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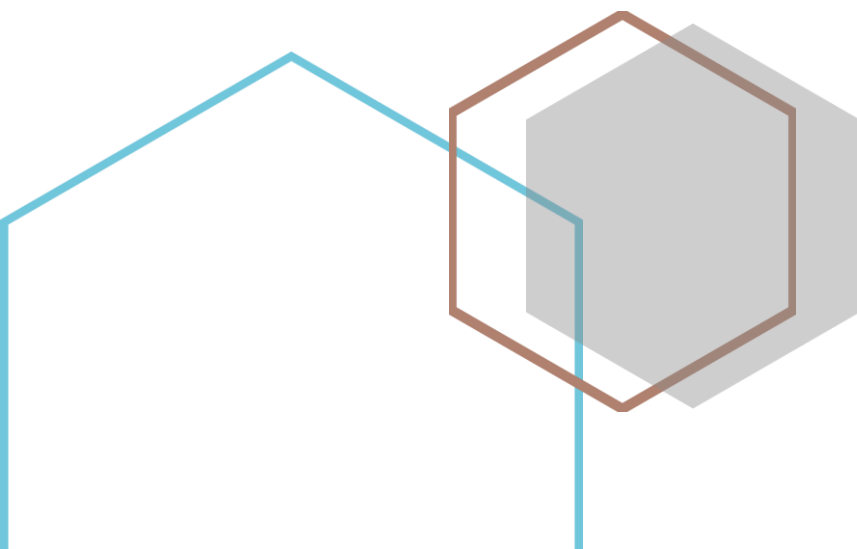
# **FRAMEWORK FOR EMBEDDING EMPLOYABILITY INTO UNIVERSITY OPERATIONS POSSIBILITY FOR MAINSTREAMING ENTREPRENEURSHIP EDUCATION**

**UNIVERSITY OF RUHUNA, SRI LANKA**

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**Integrating Talent Development into Innovation Ecosystems in Higher Education**

**586227-EPP-1-2017-1-BG-EPP**





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The framework is a strategic document presenting the University plans and priorities for embedding employability across the key institutional activities – curriculum development and delivery, research and innovation and outreach. Its overall objective is to ensure that the University effectively promotes graduates' employability while contributing to national and regional developmental priorities.

The framework seeks to devise a feasible plan for including both external stakeholders (business, the citizen sector and the public sector) and students/recent graduates in employability strategies. It is focused on 'embedding' employability into various institutional activities rather than on devising ad hoc initiatives and measures for employability promotion.



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*This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.*

## OBJECTIVES OF THE STRATEGY

The prime focus of the National Policy on Sri Lanka Higher Education regarding the 15 State Universities is to offer maximum benefits to a wide spectrum of society, while maintaining high educational standards. The strategy underscores the importance of supporting the existing State Universities in pursuing modern strategies through identification of research priorities, expansion of higher education in multiple modes of delivery, establishment of non-state higher education institutions, promotion of linkages amongst universities and encouragement of diverse programs of study to cater to the various needs of society. The policy emphasizes the development of a research culture, such that it would build up competent graduates. This encompasses training of students to be capable in identifying and utilizing native resources sustainably when conducting research. The relevance of research for providing practical skills required in occupations/professions, e.g. independent thinking, creativity, adaptability, critical analysis and problem solving, would promote investments by industry as well as international investment. Such linkages can broaden the employment opportunities for graduates, thereby improving the quality of the workforce in Sri Lanka.

The Coordinating Secretariat for Science, Technology and Innovation (COSTI) was established in 2013 with the specific aim of coordinating and monitoring Science, Technology and Innovation activities in the country. It also works to promote value addition and the commercialization of new research and innovations in line with the National Science Technology and Innovation (STI) Strategy of Sri Lanka. The mission of this institution is to establish in Sri Lanka a world-class national research and innovation ecosystem in support of strategic and sustainable technologies and economic competitiveness. Areas that are being supported are:

- areas of core competencies and resource-linked opportunities
- preparing Sri Lanka for a knowledge society through improved scientific literacy
- upholding sustainable principles in all spheres of activity.

