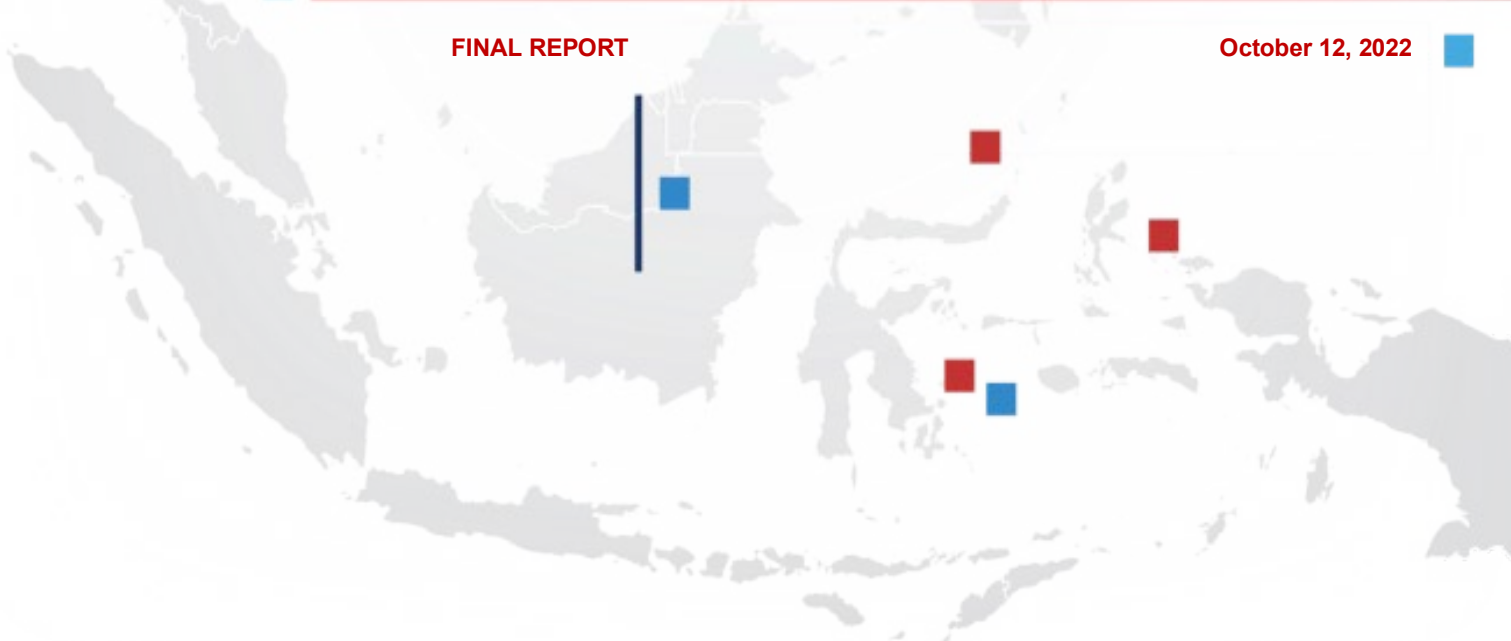# Science, Technology, Research and Innovation for Development (STRIDE)

July 17, 2013 – July 16, 2022

FINAL REPORT

October 12, 2022

Science, Technology, Research and Innovation for Development (STRIDE)

Contract AID-492-A-13-00011
Period of Performance: July 17, 2013 to July 16, 2022

Final Report

October 12, 2022

Prepared for
USAID/Philippines/Office of Education

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ACRONYMS AND ABBREVIATIONS

AdDU	Ateneo de Davao University
AGILA	Academic Grants for Industry-Led Applications
AI	artificial intelligence
AIM	Asian Institute of Management
ASTI	Advanced Science and Technology Institute
AToP	Alliance of Techtransfer Professionals of the Philippines
ATTORP	Advanced Technical Training of Research Professionals
BIST	Business Innovation Through Science and Technology
BOI	Board of Investments
BRIDGE Bicol	Building Resiliency and Innovation to Drive Growth of Enterprises in Bicol
BatState	Batangas State University
BulSU	Bulacan State University
CARWIN	Collaborative Applied Research with Industry
CHED	Commission on Higher Education
CIG	Competitiveness and Innovation Group
COMPETE	Advancing Philippine Competitiveness Program
COP	Chief of Party
COVID-19	coronavirus disease 2019
CRADLE	Collaborative Research and Development to Leverage Philippine Economy
DACUM	Developing a Curriculum
DLSU	De La Salle University
DMMMSU	Don Mariano Marcos Memorial State University
DMPI	Del Monte Philippines, Inc.
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
FABLAB/Fab Lab	Fabrication Laboratory
FACTS	Foreign Assistance Coordination Tracking System
FEC	Filipinnovation Entrepreneurship Corps
FGD	focus group discussion

FSU	Florida State University
FY	fiscal year
GIA	Grants-In-Aid
GII	Global Innovation Index
GVC	Global Value Chain
HEI	higher education institution
I³S	Inclusive Innovation Industrial Strategy
IAS	innovation advisory services
IBR	Innovation for Business Recovery
iCRADLE	Industry Level Collaborative Research and Development to Leverage Philippine Economy
IDT	Innovation Diagnostic Tool
IEA	Innovation Ecosystem Assessment
IFER	Inclusive Filipinnovation and Entrepreneurship Roadmap
IIC	Inclusive Innovation Conference
ILIGANiCE	Innovation thru Leveraging Industry, Government, Academe Networks and inclusive Community Engagements
IMI	Integrated Micro-Electronics, Inc.
IMPACT	Intellectual Property Management Program for Academic Institutions Commercializing Technologies
IP	intellectual property
IPOPHL	Intellectual Property Office of the Philippines
IR	Intermediate Result
IRA	Institutional Readiness Analysis
IRR	Implementing Rules and Regulations
iSTRIKE	Innovation Through Science and Technology and Risk Resilient-Based Initiatives Toward Knowledge Economy
KTTO	Knowledge and Technology Transfer Office
LINC	Linking Innovation Networks for Competitiveness
LOP	life of project
M&E	monitoring and evaluation
MCH	Making Change Happen
MEL	monitoring, evaluation, and learning
MKK	Magagmay nga Kristianong Katilingban
MLA	Mapping-Linkaging-Alignment
MMA	Makerspace Management Academy

MMSU	Mariano Marcos State University
MOU	memorandum of understanding
MSME	micro, small, and medium enterprise
MSU-IIT	Mindanao State University-Iligan Institute of Technology
NEDA	National Economic and Development Authority
NIASD	National Innovation Agenda and Strategy Document
NIC	National Innovation Council
NIC-ETB	National Innovation Council–Executive Technical Board
NRDC	National Research and Development Conference
OROBEST	Optimizing Regional Opportunities for Business Excellence Through Science, Technology, and Innovation
ORO Chamber	Cagayan de Oro Chamber of Commerce and Industry Foundation, Inc.
OUSECRD	Office of the Undersecretary for Research and Development
PAASE	Philippine-American Academy of Science and Engineering
PACU	Philippine Association of Colleges and Universities
PASUC	Philippine Association of State Universities and Colleges
PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
PCIEERD	Philippine Council for Industry, Energy and Emerging Technology Research and Development
PDP	Philippine Development Plan
Php	Philippine peso
PI	Performance Indicator
PIA	Philippine Innovation Act
PIC	Philippine Innovation Co-Creation
PID	Participatory Institutional Diagnostics
PISI	Platform for Innovating SUCs for Industry 4.0
PPE	personal protective equipment
PSF	Philippine Skills Framework
PSM	Professional Science Master's
PTRI	Philippine Textile Research Institute
PURE	Philippine-US Research and Exchange
Q	quarter
R&D	research and development
R.A.	Republic Act

RDC	Regional Development Council
RD/R&D Comms	DOST R&D Communications Team
RDI	research and development institute
REI	research, extension, and innovation
RIIC	Regional Inclusive Innovation Center
S4CP	Science for Change Program
SEARCA	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
SEIPI	Semiconductor and Electronics Industries in the Philippines, Inc.
SHINE	Sustaining Harvest Through Innovation and Nurturing Enterprise
SID	STRIDE Innovation for Development
SikLab	Saliksik Laboratory
SNA	social network analysis
SPRIG	STRIDE Prototype Research and Innovation Grant
START	Skills in Technical and Advanced Research Training
STEM	science, technology, engineering, and math
STI	science, technology, innovation
STRIDE	Science, Technology, Research and Innovation for Development
SUCs	state universities and colleges
TIP	Technological Institute of the Philippines
THRIVE	Technological Hive of Regional Innovation for a Vibrant Ecosystem
TTT	training the trainers
TWG	Technical Working Group
UAC	Understand-Adapt-Connect
UniFAST	Unified Student Financial Assistance System for Tertiary Education
UP	University of the Philippines
UPLB	University of the Philippines—Los Baños
USAID	United States Agency for International Development
USD	U.S. dollar
USG	US Government
USJR	University of San Jose - Recoletos
UST	University of Santo Tomas
USTP	University of Science and Technology of Southern Philippines
VUCA	Volatility, Uncertainty, Complexity, and Ambiguity
WARP	Widening Applications of Research within the Pandemic

| Y | year |
| ZamPen | Zamboanga Peninsula |

EXECUTIVE SUMMARY

The Science, Technology, Research and Innovation for Development (STRIDE) Program is USAID/Philippines' flagship education project supporting the country's path toward innovation-led inclusive growth. Since 2013, it has been working closely with the Philippine government, higher education institutions (HEIs), and industries to enhance the country's innovation capacity.

Launched as a five-year program in 2013, STRIDE was extended in 2018 for another three years to leverage stakeholders' momentum in driving research and innovation initiatives at the national and local levels. It was extended for another year in 2021 to consolidate achievements and prepare partners toward sustaining projects that have made significant impact on the country's research and innovation landscape.

United States Embassy Chargé d'Affaires ad interim Heather Variava with Philippine Government officials led by DOST Secretary Fortunato de la Peña and USAID/Philippines officers, led by Mission Director Ryan Washburn at the closeout event of the STRIDE Program in April 2022.

Key Outcomes

When STRIDE started in 2013, the Philippines was ranked 94th out of 141 countries in the Global Innovation Index. Since then, through visionary leadership at all levels, bold initiatives, strategic investments, and sustained collaboration, the Philippines rose to the top half of the rankings (51st of 132 countries in 2021) and has been recognized as one of four "innovation achievers" globally.

STRIDE is proud to have partnered with advocates from the government, academe, and industry who have carried the country's research and innovation torch through the years. By supporting their initiatives, creating programs that matter, and facilitating collaborative

activities, STRIDE helped shape universities as innovation leaders, demonstrated systems that drive innovation among enterprises, and contributed to empowering a government that places innovation at the front and center of its programs and policies.

1. **STRIDE's work helped shape universities toward becoming innovation leaders that contribute to nation building.**

Innovation pathways for 125 HEIs were created and strengthened after they partnered with STRIDE and/or benefited from its activities.

27 Career Centers established through STRIDE's technical assistance now help annually over 220,000 Filipino tertiary students better chart their career path. Universities have better enabled the development and commercialization of technologies that help address industry and community needs as a result of their participation in STRIDE knowledge and technology transfer training.

Research grants disbursed through the STRIDE Program served as a much-needed stimulus in kicking off a research culture in many universities. As an example, a research team from Mindanao State University–Iligan Institute of Technology (MSU-IIT) received further funding from the Philippine Government thanks to promising results from an initial STRIDE research grant. In 2018, the team launched the Bio-Products Research Laboratory to do advanced research on the use of renewable materials as a less expensive option in producing petroleum-derived goods.

2. **STRIDE has demonstrated collaborative systems that helped drive innovation among local enterprises. More micro, small, and medium enterprises (MSMEs) in the regions embraced new ways of doing things and maximized research and development (R&D) outputs in order to thrive and be competitive.**

Today, with eight Regional Inclusive Innovation Centers (RIICs) established across the country, more local enterprises are given the opportunity to collaborate with researchers in finding solutions to industry challenges. MSMEs gain access to innovation-driving services such as fabrication laboratories, Innovation for Business Recovery (IBR) programs, research and technology grants, etc.

Ultimately, many MSMEs now have better chances to make themselves more resilient and competitive in the local and international markets.

3. **At the end of the Program, STRIDE saw a Philippine Government that has placed research and innovation at the front and center of its governance roadmap and as a centerpiece in the country's economic growth strategy.**

In 2014, STRIDE's Philippine Innovation Ecosystem Assessment (IEA) served to identify priority needs, later informing the 2017–2022 Philippine Development Plan (PDP). Through the PDP, the Philippine Government formally identified the pursuit of inclusive and broad-based growth, with education and the use of science, technology, and innovation (STI) as key drivers.

In 2019, President Rodrigo R. Duterte signed Republic Act (R.A.) No. 11293 or the Philippine Innovation Act, and R.A. No. 11337, also known as the Innovative Startup Act. The former provides for a unified direction and harmonized strategy of innovation initiatives. It also mandates the establishment of the National Innovation Council (NIC) to steer the country's whole-of-government approach on innovation. R.A. 11337, meanwhile, provides benefits to promote and develop the country's start-up landscape.

4. **STRIDE's strong focus in increasing convergence and collaboration among stakeholders from the government, industry, and academe has significantly contributed to promoting an environment of trust, which is critical in boosting the innovation ecosystem.**

Through the years, STRIDE has approached its activities with collaboration, co-creation, and building stakeholder trust as central strategies. A third party study commissioned by USAID/Philippines to evaluate STRIDE noted this salient feature as it described STRIDE's contributions in achieving the Program's intermediate results in terms of improving innovation actors' capacity to innovate and improve the ecosystem.

In 2014, the Philippine Innovation Ecosystem Assessment (IEA) Report identified an environment of mistrust among the country's innovation actors as one of the four challenge areas in strengthening innovation. Five years later, an update to the report found that the environment of mistrust in the innovation ecosystem is "shifting toward one of greater connection and understanding, which is foundational to trust."

Likewise, the Social Network Analysis (SNA) by RTI International in 2022 revealed that the country's innovation ecosystem is "improving and that the network of actors supporting it is growing and consolidating." It further states that the network that was strengthened through STRIDE support grew with strong ties among between-group or between-region connections as well as internal connections within a group and a region—demonstrating impressive structural diversity and convergence. Trust appeared very high among the stakeholders in the connections and is likely to be sustained post-STRIDE.

Data on Performance Indicators

STRIDE achieved its targets on a significant majority of indicators listed under its Monitoring, Evaluation, and Learning (MEL) Plan.

Of the nine performance indicators met, STRIDE exceeded targets for three indicators. The program achieved 129% of its committed life of project (LOP) target for PI02 (ES.2-1) or the number of host-country HEIs receiving capacity development support with United States Government (USG) assistance.

STRIDE exceeded targets (126%) for PI03 (ES.2-52), which refers to the number of individuals affiliated with HEIs receiving capacity development support with USG assistance. It also achieved 106% of PI04 (ES.2-54) or the number of USG-supported partnerships that address regional, national, and/or local development objectives through or with HEIs.

STRIDE's primary context indicator yielded an upward trend for the Philippines' innovation productivity. From placing 100th in the Global Innovation Index (GII) in 2014, the Philippines made significant progress in parallel with STRIDE's programming years, eventually breaking into the top 50 most innovative countries and achieving its highest rank since the publication of the GII—placing 50th in 2020.

Although this development cannot be directly attributed to STRIDE, the progress reflects the investments and commitment made by the Philippine Government and key stakeholders to make innovation part of their development agenda.

Key Activities and Accomplishments

Dr. Luis Sison (2nd from left) facilitates a brainstorming session with his team at the USAID-developed SikLab, which is now an independent faculty training center at the University of the Philippines–Diliman.

STRIDE activities and accomplishments contributed toward achieving its three desired intermediate results (IRs) as follows: (1) improved higher education capacity for innovation, (2) improved regulatory environment for innovation, and (3) improved government capacity for innovation.

Improved Higher Education Capacity for Innovation

▪ Academia and industry have enhanced collaboration with a total of 27 university Career Centers established, 15 Professional Science Master's (PSM) programs launched, and 56 HEIs and 15 research and development institutes (RDIs) gaining competencies in knowledge and technology transfer. Various roundtable discussions, industry lectures, and other linkages-strengthening activities were likewise implemented, serving as an entry point for further collaboration. Highly engaged universities that have achieved significant successes were tapped to help cascade their learning, share best practices, and mentor universities that wish to pursue industry-engagement mechanisms in the future.

▪ Philippine universities demonstrated stronger commitment to pursuing their roles as innovation leaders. Serving as the unifying and direction-driving mechanism for this initiative is the Philippine Association of State Universities and Colleges' (PASUC's) "Platform for Innovating SUCs for Industry 4.0," or PISI, which was developed and launched with the support of STRIDE. Over 100 state universities and colleges (SUCs) have joined the call to assess their innovation-readiness and be part of efforts to create pathways toward an innovation-led, talent-driven economic growth.

- Two of the country's leading universities—De La Salle University (DLSU) and University of the Philippines (UP)–Diliman—are sustaining initiatives to increase the competencies of Filipino researchers and faculty members with the establishment and operation of their respective Skills in Technical and Advanced Research Training (START) Centers. Named DLSU START Hub and UP Saliksik Laboratory (SikLab), these centers offer courses that seek to help researchers and innovators improve their competencies in topics such as intellectual property management, writing scientific publications, research project management, etc.

A DLSU research team developing a robotic exoskeleton for rehabilitative medicine received USAID training to help commercialize their work.

- Fifty-seven Filipino scientists and engineers went to the United States to learn, create stronger ties, and exchange knowledge and experiences between Philippine- and US-based universities.

- Capacity-building programs such as Filipinnovation Entrepreneurship Corps (FEC), Fabrication Laboratory (Fab Lab) Makerspace Management Academy (MMA), and case writing workshops were delivered. One hundred seventy researchers and innovators gained insights in the customer journey to assess the commercial viability of their outputs; 50 Fab Lab professionals were trained in improving the management of Fab Labs, which are critical to supporting MSMEs; and 94 teaching cases were published as a result of STRIDE case writing workshops.

- There are greater opportunities for increased R&D in the Philippines as more Philippine HEIs strengthened their research capacity and culture and built linkages with the industry through USAID research grants. A total of 73 research grants totaling $5.6 million were awarded under the STRIDE Program. These were the Philippine-U.S. Research and Exchange (PURE), Collaborative Applied Research with Industry (CARWIN), STRIDE

Prototype Research and Innovation (SPRIG), STRIDE Innovation for Development (SID), Academic Grants for Industry-Led Applications (AGILA), and the Widening Applications of Research Within the Pandemic (WARP) grants.

Improved Regulatory Environment for Innovation

- Windows of opportunities were opened as STRIDE supported efforts to improve the R&D procurement system, which is critical in Philippine Government-funded research. STRIDE completed two papers, "Case Study on Research Procurement Issues and Suggested Reforms for Funded Research Projects in the Philippines," and a White Paper on the "R&D Procurement Transactions of the UP–Diliman College of Science," to help inform further efforts in improving processes. Also developed was an R&D Procurement Database to help streamline the R&D procurement system in UP–Diliman College of Science.

- Pathways toward improving Philippine HEIs' systems, codes, and policies were created through various STRIDE activities. Tools were developed to help SUCs strengthen their innovation potential. These tools include the Innovation Diagnostic Study, Institutional Readiness Analysis (IRA), and a paper on recontextualizing research and extension in Philippine SUCs post-pandemic.

- The NIC, which is mandated under the Philippine Innovation Act (PIA) to steer the whole-of-government approach in innovation, is on track to complete the National Innovation Agenda and Strategy Document (NIASD). The NIASD outlines the country's innovation vision, goals, and long-term strategies. STRIDE assisted the National Economic Development Authority (NEDA), which serves as NIC Secretariat, in crafting the NIASD and in delivering other foundational work mandated under the PIA.

- The Department of Science and Technology (DOST), Department of Trade and Industry (DTI), and the Commission on Higher Education (CHED) enhanced their efforts toward creating a regulatory environment conducive for their respective R&D and innovation advocacies. DOST, with the help of STRIDE, paved its legislative and advocacy mechanisms toward increasing long-term R&D investments in the Philippines. DTI established an Undersecretary-led office, which is mandated to design and implement policies and programs for competitiveness through innovation. Meanwhile, with STRIDE technical assistance, CHED is making policies and systems more attuned to its current operational environments through the conduct of studies on student loan programs and an internal organizational assessment.

USTP researcher Branson Mabulay (3rd from left) working with a local enterprise to increase productivity through innovation. Also in the photo is Queritess Queja (back, right), program director of the USAID-supported RIIC in Cagayan de Oro.

Improved Government Capacity for Innovation

- Innovation is at the front and center of the DTI's policy and programs. The DTI, together with the DOST, led the launch of the Inclusive Filipinnovation and Entrepreneurship Roadmap (IFER) and the formulation of the Filipinnovation Branding program. The Roadmap outlines policy and program recommendations that seek to leverage innovation and entrepreneurship in addressing poverty in the Philippines while the Filipinnovation branding aims to build the country's reputation as an innovation champion. STRIDE provided technical assistance to DTI in helping realize these initiatives.

- New knowledge and insights for use in crafting innovation-related policies and programs were gained through STRIDE activities that included the Philippine IEAs, global value chain studies on eight priority sectors, Understand-Adapt-Connect (UAC) briefs on personal protective equipment (PPE) supply chains, and a high tech industry needs assessment. STRIDE also hosted four cohorts of Strategic Foresight Training benefitting over 80 officials and officers from four government agencies.

