ANNEX D. KNOWLEDGE INPUTS AND KNOWLEDGE OUTPUTS CONTRIBUTIONS TO THE GLOBAL INNOVATION INDEX

Knowledge Inputs

	Definition
❑ Number of Web of Science/ISI-indexed publications	The number of articles published in the fields of science and technology.
❑ Number of SCOPUS-indexed publications	The number of articles published in the fields of science and technology.
❑ Total Patent Volume	Patents filed with IPOPHIL
❑ Number of utility models Total Patent Success	Ratio of patent application to grants over the assessed timeframe
❑ Number of Global Patents	Percentage of patents for which coverage was sought with the US, European and Japanese patent offices. Filing an international patent is an expensive and laborious process and filing in multiple countries or regions is an indication that the invention is considered to be nontrivial and has commercial value.
❑ Patent Citations	Total number of times a patent has been cited by other patents. The total number of times a patent has been cited by other patents. As part of the patent inspection process, the patent office examiner will cite significant prior art. The number of times a patent has been cited is an indication that it has an impact on other commercial R&D.
❑ Percent of Patents Cited	The proportion of patents cited by other patents one or more times
❑ Industry Article Citation Impact	Article-to-article citations are an established indicator of influence and research impact. By limiting the citing articles only to those from industry, this indicator reveals the influence and impact that basic research conducted in an academic setting has had on commercial research.

Knowledge Outputs

	Definition
❑ Total peso value of industry-sponsored research expenditures	
❑ Number of individual private sector entities funding research grants and contracts	
❑ Number of industry collaborators	Number of partnerships formed between researchers from university or research institute and a commercial entity. This indicator shows the percentage of research activity that is conducted in collaboration with industry, suggesting potential future economic impact of the research project jointly undertaken.
❑ Number of grants, contracts and sub-agreements from private sector entities	Consultancy work to provide expertise services to an industry partner in exchange for payment, as allowed by the research institute or university's policy. In most cases, the resulting intellectual property rights are owned by the company, with limited rights of the researchers to publish their results. The IP ownership of developed results may also be shared, depending on the Institutional IP Policy of the academic institution and terms of the agreement. The university may try to preserve the right of the researcher to publish results of his/her work, while keeping information confidential for a reasonable period of time, to allow the company to protect IP and assure position on the market.
❑ Number of sponsored research projects by the industry sector	When a private or commercial company "hires" a university or a research institute to conduct research towards a commercial goal. The objectives of the research are defined by the company and the goals are commercial, not academic. The contractor fully covers the research costs and IP protection and bears all the risks for the research. The results are usually owned by the company, with patented inventions or other intellectual property rights assigned by the university to the contractor.
❑ Number of utility models commercialized/adopted	Total number of "minor inventions" or recognized minor improvements of existing products granted an exclusive right by IPOPHIL, which allows the right holder to prevent others from commercially using the protected invention, without authorization, for a limited period of time
❑ Number of projects conducted jointly with industry	Research involving coordination between the researchers, institutions, organizations, and/or communities which can bring distinct expertise to a project and the capabilities for exchanging ideas across disciplines. Collaboration can be classified as voluntary, consortia, federation, affiliation, and merger and can occur at five different levels: within disciplinary, interdisciplinary, multi-disciplinary, trans-disciplinary or national vs international.
❑ Number of incubatees assisted by Technology Business Incubators	Incubatees refer to startup entities/companies who are residing or virtually residing in the incubation centre undertakes the structured development program and/or engages contractual usage of the shared facilities. Platforms for speedy commercialization of technologies developed in the host institution or any academic and R&D institution of the country. Interfacing and Networking: to provide networking between academia, industry and financial institution. They function as a springboard for early-stage businesses and startups with the goal of providing specialized tools needed for startups to grow and innovate.
❑ Total investments or grants received by the startups under the Technology Business incubators	
❑ Number of spinoffs	Newly-created companies based on a new technology developed by a university or research institution. The researchers involved in the development of the new technology often leave their original position at the university and end up in the new company. The university and the spin-off company usually share risks and benefits through different

	forms of joint venture arrangements. Spin-offs are often owners or exclusive licensees of the IPRs on technologies developed at the university.
❑ Number of startups	A company built on a university granted license for one or more technologies. Founders of a start-up are not affiliated with the university where the new technology has been developed and the company's financial resources are drawn from external sponsors. The agreement needs to address some key considerations such as: IP, financial conditions, management obligations, conflict of interest concerns, participation and support of the university inventor, commercialization or business plan with development milestones and a pathway to market launch and exit.
❑ Number of joint ventures	A business entity created by two or more parties pooling their resources with the objective of implementing a common business purpose. It is generally characterized by shared responsibility, governance, risks and benefits.

APPENDIX XX. TECHNOLOGY READINESS LEVEL SUMMARY

TRL 1: ***Basic principles and research*****:** Do basic scientific principles support the concept? Has the technology development methodology or approach been developed?
TRL 2: ***Application formulated*****:** Are potential system applications identified? Are system components and the user interface at least partly described? Do preliminary analyses or experiments confirm that the application might meet the user need?
TRL 3: ***Proof of Concept*****:** Are system performance metrics established? Is system feasibility fully established? Do experiments or modeling and simulation validate performance predictions of system capability? Does the technology address a need or introduce an innovation in the field?

TRL 4: ***Components validated in laboratory environment*****:** Are end-user requirements documented? Does a plausible draft integration plan exist, and is component compatibility demonstrated? Were individual components successfully tested in a laboratory environment (a fully controlled test environment where a limited number of critical functions are tested)?
TRL 5: ***Integrated components demonstrated in a laboratory environment*****:** Are external and internal system interfaces documented? Are target and minimum operational requirements developed? Is component integration demonstrated in a laboratory environment (i.e., fully controlled setting)?

TRL 6: ***Prototype system demonstrated in a relevant environment*****:** Is the operational environment (i.e., user community, physical environment, and input data characteristics, as appropriate) fully known? Was the prototype tested in a realistic and relevant environment outside the laboratory? Does the prototype satisfy all operational requirements when confronted with realistic problems?
TRL 7: ***Prototype demonstrated in operational environment*****:** Are available components representative of production components? Is the fully integrated prototype demonstrated in an operational environment (i.e., real-world conditions, including the user community)? Are all interfaces tested individually under stressed and anomalous conditions?
TRL 8: ***Technology proven in operational environment*****:** Are all system components form-, fit-, and function-compatible with each other and with the operational environment? Is the technology proven in an operational environment (i.e., meet target performance measures)? Was a rigorous test and evaluation process completed successfully? Does the technology meet its stated purpose and functionality as designed?

TRL 9: ***Technology refined and adopted, and commercialized*****:** Is the technology deployed in its intended operational environment? Is information about the technology disseminated to the user community/consumers/target markets? Is the technology adopted by the user community/ consumers/target markets?

APPENDIX XX. MARKET READINESS ASSESSMENT SUMMARY

Checklist	Operational Questions	Remarks
Product/Solution Fit	Is the product or service solving a real need? And is it the right time to bring the solution to market?	
Vision/Team Fit	Are you best equipped to be providing a solution for the product? What are your strengths?	
Product/Market Fit	Is there a willingness from consumers to pay to solve the problem or need? How are your potential target customers currently solving the problem and will they be willing to switch to your product or service? How attractive is the market for your product or service? How much value can you add and what are the possible barriers to entry?	
Market/Business Model Fit	Is the market opportunity big enough to make this business model sustainable? Will you be able to achieve a substantial market share?	