In view of this mission, since 2017 COSTI has been actively engaged in promoting innovation in university research, in particular through initiating and supporting the establishment of Technology Transfer Offices (TTO) and University Business Linkage (UBL) Cells in all state universities and through facilitating/conducting workshops to enhance researchers' and industry partners' knowledge in the field of Intellectual Property (IP) rights and all aspects of commercialization of products developed on the basis of university research. These activities are carried out with the help of the National Intellectual Property Organization (NIPO) and the World Intellectual Property Organization (WIPO). The establishment and activities of TTOs and UBLs are supported by COSTI and many state universities in the country are now working towards orienting current research activities towards innovation and commercialization.



The University Grants Commission (UGC) is the funding agency for all the state universities. Funds are allocated based on the number of students. However, all study programmes are reviewed by the Quality Assurance Council (QAC) of the UGC once every five years. Universities go through an Institutional Review once in six years. QAC of UGC is responsible for designing and introducing the regulatory framework (i.e. prerequisites, uniform credit and qualification framework, and standard teaching and training, and evaluation methods) to promote lateral mobility of students among non-professional degree programmes such as Agricultural Sciences, Natural and Applied Sciences and Liberal Arts and Humanities. The QAC guidelines for planning of new undergraduate degree programmes include:

- ways and means of evaluating need and demand
- graduate profile
- structure of the study programme
- courses and intended learning outcomes; planning for course modules
- evaluation procedures
- credit qualification framework for natural and applied science degree programmes.

The University of Ruhuna has identified six objectives - or six Es - as indicated in its 2019 – 2023 Corporate Plan. These are:

- Expanding access to education and research
- Enriching quality of education
- Enhancing relevance of education and research
- Ensuring Good Governance
- Endowing invention and innovation
- Epitomizing the uniqueness.

The fifth objective of the plan is thus directly related to promoting invention and innovation. This is presently the responsibility of the Technology Transfer Office which comprises a business incubator under it. The TTO has the following objectives:

- To develop and maintain a database of inventions and patents of the university
- To obtain five national and one international patents per year by 2023
- To commercialize two patents per year by 2023
- To achieve five participations in national and international exhibitions focused on invention and innovations

**CURRENT  
INEFFICIENCIES  
AND GAPS**

- To implement 10 awareness raising programmes for developing inventions and obtaining patents by 2023
- To modify the degree curricula to include IP policy and patenting process in relevant programmes by 2023
- To establish a product start-up and commercialization unit by 2023
- To establish a Talent Co-Creation Laboratory / incubator for experimenting with new idea by 2019.

The key performance indicators of the above activities are described in detail below.

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**Current inefficiencies and gaps in Entrepreneurship education and innovation training**

There is an institutional strategy on entrepreneurship education at University of Ruhuna. It is manifested as a separate objective in the Strategic Plan of the University, namely the objectives to inculcate an invention and innovation culture within the university and to promote entrepreneurship. However, entrepreneurship education is restricted to a limited number of undergraduate programmes. At present, there are entrepreneurship-related modules taught at the Faculty of Management and Finance in the frame of the Bachelor of Business Administration Undergraduate Programmes (Entrepreneurship is a separate specialization area for the undergraduates) and the Business Administration Master Programmes. The Faculty of Agriculture teaches entrepreneurial-related modules in their degree programmes on Agribusiness Management.

The University has already identified the importance of incorporating management and entrepreneurship education into other programmes. It needs to improve in this area by improving the curricula, delivery of lessons, activities, facilities, partnerships with external stakeholders, etc. One of the major outcomes of this project will be the introduction of a teaching module on entrepreneurship that University of Ruhuna is looking forward to share with the Faculties. The Faculties will then be able to customise and incorporate this module into their academic programmes depending on the requirements of the curriculum.

**Current inefficiencies and gaps in the learning process**

In the courses offered by Faculty of Management and Finance, the learning process in entrepreneurship education is primarily based on case studies. They focus on the development of skills or attributes that enable students to understand the realization of opportunities, which is what management education is focused on. A competence-based approach is not used to assess the results and impact of studies, but the programmes monitor the development of students' soft skills (leadership, teamwork, communication, etc.). The system of delivery is predominantly academic and theoretical, which results in lack of



practical exposure. Students nowadays prefer hands-on learning where they are directly engaged in the learning process, as opposed to the old-fashioned classroom teaching where they are expected to study and memorize lectures. In varying degrees in different faculties there is need for more practical training and for engaging students in innovative activities. In addition, effective, innovative and engaging instruction methods are critical to the students' learning.

