders. In compliance, a diverse committee of experts was engaged to identify the gaps related to IP on research and innovation landscape across Pakistan. The committee, taking into consideration the best global practices and HEC's policies for ORICs and BICs, proposed possible strategies for its effective utilization of IP laws to harness associated financial and non-financial benefits.

3. A comprehensive guideline titled "**Strengthening IP and Commercialization Efforts of HEIs in Pakistan**" (copy enclosed) was drafted and circulated across HEIs and their comments were incorporated in the final version. This guideline is a compilation of strategies for the academia to adapt their IP and commercialization policies. The guideline also includes a comprehensive model IP policy developed by WIPO which can be tailored as per the needs of HEIs. I am privileged to share the same with your esteemed HEI for its dissemination as a guiding instrument for effective protection and use of IP created by your research fraternity.

With best regards,

Yours sincerely,

(Dr. Shaista Sohail)

Vice Chancellors / Rectors
Public/Private Sector HEIs

Encl: IP & Commercialization Report



STRENGTHENING IP AND COMMERCIALIZATION EFFORTS OF HIGHER EDUCATION INSTITUTIONS IN PAKISTAN

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A/ Executive Summary

First Principles

Written primarily for an academic audience in Higher Education Institutions (HEIs), this report presents a wide range of issues to engage a broader audience including industry and policy leaders as well as those generally interested to improve Pakistan's IP and commercialization efforts.

The purpose of an IP policy - whether formulated within HEIs, the Higher Education Commission (HEC), the Intellectual Property Organisation (IPO) or beyond, is to create an enabling environment that encourages the creation of the use and development of intellectual property in all its forms and manifestations. Such an environment, however, cannot be created simply through regulatory enforcement where HEIs are compelled to act in a particular manner, but rather through facilitating and incentivizing an environment where innovation and commercialization become an organic component of the academic culture in Pakistan.

Countries at the forefront of producing intellectual capital protect owners of that capital and have benefited the overall economy and society at large. These countries also attract the largest capital inflows for investments in established businesses and start-ups. The corporate sector at large in Pakistan spends little on research and development, which has proven to sustain future growth opportunities in other countries. System-wide interventions by HEIs can play a vital role in contributing to the ecology of innovation across other sectors.

The underlying governance of IP is based on locating and fully empowering a unit in HEIs. Currently these are Offices of Research, Innovation and Commercialization (ORICs) that are likely to be the most effective agents of change. Currently, managing IP and its commercialization is a neglected component of most ORICs in Pakistan.

IP created within academia and amplified through partnership models must also ensure its fair and appropriate assignment to enable useful development leading to a substantive impact on society. We encourage all stakeholders to take a societal view of the research and development so that it can advance both commercial and non-commercial activities.

To ensure a robust IP regime, HEIs must also guard against perverse incentives that dilute the core mission of the University. The core mission of creating new knowledge through faculty and student research as well as its dissemination, should not be sacrificed by diverting or diluting overall research intensity that involves traditional discovery and integrative research.

In certain IP related activities, such as health, which are beyond the scope of any one HEI, a consortium of universities through a regulatory body like HEC might better accomplish the underlying goals of innovation through economies of scale and scope. In the absence of HEIs having an appropriate infrastructure to manage IP related activities, the regulatory responsibility becomes much more than simply creating incentives or ensuring compliance. Rather, the regulatory body needs to invest in appropriate institutional processes that can help achieve the desired objective.

Furthermore, national IP priorities must reject a "one-size-fits-all" framework for HEIs as some 250 institutions in Pakistan differ in terms of their developmental stages, their level of preparation, research focus as well as public intent. This is particularly true in terms of use, exploitation, and commercialization aspects of IP. We encourage all universities to develop their own IP policies and recommend that HEIs should encourage more inventor-friendly policies in terms of the assignment of IP rights and sharing of commercialization revenue.

Prosperity

Academic disciplines, professions, technology, and innovation are drivers of economic development and prosperity the world over. Rapid technological advances continue to accelerate at a bewildering pace in the 21st century where productive ideas correlate with the creation of wealth and well-being. According to Nobel

Laureate Paul Romer, "ideas, unlike, land, labor, and capital of the 20th century, are in abundance" and hence are engines of limitless growth and prosperity around the world.

Nations invest in ideas through expenditure in research and development, but also by creating micro-climates conducive for creativity and innovation. The impact of bold and ambitious ideas including smart cities, industry 4.0, driverless cars, augmented and virtual reality, growing organs through synthetic biology, etc., speak to the transformational impact of innovations on economic and societal well-being.

Surprisingly, the global pandemic has accelerated idea generation in certain sectors and more efficient processes leading to tangible outcomes. While the pandemic brought the world to a virtual standstill, investments in pharmaceuticals, vaccines, medical devices, biotechnology and the like, a range of indicators show in R&D investment (5-10%), numbers of papers (7.6%), patents (3.5%), venture investments (5.8%) – all of which grew during the peak of the pandemic in 2020¹.

Furthermore, discovery, integration of knowledge, learning, and improving societal conditions are mutually supportive of the core missions of research universities. Applied knowledge and its transfer to sectors in society who can make use of it to improve well-being, contributes to each of these missions². While this transfer happens through many ways, the commercialization of intellectual property through the creation of licensing, startups, and spin-offs has gained considerable currency in recent decades.

Challenges

This report responds to several challenges currently faced by HEIs in Pakistan including registering, assignment, and the exploitation of IP. More importantly, there is an acute lack of awareness about what intellectual property is and what are the roles and responsibilities of individuals (academic, staff and/or student) as well as the role of the institution. Furthermore, it is not clear within HEIs what the benefits from engaging with IP and commercialization efforts are. This ambiguity imposes significant opportunity costs on the efforts of both the individual researchers and the academic institution.

There are also considerable barriers to preparing and filing of IP, and in particular, a patent application. In most universities, specifically public HEIs, the difficulty of securing the services of an IP lawyer, writing of the patent application, and filing the patent fee, especially for a foreign patent, are significant. Entrenched bureaucratic structures and considerable red tape diminishes interest and creates inefficiencies that need to be streamlined.

The cumbersome, often non-responsive process of receiving local patents from patent authorities also require similar rationalization. The processes of patent examination, search for background IP and prior art, and the award process must be re-engineered to make the system more agile, responsive, and transparent. In several cases, it is easier and faster to receive an international patent than to get a local patent for the same IP.

There is considerable confusion within universities and their collaborating partners about IP ownership, rights, and pathways to commercialize IP. Within universities themselves, variation in policies ranging from the absence of any policy to restrictive policy regimes appear to be the norm. These variations hinder a shared common approach to IP and to progressive policy frameworks required in guiding participants.

Additional barriers manifest in ineffective management regimes within ORICs that should otherwise support the academic or an industrial partner to undertake steps required to successfully deploy and effectively commercialize IP. We see many sponsored projects which unfortunately have failed the market test. Partially, this has to do with the inability of the ORICs to help convert these research ideas into commercially viable products. Finally, there are very few initiatives in terms of diffusing new ideas and products into the country's social sector.

¹ See Global Innovation Index Report, 2021 https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf

² See National Academy Press, 2011, https://www.autm.net/AUTMMain/media/Advocacy/Documents/Managing_University_IP_in_Public_Interest_2011.pdf



Scope

The scope of this report takes a sectoral focus on HEIs. It does not assess the national level IP policy, nor does it consider IP intellectual property for the country as a unit of analysis which is vested in the Intellectual Property Organisation (IPO). Furthermore, the report does not replace any existing law governing the granting and protection of intellectual properties such as the Patent Act or laws regulating copyrights, trademarks, etc. The broader national IP policy and the various ministries including Science and Technology provide overarching frameworks of scope and scale to complement recommendations from this report.

The authors have therefore sought to achieve a narrower set of objectives that arise at the intersection of where the broader national IP policy meets academia and addresses specific challenges faced generally within HEIs. More specifically, the report identifies interventions that would strengthen matters related to IP issues faced by university departments, academics, students, and their collaborators - as well as related institutions such as funding bodies, industrial partners, accelerators and incubators, entrepreneurs, and investors, etc., that work or seek to work with HEIs.

Purpose

The primary purpose of this report is to address the above challenges by identifying interventions related to IP related matters that would strengthen an enabling environment and advance a culture within academia to achieve desirable outcomes for individuals, the institution, and the country (see box below).

Desirable Outcomes

- Ownership, appropriate protection, and assignment of IP based on allocation of resources, time, effort, and intellectual contribution.
- Assignment of IP of broad national and public interest into the commons for non-exclusive licensing and exploitation.
- Making available all IP - not categorised as being of broad national and public interest - for licensing (exclusively for a set duration and non-exclusively thereafter) to private sector entities for successful commercialization.
- Developing IP through stronger ties with private sector funding and/or based upon background IP already owned by private sector that is jointly owned and exclusively licensed to private sector.
- Prioritizing institutional capacity that properly assigns and protects IP and makes it available for use, exploitation, and commercialization through appropriate private sector partners and investors who are in the best place to value the IP and further develop it for commercialization.
- Regulatory interventions which may help facilitate the process of innovation and commercialization.

It is true, that by and large, many in Pakistan seem to be enamored by the folklore of the American entrepreneurial university – MIT, Stanford, or the University of Wisconsin – their entrepreneurial reputations have reached far and wide corners of the globe and have been the focus of a worldwide quest – primarily in Europe and Southeast Asia to emulate the entrepreneurial university.

We do not however, advocate the import of copy-paste solutions. Emulation of western models creates gaps that relatively young Pakistani HEIs cannot magically overcome. We must build our own indigenous versions of systems and structures that pay attention to the nation's local contexts which, as mentioned earlier, are significantly different for some 250 Pakistani universities. We must also work very closely with our industry partners and position ourselves as the west looks to the east for growth opportunities.

B/ Context

Defining IP

"Intellectual Property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce"³. Furthermore, according to section 2(g) of IPO Pakistan Act

University Objectives for Intellectual Property

MIT

The aim of MIT's policy on patents, copyrights, and other Intellectual Property is to make available Institute technology to industry and others for the public benefit, while providing recognition to individual inventors and encouraging the prompt and open dissemination of research results.

Boston University

The University seeks purposeful translation of such intellectual property to societal good whenever possible. The University is committed to timely assessment of legal protection and potential societal benefit of University intellectual property and to sharing equitably the rights and royalties resulting from intellectual property licensing.

University College London

UCL seeks to maximise the value of this IP for the benefit of the public, and where appropriate for the university and those involved in its creation.

University of Surrey

Commercially valuable IP refers to any IP which will (or may) create income for the University. It encompasses any discovery, invention, document, design or research result and includes, but is not limited to, algorithms, software, chemical compounds, processes, and data arising from experiments. The Technology Transfer Office manages intellectual property which has (or may have) commercial value. The University Library oversees policies that are concerned with managing IP which has no commercial value, such as most copyright on published works.

McGill University

The University's mission statement calls for "providing service to society in those ways for which we are well suited by virtue of our academic strengths". The University affirms the principles of wide freedom of research and of free publication of the information generated. To carry on research solely or even primarily in anticipation of profits would be incompatible with the University's objectives and primary functions. However, it must be recognized that software or inventions resulting from research often serve the public interest best when they reach the private sector under appropriate agreements and are protected by patents, if applicable. Even though some inventions and software may not be proper matter for intellectual property protection and are better disseminated through publication in learned journals, the University and the inventor, in some cases, wish to promote their commercial development. The University and the inventor should be allowed to benefit financially from transactions resulting from commercial development.

NUST

The National University of Sciences and Technology (NUST) established the Innovation and Commercialization Directorate (I&C) Department to protect and commercialize research. It encapsulates NUST's research and intellectual property opportunities at the earliest stage and translates these benefits to industry by working closely with industry through partnerships, collaborations, licensing and forming Spin-offs. The IP Policy has a mandate to develop a conducive environment for R&D, streamlined protocols for IP, protect IPR, encourage commercialization and aid researchers and faculty members of HEIs about IP.

UET Lahore

To encourage application and economic outcomes from research being carried out at the University of Engineering and Technology (UET), the IP policy promotes scientific investigation and research along with providing legal certainty in relations with third parties. The policy aims to set clear procedures for identification, ownership, protection, and commercialization of IP to ensure the fair and equitable distribution of economic benefits arising from commercialization of IP.

AKU

The Aga Khan University (AKU) has designed its IP policy to establish a clear framework to encourage innovation, creative work, and technological development. It is rooted in principles to protect creative efforts of its employees along with economic and other investments made by the University. The policy also entails provisions to protect the interests of the University thus by ensuring that the University receives appropriate value in the commercial development of its IP.

LUMS

LUMS is dedicated to teaching, research and dissemination of all new knowledge generated within the University community. Thus, the basic goal of policies that govern the disposition of IP generated at LUMS is to promote the progress of science and technology and to ensure that discoveries, inventions and creations generated by the faculty, staff and students are used in ways most likely to benefit the public. At the same time, it is recognized that the University must assist its faculty and other researchers in properly disclosing their scholarly work, in complying with applicable laws and formal agreements, and in gaining the protection available under local and international laws governing patents, copyrights and trademarks.

³ <https://www.wipo.int/about-ip/en/>



2012 “Intellectual Property includes a trademark, patent, industrial design, layout-design (topographies) of integrated circuits, copyright and related rights and all other ancillary rights”⁴.

The intellectual content produced is also referred to “works that refer to all designs, works of authorship, works of art, literary works, writings, student theses, inventions, software, discoveries, and other work products that may be subject to Intellectual Property Rights (IPR)” [3]. This work can be grouped into different categories based on the nature of employment of the creator and type of funding used including work that is scholarly and artistic, sponsored, commissioned, administrative, and non-covered works.

National Laws and Regulations

The legal framework for the protection of multiple IP rights is outlined in various laws and subordinate rules/ regulation highlighted in the box below. In general, the Pakistani IP legislation framework is comprehensive and at par with legislation worldwide. Most issues are due to a lack of awareness which cannot be legislated as well as enforcement which require judicial reforms that are beyond the purview of this report.

Legislation

- Intellectual Property Organization Pakistan Act, 2012
- The Trademarks Ordinance, 2001
- The Copyright Ordinance, 1962 (amended in 2000)
- The Patents Ordinance, 2000 (amended in 2016)
- Trademark Ordinance, 2001
- The Registered Designs Ordinance, 2000
- The Registered Layout-Designs of Integrated Circuits Ordinance, 2000
- The Geographical Indications Registration and Protection Act 2020
- The Plant Breeders’ Rights Act, 2016 (Ministry of National Food Security & Research)

There are, however, gaps in IP legislation which could lead to better protection for academics and inventors alike. For example, the absence of data protection and the need for a data protection bill is a welcome first step that must be enacted into law as soon as possible. In addition, Pakistan would benefit from a regime for Software Patents. Currently, software is covered under copyright law as in most commonwealth countries which has not safeguarded rights in rapidly evolving technology sectors and platform companies. It has been suggested that the author under copyright ordinance should also include developers of algorithms, frameworks, methods, techniques, etc. Specifically, IPO should recognize algorithms as patentable and not just copyrighted software as these discern unique information from the current focus on big data which is finding applications across different fields.

The US Software Patent regime affords a minimal degree of protection to software that improves computer functionality or solves a computing challenge in an unconventional manner, however, there is the risk of software monopolies that would discourage innovation and commercialization. The standards for such protection should be set following debate among responsible stakeholders pursuant to international obligations that Pakistan must meet because of cooperation treaties and the like.

The role of IPO (see below) beyond raising awareness and registration of IP rights should also be revisited. The IPO has supreme authority to adjudicate, allow and disallow the creation of IP rights for third parties which is a critical task that must in all instances be fully transparent. However, providing guidance and support during that process can result in conflicts of interest. The IPO must use its considerable expertise to create awareness and providing general guidance by way of seminars and publications with reference to the IP policy in Pakistan. However, offering specific guidance to inventors, the allowance of whose patents the IPO then has to adjudicate on would be against the norms of international law and can lower the standing of Pakistani Patents and the patent registration process in general.

⁴ <https://ipo.gov.pk/system/files/IPO-Act-2012.pdf>



Assignment of Rights

De facto rights in a patent are always awarded to the inventor who may then assign or license the rights to any third party voluntarily or involuntarily if they are considered an employee under section 12 of the patent’s ordinance. The law gives the inventor economic rights and moral rights. Even if the inventor contractually assigns their economic rights away or is obligated to do so involuntarily by virtue of being an employee, her/his moral rights of the invention remain intact. Thus, universities should be cognizant that they need to attribute the invention to the inventor and name them in all patent applications. Not doing so is a violation of the inventor’s moral rights and the inventor has recourse in those circumstances even if the university holds all IP in their name by virtue of being an employer under section 12 of the patent’s ordinance.

Overall, the assignment of rights is a sensitive subject that cannot come under a catch-all policy for all universities involved. The allocation of rights would depend on the sources of funding for the research and whether the institution is public or a private university. The quantum of rights allocated should be left to the discretion of the individual university, and a broader policy that would aid the university in setting this quantum can be outlined. Factors such as whether the researcher was a direct employee, or a consultant, whether the funding came from national institutes, government bodies or from industry/private sector, and whether the innovation leads to commercialization would need to be considered. Ultimately, discretionary power should reside in the individual university as these factors would determine the quantum of rights to be assigned.

Furthermore, ownership and assignment of rights should be in the domain of private contractual obligations between parties as related legislation would only lead to frivolous litigation. However, guidance should be given to universities on how to draft such contracts, perhaps in as broad templates or expert think tank that would guide such endeavours.

Key Organizations

Intellectual Property Organisation Pakistan (IPO) is the focal organization for the IP administration, legislation, coordination, and information in Pakistan. The IPO functions under the IPO Act of 2012 which assign certain exclusive and some non-exclusive responsibilities to IPO as per Article 13-15. The IPO is the sole authority to grant patent, copyrights, and trademarks to inventors and organisations seeking exclusive right to their intellectual property, having taken over the responsibilities of the “Patent Office” as defined in the Patent Ordinance of 2000.

Prior to 2005, IP management was fragmented in Pakistan. In 2005 IPO Pakistan was established as an umbrella organization for the integrated management of the Patent, Trademark and Copyright offices, working under different Ministries, were placed under the administrative control of IPO. The organization has presence in four cities with IPO headquarters in Islamabad, IP registries (Patent office, Trademark Office, Copyright office) in Karachi and IPO regional offices in Lahore and Peshawar.