- Local enterprises are benefiting from innovation linkages and programs of eight RIICs in Cagayan Valley, Central Luzon, Calabarzon, Bicol, Central Visayas, Zamboanga Peninsula, Northern Mindanao, and Davao Region. STRIDE has been instrumental in the establishment of these RIICs. It employed the Mapping-Linkaging-Alignment (MLA) approach to deliver programs that fostered collaboration among innovation players at RIIC sites. It conceptualized and delivered innovation workshops and provided IBR plans to over 100 MSMEs. Innovation Advisory Services (IAS) training was also provided to

enable more regional stakeholders to conduct their own linkages activities between industry, government, and academia.

- STRIDE assisted the DOST in improving the efficiencies of its grants management program through the conduct of a multi-year Grants Management Study and a capability building program for the Department's R&D project managers. The Grants Management Study recommendations include the development of a standard process for stakeholder engagement and the conduct of a work-load analysis.

- There is strengthened capacity to communicate the benefits of R&D as the DOST institutionalized the establishment of the R&D Communications Team through Special Order No. 0094, series of 2021. The R&D Communications Team has built its R&D advocacy through communications campaigns, capacity-building programs, and the hosting of the National R&D Conference (NRDC). STRIDE delivered a series of training to enhance the R&D Communications Team members' communications competencies and provided creative support services for information materials critical in delivering R&D key messages.

- There is a noted increase in the number of relevant, impact-generating R&D and innovation-related events. Stakeholders convened and hosted several conferences that seek to spur conversations and gather more stakeholder support for research- and innovation-related policies and programs. These events include the Inclusive Innovation Conference, Manufacturing Summit, Synergy Conference, and Grand Intellectual Property Forum. STRIDE supported several of these events.

- Stakeholders agree there is strengthened convergence among innovation actors, especially government agencies that are central to driving R&D and innovation in the Philippines. A research and innovation study tour to the United States was organized by STRIDE in 2017, paving the way for collaborative learning and convergence among high-level officials from the government and academia. In another mission that STRIDE supported, government and industry officials identified possible applications of best practices observed during a study tour of innovation sites in Israel.
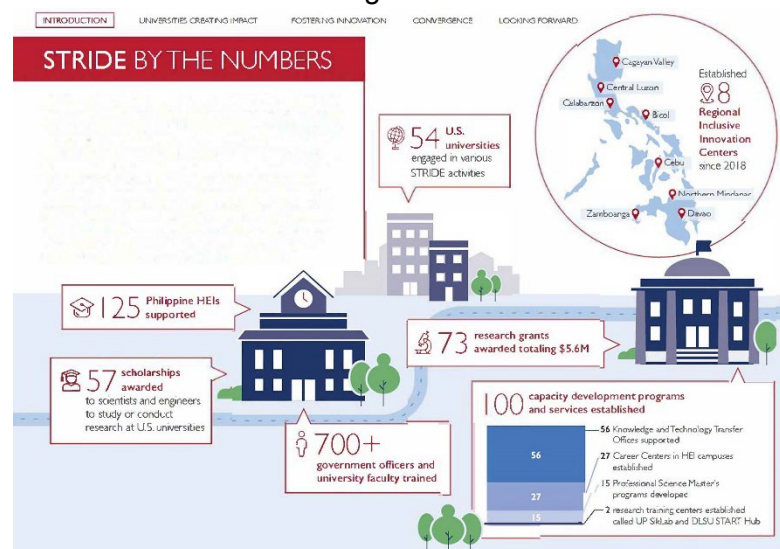
Overall Implementation Experience

The program implementation was characterized by a strong focus in creating linkages and promoting collaboration among key actors in the Philippine innovation ecosystem. It gravitated toward measures that serve as a foundation to strengthening the research and innovation landscape, particularly in terms of fostering trust, supporting innovation-related policies, and capacitating stakeholders from the government, industry, and academia.

The following thematic experiences stood out in the nine years of STRIDE implementation:

1. **Leveraging the Growing Convergence of Innovation Stakeholders.** STRIDE's transition between its first five years (2013 to 2018) and the extension years (2019–2022) was a story about growing convergence and leveraging gains. In its extension years, the program saw the need to sustain the momentum from the many actions of innovation stakeholders, especially as many began to explore points for collaboration. Stakeholders are now reaping the benefits of working together toward shared goals, while also increasing the level of trust among themselves as indicated by a STRIDE social network analysis in 2022.

   Likewise, as more local universities increased their capacity and confidence in applying for R&D funds from government agencies, reinforced by experiences from STRIDE grants and activities, innovation networks of academia with external stakeholders have expanded and become more dynamic.

2. **Providing Timely and Flexible Support to Government Partners.** A significant portion of STRIDE technical assistance went to government partners that are central to boosting R&D and innovation in the Philippines. The consistent presence and support have been well-received as indicated by the number of jointly-run programs between STRIDE and government agencies.

   For several years, STRIDE demonstrated flexible and agile technical assistance to agencies such as CHED, DTI, DOST, and NEDA. The goal has been to make a more impactful and sustainable contribution to R&D and innovation initiatives of these partners. The assistance also typically responded to rapidly evolving challenges faced by partner agencies in R&D and innovation efforts.

3. **Pivoting strategies and activities amid the coronavirus disease 2019 (COVID-19) pandemic.** The COVID-19 pandemic not only restricted movement in implementation areas, but more crucially altered the priorities of STRIDE partners. STRIDE quickly shifted certain activities, adding remote/virtual capacity-building programs and training. Entirely new activities were also created to address partner concerns that emerged from the pandemic. Interventions ranged from enabling regional businesses to better harness innovations to recover from the economic downturn, to training government staff on scenarios thinking in order to develop strategic plans more resilient to disruptions.

In the course of STRIDE implementation, RTI International dedicated various research activities to capture system-level changes as well as learnings from specific interventions. A standalone Learning Brief was developed, attached here as Annex A, to present specific lessons learned in implementing activities under each of the three STRIDE IRs.

Lessons from implementing IR1 centered on the challenges and opportunities for HEIs in fostering a robust innovation ecosystem, while learnings from IR2 covered policies on linkages that could be leveraged to enable the adoption of R&D outputs. Under IR 3, insights were generated from activities in government-related mechanisms where STRIDE made an impact. Overall, the STRIDE experience highlighted the central role of government in building convergence among stakeholders.

Disinfectant alcohol developed through USAID-funded research was distributed by Mariano Marcos State University during the COVID-19 pandemic. / Photo: MMSU

Recommendations for Future Implementation Strategies

Learning from its nine-year implementation experience, the STRIDE Program puts forward the following recommendations on potential implementation strategies:

1. **Creating mechanisms for building trust-based relationships.** STRIDE recommends that development programs be encouraged to design a more proactive and deliberate approach towards trust-building efforts. Program teams can find ways to integrate social components in their activity designs to encourage collaborative learning, shared experiences, and substantive relationship building while also producing measurable outputs and outcomes.

2. **Addressing complex development challenges through diverse, multi-functional approaches.** Mechanisms that enable program teams to provide multi-functional technical support have been well-received by program partners. This recommended approach requires development programs that are agile and flexible enough to ensure that high-impact and pivotal activities are realized despite barriers—whether procedural, technical, or resource-related—from the side of implementing partners.

3. **Beyond technical programs, strengthening of cross-functional services.** STRIDE saw that to help government partners boost their own technical programs that contribute to program goals, it is equally important to enable partners to improve competencies in fields or offices that may be considered outliers from the program's purview. A more in-depth assessment should be performed on the value of supporting horizontal or operational functions in partner organizations such as communications, stakeholder

relations, financial management, among others, in helping partners better deliver on their mandates.

4. **Preparing partners for volatility, uncertainty, complexity, and ambiguity (VUCA).** The experience of STRIDE through over two years since the onset of the COVID-19 pandemic recommends integrating strategic planning and scenario planning upon the start of any USAID-supported programs. The goal is to anticipate and prepare for possible random, unexpected, but high-impact events that could significantly affect development initiatives.

The STRIDE Program is a USAID/Philippines initiative that has a goal of strengthening science, technology, research, and innovation capacity for inclusive growth in the Philippines.

For nine years, STRIDE supported Philippine institutions in academia, government, and industry in the implementation of their own innovative solutions to achieve the country's development goals. It has facilitated the exchange of knowledge and best practices among Philippine and U.S. academic institutions and local industries through joint research and scholarships. The program also institutionalized mechanisms to better link innovation stakeholders, while fostering an enabling regulatory environment to increase innovation output. It has designed and delivered capacity-building programs to support leaders, officers, and staff involved in implementing more innovation-driven policies and programs.

Launched in 2013, STRIDE was initially a $32 million, five-year program under Partnership for Growth, a White House signature initiative through which the United States and the Philippine Governments collaborate to achieve economic growth and development. STRIDE was extended in 2018 for another three years with an additional $5 million allocation to leverage stakeholders' momentum in driving innovation initiatives at both national and local levels.

It was extended for another full year in 2021 to consolidate achievements made by the country in creating a dynamic innovation ecosystem. STRIDE completed its ninth and final year of implementation within fiscal year (FY)2022 on the programmed end date of July 16, 2022.

STRIDE had built upon the shared vision with the Philippine Government's 2017–2022 PDP, in which self-sustaining, inclusive development can be achieved by "promoting science, technology, and creative arts to enhance innovation and creative capacity." With the country achieving its highest-ever ranking of 50th in the 2020 GII, STRIDE has fostered a strong network of innovation champions, while also bringing innovation to the forefront of the country's efforts to recover from the COVID-19 pandemic.

In recent years, the program endeavored to meet its objectives through three IR areas (Figure 1).

IR 1. Improved higher education capacity for innovation

Tasks under this IR institutionalize the STRIDE-supported Knowledge and Technology Transfer Office (KTTO), university Career Centers, and PSM programs. STRIDE enhanced the mentoring capacity of the pioneer set of partner universities for these initiatives, transitioning them into powerful mentor institutions that will share their acquired expertise with other universities across the country.

STRIDE, together with partner universities, developed a researcher training center for research faculty and staff. It also engaged PASUC to help define and implement policies to increase innovation output from public HEIs, and monitored research projects funded through WARP grants.

IR 2. Improved regulatory environment for innovation

Tasks under this IR enabled STRIDE to support policy and regulatory improvements in STI as well as R&D activities in government and HEIs. Where necessary, STRIDE provided technical assistance and/or training in policy formulation and execution.

IR 3. Improved government capacity for innovation

Tasks under this IR helped strengthen innovation ecosystem development efforts of the Philippine Government. STRIDE provided targeted technical assistance to agencies and institutions that are central to the innovation ecosystem. It transferred to the government the ownership of inputs and good practices that were developed through STRIDE to strengthen systems and encourage more investments and growth.

Figure 1. Relationship of STRIDE Tasks to IRs and Program Goal
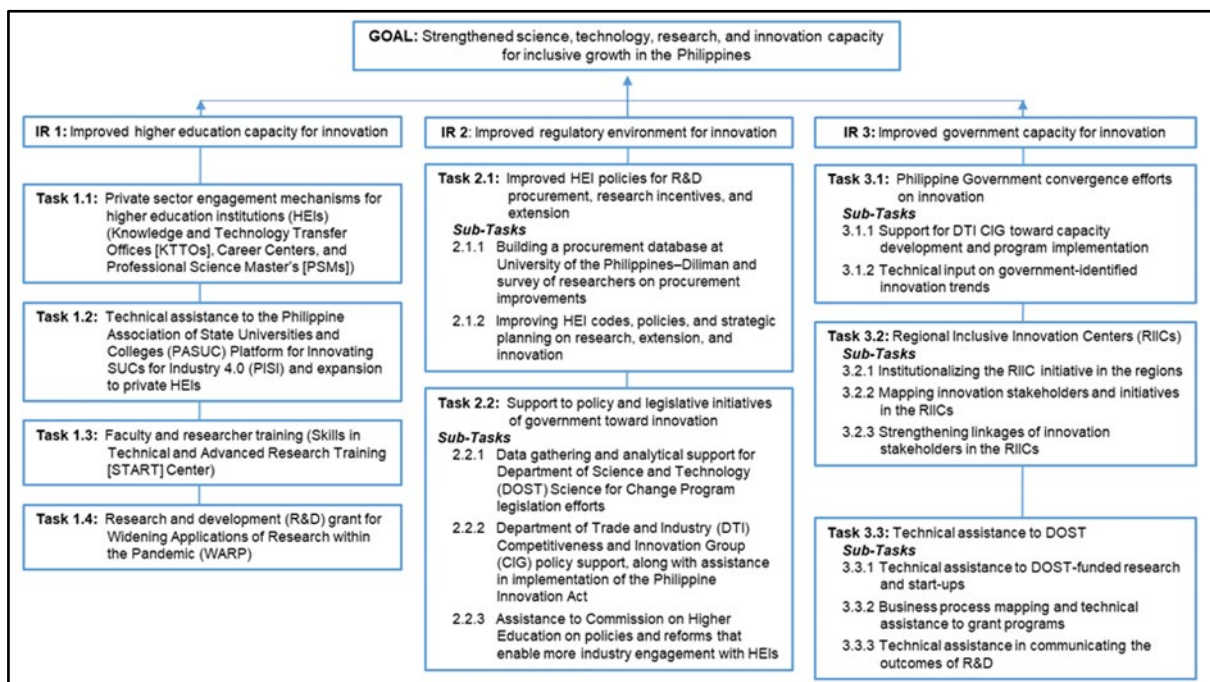
When STRIDE started in 2013, the Philippines was ranked 94th out of 141 countries in the GII. Since then, through visionary leadership at all levels, bold initiatives, strategic investments, and sustained collaboration, the Philippines rose to the top half of the rankings (51st of 132 countries in 2021) and has been recognized as one of four "innovation achievers" globally.

STRIDE leveraged the interest, enthusiasm, and gains achieved by innovation champions across the government, industry, and academia to further its mission of strengthening R&D and innovation in the Philippines to achieve inclusive growth. It is proud to have partnered with advocates who have carried the country's research and innovation torch through the years.

By supporting their initiatives, creating programs that matter, and facilitating collaborative activities, STRIDE helped build universities as innovation leaders, enterprises that are innovation-driven, and a government that places innovation at the front and center of its programs and policies.

Universities as Innovation Leaders

HEIs play a key role in sustainably achieving development outcomes.

Designing training and crafting curricula relevant to the needs of the modern workforce generate "work-ready" graduates, thereby aligning the academic system to meet the needs of growing and innovative industries. Research activities in HEIs provide innovations beneficial for local businesses to become more competitive. Establishing linkages with industry allows for the creation of knowledge, technologies, and products that are critical in maximizing future potential and addressing new market demands.

Having understood the valuable potential of HEIs to build an inclusive and better future for Filipinos, STRIDE designed its activities with a strong focus on capacitating universities. It provided HEIs the much-needed stimulus to go beyond the usual pathways in developing the next generation of Filipino talent and industrial sectors.

It challenged university leaders, faculty, and personnel to level up their competencies, adopt global best practices in research and innovation, and mobilize other members of the academia to do the same.

STRIDE's work helped shape universities toward becoming innovation leaders that contribute to nation building.

Innovation pathways for 125 HEIs were created and strengthened after they partnered with STRIDE and/or benefited from its activities. See **Annex B** for the list of the Philippine HEIs.

Career Centers established through STRIDE's technical assistance now help hundreds of thousands of Filipino tertiary students better chart their career path. Filipino scientists and engineers sent by STRIDE to the United States to continue advanced education or research have returned to the Philippines and play significant roles in addressing challenges faced by the country such as the COVID-19 pandemic.

Universities have better enabled the development and commercialization of technologies that help address industry and community needs as a result of their participation in STRIDE KTTO training. Research grants that were disbursed through STRIDE served as a much-needed stimulus in kicking off the research culture in many universities. As an example, a research team from MSU-IIT received further funding from the Philippine Government thanks to the baseline data they were able to gather through a previous STRIDE research grant. By 2018, the team had launched the Bio-Products Research Laboratory to do advanced research on the use of renewable materials as a less expensive option in producing petroleum-derived goods.

Better HEIs through Capacity-Building and Systems Strengthening

Dr. Jomar Aban, a Campus Research Technical Assistant at Don Mariano Marcos Memorial State University (DMMMSU) in Ilocos Norte, Philippines, saw the need for his colleagues and students to have more learning opportunities on how to conduct research and disseminate findings.

To address concerns similar to Dr. Aban's, STRIDE developed the START training series, providing an alternative route to learning the required soft skills to develop a research-ready workforce.

By 2022, the START courses had been offered to over a thousand Filipino faculty and researchers. The courses aimed to increase research productivity at universities by strengthening relevant skills such as writing for publications and assessing the commercialization of research. USAID partnered with DLSU and UP–Diliman—two of the country's leading research universities—in establishing their START Centers, branded the "DLSU START Hub" and "UP SikLab," respectively.

In January 2020, Dr. Aban joined with 11 researchers from 9 universities for the START course "Writing a Scientific Paper for Publication." Dr. Aban was the first participant who succeeded in having his manuscript accepted for publication by the Philippine Journal of Science.

The impact of his graduation from the START Course has rippled beyond his immediate achievement. In April 2022, he shared: "[The START training] generated skills that I was able to use to assist other faculty members…because of this, four more Scopus-indexed publications were produced by the College. I was also able to contribute to the performance of the university in the national SUC Leveling classification because of the international best paper awards that I received."

Stronger Private Sector Engagement

In March 2014, Dr. Beth Quirino-Lahoz, President of the Technological Institute of the Philippines (TIP), envisioned the university to be more responsive to industry needs. She wanted to make a difference for low-income students by ensuring they have the skills that match what the "world of work" requires.

STRIDE provided universities such as TIP the opportunity to realize their goals through its technical assistance on Career Center services. It tapped U.S.-based experts from the University of California at Berkeley, Stanford University, and the University of Florida to deliver Career Center training and mentoring to help universities build and operate Career Centers. At the conclusion of the STRIDE Program, 27 Career Centers were established across the country, helping students chart their careers and prepare to join the workforce post-graduation.

With TIP becoming a STRIDE Model Career Center, Dr. Quirino-Lahoz achieved her vision. Within six months after attending STRIDE's Career Center training, Dr. Quirino-Lahoz hired a staff of 10 and completed the construction of a new career service office. Three years later, TIP had a vibrant career services team and office with improved services for students and alumni, including employer linkages.

TIP has hosted more than 50 universities, including those outside the Philippines, to visit its Career Center and learn from its programs. TIP achieves a greater than 92% employment rate among its graduates, while consistently placing among the top 10 most preferred HEIs by employers in independent job portal surveys.

TIP also launched three PSM programs that were co-developed with specific companies. Based on similar PSM programs offered by U.S. HEIs, these novel degree programs in data science, construction, and engineering management heightened industry participation in crafting curricula that deliver relevant skills required by fast-growing sectors.

The Career Center and PSM models have proven effective in promoting academia-industry collaborations, such as TIP's, resulting in over 1,500 active industry linkages. These models align with USAID's strategic investments in higher education to build sustained, vibrant collaborations with the private sector, and address an issue that is holding back the region as a whole.

Enterprises Inspired to Innovate

MSMEs comprise 99% of all businesses in the Philippines. MSMEs create jobs, stimulate economic activities, provide products and services to communities, and serve as training grounds for the Filipino workforce and many industry champions.

Despite the potential and benefits that MSMEs generate, they continue to be overwhelmed with challenges including productivity, competitiveness, and profitability. When the COVID-19 pandemic hit, MSMEs were among those most adversely impacted.

Innovation is a key factor in developing enterprises that grow even with competition, survive despite crises, and thrive amid challenges. Strengthening the country's research and innovation ecosystem will be of no value if the benefits that it yields are not inclusive.

STRIDE has demonstrated collaborative systems that helped drive innovation among local enterprises. More MSMEs in the regions embraced new ways to operate and maximized R&D outputs in order to be competitive.

STRIDE made it a mission to bring together stakeholders who harness the potential of innovation with people and communities as ultimate beneficiaries in mind. The program embarked on ideation workshops meant to spark ideas for new products that meet market demands as well as R&D that produces outputs relevant to industries. It has encouraged universities to engage in more research extension activities to benefit immediate communities, including MSMEs.

Today, with eight RIICs established across the country, more local enterprises are given the opportunity to collaborate with researchers in finding solutions to industry challenges. MSMEs gain access to innovation-driving services such as Fab Labs, IBR programs, and research grants.

Awareness about these opportunities continues to increase as more stakeholders embark on improved ways of communicating R&D stories to the target audience. Ultimately, MSMEs

now have better access to technology and business innovations that make themselves more resilient in both local and international markets.

> *"It is not enough that we do research and produce R&D outputs. We need to ensure that the technologies developed from R&D reach its intended user – individual, community, [HEI], or private company through technology transfer. Only then can we truly serve our people."*
>
> *- Dr. Rowena Cristina Guevara*
> *DOST Undersecretary for Research and Development*

Innovation Responsive to MSME Needs

In October 2021, the Cagayan de Oro Chamber of Commerce and Industry Foundation, Inc. (Oro Chamber) formally opened Oro Best's Expo 2.0 to showcase local products. The expo featured hundreds of MSMEs not only from Cagayan de Oro but also from nearby provinces and areas beyond the region's borders.

Some of the participating MSMEs are those that benefitted from OROBEST's efforts to drive innovation among local enterprises.