The number of staff that has participated in entrepreneurship training is limited to two persons (0.38 % of total staff). Further, the number of industry or business practitioners involved in delivering entrepreneurship courses at the University of Ruhuna is 4.

There are no University employees who also have (temporary) work contracts in industry/business, as there is no such practice. There are no opportunities for staff mobility (including adjunct faculty) across the university-business divide. Therefore, the following shortcomings must be addressed:

- Increasing training for staff members of the University
- Increase the number of in-house resource persons
- Incorporating entrepreneurship in research domain
- Introduction of innovative teaching methodology to deliver knowledge.

### **Current inefficiencies and gaps in student talent development**

The following inefficiencies have been identified:

- Insufficient number and scope of partnerships with private and public industries for teaching, research and business engagement.
- Insufficient promotion of a research culture within the university to capture research opportunities that students can engage into
- There is need for hosting more entrepreneurship competitions to inculcate entrepreneurial mind-sets among students, allowing them to showcase their skills outside the classroom
- There is need to do more to help students start or operate their own businesses.

### **Current inefficiencies and gaps in relations with external stakeholders**

Sri Lanka is far behind most countries in the region in applying technology, research and development (R&D) and innovation in products and services. The tendency is to follow the science and technology development of other countries rather than to lead. The reason for this is not necessarily the lack of entrepreneurs willing to risk their capital, but more the lack of belief that we have human and physical resources capable of delivering cutting-edge products or



services. This may be due to:

- lack of positive examples of Sri Lankan companies producing and successfully marketing such products
- lack of opportunities for Sri Lankan scientists and technologists to engage in R&D and innovation in industry
- Absence of a critical mass of science and technology personnel at decision making levels in industry and business
- Lack of recognition and support for IP patenting and lack of financing for developing innovative and sustainable products
- Lack of policies encouraging local innovation and discouraging the transfer of technology with a high dependency.

To build up good relationship between the university and industry, close understanding has to be nurtured through Technology Transfer Office that has been set up recently. The TTO conducts a number of forums, raising awareness amongst industries and motivating them to invest in R&D in order to retain their competitiveness in the market.

The feedback collected from external stakeholders in the frame of the INNOTAL project has indicted the following inefficiencies and directions for further work:

- External stakeholders see collaborating with academic institutions as a positive move, but they prefer ‘win-win’ solutions wherein both parties have equal benefit
- External stakeholders shared their experience with the past interns from the University of Ruhuna. The feedback included disappointment with the low proficiency in using up-to-date technology and a negative attitude towards the workplace. This implies that University of Ruhuna graduates are not well prepared for the world of work
- University of Ruhuna and the external industries together must establish a platform that enables frequent interactions and can sustain an open forum to address unforeseen obstacles or inevitable problems.

The knowledge management platform that will be created in the frame of the INNOTAL project will be used to establish cooperation with companies.

### **Current inefficiencies and gaps in career orientation**

There are no entrepreneurship centres supporting university-business relations and entrepreneurship in general at University level. However, support is provided to all students to access internship and/or placement schemes.

The orientation of undergraduates for jobs relevant to a specific profession is performed by the Career Guidance Unit (CGU) of the University. The mandate of the CGU is to assist the undergraduates to

**FEASIBLE FUTURE IMPROVEMENTS, MEASURES AND ACTIONS**

produce globally competitive graduates. The corporate sector in Sri Lanka expects from our students a higher level of personal development attributes, soft skills and qualities of leadership in addition to academic and technical competencies. The CGU conducts a number of programs on various aspects of career. They are mostly aimed at improving students’ soft skills, such as personality development, qualities of leadership, communication and presentation skills, and in pragmatic training of e.g. writing an effective CV, facing interviews etc. These trainings help build students’ self-confidence and prepare them to enter the corporate sector.