It is the primary and exclusive role of IPO to grant, modify, amend, nullify, or adjudicate, hear disputes, administer penalties, etc., over disputes on patents, copyrights, and trademarks as per the rules and regulations specified in the original Patent Ordinance of 2000 (and further amended via Patent (Amendment) Ordinance of 2002 and the Patent Rules of 2003). In addition, the IPO also has non-exclusive/facilitative roles such as in creating awareness about intellectual property; educating and training inventors, examiners, and officials; and encouraging and supporting inventors and institutions (employers) to file patents, copyrights, and trademarks, etc.

The Higher Education Commission (HEC) is the primary regulatory body at the national level. However, there is provincial commissions (such as in Punjab and Sindh) or departments (such as in KP) tend to act autonomously and a case can be made for mutual support and integration. The primary objective of HEC is to ensure the autonomy of the universities and to plan and implement programs that lead to the development of the higher education sector and enhance quality of outcomes expected of the sector including greater relevance and impact of research.





It runs several R&D funding programs, including those with broad national and public interest such as Grand Challenge Fund (GCF) and the Local Challenge Fund (LCF); those with narrow disciplinary interests such as the National Research Programme for Universities (NRPU), and those with potential commercial interest such as the Technology Development and Transfer Support Fund (TDF & TTSTF) and Innovation Support Fund (ISF), etc. By virtue of its regulatory as well as funding functions, HEC has role in creating an environment conducive for creation, registration, and utilisation of intellectual property generated by universities that, in no way, impinges upon or is contradictory to IPO or the national patent law, but is often explanatory and guiding in nature and in some cases (particularly as a funder of R&D) could be of a binding nature. HEC exercises this through a variety of instruments such as the ORIC Policy of 2021, funding calls, and other policy, strategic, and advisory documents.

To support, organize, and promote research, innovation, and commercialization activities at the universities, HEC introduced the establishment of ORICs at HEIs. ORICs must enhance the overall research quality, relevance, and competitiveness of HEIs and streamline internal processes and standards to ensure synergies with external entities and stakeholders. HEC ORIC Policy 2021 establishes minimum guidelines for ORIC compliance which include a full-time leader at the level of Pro-VC, Pro-Rector or in case of smaller HEIs by a Dean or Director of Research.

ORICs have two distinct sections including research management and innovation and commercialization, each to be headed by a full-time Director/ Manager. The performance of ORICs is annually reviewed by the HEC through Self-Assessment Scorecards. ORICs which are compliant are entitled to receive up to 15% performance overhead under HEC sponsored competitive research grants. To ensure achievement of ORICs envisioned objectives, ORICs are governed by Steering Committee having a majority of representation from industry/corporate entities. The Steering Committee provides strategic leadership and governance oversight to ORICs in accordance with overall goals of the HEI. HEC provides continuous support to ORICs in capacity building initiatives through its national and international partners, through other well-performing ORICs in diverse areas including management, IP assignment, tech transfer, commercialization, etc.

While these are welcomed developments, regarding faculty performance evaluations, HEC's emphasis on research metrics (for example, the number of publications, citations, impact factors, etc.) should expand to incentivize innovation and commercialization efforts.

Universities and University Syndicates have the exclusive role of making policy at universities governing the use of facilities; creation and execution of contracts with outside entities including research collaborators and funders; employment contracts and conditions of scientists and inventors; creation, assignment, and registration of intellectual properties, etc.

HEI policies must comply with national laws and frameworks as specified by bodies such as IPO as well as binding policies of HEC, but may adopt differentiating approaches of complying with these laws and policies that allow the university to uphold its true and primary goal of knowledge creation and its dissemination, while at the same time protecting the interests and rights of the inventor (and/or assignee). They must also ensure societal impact from this intellectual property. HEIs use a myriad of instruments for executing policies including contracts and through ORICs, TTOs, TISCs, etc.

Most HEIs in Pakistan have not extended the current focus of generating citations and impact factor publications. Ownership, protection, and sustainable use of research conducted needs to be manifested in research outcomes, trained HR, and SOPs outlining methodological pipelines, lab level prototypes and use-cases that should be archived and managed for further use. This will enable universities to better harvest basic research and generate advance funding or licensing opportunities with industry for further product and service development.



Inventors of Intellectual Property The term "inventor" is specifically used in patent law to refer to a natural person who has devised an invention. An application may have a single inventor or more than one inventor. Copyright law uses the term "Author" to refer to the creator of literary or artistic work. In legal terms an "Author" under the copyright law is the creator of the original expression in a work. Therefore, a writer, artist, musician, poet would be known as 'author' for the sake of copyright law.

According to Copyright Ordinance, 1962, "author" means: (i) In relation to a literary or dramatic work, the author of the work; (ii) In relation to a musical work, the composer; (iii) In relation to an artistic work other than a photograph, the artist; (iv) In relation to a photograph, the person taking the photograph; (v) In relation to a cinematographic work, the owner of the work at the time of its completion; and (vi) In relation to a record the owner of the original plate from which there cord is made, at the time of the making of the place.

International Organisations and Agreements IP rights have long been recognized within various legal systems. For example, patents to protect inventions were granted in Venice as far back as the 15th century. However, protection of IPRs through international law started in 18th century with the signing of Paris Convention (1883) for the protection of industrial property (patents, trademark, designs) and during the Bern Convention (1886) for the protection literary and artistic work.

Moreover, with the rise of globalization and international trade, emphasis on international IP protection in the perspective of trade was increased. Therefore, agreements on trade-related aspects of IP Rights (TRIPS) were concluded as the most comprehensive multilateral agreement on IP at the platform of World Trade Organization (WTO), which came into force in 1995. The agreement sets minimum standards to comply for WTO member states for different IP forms namely, patents, trademark, copyrights, geographical indications, undisclosed information etc.

Furthermore, 26 international IP treaties are currently administered by WIPO to regulate multiple intellectual property rights globally. The important ones are contained in the Patent Cooperation Treaty (PCT) and Madrid protocol for the global registration of patent and trademarks respectively. Intellectual property rights are also enshrined as human rights in the Universal Declaration of Human Rights. Article 27 of the Universal Declaration provides that "Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author".

World Intellectual Property Organization (WIPO) is specialized, self-funding agency of UNO having 193 members, is a global forum for Intellectual Property services, policy, information and cooperation. WIPO was established in 1967 under WIPO Convention with the aim of providing a balanced and effective international IP system to encourage innovation and creativity for the wellbeing of all.

World Trade Organization is an international organization dealing with the trade rules/regulations between nations. It acts as a forum to negotiate trade agreements and settle trade disputes to enable smooth and free flow of trade among states. The organization is also important in the perspective of IP as it administer the most comprehensive international legal agreement on IP, namely agreement on Trade- Related Aspect of Intellectual Property Rights (TRIPS). Unlike other IP agreement, TRIPS has a powerful enforcement mechanism which can discipline member states through the WTO's dispute settlement mechanism.

Pakistan is signatory to Paris Convention, Bern Convention and TRIPS agreement. National IP legislations of Pakistan are TRIPS compliant giving rise to protection of intellectual property creations in line with international norms and practices. Moreover, Pakistan has also joined Madrid protocol in February 2021. With the joining of Madrid, Pakistani brand owners can now protect their trademarks in 107 members of the System by filing a single international application and paying a single set of fees.





C/ Policies to Strengthen IP in HEIs

Intellectual policy has come a long way in Pakistan from when IP or copyright was often considered a pejoratively (usually read as “right to copy”). This mindset deprived developing countries from generating new ideas and innovations. Developing countries were instead looking for shortcuts including software piracy with a growing realisation within academia of the importance of IP. While legal and organisational infrastructure has evolved to support IP at HEIs, several loopholes and gaps continue to create an environment of uncertainty and lack of proper utilisation progressive initiatives.

There is considerable ambiguity amongst academic staff as well as university administration around who owns the IP being created at HEIs. This uncertainty diminishes interest amongst academics and leads to ad-hoc disclosures and protection. Except for some private and semi-public universities, such as The Aga Khan University, LUMS, NUST, and UET, who have developed IP policies, the vast majority of HEIs remain disengaged while some are in nascent stages of developing IP policies.

Most public sector universities take a very narrow view of academic staff as government employees with restrictions imposed on any business-related activities. For most of these public sector universities, the lack of incentives for faculty to file patents or make IP disclosures result in skewing hiring, promotion, and rewards that are closely linked only to publishing papers and supervising PhDs. In the absence of an overarching national framework such as the Bayh-Dole Act⁵ in the US, the picture with regards to the funding bodies also remains rather ad-hoc with several instances in the past, particularly with ICTR&D funding that adds to this confusion.

In the absence of a clear policies and guidance on IP, there is either apathy towards securing and exploiting the potential of IP or informal, ad-hoc approaches that lead to delays and slow progress at best and the potential for perverse incentives, at worst. This clearly leads to a waste of the talent and high opportunity costs of human capital engaged in over 250 HEIs across Pakistan.

To address some of these challenges around ownership and exploitation of IP and provide efficient systems for ownership and assignment, there is a need to establish pathways that translate IP into commercialization and wide impact. A national strategy for securing, catalysing, and translating intellectual capital at nation's HEIs should embrace the following elements including the ownership, protection, and assignment of IP as well as explicit incentivization encouraging how IP will be used and developed and a strategy for phasing in IP translation. Each of these elements are briefly elaborated below.

I/ Ownership, Protection, and Assignment

In Pakistan, there is still considerable confusion about ownership of IP and in particular, patents, which require a clear definition. Although there is considerable weight of international experience that favours the university as the owner of a patent, the Pakistan Patent Ordinance of 2000 gives the default right to file and own the patent to the inventor and/or his or her legal representative if the former is deceased (Section 11 and 12).

The Patent Ordinance (2000) also denies the employer an automatic right to a patent even if the invention is made during the course of employment, unless there is an explicit contractual obligation to the contrary. The onus of proof that the invention could not have been made without the use of employer's facilities and resources is on the employer, and not on the employee. Given that any new policy cannot be contrary to the law of the land, this is then a settled position for ownership of intellectual property.

The Patent Ordinance (2000) also lays out mechanisms for grant of patents, notification of assignments and of transmission of patents, of licenses under patents, and of amendments, extensions, and revocation of patents and any other matters affecting the validity and proprietorship of patents (Sections 54 and 55). The law does not, therefore, restrict the university (or the employer) from contractually obligating the academic/inventor from assigning the patent to the university.



The assignment of rights would ultimately depend upon a number of factors, including the sources of funding, public interest nature of research, type of institution and its policies towards IP, and precise employment status of the employee, and the nature of research and use of university facilities, etc.

Overall, the quantum of rights assigned are left to the discretion of the individual university and the funding entity, to be exercised through employment and research contracts respectively, and broader guidelines that would aid the university in setting this quantum is being outlined here.

Inventor

The inventor (or inventors) remains the first and primary applicants of a patent application and the default owners of the patent resulting from any patentable intellectual property, unless otherwise specified by employment or funding contract. In either case, the inventor as the unalienable right to have his or her name mentioned as the inventor of the patent and this is irrespective of any later assignment, re-assignment, or any such arrangements that may transfer the beneficial interest of the patent to another entity.

The members of universities staff also have the right to ownership of copyright in teaching materials, educational resources, video lectures, etc. Members of staff are entitled to publish their scholarly materials and engage with third parties (e.g., publishers etc.) accordingly. There is only one exception to this rule is any materials created as a result of and in pursuance of the administration or management of the university.

University

Should such a provision exist in the employment contract, or declared university policy, at the time when the work leading to an invention was carried out by the inventor, the university may have the right to ask the inventor to assign the IP to it. The university's case for assignment shall be effective when (a) The invention is within the scope of university employment, including work under university grants and contracts with third parties (supported invention); or (b) Otherwise, makes a with significant use of university resources. However, if the intellectual property is created outside the scope of university employment and without any significant use of university resources (incidental invention), the individual shall own the intellectual property.

The inventor has the first and automatic right to file a patent application for any invention made during his/her research after due approval from the university if required and meeting all IPO formalities (such as a no-objection certificate). In case of a dispute on whether the invention was supported, the burden of proof lies with the university.

Where faculty academic works are incorporated into educational resources designed for ongoing departmental classroom use in a particular school or college, the university shall have a perpetual, nonexclusive, royalty-free license to use such academic works for such purposes.

Funder or Commercial Partner

The ownership of Intellectual Property developed during or pursuant to a sponsored research or other contractual funding agreement will be determined according to the terms of such agreement. In pursuing and agreeing to such an arrangement, the university may look at the nature of technology being developed (for example the degree of “public interest” or “public/private good”) inherent in the nature of the problem or solution, the proportion of private funding being offered, and any background IP which the research project draws upon, etc. Projects fully funded by private parties with some background IP and developing private goods present a clear and strong case for ownership of IP by the (private) funding entity.

Where substantial public interest is involved, the government as a funding agency may withhold the right of ownership of the IP and may make it available through an open source or non-exclusive licensing regime aimed at serving the widest possible public interest.

⁵ https://www.umventures.org/sites/umventures.com/files/COGR_Bayh_Dole.pdf

Even in case of privately funded IP, the government may, subject to conditions specified in Article 58 of Patent Ordinance (2000) decide that the public interest, in particular, national security, nutrition, health or the development of other vital sectors of the national economy, so requires that the Federal Government may, even without the consent of the owner of the patent, decide that a Government agency or a third person designated by the Federal Government may exploit a patented invention.

In case of joint ownership, the university may ask a student to enter into a binding agreement under which the student agrees to assign to the university any commercially valuable IP that they generate, so that the university can commercialize the complete package of IP arising from the research programme. In return, the university will treat the student as an employee for the purposes of the university's revenue sharing policy for staff inventors. Any dispute as to the ownership (or the quantum of ownership) of a student-created IP may be resolved by a duly appointed and sufficiently independent dispute resolution committee by looking at student's laboratory notebooks, progress reports, and other research artefacts. While these are some general guiding principles regarding ownership of IP within Universities and their funding and collaborating partners that is consistent with Pakistan's context.

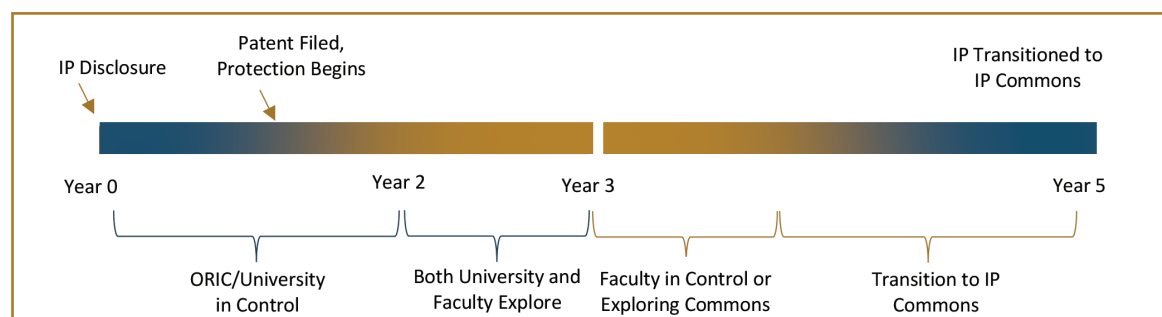
Student

As a general principle, a student enrolled in an academic or a research program– and not under an employment contract – shall be the owner of any IP he/she produces, exceptions include when the student's studies or research is funded by a third party (or the university) and the contract clearly specifies otherwise. When the student participates in a research endeavor involving other colleagues, and this results in an invention being made, he/she may be eligible for joint ownership of IP. This principle may be subject to variation in the case of externally sponsored or collaborative work. Patent Ordinance and IPO Act, there is a wealth of literature available to enable individual institutions (including universities) to develop their own variations complying with the general principles. World Intellectual Property Organisation (WIPO) has produced a quality document with some useful set of ideas that capture global best practices and is recommended by Pakistan IPO and HEC for use by universities and other institutions.

II/ Use and Development of IP

IP rights and their development depend upon the national laws, aspirations, university policies, and the conventions of a particular discipline [6]. Not every discipline of knowledge will have equal opportunities for commercial exploitation or social impact and mechanisms and pathways for social or commercial impact may vary considerably. Therefore, commercialization of IP should not be mandated as a "one-size-fits-all" policy but rather encouraged and incentivised case-by-case.

Incentive structures need to be carefully designed so that they do not divert scarce resources away from the core business of the University to create new knowledge nor dissatisfaction through unintended consequences. IP ultimately has a social impact which in principle supersedes commercial interests that privilege a few. This is why IP is grounded in the "public interest" and in many cases needs to be accessed, royalty-free, for wider societal impact. Thus, IP with limited commercial value, or the one with significant "public interest," should be made available by the University into an "IP commons" for non-exclusive royalty-free utilisation with government, non-profits, individuals, and others. In most cases, though, timing is of the essence and there needs to be a strategy framework in place to allow IP to be freely available to various actors that are in the best position to utilise them. The following suggestive timeline is laid out below.



Ownership of Intellectual Property at a Sampling of Universities

Massachusetts Institute of Technology (MIT)

With the exception of student theses, rights in patentable inventions, mask works, tangible research property, trademarks, and copyrightable works, including software ("Intellectual Property"), made or created by M.I.T. faculty, students, staff, and others participating in M.I.T. programs, including visitors, are as follows:

- a) Inventor(s)/author(s) will own Intellectual Property that is:
 - i) not developed in the course of or pursuant to a sponsored research or other agreement (the faculty advisor, administrative officer, or the Office of Sponsored Programs contracts administrator can advise on the terms of the agreements that apply to specific research); and
 - ii) not created as a "work-for-hire" by operation of copyright law (a "work-for-hire" is defined, in part, as a work prepared by an employee within the scope of his or her employment) and not created pursuant to a written agreement with M.I.T. providing for a transfer of copyright or ownership of Intellectual Property to M.I.T.; and
 - iii) not developed with the significant use of funds or facilities administered by M.I.T. ("significant use" is discussed in Section 2.1.2 of the Guide).
- b) Ownership of all other Intellectual Property will be as follows:
 - i) ownership of Intellectual Property developed in the course of or pursuant to a sponsored research or other agreement will be determined according to the terms of such agreement.
 - ii) ownership of copyrightable works created as "works-for-hire" or pursuant to a written agreement with M.I.T. providing for the transfer of any Intellectual Property or ownership to M.I.T. will vest with M.I.T.
 - iii) ownership of Intellectual Property developed by faculty, students, staff, and others participating in M.I.T. programs, including visitors, with the significant use of funds or facilities administered by M.I.T. will vest with M.I.T.

