



NATIONAL SCIENCE, TECHNOLOGY AND INNOVATION POLICY 2021-2030

ACTION PLAN

Technology Driving the Nation's Future

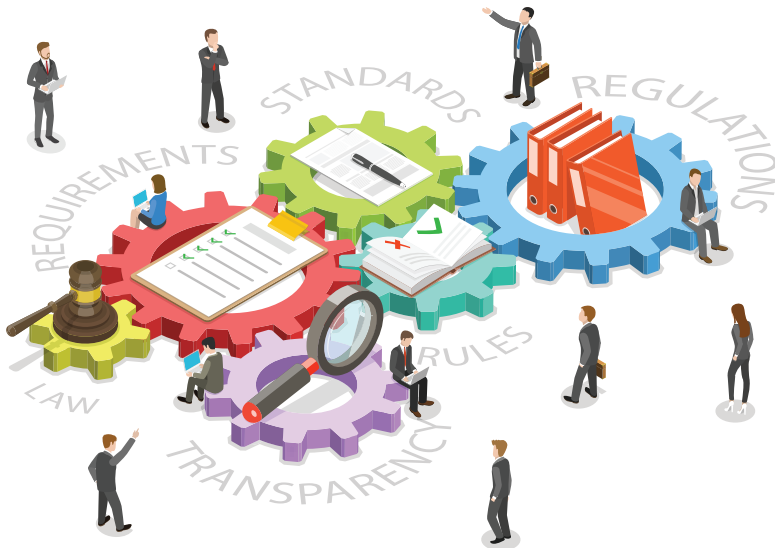
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ACTION PLAN
**NATIONAL SCIENCE, TECHNOLOGY
AND INNOVATION POLICY**
2021-2030

THRUST 1

Responsive STI Governance



THRUST 1: Responsive STI Governance

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
1.1. Strengthening the Governance of the STI ecosystem	1.1.1. Formulating Legal Provision for STI	<ul style="list-style-type: none"> To propose a gazetted legal provision that covers institutional framework, decision-making instruments, infrastructure and R&D&C&I funding management. 		<ul style="list-style-type: none"> STI legal provision formulated, passed, and gazetted. Full adoption of STI legal provision by relevant ministries and agencies. 	<ul style="list-style-type: none"> Review the adoption of STI legal provision by relevant ministries and agencies. Review and update the STI legal provision based on the next STI policy revision. 	<ul style="list-style-type: none"> STI governance regulated through the legal provision. 	Lead Agency: MOSTI Others: EPU, MOE, MOHE, MAFI, MOH, MCMM, MITI, Other STI-related ministries/agencies
	1.1.2. Establishing a platform for discussion at the parliamentary level.	<ul style="list-style-type: none"> To propose and table to the cabinet, the establishment of a parliamentary level platform, for discussions and negotiations. 	<ul style="list-style-type: none"> The formation of a parliamentary level platform to discuss and negotiate on STI agenda. 	<ul style="list-style-type: none"> Full discussion and consultation of STI policy matters through the parliamentary caucus/ select committee formed. 		<ul style="list-style-type: none"> Input and views on STI policy matters consulted through the parliamentary caucus/ select committee. 	Lead Agency: MOSTI

THRUST 1: Responsive STI Governance

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	1.1.3. Identifying the a supreme council to determine the national strategic direction of STI	<ul style="list-style-type: none"> To establish a new supreme council, reactivate or be part of an existing supreme council. To determine the direction for national STI. 	<ul style="list-style-type: none"> Formation of highest body chaired by the Prime Minister to determine STI policy direction and execution. 			<ul style="list-style-type: none"> Highest body chaired by the Prime Minister to determine STI policy direction and execution. 	Lead Agency: MOSTI
	1.1.4. Institutionalising a central independent body for R&D management	<ul style="list-style-type: none"> To propose an independent body at central level to: <ul style="list-style-type: none"> - To formulate policy direction for R&D; - To coordinate STI resources; - To manage and distribution fund; - To monitor/ implement the direction/ decisions made by the supreme STI council; 	<ul style="list-style-type: none"> Establishment of a centralised independent entity. 	<ul style="list-style-type: none"> Centralised R&D&C&I funding. Centralised Commercialisation platform 		<ul style="list-style-type: none"> A centralised independent body to coordinate and govern R&D&C&I ecosystem. 	Lead Agency: EPU MOSTI

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Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> - To monitor research activities; and - To monitor and review R&D&C&I performance 					
	1.1.5 Establishing Technology Commercialisation Accelerator (TCA)	<ul style="list-style-type: none"> • To identify a platform to ease and accelerate the commercialisation of products be it via repurposing, or expanding the functions of existing agencies; • TCA plays a role in commercialisation thorough: <ul style="list-style-type: none"> - Intervention and facilitation; - Monitoring and reporting of performance; and - Strategic/smart collaborations. 	<ul style="list-style-type: none"> • Establishment of the Technology Commercialisation Accelerator (TCA). 			<ul style="list-style-type: none"> • A centralised independent body to improve the commercialisation of R&D products and services. 	Lead Agency: MOSTI

THRUST 1: Responsive STI Governance

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	1.1.6 Establishing Malaysian Science Endowment (MSE) fund	<ul style="list-style-type: none"> To identify a platform to coordinate alternative funding (private fund, cess fund, waqf etc.) MSE plays a role to reduce the dependency on government funding by: <ul style="list-style-type: none"> Encouraging contribution of alternative fundings; and Monitor and reviewing the MSE's funding management. 	<ul style="list-style-type: none"> Establishment of the Malaysian Science Endowment (MSE) fund 			<ul style="list-style-type: none"> A centralised independent body to coordinate alternative funding. 	Lead Agency: MOSTI