OROBEST, which stands for Optimizing Regional Opportunities for Business Excellence through Science, Technology, and Innovation, is one of the two innovation programs of the RIIC in Northern Mindanao. The Oro Chamber is one of OROBEST's key collaborators.

With STRIDE support, OROBEST has been introduced to and has mounted its own R&D ideation workshops with the objective of inspiring industry and academia to collaborate on new ideas that could address challenges faced by enterprises.

OROBEST was also the first adopter of the STRIDE's conceptualized program called IBR, which sought to help MSMEs survive, recover, and even thrive through the pandemic,.

To date, OROBEST has supported at least 60 MSMEs in the region.

Some of these local enterprises were Green Pastures, which produces health supplements using algae-based raw material called spirulina; Bestfriend Goodies, a sweets-selling company; and Grace Tajera Engineering Works, among others.

Many other MSMEs attested to the benefits of RIIC programs to their businesses. In Bicol, another IBR Program participant, Med Villanueva of Shelmed Cottage Treasures remarked, "It has never been so good. At a time when we thought our sales would dip, our marketing [would] dip, our production increased again, thanks to USAID and DLSU."

The OROBEST and other RIIC-driven programs like the IBR are testaments that MSMEs could be inspired to look at research and innovation from a different light. After all, the end goal of R&D, as DOST Undersecretary Rowena Guevara said, is to make sure that R&D benefits its target user.

Government Championing Research and Innovation

For innovation efforts to be impactful, the government must spearhead efforts in bringing stakeholders together, crafting a supportive policy environment, and delivering programs that bring tangible benefits to all stakeholders.

STRIDE provided support to government partners that are most critical in driving the research and innovation agenda. It brought in U.S.-based and local experts to help build the

capacities of public servants in charge of R&D and innovation. It commissioned works that informed many programs and policies to unlock the potential of Filipino innovators.

At the end of the program, STRIDE saw a Philippine Government that placed research and innovation at the front and center of its governance roadmap and a centerpiece in the country's economic growth strategy.

In 2014, STRIDE's Philippine IEA served to identify priority needs, later informing the 2017–2022 PDP. Through the PDP, the Philippine Government formally identified the pursuit of inclusive and broad-based growth, with education and STI as key drivers.

In 2019, President Rodrigo R. Duterte signed R.A. No. 11293, or the PIA and R.A. No. 11337, also known as the Innovative Startup Act.

The former provides for a unified direction and harmonized strategy of innovation initiatives. It also mandates the establishment of the NIC to steer the country's whole-of-government approach on innovation. R.A. 11337, meanwhile, provides benefits to promote and develop the country's start-up landscape.

At present, the NIC has already been established, with NEDA as Secretariat. It is working on the development of the NIASD, which outlines the country's vision, goals, and long-term strategies related to innovation.

Public Sector Investments Leverages

In 2019, DOST Undersecretary Rowena Guevara expressed the need to beef up the communication of the benefits of R&D projects, including its Science for Change Program, to the target audience. The end goal is to create more interest in R&D, including collaborative projects with the industry, and garner support for more public investments in research.

"Our partnership with the STRIDE team is among the most impactful development projects we have had so far. It was serendipitous that a USAID education project such as STRIDE was there, as the focus of DTI's work was evolving to adapt to the changing needs of industries and the country as a whole."

- Dr. Rafaelita Aldaba
DTI Undersecretary for Competitiveness and Innovation

"We have witnessed many stories of successful collaborations between academe, industry and various stakeholders in pursuing innovation activities that bolstered the capacity of science, technology, and innovation in the country over the last nine years… I have witnessed the change in terms of the level of trust… When I see today the high percentages in terms of the level of trust I am indeed very happy and I do

In support of this thrust, STRIDE provided technical assistance to DOST on R&D communications. To help them deliver R&D key messages more effectively, staff were trained on communications planning, social media communications, news writing, video production, crisis communications, and science storytelling,

Today, DOST has institutionalized the R&D Communications Team composed of 14 DOST offices, research councils, and institutes to synergize its R&D communications advocacy. It has also increased its investments in the conduct of the NRDC to serve as a better platform in telling R&D stories.

Governance Mechanism Designed for Innovation

The early STRIDE partnership with DTI covered the design and implementation of studies and roadmaps to help direct the department's innovation policy. In 2017, STRIDE facilitated workshops and activities that helped inform the Philippine IFER, which highlighted the establishment of RIICs as a key recommendation.

DTI leadership doubled down on innovation in 2019 with the creation of the Competitiveness and Innovation Group (CIG) headed by newly appointed Undersecretary Rafaelita Aldaba, who had long been leading joint activities for DTI with STRIDE. CIG received STRIDE technical assistance in its policy creation and implementation efforts, along with the execution of its centerpiece RIIC program in partnership with other government agencies.

Innovation Actors Converging, Collaborating, and Fostering Trust

Innovation ecosystems thrive in a high-trust, collaborative, and mutually beneficial environment where commercial, social, and development interests are considered.

Within a year of STRIDE starting in 2013, the program started the Philippine IEA, which found the country's innovation ecosystem to be generally characterized by widespread mutual mistrust and dismissiveness between university and industry communities, and more about competition than being collaborative. Some stakeholders also described government agencies as being more concerned with boundaries among government bureaus and departments, rather than with any collaborative efforts or resource sharing.

STRIDE's strong focus in increasing convergence and collaboration among stakeholders from the government, industry, and academe has significantly contributed to promoting an environment of trust, which is critical in boosting the innovation ecosystem.

Through the years, STRIDE has approached its activities with collaboration, co-creation, and building stakeholder trust as central strategies. A third party performance assessment of STRIDE[1], commissioned by USAID with the Panagora Group, noted this salient feature as it described STRIDE's contributions in achieving desired IRs in terms of improving innovation actors' capacity to improve the ecosystem.

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[1] https://pdf.usaid.gov/pdf_docs/PA00XWRX.pdf

In 2014, the STRIDE Philippine Innovation Ecosystem Assessment[2] identified an environment of mistrust among the country's innovation actors as one of the four challenge areas in strengthening innovation. Five years later, STRIDE conducted an update[3] to the original report which found that the environment of mistrust in the innovation ecosystem is "shifting toward one of greater connection and understanding, which is foundational to trust."

As part of the STRIDE Learning Agenda and with inputs from USAID/Philippines, a Social Network Analysis (SNA)[4] was conducted by STRIDE in 2022 to better characterize how collaborations and the level of trust have evolved in the innovation ecosystem through the STRIDE period of performance.

A survey of stakeholders and the subsequent analysis revealed that the innovation ecosystem is "improving and that the network of actors supporting it is growing and consolidating." It further states that the network that was strengthened through STRIDE support grew with strong ties among between-group or

Figure 2. STRIDE SNA Results

Past Network by Affiliation   **Present Network by Affiliation**
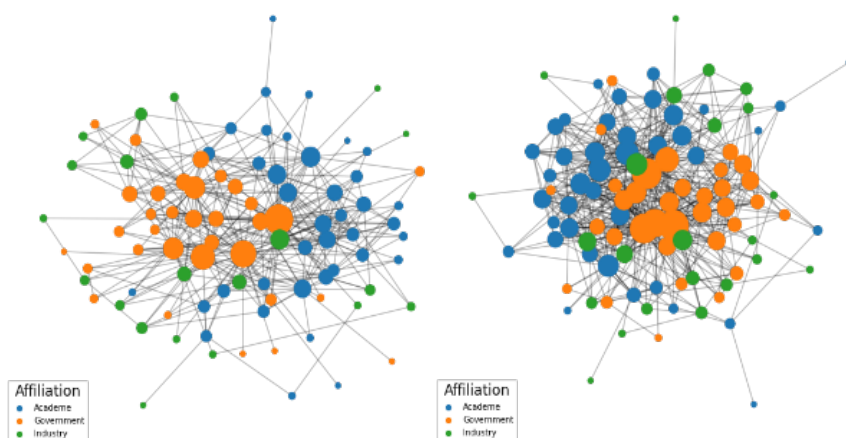
This figure from the STRIDE SNA shows a 67% increase in collaborative ties within the innovation stakeholder network. From 366 connections, the network grew to 611 connections in 8 years.

between-region connections, as well as internal connections within a group and a region—demonstrating impressive structural diversity and convergence. Trust appeared very high among the stakeholders in the connections and is likely to be sustained post-STRIDE.

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[2] https://pdf.usaid.gov/pdf_docs/PA00KHRP.pdf
[3] https://pdf.usaid.gov/pdf_docs/PA00ZGD2.pdf
[4] RTI International (2022). Philippine Innovation Ecosystem: Social Network Analysis, Report for the STRIDE Program. Research Triangle Park, NC: RTI International

SUCCESS STORY 1

SUCCESS STORY

When research means business: Industry and academia working together to produce commercially viable technologies

(Above) A researcher works on the joint project between USA and Maridan Industries. (Below) DLSU and IMI researchers work on the AGILA project. / Photos: USA and RTI

Seven out of 10 research grants awarded by USAID through the Science, Technology, Research and Innovation for Development (STRIDE) Program were for research jointly done by academia and industry.

Through grants such as Collaborative Applied Research with Industry (CARWIN) and Academic Grants for Industry-Led Application (AGILA), STRIDE in total awarded at least $3.88 million toward technologies that are to be commercialized.

One such technology is a honey-based wound dressing that supports the healing of skin injuries in a moisture-rich environment. The product, Honelle Wound Gel, is ready for commercial use, having been certified by the Philippine Food and Drug Administration as conforming to safety standards.

Honelle is manufactured by Maridan Industries of Iloilo City, which worked with its neighbor, the University of San Agustin (USA), to study the antibacterial potential of Philippine honey and its bioactive components. The company's R&D collaboration with academia began in 2016 through a STRIDE CARWIN grant. Inspired by the encouraging results from its partnership with USA, which led to the Honelle Wound Gel, Maridan Industries has since embraced more collaborations with other universities in the region.

"Collaboration between academe and industry is essential in maximizing innovation. Industries serve as a medium to identify new market opportunities, while academe acts as a pool for knowledge of basic sciences. If these two sectors start to work together, it could organize research that would have a valuable impact on society," Sollesta said.

"If we could maximize this linkage, our industries would become more competitive locally and abroad. Our products would become more valuable and superior in the market since they are backed by science and research," Maridan Industries Vice President for Production Jan Vincent Sollesta said.

Big industries buying in to university research

In 2017, STRIDE, with Del Monte Philippines Inc. (DMPI) and Integrated Micro-Electronics Inc. (IMI), awarded more than Php12 million (~$240,000) in AGILA grants to the University of the Philippines Los Baños (UPLB) and De La Salle University (DLSU). The funded projects covered research on the health benefits of proteins from pineapples (for DMPI) and developing novel electronic health devices (for IMI).

But the key feature for all these AGILA grants was that these industry partners contributed matching funds and resources to the USAID support. Industry partners initially posted their technical challenges that applicants addressed through research proposals. Technical teams from industry were also part of the selection process.

"We've entered into several collaborations with academe in the past, but none at this level wherein we do specific R&D and put in some of our resources," said Sherwin Nones, IMI Head of Strategic Planning and Marketing.

"We extended this support because we believe that giving a piece of our company toward the development of something and working together with academia could be a win-win situation," Nones added.

The recipe for more fruitful university-industry collaborations may rely more on building trust and open lines of communications. "There's a bright future for this kind of model," said DMPI's Ronald Benedicto. "There are two different cultures that we are talking about. It will not work with just one side pushing it and not willing to accept the limitations of the other."

Priming for government support

A $145,000 USAID grant enabled Mindanao State University–Iligan Institute of Technology (MSU-IIT) to co-develop with industry an energy-harvesting integrated circuit chip. The work with Analog Devices and Sinyx Design Consultancy Services will allow wireless sensors and electronics to operate, even without a conventional power source.

The promising results of the research paved the way for MSU-IIT to receive subsequent funding of Php 34 million (~$680,000) from the Department of Science and Technology (DOST) to further develop its output. The goal is to come up with a network of sensors that could be used for crop maintenance in modern farms.

"We are very grateful for the research financial support from the USAID STRIDE Program. It enabled us to

"Promoting collaboration between industry and academia has always been a part of the STRIDE DNA. Beyond doing this through research grants, we have made it a mission to create platforms for R&D-related discourse between companies and universities. We are pleased to say that through various activities, we were able to forge over 400 new partnerships between HEIs, private sector, and the government," said STRIDE Chief of Party Richard Abendan.

kick-off the initial research into its final expected outcome, which was subsequently supported by the Philippine government," said principal investigator Jefferson Hora.

The Philippine Government itself has recently been increasing support to industry-academe research collaborations. As of December 2021, DOST's Collaborative R&D to Leverage Philippine Economy (CRADLE) grant under the Science for Change Program (S4CP) has awarded a total of Php 344.5 million to 34 institutions and 77 industry partners. The grant was used for 76 research initiatives across 10 regions in the Philippines.

Industry leaders are one with the DOST in its thrust for more research partnerships. "Collaboration between academe and industry is essential in maximizing innovation. Industries serve as a medium to identify new market opportunities, while academe acts as a pool for knowledge of basic sciences. If these two sectors start to work together, it could organize research that would have a valuable impact on society," Maridan's Sollesta said.

These collaborations demonstrated that while not common, it is not impossible to facilitate industry-academia research. "Promoting collaboration between industry and academia has always been a part of the STRIDE DNA. Beyond doing this through research grants, we have made it a mission to create platforms for R&D-related discourse between companies and universities. We are pleased to say that through various activities, we were able to forge over 400 new partnerships between HEIs, private sector, and the government," said STRIDE Chief of Party Richard Abendan.

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SUCCESS STORY

Research & Development in the time of COVID: How innovation beneficiaries of USAID help fight the pandemic
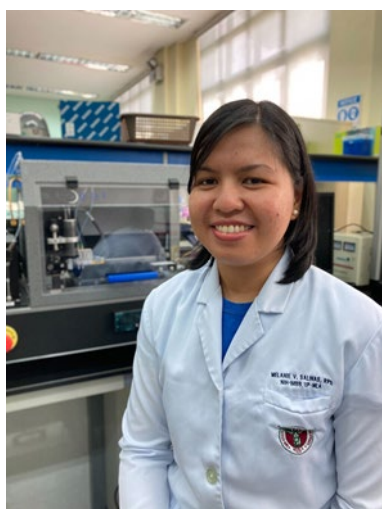
USAID scholar Melanie Salinas at the Philippine National Institute of Health. I Photo: Ms. Salinas

RT-PCR tests, antiviral hand sanitizers—these were some of the buzzwords in the last two years as people battled the coronavirus disease 2019 (COVID-19) pandemic.

Melanie Salinas and Mariano Marcos State University (MMSU) President Shirley Agrupis know these words all too well. While most tried to avoid being outside their homes, Ms. Salinas and Dr. Agrupis were at laboratories handling research and technologies that sought to mitigate the impact of COVID-19.

At the onset of the pandemic, Ms. Salinas, who works as a science research specialist at the Philippine National Institute of Health (NIH), was called to be part of the NIH's COVID-19 Taskforce. Dr. Agrupis, meanwhile, had led MMSU's research and development (R&D) team in producing medical-grade disinfecting alcohol from local raw materials.

Ms. Salinas and Dr. Agrupis are both part of the network of individuals and higher education institutions (HEIs) that have benefitted from USAID-funded initiatives through the Science, Technology, Research and Innovation for Development (STRIDE) Program.

Ms. Salinas completed her Professional Science Master's (PSM) degree in Bioinformatics at the University of Delaware as a USAID scholar, while Dr. Agrupis, prior to becoming president of MMSU, had received STRIDE research grants.

At the forefront of COVID-19 testing

In March 2020, almost four years after completing her PSM degree, Ms. Salinas saw herself thrust to the frontlines of the country's nascent COVID-19 testing efforts. She was asked to be part of a task force to

(Above) Disinfectant alcohol produced by the MMSU research team. (Below) One of the village-scale ethanol producing facilities. I Photo: MMSU

"At the height of the pandemic, a USAID-supported technology became front and center in our efforts to address the high demand for medical-grade alcohol, not only for our frontliners in Ilocos and nearby provinces, but even in further parts of the Philippines," said Dr. Agrupis.

rapidly set up a central COVID-19 testing laboratory at the NIH.

At that time, many countries, including the Philippines, did not have much ready infrastructure or capacity for testing individuals for COVID-19. The government needed reliable diagnostics to help manage the spread of the disease.

"We had to assist the Research Institute of Tropical Medicine, which was the only laboratory in the country capable of testing samples at that time, as they needed help from other laboratories," Ms. Salinas added.

Ms. Salinas also helped validate the country's first locally developed COVID-19 PCR (polymerase chain reaction) testing kit that provides more affordable access to accurate COVID-19 testing. She greatly attributes her success in managing the challenges she faced as a COVID-19 taskforce member to the unique training she had from the PSM scholarship, which combined professional skills such as leadership and management with scientific training.

"I am very grateful for the PSM 'plus courses' that I took in University of Delaware as part of the PSM Bioinformatics program. It provided me with the formal training on the necessary soft skills that not every researcher here in the country was fortunate enough to receive," Ms. Salinas said.

Medical-grade alcohols

Disinfectant products were also very much in demand by public health institutions throughout the country.

Building on the results of its earlier USAID-funded research, MMSU pivoted its research facilities, which typically produce alcohol fuel from the sap of local palm trees, toward medical-grade alcohol to be used as disinfectants. It had also previously developed village-scale alcohol-producing facilities, which were now harnessed to support disinfectant production efforts.

"At the height of the pandemic, a USAID-supported technology became front and center in our efforts to address the high demand for medical-grade alcohol, not only for our frontliners in Ilocos and nearby provinces, but even in further parts of the Philippines," said Dr. Agrupis.

"Together with our partner communities, we were able to provide about 15,000 liters of disinfectants to more than 50 hospitals including [Philippine General Hospital], [local government units], government agencies, and 12,000 individual beneficiaries. At present, we continue to supply to MMSU's immediate community," she added.

In 2021, a new STRIDE research grant activity, titled Widening Applications of Research within the Pandemic (WARP), awarded a grant to MMSU. The

grant enabled the deployment of MMSU's novel fermentation and distillation technologies to two new village communities. Each of the facilities is now capable of producing 150 liter batches of alcohol from local plants, which are to be further formulated at MMSU for a high-grade disinfectant product.

To make the initiative more sustainable, residents from nearby rural communities were trained in gathering feedstock and supporting the operations of the facilities. With part of the grant, MMSU has also pursued the creation of a disinfectant product that it can commercialize, capitalizing on it being sourced and produced from local communities.

MMSU is among the growing number of Philippine HEIs that have contributed to addressing the challenges brought about by the COVID-19 pandemic. Other universities provided immediate aid to frontliners and affected communities, produced personal protective equipment through fabrication laboratories, and distributed technology-based food and related products. The Philippine Association of State Universities and Colleges, with STRIDE assistance, has just released a compendium of such efforts from its member institutions.

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SUCCESS STORY

Innovation + Collaboration: Entrepreneurs' newfound success formula

DOST Secretary Fortunato de la Peña visits one of the beneficiaries of RIIC activities and DOST research funding. / Photo: RTI

"Promoting collaboration between industry and academia has always been a part of the STRIDE DNA. Beyond doing this through research grants, we have made it a mission to create platforms for R&D-related discourse between companies and universities. We are pleased to say that through various activities, we were able to forge over 400 new partnerships between HEIs, private sector, and the government," said STRIDE Chief of Party Richard Abendan.

More local entrepreneurs in Mindanao are raving about their newfound formula for success—to innovate and collaborate.

Tapping business-friendly technology packages; innovating business practices; and working with stakeholders from the industry, academia, and government have been keys to helping micro and small enterprises succeed and rebound during the coronavirus disease 2019 (COVID-19) pandemic.

Technologies increasing business competitiveness

Green Pastures Corporation, a Filipino-owned small business in Cagayan de Oro City that manufactures vitamins and health supplements, benefitted from this kind of approach. Its innovation and collaboration journey began when it joined one of the ideation workshops organized with the support of the USAID-Science, Technology, Research and Innovation for Development (STRIDE) Program.

Through the workshops, which were run under the Philippine Government's Regional Inclusive Innovation Centers (RIICs) initiative, locally dubbed as OROBEST, Green Pastures was able to articulate its innovation needs and was matched with Mindanao State University (MSU)–Naawan. The university has a faculty expert that could help source raw materials locally. Prior to this, raw materials were being imported with increasing cost and limited supplies.

The partnership came up with a collaborative research proposal for propagating spirulina, an algae used as an ingredient in the company's products. The project was subsequently awarded a grant by the Department of Science and Technology (DOST) amounting to almost

Php 3 million (~$60,000), and has quickly generated results that have directly benefited Green Pastures.

Rey Paraguya, Green Pastures owner remarked, "Without collaboration, we will be on our own, without even knowing that all these abundant resources of expertise, funding, and support are available. Thanks to the OROBEST innovation program, I was able to achieve my dreams for Green Pastures."

Bestfriend Goodies, a company that sells packaged sweets, also saw how innovation and academic partnerships could positively change their business course. After OROBEST's innovation workshop, the enterprise worked with the University of Science and Technology of Southern Philippines (USTP) in customizing a twin extruder machine that doubled the business's production capacity. This partnership also received research funding from DOST.

Business recovery

In Davao, a food processing company called A's and R's, was hit both by the COVID-19 pandemic and an outbreak of African swine fever, limiting pork supplies.