University College London (UCL)

All IP created by UCL staff in the course of their duties will belong to UCL, exceptions below. To the extent permissible by law, UCL shall own IP created by UCL staff outside the course of their duties where Additional UCL Support has contributed to the development of such IP. Where such rights do not vest in UCL automatically, UCL staff members shall assign these rights to UCL upon request. UCL acknowledges and respects the rights of UCL staff to ownership of copyright in teaching materials in accordance with this policy. Members of staff are entitled to publish their scholarly materials and engage with third parties (eg publishers) accordingly. As a general principle, UCL recognises the student as owner of any IP he/she produces while a registered student of UCL. This principle may be subject to variation in the case of externally sponsored or collaborative work

John Hopkins University (JHU)

The University owns all rights, title and interest in and to Intellectual Property developed as a result of support either directly from or channeled through the University. By accepting employment with or enrollment in the University, faculty hereby assign and agree to assign to the University all of their rights, title and interest in and to Intellectual Property developed as a result of University support. The University may transfer any rights of ownership by assignment or otherwise to the Inventor.

University of Surrey (U of S)

The University owns all IP created by its employees unless it is created in a private capacity that is inconsequential to the employee's role. A student owns all IP they create, unless it is created as a result of being an employee of the University. As they participate in University research programmes and contribute to inventions or other creative aspects of the outcomes, they are joint inventors or creators of any resulting IP. The University may ask a student to enter into a binding agreement under which the student agrees to assign to the University any commercially valuable IP that they generate, so that the University can commercialise the complete package of IP arising from the research programme. In return, the University will treat the student as an employee for the purposes of the University's revenue sharing policy for staff inventors.

McGill University

Except in cases where the rights of the University are assigned to the inventor(s), all rights to inventions or software that an inventor wishes to develop for commercial purposes shall be assigned by the inventor(s) to the University within 30 days of completion of the commercialization plan, at the latest. Except for moral rights where they exist, which shall remain with the inventor, the University shall then become the sole owner of all rights to the invention or software.

Harvard University

OTD shall have the sole discretion with respect to the commercialization of a Supported Invention, but shall take into account the public interest. Where a Supported Invention is subject to an external agreement with a third party (for example, the federal government or other funding sponsor), OTD shall make decisions consistent with that agreement. OTD shall make decisions concerning commercialization as it deems appropriate and shall make reasonable efforts to keep Inventor(s) involved and informed of its commercialization efforts. Administrative fee – 15%. Of the remainder: Creator's personal share – 35%; research share – 15%; Department/Center share (except that if within FAS, or if no Department or Center, to be allocated by Dean of the Creator's School for research purposes) – 15%; School share – 20% President's share – 15%

IP Ownership: Sample of Pakistani HEIs

NUST

- (A) Under Full Ownership of HEI, if:
- the IP is an outcome of sponsored research and funds were received from a national funding agency, unless the sponsoring agency has IP policy of shared ownership.
 - the IP is generated with significant use of HEIs resources.
- (B) Under Partial Ownership of HEI, if:
- the IP is an outcome of sponsored research and funds were received from an international funding agency, unless the sponsoring agency has IP policy of sole ownership.
 - the IP is an outcome of sponsored research and funds were received from a local industry or organization, unless the sponsoring agency has an IP policy of sole ownership.

UET Lahore

All rights in IP devised, made or created by employee of the university in course of his/her duties and activities of employment shall belong to the University. In case where significant University resources have been used and IP is created outside the normal course of the employee's duties the IP rights shall belong to the University as a consideration for use of University's resources. If the IP is created through sponsored research by third party, the IP shall initially belong to the University and then ownership will be determined according to the terms of the agreement with the third party. IP created during an academic visit by the employee to another university/institute shall be governed by the terms and conditions of the agreement between the university and the other university/institute. Students at the University: Students who are not employees of the University shall own the IP created by them during the normal course of their studies.

AKU

The University exclusively and absolutely owns all rights, title and interest in and to IP developed as a result of University Support. By accepting employment with or enrolment in the University, University Personnel and Students hereby assign and agree to assign to the University all of their rights, title and interest in and to Intellectual Property developed as a result of University Support unless otherwise explicitly agreed. If an employee of the University creates IP outside the normal course of his or her duties of employment, with the use of University Support, he or she will be deemed to have agreed to transfer and shall here by assign and transfer the IP to such created IP to the University as consideration for the use of University Support. Ownership of Intellectual Property emerging from all sponsored research including clinical trials and partnerships will be negotiated separately taking this Policy and the interests of the University into account.

LUMS

The University shall own any and all IP provided that such IP is conceived:

- During a research or other assignment given to researcher pursuant to a research project, grant or contract, or any other University administered program;
- Utilizing University resources or other contributions of the University (use of university residential facilities allotted to the researcher shall not be considered for this purpose);
- By the researcher but the University has not entered into a research grant or contract agreement with express provisions to the contrary.

Ownership and disposition of IP rights resulting from research financed wholly or partially by governmental, industrial or other organizations shall be determined by the rules, regulations, and procedures of the sponsor and in accordance with the terms of the related research agreement and the policies of the University. Any researcher who elects to perform research on governmental, commercial, or other projects undertaken by the University is required to sign such supplemental agreements or other documents as are necessary to enable the University to fulfil its legal obligations with respect to protectable inventions.

Each university with an established ORIC needs to create an Oversight Steering Committee as per HEC 2021 guidelines (Section 30) which looks at the university's IP portfolio, decides which IP is available for licensing, and whether a piece of IP should be placed in the IP Commons. Currently, many NRPUs are geared for publications and rarely converted into IP nor taken for further advancement for commercialization or funding. A dedicated ORIC Manager for Innovation & Commercialization can be tasked for tech-transfer decisions regarding what to file for the effective utilization of scarce resources.

Unless otherwise stated in the funding agreement, or there is an overwhelming "public interest" compulsion, all university IP may pass through the above timeline of changing control by various actors (university, faculty, etc.) before they end up in commons. ORIC may petition the Oversight Steering Committee for special consideration from withholding certain IP (with potential for commercialization) but this should not exceed more than 5% of the university's overall IP portfolio. If ORICs are not able to commercialize IP, there should be an indicative mechanism such as under the Patent Support Program of HEC which restricts patent filing (specifically international) lacking commercial potential.

The above provisions are also broadly in line with HEC's revised ORIC Policy of 2021. Each ORIC is mandated to publish an exhaustive list of IP available for licensing and their overhead rates are linked to their performance which includes, among other things, on making efforts to transition IP through various mechanisms (see below) to the private sector for commercialization or societal impact.

This section deals primarily with the commercialization of IP and provides a non-exhaustive list of possible mechanisms and impact pathways to move forward. These mechanisms can gradually enable universities to consider the following high impact interventions.

Mechanisms

Research endeavors that result in the creation of new IP mostly stem from contract research funded either by the government or the private sector. While contract research is not mentioned in the table below, it is an important pathway to develop a research culture, that identifies new questions, develops new knowledge to address these questions and builds HEI's infrastructure and overall capacity to do research. The contract itself specifies but should not limit the ability of HEIs to use and capitalise on the resultant IP that is created.

1: The University licenses IP to a commercial party. The commercial party uses the IP to expand its business resulting in licensing fee + royalty income for the university.

2: The University finds a private investor who can bring the resources, manpower, partners to create a company, giving the university licensing fee (for exclusive use of IP) as well as a royalty and/or equity in the start-up.

3: An entrepreneurial student and/or faculty member interested in commercializing his/her research approaches the University for a license to spin-off a company. The student and/or faculty member joins as a scientific advisor and or a non-operational co-founder. The university does an option-to-license agreement for a period of time to enable the student/faculty member to prepare a startup, ideally within the University incubator, and obtains the necessary approvals. The founders receive most of the equity, the university retains 5-10% and the student/faculty gets their requisite share for their advisory roles.

4: The university, unable to find a party willing to invest, decides to create a spin-off supported by ORIC, faculty, and students, invests some of its own money (or finds outside investors and partners). Starting with nearly 100% equity, it gradually dilutes itself out to 10-15% at the time of an exit event. Faculty also own equity in this venture as per university policy of equity-sharing.

5: In case the University, unable to find any traction in licensing or spinning-off an IP, assigns the IP rights to the faculty member leading the commercialization activity and takes a limited role but finds the investor(s) or partner(s). Faculty may spend time (say, above 10% and below 50%) to build the company which is 'bought out' via a contractual arrangement with the company. The faculty initially owns a significant share of IP (which is ultimately diluted to a minority position) and will not double dip in the university share which owns 10-20% equity for having made available the research funding, faculty time, and continued use of facilities.

6: The University, unable to find any traction in licensing or spinning-off an IP, assigns IP rights to the faculty who takes a sabbatical or leave-of-absence to start a faculty startup. Faculty owns the majority of the equity and oversees the hiring of employees and managing operations.

7: If the University's IP is deemed unattractive for commercialization, perhaps, because of its 'public interest' value, the only way to realize impact is by transitioning the IP into an 'IP Commons' where it may be available for utilization and exploitation via a royalty-free and non-exclusive license by government entities, non-profits, and individuals that are able to do something with it.



Technology Transfer (Licensing) – Technology transfer through licensing is an important impact pathway for IP without the university (or the faculty) having to start and operate a commercial entity. The benefits include economic incentives for researchers and ensures a mechanism to translate IP into commercial and economic gains for society. In most of the cases where IP is created, licensing is and should continue to be the easiest and primary course of action.

The primary actor in this commercialisation pathway is the ORIC mandated for Technology Transfer (TT) activities as well. The process begins with an invention disclosed by a faculty member. ORIC must maintain a research archive that can be used as a resource for building, protecting and sustaining IP in the most transparent and equitable means possible. The ORICs must routinely monitor and interact with faculty and research labs to determine potential projects that can be channeled into the industry. ORIC staff also builds and maintains relationships with the relevant industry arranging industry meetups. If a technology licensing opportunity is spotted, the ORIC staff takes the overall responsibility for negotiating and structuring the agreement. In Pakistan this (expanded) role has been assigned ORICs, in the absence of TTO's which needs to change.

2. **License to Spin-off** – IP Licensing for spin-off is the most efficient mechanism to spin-off a piece of intellectual property without a lot of involvement and financial exposure of the university. This is done usually when there is an attractive piece of IP and a ready investor willing to exclusively license the IP to create a venture. The university retains a small equity/royalty in the resulting venture. The faculty may remain involved in an advisory capacity and the startup employ some graduate students trained by the faculty, though neither of this is necessary. The university may use an "Option to License" with a term-limit rather than an outright license agreement if there is risk involved and may exclusively license only when the startup has materialized, and funding secured.
3. **Spin-off through Student/Faculty Startup** – One of the most common ways of spinning off and commercialization of faculty IP is through his/her students. Where a student with an entrepreneurial bent is identified and he/she is interested in creating a startup that commercializes IP developed by his/her faculty, there is a possibility to leverage this student-faculty relationship of trust and knowledge to advance the commercialisation agenda. The university may start with an option to license (leading to exclusive license) the IP to student (and his/her team), incubate the new startup in the incubator, and help it with additional support and handholding. The faculty member may serve as a non-operational advisor and his/her lab may remain the focus on continued IP development. The university and faculty member may both receive equity in the resulting student startup.
4. **Spin-off through ORIC or University Company** – Should the ORIC Steering Committee decide to spin-off the IP into a startup directly and be willing to commit significant university resources (and reputation) to achieve this, the ORIC (or a wholly-owned University entity) may create a startup from scratch taking on the roles of fundraiser as well as the top management team. This involves considerable risk but also some additional returns since the University owns a significant majority of the equity in the startup, though it ends up diluting as it raises outside money. It is worth noting here that even though there may be a temptation to make this a favored course-of-action, in reality it is not. Outside investors, who have a significant skin in the game are usually in the best position to evaluate the potential and the ability to create a successful startup.
5. **Spin-off championed by Faculty** – Should the ORIC find itself unable to find outside investors and the ORIC Steering Committee unwilling to commit any resources to in house commercialization (Pathway 4), the option to commercialize may revert to the faculty member. With university being the assignee, and ORIC having the first right of refusal, this needs to happen within a reasonable period of time (between 1.5 to 3 years) so as to not make the IP obsolete. In this model, the faculty takes on the role of a champion – not necessarily the operational lead, CEO, or the angel investor – of the new venture and rallies his/her contacts to find an investor and help put together a management team to create a startup. The faculty may negotiate with the University/Department some dedicated time (say 10-15%) to spend on the startup with any additional time-off upto a

maximum (say 50%) bought out from the university by the startup. This is a limited exposure approach for the faculty to make a focussed attempt to get a startup off the ground, but it doesn't fundamentally change his/her relationship with the University.

6. **Spin-off spearheaded by Faculty** – The difference between Pathway 6 and 7 is the degree of involvement and commitment of the faculty. In Pathway 7, the faculty rolls up his/her sleeves and decides to get fulltime into building a startup venture. This is obviously incompatible with his/her role as a faculty member and a researcher and thus only possible when he/she is able to take a sabbatical or a leave of absence from his/her academic duties. In this instance, therefore, the faculty is taking exactly the same risks as a startup entrepreneur and deserves almost the same returns. He/she, therefore, starts by owning a very high percentage of the equity (almost 90%) in the company and gradually dilutes out as most founders do. There may also be a possibility of a transition from Pathway 6 to Pathway 7 and it is upto the department/university and faculty to mutually decide that. Both Pathway 6 and 7 come with a hazard warning that although appealing, these may not be the best course of action either for the faculty member or the university since it means losing considerable focus from the primary function of the university (and faculty) and diverting attention away from cutting-edge research and teaching. Also, with some exceptions, faculty is not the best prepared and equipped to understand or deal with the market forces. However, in some cases – particularly when the faculty member singlehandedly believes in the value of the IP and is willing to put a productive research career aside – this might be the only way to successfully commercialize.
7. **IP Transitioned to IP Commons** – When all else fails or the IP is deemed unattractive for commercialization, perhaps, because of its "public interest" value, the only way to realize impact is by transitioning the IP into an "IP Commons" where it may be available for utilization and exploitation via a royalty-free and non-exclusive license by government entities, non-profits, and individuals that are able to do something with it. The licensing regime for patents, copyrights, and works etc. in the IP commons may start with an almost automatic year-long "option to license" followed by a "non-exclusive" license subject to commercial (or non-commercial) use renewable every 5 years. The university may also require certain reporting requirements to assess the impact of the IP in the commons.

Incentives: Royalty Sharing

Universities are derived from its centuries old traditions that have evolved over the years into multiple demands on faculty. Significant changes in incentives structures can lead to undesirable long-term effects and unintended consequences as incentive structures have a demonstrable effect on human behavior and motivation. While it is important to align incentives to encourage people to undertake a desirable action which underpins the goal to create IP and commercialization, too strong an incentive could end up misallocating scarce resources and diverting faculty attention from the core mission of HEI's. Extrinsic incentives, such as monetary rewards of large value, often act as blunt incentives within academia which is known to thrive primarily on intrinsic motivation. It is, important to tread carefully as one looks at the possibility of designing incentives to encourage faculty seek commercialization and impact from their research.

A cursory look at some of the best practices of defining IP ownership rights, both globally and locally, suggests that they are either owned exclusively by the academic institution or shared between the researchers and the academic institution. In either case, a revenue sharing formula between the researchers and the academic institution is set in place which protects the rights and incentives of all parties.

The revenue sharing formula may vary across universities but royalties and licensing revenues (after accounting for all expenses) are usually divided around a third each between the individual faculty, his/her department, and the university (including its commercialization arm), etc. Some universities have tried to replace some extrinsic incentives for individual faculty (such as cash) with intrinsic incentives (such as discretionary research funds for travel and RAs and funds for setting up labs or procuring equipment, etc.). This is also broadly in line with the practice in the industry where a patent usually leads to a small-to-moderate cash prize (\$5000 at IBM) but also greater professional prestige and discretionary power in one's lab or department.



Pakistan's HEIs operate in a resource-constrained environment with limited grants and research awards. This explain why we believe implicit incentives should be encouraged. Based on global best practices, we recommend sharing of royalty and other proceeds of commercialization (for example, equity) with individual faculty and research teams involved in the generation of the IP. The box below is illustrative of what such arrangements typically look like. For young universities in Pakistan, one might provide greater incentives for the inventor. Again, this is but one example and not an across-the-board solution.

Inventor(s) (divided by individuals and/or research groups)	50%
Department (s)/School (s) (division based on relative contributions)	20%
HEI	20%
ORIC (& TTO)	10%
	100%

III/ A Strategy for IP Translation

Where do we go from here? Pakistan stands at the crossroads with the backdrop of almost decades of unprecedented investments in HEI's. More recently, the focus to improve quality, relevance, and impact of research has been manifested in systematic institutional capacity building. These have come in the form of National Centers for Entrepreneurship, AI, Robotics, Big Data and Cloud Computing, Cybersecurity, Livestock Breeding, Genetics and Genomics, Industrial Biotechnology, Energy, Water and Agriculture. In addition, new grant programmes by HEC include the Grand Challenge Fund, Local Challenge Fund, Technology Development and the Transfer and Support Fund, and Innovation Support Fund.

As greater capacity is developed, there are increasing demands to demonstrate the impact of research. While a few universities have taken first-steps to experiment with approaches to exploit their IP portfolios, many of these efforts have been undermined by lack of a clearly defined policy guiding and facilitating these efforts. There is also a need for a critical mass of IP commercialization activity to take place. This must be accompanied by prioritizing the training of professionals who can negotiate licenses, carry out valuations, write term-sheets, and develop deal pipelines.

In the absence of a simplifying mechanism, therefore, it may take too long – perhaps 5 to 10 years or more – for enough numbers of deals to have been done for mechanisms to be validated, norms to be established, and enough people – having tried, and failed, or succeeded – trained within the nascent academic and venture investment community in Pakistan. A strategy to jumpstart a culture of securing, protecting, and translating the intellectual capital available at Pakistan's universities and rapidly build this into a strong and robust system will require a series of urgently needed actions that are outlined in section D below.