THRUST 1: Responsive STI Governance

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
1.2. STIE as an enabler in addressing national issues and challenges	1.2.1. Increasing capacity development and application of STI Foresight	<ul style="list-style-type: none"> • To increase expertise in STI foresight. • To explore new foresighting mechanism or method. • To establish public-private partnership in foresighting activities. • To develop a guideline to formulate national policies/ legal provisions by using STI foresight. • To update STI foresight document periodically. 	<ul style="list-style-type: none"> • Strengthening STI foresight ecosystem. • A guideline for STI foresight adoption in policy formulation. 	<ul style="list-style-type: none"> • National policy with the adoption of STI foresight. 	<ul style="list-style-type: none"> • National policy in line with the SDG agenda. 	<ul style="list-style-type: none"> • National policy formulated with the adoption of STI foresighting elements. 	Lead Agency: MOSTI

THRUST 1: Responsive STI Governance

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> To adoption STI foresight in national planning and development. 					

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THRUST 2

**Technological
Development
through
R&D&C&I.**



THRUST 2: Technological Development through R&D&C&I.

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
2.1. Determination of National Research Priority Areas.	2.1.1. To streamline national R&D priority areas based on national development plans, research strengths, emerging technologies, future scenarios and essential expertise. National R&D Priority areas are set based on national development planning, research strengths, emerging technologies, future scenarios and required expertise.	<ul style="list-style-type: none"> To set national R&D Priority areas. To review GERD/ GDP targets based on identified national R&D Priority areas. To allocate specific funding for each national R&D priority area 	<ul style="list-style-type: none"> R&D priority areas identified and applied. Increase GERD/ GDP target to 2.5%. 	<ul style="list-style-type: none"> Revision of R&D priority areas. Increase GERD/ GDP target to 3.0%. 	<ul style="list-style-type: none"> Revision of R&D priority areas. Increase GERD/ GDP target to 3.5%. 	<ul style="list-style-type: none"> Increase GERD/ GDP target to 3.5% by 2030. 	Lead Agency: EPU MOSTI

THRUST 2: Technological Development through R&D&C&I.

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
2.2. Enhancing R&D for high value outputs, high impact outcomes and new innovations.	2.2.1. Advancing fundamental and applied research, empowering experimental-based research and strengthening future technologies	<ul style="list-style-type: none"> To evaluate and allocate funding to high quality basic & applied research. To prioritise allocation for experimental development research. To train more researchers to conduct translational research projects. 	<ul style="list-style-type: none"> Disburse-ment of R&D funding based on national R&D priority areas. 30% increase for the number of translational scientists compared to the 2020 baseline. 	<ul style="list-style-type: none"> 50% of R&D budget allocated for experimental development 50% increase of the number of translational scientists compared to the 2020 baseline. 	<ul style="list-style-type: none"> 100% increase of the number of translational scientists compared to the 2020 baseline. 	<ul style="list-style-type: none"> Introduce more R&D output with higher commercial value to the market. 	Lead Agency: MOSTI KPT
	2.2.2 Enhancing the ability of researchers in R&D.	<ul style="list-style-type: none"> To transfer knowledge and technology know-how through joint research with world-renowned Research Institutes (RIs) based on a specific area of expertise. 	<ul style="list-style-type: none"> Baseline data 2020 for international collaborative research project established. 	<ul style="list-style-type: none"> 10% increase (from the 2020 baseline) in the number of international collaborative research projects. 	<ul style="list-style-type: none"> 20% increase (from the 2020 baseline) in the number of international collaborative research projects. 	<ul style="list-style-type: none"> Increase the expertise of researchers. 	Lead Agency: MOSTI KPT

THRUST 2: Technological Development through R&D&C&I.

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	2.2.3 Fostering a culture of research ethics responsible in the local scientific ecosystem to ensure compliance with research integrity.	<ul style="list-style-type: none"> To adopt the certification of Malaysian Code of Responsible Conduct in Research (MCRCR) - and Responsible Conduct in Research (RCR) training. 	<ul style="list-style-type: none"> All grant applicants' principal investigators (PIs) are MCRCR-certified. 	<ul style="list-style-type: none"> MCRCR reviewed and updated. 	<ul style="list-style-type: none"> Nationalised curriculum on RCR for all undergraduates at all Institutions of Higher Learning (IHLs). 	<ul style="list-style-type: none"> Standardised practise on research ethics and conduct. 	Lead Agency: MOHE MOSTI
2.3. Improving R&D fund management and alternative funding sources.	2.3.1. Developing National Guideline on R&D Fund Management	<ul style="list-style-type: none"> To identify: <ul style="list-style-type: none"> - R&D priority areas; - Type of research; - Evaluation criteria; - Monitoring mechanisms; and - The enforcement mechanisms (penalty, etc.). 	<ul style="list-style-type: none"> National Guidelines on R&D Fund Management formulated. Data on R&D fund disbursement developed. 	<ul style="list-style-type: none"> 50% deliverables and 0% overlapping of fund disbursement for R&D projects. 	<ul style="list-style-type: none"> 70% deliverables and 0% overlapping of fund disbursement for R&D projects. 	<ul style="list-style-type: none"> Monitor deliverables and avoid overlapping of fund disbursement 	Lead Agency: MOSTI EPU

THRUST 2: Technological Development through R&D&C&I.