**Increasing the quality or number of entrepreneurship courses and innovation trainings**

At present there are 17 undergraduate degree programmes offered by 9 faculties of the University. Only 1.64% percent of students get entrepreneurship related experience during their academic study at the University. The number of students in entrepreneurship programs is 174 in a total of 10 598 students, while the number of staff teaching entrepreneurship courses is 13 in a total of 521 staff members (2.49% of total staff). No entrepreneurship-related research projects are implemented at the University of Ruhuna.

The university plans to increase entrepreneurship education in several undergraduate and post graduate degree programmes. The potential academic Departments to conduct such programme are identified below.

Faculty	Undergraduate Degree Programme	Currently existing entrepreneurship courses	Potential Department/Faculty for launching entrepreneurship education
<b>Agriculture</b>	Bachelor of the Science of Green Technology	Yes	Existing courses will be enhanced as a result of the INNOTAL project through the Department of Agriculture Economics
	Bachelor of Resources Management & Technology	Yes	
	Bachelor of the Science of Agri Business Management	Yes	
<b>Engineering</b>	Bachelor of the Science of Engineering	No	Department of Interdisciplinary Studies is a potential Department identified to offer





			Entrepreneurship training
<b>Fisheries and Marine Sciences</b>	Bachelor of Science in Fisheries and Marine Sciences	No	Department of Fisheries and Aquaculture is a potential
	Bachelor of Science in Marine and Fresh Water Sciences	No	Department identified to offer Entrepreneurship education
<b>Humanities and Social Sciences</b>	Bachelor of Arts	No	Department of Economics will offer Entrepreneurship education as a module
<b>Management and Finance</b>	Bachelor of Business Administration	Yes	The areas covered under existing Entrepreneurship courses will be revised considering the suggestions developed in the frame of the INNOTAL project
<b>Medicine</b>	Bachelor of Medicine and Bachelor of Surgery	No	This is a professional degree that is <u>not</u> suitable for entrepreneurship education
<b>Allied Health Science</b>	Bachelor of Medical Laboratory Science	No	Currently, there are no plans for offering courses related to entrepreneurship
	Bachelor of Pharmacy	No	
	Bachelor of Science in Nursing	No	
<b>Science</b>	Bachelor of Computer Science	No	The Faculty of Science itself will offer modules related to entrepreneurship
	Bachelor of Science	No	
<b>Technology</b>	Bachelor of Engineering	No	The Department of Multi-Disciplinary



Technology		Studies will offer
Bachelor of Information and Communication Technology	No	Entrepreneurship education as a module
Bachelor of Bio Systems Technology	No	

The following further objectives should be pursued in order to strengthen entrepreneurship education and talent development:

- Forge partnerships with private and public industries for teaching, research and business engagement
- Inculcating research culture within the university to capture research opportunities in the public and private sectors
- Support and equip faculty and staff with necessary resources needed to enhance student services.

**Improving students’ learning experience through practice-based methodologies, extra- and co-curricular activities, or more practical training and internships**