D/ Action Plan

Action 1: Pilot IP Commercialization Strategies

In the early days of the emergence of venture capital in a country, simple push strategies were used without getting into the nitty-gritty of valuations. Today, standard 'SAFE' multiples are used to agree on valuations and deal flow. By simplifying contracting, IP commercialization and spin-offs may start by making all IP available for licensing and commercialization at a standard equity share for the university (say 10%). This will greatly simplify the valuation discussions, and could immediately jumpstart the spin-off process. Once a few deals have been done, and stakeholders (ORICs, faculty, investors) gain experience in valuing their respective contributions, these simplifications may be relaxed for more sophisticated approaches. Pilots are encouraged in research-incentive universities that have the requisite infrastructure in place.

Royalty Sharing at Leading Overseas Universities

Boston University (BU)

1. To the inventor/author: 1/3
 2. To the University: 1/3
 3. To the academic units who supply the intellectual home and research support for the faculty member: 1/3
- In many cases, this portion is divided between the academic school/college and an all-University laboratory/ center. If the laboratory is totally embedded in a school/college, then the funding goes to the school/college.

John Hopkins University (JHU)

1. For all net proceeds above \$300,000
2. Inventor (personal share): 35%
3. Inventor (research share): 15%
4. Inventor's Department: 15%
5. School's Share: 25%
6. University Share: 10%

University of Surrey

Income arising from proceeds of licensing IP is known as royalty income. Royalty income will continue to be paid to the creator(s) of the IP by the University even when they no longer are employees of the University, and to their estate after their death. 40% of the income will be shared with the creator(s) themselves directly. 30% of the income will be shared with the creator'(s)' department(s). 30% of the income will be retained within the University centrally.

University College London

The percentage share of net revenue that is distributed to individual faculty, UCL/UCL Business, and the department is as follows:

Net Revenue (£)	Originator(s) (%)	ICLB/UCL ² (%)	Department (%)
≤£100,000	80%	10%	10%
>£100,000 but ≤£1m	50%	30%	20%
>£1m	30%	40%	30%

McGill University

Commercialization by the University: In the case where the University is responsible for the commercial development of the invention or software, the first \$10,000 of net royalties shall accrue to the inventor. Of the balance of net income, 60 per cent shall go to the inventor(s) and 40 per cent shall go to the University.

Commercialization by the Inventor(s) In the case where the University assigns the rights to the inventor(s) under section 8.4, and the inventor(s) is responsible for the commercial development of the invention or software, net total income shall be apportioned as described below:

- a) Royalties: Of the first \$100,000 of net royalties, 80 per cent shall go to the inventor(s) and 20 per cent shall go to the University. Of any net royalties above \$100,000, 70 per cent shall go to the inventor(s) and 30 per cent shall go to the University.
- b) Equity, Options, and Other Consideration: Of the balance of net total income, 70 per cent shall go to the inventor(s) and 30 per cent shall go to the University.

Allocation of University's Share of Income: In respect of royalties, the University's share of income shall be apportioned as follows: 25 per cent to central administration, 25 per cent to the faculties of the inventors, 25 per cent to OTT, and 25 per cent to graduate fellowships.

Royalty Sharing at Leading Pakistani Universities

NUST

The royalties and other income will be disbursed as described in the table. The term of revenue sharing will last for the life of the license. Schools / Colleges have also been included in the share distribution which they may utilize for the R&D projects and associated activities of the respective institution.

Annual Royalty Bracket (Rs)	Inventor(s) (Wholly or mutually)	School/College/Center/Institute	NUST
Up to 0.5M	100 %		
> 0.5M ≤ 5M	60%	15%	25%
> 5M ≤ 10M	50%	10%	40%
> 10M	40%	5%	55%

UET Lahore

The net income arising out of commercialization of IP shall have following distribution percentages: Inventor (75%); ORIC (5%); Department (10%); University (10%)

AKU

The formula of distribution of Net Income arising from the commercialization of any IP will be negotiated on a case-by-case basis as a function of circumstances, including the extent of university support for the development of the IP. The revenue will be shared between the inventor(s), the department(s), the Research Office (ORIC), and the University. The following considerations shall guide the determination of the Net Income as best practice:

- One-third (1/3) of Net Income generated by patentable intellectual property shall go to the Inventor.
- One-third (1/3) of Net Income generated by patentable intellectual property shall go to the University, one-third (1/3) of which will be used to support research in the Faculty/Department where the research took place.
- One-third (1/3) of Net Income generated by patentable intellectual property shall be committed to the Commercialization process.

LUMS

The University intends to encourage the originators' participation in the technology transfer and commercialization of IP. It shares the net revenues generated from the commercialization or licensing of IP with the originators as follows:

- 100% to the University until all its out-of-pocket and development expenses associated with the protection and exploitation of the patent or software have been reimbursed. Such expenses include fees associated with patent filing and copyright registration and any other continuing costs associated with licensing or commercialization of IP. Thereafter, income received is distributed as follows:
- 50% to the inventor(s) or developer(s) (or their legal heirs). In the absence of an agreement to the contrary, income will be split equally among the multiple inventors or developers. However, the inventors or developers may enter into an agreement among themselves that specifies a different Intellectual Property and Commercialization distribution formula which takes into account the differential contributions of the individual inventors to the invention. In the absence of such an agreement, the University's policy will be equal income payments to all inventors and developers.
- 20% to the relevant School.
- 30% to the University.

It should be noted that IP protection and related operating expenses need to be covered before any royalties are distributed. It has also been suggested that while universities are encouraged to devise their royalty sharing formulas, HEC can consider providing a range to work with.

Action 2: Hire/Train a Critical Mass of Staff

It is imperative to train, hire, and incentivise IP related staff at ORICs within HEIs. Staff in these units are either in very small in number, in need of training or require experts. ORIC staff needs to be trained not only in executing general operations but also in the areas of communicating and engaging with industry and translating these interactions into opportunities and technology transfer initiatives. University rules that forbid university administration from hiring and incentivising such people need to be revisited to enable hiring and training professional staff. Starting with a smaller number of universities and focussing on commercializing through licensing to spin-off may help in addressing this issue in the short run (see #2 in the box on page 17 and explanation on page 18).

Action 3: Push IP to Industry

In order to fast track the development of a culture of IP and commercialization, HEIs should be encouraged to push IP outwards to the industry even if even if this results in failure. Failure is, however, the best teacher and more valuable than not trying at all. ORICs must make IP available for licensing and to push hard for it so that market entities that are in the best position to commercialize can take the idea to fruition. HEIs and the HEC should consider broadening how the impact of research is measured. In addition to grants, publications, and citations, the translation of patents into commercial goods and services need to be considered.

Action 4: Form Regional /National IP Advisory Committees

In order for IP commercialization to gain rapid traction and provide strategic advice to HEIs on issues relating to IP protection, legislation, commercialization, international best practices, and general counseling/assistance, regional and national level IP advisory committees should be constituted. The regional ones steered by "W" category ORICs (reporting to the national one headed by HEC) and national ones by the HEC having equal and fair representation of IP stakeholders from government and industry.

Action 5: Convene Key Stakeholders

HEIs and ORIC units must work closely with several organizations including the IPO, HEC, PPRA, STZA, SECP, Accelerators and Venture Funds, and the Establishment Division to address specific bottlenecks. These bottlenecks include structuring minority-ownership of equity by a faculty member, competitive auctions for IP licensing, etc., that tend to hinder a culture of IP commercialization. Considering the incentives being provided to STZs, government incentives should be aligned with the STZ member's contribution to Pakistan's knowledge economy to encourage the STZ-based industries to collaborate with local universities and come up with local technologies, creating better impact to the society. An annual conference as part of the action plan can be organized not only to build capacity in ORICs, share best practices as well as convene key stakeholders to move the needle on key roadblocks.

Action 6: Strengthen Linkages between IPO and HEC Partners

These organizations are critical in framing policy and providing leadership to promote innovation through IP and its potential commercialization. They must work in symphony. IPO might consider subsidizing HEIs which are in nascent stages of IP development. Even though many of these efforts may not result in commercialization, the intellectual value should not be underestimated. Once the HEIs IP portfolio reaches a certain threshold, the subsidy can be removed. For a more effective, transparent, responsive, and accountable partnership, all parties must endeavour to work in a formal structure that builds a culture within HEIs to protect, catalyse, and translate IP from universities to the marketplace and to society at large.

Action 7: Create an Online Portal

Detailed online searches is the first requisite step before filing an IP. Unlike the major global IP offices (for example, the USPTO, EPO, KIPO), IPO Pakistan does not have an online repository of its IPs. The absence of such a repository makes it almost impossible for an ORIC or other units in HEIs to search for novelty among the patents filed in Pakistan. In addition, online patent databases (for example, pat base, patserv, Clarivate Analytics) do not feature Pakistani IPs due to this digital disconnect. By setting up an online portal to submit, track and review IP applications, this site can provide access to the existing filed and granted applications and provide other essential support.



Action 8: A Central Legal Office for IP-related Legal Issues and an IP Registration Portal

The majority of HEIs do not have access to legal expertise that ORIC must increasingly rely on. The central office could provide both advisory and commissioned work depending on the nature of the requests from HEIs. The single window registration would encourage HEIs to follow a standard framework across the country.

Action 9: Establishing Parallel Legal and Governance Structures Supporting Commercialization

Most HEIs are established under a Charter/Act as a body corporate which can acquire and hold property (movable and immovable), or sell or transfer any property vested in it, or enter into contracts for the purposes defined in their Act. However, most HEI Acts do not have provisions to incorporate a company. To establish an incorporated entity, reference may be made to other clauses in HEI Acts as guidelines for under taking such activities.

For example, reference to Section 4(v) of the NED University of Engineering & Technology Act, states that the University has the power “to do such acts or things, whether incidental to the powers aforesaid or not, as may be necessary to further the objectives of the University as a place of education, learning and research”⁶. Based on this provision, it could be argued that NED University may incorporate a company in order to further the University’s objectives of education, learning and research. Furthermore, amendments may be made in the HEI Acts to insert provisions that allow the university to incorporate a company by the university.

HEIs can develop guidelines for establishing corporate structures as wholly, partially owned or an arms-length company. The recommended structure for a university spin-off company is for it to be a wholly owned subsidiary company of the university. Such guidelines may ensure good governance, including the following:

- The spin-off company should report regularly to the university and its board
- The spin-off company should be audited
- The university payroll unit should manage or have oversight of the spin-off company’s payroll.
- The university should be well represented on the spin-off board of directors. The Chairman of the spin-off Board needs the confidence of and access to the head of the University.

Action 10: Guidelines for STZ and PPP Frameworks

HEIs can mutually agree with the Special Technology Zone (STZ) Authority on a framework to declare knowledge based commercial activities in HEIs as part of a STZ that is entitled to the same incentives, concessions and support extended to other zone enterprises located in declared zones across Pakistan. However, to achieve these concessions, the provisions of the STZ Act and its rules will have to be followed.

Note that pursuant to Section 12(1)(f) of the STZ Act, the Approvals Committee is empowered to “recommend any existing or new zone proposed by any investor, whether public or private.” Therefore, in order for areas within HEIs to be declared as a STZ, the university should focus on Rule 17(3) as well as rule 160(4) (Alternate Dispute Resolution) of STZ rules and approach the STZA Approvals Committee either prior to or after its establishment.

HEC may provide guidelines to encourage MOUs between HEIs and the STZ Authority in creating a Digital Knowledge Park to bring research and commercialization activities under STZs. Furthermore, clarification may be sought from the STZ Authority on whether: (a) a technology park being developed by a provincial department/agency/entity under the relevant Provincial PPP laws (such as the Sindh PPP Act) can apply for status of a “Zone” and be entitled to incentives available under the STZ Act; (b) the concession agreement executed in respect of a PPP project can be construed as the “Development Agreement” subject to endorsement/approval of the Approvals Committee; and/or (c) the zone developer/concessionaire of the technology park will be required to sign any agreement other than a licensing application, with the STZ Authority, where an existing zone (after development) applies for STZ status and incentives would be applicable for zone enterprises only.

⁶ NED Act

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F/ Appendices

A/IP Examples in the Pakistani Context

These examples have been extracted from an IP self-study guide developed by the US department of commerce.

1. Patent Scenario

An important feature of Pakistan’s medicine has always been the use of herbs. In the Middle Ages, Punjabi “Justicia adhatoda” revealed the medicinal properties of some herbs or flowers, in particular of periwinkle. Based upon this knowledge, Beenish H., a pharmacist, has developed a new compound consisting mostly, but not exclusively, of periwinkle. She claims that this compound can boost the immune system and protect against the common cold. This compound is sold as syrup.

Question 1: May Beenish H., apply for a patent in Pakistan? If yes, what must Beenish H. demonstrate in order to prove that she is entitled to a patent under the laws of Pakistan?

Answer: In order to obtain a patent, in conformance with international standards established under the intellectual property agreement of the WTO, she demonstrates:

- 1) That her compound is new (novel).
- 2) That it involves an inventive step (is non-obvious).
- 3) That it is capable of industrial application (useful).

Another pharmacist, Javed N., has bought Beenish H.’s syrup, analyzed it and made a syrup with the same ingredients. Javed N. wants to sell his syrup in Pakistan under a name different from Beenish H.’s syrup.

Question 2: May Javed N. do so?

Answer: No. A patent gives the patent holder, in a given country and for a given duration, an exclusive right to manufacture and sell (or offer for sale) the patented product, or in this case compound.

Javed N. has bought Beenish H.’s syrup, analyzed it and made a syrup with the same ingredients. However, Javed N. prepares a very diluted version of Beenish H.’s syrup and wants to sell it as a medicine for very young children.

Question 3: May Javed N. do so?

Answer: No; the diluted syrup would infringe Beenish H.’s patent since it contains the same formula as the patent, but in a diluted version. If Javed creates and sells the diluted version, he will violate Beenish H.’s exclusive right to manufacture and sell (or offer for sale) the patented formula.

Beenish H. has obtained a patent for her medicine in several countries but not in country X. A pharmacist from country X has bought Beenish H.’s syrup, analyzed it and made a syrup with the same ingredients.

Question 4: May this pharmacist sell this syrup in country X?

Answer: Yes. Patents are strictly territorial in nature. Thus, regardless of the validity of Beenish H.’s Pakistan patent, she has no exclusive rights in country X.

2. Copyright Scenario I

Using directories and websites from all major Pakistani research institutions and universities, Humayun B. creates a web-based database of 1000 Pakistani scientists; this database makes it possible to conduct searches by scientific fields and to find scientists who have published scientific papers in each field.

Question 1: Does Humayun B. have a copyright?

Answer: Yes. While the data Humayun B. used to create his database is public information, the database that Humayun B. created required intellectual creativity, and is, therefore, protectable by a copyright. Such creativity (originality) may exist in the selection of the information to be presented in the list, the arrangement of this information and its display on the website.

Question 2: Can Humayun B. charge people for using his database?

Answer: Nothing under copyright law prevents Humayun B. from charging for access to his website.

3. Trademark Scenario I

Two college students have developed a software program that makes access to the Internet faster. They decide to sell their software program to people and companies that operate "internet cafés." They use the mark "Moscrosoft" for their new software program because it will tell people that their software is as good as the software developed by "Microsoft."

Question: Does their use of the "Moscrosoft" mark on their software violate any trademark rights of the Microsoft Company?

Answer: Yes. Although the mark is not identical to the Microsoft mark, it is sufficiently similar, and is used on sufficiently similar goods, that the unauthorized use of the mark is likely to confuse the public regarding the source or affiliation of the Moscrosoft goods. In addition, the differences between Moscrosoft and Microsoft are so insignificant that the marks appear to be virtually indistinguishable, and, therefore, qualify as counterfeit.

2. Copyright Scenario II

Erum S. and Gul H. have developed a software program that makes it possible to conduct searches in databases of pharmaceutical patents to identify domains of possible pharmaceutical research that are not covered by patents. They call this software "Pharmasearch". Erum S. and Gul H. send their software to DMC, a software company that specializes in "data mining" and offer to sell or license this software to DMC. A month later, DMC sends back the software to Erum S. and Gul H. with a letter saying that DMC is not interested in buying or licensing the software. A year later, DMC publishes and starts selling software that makes it possible to conduct searches in databases of pharmaceutical patents to identify domains of possible pharmaceutical research that are not covered by patents. DMC calls this software "Moleculesearch". Erum S. and Gul H. obtain a copy of "Moleculesearch", analyze it, and conclude that the source code of the software, its structure, and the screen displays are different from the source code, the structure, and the screen displays of "Pharmasearch".

Question: Has DMC infringed on Erum S. and Gul H.'s copyright?

Answer: No. Copyright does not protect ideas but the expression of ideas. So long as DMC has not copied any of the protected expression of "Pharmasearch", it has not infringed Erum S. and Gul H.'s copyright. Copyright does not prevent someone from creating a software program (A) which performs the same functions, as another program (B), so long as program A does not reproduce the protected expression of software B, the original. This protected expression includes the code, its screen displays, and, in certain instances, the structure, sequence and organization of the program.

3. Trademark Scenario II

CADRISC is the main brand under which COMPUDESIGN, one of the world's leading manufacturers of programmable integrated circuits for computer-assisted design, sells its best integrated circuits. Pakistan Computer Assisted Design (PAK-CAD) just developed a new family of desktops dedicated to computer-assisted design, built around CADRISC's integrated circuits that PAK-CAD buys from COMPUDESIGN's distributor.

Question: May PAK-CAD use the brand "CADRISC Machines" for its new desktops?

Answer: No. When PAK-CAD uses the CADRISC chips in its desktops, it does not violate COMPUDESIGN's rights. Similarly, informing buyers that its desktops are built around CADRISC chips does not violate any trademark rights. However, using the brand "CADRISC Machines" may mislead buyers into believing that PAK-CAD's desktops are made by or sponsored by COMPUDESIGN.

B/ Technology Transfer and Licensing

An individual or an organization is prohibited to use a technology that is:

- (1) developed by another individual or organization, and
- (2) is protected by the intellectual property rights (patents, copyrights, etc.)

However, an entity may obtain a *license* (via technology licensing processes) to make use of technology developed by someone else, such as an individual, a researcher at a university, or a group of employees at another company. The technology *transfer* typically imparts knowledge and skills to the target organization to up-skill them on a new technology or process and may include a technology license as well.

The practice of technology licensing in industry as well as at universities is commonplace and formal technology licensing procedures are beneficial in multiple ways. They:

- (a) reduce the chances of a future conflict
- (b) ensure that an invention or innovative technology benefits a broader user base
- (c) creates financial incentives for the inventors
- (d) motivate researchers to develop industry-ready ideas (impactful research)

In this section, we outline the role and process of technology licensing and transfer, limiting our discussion to the case where a university is the granting entity of the technology license. The principles and methodology would be similar if all entities, engaged in technology licensing and transfer, are non-academic.