"We thought we'd be extinct," A's and R's co-owner Randy Cañedo lamented. "When the (supply of) meat problem occurred together with the pandemic, we really had to buy the meat at a high price. We just wanted to exist during those times," he said.

It was all looking bleak, until A's and R's participated in the Innovation for Business Recovery Program (IBR) of its RIIC in Davao City, locally branded as the iSTRIKE center.

IBR was conceptualized in 2020 by STRIDE to help local enterprises move forward from the devastating effects of the COVID-19 pandemic. Business recovery plans are provided to local enterprises that are mentored by experts from academia in utilizing research and innovative solutions that can help business viability. Enterprises are empowered to make informed decisions, while government partners provide support programs that can be easily adopted by local businesses.

Through the IBR, A's and R's was linked with faculty of the University of the Philippines–Mindanao for business analysis and recovery planning. Together, they were able to develop innovative systems for production, marketing, and human resources, which increased the business's efficiency.

"It really helped us improve our business. Slowly, we were able to recover. It became so easy for us to use the system. We are using it now to monitor our production, marketing and deliveries," said co-owner Rolyn Cañedo.

A's and R's later received a Php 936,000 (~$18,000) grant from the DOST Small Enterprise Technology Upgrading Program (SETUP). The fund enabled the

enterprise to acquire technologies that significantly scaled up its production rates.

OROBEST and iSTRIKE are among the nine RIICs that are leveraging the strengths of local stakeholders, mapping out and linking technologies and services to the benefit of local enterprises. The RIIC initiative is implemented by DOST and Department of Trade and Industry with technical assistance from USAID through STRIDE.

With USAID support, more local enterprises are able to reap the benefits of innovation and access more support from universities and government. To date, there are over 100 micro and small enterprises that have been supported through IBRs across RIIC sites in Bicol, Cebu, Davao, Cagayan de Oro, and Central Luzon.

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SUCCESS STORY

Collaborating with government to boost the R&D landscape: A USAID-DOST partnership story

(Seated, left to right) PCIEERD Deputy Executive Director Raul Sabularse, PCIEERD Executive Director Enrico Paringit, and STRIDE Chief of Party Richard Abendan. Standing as witnesses are (left to right) are KTTO-IMPACT Program Manager Edward Paul Apigo, RTI International Director of Technical Services Cheryl Doty, and PCIEERD RITTD Chief Russell Pili. | Photo: DOST-PCIEERD-RITTD

The Department of Science and Technology (DOST) has been at the forefront of research and development advocacy in the Philippines, espousing the societal impact of innovations and the value of increased investments in research and development (R&D).

DOST has been driving research activities in the Philippines through infrastructure, grants, scholarships, and capacity building. It has also been actively communicating the benefits of R&D to stakeholders, including the general public.

In light of these roles, DOST recognizes the need for it to continuously enhance its systems as well as the skills of its implementing officers. With technical assistance from USAID through the Science, Technology, Research and Innovation for Development (STRIDE) Program, DOST has embarked on various process and skills assessments, while also participating in training initiatives that support the delivery and communication work of R&D programs.

Together, DOST and STRIDE designed learning and mentoring program, and rolled them out among target officers and staff. For four years, the collaboration has targeted the areas of grants delivery management, R&D communications, knowledge and technology transfer, and strategic foresight planning.

Efficiencies in the delivery of grants

Through USAID technical assistance, DOST's Grants-in-Aid (GIA) systems and processes were analyzed by external organizational development experts. The multi-year grants management study resulted in the development of a process manual containing proposed R&D process improvement indicators, a case study on Collaborative Research

Academic and RDI representatives participate in one of the exercises at the DOST and STRIDE-organized KTTO-IMPACT Training. Photo: RTI

STRIDE Senior Communication Consultant Nini Montemayor Santos facilitates a strategic communications workshop among DOST R&D agencies. / Photo: RTI

and Development to Leverage Philippine Economy (CRADLE), and a GIA competency framework and communications plan.

Later phases of the study looked into pilot-testing improvements in areas such as business processes, stakeholder engagement, and change management. The DOST Policy Inter-council Committee, which has consistently shown willingness toward positive changes, supported the recommendations and began the steps toward implementing prescribed changes.

Increasing pathways to commercialization of research

The Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) of DOST and STRIDE also inked a memorandum of agreement to boost the capacity of universities and DOST research and development institutes (RDIs) for technology transfer and commercialization.

The partnership gave birth to a training program that merges STRIDE's Knowledge Technology Transfer Office (KTTO) training activity with PCIEERD's Intellectual Property Management Program for Academic Institutions Commercializing Technologies (IMPACT) capacity-building grant. KTTO-IMPACT helped build the capacity of two cohorts of trainees from 71 academic and research institutions in enabling their in-house technology transfer and commercialization capabilities.

PCIEERD allocated Php 40 million (~$800,000) worth of grants to help the university and RDI graduates of KTTO-IMPACT strengthen their technology commercialization policies and systems and generate at least two license agreements on technologies resulting from PCIEERD R&D grants.

Communicating R&D benefits

For four years, DOST and USAID worked on increasing awareness of and appreciation for R&D activities. By communicating innovation outputs more effectively, DOST aims to get the support of more stakeholders for R&D investments and translate innovation wins into maximum economic and social benefits for all Filipinos.

The collaboration has invested in capacitating the communications staff of DOST R&D councils and RDIs. Training and mentoring sessions were delivered on topics such as strategic communications planning, media relations, newswriting, science storytelling, video editing and production, and social media communications.

Parallel to these efforts was the development of unified key messages on R&D and the syncing of DOST agencies' R&D communications initiatives. A personnel support structure was also organized for

R&D specific messaging. In 2021, this support structure was formalized through the creation of the R&D Communications Team approved by DOST Secretary Fortunato De La Peña.

Asked about the greatest impact of the DOST-STRIDE partnership to R&D communications, a team member said, *"One was the capacity training was very good that STRIDE gave, because it really helped our officers be at par with what's already out in the industry. Second is, they helped us realize what we should really be doing, what makes [an] impact to the people, to the audience, and be able to communicate it effectively."*

Today, member agencies of the R&D Communications Team have been creating novel and striking communication materials, with more joint communication initiatives across different offices of the agency. They are also proposing additional internal funding for major communications projects.

DOST Undersecretary for R&D Rowena Guevara cited the role of the DOST and USAID partnership in efforts to deliver R&D benefits to people and communities:

"Thanks USAID for supporting [DOST] in its effort to make change happen through research and development, and make science and technology truly work for the people," the Undersecretary said.

<<End>>

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DATA ON PERFORMANCE INDICATORS

In its original five years of implementation, STRIDE used four IRs in cascading activities through three missions. With the four-year extension of STRIDE from FY2018 Quarter (Q)3 to FY2022, the IRs were refocused in alignment with new tasks and increased assistance to Philippine Government initiatives.

The revised set of performance indicators in this terminal report is based on STRIDE's current Monitoring, Evaluation, and Learning (MEL) Plan approved in December 2021. For STRIDE's achievements based on original indicators in its initial five years of implementation, kindly refer to STRIDE's Annual Report for FY2018.[5]

Targets were identified for performance indicators under STRIDE's MEL Plan covering FYs 2018 to 2022. These indicators and the relationships with the sub-IRs and IRs of the project are illustrated through a results framework shown in **Figure 3.**

Figure 3. STRIDE Results Framework

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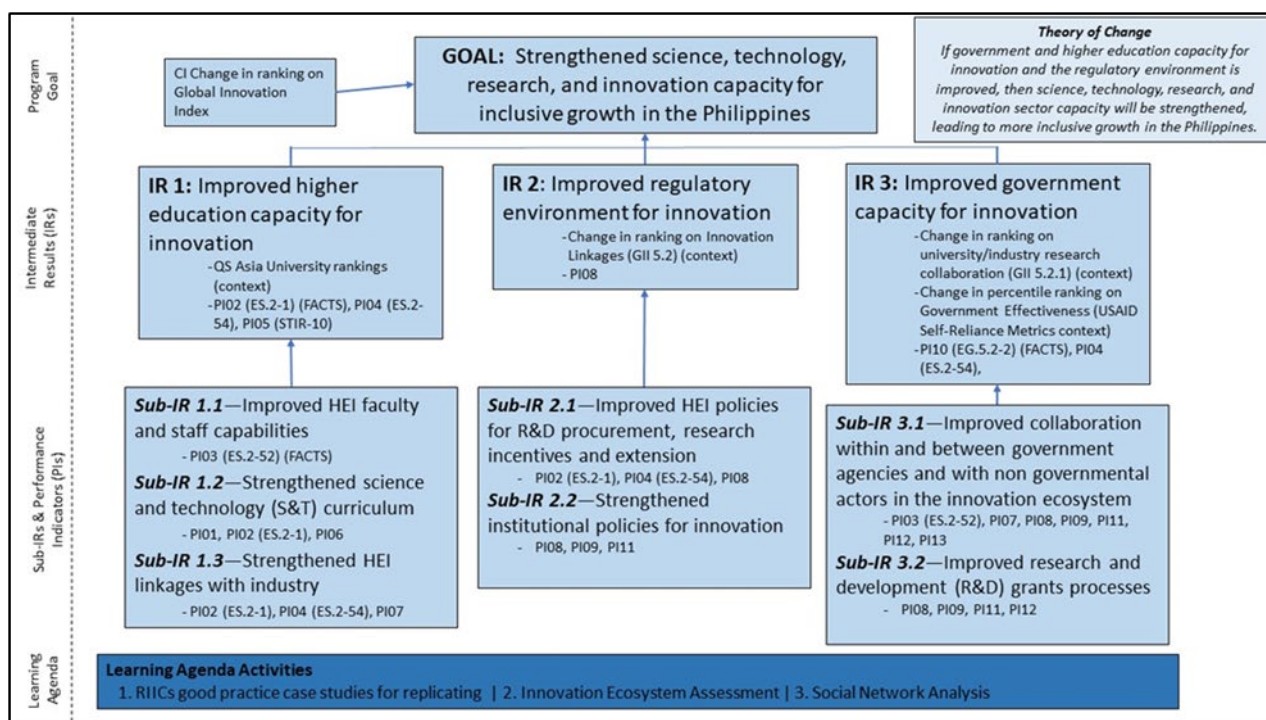
[5] https://pdf.usaid.gov/pdf_docs/PA00WJBT.pdf

Indicators

PI01 (*formerly PI16*)
Number of USG-supported higher education programs with curricula revised with private and/or public sector employers' input or on the basis of market research

PI02 (ES.2-1) (*formerly PI21*)
Number of host-country higher education institutions receiving capacity development support with USG assistance (FACTS)

PI03 (ES.2-52) (NEW)
Number of individuals affiliated with higher education institutions receiving capacity development support with USG assistance

PI04 (ES.2-54) (NEW)
Number of USG-supported partnerships that address regional, national, and/or local development objectives through or with higher education institutions

PI05 (STIR-10) (NEW)
Number of innovations supported through USG assistance

PI06 (*formerly PI25*)
Number of individuals attending higher education institutions with curricula revised with private and/or public sector employers' input or on the basis of market research

PI07 (*formerly PI26*)
Number of new partnerships between higher education institutions, government, and/or private sector firms developed as a result of USG-supported programs

PI08 (*formerly PI27*)
Number of initiatives of innovation policy, strategies, or plans approved or implemented attributable to USG support

PI09 (*formerly PI31*)
Number of public sector-funded programs or offices that have improved management practices or technologies as a result of USG assistance

PI10 (EG.5.2-2) (*formerly PI32*)
Number of private sector firms that have improved management practices or technologies as a result of USG assistance (FACTS)

PI11 (*formerly PI33*)
Amount of mobilized funds from Philippine Government on innovation-related activities as a result of USG-supported interventions

PI12 (*formerly PI34*)
Number of government staff whose qualifications are strengthened through USG-supported STI-related training programs

Completed & Enrolled
i.   KTTO
ii. FEC
iii. Strategic Foresight
iv. Communications
v.   Innovation Advisory Services
vi. Filipinnovation Branding
vii. DOST capacity building

PI13 (*formerly PI35*)
Number of established Regional Inclusive Innovation Centers (RIICs)

STRIDE achieved its targets on a significant majority of indicators listed under the MEL Plan.

Of the nine performance indicators met, STRIDE exceeded targets for three indicators. The program achieved 129% of its committed LOP target for PI02 (ES.2-1), Number of host-country higher education institutions receiving capacity development support with USG assistance.

It exceeded targets (126%) for PI03 (ES.2-52), which refers to the number of individuals affiliated with HEIs receiving capacity development support with USG assistance. It also achieved 106% of PI04 (ES.2-54) or the number of USG-supported partnerships that address regional, national, and/or local development objectives through or with HEIs.

These Foreign Assistance Coordination Tracking System (FACTS) indicators feed into the identified outcomes of USAID's Higher Education Program Framework in developing the capacity of individuals and HEIs and promoting higher education as a central actor in locally led development.

The highlights of each performance indicator, achievements vis-à-vis LOP targets are presented in **Table 1**.

Table 1. STRIDE Overall Performance Against LOP Targets

Indicator Name	LOP Target	LOP achievements	Percentage
PI01. Number of USG-supported tertiary programs with curricula revised with private and/or public sector employers' input or on the basis of market research	8	6	75%
PI02 (ES.2-1). Number of host-country higher education institutions	141	182	129%

Table 1. STRIDE Overall Performance Against LOP Targets

Indicator Name	LOP Target	LOP achievements	Percentage
receiving capacity development support with USG assistance			
PI03 (ES.2-52). Number of individuals affiliated with higher education institutions receiving capacity development support with USG assistance	350	442	126%
PI04 (ES.2-54). Number of USG-supported partnerships that address regional, national, and/or local development objectives through or with higher education institutions	18	19	106%
PI05 (STIR-10). Number of innovations supported through USG assistance	5	5	100%
PI06. Number of individuals attending tertiary education institutions with curricula revised with private and/or public sector employers' input or on the basis of market	See discussion below		
Graduates	240	129	54%
New enrollees	320	340	106%
Ongoing	500	507	101%
PI07. Number of new partnerships between tertiary education institutions, government, and/or private sector firms developed as a result of USG-supported programs	221	429	194%
PI08. Number of initiatives of innovation policy, strategies, or plans approved or implemented attributable to USG support	35	40	114%
PI09. Number of public sector-funded programs or offices that have improved management practices or technologies as a result of USG assistance	20	18	90%
PI10 (EG.5.2-2). Number of private sector firms that have improved management practices or technologies as a result of USG assistance	30	26	87%
PI11. Amount of mobilized funds from Philippine Government on innovation-related activities as a result of USG-supported interventions	13M USD	7,971,056 USD	61%
PI12. Number of government staff whose qualifications are strengthened through USG-supported STI-related training program	190 enrolled and 185 completed	348 enrolled and 319 completed	183%, 172%
PI13. Number of established Regional Inclusive Innovation Centers (RIICs)	8	8	100%

Performance Indicators

PI01. Number of USG-supported higher education programs with curricula revised with private and/or public sector employers' input or on the basis of market research

Target: 8; Results: 6

STRIDE achieved only 75% of its LOP target. The shortfall in this indicator was primarily due to HEIs shifting priorities and resources in response to the COVID-19 pandemic. With the focus on delivering existing course offerings through distance or hybrid learning, academic partners had to curtail efforts to develop new programs such as STRIDE-supported PSMs. With the prolonged closure and disruptions at HEIs, STRIDE pivoted from its original intervention of facilitating academe-industry partnerships through the establishment of new PSM programs. Instead, existing PSMs were strengthened and supported as these adapt to the new operating environment coming out of the pandemic.

PI02 (ES.2-1). Number of host-country higher education institutions receiving capacity development support with USG assistance

Target: 141; Results: 182

STRIDE achieved 129% of its LOP target. This achievement provided support to 182 public and private HEIs (of which 56 HEIs are tagged as unique). This achievement was based on STRIDE's various capacity-building activities for academia through PSM, KTTO, Career Center, FEC, FABLAB, and WARP grants. These program activities contributed to the capacity of HEIs and aligned their intellectual capital and competencies with the current industry needs and priorities, especially in the areas of customer discovery, career services, research, and technology transfer.

PI03. Number of individuals affiliated with higher education institutions receiving capacity development support with USG assistance

Target: 350; Results: 442

For this indicator, which is associated with PI02 (ES.2-1), STRIDE achieved 126% of the LOP target. The 442 faculty and staff from various HEIs received support through the various activities listed in PI02. These interventions helped improved academic stakeholders' qualification and HEIs' capacity to sustainably deliver innovative services and mechanisms.

PI04 (ES.2-54). Number of USG-supported partnerships that address regional, national, and/or local development objectives through or with higher education institutions

Target: 18; Results: 19

STRIDE achieved 106% of the LOP target. The continued interest and commitment of HEIs to pursue development objectives through formal external partnerships facilitated by STRIDE is reflected by this indicator. These partnerships allow for mutual co-learning with other stakeholders and can be a pathway for sustained organizational performance improvement and systemic, locally led development.

PI05 (STIR-10). Number of innovations supported through USG assistance

Target: 5; Results: 5

This indicator achieved 100% of its LOP target. The innovations supported through the WARP grants given to five HEI grantees paved the way for previous USAID-funded research to better address challenges within the operating environment brought about by COVID-19.

PI06. Number of individuals attending higher education institutions with curricula revised with private and/or public sector employers' input or on the basis of market research

Target: 240 graduates, 320 new enrollees, and 500 ongoing students; Results: 129 graduates, 340 new enrollees, and 507 ongoing students

STRIDE achieved 54%, 106%, and 101% of its LOP targets, respectively. The aggregate numbers for four academic years were reported by partner HEIs with operational PSM programs. While STRIDE has no direct influence on the operation of the PSM programs, the disparity in the completion of PSM students reported by partner HEIs is affected by several factors such as the disruption of classes due to COVID-19 and lower than expected enrollment rates. Additionally, some PSM programs launched within the programming period were still dealing with regulatory processes prior to the operationalization of these programs.

PI07. Number of new partnerships between higher education institutions, government, and/or private sector firms developed as a result of USG-supported program

Target: 221; Results: 429

Central to STRIDE's thrust of building partnerships between key innovation actors, Program support resulted in the formation of 429 partnerships, achieving 194% of its LOP target. The continuous partnerships built through the industry-engagement mechanisms (PSM, KTTO, and Career Center) and RIIC initiatives enable a more cohesive innovation ecosystem built on trust. These partnerships allow stakeholders to work together in designing and implementing activities and to pursue common innovation objectives.

PI08. Number of initiatives of innovation policy, strategies, or plans approved or implemented attributable to USG support

Target: 35; Results: 40

Forty innovation-related policies, strategies, and plans were adopted and implemented at national, regional, and institutional levels with STRIDE's assistance. This reflects a 114% achievement against the LOP target. The institutionalization of the mechanisms and programs co-developed with the stakeholders will improve the enabling environment while sustaining the government's commitment and investment for innovation.

PI09. Number of public sector-funded programs or offices that have improved management practices or technologies as a result of USG assistance

Target: 20; Results: 18

Eighteen different public sector agencies and offices have reported improvements in their own management practices, with STRIDE's support translating into 90% achievement of its LOP target. Many of these agencies highlighted improvements in the areas of strategic planning, program implementation, and collaboration with external stakeholders.

PI10. Number of private sector firms that have improved management practices or technologies as a result of USG assistance

Target: 30; Results: 26

With the support of STRIDE through the RIICs initiative, 26 MSMEs from various regions highlighted improvements to their own operations. This reflects 87% of the total achievement of the LOP target. The slight shortfall in this indicator is attributed to the gradual adoption by some MSMEs of the changes and technologies being introduced from STRIDE activities. It is projected that further adoptions will come into fruition beyond the program's period of performance.

PI11. Amount of mobilized funds from Philippine Government on innovation-related activities as a result of USG-supported interventions

Target: $13 million; Results: $7,971,056

STRIDE's technical assistance translated into continued investments of Philippine Government and academe partners in innovation. Key partners' allocations on various programs to continue the creation and implementation of innovation-related services prove the commitment of partners to sustain these initiatives post-STRIDE. The disparity between the achievements against the LOP target, with STRIDE achieving only 61%, is primarily attributed to the projected delay or deferment of government funding allocations for the implementation of PIA and DTI-CIG funds for innovation for FY2022. These delays have been attributed to budget processes and recent funding limitations.

PI12. Number of government staff whose qualifications are strengthened through USG-supported STI-related training programs

Target: 190 enrolled and 185 completed; Results: 348 enrolled and 319 completed

With 348 staff enrolled and 319 of which completing various capacity-building activities, STRIDE achieved 183% and 172% of its LOP targets respectively. The various trainings centered on science and technology communications, strategic foresight, and IAS have upskilled government partners in crafting and implementing their own innovation programs and activities.

PI13. Number of established Regional Inclusive Innovation Centers

Target: 8; Results: 8

There are 8 established RIIC sites formalized through Regional Development Council (RDC) Resolutions, achieving 100% of the LOP target. The 8 RIIC sites are the following:

1. RIIC Region II (Cagayan Region)
2. RIIC Region III (Central Luzon Region)
3. RIIC Region IV-A (Calabarzon Region)
4. RIIC Region V (Bicol Region)
5. RIIC Region VII (Central Visayas Region)
6. RIIC Region IX (Zamboanga Region)
7. RIIC Region X (Northern Mindanao Region)
8. RIIC Region XI (Davao Region)

Context Monitoring

Complementing routine performance monitoring, STRIDE also selected a handful of context indicators to keep track of the wider innovation trends reflecting developments outside of the project's environment (**Table 2**).