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	2.3.2. Obtaining alternative funds for STI.	<ul style="list-style-type: none"> To manage and find alternative financing mechanisms through the endowment. 	<ul style="list-style-type: none"> Cess-derived R&D fund established. 	<ul style="list-style-type: none"> Fund from other endowment mechanisms taken into account (i.e., Angel funding, crowd funding and <i>Waqf</i>) 	<ul style="list-style-type: none"> Greater access to data for the acceleration in innovation activities. 	<ul style="list-style-type: none"> Reduce dependency on government funding. Consolidation of data into a common platform. 	Lead Agency: MOSTI EPU
2.4. Encouraging open data sharing.	2.4.1. Establishing Malaysia Open Science Platform (MOSP).	<ul style="list-style-type: none"> To consolidate data from PRIs and IHLs on: <ul style="list-style-type: none"> - Resources; - Expertise; - Facilities; - Equipment; and - Research data. 	<ul style="list-style-type: none"> Malaysia Open Science Platform established. 	<ul style="list-style-type: none"> Consolidation of data into a common platform. 		<ul style="list-style-type: none"> Greater access to data for acceleration in innovation activities. 	Lead Agency: MOSTI

THRUST 2: Technological Development through R&D&C&I

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> To encourage government, industries, researchers & the society to use and share various resources to boost innovation. To enhance existing National Scientific Facilities & Equipment (NSFE), i.e., RADARS, KRSTE.my. 					

THRUST 2: Technological Development through R&D&C&I

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
2.5 To galvanise collaborative action to respond to national challenges. Encouraging efforts and cooperation to address national challenges.	2.5.1. Embarking on national big impact initiatives such as the establishment of the National Technology Innovation Sandbox (NTIS) in responding to national challenges.	<ul style="list-style-type: none"> To identify national challenges and the big impact initiatives through STI, such as: <ul style="list-style-type: none"> - Climate change; - Oceanography; - Polar; - Zero-waste; and - Society's health and well-being. Develop strategic plans to achieve the goal of the initiatives; and Implement and review of outcome. 	<ul style="list-style-type: none"> The NTIS Established. Strategic plan implemented. 	<ul style="list-style-type: none"> Review of NTIS outcome. Periodic review of the outcome of the strategic plan. 	<ul style="list-style-type: none"> Improve implementation of the NTIS. Improvement in specific SDG indices 	<ul style="list-style-type: none"> NTIS as a platform to respond to national issues and challenges using STI. Strategic plans published/ adopted in responding to national challenges. 	Lead Agency: MOSTI

THRUST 2: Technological Development through R&D&C&I

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	<p>2.5.2. Empowering local digital technology development for the benefit of various sectors (Digital Tsunami)</p> <p>Catalyse knowledge integration and development of technological innovations via transdisciplinary research approaches.</p>	<ul style="list-style-type: none"> To strengthen local digital technology by increasing R&D activities in technologies such as Internet of Things (IoT), Big Data Analytics (BDA) and Artificial Intelligence (AI); To establish a consultative platform between Ministries and Agencies for the implementation of technological innovations in various sectors. 	<ul style="list-style-type: none"> The utilisation of digital technology in the public service delivery. Adoption of digital technology in the agricultural sector. 	<ul style="list-style-type: none"> Adoption of digital technology in health, agriculture and business sectors. 	<ul style="list-style-type: none"> Adoption of digital technology in the public and private sectors. 	<ul style="list-style-type: none"> Digital technology widely applied and adopted in both public and private sectors. 	<p>Lead Agency: MOSTI</p> <p>Others: MAFI MOH MCMM MOT MAMPU</p>

THRUST 2: Technological Development through R&D&C&I

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	2.5.3 Intensifying knowledge integration and technological innovation development through transdisciplinary research approach.	<ul style="list-style-type: none"> To develop a negotiation platform for technological innovation. To develop a strategic plan to achieve initiative goals. Implement and review the outcome of initiative. 	<ul style="list-style-type: none"> To develop a strategic plan. 	<ul style="list-style-type: none"> Periodically review the outcome of the developed strategic plan. 	<ul style="list-style-type: none"> Improvement on the related SDG indices. 	<ul style="list-style-type: none"> Strategic plan implemented to handle national issues and challenges. 	Lead Agency: MOSTI
2.6. Driving social innovation for the benefit of the marginalised and underprivileged groups.	2.6.1. Empowering social innovation and social impact investment to find solutions through STI that are beneficial to the community.	<ul style="list-style-type: none"> To establish a smart partnership between government and corporate in social innovation; To increase funding in social innovation projects funded through corporate social innovation; 	<ul style="list-style-type: none"> To establish smart partnership on social innovation. 	<ul style="list-style-type: none"> 50% increase (of 2020 baseline) in social innovation projects funded through corporate social innovation. 50% increase in the number of local institution-supported initiatives (2020 baseline). 	<ul style="list-style-type: none"> 70% increase in social innovation projects funded through corporate social innovation (2020 baseline). 70% increase in the number of local institution-supported initiatives (2020 baseline). 	<ul style="list-style-type: none"> Increased number of marginalised and underprivileged communities that are benefitted through social innovation. 	Lead Agency: MOSTI Others: MITI MWFCF