Technology transfer offices at the universities (e.g., ORICs in Pakistani universities):

An effective technology licensing and transfer framework catalyzes the creation of useful knowledge at the universities in two ways:

- 1) it serves as an economic incentive for the faculty and researchers, the main driving force behind knowledge creation, and
- 2) it ensures that the intellectual property stemming from university research translates into commercial and economic gains, thus benefitting the society.

Through licensing and transfer of technology, academic research makes way into the marketplace, without requiring the university and researchers to start and operate a commercial entity.

The Technology Transfer Office (TTO) at a university has a central role to play in taking the university research to the market. Officers from the TTOs routinely interact with the faculty and research labs to determine what can be channeled into the industry. TTO staff also builds and maintains relationships with the relevant industry and often arranges industry meetups at the university. If a technology licensing opportunity is spotted, the TTO staff takes the overall responsibility for negotiating and structuring the agreement.

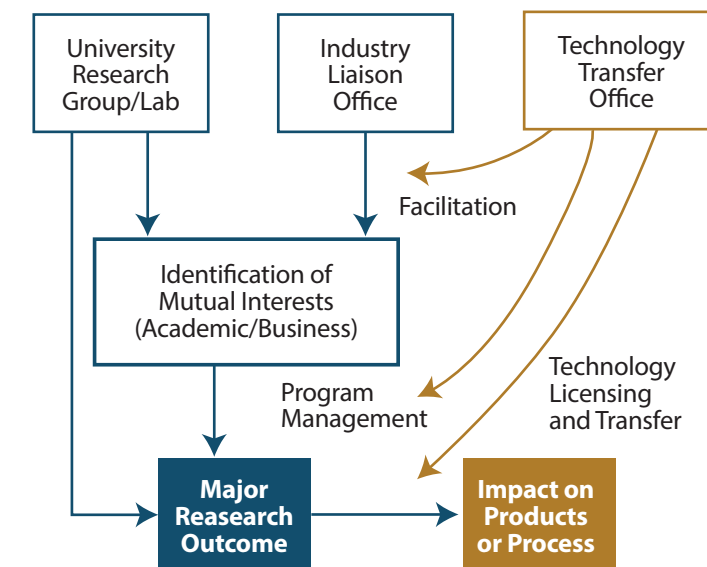
The technology licensing framework:

AA policy framework at the national level (such as the Bayh Dole Act in the US) that is generous in granting intellectual property rights to inventors, irrespective of the source of research funding, motivates the stakeholders in the university ecosystem to engage in knowledge creation. However, the ownership of the technology licensing and transfer mechanisms lies with the university. A comprehensive manual for technology licensing has been developed by the World Intellectual Property Organization (WIPO) and is available online⁷. For university scenarios, cases of technology licensing are generally simple and may be exhaustively covered by considering:

- (a) the valuation of intellectual property,
- (b) intellectual property management by the technology licensing office,
- (c) the negotiation process, and
- (d) the licensing agreements.

Technology Licensing and Channeling Research Outcomes:

Bulk of the research generated in the university does not get translated into useful products or process improvements. A quantitative study⁸ of over a 100 industry-university collaborative projects at 25 multinational companies revealed that half of those projects resulted in a major research outcome – an excellent success rate. However, only less than half of those major research outcomes could bring any measurable impact from the business perspective. For other research projects that are completed solely within the university, possibly with government funding, without significant industrial collaboration, it is extremely unlikely that the research outcomes will make their way into useful products and technology. Technology licensing process can bridge this gap between the “research outcomes” and “industry impact”. The aforementioned study also identifies “best practices” that can increase the likelihood of research positively impacting the business, and the presence of a well-formed technology licensing and transfer program, guided by the technology transfer office, can make the difference. A pictorial representation of a typical collaborative project with a major research outcome that also gets translated into business impact is provided.



Technology licensing lifecycle:

The technology transfer offices are the custodians of the technology licensing and transfer lifecycle which comprises of the following steps⁹:

1. Identification and disclosure of innovation or research outcome
2. Evaluation (internal examination) of the outcome and potential of impact
3. Registration / Patenting / Copyright
4. Marketing and dissemination in the network of relevant industries
5. Negotiations (valuation by external entity interested in commercialization)
6. Technology licensing and transfer agreements

The WIPO manual⁷ for technology licensing provides detailed considerations a technology licensing office should make during each step of the licensing process.

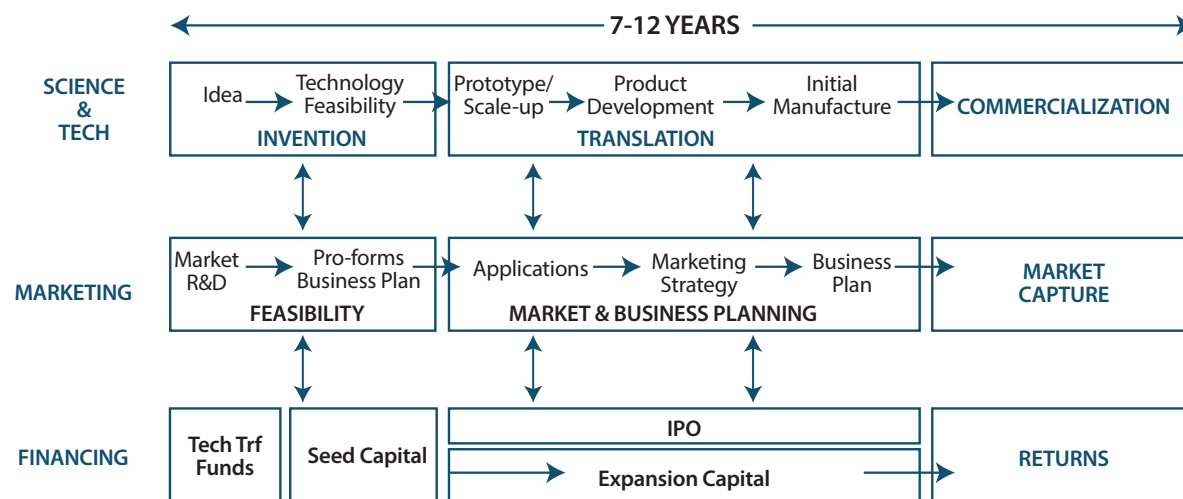
⁷ https://www.wipo.int/edocs/pubdocs/en/licensing/903/wipo_pub_903.pdf

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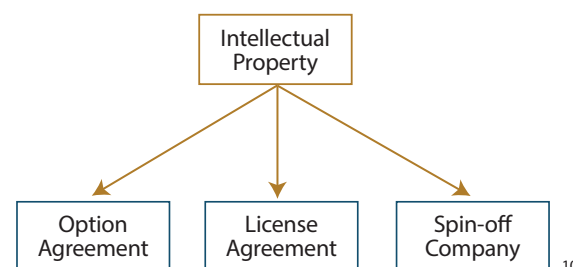
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Licensing Strategy:

We highlight three parallel paths below to assess technical, market and financial feasibility to achieve the desired impact of the technology commercialization process.



In addition, a number of pathways towards commercialization exist for inventors to consider. A commercialization strategy must evaluate a bespoke structure based on the several factors including the investment, technology readiness, risk mitigation and the like. For example, a transaction can be structured as an "Option agreement" which tend to be effective to attract private capital in cases where technology is not ready to be transferred to the industry and when investment risk levels are high. At this stage, funding requirements are low, and the private party can secure exclusive first rights to refusal for licensing & follow-up funding if certain deliverables are achieved by the inventor. These option agreement structures have been extremely effective in bridging the funding gap typically witnessed at the "valley of death" stage of the technology venture life cycle. Not every technology can be spun-off into a company without a business model demonstrating complete market and financial feasibility. It is therefore imperative that IP commercialization pathways and options must be strategically evaluated before dedicating resources in a particular direction to attract private capital.



Option Agreement

- Early-stage technology that requires further development
- Proof of principle; add value or reduce risk
- Achieve progress to interest investors
- Avoid giving up rights to develop or sell products
- Exclusive or non-exclusive
- Convertible to license agreement on agreed terms

¹⁰ Mapping of Business Incubation Centres & Offices of Research, Innovation, & Commercialization in Pakistan by Mr. Omer J. Ghani

License Agreement – Existing Company

- Technology likely to lead to a single product
- Small number of large firms that dominate the field
- Exclusive or non-exclusive
- Capital requirements to enter the industry prevent startups from being competitive
- Existing company may be able to get the technology to market faster

Spin-Off Company

- Platform or disruptive technology with broad patent protection
- Ability to generate interest from investors
- Market size sufficient
- A viable business model with attractive gross margins
- Begins with an option agreement based on deliverables
- Investment capacity
- Management team

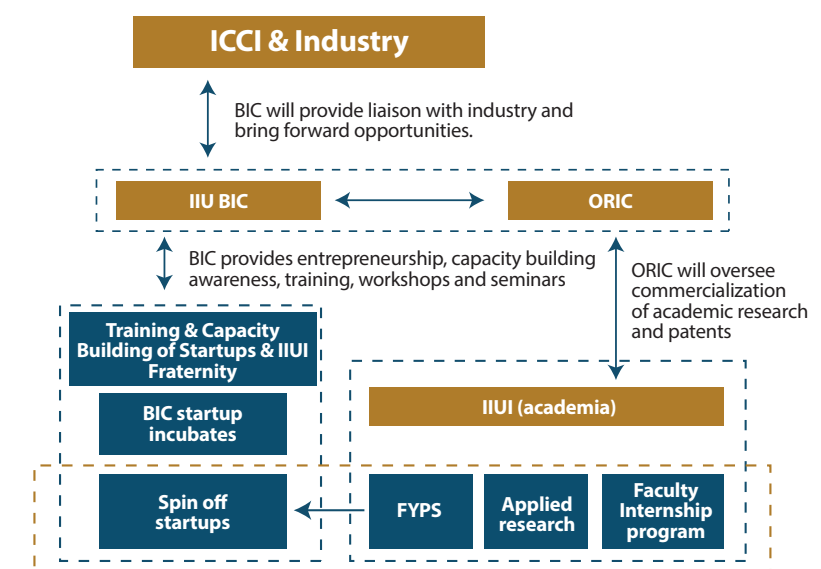
Examples of License Types:

While the researchers and the research lab may primarily be interested in the impact of their research on new products and processes, the university and the technology transfer office (ORIC in Pakistani universities) may consider several different structures which allow the use of technology developed at the university in industrial products. These include:

- Exclusive patent commercialization
- Non-exclusive patent commercialization
- Non-exclusive patent internal use
- Commercial Evaluation License
- Inter-institutional license agreements

It is important for the university to own the rights of the intellectual property or partially own such rights in case of collaborative research, with the potential licensee organization or with other universities. If the right of the work developed by the university researchers is owned by the government, as may be the case of government-funded projects, it would be hard for the industry to obtain an exclusive license, leaving little incentive to invest in the commercialization activity.

The International Islamic University emphasizes the role of Business Incubation Centres (BICs) to strengthen faculty with entrepreneurs. They propose the following schema to situate BICs





C/HEC's ORIC 2021 Policy

Introduction and Objectives

1. Offices of Research, Innovation, and Commercialization (ORICs) have been introduced to support and organize research and commercialization activities at universities. This policy defines the role, responsibilities, and mission of ORICs, and establishes KPIs (Key Performance Indicators) to gauge and measure their performance.
2. **Mission:** "Support Pakistani universities into becoming centers of innovation, high impact applied research, and entrepreneurship."
3. **Objectives:**
 - a) Enhance research quality, relevance, and competitiveness, and promote innovation and commercialization at HEIs.
 - b) Support university-based research through strategic planning, streamlining of internal process, establishing and monitoring of standards, mobilizing resources for research, publicizing research achievements, identification of synergies, and development of relationships with key external partners.

ORIC Responsibilities

4. Provide a one-stop office for supporting, advising, and monitoring quality of research.
5. Strengthen institutional collaboration between university researchers and potential users of research in government, industry, and communities.
6. Mobilize resources for research from national and international funding bodies.
7. Establish an Ethical Institutional Review Board (IRB) in the university to undertake meticulous reviews of research proposals before submission to national and international funding bodies, to ensure that all research, especially research on human subjects, adheres to ethics guidelines.
8. Develop the university's IPR (Intellectual Property Rights) Policy, and ensure that the interests of researchers and faculty-members are fully protected.
9. Identify, build, and market the intellectual property of the university personnel (faculty, students and researchers) through a range of licensing and spin-off arrangements.
10. The university shall establish every year a research budget, which will receive funds of project overheads, 15% performance grant allocated by HEC, the university's own contribution and any matching contribution by industry or the business plus other research grants received from government or inter-governmental sources. The university shall share and audit its statements of the research support budget every year and this be used in the determination of the 15% performance grant by HEC.
11. ORIC will provide the Advance Studies and Research Board (AS&RB) an annual report describing priority areas for research for graduate studies and highlighting the research achievements of the University.
12. Provide support to the researchers to access relevant research data about their district.

Structure and Governance

13. ORIC's should be headed by the Senior Professor on full-time basis, who as head of the university's research program will report directly to the Vice Chancellor, Rector, or President. Ultimately, the ORIC head should be at the level of Pro Vice Chancellor, Vice President, Pro Rector, or similarly named, after making the necessary changes in the University Acts or Statutes. In case of smaller universities, the Dean or Director of Research can be designated as ORIC head on full-time basis, who will report directly to the Vice Chancellor, Rector, or President. Universities that are not in compliance with this requirement may defend their current appointees in writing to HEC.
14. Detailed guidelines for the appointment of Heads of ORIC and the ORIC team are provided in Section "Guidelines for Selection of ORIC Team" below.
15. The Head of ORIC shall be appointed in accordance with these guidelines as well as the formal appointment procedures and selection criteria of the university. Except where the University's statutes determine otherwise, this shall be done through a selection board consisting of individuals of appropriate status and eminence.
16. Universities shall establish an ORIC Steering Committee (ORIC-SC), chaired jointly by the Vice Chancellor and an eminent representative of the private sector, in order to guide the Head of ORIC, advise the university on the appointment of the head of ORIC, set targets and KPIs, and monitor performance on an annual basis. The ORIC-SC shall consist of at least 07 members, of which the majority is from the private sector, and the remaining from senior university officials (e.g., Deans, and/or Senior Professors with well-established track record of research, grant raising, and commercialization). Section "Terms of Reference for ORIC Steering Committee" provides the TORs for ORIC-SCs.
17. ORIC shall have two distinct sections, namely, a) Research Management, b) Innovation and Commercialization. Each of these sections shall be headed by a full time Manager.

ORIC Strategic (5-Year) Plan

18. Each Vice Chancellor is responsible, within 3 months of the notification of this policy (or at the time of application to HEC for notification of a new ORIC) to submit a five-year development roadmap for the university's research agenda, with objectives, strategies, tasks, and annual targets for research, innovation, and commercialization, as well as the staffing of research positions. The 5-year plan should demonstrate how its execution would lead to an improvement in the university's research achievements.

Performance Monitoring and Evaluation

19. HEC's R&D Wing shall carry out annual performance reviews of notified ORICs. The reviews shall serve to assess compliance and validate performance.
20. Only universities that have functioning ORICs, and are compliant with the requirements of this policy, as verified during the annual review, shall be eligible to include performance-based overhead costs in research grant proposals (please see "Financial Rules Governing Competitive Research Grants", Section IV Sub-Section 7, at <https://bit.ly/32RGL3x>).
21. Only universities that have functioning ORICs, and are compliant with the requirements of this policy, as verified during the annual review, shall be eligible to receive performance grants under HEC's recurring grant allocations.
22. All overhead earnings and research-based performance grants shall be utilized by the university for research-support activities through their ORICs, and shall be subject to review and audit by HEC.



23. Compliance with the ORIC policy shall be measured against a standard checklist, and applied uniformly to all universities. In summary, performance shall be scored on a scale of 0-100. Scores will be assigned to various indicators, including the establishment of the ORIC-SC, appointment of a full-time Head of ORIC and a dedicated ORIC Team, approval of the ORIC organizational structure, strategic plan, and KPIs, and the actual output of research and commercialization strategy. A minimum score of 40 is required as indication of compliance, and higher scores will determine the amount of funding to be provided.
24. ORICs notified less than a year ago will be considered in Y category for the first year until their status is revised after the first annual review.
25. Non-compliant and non-performing ORICs will be given a warning, and if they fail to comply, will be de-notified and removed from the list of universities eligible for receiving performance grants or research overheads.
26. The following ranking criteria shall be used during the annual performance reviews:

Category	Score	University Overhead (Performance) on the Basis of Score
W	80 and above	15
X	60-79	10%
Y	40-59	5%
Non-complying	Below 40	0%

Key Performance Indicators

27. The following Key Performance Indicators shall be reported to HEC annually, and validated through the annual review process.

a. Human Resource & Operations:

- Dedicated ORIC Functional Office with ICT facilities
- Three full-time dedicated positions of Head of ORIC, Manager Research Support, and Manager I&C
- Status of ORIC-SC: constitution, number of meetings, minutes, actions taken.
- Support Positions (full-time or part-time) for effective functioning of ORIC
- ORIC Website, social media presence

b. Research Support:

- Number and volume of research proposals submitted, approved, and completed.
- Number and volume of joint research projects submitted, approved, and completed.
- Research links established with other universities, industry, government, or NGOs.
- Contract research awarded by industry or government organizations
- Acceptance ratio of proposals
- Annual research revenue generated
- Research grant opportunities identified and circulated to faculty
- Consultancy opportunities identified and circulated to faculty.
- Consultancy contracts executed through ORIC.
- Client satisfaction.

c. Innovation and Commercialization

- Number of IP disclosures
 - Number of policy briefs
 - Number of IP licensing negotiations initiated
 - Number of non-exclusive or exclusive licenses signed
 - Yearly revenue earned from licensing, royalties, policy advocacy, or other academic activities.
 - Number of visits by representatives of industry or community members regarding potential research subjects.
 - Number of events organized for industry or entrepreneurial stimulus, or for community engagement or community awareness
 - Number of agreements signed for collaboration with industry, government
 - Number of national or international honors or awards won.
28. These Key Performance Indicators include a mix of input, process, output, and outcome measures that seek to collectively capture the core objectives of an ORIC. This list shall be updated periodically to incorporate new and emerging factors. KPIs shall be set in such a way that ORIC have an incentive to aspire to above average performance for each metric for at least 25 per cent of the metrics, and no less than average for at least 50 per cent of the metrics. Universities may set higher standards in accordance with their capacity and ambition.