Table 2. STRIDE Context Indicators Overview

Context Indicator	2014 Rank	2020 Rank	2021 Rank	2022 Rank	Data Source and Methodology
Philippines Ranking in GII	100th	50th	51st	TBD	GII Report 2; Philippines ranking
QS Asia University Rankings	na	133rd	139th	137th	QS Asia University Rankings (Philippine universities with ranking)
Change in ranking on Innovation Linkages (GII 5.2)	97th	64th	94th	TBD	GII Report; Philippines ranking
Change in ranking on university/industry research collaboration (GII 5.2.1)	67th	27th	61st	TBD	GII Report; Philippines ranking
Change in percentile ranking on government effectiveness (USAID self-reliance metrics)	61st	55th	55th	TBD	Worldwide Governance Indicators (World Bank); Philippines' percentile rank

While some context indicators monitored moved insignificantly, the program's primary context indicator yielded an upward trend for the Philippines' innovation productivity.

From placing 100th in the GII in 2014, the Philippines made significant progress in parallel with STRIDE's programming years, eventually breaking into the top 50 most innovative countries with its highest rank since the publication of the GI, placing 50th in 2020.

Although this development cannot be attributed to STRIDE, the progress reflects the investments and commitment made by the Philippine Government and key stakeholders to make innovation part of their development agenda.

The 2020 GII report also contains a feature of the Philippines investments on the path to inclusive innovation entitled "Filipinnovation: Financing Science for the People," authored by DOST Secretary Fortunato de la Peña. The chapter underscored the Philippine Government's valuable investments by enacting cohesive policies, strategies, and programs anchored on innovation as a key driver to sustainable and inclusive growth.

Despite the drop in rankings for GII sub-indicators Innovation Linkages (GII 5.2) and University/Industry Research Collaboration (GII.5.2.1), the Philippines' respective rankings moved gradually from the 2014 GII report.

Average rankings of the Philippine universities included in the QS Asia Rankings also showed a steady trend, with the average ranking of universities with definite rankings (UP, Ateneo de Manila University, DLSU, and University of Santo Tomas) averaging a combined rank of 137th among Asian university peers.

Notably, the QS Asia Rankings for 2021–2022 included new Philippine universities that are STRIDE HEI partners entering the QS Asia ranks, such as Adamson University, Ateneo de Davao University, Central Luzon State University, Cebu Technological University, MSU-IIT, Central Mindanao University, and Lyceum University of the Philippines.

DETAILS OF ACTIVITIES AND ACCOMPLISHMENTS

IR 1. Improved Higher Education Capacity for Innovation

IR 1. Key Accomplishment No. 1

Enhanced Collaboration between Industry and Academia

Three STRIDE industry engagement mechanisms significantly supported the thrust toward enhanced collaboration between academia and industry players. These mechanisms include the university Career Centers, KTTO, and the PSM program.

Career Center trainers from Stanford University and University of Florida with students of TIP in Manila. / Photo: TIP

1.1.1 A total of 27 Career Centers across the Philippines, offering services to around 222,000 students annually, were established and strengthened through STRIDE's Career Center training and technical assistance.

University Career Centers help prepare students and graduates for the world of work by offering various services such as career advising, industry seminars, job fairs, etc.

Four Cohorts of Career Center Training

STRIDE delivered Career Center training and mentoring for a total of four cohorts, including 72 Career Center directors, counselors, staff, and faculty members. The trainees were provided knowledge of and exposure to Career Center design, planning, and implementation.

Training for Local Career Center Mentors

STRIDE recognized five universities as having model Career Centers. Ateneo de Davao University (AdDU), TIP, University of Santo Tomas (UST), University of Science and Technology of Southeastern Philippines (USTP), and USTP-Cagayan de Oro were recognized for their achievements and milestones since joining the STRIDE Career Center Network.

Four of the universities were trained by STRIDE to serve as local Career Center mentors. They supported career center experts from Florida State University (FSU) in rolling out the training and mentoring for Cohorts 2 to 4. They helped contextualize Career Center learning in the local setting and supported other Career Center-related initiatives of STRIDE.

Other Support for Career Centers

Support to the STRIDE Career Center Network included follow-on mentoring sessions and training, to consultations on Career Center planning, linking universities with the private sector, or identifying resource persons for career conferences, among other things.

In 2020, STRIDE completed the distribution of the Career Center Starter Kits, which contain student testing materials and career planning guides that HEIs can use to start providing career services. A year after, STRIDE partnered with various universities and the private sector for a series of Career Center Live Chat sessions. Around 500 Career Center directors, staff, university students, and education stakeholders took part in the live chat sessions.

"With the Career Center's strong industry linkages, it had become easier for our students to land on-the-job trainings, internships, cadetships, scholarships, and even employment. I am proud of what we were able to accomplish with the technical support of USAID through the STRIDE program."

-TIP President Elizabeth Quirino-Lahoz

Annex C lists the STRIDE-supported university Career Centers in the Philippines.

1.1.2 Fifteen PSM programs were collaboratively developed and launched by Philippine HEIs and industry partners across the country.

"We are excited to work in this system where universities become market-driven providers of talent and knowledge, equipping more graduates and faculty to contribute to economic growth driven by rapidly growing technology."

–Fr. Cristopher Maspara, USJR President

PSM programs equip students with advanced science and engineering knowledge matched with professional industry competencies. They encourage collaboration between HEIs and the private sector in offering higher education courses that will enable Filipino students to meet industry work requirements.

Joint Academe-Industry Curriculum Development

STRIDE actively supported the development of several PSM course curricula with HEIs and industry partners. Twelve Philippine universities, together with their respective industry partners, are now implementing their own PSM programs. Since the first set of PSM graduation in 2018, there have been 129 students who have received their PSM degrees. As of the 2021 to 2022 school year, 173 students are currently enrolled in operational PSM courses.

Beginning STRIDE Year 6, STRIDE adopted the DACUM (Developing a Curriculum) framework in the PSM development process. DACUM emphasizes industry-led competency profiling as the starting point for formulating an academic curriculum. The approach had the industry partners leading the curriculum development process, which used to be more dependent on the university faculty. This helped ensure that curricula are more aligned with the realities of industry practice.

Other Support

Seeking to help Philippine HEIs create increased awareness about PSM courses and entice more student enrollees, STRIDE delivered a training on digital marketing communications for university personnel involved in PSM programs. The training included a series of one-on-one mentoring sessions

STRIDE also developed a guidebook titled "Competency Profiling for Designing a PSM Program" to guide other universities that may be interested in developing PSMs in the future. The Guidebook was adopted by TIP in its curriculum development process and was endorsed to CHED and Philippine Association of Colleges and Universities (PACU).
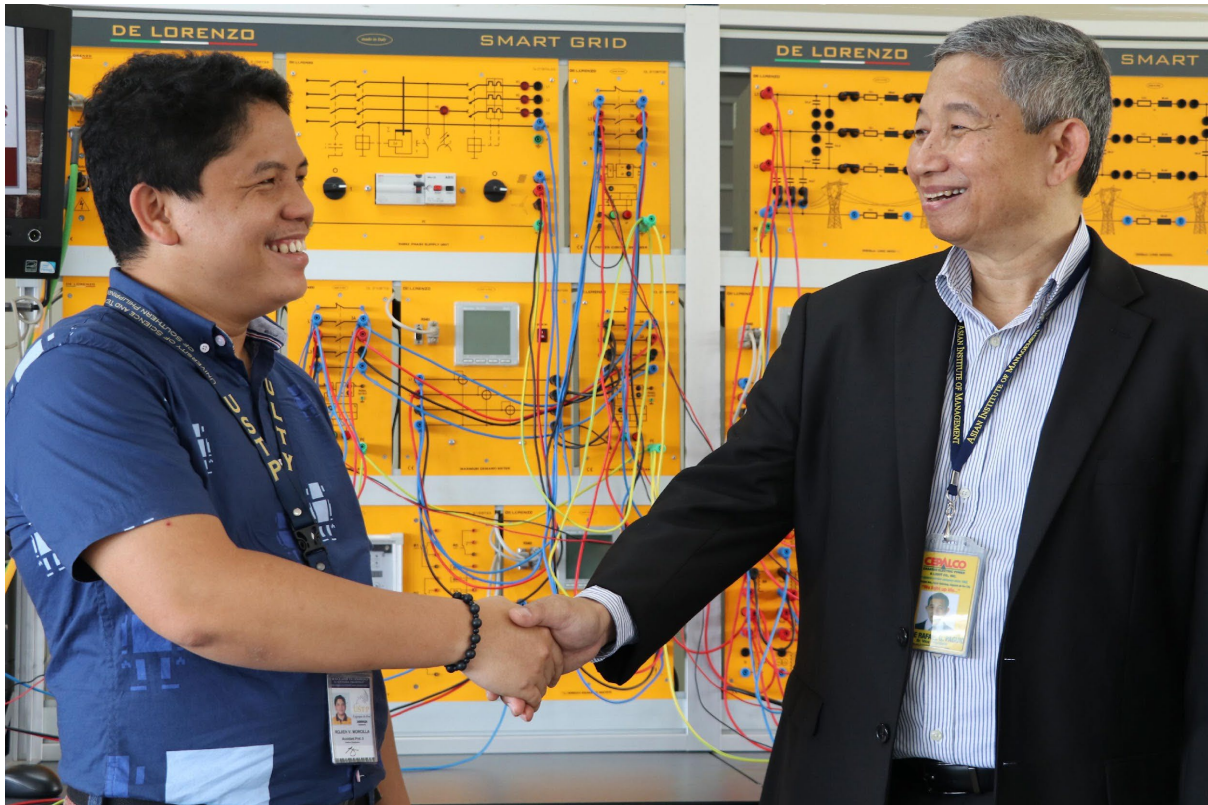
USTP and its local industry partner collaborated to develop and offer the PSM Program "Power Systems Engineering and Management."

Annex D outlines the PSM programs that were launched in the Philippines through STRIDE support.

1.1.3 56 HEIs and 15 RDIs and government institutions gained competencies in and became champions of knowledge and technology transfer; many of the participating universities have established their own KTTO systems and have either built new premises or adapted existing facilities as KTTOs.

KTTOs are envisioned as one-stop shops for discussions, negotiations, and engagements in relation to the talents, expertise, research, and technologies housed within a university. By having such an office, HEIs are expected to strengthen their industry engagement mechanisms, thereby triggering more innovations and technology transfer.

Pilot KTTO Training

From 2015–2016, STRIDE piloted the KTTO training for 10 universities from around the Philippines. The training featured a study visit to the United States that included a tour of university KTTOs and participation in the Association of University Technology Managers Conference. STRIDE also hosted a President's Forum with participating universities to engage university administration and gain buy-in for KTTO implementation and sustainability.

Partnership with DOST

In 2019, STRIDE inked a memorandum of agreement with the DOST-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD) to boost the capacity of universities for technology transfer and commercialization through training, funding, and program implementation support.

The partnership leveraged STRIDE's KTTO training program and PCIEERD's Intellectual Property Management Program for Academic Institutions Commercializing Technologies (IMPACT) Grant for the development and scaling-up of technology transfer and commercialization within universities and research institutions. The KTTO-IMPACT Training Program was established to help HEIs and RDIs build a stronger foundation in technology transfer, thus strengthening their ability to meet the criteria for the IMPACT Grant and achieve its deliverables.

Training Cohort

From 2019–2020, STRIDE and PCIEERD delivered the KTTO-IMPACT Training for two cohorts. Each training had four three-day modules and an industry mixer event where trainees were introduced to industry stakeholders in order to apply learnings in actual situations.

Twenty-four institutions had their proposals for IMPACT Grants approved. The funds they received will be used in setting up their own KTTO and commercialization processes. In total, over Php 70 million (~$1.4 million) was unlocked as funding from DOST-PCIEERD as a result of the KTTO-IMPACT initiative.

Local KTTO Mentors

Nine technology transfer officers were trained as local mentors to support U.S. instructors in delivering succeeding KTTO training. Three of them came from the pilot KTTO universities.

Other KTTO Support

STRIDE delivered a two-day training on ICANVAS, a tool that helps technology managers assess the commercial readiness of a particular technology. Held in 2021, the training benefited 65 participants, the majority of whom where DOST IMPACT Grantees and KTTO-IMPACT trainees. Moreover, DOST's Advanced Science and Technology Institute (ASTI) and Philippine Textile Research Institute (PTRI) received direct technical assistance on technology transfer policy, valuation, and negotiation.

Annex E shows the list of HEIs and RDIs that benefited from the KTTO program of STRIDE.

1.1.4 The Alliance of TechTransfer Professionals of the Philippines (AToP), an initiative of the graduates of the STRIDE KTTO program, was formally created and is now in operation.

AToP is an independent organization that seeks to professionalize the discipline of technology transfer. It advocates for policies and programs that will help promote technology transfer, R&D commercialization, and intellectual property (IP) management.

Formally established with the Securities and Exchange Commission in 2021, AToP ran its first major project, providing knowledge and technology transfer training to the Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). The modules for the training were adapted from the KTTO-IMPACT Training Program.

Since October 2019, STRIDE has supported AToP in its conceptualization and early years of establishment, given the alignment of its objectives with the thrust toward strengthened research and innovation in the Philippines.

1.1.5 At least five other activities were designed and rolled out by STRIDE to improve linkages between industry and academia. These include faculty externships, Guest Industry Lectures, Visiting U.S. Professors Program, innovation workshops, and a review of course curricula.

From 2014 to 2018, STRIDE facilitated the externships of 110 faculty members from Philippine HEIs nationwide. Under this program, faculty members in the fields of science and technology were hosted by companies to help them better understand industry realities and on-the-ground needs. Aiming to foster more active linkages between industry and academia, STRIDE facilitated 42 innovation workshops that sought to identify collaborative efforts, including research, that could help identified sectors solve their most pressing technical challenges. STRIDE also arranged the holding of 105 Guest Industry Lectures and the short-term visits of 42 U.S. professors to Philippine universities to conduct teaching and research.

STRIDE also partnered with the Philippine Business for Education (PBEd) for the conduct of curriculum review workshops and competency profiling. The findings showed that there remains a mismatch between industry needs and university aspirations in terms of curriculum design in select engineering fields.

IR 1. Key Accomplishment No. 2

STRENGTHENED COMMITMENT FROM STATE UNIVERSITIES TO BECOME MORE INNOVATIVE AND COMPETITIVE

STRIDE has provided technical assistance to PASUC in developing programs that create pathways toward innovation and competitiveness. One of STRIDE's key areas of support was on the development of PASUC's "Platform for Innovating SUCs for Industry 4.0" or PISI (which means "thread" in Filipino).

From left to right: DTI Undersecretary Rafaelita Aldaba, STRIDE Chief of Party Richard Abendan, PASUC President Tirso Ronquillo, Singapore Polytechnic International General Manager Goh Siak Koon, then-USAID Acting Mission Director Denny Robertson, and Philippine Development Foundation Chairman Dado Banatao. Photo was taken at the launch of the PASUC PISI Program.

1.2.1 Over 100 SUCs in the Philippines attended the launch of the PASUC PISI Program, responding to the call of the government to join pathways toward an innovation-led, talent-driven economic growth.

PISI is a seamless and intertwining set of programs intended to re-engineer the SUCs' intellectual capital to be Industry 4.0-ready. It seeks to enable an environment where university leaders, faculty, and students are able to productively engage local and global partners in the dynamic process of discovery, knowledge creation, user-informed product development, and innovation.

STRIDE provided technical assistance toward the creation of the PISI document through conceptualization meetings with PASUC leadership and direct technical inputs into the writing and publication of PISI. It also supported the launch of PISI in February 2019, and worked toward gathering more stakeholders' buy-in.

Then USAID Acting Mission Director Robertson acknowledged the critical impact of PISI in the country's innovation ecosystem and said that it signals the "commitment as leaders of [SUCs] in the Philippines to become more competitive and maintain relevance in this highly competitive era of the fourth industrial revolution."

Aside from the SUCs, stakeholders from academia, government and industry graced the event. Then USAID Acting Mission Director Denny Robertson graced the event and committed to support the SUCs in their journey of creating a vibrant innovation ecosystem in the Philippines.

PISI is envisioned to build the capacity of SUCs on four strands, namely (1) Innovation diagnostics, (2) Intellectual capital development, (3) Inclusive innovation partnership and collaboration, and (4) an Inclusive innovation ecosystem.

The program, through then STRIDE Senior Consultant Dr. Napoleon Juanillo, Jr., spearheaded work with PASUC in identifying the innovation needs and possible interventions at SUCs.

1.2.2 PASUC, in partnership with STRIDE, put a spotlight on SUC-led research and extension projects on addressing challenges brought about by the COVID-19 pandemic.

During its first Digital Summit, PASUC presented the publication titled "Innovating as We Heal as One: A Compendium."

With support from STRIDE, PASUC collected information on 264 projects as reported by 74 of the country's 112 SUCs.

A majority of the projects were in the form of providing immediate aid to frontliners and affected communities, such as the production of PPE using university Fab Labs, and the distribution of food and related products, many of which are based on technologies developed by faculty.

The compendium also highlighted new technologies that address more complex issues brought about by the pandemic, including among others the following:

- A village-scale ethanol production facility that produces medical-grade alcohol sourced from endemic raw material. The facility was fabricated and deployed by the Mariano Marcos State University (MMSU).

- Bulacan State University's (BulSU) "Roving Doctor" robot called RoDiVic which helped reduce the exposure of medical professionals to COVID-19 patients.

- UP-led laboratory study to assess the efficacy of convalescent plasma transfusion from recovered patients as a means to prevent disease progression among afflicted patients.

The PASUC Digital Summit was held on August 26, 2020, with the theme, "Making Research and Extension Work for COVID-19 Response: Innovation Initiatives by Philippine State Universities and Colleges." More than 300 guests from 112 SUCs attended the event.

IR 1. Key Accomplishment No. 3

SUSTAINED INITIATIVES IN INCREASING THE COMPETENCIES OF FILIPINO RESEARCHERS AND HEI FACULTY MEMBERS

STRIDE enabled the establishment of two START Centers, both of which are still operating beyond STRIDE and are being managed by two of the leading universities in the Philippines, namely UP-Diliman and DLSU.

> *"Through the visionary leadership of [PASUC President] Dr. Tirso Ronquillo, we worked together on PASUC's own innovation roadmap as well as the Innovation Diagnostics that would help you become more attuned to what your institutions need and to become more competitive,"*
> *-USAID/Philippines Education Director Thomas LeBlanc*
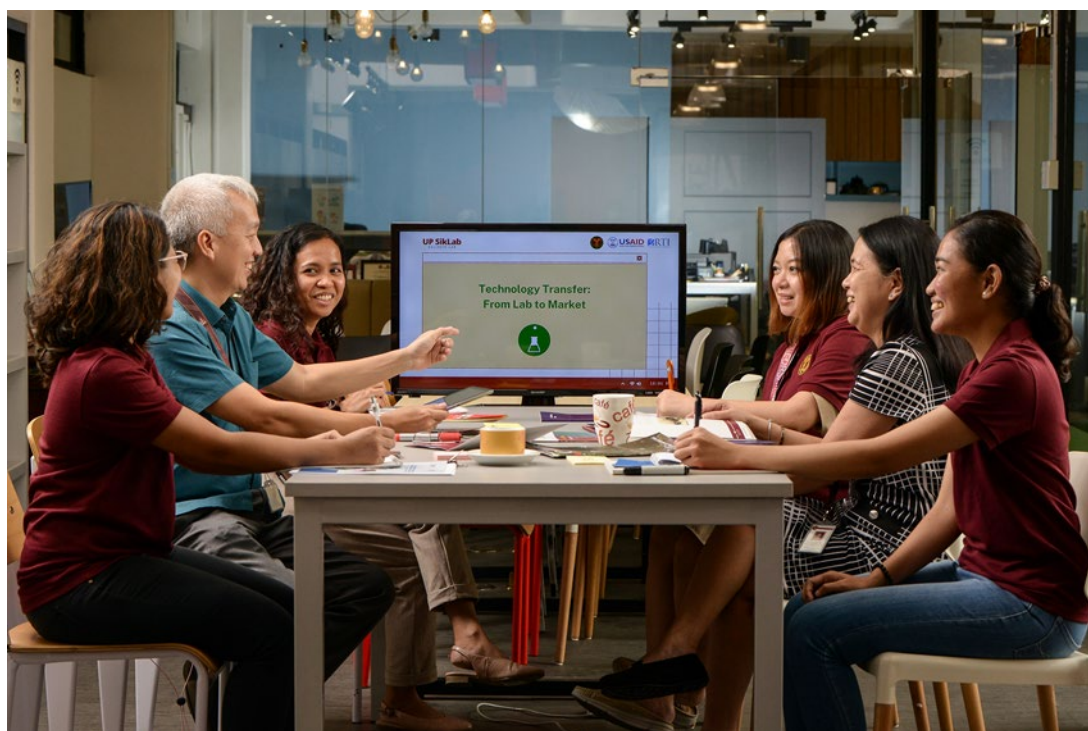
The UP SikLab team crafting their faculty training module on technology transfer.

1.3.1 Two of the country's leading universities, DLSU and UP–Diliman, are sustaining initiatives to increase the competencies of Filipino researchers and faculty members with the establishment and operation of their respective START Centers.

Two sub-awards were approved by STRIDE for the establishment and operation of the START Centers.