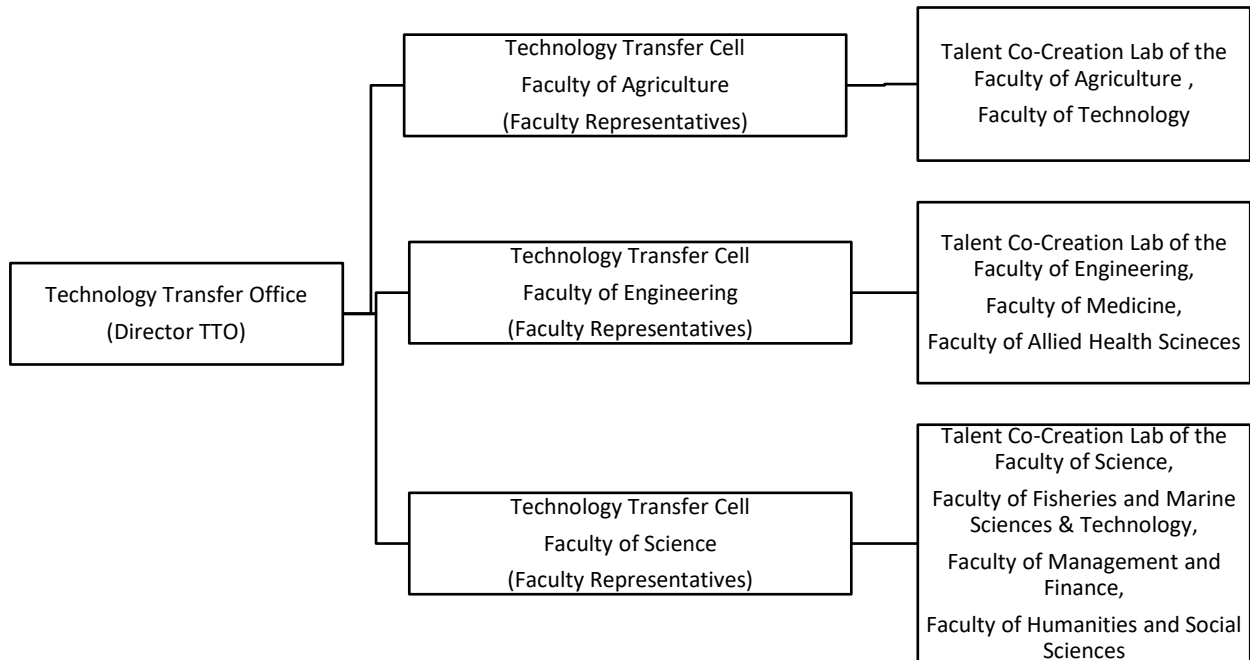
- The university hosts an Invention and Innovation Exhibition annually together with Sri Lanka Inventors Commission (SLIC). This will be formalized and will provide a good platform for showcasing new ideas outside the classroom in a practical and competitive manner
- The University can host entrepreneurship competitions other than exhibitions to inculcate entrepreneurial mind-set among students
- Establishment of an effective mechanism for providing consultation, assistance and funding to students who want to start their own businesses
- Establishment of 3 Talent Co-Creation Laboratories across the 9 faculties, in order to provide space for teamwork and support
- Allocation of internships based on relevance to the study programme and the personal interest of the student.

The below diagram shows the distribution of Talent Co-Creation Labs among the 9 undergraduate faculties and their link to Technology Transfer Office through the Technology Transfer Cells of respective faculties. The Technology Transfer Office of the University is run by a Director who chairs the Technology Transfer Management Committee, which meets once a month. Each Faculty has a Technology Transfer Cell Coordinator who is a member of the



Technology Transfer Management Committee.

The Technology Transfer Management Committee will be in charge of the Talent Co-Creation Labs.



**PRIORITY AREAS OF STUDY IN WHICH ENTREPRENEURSHIP COURSES SHOULD BE INTRODUCED**

**Promoting student talent development by involving students in innovation and research activities in cooperation with external stakeholders**

The following priority actions have been identified at University of Ruhuna:

- Identify and engage key external stakeholders to support the professional growth of students
- Enhance opportunities and supporting schemes for innovation and research
- Pursue research on entrepreneurship in collaboration with business, industry and other external organizations.

University of Ruhuna plans to incorporate entrepreneurship courses in the following disciplines

Faculty	Name of the Undergraduate Degree Programme	Priority areas of entrepreneurship courses
<b>Agriculture</b>	Bachelor of Science in Green Technology	Technical Entrepreneurship (new business creations, tourism, agricultural extension and services technology, IT)
	Bachelor of Resources Management & Technology	
	Bachelor of Science in Agri Business Management	
<b>Engineering</b>	Bachelor of Science in Engineering	Corporate Entrepreneurship (electronic business creation, corporate entrepreneurship)
		Entrepreneurship and Innovation (Technology, IT)
<b>Fisheries and Marine Sciences</b>	Bachelor of Science in Fisheries and Marine Sciences	Skills in Entrepreneurship
	Bachelor of Science in Marine and Fresh Water Sciences	Development Entrepreneurship
<b>Humanities and Social</b>	Bachelor of Arts	Social Entrepreneurship



<b>Sciences</b>		Development Entrepreneurship
<b>Management and Finance</b>	Bachelor of Business Administration	Strategic Management and Entrepreneurship
<b>Science</b>	Bachelor of Computer Science	Entrepreneurship and Innovation
	Bachelor of Science	
<b>Technology</b>	Bachelor of Engineering Technology	Skills in Entrepreneurship
	Bachelor of Information and Communication Technology	Technical Entrepreneurship (New Business Creations, Tourism, Agricultural Extension and Services Technology, IT)
	Bachelor of Bio Systems Technology	