Guidelines for Selection of ORIC Team

29. The appointment of ORIC Head shall be governed with the following guidelines:

- The position shall be filled by a professional with experience and background in research as well as interaction with potential users of research (i.e., private sector or government entities). An attempt should be made to find the best combination of the skills; e.g., a person from academia should have demonstrated experience of commercialization and research grant management, while those from industry or government should have adequate exposure to research. All appointments shall be full-time.
- The search committee may recommend a suitable salary package and bonus for ORIC Head, in line with the market for such talent and the applicable rules and regulations of the University.
- The positions of Manager (Research Management) and Manager (Innovation and Commercialization) are required to be responsible for delivering their respective KPIs. Each Manager shall be responsible, under the overall direction of the ORIC Head, for appointing his/her dedicated support team.
- The staff titles are for indicative purposes only, and will be determined formally by the universities in accordance with their rules.

Terms of Reference for ORIC Steering Committee

30. The ORIC Steering Committee (ORIC-SC) shall be governed by the following TORs:

- ORIC-SC is the governing body for the ORIC, and shall provide strategic leadership and governance oversight. ORIC-SC will provide dedicated advice to the VC for decisions and actions to be taken in accordance with the objectives, approach and scope of the ORIC.
- ORIC-SC shall continuously review the performance of ORIC in line with the devised KPIs and strategic plan and guide the ORIC leadership by providing effective oversight and evaluations.





c. ORIC-SC shall:

- i. Devise and approve the 5-year strategic plan for the ORIC and ensure its proper compliance.
 - ii. Review and approve the recommendations for implementation of initiatives for better achievement of ORIC objectives from ORIC leadership.
 - iii. Review periodic monitoring reports on the basis of KPIs and advise the ORIC leadership accordingly.
 - iv. Provide policy guidance to ORIC leadership.
 - v. Ensure that ORICs activities and initiatives are coordinated with other relevant stakeholders, inside or outside the HEI.
 - vi. Bridge the gap between academia and industry and provide crucial advice on matters to promote university-industry linkages and commercialization.
 - vii. Advise the VC on the research management challenges of the university.
 - viii. Undertake any other task relevant to the better functioning of the ORIC.
- d. Members of ORIC-SC shall be appointed on the basis of their expertise in dealing with roles and responsibilities associated with the better performance of ORIC. All members shall have to sign Conflict of Interest statements.



D/ WIPO IP Policy Template for HEIs

Foreword

Universities and research institutions have a fundamental role in socio-economic development. Innovation and scientific development are the basis for economic, technological and social mobility as well as for economic growth. Universities and research institutions are a main arena in which scientific development and innovation takes place and the intellectual property (IP) system is the main mechanism that enables universities and society at large to capture the value of innovation.

It is the IP system that assists Universities and research institutions to commercialize their knowledge assets and by doing so potentially obtain additional sources of funding, which may be channeled into, amongst other, further research. At the same time, partnerships with the private sector and other organizations can ensure that academic research outcomes have broader impact, including competitiveness of industry and the regions, establishment of new companies, or addressing a variety of socio-economic challenges such as health, energy, and food security. This is the primary reason for Universities and research institutions in a developing and least developed context for engaging in the commercialization of their research outcomes: to ensure relevance of the research for impact in society.

This approach requires support for the entrepreneurial dimension of knowledge transfer, where strategies that leverage IP assets at the same time place emphasis on how academic research and the resultant IP best provide economic, environmental and social benefits for society at large.

An institutional IP policy is the very foundation of IP management in that an IP policy:

- serves as the starting point for a common understanding about IP, IP rights and incentives for researchers;
- establishes the structure for the way an academic or research institution deals with the ownership and disposition of its IP. As such, it ensures certainty and transparency to reinforce the links between the institutions and industry; and
- is also fundamental in helping institutions address social commitments, and especially, in ensuring the dissemination of knowledge and technology for the public good.

The World Intellectual Property Organization (WIPO) provides support programs to assist Universities and research institutions in the efficient identification, management and commercialization of research outcomes and the resultant IP. This **Intellectual Property Policy Template for Universities and Research Institutions** (Template) aims to provide a compendium of key issues that are essential in an IP policy, including ownership, incentives, confidentiality and publication, IP management and commercialization, recording and maintenance of IP, and IP-related conflicts of interest.

The Template provides a coherent set of clauses that comprise an effective IP Policy. The clauses may be used as is. However, there are a variety of policy choices and clauses that may be used instead of those provided in the Template. The **Guidelines for Customization of the IP Policy Template** provide these alternatives and provide options through different country examples, and an analysis of pros and cons of various approaches.

The primary purpose of this Template and its Guidelines is to provide a range of options, rather than a set of recommendations. The aim is to promote reflection and critical thinking; to stimulate certainty in terms of IP ownership; to encourage responsible IP commercialization of research results; and to provide objective information that will support IP policy drafters as they make judgments, tailored for their institution.

Institutions wishing to use this document as the basis for their policy are permitted to, and should, delete, amend and add relevant information to meet the institution's specific obligations, requirements and practices, as well as to conform to existing institution policies and applicable laws. The Template is not to be treated as a substitute for professional legal advice. Institutions are encouraged to obtain advice from an appropriate professional source.



Authorship and Acknowledgements

This IP Policy Template is the product of the collective energy of dozens of people and institutions in many countries. The main authors are Ms. Lien VerbauwhedeKoglin, Mr. Richard Cahoon, Mr. Mohammed Aljafari, Ms. Hagit Messer-Yaron, Mr. Barthelemy Nyasse, Ms. Maria del Pilar Noriega Escobar and Ms. Tana Pistorius. We would like to thank Ms. Kerry Faul, Ms. Yumiko Hamano, Ms. Justyna Ożegalska-Trybalska, Mr. Mohamed Shariff and Mr. Mc Lean Sibanda for their constructive inputs, as well as Ms. Natalia Henczel for the coordination.

The IP Policy Template is part of the World Intellectual Property Organization's (WIPO) Intellectual Property (IP) Toolkit for Universities and Research Institutions – Connecting Academic Research with the Economy and Society.

WIPO IP Toolkit for Universities and Research Institutions¹¹

- **Guidelines for the Customization of the IP Policy Template:** An explanatory guide to adapt the IP Policy Template to the varied legal frameworks, cultural contexts, and local ecosystems in which institutions operate. Authors: Ms. Lien VerbauwhedeKoglin, Ms. Kerry Faul and Mr. Richard Cahoon.
- **IP Policy Writers' Checklist:** Practical guidance and step by step information on the different stages the process of creating or improving an IP Policy usually involves. Author: Ms. Lien Verbauwhede Koglin.
- **Academic Intellectual Assets Map:** Designed to assist the Toolkit User to understand the broad scope of potential assets that an academic institution owns or may own and the way to strategically use them. Project Leader: Ms. Olga Spasić, authors: Mr. Steven Tan and Dr. John Fraser.
- **Model Agreements:** Compilation of model agreements for knowledge and technology transfer between academic institutions and with business partners. Project Leader: Ms. Olga Spasić, author: Mr. D. Patrick O'Reilley.
- **Case studies:** Five Hypothetical Case Studies, as a tool for training technology managers and which correspond and make reference to several of the Model Agreements. Project Leader: Ms. Olga Spasić, authors: Ms. Hagit Messer-Yaron and Dr. Keren Primor.

WIPO Intellectual Property Policy Template for Universities and Research Institutions

ARTICLE 1 - PREFACE

1.1. Context and Institution Mission

- 1.1.1. The core mission of the [Name of the Institution] ("Institution") is [Mission].
- 1.1.2. The Institution is committed to ensuring that Intellectual Property (IP) emanating from its Research activities is used in support of the objectives set out in its [Charter and Statutes], and in accordance with its legal obligations, for the benefit of the Institution, the Creators and, most importantly, society-at-large.

1.2. Purpose of the IP Policy

- 1.2.1. **Promotion of IP utilization.** The intent of the IP Policy is to facilitate the widespread use of, through various modalities of access to, the Institution's IP.

- 1.2.2. **IP management.** The IP Policy seeks to set the framework for the translation of the IP arising from the Institution's Research into products, services and processes. It encourages Staff Members, Students and Visitors to become Creators and to identify IP with potential commercial value. It also establishes clear rules and procedures for the management and Commercialization of such IP generated at the Institution.

- 1.2.3. **Balance of interests.** The IP Policy seeks to ensure the legal protection, where applicable; effective management and Commercialization of Institution IP; while at the same time not impeding with the traditions of education and scholarship, academic freedom, open and timely publications, Institution sovereignty, and the Institution's mission serving the public interest.

1.3. Overall Principles

The Institution operates under the following overall principles:

- 1.3.1. **Responsible Commercialization.** Where IP arises that has commercial potential as a result of Research, the Institution intends to make such IP available in a form that will most effectively promote its development and use for economic and social benefit.

- 1.3.2. **Incentives.** The Institution wishes to recognize and reward Staff Members, Students and Visitors whose IP generates a demonstrable socio- and/or economic impact.

[Option - Clause to promote the inclusion of local, regional and/or small businesses in development and Commercialization of Institution IP:]

- 1.3.3. **Local development.** The Institution encourages Research that responds to the local, regional and national needs. In its efforts to Commercialize Institution IP, the Institution shall seek to optimize the economic and societal benefits for industry from [Country] [and to address [Priority needs]].

ARTICLE 2 - DEFINITIONS

Without prejudice to any applicable laws, in this Policy the definitions set out below shall apply:

Appointment. A formal agreement for a Visitor at the Institution, which is a prerequisite to participate in or conduct Research, scholarship, creative work, or teaching at the Institution.

Author. Any person to whom this Policy is applicable, who individually or jointly with others makes a design, a mark or copyrightable work and who meets the criteria for authorship under the IP laws of [Country].

Background IP. Any pre-existing IP created before the execution of any Research Project, or prior to a Creator becoming subject to this IP Policy, by virtue of Appointment in the case of a Visitor, employment contract in the case of a Staff Member, or registration in the case of a Student.

Commercialization. Any form of utilisation of IP intended to generate value, which may be in the form of a marketable product, process or service, commercial returns, or other benefit to society. **Commercialize** is similarly defined.

Commercialization Entity. A company that has access to the IP of the Institution, through any one or more of the available Commercialization modes, to produce new products, processes or services. This can be a spin-off or startup.

¹¹ The Toolkit provides a one-stop-shop for academic and research institutions that seek guidance in the course of shaping and implementing their institutional IP policies. A copy can be found on the [WIPO website](#).



Conflict of Commitment (COC). Any situation in which an individual Staff Member's or Visitor's primary professional loyalty is not to the Institution because the time devoted to outside activities adversely affects their capacity to meet their responsibilities as set out in their employment contract of Appointment, respectively.

Conflict of Interest (COI). Any situation in which real or perceived interests of an individual Staff Member, Visitor or Student may run counter to the interests of the Institution or negatively affect their employment or duties.

Course Materials. All materials used in, or in connection with, and for the purpose of, teaching an education course through the provision of lectures, tutorials, seminars, workshops, field or laboratory classes, assessments, practicum and other teaching activities conducted by the Institution; and all IP in such materials.

Creator. Any person to whom this Policy is applicable, who creates, conceives, reduces to practice, authors, or otherwise makes a substantive intellectual contribution to the creation of IP and who meets the definition of 'inventor', 'author' or 'breeder' as generally implied in the IP laws of [Country].

Enabler. Any assistants, technicians, and other individuals who have indirectly contributed to the creation of IP by Creators - and as such may not be listed themselves as an author or inventor in terms of statutory IPRs - mainly through the execution of standard tasks or following through on specific instructions, but without whose practical contribution the Commercialization would not have been possible.

Genetic Resources (GRs). "Genetic material of actual or potential value."¹² Genetic material is defined as "any material of plant, animal, microbial or other origin containing functional units of heredity".¹³ Some GRs are linked to traditional knowledge (TK) through their use and conservation by indigenous peoples and local communities, often over generations, and through their widespread use in modern scientific Research. Examples include medicinal plants, agricultural crops and animal breeds.

Gross IP Revenue. All revenue received by the Institution on Commercialization of Institution IP before any deductions for IP Expenses, as defined in Article 10.

Guidelines. The *Guidelines for Customization of the WIPO Intellectual Property Policy Template for Academic and Research Institutions*.

Institution. [Name of Institution].

Institution IP. IP owned or co-owned by the Institution.

Intellectual Property (IP). All outputs of creative endeavour in any field at the Institution for which legal rights may be obtained or enforced pursuant to the law. IP may include:

- a) literary works, including publications in respect of Research results, and associated materials, including drafts, data sets and laboratory notebooks;
- b) teaching and learning materials;
- c) other original literary, dramatic, musical or artistic works, sound recordings, films, broadcasts, and typographical arrangements, multimedia works, photographs, drawings, and other works created with the aid of Institution resources or facilities;
- d) databases, tables or compilations, computer software, preparatory design material for a computer program, firmware, courseware, and related material;
- e) patentable and non-patentable technical information;
- f) designs including layout designs (topographies) of integrated circuits;
- g) plant varieties and related information;

¹² Article 2 of the Convention on Biological Diversity.

¹³ Id.



- h) trade secrets;
- i) know-how, information and data associated with the above; and
- j) any other Institution-commissioned works not included above.

Intellectual Property Rights (IPRs). The proprietary rights that may be granted for an invention, mark, design, plant variety, or other type of IP, should the statutory requirements for protection be met to result in a patent, trade mark, registered design or plant breeders' right, respectively.

Invention. [Definition under the IP laws of [Country]].

Inventor. Any person to whom this Policy is applicable, who individually or jointly with others makes an Invention and who meets the criteria for inventorship under the [national IP laws].

IP Disclosure Form. The form [provided in Annex X] to be completed by Creators and submitted to IPMO to document their creation.

IP Expenses. All expenses incurred by the Institution in the management and Commercialization of IP for which Gross IP Revenue has been received.

IP Committee. The body within the Institution, set up in terms of Article 4.1, which is responsible for overseeing the drafting, implementation, monitoring and evolution of the Policy, and for providing strategic oversight of the IPMO.

IP Management Office (IPMO). The administrative unit established in terms of Article 4.2, responsible for day-to-day management of all IP-related activities of the Institution.

IP Policy Template (or Template). *This WIPO Intellectual Property Policy Template for Universities and Research Institutions, to be used together with its Guidelines for Customization.*

Net IP Revenue. Gross IP Revenue less IP Expenses.

Open Educational Resources (OER). Teaching, learning and Research materials that reside in the Public Domain and that have been released under an open license that permits their free use or modification by others.

Plant Variety. [Definition under the national Plant Variety Law]. [Or: A homogenous grouping of plants that can be protected by a form of plant breeder's right such as that defined in the International Convention for the Protection of New Varieties of Plants¹⁴.]

Policy. This [Title of the Intellectual Property Policy of the Institution].

Public Disclosure. The communication of information, relating to IP, to external parties. Public Disclosure includes, but is not limited to, disclosure in written or oral form; communication by email; posting on a web blog; disclosure in a news report, press release or interview; publication in a journal, abstract, poster, or report; presentation at a conference; examination of a thesis; demonstration of an Invention at a trade show; or the industrial application of an Invention.

Public Domain. The freely accessible public realm in which works that are not protected by IPRs, either because the rights have been forfeited or because the rights have been expired, are thereby held by the public at large and available for all to use without permission from the Creator or owner.

¹⁴ Generally referred to as "[UPOV Convention](#)."





Research.¹⁵ Any creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications. It comprises three activities: basic research, applied research and experimental development.

Research Contract. Any type of agreement between the Institution and an external party or research sponsor, concerning Research, which could result in IP being created at the Institution. This shall include, but is not limited to, all sponsorships, donorships and collaborations with the external party or research sponsor.¹⁶

Research Project. Any Any project that forms the basis of Research undertaken by the Institution and includes projects undertaken by a Student, under the supervision of a Staff Member or a Visitor, as part of a research degree program.

Scholarly Works. All copyright works which are the outputs of academic Staff Members, Students or Visitors, including Research, creative and other outputs in area(s) of his/her expertise. It does not include Course Materials [**Option:** and computer software and databases].

Senior Responsible Officer. The person at the Institution who has the ultimate decision-making authority regarding IP.

Staff Member. Any person who is under a contract of employment with the Institution including academic, research, technical, administrative and adjunct staff, whether full-time or part-time or on a temporary basis.

Student. Any student registered for an approved course at the Institution.

Substantial Use. Extensive [unreimbursed] use of the Institution’s resources which include but are not limited to facilities, equipment, human resources or funds [**Option:** and Background IP that is not publicly available]. Not included is routine use of libraries and/or office space.

Trade Secret. [Definition under the national Trade Secret Law]. [**Or:** Confidential information not publicly available that has commercial value because of its confidential nature, and which the owner has taken reasonable efforts to keep secret.]

Traditional Knowledge (TK). [Definition under the national TK Law]. [**Or:** A living body of knowledge resulting from intellectual activity in a traditional context, which includes know-how, practices, skills, and innovations. TK embodies the traditional lifestyles of indigenous peoples and local communities and is transmitted from generation to generation, often forming part of the cultural and spiritual identity of the community. TK is not limited to any specific technical field, and may include agricultural, environmental and medicinal knowledge. TK also often encompasses knowledge associated with Genetic Resources.¹⁷]

Visitor. Any person who is neither a Staff Member nor a Student of the Institution who engages in work at the Institution, including visiting professors, adjunct and conjoint professors, teachers, researchers, scholars and volunteers; and who concludes an Appointment agreement with the Institution.

¹⁵ Definition from the [Frascati Manual](#).

¹⁶ For details as to the difference between sponsorships, donorships and collaborations, and how the IP ownership clauses may change, see the Guidelines, Article 8.

¹⁷ There is not yet an accepted definition of “traditional knowledge” at the international level. The proposed definition is provided for the purposes of this Template.