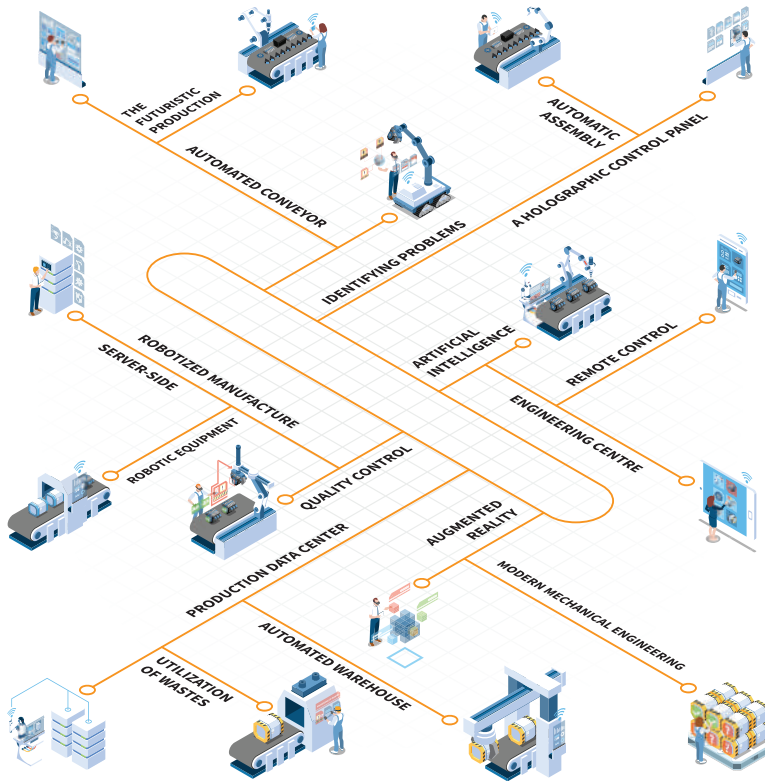
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Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> • To support the implementation of projects through technologies developed by local expertise; • To transfer technology know-how to the community; and • To generate wealth through successful and sustainable social technopreneurs. 					

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THRUST 3

Local Technology-Based Industry



THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
3.1. Encouraging demand-based industries through collaborative networks.	3.1.1. Creating industry-led collaborative networks based on priority areas that drive the country's economic growth.	<ul style="list-style-type: none"> To develop and map nation-wide knowledge cluster within identified industry areas. To formulate a mechanism to establish collaborative networks such as technology consortia. 	<ul style="list-style-type: none"> Nation-wide knowledge cluster map developed. 2 collaborative networks established. 	<ul style="list-style-type: none"> Revision of knowledge cluster map. 4 collaborative networks established. 	<ul style="list-style-type: none"> 7 collaborative networks established. 	<ul style="list-style-type: none"> 7 collaborative networks established by 2030. 	<p>Lead Agency: MOSTI</p> <p>Lead Agency: EPU MITI MOHE MEDAC IHLs Industries</p>

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indication(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	3.1.2. Establishing an Advanced Technology Cluster (ATC) to explore the use of high technology.	<ul style="list-style-type: none"> To establish local and international cooperation networks for research and innovation to explore the use of high technology. To identify local and Commercialisation of high-tech innovation results locally and internationally. To identify priority areas in high technology that need to be explored in line with industry's needs. 	<ul style="list-style-type: none"> Establishment of ATC. 10 international collaborations for local industries. 	<ul style="list-style-type: none"> Commercialisation of high-tech innovation outputs locally and internationally. Evaluation and review of outcomes 		<ul style="list-style-type: none"> Malaysia as a centre for the development and commercialisation of high-tech products and services. 	Lead Agency: MOSTI Lead Agency: MITI

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
3.2. Increasing the commercial value of Malaysian STI products and services.	3.2.1. Facilitating and providing incentives for product commercialisation.	<ul style="list-style-type: none"> To develop a National Guideline on Commercialisation. 	<ul style="list-style-type: none"> A National Guideline on Commercialisation developed. 	<ul style="list-style-type: none"> Adoption of the National Guideline on Commercialisation. 		<ul style="list-style-type: none"> Increased demand for local product and services from the 2020 baseline. 	Lead Agency: MOSTI MITI MEDAC MDTCA (KPDNHEP) EPU Others: TTO of universities Industries
		<ul style="list-style-type: none"> To identify a specific entity to drive commercialisation activities. To strengthen the regulatory framework in maximising the usage of local products and services. To provide a platform and mechanism for technology transfer. 	<ul style="list-style-type: none"> 10% increase in demand for local product and services from the 2020 baseline. 10% increase of joint publications & IPs between BEs & local institutions compared to 2020 baseline. 	<ul style="list-style-type: none"> 20% increase in demand for local product and services from the 2020 baseline. 30% increase (2020 baseline) in technologies transferred internationally. 20% increase of joint publications & IPs between BEs & local institutions compared to 2020 baseline. 	<ul style="list-style-type: none"> 50% increase in demand for local product and services from the 2020 baseline. 50% increase (2020 baseline) in technologies transferred internationally. 30% increase of joint publications & IPs between BEs & local institutions compared to 2020 baseline. 		

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> To incentivise all stakeholders especially the industry to produce more joint high impact research projects in national R&D priority areas. 					

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	3.2.2. Increasing the value of intellectual property (IP) and invention.	<ul style="list-style-type: none"> To develop capacity for IP professionals. To develop the capabilities and professionalism of officers involved with IP valuation. To develop and implement a mechanism for IP valuation. To accelerate the commercialisation of IP invention. Bundle IPs for high commercial benefit. 	<ul style="list-style-type: none"> 10% of IPs granted within 18 months (post-filing by inventor). 10% increase in sales value of bundled IPs from 2020 baseline. 	<ul style="list-style-type: none"> 30% of IPs granted within one year (post-filing by inventor). 30% increase in sales value of bundled IPs from 2020 baseline. 	<ul style="list-style-type: none"> 50% of IPs granted within one year (post-filing by inventor). 50% increase in sales value of bundled IPs from 2020 baseline. 	<ul style="list-style-type: none"> A 50% increase of the commercialised IP and invention from the 2020 baseline. 	Lead Agency: MDTCA (KPDNHEP) Industries

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
3.3 Encouraging STI adoption by SMEs to increase competitiveness and productivity.	3.3.1 Facilitating STI adoption in harnessing SME innovation potential and supporting local technology development.	<ul style="list-style-type: none"> To develop incentives to encourage technological adoption by SMEs at different stages of readiness. 	<ul style="list-style-type: none"> 10% increase in number of companies received incentives from 2020 baseline. 	<ul style="list-style-type: none"> 30% increase in number of companies received from 2020 baseline. 	<ul style="list-style-type: none"> 50% increase in number of companies received from 2020 baseline. 	<ul style="list-style-type: none"> Create innovative, sustainable and competitive SMEs. 	Lead Agency: MEDAC Others: MITI EPU MOSTI MOF MOA Intermediaries
		<ul style="list-style-type: none"> To provide capacity building on STI adoption for SMEs through mentorship programmes. 	<ul style="list-style-type: none"> 10% increase in number of companies trained from 2020 baseline. 	<ul style="list-style-type: none"> 30% increase in number of companies trained from 2020 baseline. 	<ul style="list-style-type: none"> 50% increase in number of companies trained from 2020 baseline. 		