**PRIORITY AREAS FOR RESEARCH, INNOVATION AND OUTREACH IN WHICH STUDENTS COULD COLLABORATE WITH EXTERNAL STAKEHOLDERS**

University of Ruhuna plans to engage students in research and innovation projects in the following areas:

- Basic and applied scientific research including the research in social sciences and science education programmes
- Peace and developmental studies
- Sustainable energy
- Automation of agricultural processors
- Remotely operated underwater vehicles
- Environmental pollution and ecosystem stability.

**FINANCIAL AND ORGANIZATIONAL RESOURCES AVAILABLE TO IMPLEMENT THE NEW ACTIONS**

University of Ruhuna is a state university funded through the University Grants Commission which is the funding agency for national universities.

Each year, budget proposals are submitted by the Faculties and the University for new activities. It is up to the Faculties to reserve additional funding required for new activities.

The TIO will provide the necessary guidance and support for the implementation of the proposed activities. The budget required for such activities conducted by the TIO will be separately requested.



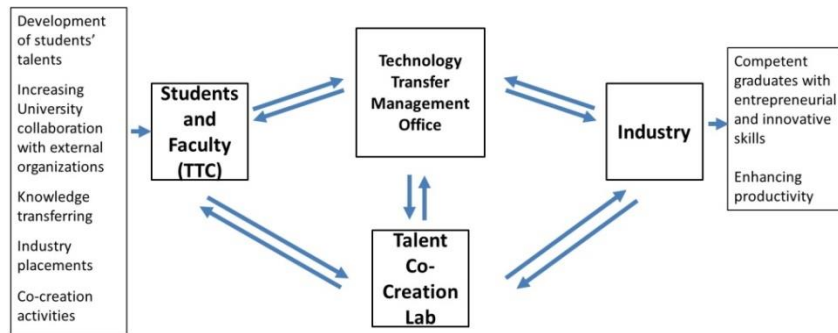
**HUMAN RESOURCES AVAILABLE TO IMPLEMENT THE NEW ACTIONS**

The existing human resources are currently not prepared to carry out the planned teaching and research activities.

With the TTO of the University, it is necessary to train existing staff to provide guidance to students who wish to engage in innovation projects.

**GOVERNANCE AND MANAGEMENT OF THE IMPLEMENTATION OF THE PROPOSED NEW ACTIONS**

During internal discussions in the frame of the INNOTAL project, it was decided that in order to ensure sustainable outcomes, implementation authorities will have the following functions:



Proposed activity	Implementation authority
To develop and maintain a database of inventions and patents of the university	Technology Transfer Management Committee
To obtain five national and one international patents per year by 2023	Technology Transfer Management Committee
To commercialize two patents per year by 2023	Technology Transfer Management Committee
To achieve five participations in national and international exhibitions in the field of invention and innovations	Technology Transfer Management Committee
To implement 10 awareness raising programmes focused on developing inventions and obtaining patents by 2023	Faculty Boards of respective faculties
To modify the curricula of degree programs to include IP policy and patenting process in the learning content by 2023	Faculty Boards of respective faculties
To establish a product start-up and commercialization unit by 2023	Faculty Boards of respective faculties
To establish a Talent Co-	Faculty Boards of respective





**LEADERSHIP IN THE PROCESS OF INSTITUTIONAL CHANGE**

**STAKEHOLDER ANALYSIS**

**Creation Laboratory / incubator for experiments and ideas by 2019** faculties

- The Technology Transfer Management Committee will manage the Talent Co-Creation Labs at the university level
- At the Faculty level, the TT Cell coordinator will manage all proposed activities under, and will guarantee Faculty-level implementation
- Introduction of new course modules and enhancement of existing modules will be implemented by the Faculty Boards
- Financial arrangements and budget allocations are a part of the responsibility of each Faculty.

The responsibilities and interests of internal stakeholders have been clarified at this stage, and are reflected in the management and implementation arrangements.