ARTICLE 3 – SCOPE OF THE POLICY

- 3.1. IP. This Policy applies to all IP generated at the Institution, in particular by Staff Members, Students and Visitors.
- 3.2. Background IP. Upon commencing employment, enrolment or an Appointment, Staff Members, Students and Visitors must declare any existing IP they wish to exclude from the application of this Policy due to creation prior to their employment, enrolment or Appointment at the Institution.
- 3.3. Applicability. This Policy applies to all Staff Members, Students and Visitors who participate in a Research Project or produce Scholarly Works. Rights and obligations under this Policy shall survive any termination of employment, enrolment or Appointment at the Institution.
- 3.4. Binding effect of the Policy. This Policy constitutes an understanding that is binding on the Institution, Staff Members, Students and Visitors, once adopted by the Board or Senate of the Institution, on the following grounds:

3.4.1. Staff Members. The Institution shall ensure that the employment contract or other agreement establishing any type of employment relationship between the Institution and Staff Members includes a provision placing Staff Members under the scope of this Policy.

3.4.2. Students participating in a Research Project. The Institution shall ensure that Students participating in a Research Project sign an agreement before commencing the project, to the effect that they have read and will comply with the provisions of this Policy, according to Article 5.2.5.

3.4.3. Visitors. The Institution shall ensure that Visitors sign an Appointment agreement before commencing any activity at the Institution. Such agreement shall place the Visitor under the scope of this Policy and shall make reference to this Policy, a copy of which will be made available to the Visitor.

3.4.4. Informed consent. This Policy shall be included on the Institution’s website, the [Title of faculty handbook] and the [Title of student handbooks]. In addition, a reference to this Policy shall be made in [the terms and conditions of enrolment of Students], academic catalogues or their equivalent. Said reference shall be in sufficient detail to enable the full text of the Policy to be easily accessed.

ARTICLE 4 – GOVERNANCE AND OPERATION

- 4.1. IP Committee

4.1.1 Purpose. The Institution shall establish an IP Committee to oversee the implementation and evolution of this Policy and provide strategic guidance to the IPMO (according to Article 4.2 below).

4.1.2. Composition. The IP Committee shall consist of [Composition], chaired by the Senior Responsible Officer or their designated other.

4.1.3. Responsibilities. The IP Committee is the ultimate decision making body in the determination of an IP management and Commercialization strategy for a particular IP.

4.1.4. Meetings. The IP Committee shall establish regular meetings and also be available for ad hoc meetings.





4.2. The IP Management Office (IPMO)

4.2.1. Purpose. The Institution shall establish an IP Management Office (IPMO) or designate a function within the Institution or another organization to act as such, to assist the Institution in managing and Commercializing its IP in a form that will most effectively promote its development and use for economic and social benefit.

4.2.2. Responsibilities. The responsibilities of the IPMO shall include, but are not limited to:

- a. Outreach/awareness to Creators;
- b. Relationship management with Creators;
- c. IP management;
- d. Technology marketing and IP contract negotiation;
- e. IP contract management; and
- f. IP costs and revenue distribution.

ARTICLE 5 - OWNERSHIP OF IP AND RIGHTS OF USE

5.1. IP Created by Staff Members

5.1.1. Institution ownership. The Institution owns all IP created by a Staff Member:

- a. in the course and scope of his/her employment; or
- b. making Substantial Use of the Institution's resources.

5.1.2. Staff Member ownership. Staff Members will own/co-own the IP they have created when such IP:

- a. is outside the course and scope of their employment and without Substantial Use¹⁸ of the Institution's resources;
- b. vests in Scholarly Works (see Article 5.5);
- c. **[Option:** Other IPRs, as required by national law, or for which the Institution cannot or does not wish to claim ownership and the Institution has communicated such in writing].

5.1.3. IP emanating from Research Contracts. In the absence of provisions to the contrary in any national law [Or: where there is no Substantial Use of the Institution's resources], the terms of the Research Contract will regulate ownership of IP created by Staff Members in the course of a Research Project that forms part of a Research Contract, as set out in Article 7.

5.1.4. Appointment of Staff Members at another Institution.¹⁹ It is the responsibility of each Staff Member that holds an honorary or other academic or research appointment at another institution (Host Institution) to bring to the attention of the Host Institution, including its IPMO, his/her obligations in terms of this Policy, prior to the tenure at the Host Institution. To the extent that the Host Institution's IP Policy makes a claim on IP created by the Staff Member pursuant to such appointment, the Staff Member shall ensure that the Host Institution negotiates a suitable IP arrangement with the Institution.

5.2. IP Created by Students

5.2.1. Student ownership. IP created by a Student in the course of study at the Institution (including theses, dissertations and other Scholarly Works) will be owned by the Student. This is in contrast to IP created by a Student in a Research Project, as per Article 5.2.3 below.

¹⁸ Use will be deemed not Substantial if minimal overhead costs have been incurred by the Institution (such as the use of office space, the library, facilities or traditional desktop computers); only a minimal amount of time has been spent using significant Institution facilities; or the IP has been written or developed in the personal (unpaid) time of the Creator.

¹⁹ This means that such Staff Members are a visitor at another institution.



5.2.2. Theses or dissertations.

[Option 1] The Student must submit his/her final thesis or dissertation to the Institutional repository.

[Option 2] The Student must grant a royalty-free licence to the Institution to reproduce his/her thesis or dissertation and to distribute copies thereof to the public.²⁰

5.2.3. Institution ownership. IP emanating from a Student's Research Project shall be owned by the Institution in the following circumstances:

- a. if the IP is created by making Substantial Use of the Institution's resources (excluding supervision) and there is no re-imbursement agreement concluded between the Institution and the Student; or
- b. if the Research carried out by the Student forms part of the Institution's Research Projects.

5.2.4. IP emanating from Research Contracts.²¹ The terms of the Research Contract shall regulate the ownership of IP created by a Student in the course of such Research Contract, as set out in Article 8.

5.2.5. Institution ownership responsibilities.²² If the Institution is the owner of IP created by a Student, in terms of Article 5.2.3 or Article 5.2.4, and hence created in terms of a Research Project or Research Contract, respectively, the Institution shall:

- a. provide the Student with an explanation of the reasons for the assignment of IP rights to the Institution;
- b. advise the Student to seek independent advice regarding the assignment;
- c. obtain a deed of assignment from the Student for all IPRs emanating from the Student's Research Contract or Research Project, where relevant, in return for revenue sharing as provided for in Article 10; and
- d. withdraw the Student from the Research Project or Research Contract if a Student elects not to assign the relevant IPRs to the Institution.

5.2.6. Bursaries/scholarships. An external party that grants a bursary or scholarship to a Student may elect to own the IP created by that Student in the course of his/her study at the Institution, provided the Student and the Institution have consented to the assignment of IP ownership in writing and such consent is not contrary to any applicable local or national law.

5.2.7. Student Owned IP. IPMO may, upon agreement, provide Commercialization services to Students for their IP.

[Option 1: In this event, Students may be required to assign their IP to the Institution and will be afforded the same rights and obligations as Staff Members under this Policy].

[Option 2: In the absence of an assignment of the IP to the Institution, the Students and IPMO may agree on the specific Commercialization services required], **[Option 2a:** at no cost to the Student;]

[Option 2b: in exchange for an agreed fee being paid to the Institution] **[Option 2c:** or sharing of Commercialization revenues accruing to the Students].

5.3. IP Created by Visitors

5.3.1. Institution ownership. Unless otherwise agreed to in writing by the Institution and the Visitor's home institution prior to the tenure at the Institution, Visitors are required to assign to the Institution any IP:

- a. created in the course and scope of their Appointment at the Institution; or
- b. created by making Substantial Use of the Institution's resources.

5.3.2. Institution IP. On departure from the Institution, a Visitor must sign and submit to IPMO an IP Disclosure form disclosing any IP created, as per Article 5.3.1, whilst at the Institution.

²⁰ The Rules of the Institution generally require, as a condition of enrolment, that the Institution reserves the right to retain the original or copy of any theses, and a license as described in Article 5.2.2. Reference should be made to the applicable Rules. Such retention does not affect any copyright or other IP right that may exist in such theses.

²¹ That is, if the Student is participating in a Research Project under a Research Contract between the Institution and an external entity or research sponsor.

²² See also Article 3.4.2 of this Policy.





5.4. Special Rules for Course Materials

5.4.1. Institution ownership. The Institution will own the IP in Course Materials created by a Staff Member or a Visitor, with the exclusion of Course Material that is created from or for Open Educational Resources, in accordance with Article 5.7.1.

5.4.2. Licensed by the Institution. The Institution grants the Creators of Course Materials a royalty-free, non-exclusive licence to use the Course Materials created by them for teaching and Research purposes at the Institution. **[Option:** With the express prior written permission of the Institution, such licence may be utilized for commercial purposes outside the Institution].

5.5. Special Rules for Scholarly Works

5.5.1. Publication. The Institution recognizes and endorses the rights of Staff Members, Students and Visitors to publish their Scholarly Works, provided that any Scholarly Work which may disclose any possible Institutional IP shall first be cleared by IPMO after having an opportunity to protect such Institutional IP according to Article 8.

5.5.2. Institutional repository. Staff Members, Students and Visitors should endeavour to obtain publishers' permission to include published Scholarly Works in the Institutional repository [whether as a published edition or in pre-publication form].

5.5.3. Licensed to the Institution. Staff Members, Students²³ and Visitors shall grant to the Institution a non-exclusive, royalty free license to use their Scholarly Works for the Institution's [administrative, promotional,] Research and teaching purposes.

5.6. Moral Rights

5.6.1. Recognition. The Institution undertakes to respect and protect the moral rights which copyright law confers on Authors of copyright works.²⁴

5.6.2. Rights granted. The Institution acknowledges that moral rights vest in Authors of copyright works irrespective of the copyright ownership thereof and include: ²⁵

- a. the right of attribution of authorship in respect of the copyright works;
- b. the right not to have authorship of the copyright works falsely attributed; and
- c. the right of integrity of authorship in respect of the copyright works.

5.6.3. No waiver. The Institution will not require Staff Members, Students or Visitors to waive their moral rights as a condition of employment, enrolment, Appointment or funding.

5.7. Public Domain

5.7.1. Public Domain. Institution IP forms part of the Public Domain in the following circumstances:

- a. if a Research Contract provides that the Research results be placed into the Public Domain; or
- b. if Staff Members or Visitors made use of OERs or resources licensed through Open Source or Creative Commons Licences²⁶ and the licensing conditions require release of derivatives into the Public Domain.

²³ This obligation can be enforced against Students through a provision in the Student registration form in terms of which the licence is granted to the Institution.

²⁴ This article must be adapted in accordance with national law.

²⁵ The list of rights granted needs to be adapted to the moral rights recognized in national laws.

²⁶ Creative Commons is a non-profit corporation dedicated to making it easier for people to share and build upon the work of others within the framework of national copyright laws. The Creative Commons suite of free copyright licenses provides a simple, standardized way to give users permission to share and use creative and scholarly work. Such licenses allow Creators to stipulate which rights they reserve, and which rights they waive for the benefit of others.



5.7.2. Release into the public domain. The Institution will release IP into the Public Domain in the following circumstances:

- a. where it is deemed to be in the public interest;
- b. if the IP has low commercial or other development potential and low prospects of fostering the development of new products or services; or
- c. if deemed necessary by the Institution.

ARTICLE 6 – PUBLICATION, NON-DISCLOSURE AND TRADE SECRETS

6.1. Right of publication. The Institution encourages and supports the right of Creators to decide if and when to publish their Research results, in accordance with Article 5.5 above.

6.2. Non-disclosure for IP protection. In conjunction with the right of publication, Creators should be aware that premature Public Disclosure may result in loss of IP protection rights²⁷. Therefore, they are strongly encouraged to make all reasonable efforts to identify any protectable IP as early as possible, according to Article 8, and shall consult IPMO before making any Public Disclosure of potential Institution IP **[Option:** or exercising their academic freedom rights].

6.3. Trade Secrets. The Institution may designate certain confidential information as a Trade Secret, owned by the Institution. In that event, all Creators will be obligated to maintain secrecy of the Trade Secret and to follow the direction for management of the Trade Secret by IPMO.

ARTICLE 7 – RESEARCH CONTRACTS

7.1. Authority. Staff Members, Students and Visitors shall not have the right to enter into a Research Contract with external parties on behalf of the Institution unless they are authorized to do so by an official representative of the Institution.

7.2. Research Contract Policy. All Research Contracts must be executed and performed in compliance with the Institution's Research Contract Policy (where available) [named XX].²⁸

7.3. Due diligence. Persons acting for and on behalf of the Institution shall exercise all due diligence and consult IPMO when negotiating and signing contracts that may affect the Institution's IPRs.

7.4. Ownership and rights to use. Subject to any provisions in law to the contrary, ownership and rights to use shall be agreed upon with the external entity, in accordance with the guidelines in [Annex XX].

7.5. Government rules. Research Contracts shall comply with any applicable law and/or Government regulations and/or rules, which may be applicable to Research undertaken by the Institution, in particular, as far as it relates to the ownership of IP resulting from such Research. **[Option:** The appropriate legal representative of the Institution will be consulted in this respect before signature of any Research Contract unless this responsibility has been delegated to IPMO by the Institution.]

²⁷ Patents provide protection for technical inventions but there are strict procedures and rules which must be followed. A patent cannot be granted if the invention has already been disclosed and so care must be taken to avoid premature disclosure before the patent application has been filed.

²⁸ In general, Research Contracts must be managed in terms of a specific research contract policy. Article 8 of the Template only deals with the IP ownership clauses and the possible options for contract, sponsorship or donor funding.





7.6.

Approval. [Option 1: Proposed Research Contract and other legal statements concerning the Institution's IPRs shall comply with the provisions of this Policy. Any variance from this Policy must be approved by the Senior Responsible Officer.] [Option 2: Before signing, the full copy of the proposed Research Contract and other legal statements concerning the Institution's IPRs shall be submitted to IPMO for advice and approval by the Senior Responsible Officer, unless this responsibility has been delegated in writing to IPMO by the Institution].

7.7.

Basic Principles. The IP clauses in all Research Contracts shall be governed by the following basic principles:

7.7.1. Concluded from the outset. A Research Contract must be executed in writing and signed by the Institution and the external party(ies)/sponsor(s) prior to the commencement of any Research Project and, as appropriate and without limitation, must contain terms relating to ownership, management and use of IP arising from the Research Project as well as any Background IP.

7.7.2. Background IP. All Institution Background IP must be properly recorded and declared prior to the commencement of a Research Contract and belongs to the Institution. Similarly, Background IP of the external party/sponsor, belongs to such party or sponsor. Use of such Background IP requires express written permission.

7.7.3. Foreground IP (IP arising from the Research Contract). IP generated pursuant to a Research Contract by Staff Members, Students or Visitors shall be governed in terms of the above provisions relating to IP generated by these parties. The general rule is that such IP shall be owned by the Institution.

7.7.4. Co-owned Foreground IP.

- a. **Terms for co-ownership.** Co-ownership of IP generated pursuant to a Research Contract shall be in accordance with national legislative provisions, failing which, [Option 1] as per the percentage of IP created by the Institution and the external party(ies)/sponsor(s), [option 2] in an equal undivided manner or [option 3] as mutually agreed contractually.
- b. **Costs for protecting and maintaining co-owned IP.** The costs for protecting and maintaining any IPRs shall be shared between the Institution and the external party(ies)/sponsor(s) [Option 1] in accordance with the percentage of IP ownership; [Option 2] in an equal manner; [Option 3] as mutually agreed contractually.

7.7.5. Serendipitous IP²⁹. Any IP created during the course of the Research Contract which falls outside of scope of the Research Contract shall be owned by the Institution or the external party(ies)/sponsor(s) which developed such IP, unless agreed contractually otherwise in the Research Contract.

7.7.6. Right of first refusal to the IP. The Research Contract may include provisions giving the external party(ies)/sponsors, a right of first refusal to Commercialize the IP emanating from the Research Contract, through a license or joint venture arrangement or assignment.

7.7.7. Publication delay. It is the strict policy of the Institution to allow Creators freedom to publish their work. However, the Institution acknowledges that delays in publication for the purpose of initiating statutory protection of the IP is often necessary. In this regard, the Institution will agree, on a case-by-case basis, to a contractual delay in publication by Creators. Such delay

²⁹ Results are serendipitous when research that was originally funded for one purpose turns out to be useful for another purpose.



will not exceed [typically 90 calendar days] from the date IPMO is notified of the intent to publish, unless authorized by the Senior Responsible Officer. [Option: IPMO may, if so required, facilitate the signing of a non-disclosure agreement by the journal appointed peer reviewers, such that review of the article for publication can proceed while the necessary procedures are being followed for IP protection.]

7.7.8. Use of the IP for Research and teaching. In instances, where the Institution IP is licensed exclusively or assigned as part of the Research Contract, all efforts should be made to secure a royalty-free license for use of the IP for on-going Research and teaching purposes.

7.8. Exceptions to the Policy. In certain cases, it may be necessary and/or beneficial to the Institution to enter into a Research Contract that contains exceptions to the provisions of this Policy. Any such exceptions require prior, written approval from the Senior Responsible Officer.

ARTICLE 8 – DETERMINATIONS BY THE IPMO

8.1. Responsibility to Disclose IP

8.1.1. Recording. Creators shall keep appropriate records of their Research in accordance with the Institution's applicable policy procedures and make reasonable efforts to ensure that only those individuals within the Institution who have a need to have access to such records for the performance of their duties are granted such access.

8.1.2. IP Disclosure. Where a Creator identifies potential IP resulting from his/her Research [or that of his/her team], he/she shall disclose such potential IP to IPMO promptly by means of an IP Disclosure Form.

8.1.3. Complete disclosure. Creators must provide to IPMO such full, complete and accurate information as IPMO may reasonably require to enable it to sufficiently assess the technical and related features and functions, ownership, commercial potential and IP protection that might be applicable to such IP. Upon complete disclosure, the IP Disclosure will be registered and assigned a reference number and IPMO will share this reference number with the Creators to signify that the IP Disclosure has been formally received by the Institution.

8.1.4. [Optional Clause – Disclosure Clause for IP related to GRs and/or TK]. When potential IP has been developed using GRs and/or TK, the IPMO [shall/could] require its Creators to disclose relevant information, in accordance with national legislation.

8.2. Creatorship and Ownership

8.2.1. Creatorship. Creators shall, upon request, sign the appropriate legal documents provided by IPMO that attest to creatorship. Where there is more than one Creator, and there is a dispute as to the contribution to creatorship, IPMO shall in consultation with the Creators, assist in the determination of the percentage IP creatorship, failing which it shall be assumed that there was an equal undivided contribution.