Under the sub-award, each university host received over $50,000 worth of funds and technical assistance to manage their respective START Center's operations including staffing, course design and development, program offerings, marketing and promotion, and training delivery.

On June 25, 2021, DLSU launched the START Hub, which was envisioned to be the leading innovation hub in harnessing research initiatives of academe and industry. START Hub continues the delivery of START courses that were offered by STRIDE while creating new professional development programs for Filipino faculty and researchers from various academic institutions.

UP SikLab, on the other hand, was unveiled on August 6, 2021. UP President Danilo Concepcion shared that the goal of UP SikLab is to "spark research ideas by providing tools and helping develop the skills researchers need beyond the actual conduct of research."

1.3.2 Over 1,100 Filipino faculty members and researchers have graduated from various research-related courses offered by STRIDE and two START Centers in DLSU and UP.

During the life of STRIDE, DLSU START Hub and UP SikLab courses, combined, have benefitted over 130 faculty members and researchers. The DLSU START Hub delivered three courses namely (1) Publishing High Impact Journals, (2) Strategic Management of IP, and (3) Advanced Strategic Management of IP.

UP SikLab offered the courses "Research from Concept to Impact" and "Tech Transfer: From Lab to Market."

START Center Pilot Courses

Prior to granting the sub-award for START Center, STRIDE designed and piloted the course "Writing Scientific Paper for Publication." The course combined face-to-face training and virtual mentoring from highly published local faculty, and helped trainees publish their own scientific papers. STRIDE also developed and turned over to DLSU START Hub and UP SikLab a training module on "Managing Research Projects."

Advanced Technical Training of Research Professionals (ATTORP)

The START Center evolved from the series of research-related training, which STRIDE delivered under the ATTORP project. Training on topics such as writing research proposals, research management and ethics, and writing effective papers for peer-reviewed journals, among others, were organized.

STRIDE delivered a total of 20 short courses, which benefitted 887 individuals. ATTORP was renamed a START Center, and a decision was made for STRIDE to turn over the management of the learning platform to a qualified HEI to ensure program quality and sustainability.

IR 1. Key Accomplishment No. 4

IMPROVED RESEARCH AND INNOVATION CAPACITY OF HEIs THROUGH GRANTS AND TRAINING

STRIDE designed and implemented various capacity-building initiatives such as scholarships and training programs, to align universities' knowledge and competencies with industry priorities. Interventions included the rollout of the FEC, support for Fab Labs, and other training programs.

USAID scholar Jake Licayan (right) while conducting research at Rutgers University. / Photo: Mr. Licayan

1.4.1 Through STRIDE scholarships, 57 Filipinos went to the United States to learn, create stronger ties, and exchange knowledge and experiences between Philippine- and U.S.-based universities. Of this number, 26 were PSM scholars while 31 were granted PhD or research scholarships.

All scholars returned to the Philippines. They performed to the highest standard with several exceeding expectations. Many scholars have returned to roles that support the broader objectives of STRIDE.

In 2017, STRIDE held a reception for returned PSM and Advanced Research scholars. Hosted by then Mission Director Dr. Susan Brems, the event saw the scholars sharing their experiences, learning, and future plans.

The STRIDE scholarship alumni were featured in an exhibit during the Synergy Conference 2017. The exhibit highlighted the scholars' achievements in their pursuit of a PSM degree or the conduct of their advanced research.

Annex F shows the list of the STRIDE scholars, their field of study, and the U.S. HEIs that hosted them.

1.4.2 Over 170 researchers and innovators from Philippine HEIs completed the FEC training, gaining insights with regard to the customer journey and the commercial maturity of their respective research initiatives.

The FEC aimed to make research more customer-driven in order to have an output with a better chance for commercialization. FEC learning sessions are centered on customer discovery and discussed topics such as minimum viable product, business model canvas, market sizing, etc.

Three Training Cohorts

In partnership with DOST-PCIEERD and DLSU, STRIDE rolled out three cohorts of the FEC training program starting in 2018. The first cohort was completed with DLSU as main proponent and DOST as the majority co-funder with STRIDE. The positive feedback from the first batch encouraged the proponents to continue the program.

FEC Cohorts 2 and 3 were completed in April 2019 and January 2022, respectively. The second cohort was delivered by experts from George Washington University and RTI International for 10 research teams.

The third FEC adopted a 100% remote approach due to the COVID-19 pandemic. Local mentors delivered this cohort with reduced involvement from U.S.-based resource persons. This module was housed under the STRIDE-supported START Center. Ensuring local trainers and a platform to house the program helps ensure that the FEC program could be maintained long after STRIDE has ended.

FEC Local Mentors

STRIDE, PCIEERD, and DLSU conducted an FEC Train-The-Trainers (TTT) program, a certification module in teaching business model generation and customer discovery to researchers and entrepreneurs. The TTT sought to build a pool of mentors to sustain the delivery of future FEC training courses. It ran from October 2021 to January 2022 and produced 14 certified local FEC trainers.

The local trainers' FEC journey included a four-day workshop, an entrepreneurship bootcamp, and a walk-through on the FEC program objectives, delivery method, and concepts. They were asked to design and deliver a FEC-light curriculum to DLSU undergraduate students before the actual facilitation of FEC 3.

1.4.3 Four case writing workshops with a total of 136 faculty participants from across the Philippines were delivered by STRIDE, resulting in the publication of 94 teaching cases through William Davidson Institute Publishing.

The case writing workshops included instruction on understanding, writing, and teaching a case study. It explored the methods of teaching a university course using the case studies from the STRIDE Case Collection. It helped enhance faculty members' publication writing skills and introduced them to the William Davidson Institute–University of Michigan approach to case-based teaching.

Training Cohorts

"Our department is in need of ways to improve the quality of learning and the learning environment of our students; and attending the case writing and case teaching workshop provided us more ways to improve or develop student learning," said Prof. Relanie Jean Eleana, Philippine Investment Management, University of Iloilo

For the first five years of its implementation, STRIDE delivered three-day case writing workshops for four cohorts of faculty members. The training included remote mentorship and editorial support. The case studies that were published as a result of the training can be found at http://wdi-publishing.com/stride/.

Teaching Workshop for Mindanao HEIs

In 2017, STRIDE conducted a teaching workshop for 25 faculty members from nine universities in Mindanao. This workshop was in support of the efforts of four Mindanao-based faculty to echo what they learned in the region.

These faculty members were Prof. Noel Tarrazona of Western Mindanao State University, Prof. Thaddeus Acuña of UP-Mindanao, and Prof. Lemuel Clark Velasco and Dr. Pamela Resurreccion of MSU-IIT.

Case Writing: U.S. Study Visit

In February 2017, STRIDE faculty members Dr. Rowena Gelvezon from UP–Visayas and Dr. Dinah Depositario from UP–Los Baños joined a Case Writing Study Visit in the United States. Facilitated by William Davidson Institute–University of Michigan, the two-week study visit provided Dr. Gevelzon and Dr. Depositario an in-depth review of case teaching and writing.

Support to the Philippine Science Letters

STRIDE also supported the setting-up and operations of the Philippine Science Letters, formerly *The International Journal of Philippine Science and Technology* and recently renamed "*Science and Engineering Journal*" or SciEnggJ.

A peer-reviewed, online, open access journal that showcases science done in the Philippines and by Filipinos elsewhere, SciEnggJ publishes regular research articles, commentaries, and letters to the editors on studies in the natural, physical, mathematical, computational and social sciences.

STRIDE's assistance included assembling the journal's international editorial board, increasing the number of quality submissions, and taking the preliminary steps in seeking international recognition and listing status for the journal.

1.4.4 FAB LABs Philippines, a network and community of practice of 23 Fab Lab host institutions, was formally launched, creating an opportunity to address challenges such as lack of single representation, need for capacity development, and lack of formal collaboration systems.

Typically hosted by Philippine HEIs, fabrication laboratories (FabLabs) provide rapid prototyping and small-scale production facilities to collaborating MSMEs. They can play a major role in enabling MSMEs and start-ups to pursue innovative products development, while also providing a venue for business mentoring.

In December 2020, with STRIDE support, a network of FabLabs was organized and launched through Makers Without Borders, a virtual conversation and training platform led by the U.S. Embassy's American Spaces Philippines. Other event partners were DTI and FAB LAB Mindanao.

The network called FAB LABs Philippines enables regular exchange of views and collaboration among facilities nationwide. In its first year it has enabled stronger dialogue and resource sharing among its members; and consolidated their engagement with external stakeholders. The group has also provided training opportunities to its members.

STRIDE also supported the regular convening of a technical working group (TWG) that took charge of the steering discussions and led decision-making pertinent to the endeavor. The TWG members were Batangas State University (Bat State), Bicol State College of Applied Science and Technology, Bohol Island State University, and Philippine Science High School–Ilocos Regional Campus.

"Through American Spaces Philippines and the USAID STRIDE Program, links between FAB LABs in the Philippines and the United States are strong and expanding every day. As we face the unprecedented challenges brought by COVID-19, there is no doubt that international collaboration in science, technology, and innovation is needed now more than ever," then US Embassy Charge d'Affaires John Law said at the launch of Makers Without Borders.

Technical Assistance to FAB LABs Philippines

Upon the launch of the network, STRIDE provided support in the election of the network's officers, formation of its management committee, and the conduct of strategic planning sessions which outlined the network's strategies and roadmap.

STRIDE's assistance to FAB LABs included technical assessment of their capabilities and industry engagement. Based on the assessment, FAB LABs were constrained in how they coordinate among themselves and their prospective partners. To this end, STRIDE has helped the network create their own web portal called Fab Labs PH. The website has been turned over to FAB LAB Philippines for continued hosting (www.fablabs.ph).

USAID/Philippines Mission Director Ryan Washburn visiting a Fab Lab at MSU-IIT in Northern Mindanao.

1.4.5 The FAB LABS Philippines' MMA was launched and thereafter delivered two major courses dubbed as FORM 2020 and the Fundamentals 2021 Program. A total of 50 Fab Lab personnel have benefitted from the courses.

Launched in November 2020, the Fab Lab MMA is a capacity development program designed to improve the design and prototyping competencies of Fab Lab staff. The end goal is to develop Fab Lab facilities and personnel who are capable innovation partners of local industries.

MMA Courses

FORM 2020, a Fab Lab Operations Resilience Masterclass, is a STRIDE-supported capacity development program that aims to enhance the technical industry engagement capabilities of FAB LABs Philippines. In 2021, the seven-module MMA Fundamentals course focused on enhancing the trainees' project management competencies that are vital in Fab Lab operations. In March 2022, FAB LABs Philippines rolled out a four-session TTT program to enable MMA graduates to help facilitate the academy's future learning activities.

IR 1. Key Accomplishment No. 5

GREATER OPPORTUNITIES FOR INCREASED RESEARCH ACTIVITIES AT PHILIPPINE HEIs

A member of a research team from Western Philippine University with children from the community exploring a sustainable abalone farm in the Province of Palawan. The research, which was funded by USAID through STRIDE, sought to help communities generate more income while preserving marine resources.

STRIDE offered six types of research grants namely: Philippine-U.S. Research and Exchange Grants (PURE), Collaborative Applied Research with Industry (CARWIN), STRIDE Prototype Research and Innovation Grants (SPRIG), STRIDE Innovation for Development (SID), Academic Grants for Industry-Led Applications (AGILA). In 2020, at the onset of the COVID-19 pandemic, STRIDE managed the call and implementation of the Widening Applications of Research Within the Pandemic (WARP) Grant.

1.5.1 A total of 73 research grants amounting to $5.56 million were awarded by the USG through the STRIDE Program. All funded projects were successfully completed with several grantees being awarded further grants by other funding bodies.

Philippine-US Research and Exchange Grants

PURE grants offered opportunities for Philippine HEIs to conduct joint research with a U.S. university of their choice on a topic relevant to industry. With a total of over $1.1 million worth of funds, PURE grants were awarded to 12 universities. Funded projects were completed in 2017.

One of the projects funded under PURE was the "Rigid Polyurethane Insulation Foams Made from Lignocellulosic Rice Straw" of MSU-IIT. The research aimed to utilize bio-based raw materials such as rice straw into crude glycerin and lignocellulosic biomass that are commonly used in producing foams for insulation. esults of the research served as the

foundation for succeeding studies of the university, one of which qualified for further funding by USAID-STRIDE through WARP Grants.

Collaborative Applied Research with Industry

In total, over $3.6 million worth of CARWIN grants were awarded to 40 universities in the early years of STRIDE implementation. It funded projects that increase HEIs' capacity to work with industry on joint industry-academe research.

> *During the STRIDE Close Out Event, MMSU President Shirley Agrupis described the positive impact of the USAID assistance: "When the pandemic broke out, the USAID-supported technology became front and center in our efforts to help address the high demand of medical-grade alcohol."*

One of the projects was titled "Establishment of Science and Technology-Based Sustainable Village-Scale Bioethanol Industry," an extension grant for MMSU in Ilocos Region. The successful fabrication and deployment of the village-scale bioethanol facility created nationwide awareness of the feasibility of a village-scale distribution model to increase local ethanol production in the country.

Results of succeeding research on the subject matter helped increase local ethanol production and involved more rural workers to evolve from being raw materials gatherers and sellers to being vertical integrators and entrepreneurs in the biofuel industry.

STRIDE Prototype Research and Innovation Grants

SPRIG awarded a maximum of Php 1 million (~$20,000) to academic researchers who are at the last stage of their research and are working toward the commercialization of their outputs; 10 universities received the grants.

One of the projects was the "Multi-Powered Drying System for Food Processing" by the Iloilo Science and Technology University. The project developed and deployed a seaweed drying technology at the production site of its industry partner, Magagmay nga Kristianong Katilingban (MKK).

MKK is a small cooperative engaged in the production of food products that use seaweeds as base material. The technology improved the quality and increased the production of dried seaweeds, providing a more sustainable income to the MKK seaweed farmers.

STRIDE Innovation and Development

The SID Grants for Science and Technology were given to three Philippine HEIs that were collaborating with civil society groups including nongovernmental organizations, community-based and people's organizations, and cooperatives, for up to 12 months of joint research.

One of the projects was the "War on Worms and Water, Sanitation, and Hygiene (WOW-A-WASH): Integrated Helminthiasis Control with Water, Sanitation, and Hygiene in Selected Haiyan-Stricken and Armed Conflict Areas in the Philippines."

Awarded to UP–Manila, the research demonstrated the feasibility of integrating the *war on worms* campaign with water, sanitation, and hygiene among preschool-aged children and school-aged children. The study included a parasitological and nutritional assessment in

select sites in Eastern and Western Samar, more than 750 km south of Metro Manila. It conducted capability building of local health workers based on the research results.

Academic Grants for Industry-Led Applications

AGILA funds research that investigates subject matters of interest to industry players given their high chances of technology application and commercialization. The grants were given to research jointly done by industry and academia.

In 2017, three research projects were awarded a total of over $134,000 of AGILA grants. One of the projects worked on producing a low-cost, point-of-care electronic device that can detect lung diseases prior to using more dedicated medical tests. DLSU and Integrated Microelectronics, Inc., collaborated on the project.

Widening Applications of Research Within the Pandemic

The USAID-STRIDE Program awarded nearly Php 12 million (~$240,000) to five Philippine universities for relevant research within the pandemic. Ceremonially launched on April 27, 2021, WARP seeks to help Philippine universities build on previous USAID-funded research to address challenges and changes brought about by COVID-19.

STRIDE's call for applications for the WARP grants generated 26 proposals from among previous STRIDE research grantees. A stringent selection and co-development process led to the selection of proposals from five universities. All grantees have achieved their respective

> *Speaking at the event, then USAID/Philippines Mission Director Lawrence Hardy II said that WARP is part of USAID's continuing support to partner universities so that they may "continue their fantastic work in research and innovation to create viable solutions for economic and social challenges throughout the country."*

research objectives. Most are exploring either the commercialization of their outputs or the conduct of follow-through research to sustain the further progression of work. One of the grantees, UP–Visayas, was able to produce different variants of "tuna jerky" and is preparing the product for commercialization and marketing.

Annex G. shows the list of research grants awarded by USAID through the STRIDE Program.

IR 2. Improved Regulatory Environment for Innovation

IR 2. Key Accomplishment No. 1

INCREASED PATHWAYS FOR BETTER R&D PROCUREMENT POLICIES AND SYSTEMS IN UNIVERSITIES

STRIDE worked with various government and academic institutions to find solutions to R&D procurement challenges that impact research projects in the country. Under its institutional partnership with the University of the Philippines, STRIDE pursued activities and projects that sought to help the HEI streamline its R&D procurement process.

Assistant Dean Ricky Nellas of the University of the Philippines College of Science use a database that facilitates procurement processes for faculty members. STRIDE funded the database and worked with the College in its development.

2.1.1 Through STRIDE's institutional partnership with the UP System, two papers on HEI R&D procurement were developed as part of efforts to contribute to improving the process involved in procuring goods critical in Philippine Government-funded research.

On December 15, 2020, STRIDE and UP–Diliman signed a memorandum of understanding (MOU) to formalize a partnership that sought to improve UP–Diliman's R&D procurement process. Central to the collaboration was the conduct of studies and fora, as well as development of procurement tools.

Case Study on Research Procurement Issues with Suggested Reforms for Funded Research Projects in the Philippines

This policy paper was anchored on the results of STRIDE's cumulative work throughout its programming years, and its R&D Procurement Survey among 77 Filipino scientists and researchers. That study described the experiences of researchers in relation to the public procurement process for R&D activities in the HEI setting, documented procurement turnaround time, identified challenges, and outlined recommendations to facilitate procurement in research.

The study documents the "perception of procurement as being largely inefficient and difficult to implement."[6] It also discussed how significant turnover times during procurement of

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[6] RTI International (2022). Research Procurement Issues with Suggested Reforms for Funded Research Projects in the Philippines: A Review and Case Study, Report for the STRIDE Program. Research Triangle Park, NC: RTI International

supplies and equipment can negatively affect the impact of research projects. Recommendations were crafted to include both internal (for institutions) and external (potential areas for policy and legislative reform) measures.

White Paper on the R&D Procurement Transactions of the UP–Diliman College of Science

STRIDE finalized a joint white paper with the UP-Diliman College of Science that covered an exploratory data analysis of over 1,800 R&D procurement transactions at the College for the years 2019 and 2020. The analysis covered parameters such as transactions that are tagged as failed biddings and those that utilize alternative modes of procurement.

Alongside the results, the paper proposed recommendations to further streamline the process and increase the utilization of alternative procurement methods available for public university researchers. Given the institutional data utilized in the analysis, the white paper has been turned over to the College of Science for its internal use towards reforms it will pursue both within its own systems and that of the larger UP-Diliman campus.

UP–Los Baños Survey

Prior to the closing of STRIDE, the program completed an R&D Procurement Survey targeting UP–Los Baños-based researchers. Gathering more than 90 responses, this survey is similar to a previous R&D procurement survey done by STRIDE with various HEIs. This latest survey was conducted as a collaboration with PAASE and some of its members from UP-Los Baños, who wanted a more specific diagnostic of procurement challenges at the university. The results will be used by PAASE for specific advocacies and was also used as a basis for the Case Study described earlier in this section.

The study is critical to increasing awareness of the need to reform and revise procurement processes and systems for research commodities specific to UP–Los Baños. The learnings will also serve as added input to broader efforts by PAASE to create an enabling environment for scientists involved in scientific and R&D-related activities. Given the institutional information involved, the survey results have been turned over to PAASE for its own internal use. The association will manage the distribution and utilization of the results going forward.

Earlier Work in Relation to R&D Procurement

In its early years of implementation, STRIDE identified government procurement as a critical issue in addressing cross-cutting "chains of impact" across the innovation ecosystem, particularly in research and knowledge creation. In 2016, STRIDE convened the Procurement of Scientific and Technical Equipment for Research Summit, or POSTER. This summit discussed best practices around the procurement of scientific and technical equipment for research and outlined recommendations. Results from the forum were shared with the Philippine Government.

2.1.2 An R&D Procurement Database was formally turned over by STRIDE to the UP–Diliman College of Science.

Turned-over in 2022, the database was designed to streamline the procurement process at the College of Science and make it easier for researchers to conduct their work. It records the R&D equipment procured by different institutions under the UP–Diliman College of Science and compiles available suppliers for R&D-specific products.

The database is part of STRIDE's commitment under its institutional partnership with UP, which centered on improving the university's R&D procurement. It was one of the key recommendations that echoed at the R&D Procurement Forum that STRIDE co-organized with UP–Diliman in February 2020.

According to Dean Giovanni Tapang, Dean of UP College of Science, the college receives over Php 1 billion (~$20 million) worth of external R&D funding annually. It produces 55% of journal publications in UP–Diliman, and 22% in the whole UP system.

IR 2. Key Accomplishment No. 2

IMPROVED HEI POLICIES AND SYSTEMS FOR RESEARCH, EXTENSION, AND INNOVATION

STRIDE conducted various research; facilitated several stakeholder consultations, focus group discussions (FGDs), and dialogues; and developed a number of papers with the objective of helping universities improve their policies and systems.

One of the many FGDs that STRIDE conducted in support of efforts to improve HEI policies and systems.

2.2.1 Results of the Innovation Diagnostic Tool (IDT) Study were launched to the public and presented via a paper titled "Scanning the Innovation Status of Philippine State Universities and Colleges." The IDT was conducted by STRIDE in collaboration with PASUC.