Regarding the external stakeholders, the following stakeholders have been identified and consulted.

Stakeholder	Stakeholder position toward the proposed actions	Stakeholder's level of influence	Stakeholder's level of interest in the change
<b>Unilever Sri Lanka Limited</b>	Positive	Substantial power and influence	Little interest
<b>Bank of Ceylon</b>	Positive	Substantial power and influence	Little interest
<b>People's Bank</b>	Positive	Substantial power and influence	Little interest
<b>Sampath Bank</b>	Positive	Substantial power and influence	Little interest
<b>Commercial Bank</b>	Positive	Substantial power and influence	Little interest
<b>Mobitel (Pvt) Ltd</b>	Positive	Substantial power and influence	Little interest
<b>Seylan Bank</b>	Positive	Substantial power and influence	Little interest



<b>Nations Trust Bank</b>	Positive	Substantial power and influence	Little interest
<b>Harischandra Mills Company Ltd</b>	Positive	Substantial power and influence	High interest
<b>Noppolac Paint Lanka (Pvt) Ltd</b>	Positive	Substantial power and influence	High interest
<b>HNB Assurance PLC</b>	Positive	Substantial power and influence	High interest
<b>Merchant Bank of Sri Lanka</b>	Positive	Substantial power and influence	High interest
<b>DSI Samson Group (Pvt) Ltd</b>	Positive	Substantial power and influence	High interest
<b>Asiri Hospital (Pvt) Ltd</b>	Positive	Substantial power and influence	High interest
<b>Freelan Enterprises (Pvt) Ltd</b>	Positive	Little power and influence	Little interest
<b>Vallibel Finance</b>	Positive	Little power and influence	Little interest
<b>Federation of Associations of Small &amp; Medium Enterprises of Sri Lanka</b>	Positive	Little power and influence	Little interest
<b>National Development Bank PLC</b>	Positive	Little power and influence	Little interest
<b>SLIIT</b>	Positive	Little power and influence	Little interest
<b>SmartPro (Pvt) Ltd</b>	Positive	Little power and influence	Little interest
<b>Associated Motorways (Pvt) Ltd</b>	Positive	Little power and influence	High interest
<b>Global HR</b>	Positive	Little power	High interest



<b>Solutions (Pvt) Ltd</b>		and influence	
<b>V –Heart</b>	Positive	Little power and influence	High interest
<b>Maweli Group of Companies</b>	Positive	Little power and influence	High interest
<b>Henry Holdings (Pvt) Ltd</b>	Positive	Little power and influence	High interest
<b>T &amp; D Associates</b>	Positive	Little power and influence	High interest



	Latents	Promoters or Opponents
<b>A lot of power and influence</b>	Unilever Sri Lanka Limited Bank of Ceylon People's Bank Sampath Bank Commercial Bank Mobitel (Pvt) Ltd Seylan Bank Nations Trust Bank	Harischandra Mills Company Ltd Noppolac Paint Lanka (Pvt) Ltd HNB Assurance PLC Merchant Bank of Sri Lanka DSI Samson Group (Pvt) Ltd Asiri Hospital (Pvt) Ltd
	Apathetics	Defenders or Critics
<b>Little power and influence</b>	Freelan Enterprises (Pvt) Ltd Vallibel Finance Federation of Associations of Small & Medium Enterprises of Sri Lanka National Development Bank PLC SLIIT SmartPro (Pvt) Ltd	Asiri Hospital (Pvt) Ltd Associated Motorways (Pvt) Ltd Global HR Solutions (Pvt) Ltd V –Heart Maweli Group of Companies Henry Holdings (Pvt) Ltd T & D Associates
	<b>Little interest in the new actions</b>	<b>High interest in the new actions</b>

**EXPECTED  
IMPACT OF THE  
NEW ACTIONS**

- Development of students’ talents
- Increased university collaboration with external organizations
- Knowledge transfer
- Industry placements relevant to students’ skills and interest
- Co-creation activities
- Competent graduates, equipped with entrepreneurial and innovative skills
- Enhanced productivity.