THRUST 3 : Local Technology-Based Industry

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	3.3.2 Empowering the agricultural sector through Precision Farming/ Agricultural Automation.	<ul style="list-style-type: none"> To establish agricultural technology cooperation with MAFI. To develop agriculture - related technologies such as the use of BDA in management that collects, processes and analyses various data and information related to agriculture. To develop and use technologies such as IoT sensors, automation, robotics and wireless systems in the agricultural sector. 	<ul style="list-style-type: none"> 5 technologies are applied in the agricultural sector. 	<ul style="list-style-type: none"> 10 technologies are applied in the agricultural sector. 	<ul style="list-style-type: none"> 15 technologies are applied in the agricultural sector. 	<ul style="list-style-type: none"> Science and technology-based agricultural sector. 	Lead Agency: MOSTI MAFI



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THRUST 4

Adaptive STI Talent

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
4.1. Strengthening national planning for competent and adaptive STI talent.	4.1.1. Formulating national STI talent planning at the central level through an integrated approach.	<ul style="list-style-type: none"> to collect data related to the supply and demand of STI talent for strategic workforce planning in all sectors based on STI foresight. 	<ul style="list-style-type: none"> Comprehensive STI talent supply and demand directory for the reference of employers and job seekers. STIs are embedded in the national talent planning. 	<ul style="list-style-type: none"> To be maintained. 	<ul style="list-style-type: none"> To be maintained. 	<ul style="list-style-type: none"> The comprehensive STI talent supply and demand directory developed based on STI foresight, is used as a reference by employers and job seekers. 	Lead Agency: EPU Others: MOHE MOHR MOSTI TalentCorp MDEC MITI DOSM Association of Industries Professional Bodies
	4.1.2. Integrated approach in STIE career mapping planning.	<ul style="list-style-type: none"> Current and future STI career mapping covering areas of work, related qualifications, competencies and technical skills. 	<ul style="list-style-type: none"> All STEM jobs are in line with MASCO skills / qualifications and competencies. 				

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
4.2. Leading STEM Education	4.2.1. Developing a transdisciplinary STEM teaching and learning module	<ul style="list-style-type: none"> to adopt more fun modules, build experience and be effective in teaching and learning STEM. The mapping of STEM teaching modules based on education level. To design an industry-based curriculum for educational and research purposes. 	<ul style="list-style-type: none"> Comprehensive STI talent supply and demand directory for the reference of employers and job seekers. STIs are embedded in the national talent planning. All STEM jobs are in line with MASCO skills / qualifications and competencies. 	<ul style="list-style-type: none"> To be maintained. 	<ul style="list-style-type: none"> To be maintained. 	<ul style="list-style-type: none"> The comprehensive STI talent supply and demand directory developed based on STI foresight, is used as a reference by employers and job seekers. 	Lead Agency: EPU Others: MOHE MOHR MOSTI TalentCorp MDEC MITI DOSM Association of Industries Professional Bodies

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	4.2.2. Streamlining the TVET Module in the education system.	<ul style="list-style-type: none"> to develop TVET modules based on industries' needs. Implement TVET education in STEM curriculum. To train teachers / instructors in TVET skills. 	<ul style="list-style-type: none"> Industry-based TVET modules are developed. TVET is implemented in the STEM curriculum 	<ul style="list-style-type: none"> Full implementation of TVET in the STEM curriculum. 	<ul style="list-style-type: none"> Increase in the number of jobs for TVET graduates. 	<ul style="list-style-type: none"> TVET module in line with industry needs. 	Lead Agency: MOE MOHE Others: MOHR

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
4.3. Expanding STI talent participation in the workforce.	4.3.1. Upskilling and reskilling for adaptive STI talent to adapt to changing environments	<ul style="list-style-type: none"> To improve career paths and remuneration to make STI a career of choice and attracts superior talent. To encourage lifelong learning. 	<ul style="list-style-type: none"> Payment and remuneration schemes for STI talent are assessed. 30% STI skills upgrading and retraining programmes are jointly developed / revised. 30% of STI workforce in 4IR field has been retrained and upgraded skill levels (2020 baseline). 	<ul style="list-style-type: none"> A policy on minimum wage for STI-related jobs is enacted. 50% STI skills improvement and retraining programmes are jointly developed / revised. 50% of the STI workforce in the 4IR field has been retrained and upgraded in skill levels (2020 baseline). 	<ul style="list-style-type: none"> STI is made the main career choice. 80% of STI skills improvement and retraining programmes are developed / revised jointly. 80% of STI workforce in 4IR field has been retrained and upgraded in skill levels (2020 baseline). 	<ul style="list-style-type: none"> Increase in the number of STI workforce retrained and improved level of skills. 	Lead Agency: MOHR Others: MOHE