8.2.2. Ownership. Once creatorship has been determined, the Creators shall be required to formally assign any right, title or interest they may have in that IP to the Institution in the form of a contract that specifies the rights that will accrue to the Creator(s) and the Institution and the obligations they will have to assist the Institution with the Commercialization of that IP. Article 9.3 will apply.





8.3. Determination as to IP Protection and Commercialization

- 8.3.1. Evaluation and recommendation.** IPMO will analyse the information disclosed in the IP Disclosure within [usually 60-90 days] of formal receipt. The analysis will include: whether or not the subject matter is protectable as IP; an assessment of economic viability or marketability; and determination of any rights of external parties, such as a funder or collaborator. After evaluation, IPMO will prepare a preliminary report with findings that enable the Institution to decide if it will proceed with IP protection and Commercialization. IPMO shall share the preliminary report with the Creator(s), and seek their input.
- 8.3.2. Decision to protect/Commercialize.** The Institution will decide, as soon as reasonably practicable, whether or not it wishes to protect and/or Commercialize the IP. IPMO will use all reasonable efforts to notify the Creator(s) of the Institution's decision within [usually 60-90 days] of formal receipt of the IP Disclosure. IPMO will also make a determination in relation to the validity of any claim made by a Staff Member, a Visitor or a Student that they are the true Creator(s) of that IP and in relation to their rights under this Policy.
- 8.3.3. Institution's obligation to notify Creators of its decision.** Within no more than [usually 60-90 days] IPMO will notify the Creator(s) of the decision of whether the Institution will or will not pursue IP protection and Commercialization of their IP Disclosure.
- 8.4. Institution Elects not to Protect /Commercialize the IP**
- 8.4.1. IP abandoned or not Commercialized.** The Institution reserves the right not to protect or Commercialize IP that it owns if after consultation with the Creators:
- there is no reasonable prospect of commercial success;
 - it is not deemed to be in the best interest of the Institution; or
 - it is not deemed to be in the public interest.
- 8.4.2. Transfer of Ownership.** In the event the Institution decides not to pursue IP protection and/or Commercialization, it will take steps to return said IPRs to the Creator(s), contingent on any other superseding contract rights of external party(ies)/sponsor(s).
- 8.4.3. Written notification.** If the Institution is unable to or decides not to protect or Commercialize the Institution IP, it should notify the relevant Creator(s) of its decision in writing and in a timely³⁰ manner.
- 8.4.4. No prejudice to IP protection.** The Creator(s) should receive the written notification in a timely manner that enables the relevant Creator(s) to take any formal steps to ensure the protection of IP, should they so desire.
- 8.4.5. Assignment.** If the Creator elects to take assignment of the IP, the Institution shall ensure that a deed of assignment is executed without delay.
- 8.4.6. Terms and conditions.** If the Institution assigns IPRs to the Creator in terms of this Article 8.4.5, the assignment may be subject to one or more of the following terms and conditions:
- that upon Commercialization, the Institution be compensated for any expenditure it may have incurred in connection with the protection and/or Commercialization of such IP; and/or
 - that the Institution be granted a non-exclusive, royalty-free licence to use the IP for Research and teaching purposes.

³⁰ "Timely" means sufficient to not cause the loss of IP rights by failure to act.



ARTICLE 9 - COMMERCIALIZATION OF IP

- 9.1. Determination of the Commercialization Strategy.** Within [usually 3-6 months] of the decision to protect or Commercialize the IP under Article 8.3.2, the Institution will determine, with input from the Creators, the most appropriate Commercialization strategy.
- 9.2. Assistance to IPMO.** Creators of IP which has been selected for IP protection and Commercialization by the Institution must provide IPMO with all reasonable support in the assessment, protection (including preventing premature disclosure and execution of any documents including deeds of assignment and deeds attesting to creatorship), and Commercialization of the IP.
- 9.3. Sovereignty and Cooperation.** The Institution shall have the sole discretion regarding the Commercialization of IP owned by it. Notwithstanding, the Institution will ensure that reasonable efforts are made to keep the Creators informed and, where appropriate, involved in the Commercialization of the IP to which they contributed. The Commercialization of Institution IP will be planned, executed, and monitored by IPMO.
- 9.4. Commercialization Pathways.** Modes of IP Commercialization may include:
- license, either exclusive or non-exclusive, and variations thereof [**Option:** Preference for licensing to small and medium sized companies or businesses];
 - assignment (sale) [**Option:**, in extraordinary circumstances];
 - formation of a Commercialization Entity to which the IP is licensed or assigned in terms of this Policy;
 - non-profit use or donation;
 - joint ventures;
 - royalty free access on humanitarian or other grounds; or
 - various combinations of the above.
- 9.5. Guidelines.** Regardless of the mode of IP Commercialization, the transaction will be executed in a contract which:
- protects the interests of the Institution, its Staff Members, Students and Visitors;
 - retains rights for the Institution to use the IP for educational and research purposes;
 - assures that the IP will be utilized in a manner which will serve the public good;
 - assures that the IP will be developed and brought to the marketplace as useful goods and services; and
 - prohibits the "shelving" or "mothballing"³¹ of the IP or its use in any illegal or unethical manner.
- 9.6. [Option]** The Institution will endeavour to Commercialize IP in a manner that enhances local, regional, and national economic development.
- 9.7. [Option]** The Institution will endeavour to Commercialize IP in a manner that encourages and fosters entrepreneurship by Staff Members and others and which supports Commercialization Entities.

³¹ Shelving or mothballing of academic IP refers to IP and invention disclosure bundles that remain unexplored, unlicensed or unused.



ARTICLE 10 - INCENTIVES AND DISTRIBUTION OF REVENUES

10.1. The Institution's Incentive Structure

10.1.1. Purpose and scope. The Institution, in the interest of promoting knowledge transfer, will give due consideration to incentives to researchers to foster Research that has socio-economic impact; such incentives may be financial or non-financial. A Creator/Enabler may receive incentives from each IP they created/enabled which is Commercialized.

10.2. Sharing of Revenues

10.2.1. General. The Institution, in line with the minimum requirements set out in relevant national legislation [namely [Title Legislation] where there is such legislation], will award Creators/Enablers in the sharing of monetary benefits that may accrue to the Institution from the Commercialization of Institution IP.

10.2.2. Calculation of revenues for distribution. Calculation of Gross IP Revenue, IP Expenses, and Net IP Revenue shall be in accordance with the following rules:³²

10.2.2.1. Calculation of Gross IP Revenue. "Gross IP Revenue" is defined in Article 2 as "all revenue received by the Institution for Commercialization of Institutional IP before any cost recovery or deductions for IP Expenses" and includes, but is not limited to, outright sale of IP, option payments received, licence fees received, evaluation fees received, upfront and milestone payments received, royalty payments received, share of profits received, dividends received, commissions, income through disposal of equity, and direct sale of products or services.

10.2.2.2. IP Expenses. "IP Expenses" is defined in Article 2 as "all expenses incurred by the Institution in the management of IP for which Gross IP Revenue has been received" and includes, but is not limited to, those expenses that relate to (i) the Institution's expenses incurred by payment to external entities for securing, maintaining and enforcing IP protection, such as patenting and litigation expenses; (ii) costs incurred by the Institution in the licensing/assignment of IP, including marketing costs, contract negotiation and drafting costs; and [Optional] (iii) costs in making, shipping or otherwise distributing products, processes or services that embody the particular IP, [Recommended] but not including staff time or general administrative costs.

10.2.2.3. Calculation of Net IP Revenue. IPMO shall maintain accurate and transparent documentation of IP Expenses incurred for a particular IP and shall be entitled to cover all IP Expenses it has incurred, as set out in 10.2.2.2 above. The "Net IP Revenue" is calculated as the Gross IP Revenue less IP Expenses.

10.2.2.4. Co-owned IP. Where the IP is co-owned by the Institution and an outside organization, the Gross IP Revenue received by the Institution will be shared in accordance with a pre-determined formula as per a contractual arrangement. Thereafter, the Gross IP Revenue received by the Institution and the Net IP Revenue will be determined, and revenues will be shared in accordance with section 10.2.3.1 and 10.2.3.2 below.

10.2.3. Sharing of revenues – Creators/Enablers

10.2.3.1. Standard Creator's share.

[Option 1] [Number]% of the Gross IP Revenue [Option: the first [amount] of the Gross IP Revenue] will be allocated to the Creators. Where there is more than one Creator, the

Creators are entitled to an equal or pro rata share, based on contribution, of the [number]% of the Gross IP Revenue. Thereafter, the Creator(s) shall be entitled to [number]% of the Net IP Revenue.

[Option 2] [Number]% of the Net IP Revenue will be allocated to the Creator. Where there is more than one Creator, the Creators are entitled to an equal or pro rata share, based on contribution, of [number]% of the Net IP Revenue, except where there is a prior written agreement between all the Creators to the contrary.

10.2.3.2. Standard Enabler's share.

[Option 1] Creator(s) may at their joint sole discretion choose to provide for Enablers to receive a share of the Creator(s)' portion of the Gross or Net IP Revenue. This arrangement must be agreed to in writing by all Creators, if more than one.

[Option 2] The Institution may elect to set aside [number]% of the Gross or Net IP Revenue for an Enabler. Where there is more than one Enabler, the Enablers are entitled to an equal or pro rata share, based on practical contribution, of [number]% of the Gross or Net IP Revenue, except where there is a prior written agreement between all the Enablers to the contrary.

10.2.3.3. Disputes. In the event of a dispute or uncertainty regarding the Creators'/Enablers' share of the Gross or Net IP Revenue from a specific IP, the issue shall be brought for resolution to the IP Committee.

10.2.3.4. Payment. Payment to the Creators/Enablers will be made by the Institution on a periodic basis as agreed in writing, but no later than [typically twelve] months after receipt of the Gross IP Revenue by the Institution.

10.2.3.5. Taxes. Payments made as per 10.2.3.4 are subject to personal tax³³. [Optional] The Institution may, if so obliged by national tax laws, make any applicable tax deductions before making payments to the Creators/ Enablers.

10.2.3.6. Entitlement. Creators/Enablers and their heirs will be entitled to IP revenue sharing for as long as the Institution receives Gross IP Revenues from Commercialization of the Institution IP. [Option: The entitlement to a Creator's/Enabler's share of Gross or Net IP Revenue shall survive any resignation/termination of employment].

10.2.3.7. Banking details. The onus is upon each Creator/Enabler to ensure that the Institution has their current banking details for the purpose of revenue sharing. The Institution will keep the relevant IP revenue amounts in reserve for a maximum period of 3 (three) years after which all rights of Creators/Enablers to receive such payments will be forfeited. If the Institution pays an amount into an incorrect account as a result of information supplied to it being outdated or incorrect, the Institution will not have any further obligation or liability in respect of such payment, which will be deemed to have been duly and properly made.

10.2.4. Sharing of revenues – Institution. The Institution's share of Net IP Revenue is distributed internally as follows:

[number]% for further Research;

[number]% to IPMO;

[number]% for further IP prosecution and maintenance costs; and

[number]% to institutional overheads.

³²Article 10.2 needs to be adapted to applicable national laws which may contain mandatory rules for the calculation of the Gross and Net IP Revenues and/or for the sharing of benefits. The national laws may set minimum requirements but this does not stop the Institution from being more generous, for example if the national laws require 20% of the Gross IP Revenues to be distributed, an Institution can legally provide for 25% of the Gross IP Revenues to be distributed.

³³ National law tax provisions should be consulted.



10.3. Other Incentives

10.3.1. General. As a default position, the Institution will refrain from accepting non-monetary benefits for the Commercialization of its IP or from offering incentives other than revenue sharing, unless they are in addition to the revenue sharing as per 10.2.3.1 and 10.2.3.2, as appropriate. The Institution will thus give consideration, on a case-by-case basis, to the provision of other incentives, where monetary benefits (revenues) are not available or where the Creator/Enabler elects to choose other benefits in lieu of revenue sharing, which may only be realized in due course. Other incentives will include, but are not limited to, the incentives described in Article 10.3.2. – 10.3.4.

10.3.2. Growth, development and acknowledgement. A framework for growth and development of the Creator/Enabler in their professional and personal capacity shall be developed including (i) recognition of IP generation and Commercialization performance in appraisal procedures; and (ii) opportunities for enterprise development or capacity development through, for example, specific training opportunities, sabbaticals, and local and international exchanges in their relevant Research field or in the field of IP management and knowledge transfer.

10.3.3. Research funds. The Institution will actively, through its IPMO, promote, source and/or facilitate collaborative arrangements with industry partners to secure funding for further Research for the Creators/Enablers.

10.3.4. Creator/Enabler receiving shares in a Commercialization Entity or other licensee.

10.3.4.1. In the case where a Creator/Enabler is granted equity in a Commercialization Entity that licences the Institution IP which the Creator/Enabler has created,³⁴ such Creator's/ Enabler's portion in the standard revenue sharing formula of Article 10.2.3.1 or 10.2.3.2 will be **[Option 1]**: unaffected. **[Option 2]**: adjusted accordingly, taking into account the shares held in the company by the Creator/ Enabler. All other Creators/Enablers will be rewarded in accordance with the formula in Article 10.2.3.1 or 10.2.3.2.

10.3.4.2. Where the Institution receives shares in a licensee company, which company may be a Commercialization Entity, as consideration for an IP license, the Institution will **[Option 1, recommended]**: hold all the shares until liquidation, at which time the income will be considered Gross IP Revenue and the Creators/Enablers will receive their share according to the revenue sharing formula in Article 10.2.3.1 or 10.2.3.2. **[Option 2]**: take steps such that the Creators/Enablers will be issued their licensee company shares in the revenue sharing proportions, at the time the shares are issued to the Institution by the licensee.

10.3.4.3. Notwithstanding the benefit sharing in respect of shares in terms of this Article 10.3.4, the Creators/Enablers will still be entitled to their share of any other revenues under the IP license.

10.4. Contact Details

10.4.1. Contact details. The onus is upon each Creator/Enabler to ensure that the Institution is in receipt of their current address details for the purpose of revenue sharing. Unless contrary to law, should the Institution be unable to locate the Creators/Enablers through reasonable efforts, in order to effect payment of the revenue share amount, and a period of **[five]** years has passed since an initial attempt, then the portion owed to that Creator/Enabler or his/her heirs will be paid to the Institution's central fund to be used to support Research and innovation activities.

³⁴ The institutional policy regulating Conflict of Interests must be consulted to assess additional measures that should be put in place especially when the researcher outsources research to the spin-off or start-up company, in which the researcher has a material interest.



ARTICLE 11 - IP PORTFOLIO MAINTENANCE

11.1. Recording and monitoring. IPMO [or an external entity designated by the IPMO] shall maintain records of the Institution's IP in an appropriate form and in sufficient detail. It shall monitor the deadlines for the payment obligations related to the maintenance or annuity fees of protected IP, and shall, within a reasonable time, inform the person or department designated to make such payments.

11.2. Accounting. IPMO shall maintain income/expense accounting records on each IP so that revenue sharing allocations can be calculated.

ARTICLE 12 - TRADITIONAL KNOWLEDGE AND GENETIC RESOURCES

12.1. When Research is conducted at the Institution using TK and/or GRs, provisions of national legislation must be observed,³⁵ which provisions may include prior informed consent, and access and benefit-sharing, and the need to obtain any relevant permits.

12.2. The Institution shall formulate procedures and mechanisms for access to GRs/TK in order to comply with national legislation.

12.3. The Institution shall make provision in all Research Contracts concluded for the protection of any IP which may arise from the use of TK and/or GRs.

ARTICLE 13 - CONFLICTS OF INTEREST AND CONFLICTS OF COMMITMENT

13.1. Commitment to the Institution. Staff Members' and Visitors' primary commitment of time and intellectual contributions should be to the education, research and academic programs of the Institution.

13.2. Best Interests of the Institution. Staff Members and Visitors have a primary professional obligation to act in the best interests of the Institution; they should avoid situations where external interests could significantly and negatively affect their work ethic and research integrity.

13.3. Agreements with External Parties. It is the responsibility of all Staff Members and Visitors to ensure that their agreements with external parties do not conflict with their duties and responsibilities in terms of this Policy. This provision shall apply in particular to private consultancy and other research service agreements concluded with external parties. Each individual should make his/her duties and responsibilities clear to those with whom such agreements may be made and should ensure that they are provided with a copy of this Policy.

13.4. Disclosure of External Activities and Financial Interests. Staff Members and Visitors shall promptly report all potential and existing Conflict of Interest (COI) or Conflict of Commitment (COC) to the appropriate Institutional authority, in compliance with applicable COI/COC policies. The authority will be responsible for resolving the conflict or reaching a solution satisfactory to all parties concerned. [Option: The decision must be approved by a high level academic functionary (e.g., Dean or Rector)].

³⁵ For instance, when a member of the Institution needs to access and use GRs for the purpose of the research or when it is envisaged to share samples of GRs with partners from other countries, the Institution shall abide by the national laws in place.





13.5. **Policy.** The Institution will develop a separate and comprehensive policy on COI, in order to increase the awareness of Staff Members and Visitors about COI and COC; outline requirements for disclosure of COI and COC; and establish procedures to identify them, avoid or properly manage such conflicts.

ARTICLE 14 - DISPUTE

14.1. **Violation.** Breach of the provisions of this Policy shall be dealt with under the normal procedures of the Institution, and in accordance with the relevant provisions of laws and regulations in force.

14.2. **Dispute Resolution.**

14.2.1. Any internal disputes or questions of interpretation arising under this Policy must in the first instance be referred to IPMO for consideration and mediation by the IP Committee.

14.2.2. If the matter cannot be resolved by the IP Committee within [two months],], then the dispute or question of interpretation must be referred to the Senior Responsible Officer for mediation.

14.2.3. The Senior Responsible Officer may at their sole discretion refer the matter to Institution's Executive Committee and/or an independent committee for arbitration as final arbiter of any disputed issues or for final determination.

14.3. **Appeal.** Individuals covered by this Policy shall have the right to appeal the application of any aspect of this Policy to the IP Committee.

ARTICLE 15 - AMENDMENT

15.1. **Revision.** This Policy may be amended at any time by a decision of the IP Committee. In this case:

- a. all IP disclosed on or after the effective date of such amendment shall be governed by the Policy as amended; and
- b. all IP disclosed prior to the effective date of the amendment shall be governed by the Policy prior to such amendment, provided that the provisions of the Policy (as amended) shall apply to all IP licensed or otherwise Commercialized on or after the effective date of any such amendment regardless of when the IP is disclosed.