**SWOT ANALYSIS  
FOR THE  
PROPOSED  
ACTIONS**

Internal	Strengths	Weaknesses
	<p><u>Advantages of the proposed change</u></p> <ul style="list-style-type: none"> <li>✓ Increased employability</li> <li>✓ Increase university collaboration with external organizations</li> </ul> <p>Which internal stakeholders will support it?</p> <ul style="list-style-type: none"> <li>✓ Competent graduates with entrepreneurial and innovative skills</li> <li>✓ Forward-looking staff</li> <li>✓ Senior management</li> </ul>	<p><u>Limitations and challenges that the proposed changes are likely to meet</u></p> <ul style="list-style-type: none"> <li>- Insufficient trained staff.</li> </ul> <p>Which internal stakeholders may oppose the changes?</p> <ul style="list-style-type: none"> <li>- Certain staff members that have no interest in entrepreneurship education</li> </ul>
External	Strengths	Weaknesses
	<p><u>External factors that would help promote and sustain the proposed changes or strengthen their impact</u></p> <ul style="list-style-type: none"> <li>✓ Knowledge transfer to society will be supported by external stakeholders, including the government</li> <li>✓ Enhancing</li> </ul>	<p><u>External factors that could hinder or delay the proposed changes or weaken their impact</u></p> <ul style="list-style-type: none"> <li>- Financial constraints related to funding of higher education and the constraints faced by external stakeholders</li> </ul>



**MONITORING AND EVALUATION MECHANISMS**

**LOGICAL FRAMEWORK**

	<p>productivity of the economy will be supported by external stakeholders, including the government</p> <p>✓ Industry placements for students will provide a pool of prospective employees and will underscore the positive impact of the changes</p>
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- The TTO will monitor university-level activities while the introduction of academic programmes will be monitored by respective Faculty Offices
- Programme Review and Institutional Review will analyse the impact of such activities on the students.

Below we present the logical framework that will guide the implementation of the strategy.





Objective(s)	Outcomes to be monitored	Indicators	Means of verification
<b>Endowing invention and innovation</b>	Development and maintenance of a database of inventions and patents of the university	<i>Establishing a data base for inventions</i> 2019 = 50 2020 = 75 2021 = 100 2022 = 100	TTO monitoring reports
		<i>Establishing a data base for Patents</i> 2019 = 50 2020 = 75 2021 = 100 2022 = 100	TTO monitoring reports
	Obtaining five national and one international patents per year by 2023	<i>Number of National Patents obtained</i> (2018= 1) 2019 = 1 2020 = 1 2021 = 1 2022 = 2	TTO monitoring reports
		<i>Number of International Patents obtained</i> 2019 = 0 2020 = 0 2021 = 2 2022 = 2	TTO monitoring reports
Commercializing two patents per year by 2023	Number of Patents commercialized 2019 = 0 2020 = 2 2021 = 2 2022 = 2	TTO monitoring reports	
Achieving five participations in national and international exhibitions in the field of invention and innovations	<i>Number of participations in national exhibitions</i> (2018 = 4) 2019 = 5 2020 = 6 2021 = 8	TTO monitoring reports	

	2022 = 10	
	<i>Number of participations in international exhibitions</i> (2018 = 4) 2019 = 4 2020 = 4 2021 = 6 2022 = 8	TTO monitoring reports
Implementing 10 awareness raising programmes for developing inventions and obtaining patents by 2023	<i>Number of Awareness Programmes conducted</i> (2018 = 2) 2019 = 2 2020 = 3 2021 = 4 2022 = 6	TTO monitoring reports
Modifying the curricula of degree programs to include IP policy and patenting process in learning content by 2023	Number of Courses Modified 2019 = 5 2020 = 5 2021 = 5 2022 = 5	Reports from respective Faculty Boards
Establishing a product start-up and commercialization unit by 2023.	<i>Number of agreements with external parties to commercialize products</i> (2018 = 3) 2019 = 3 2020 = 3 2021 = 3 2022 = 3	TTO monitoring reports
	<i>Number of commercialization of products</i> (2018 = 3) 2019 = 3 2020 = 3 2021 = 3 2022 = 3	TTO monitoring reports

Establishing a Talent Co-creation Laboratory / incubator for experiments and ideas by 2019.	Establishment of the talent co-creation laboratory/incubators 2020=1 2021=2 2022=3	TTO monitoring reports
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