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	4.3.2 Creating local talent groups capable of developing and inventing technology.	<ul style="list-style-type: none"> To establish specialised upskilling and reskilling programmes for local scientists and researchers in the public and private sectors to provide exposure and improve skills related to the latest technology and it's development. 	<ul style="list-style-type: none"> 30% of technology developers among local scientists and researchers (basic data for 2020). 	<ul style="list-style-type: none"> 50% of technology developers among local scientists and researchers (2020 data base). 130 researchers, scientists, engineers and technologists (RSET) by 10,000 workforce. 	<ul style="list-style-type: none"> 70% of technology developers among local scientists and researchers (basic data for 2020). 200 researchers, scientists, engineers and technologists (RSET) by 10,000 workforce. 	<ul style="list-style-type: none"> Increase in the number of local scientists and researchers developing and inventing technologies. 	Lead Agency: MOSTI Others: MAFI MoHE MOH MPIC MITI Industry

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	4.3.3 Increasing women's participation in the STI workforce.	<ul style="list-style-type: none"> to provide incentives to women in the field of STI such as: <ul style="list-style-type: none"> - to increase the level of skills. - To establish support facilities. 	<ul style="list-style-type: none"> Programmes that encourage the improvement of skills for women who wish to return to the STI employment sector are developed and implemented. 	<ul style="list-style-type: none"> 65% female labour work force participation rate (LFPR) in the age group 40-50 is achieved. 	<ul style="list-style-type: none"> 70% female labour work force participation rate (LFPR) in the age group 40-50 is achieved. Review of re-entry policy. 	<ul style="list-style-type: none"> Increase in women's participation in the STI workforce. 	Lead Agency: MOHR PSD (JPA) Others: MWFC
	4.3.4 Encouraging re-entry of women into the workforce.	<ul style="list-style-type: none"> To formulate policies that allow the re-entry of women into the workforce. 	<ul style="list-style-type: none"> Policies for re-entry of the female workforce are formulated. 	<ul style="list-style-type: none"> Monitor labour re-entry rates of women in the STI sector. 	<ul style="list-style-type: none"> The number of women in the STI workforce is increasing. 	<ul style="list-style-type: none"> 30% of the female STI workforce compared to the 70% female labour force participation rate (LFPR) in the age group 40-50 is achieved by 2030. 	Lead Agency: MOHR Others: PSD (JPA) MWFC.

THRUST 4 : Adaptive STI Talent

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
4.4. Increasing the demand for STI talent.	4.4.1. Strengthening public-private partnership to increase demand for STI talent.	<ul style="list-style-type: none"> To gain industry insights in specific sectors to identify and understand the demand for STI talent. To encourage mutual funding in the form of scholarships, internships and pilot projects. To encourage the industry to conduct research. 	<ul style="list-style-type: none"> 25% increase in the number of STEM graduates working (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in the number of STEM graduates working (2020 data). 50% increase in techno-entrepreneurship developed (base value of 2020). 	<ul style="list-style-type: none"> 80% increase in the number of STEM graduates working (2020 baseline). 	<ul style="list-style-type: none"> An increase of 80% in the number of STEM graduates working in 2030 compared to the baseline 2020. 	Lead Agency: MOHE MOSTI
	4.4.2. Strengthening the mechanism that supports techno-entrepreneurship (STI-based entrepreneurship).	<ul style="list-style-type: none"> To assist researchers to build entrepreneurial skills. 	<ul style="list-style-type: none"> 25% increase in techno-entrepreneurship developed (2020 baseline). 		<ul style="list-style-type: none"> 75% increase in techno-entrepreneurship developed (2020 baseline). 	<ul style="list-style-type: none"> 75% increase in techno-entrepreneurship developed in 2030 compared to the baseline in 2020. 	Lead Agency: MOSTI



**ACTION PLAN
NATIONAL SCIENCE, TECHNOLOGY
AND INNOVATION POLICY
2021-2030**

THRUST 5

Enculturation and Application of STIE

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
5.1. Improving the effectiveness of the STIE outreach programmes.	5.1.1. Coordinating, monitoring and evaluating national STIE enculturation initiatives centrally.	<ul style="list-style-type: none"> To establish an STIE enculturation committee at the central level. To develop a standardised STIE enculturation module. To empower the National Science Centre as an STIE enculturation centre of excellence. 	<ul style="list-style-type: none"> The establishment of STIE Enculturation Committee at the central level. 	<ul style="list-style-type: none"> 5-year achievement report for youth enculturation activities is published. The review of achievement reports. 	<ul style="list-style-type: none"> 10-year achievement report for youth enculturation activities is published. The review of achievement reports. 	<ul style="list-style-type: none"> Coordination of STI enculturation activities. PSN as the centre of excellence in the coordination of STIE enculturation. 	Lead Agency: MOSTI

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	5.1.2. Creating a network between the operators of private STIE enculturation centres (Petrosains, Kidzania, Tech Dome).	<ul style="list-style-type: none"> To organise business dealings with private STIE enculturation centre operators. To establish smart partnerships between operators of public and private STIE enculturation centres. 	<ul style="list-style-type: none"> National Science Centre & Planetarium restructured and upgraded to accommodate new government services. 10% increase in total investment from strategic partners (2020 baseline). 	<ul style="list-style-type: none"> 30% increase in total investment from strategic partners (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in total investment from strategic partners (2020 baseline). 	<ul style="list-style-type: none"> A more attractive and well-known public STIE enculturation centre. 	Lead Agency: MOSTI Others: MOTAC MHLG (KPKT)
	5.1.3. Assessing the level of STIE enculturation among the community.	<ul style="list-style-type: none"> To develop an index of STIE enculturation standards. To measure the STIE enculturation index. 	<ul style="list-style-type: none"> The national STIE Enculturation Index is developed and measured. 	<ul style="list-style-type: none"> 30% increase in achievement of STIE Enculturation Index (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in achievement of STIE Enculturation Index (2020 baseline). 	<ul style="list-style-type: none"> A comprehensive National STI Enculturation Index is developed and adopted nationwide. 	Lead Agency: MOSTI