The IDT sought to create a baseline that maps the SUCs in their innovation journey. It defined the HEIs' standing by plotting them in a diagnostic web based on 362 indicators that operationalize innovation through 12 pillars: (1) leadership, (2) management, (3) innovation-support infrastructure, (4) linkages, (5) basic research, (6) industry-facing research, (7) twenty-first century research, (8) industry-facing teaching, (9) twenty-first century facing

teaching, (10) industry-facing extension, (11) community-facing extension, and (12) global innovation.

IDT Results Presentation

According to PASUC President Tirso Ronquillo, the study allowed the SUCs to "take stock of their human, structural, and relational resources and re-engineer it toward revolutionizing universities into thriving platforms for collaborative knowledge creation that are on par with the world's best and as bustling factories of innovation that can positively transform the lives of Filipino families and communities."

On October 23, 2020, STRIDE presented the results of the IDT Study before 250 members of academia at PASUC's Digital SUC Innovation Conference.

The IDT Study showed that SUCs appear to locate themselves in the middle axis of the diagnostic web in relation to innovation pillars that are "long-range," goal-oriented, or planning-heavy. On the other hand, they appear farthest from the ideal range in relation to "nuts and bolts," implementation-heavy, and resource-demanding innovation pillars.

IDT Survey Administration

STRIDE worked with PASUC in administering the IDT self-assessment instrument. A TWG composed of officials from different SUCs was formed to supervise the survey administration and agree on the conceptual definitions of each of the 12 innovation pillars; 105 SUCs participated in the survey.

2.2.2 A paper titled "Recontextualizing Research and Extension in Philippine State Universities and Colleges in the Post- Pandemic Future" was developed by STRIDE as part of efforts to help SUCs improve their codes, strategies, and policies.

Presented on August 26, 2020, at the first PASUC Digital Summit, the paper sought to build a unified understanding among SUC presidents, senior administrators, and faculty on research and extension as a (1) stimulus for local and regional innovations, (2) platform for social change, and (3) pathway to build responsive structures and resilience in the post-pandemic era.

The paper outlined action points for SUCs to build the foundational elements of SUC research and extension. To improve the faculty's mindset and capabilities in relation to research and extension, the paper suggested that HEIs look into two critical areas of actions, namely: providing support to faculty members and crafting new metrics to measure research and extension productivity.

It also tackled how research and extension can "play a critical role in finding solutions to myriad problems brought about by the COVID-19 pandemic —from disease modeling and vaccine development to food security and sustainable livelihoods among others."[7] It suggested ways universities could drive initiatives in the post-pandemic era by pursuing a number of United Nations Sustainable Development Goals.

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[7] N. Juanillo, Jr. (2020). Recontextualizing Research and Extension in Philippine State Universities and Colleges in the Post-Pandemic Future. Report for the STRIDE Program, p. 21. Research Triangle Park, NC: RTI International

The STRIDE paper is a result of years-long consultations with stakeholders in academia. Among others, the inputs gathered through the 60 participatory institutional diagnostics (PID) that were organized by STRIDE helped identify the challenges that hinder the efficient implementation of research and innovation in the Philippines.

2.2.3 Results of the IRA were presented to MSU-IIT and BulSU as both universities revolutionize their systems to be most competitive in the areas of research, extension, and innovation.

Hoping to help scale up Philippine HEIs' research and extension capacity, STRIDE developed the IRA as a tool to assess a university's research and extension development plans. The assessment is based on the findings of the STRIDE reference paper cited above, "Recontextualizing Research and Extension in Philippine State Universities and Colleges in the Post-Pandemic Future."

The IRA findings stated that both MSU-IIT and BulSU welcome research and extension reforms and that both expressed commitment to pursue activities to realize goals under the endeavor.

To strengthen the culture of research within MSU-IIT and BulSU, the IRA recommended the strengthening of HEI policies and employing a "whole-of-university" approach in the areas of research, extension, and innovation (REI). It also suggested providing incentives to non-teaching staff who undertake REI reforms, linkaging with external stakeholders, and executing a strategic communications plan to create, among both internal and external audiences, awareness and understanding of research.

In rolling out the IRA, STRIDE worked with pilot HEIs MSU-IIT and BulSU. The project involved a series of consultation meetings and data gathering activities such as surveys, interviews, and FGDs.

2.2.4 The University of Science and Technology of Southern Philippines was created by virtue of R.A. No. 10919.

Enacted on July 21, 2016, the law established USTP, providing for the amalgamation of Mindanao University of Science and Technology and the Misamis Oriental State College of Agriculture and Technology. The charter creating USTP focuses strongly on the establishment of an applied research university that serves and works with regional industry and communities.

One of the champions of the USTP legislation was former Mindanao University of Science and Technology President Dr. Ricardo Rotoras, who drew heavily on STRIDE's research and extension principles and initiatives.

IR 2. Key Accomplishment No. 3

STRENGTHENED NATIONAL POLICY ON R&D AND INNOVATION

STRIDE contributed to achieving a better national policy on R&D and innovation by providing technical assistance to the Philippine Government and other partners involved. STRIDE conducted studies that helped inform policy making, facilitated stakeholder conversations and dialogues, and supported advocacy campaigns on R&D and innovation.

CHED Chairperson J. Prospero E. De Vera III speaks about the challenges and opportunities in strengthening higher education in the Philippines during an FGD organized with STRIDE. / Photo: CHED

2.3.1 DTI established an Undersecretary-led office that is mandated to design and implement policies and programs for competitiveness through innovation. This structural reform has made innovation a key component of the Department's initiatives for various industries and MSMEs.

STRIDE provided technical assistance to the DTI-CIG since the beginning of its operations, including organizational and training support. The program significantly collaborated with CIG Undersecretary Rafaelita Aldaba on various innovation-related work prior to her appointment to the post.

The DTI-CIG has three offices under its jurisdiction, namely the Bureau of Trade and Industrial Policy Research, Competitiveness Bureau, and Philippine Accreditation Bureau.

2.3.2 DOST has strengthened its legislative and advocacy pathways toward securing increased long-term investments for R&D in the Philippines. Through the proposed bill on the Science For Change Program (S4CP), DOST seeks to institutionalize increased R&D funding from the national budget.

STRIDE provided technical assistance to DOST on the S4CP legislation and advocacy. STRIDE sought to help DOST achieve its target of securing up to 2% of the country's general appropriations act for R&D. In parallel to creating more awareness and understanding of S4CP, STRIDE also outlined recommendations to improve DOST stakeholder relations, which are critical in securing more buy-in for increased R&D resources.

STRIDE also provided technical advice for improving DOST's narrative and budget presentation by expounding on investment returns and adopting an economic framework in presenting research outcomes.

2.3.3 STRIDE completed various activities and assessments with CHED as the agency tackles changes to its operating environment. Recent activities include a global survey of student loan programs and an organizational assessment of CHED in light of legislative actions in higher education.

STRIDE has provided CHED with technical assistance on various projects and topics through its period of implementation. Early on, STRIDE supplemented efforts under the CHED Philippine-California Advanced Research Institutes project, which facilitated collaborations between United States and Filipino researchers in specific scientific fields.

CHED also managed the impact to higher education brought about by the introduction of the Kindergarten to Grade 12 framework in basic education. STRIDE engaged various consultants, many on a full-time basis, to provide specific expertise to CHED's transition team throughout this process.

In 2019, in response to a request by CHED Chairperson Prospero De Vera, STRIDE engaged a US-based expert to provide CHED with a survey and analysis of various models of student loan programs utilized throughout the world. This information was used by a technical working group under CHED's Unified Student Financial Assistance System for Tertiary Education (UniFAST) to determine the institutional steps it will take to set up an integrated student loan program in the country.

Based on another request from the CHED Chair, STRIDE engaged a senior local consultant to conduct a background assessment of the organizational structure of the Commission in relation to new roles and mandates brought about by new and upcoming legislation. Data collection and interviews were conducted through the pandemic period, while an added analysis was made of the impacts of proposed reforms to the Higher Education Act of 1994 (R.A. 7722). The reports from these studies have been provided to CHED for its internal use, while key findings and recommendations were presented to all CHED Commissioners and Executive Director Cinderella Benitez-Jaro in August 2022.

2.3.4 STRIDE completed a study on the science, technology, engineering, and math (STEM) education pipeline and the feasibility investigation of having university personnel as industry association members.

The STEM Education Pipeline Mapping reviewed the system with which the Philippines is developing its scientists. It sought to identify the factors that contribute to the shortage of scientists and engineers in the Philippines.

The study indicated that there is greater interest among high school science students if the STEM curriculum is more practical, more hands-on, and more problem-solving based. Such an approach, the report recommended, must be disseminated more widely, coupled with other initiatives that must go as far back as elementary school.

To catalyze collaborative engagements between industry and academe, stakeholders recommended that university personnel be allowed membership in industry associations. In 2015, STRIDE conducted a preliminary study of the feasibility of the idea.

Information gathered revealed that organizations approach faculty memberships differently. While some welcome faculty memberships, other associations have no formal guidelines

with regard to having members from the HEIs. Awareness building on membership of university personnel is passive.

2.3.5 The Philippine Government signed the respective Implementing Rules and Regulations (IRR) of the Innovative Startup Act and the Philippine Innovation Act. STRIDE provided technical inputs to government partners in the development of the two IRRs.

IRR of R.A. No. 11337, or the Innovative Startup Act, was signed on November 22, 2019. The law provides that any start-up may qualify for benefits and incentives, including subsidies; facilitation of business registration; and start-up visas. It creates a Startup Venture Fund and a Startup Grant Fund "to provide initial and supplemental grants-in-aid" for qualified start-up applicants.

The IRR of PIA, also known as R. A. No. 11293, was signed on February 7, 2020. PIA provides for the harmonization of the government's innovation policies and programs. It creates the NIC that will serve as the country's policy advisory body in the formulation and monitoring of innovation initiatives.

The two laws are expected to provide a significant boost to the country's research and innovation agenda.

2.3.6 NEDA, as secretariat to the NIC, kicked off the development of the NIASD, a key policy requirement mandated by R.A. 11293.

STRIDE provided technical assistance to NEDA in delivering the NIASD and other activities that are critical to the successful implementation of the PIA.

In 2022, STRIDE supported NEDA and the NIC–Executive Technical Board (NIC-ETB) in formulating the National Innovation Agenda 2032, which outlines the Philippines' 10-year vision, goals, and strategies toward innovation governance.

To enable this, STRIDE delivered a Design Sprint Workshop for NEDA innovation staff to provide them with tools in designing the Philippine Innovation Co-creation (PIC) toolkit that will serve as a core platform for the NIASD development. It also conducted a writeshop that sought to gather inputs to the National Innovation Agenda 2032.

STRIDE also assisted NEDA staff in the conduct of activities in celebration of the National Innovation Day on April 21, 2022 and provided support in the area of strategic foresighting. The assistance centered on providing tools that could help the agency craft and validate its own foresighting and planning mechanisms.

> *"Innovation is critical for growth and development because it creates new and better products and processes. The Philippine Innovation Act serves as our strategic direction toward strengthening the country's knowledge-based economic development. Under the Act, we can introduce different types of innovation that play distinct roles at various developmental stages across several sectors,"*
>
> *-NEDA Undersecretary Rosemarie G. Edillon*

Moving forward, the NEDA, as NIC Secretariat, will work toward the finalization of the NIASD and the implementation of the Filipinnovation Branding campaign, which was approved by the NIC in 2022. STRIDE supported the campaign by developing a communications

branding, communications, and visual guide for organizations that wish to align their innovation initiatives with the Filipinnovation branding.

IR 3. Improved Government Capacity for Innovation

IR 3. Key Accomplishment No. 1

INNOVATION AT THE FRONT AND CENTER OF GOVERNMENT PROGRAMS

STRIDE provided technical assistance to DTI in efforts to help industry players, particularly MSMEs, achieve growth through innovation and competitiveness. The program onboarded two permanent staff to provide focused support to the design and implementation of key projects at the DTI- CIG.

USAID/Philippines Mission Director Ryan Washburn speaking at the Inclusive Innovation Conference 2022. Photo: Batangas State University

3.1.1 The DTI and DOST launched the Inclusive Filipinnovation and Entrepreneurship Roadmap, outlining policy and program recommendations that seek to leverage innovation and entrepreneurship in addressing poverty in the Philippines. STRIDE was one of the key partners in finalizing the roadmap.

The Roadmap marked the Philippine Government's convergence efforts on innovation. It has six components, namely: (1) innovation policy and commercialization, (2) entrepreneurship program and making MSMEs competitive, (3) government-academe-industry, (4) industry clusters for growth, (5) skilled workforce, and (6) funding and finance.

Within its launch year, DTI and DOST rolled out strategies to further strengthen and harmonize the Government's innovation agenda. DTI established an Undersecretary-led CIG

that leads and coordinates innovation initiatives across the DTI. The Group oversees the responsibilities of the Bureau of Trade and Industrial Policy Research, Competitiveness Bureau, and the Philippine Accreditation Bureau.

DOST, on the other hand, continued to strengthen its R&D initiatives and committed resources for technology transfer, joint industry-academe research, and the establishment of the RIICs in pilot regions.

For two years, STRIDE assisted DTI and DOST in the conduct of regional consultations on stakeholders' innovation needs and concerns. It also supported the actual crafting of the policy brief that described the IFER.

A prescribed graphic from the Filipinnovation Branding and Communications White Book that has recently been accepted by the National Innovation Council.

3.1.2 The Philippine Government designed a branding initiative that seeks to position the Philippines as an innovation-driven nation. STRIDE supported the efforts by developing and turning over to the government a Filipinnovation Branding and Communications White Book.

The White Book aims to crystallize the notion of Filipinnovation for stakeholders in the government and the rest of the country. It is an instrument to strengthen the call toward further advancing innovation and entrepreneurship for national development. It provides visual and communication guidelines for individuals, institutions, and partners who wish to advocate Filipinnovation.

Building a strong innovation brand for the Philippines is expected to strengthen the world's perception of the country's innovation efforts, encourage stakeholder buy-in, and improve policies and programs to advance innovation and entrepreneurship. The White Book has recently been accepted by the National Innovation Council.

<u>Brand Design Activities</u>

STRIDE supported the development of the White Book, which is a key output of the Filipinnovation branding program that the DTI, NEDA, and DOST are jointly working on. The end goal is to have the Filipinnovation branding program integrated into the NIASD and form part of NIC's key initiatives.

In developing the White Book, STRIDE facilitated a series of FGDs among government agencies that are involved in improving the country's innovation landscape. It socialized the output with members of the NIC-ETB, which is tasked to review matters for consideration of the innovation council.

<u>Capability Building on Branding</u>

On April 29, 2022, STRIDE facilitated a seminar-workshop on branding for key representative agencies of the NIC–ETB. During the training, STRIDE presented the Filipinnovation Branding Whitebook and gave recommendations for its strategic use. The workshop also served as a venue to start discussions pertinent to harmonizing NIC members' innovation branding initiatives.

3.1.3 Staff from the DTI-CIG office and bureaus gained new insights and creative approaches in communicating innovation after joining a series of workshops and learning sessions, which STRIDE delivered.

The workshops and training formed part of STRIDE's technical assistance on strategic communication for the DTI–CIG. The support aimed to (1) strengthen the DTI-CIG's competencies to communicate information about innovation-related policies and programs, (2) support and complement the DTI's overall communication initiatives by ensuring the effective delivery of key messages on innovation, and (3) promote innovation among DTI stakeholders.

Communications Planning Workshops

STRIDE facilitated several workshops aiming to help DTI-CIG offices and bureaus develop their respective communications plan. One session on each of the following topics was organized: Messaging, Media and Tactics Planning, and Communication Structure and Resource Identification. A validation session followed to discuss outputs that resulted from the workshops.

Communications Training

STRIDE delivered four communication-related training courses for DTI-CIG staff to help improve their capability to communicate innovation-related programs and results. These courses include news writing and sought to help hone the learners' ability to write newsworthy stories about the CIG's initiatives. The next training was on content development and aimed to enhance the staff's ability to develop effective and engaging communication materials.

The third and fourth courses were on the topics of visual communication and digital communications. The former was designed to equip staff with basic skills in using visual elements to tell a story and highlight messages, while the latter gave participants an overview of the wide range of digital platforms and tools that may be used for outreach and communications.

Communications Strategy Review Workshop.

STRIDE capped its technical assistance to DTI-CIG on communications through a Communications Strategy Review Workshop.

Held on November 29, 2021, the workshop revisited key components of the CIG communications plan with the goal of making the components more enabling and supportive of CIG programs and activities. Results of the workshop served as valuable inputs in planning CIG's overall communications strategy and the Group's strategic plan.

3.1.4 STRIDE provided technical assistance to DTI-CIG on various initiatives particularly on strategic planning, government convergence, and capability building.

STRIDE assigned two personnel to provide focused support on key projects of DTI-CIG on innovation. Assigned under the Office of the Undersecretary for Competitiveness and Innovation, the staff provided day-to-day and technical assistance to the Undersecretary and other key DTI officials involved in innovation work.

Government Coordination and Convergence

Work included the mapping of innovation stakeholders at the national and local levels, coordinating CIG work that involves other government agencies, and consultation and dialogues with stakeholders including academia and those at RIIC sites. STRIDE had a key role in the technical work and coordination among the members of the Filipinnovation TWG.

Policy and Strategic Planning

In May 2022, STRIDE provided inputs to the CIG for the development of a policy brief on the establishment of RIICs. The paper discussed how the RIICs transformed from concept to reality as a mechanism to bridge the gaps between the innovation and entrepreneurship ecosystems. The paper also identified gaps and challenges, and recommended ways forward in sustaining the RIICs post-STRIDE.

In November 2021 and February 2022, STRIDE facilitated the CIG's strategic planning workshops. The workshops identified key action points that will have long-term impact on CIG operations such as the development of a CIG Operations Manual, formulation of a Strategic Communications Plan, and the review of CIG human resource needs. The team also reviewed the programs and activities lined up for the year 2022, as well as the proposed national budget for 2023.

Response to Mitigate COVID-19

In 2020, given the huge impact of the community quarantine on Philippine industries, the DTI–CIG supported the rest of the Department as it participated in the whole-of-government approach to respond to the Philippines' urgent needs.

STRIDE assisted the Office of the Undersecretary for Competitiveness and Innovation in facilitating the aggregation of supply and demand data for PPE. It coordinated with DTI field offices with regard to the demand for face shields and other medical supplies required by hospitals, health centers, and similar facilities. Program staff also helped the DTI-CIG coordinate with the Department of Health and industry partners in relation to DTI's Bayanihan PPE Project.

IR 3. Key Accomplishment No. 2

PARTNERS UTILIZED NEW IDEAS AND INSIGHTS IN CRAFTING INNOVATION-RELATED POLICIES AND PROGRAMS

STRIDE completed various studies on topics that are important to government's R&D and innovation efforts. The Philippine IEAs along with many industry-specific papers were key studies that helped inform stakeholders' policies and programs. STRIDE also delivered Strategic Foresight Training to more than 80 government staff to enable more dynamic long-term planning at agencies such as NEDA, DOST, and DTI.

Undersecretary Rosemarie Edillon (1st from left) meets with her innovation team at the National Economic and Development Authority.

3.2.1 The STRIDE IEA 2019 Update Study was launched. The study, which serves as a follow-on to the first IEA study, revealed that 68% of individuals surveyed said the innovation landscape has improved, although challenges remain.

The IEA 2019 Update Study shows that 68% of 319 individuals surveyed believed the Philippines innovation landscape had improved since 2014. The improvements were mostly attributed to factors such as (1) intentional interventions from government, (2) increased focus from academia to align with industry, and (3) industry's increased openness and willingness to collaborate with academia on human capital development and R&D.

The study team advised the Philippines to work on the challenges that remained such as those in the areas of STI-related procurement, R&D investments and mechanisms, collaboration toward holistic goals and mutually beneficial outcomes, raising awareness about innovation opportunities, and generating examples of local successes in entrepreneurship to further drive successful start-ups.

In partnership with DOST, the public release of the results of the IEA Update was broadcast in September 2020 via the *DOST Report*, the agency's weekly online program featuring Secretary Fortunato de la Pena. DOST Undersecretary for R&D Rowena Guevara and RTI Innovation Advisors joined the program to discuss and share the study's key findings and recommendations.

Prior to its release, the IEA 2019 Update was socialized by STRIDE with high-level government officials, including DTI Undersecretary Rafaelita Aldaba, DOST Undersecretary Rowena Guevara, Department of Agriculture Undersecretary Rodolfo Vicerra, NEDA Director Richard Ballester, and Department of Information and Communications Technology Director Rior Santos. STRIDE also socialized the report with DOST Assistant Secretary for Policy Development and Planning Maridon Sahagun and CHED Director Nelson Cainghog.

The study was also presented to USAID/Philippines officials on July 17, 2020.

The 2014 IEA Study

Back in 2014, the first IEA was undertaken to characterize the landscape of the country's innovation landscape, identifying key players and characterizing strengths and weaknesses against the selected variables. The IEA provided an assessment of the landscape per each of the following areas: (1) education and human capital, (2) research and knowledge creation, (3) research extension or know-how transfer, (4) intellectual property, (5) start-up and spinoff companies, and (6) collaboration and relationship between different players. It came up with an overall scorecard on the Philippines' innovation ecosystem performance.

It offered recommendations on addressing cross-cutting "chains of impact" such as R&D procurement, counterpart funding in research grants structures, and university patent licensing revenue for better industry-academe collaboration.

The IEA 2019 Update Study provided a comprehensive update on the state of the country across the areas identified above.