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	5.1.4. Improving scientific and critical thinking skills through informal learning.	<ul style="list-style-type: none"> To establish smart partnerships between state governments and industries to create STIE enculturation based on <i>in-situ</i> learning. The state government allocates special budget to promote STIE enculturation. 	<ul style="list-style-type: none"> 30% of the total Parliamentary constituencies have Science and Technology Community Centres. 30% of the existing STIE culture space is used for STIE <i>in-situ</i> learning. 	<ul style="list-style-type: none"> 50% of the total Parliamentary constituencies have Science and Technology Community Centres. 50% of the existing STIE culture space is used for STIE <i>in-situ</i> learning. 	<ul style="list-style-type: none"> 70% of the total Parliamentary constituencies have Science and Technology Community Centres. All existing STIE enculturation space are used for STI <i>in-situ</i> learning. 	<ul style="list-style-type: none"> 70% of the total Parliamentary constituencies will have Science and Technology Community Centres by 2030. 	Lead Agency: MOSTI Others: State Governments MHLG (KPKT) MOTAC

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	5.1.5 Enculturating and applying "Technology for All"	<ul style="list-style-type: none"> To establish a programme of enculturating and applying technology to SMEs To establish programmes for the enculturation and application of technology among the community at the established Science and Technology Community Centres. To assess the level of application of technology among SMEs and the community. 	<ul style="list-style-type: none"> 30% increase in the level of technology application among SMEs and society (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in the level of technology application among SMEs and society (2020 baseline). 	<ul style="list-style-type: none"> 70% increase in the level of technology application among SMEs and society (2020 baseline). 	<ul style="list-style-type: none"> Industrial and grassroot industry-literate community. 	Lead Agency: MOSTI Others: State Governments MHLG (KPKT) MRRD (KKLW) MOTAC

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
5.2. Mainstreaming science communication.	5.2.1 Improving communication and translation of STIE content including content in the media.	<ul style="list-style-type: none"> To develop a National Science Media Network virtually to increase STIE content in the media. To make STIE communication one of the focuses of the Corporate Communications Unit in the ministries related to science. To introduce Science Communication modules in all STEM programmes in Institutions of Higher Learning (IHL). 	<ul style="list-style-type: none"> National Science Media Network is developed. 20% increase in the number of links uploaded to the ministry's websites & social media accounts (2020 baseline). Science Communication module is developed for all STEM programmes in the Institutes of Higher Learning (IHL). 	<ul style="list-style-type: none"> 30% increase in STI content in the media (2020 baseline). 40% increase in the number of links uploaded to the ministry's websites & social media accounts (2020 baseline). All local Institutions of Higher Learning implement Science Communication courses. 	<ul style="list-style-type: none"> 70% increase in STI content in the media (2020 baseline) 70% increase in the number of links uploaded to the ministry's websites & social media accounts (2020 baseline). All local Institutions of Higher Learning implement Science Communication courses. 	<ul style="list-style-type: none"> 70% increase in STI content in the media compared to the base value in 2020. 	Lead Agency: MOSTI MOHE MCMC / related Ministry

THRUST 5 : Enculturation and Application of STIE

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	5.2.2 Inspiring the community through STIE programmes and famous local science icons.	<ul style="list-style-type: none"> To facilitate partnerships and encourage collaboration in educational entertainment related to local STIE development. To create the "Young Scientist Award", "Outstanding Scientist Award", "National Technologist Award" or other awards related to STIE. To develop individuals with superior STIE achievement as icons to popularise STIE. 	<ul style="list-style-type: none"> 20% increase in the number of educational entertainment programmes (2020 baseline). 10% increase in the number of series / documentations produced (2020 baseline). 30% increase in the number of engagements carried out (2020 baseline). 	<ul style="list-style-type: none"> 40% increase in the number of educational entertainment programmes (2020 baseline). 25% increase in the number of series / documentations produced (2020 baseline). 50% increase in the number of engagements carried out (2020 baseline). 	<ul style="list-style-type: none"> 70% in the number of educational entertainment programmes (2020 baseline). 75% increase in the number of series / documentations produced (2020 baseline). 75% % increase in the number of engagements carried out (2020 baseline). 	<ul style="list-style-type: none"> STI involvement in the community is nurtured and inspired through local discoveries and the success of science icons. 	Lead Agency: MOSTI Others: MOE MOHE MCMM

ACTION PLAN
NATIONAL SCIENCE, TECHNOLOGY
AND INNOVATION POLICY
2021-2030

THRUST 6

Global Prominence



THRUST 6 : Global Prominence

Strategy	Initiative	Activities	Indicator(s)			Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
6.1. Coordinating STIE collaboration at the international level	6.1.1. Creating local entities to coordinate the ecosystem for international STIE cooperation.	<ul style="list-style-type: none"> To coordinate the international STIE ecosystem through committees at the national level. To establish a centralised database for STIE Malaysia cooperation internationally. To identify areas of priority and resources that can attract international partners. 	<ul style="list-style-type: none"> The first report on the status of international STIE cooperation is published. Evaluation methods and output testing are published. A comprehensive list of priority areas, resources, expertise, and technology can be identified. 	<ul style="list-style-type: none"> A review of Malaysia's international relations is published. Review priority areas based on industry needs and economic change. 	<ul style="list-style-type: none"> Enforce monitoring and evaluation. Review priority areas based on industry needs and economic change. 	<ul style="list-style-type: none"> A report on the status of Malaysia's cooperation at the international level is published online. 	Lead Agency: MOSTI MITI MoFA

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	6.1.2. Facilitating the network of international relations throughout STIE supply chain through Malaysian Representative Offices.	<ul style="list-style-type: none"> To coordinate the international STIE ecosystem through committees at the national level. To establish a centralised database for STIE Malaysia cooperation internationally. To identify areas of priority and resources that can attract international partners. 	<ul style="list-style-type: none"> The first report on the status of international STIE cooperation is published. Evaluation methods and output testing are published. A comprehensive list of priority areas, resources, expertise, and technology can be identified. 	<ul style="list-style-type: none"> A review of Malaysia's international relations is published. Review priority areas based on industry needs and economic change. 	<ul style="list-style-type: none"> Enforce monitoring and evaluation. Review priority areas based on industry needs and economic change. 	<ul style="list-style-type: none"> A report on the status of Malaysia's cooperation at the international level is published online. 	Lead Agency: MOSTI MITI MoFA

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
6.2. Strengthening marketing strategy for local STI innovation in the international market.	6.2.1. Increasing efforts to penetrate international market for local STIE innovation.	<ul style="list-style-type: none"> • To develop guidelines and mechanisms for marketing local products as international brands. • To identify key destinations for marketing STIE Malaysia products and services. • To identify and promote potential local STIE products and services within international branding. 	<ul style="list-style-type: none"> • Guidelines are developed to upgrade local products as international brands. • Websites aimed at promoting local STIE products are created. 	<ul style="list-style-type: none"> • 25% increase in the number of STIE innovations becoming global brands (2020 baseline). 	<ul style="list-style-type: none"> • 50% increase in the number of STIE innovations becoming global brands (2020 baseline). 	<ul style="list-style-type: none"> • Guidelines for promoting STIE products and services in the international market are developed and enforced. 	Lead Agency: MITI MEDAC

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	6.2.2 Establishing a Malaysia Innovation Hub to support the commercialisation of local innovation products and attract more international strategic collaboration partners	<ul style="list-style-type: none"> To upgrade Technology Park Malaysia (TPM) to becoming Malaysia's Innovation Hub which aims to: <ul style="list-style-type: none"> - support and enhance the commercialisation of local innovation products. - attracting more international strategic collaboration partners - marketing local innovation penetrates the global market. 	<ul style="list-style-type: none"> TPM upgrade 30% increase in the level of commercialisation of local R&D products (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in the level of commercialisation of local R&D products (2020 baseline). 	<ul style="list-style-type: none"> 70% increase in the level of commercialisation of local R&D products (2020 baseline). 	<ul style="list-style-type: none"> Commercialisation of local R&D products 	Lead Agency: MOSTI

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> To develop facilities such as: <ul style="list-style-type: none"> - living lab - commercial centre - experimental lab (test bed) - continuous capacity and capability development aid (learning tools) and teaching materials (online / offline). 					

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
6.3. Strengthening the network of international cooperation for research collaboration, strategic partnerships and business alliances.	6.3.1. Strengthening the branding and position of innovation, expertise and international partnerships for local STIEs.	<ul style="list-style-type: none"> To enhance STIE bilateral / multilateral sharing network. To increase the number of joint research with international research institutions. To provide incentives to Higher Education Centres of Excellence (HICoEs), RIs, & Innovation Centres (Cols) to conduct experimental-based research with overseas partners. 	<ul style="list-style-type: none"> 25% increase in the number of research projects funded by international funds (2020 baseline). 10% increase in the number of commercially traded intellectual property (2020 baseline). 	<ul style="list-style-type: none"> 50% increase in the number of international collaborations / cooperations (2020 baseline). 50% increase in the number of research projects funded by international funds (2020 baseline). 10% increase in the number of collaborative research projects (2020 baseline). 20% increase in the number of commercially traded intellectual property (2020 baseline). 	<ul style="list-style-type: none"> 70% increase in the number of international collaborations / cooperations (2020 baseline). 75% increase in the number of research projects funded by international funds (2020 baseline). 20% increase in the number of collaborative research projects (2020 baseline). 50% increase in the number of commercially traded intellectual property (2020 baseline). 	<ul style="list-style-type: none"> An increase of 70% in the number of international collaborations / cooperations compared to the 2020 baseline. 	Lead Agency: MOSTI MOHE MITI MoFA

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> To intensify international exchange programmes of experts, students and researchers 		<ul style="list-style-type: none"> 50% increase in the number of trained manpower (2020 baseline). 20% increase in the placement of Malaysian students, researchers and experts in foreign institutions and industries (2020 baseline). 	<ul style="list-style-type: none"> 70% increase in the number of trained manpower (base value 2020). 50% increase in the placement of Malaysian students, researchers and experts in foreign institutions and industries (2020 baseline). 		

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
	6.3.2 Establishing the National Vaccine Centre (NVC) to support the national health safety ecosystem through local and international strategic collaboration platforms	<ul style="list-style-type: none"> To identify international strategic collaboration partners. To establish NVC in collaboration with international strategic partners to obtain technical solutions and health safety infrastructure. NVC to include the following elements: <ul style="list-style-type: none"> - command & control management; - epidemiology and data analysis; - R&D; - public health and health care; and - mental well-being. 	<ul style="list-style-type: none"> Establishment of NVC. 	<ul style="list-style-type: none"> R&D for human and animal vaccine. 	<ul style="list-style-type: none"> Commercialisation of human and animal vaccines. 	<ul style="list-style-type: none"> Production of vaccines for the benefit of the people and the international market. 	Lead Agency: MOSTI Others: MOH MoFA

THRUST 6 : Global Excellence

Strategy	Initiative	Activities				Intended Outcome	Key Players
			Short Term (2022)	Medium Term (2025)	Long Term (2030)		
		<ul style="list-style-type: none"> NVC to include the following elements: <ul style="list-style-type: none"> - command & control management; - epidemiology and data analysis; - R&D; - public health and health care; and - mental well-being. 					

MINISTRY SCIENCE, TECHNOLOGY AND INNOVATION (MOSTI)

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