"Improving foresight literacy among DOST personnel and inculcating a foresight culture in an ever-changing research and policy environment are imperative for us to further uphold the vision of a sustained, dynamic leadership in S&T innovation in the country," Philippines Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) Executive Director Reynaldo Ebora said during the training's kick-off session.

3.2.2 Over 80 personnel from four government agencies, including senior level officials, completed the Strategic Foresight Training, which sought to help public sector leaders and officers prepare for reshaping programs and policies amid uncertainties in the future. Four training cohorts were delivered by STRIDE.

The Strategic Foresight Training is a six-session course designed for Philippine Government leaders to learn about the fundamentals of strategic foresight and explore emerging trends that will impact the Philippines in the next few years.

The goal is to help government leaders conduct scenario planning and learn how it interplays with the governments' strategy development, policy making, and program planning. During the training, participants formed multi-agency teams to encourage convergence, learning, and the possibility of working together to implement their capstone projects.

U.S.-based innovation advisors and foresight experts from RTI International and the University of Notre Dame served as resource persons.

Cohort 1. Senior Government Officials

The first training cohort ran from September 29, 2020, to November 6, 2020. It was attended by senior level officials from the DTI, DOST, and Intellectual Property Office of the Philippines (IPOPHL) led by DTI Undersecretary Rafaelita Aldaba, DOST Undersecretary Rowena Guevara, and IPOPHL Director General Rowel Barba.

Cohort 2: Government Personnel and SEIPI

The second cohort had representatives from DTI, DOST, IPOPHL, NEDA, and the Semiconductor and Electronics Industries in the Philippines, Inc. (SEIPI) as participants. It kicked off on March 4, 2021, and culminated on April 22, 2021.

Aside from providing an overview of the foresight processes and tools, the training also centered on how teams could utilize insights into crafting actionable plans. Activities were rolled out to help the participants examine their preferred integrated future scenario. Exercises include (1) "incasting," which involves proposing policies, portfolios, investments, and people that will exist in preferred scenarios; and (2) "backcasting," which identifies milestones, activities, and timelines toward preferred futures.

Cohort 3: Local Directors and R&D Communications Team

Participants were asked to conduct a future forces assessment in line with their respective capstone projects. Succeeding sessions included follow-on consultations that helped the participants improve their projects.

Speaking at the training, USAID Office of Education Director Thomas LeBlanc highlighted the importance of foresight tools for government officers, particularly in the areas of strategic planning and policy formulation.

Cohort 4: Roadmapping and Foresight

This cohort had 22 DOST sectoral planning officers as participants. The training began in March 2022 and culminated in April 2022.

The training for this cohort formed part of Phase I of the project, "Development and Institutionalization of DOST Foresight Framework and Protocol." Led by DOST-PCAARRD, the project aims to strengthen foresight capability of DOST agencies and ultimately, develop and institutionalize a foresight protocol that will enable a foresight-driven R&D agenda.

3.2.3 Studies on the Global Value Chain (GVC) activities of eight priority industries in the Philippines, as well as four high-value agribusiness sectors, were completed and presented to government and industry stakeholders.

The GVC study aimed to identify innovation pathways for supply and demand activities in select industries. In addition to the preliminary study that covered the agribusiness industry, the GVC research was done in two phases.

The Agribusiness Study was done by STRIDE in response to feedback gathered from earlier round table discussions. Involving interviews with over 60 individuals from the government, industry, and academe, the Agribusiness Study was published in 2016.

GVC Study Phase I

After the completion of the GVC on agribusiness, STRIDE supported the industry competitiveness initiatives of the DTI-Board of Investments (DTI-BOI) and the Advancing Philippine Competitiveness Program (COMPETE). STRIDE funded the rollout of the GVC

Phase I Study, which covered the aerospace, automotive, chemicals, electronics and electrical, and paper industries. Duke University's Center on Globalization, Governance and Competitiveness was engaged for the research.

The University prepared a GVC Report for each industry following the conduct of research and the socialization of its results. It carried out a GVC workshop for DTI-BOI staff and presented the GVC Report via a forum with each industry concerned.

<u>GVC Study Phase II</u>

Following the success of the GVC Study, the DTI-BOI requested to expand the study into four high-value agribusiness sectors, namely cacao, coffee, mango, and rubber, as well as shipbuilding.

Phase II was launched in October 2017. Reports for all industries were finalized in June 2017 after a series of socialization activities and workshops. The reports fed into the policy-making initiatives of the DTI and the Department of Agriculture. The DTI, with support from STRIDE, published Policy Briefs on the industries studied. These papers can be accessed via https://industry.gov.ph/dti-policy-briefs/.

3.2.4 Findings and recommendations from various studies conducted by STRIDE were presented to government officials to guide innovation-related policies and programs.

STRIDE developed UAC Briefs based on interviews with several stakeholders.

The UAC study was undertaken by STRIDE to help highlight innovation opportunities in the PPE value chain and other health care supplies in light of the COVID-19 pandemic. It aimed to help companies make sense of the changing business environment, adapt their operations, and connect with partners that can support their transition to medical goods manufacturing.

Results of the UAC study helped inform potential areas for policy development in the PPE industry.

<u>Other Studies Supported by STRIDE</u>

STRIDE supported the DTI in the conduct of studies in relation to the development of the Philippine Artificial Intelligence (AI) Roadmap and the Philippine Skills Framework (PSF) Initiative.

The Philippine AI Roadmap outlines the country's vision and long-term strategies toward leveraging AI for the development and growth of priority sectors. Launched on May 5, 2021, the plan recommended a private sector-led establishment of a National Center for AI Research. Envisioned as the country's shared hub for AI research, the center will support the digital transformation of Filipino enterprises and industries.

The PSF Initiative is an inter-agency effort that involves the development of sector-specific skills frameworks that will guide the country's workforce in enhancing skills for particular jobs. It is designed to help companies plan their human resources and talent development initiatives. It is also intended for institutions that are revising existing curricula or designing new courses that are more relevant to industry needs and emerging markets.

Skills development is one of the pillars of the Philippines' Inclusive Innovation Industrial Strategy (i^{3}S) and a key strategy in implementing the Philippine IFER.

3.2.5 The DTI presented the results of the High-Tech Industry Needs Assessment at the 2017 Inclusive Innovation Conference (IIC).

The study sought to identify industry sector challenges and opportunities to help guide policy and supporting programs crafted by the Philippine Government.

STRIDE supported the initiative by sending an RTI Innovation Advisor to facilitate a workshop called "Industry Needs Assessment: Call to Action." The workshop was attended by key industry representatives from select sectors. STRIDE also conducted interviews on the topic.

Results of STRIDE's data gathering served as inputs to the development of the High-Tech Industry Needs Assessment Report.

IR 3. Key Accomplishment No. 3

INNOVATION LINKAGES AT THE LOCAL LEVEL INSTITUTIONALIZED, DRIVING COMPETITIVENESS AND GROWTH AMONG ENTERPRISES

STRIDE was instrumental in the establishment and capacity-building of the RIICs across the Philippines. Four RIICs were established in the pilot regions of Bicol, Central Visayas, Northern Mindanao, and Davao, while another four RIICs were established in expansion sites, namely, Cagayan Valley, Central Luzon, Calabarzon, and Zamboanga Peninsula.

Government, academic, and industry stakeholders from Davao City sign a collaborative agreement to set up an RIIC in the region. At the center are DTI Undersecretary Rafaelita Aldaba and USAID/Philippines Education Director Thomas LeBlanc.

3.3.1 Eight RIICs were established across the Philippines and are now implementing their respective projects and activities; nine branded local innovation programs were also developed to promote awareness and build each RIIC's unique identity. All RIICs were adopted as a priority agenda by the respective RDC.

A RIIC is a network of innovation agents that collaborate to commercialize R&D outputs for regional competitiveness. The establishment of RIICs is a major recommendation under the IFER.

<u>The Mapping-Linking-Alignment (M-L-A) Approach in Establishing RIICs</u>

STRIDE was one of those at the forefront of establishing and championing RIICs across the Philippines. It provided technical assistance in the establishment of RIICs in the four pilot regions as well as in the expanded sites. The four pilot RIICs were established in 2019 while the rest were built from 2019 to 2020.

At each RIIC site, STRIDE engaged in the delivery of workshops and activities to advance understanding of local innovation needs as well as to design relevant and localized programs. The program also worked to promote better synergy and engagement among local stakeholders. It pushed for the adoption of RIICs in the regional development agenda of each RIIC site.

STRIDE employed the M-L-A approach in order to build on the stakeholders' existing networks, partnerships, and programs. The approach features three categories, namely, (1) Mapping innovation actors and efforts, (2) Linking innovation players through dialogues, and (3) Aligning key programs and services toward industry needs.

Stakeholders per each RIIC were asked to identify and agree on a regional priority sector that will serve as a test case for the demonstration of the RIIC concept.

<u>Launch of Branded Innovation Programs</u>

Stakeholders worked on developing their respective branded innovation programs. Launched were the following:

- Sustaining Harvest through Innovation and Nurturing Enterprise in Cagayan Valley (SHINE Cagayan Valley)

- Technological Hive of Regional Innovation for a Vibrant Ecosystem in Central Luzon (THRIVE Central Luzon)

- Linking Innovation Networks for Competitiveness in Calabarzon (LINC Calabarzon)

- Building Resilience and Innovation to Drive Growth of Enterprises in Bicol (BRIDGE Bicol)

- Startup Islands PH Cebu

- Zamboanga Peninsula (ZamPen) InnoHive

- Optimizing Regional Opportunities for Business Excellence through Science and Technology (OROBEST)

- Innovation through Leveraging, Industry, Government, Academe Networks and inclusive Community Engagements (ILIGANiCE)

- Innovation through Science, Technology, and Risk-resilient based Initiatives toward Knowledge Economy in Davao (iSTRIKE Davao)

3.3.2 To leverage success and sustain activities, RIICs had their respective strategic plans developed, validated, and approved. The plans were either adopted or have been endorsed for adoption by the RDC in the RIIC sites.

STRIDE facilitated the RIICs' respective strategic planning workshops, strategic plan validation, and action planning sessions. The program also supported the RIICs in having their strategic and action plans adopted into the Regional Development Agenda.

The workshops guided stakeholders in concretizing their vision over a five-year timetable and in brainstorming for possible strategies and activities for the covered period. They also helped the RIICs validate and refine their respective strategic roadmaps.

This effort helped institutionalize the RIIC initiatives, ensuring stakeholder buy-in and resource allocation for programs and activities in the years to come.

RIIC Region 7 prioritized the firming up of its institutional arrangements through Strategic Planning, as this was specifically provided in the RDC-Region 7 Resolution approving and adopting the RIIC as the innovation ecosystem in the Visayas Region.

DOST Secretary Fortunato de la Peña and DOST Undersecretary for R&D Rowena Guevara visit the THRIVE Central Luzon exhibit. / Photo: THRIVE Central Luzon

3.3.3 Twenty-one representatives from regional and local offices of DOST and DTI in Regions 10 and 11, and the newly established DTI RIIC Project Management Office, completed a three-month training program that enhanced their competencies in delivering Innovation Advisory Services and prepared them to continue the innovation linkages at the RIIC sites.

The participants were trained to become innovation advisers after having gone through in-depth discussions on the RIIC's MLA approach and process. They also took part in sessions that allowed them to share experiences, challenges, and best practices relative to the RIIC activities.

The new innovation advisers presented their capstone projects and received their completion during the training's culminating activity. Through them, DOST and DTI hope to continue to enable more strategic partnerships and implement future activities at the RIICs.

The IAS training sessions were rolled out February 15–17, 2022, and continued with several coaching sessions. The IAS coaches guided the trainees in developing their own capstone

projects to enhance their core and functional competencies as innovation advisors. The training culminated on May 12, 2022.

IAS Competency Assessment

In December 2021, prior to the IAS training and coaching sessions, STRIDE deployed an IAS Competency Assessment tool to better assess the trainees' capabilities and competencies relative to the requirements of providing IAS. The results of the assessment helped inform the design of the IAS Capability Building Program.

3.3.4 Over 100 MSMEs have been supported and linked with partners by the RIICs through the IBR Program, R&D workshops, and other related activities.

IBR Program

STRIDE provided the various RIICs with technical assistance in conceptualizing and implementing their innovation-related programs for the benefit of local MSMEs.

IBR is a localized consultancy service that seeks to help MSMEs rethink their operations and strategies. It is a multi-step advisory process, comprising various stakeholder engagement and partnership brokering activities. The concept was developed and pitched by STRIDE to partners in RIIC sites given the adverse impact of the COVID-19 pandemic on local MSMEs.

The IBR is co-implemented by local partners in government, industry chambers, and academe in RIIC sites. It has been adopted and is being implemented in six RIICs.

A great majority of the MSMEs that have already received their IBR plans were either from Cagayan de Oro (10 MSMEs) or from Davao (9 MSMEs). The RIICs in the said areas were the first to launch and implement the program.

Many other MSMEs are participating in the IBR and are at different stages of the advisory services, that is orientation and rapid needs analysis, suggested next steps, and IBR plan development.

Several other MSMEs have benefitted from RIIC activities through various forms such as food technology adoption, technology/machine transfer, and other collaborative activities.

R&D Workshops

Introduced in 2019, STRIDE's R&D Ideation Workshops sought to identify and articulate industry challenges, explore solutions, and prioritize possible interventions. The end goal was to lay the groundwork for long-term strategic partnership between an enterprise and an HEI.

Through the workshops, MSMEs were introduced to potential research partnerships with local universities. For example, in Region 3, TLM Yema Buko Pie and Pasalubong Center and BulSU's Mechanical Engineering Department signed a collaborative research agreement for the adoption and further development of the Ube Halaya Making Machine technology.

The workshops also paved the way for MSMEs and the HEIs to work together in developing research proposals for DOST grants. Some of the industry players whose proposals were approved were Bestfriend Goodies, CDO Handmade Paper Crafts, Global Mindanaw Agriventures, Inc., and Ammara Ice Cream.

Annex H provides the list of MSMEs that were assisted through RIICs.

MSME Bestfriend Goodies makes use of new technologies acquired through DOST and RIIC assistance.

3.3.5 At least 10 R&D and innovation-related knowledge products were developed and turned over by STRIDE to the RIICs across the country. Several other RIIC-specific knowledge products were developed and given to the RIIC partners.

The knowledge products that were provided across all RIICs were as follows:

a) <u>RIIC Brochure.</u> Provides a quick overview of the RIICs. This can be reproduced and disseminated to stakeholders during events or meetings with prospective partners.

b) <u>RIIC Guidebook.</u> A reference document for setting up and operationalizing RIICs. It contains fundamental principles on innovation, rationale for collaboration and innovation, and role of innovation advisers.

c) <u>RIIC Case Study.</u> Captures and features the documented experiences of two pilot innovation programs, iSTRIKE Davao and OROBEST, from which stakeholders can gain ideas for establishing, operating, and sustaining RIICs in their own region or locality.

d) <u>IAS Assessment Report.</u> Captures the results of the IAS rapid competency assessment, which sought to (1) analyze the current practices in assisting and engaging target innovation users and adopters; (2) design a business process that will systematize the workflow for the IAS; and (3) develop a competency framework and operations guidebook, as well as policy proposals to strengthen capacities of the RIIC teams.

e) <u>IAS Guidebook.</u> An offshoot of the IAS Assessment Report, this can serve as reference material for RIIC stakeholders on facilitating linkaging activities such as Innovation Talks, webinars, fora, R&D Ideation Workshops, business to business networking, etc.

f) <u>IBR Primer.</u> A user-friendly resource that provides a step-by-step guide to help RIIC IBR technical teams plan and implement IBR activities.

g) <u>Innovation Guidebook for MSMEs (for RIICs 2, 3, 5, 10, 11).</u> A compendium of information that will support MSMEs throughout their innovation journey, from idea generation to launching a product and commercialization.

h) <u>MSME Innovation and Alignment Training Guidebook.</u> A guide to how RIIC teams can develop their own MSME Innovation Guidebook. This pack includes presentation materials and tools for reference.

i) <u>Concept Note on Maximizing the Usability of the RIIC MSME Innovation Guidebook.</u> Provides ideas on how to maximize use of the Innovation Guidebook beyond simply as a guide for MSMEs but also as a policy tool for the RIIC Innovation Program implementers.

j) <u>Davao RIIC: Innovation and Entrepreneurship Programs on Processed Fruits and Functional Foods.</u> Aims to guide government agencies and other stakeholders on strategy development in the context of innovation management. This product zooms in on the processed fruits and functional foods of Davao City.

STRIDE also developed reference material in relation to the assessment of the industry engagement and service bureau function of Fab Labs in RIIC sites. It also prepared a case study of the establishment of textile hubs in Negros. Other knowledge products were region specific.

IR 3. Key Accomplishment No. 4

STRENGTHENED PROCESS IN DOST GRANTS MANAGEMENT PROGRAM

STRIDE assisted the DOST in reviewing and improving the efficiencies in the management of R&D grants, the majority of which are coursed through the Grants-In-Aid (GIA) Program. It also looked into strengthening the Department's S4CP.

MMSU President Shirley Agrupis was also the principal investigator of the USAID-funded research on bioethanol production. MMSU has received increased research funding from DOST and other government agencies in recent years. / Photo: MMSU

3.4.1 Results of the DOST Grants Management Study Phases I and II were presented by STRIDE to DOST officials. Key findings and recommendations to enhance the efficiencies of the Department's grants program were discussed.

STRIDE's technical assistance on grants management looked into (1) mapping the process involved in the DOST grants management, (2) assessing the factors that impact Collaborative Research and Development to Leverage Philippine Economy (CRADLE) grant proposal development and submission, and (3) developing a competency framework for GIA program managers.

One of the key decision points discussed during the presentation was the harmonization of the 40-day processing period for GIA applications from submission to approval, and the adoption of the new rubric for the grants evaluation criteria.

The second phase of the intervention looked into pilot-testing improvements to the GIA Operations Manual. This study was divided into four components as follows: (1) business process, (2) stakeholder engagement, (3) capacity-building, and (4) change management.

The results were presented and discussed with DOST officials led by Undersecretary Rowena Guevara and the executive directors of the DOST research councils. Phase I results were presented in July 2021, while Phase II results were discussed in May 2022.

3.4.2 DOST GIA program managers completed a training program on financial management, enabling them to monitor financial performance and compliance of research grantees during the project.

Held in February 2022, the training discussed financial management principles as well as best practices, issues, and challenges in program implementation. The training was delivered in response to the observation that GIA program managers need to strengthen their financial management capacity. This observation was part of the findings under Phase II of the DOST Grants Management Study.

3.4.3 A report on industry players' perception and experience with regard to grant applications, particularly the Business Innovation through S&T (BIST) for Industry Program, was submitted to DOST. Two companies were assisted by STRIDE in their BIST grant application.

STRIDE conducted a series of interviews and meetings with industry players to generate insights on how to improve industry's acceptability and participation in the BIST for Industry Program. STRIDE submitted the draft BIST Report to DOST.

Through the process of conducting the BIST-related engagements, STRIDE was able to assist two companies applying for a BIST grant. These companies were Bioassests, a veterinary research and diagnostic company, and Maridan industries, Inc., a pharmaceutical company that was an industry partner under STRIDE's CARWIN grant.

Bioassets' grant proposal in the amount of Php 16 million (~$320,000) was eventually approved by DOST.

IR 3. Key Accomplishment No. 5

STRENGTHENED CAPACITY TO COMMUNICATE THE BENEFITS OF R&D TO TARGET AUDIENCE

STRIDE's technical assistance comprised three buckets, namely capability building, delivery of R&D communications projects, and organizational support for communications. It delivered activities founded on the principle of strong partnership with DOST and the belief that leveraging the collaborative spirit among DOST R&D agencies is critical in strengthening R&D communications.

RTI Innovation Adviser Kirsten Reith facilitates a communications needs assessment workshop among DOST R&D agencies in 2019.

3.5.1 The five-year DOST R&D Communications Strategic Framework and Action Plan have been approved. The documents were prepared by the R&D Communications Team, which has been institutionalized through DOST Special Order No. 0094, series of 2021.

The Strategic Framework and Action Plan were outputs of the planning sessions that STRIDE facilitated for the DOST R&D Communications Team in January and March 2021.

The strategic framework contains the team's vision, goal, expected outcomes, and six IRs or strategies to achieve objectives. DOST PCIEERD Supervising Research Specialist Ivan Roblas and Metals Industry Research and Development Center Communications Officer Zalda Gayahan led the R&D Comms Team's presentation to DOST Undersecretary Rowena Guevara.

<u>DOST R&D Communications Team</u>

Bound by common goals, 14 DOST R&D agencies comprised the DOST R&D Communications Team (R&D Comms Team). These agencies include the Office of the Undersecretary for Research and Development (OUSECRD), four research councils, seven R&D institutes, the Technology Application and Promotion Institute, and the Science and Technology Information Institute. Undersecretary Rowena Guevara was designated as the R&D Communications Team chair.

The institutionalization of the team provides more opportunities for improved R&D communications. It adds credence to the communications officers' efforts, provides a stronger mandate for them to pursue joint initiatives, and increases the rationale for funding synergized R&D communications projects.

One of the creative materials developed with STRIDE assistance to promote R&D output to the public.

3.5.2 The DOST R&D Communications Team has built up efforts to tell stories about R&D impact as it implemented the "R&D: Making Change Happen" (MCH) communications campaign in 2020.

The MCH campaign was an R&D Comms Team's thematic communications campaign developed at the onset of DOST's R&D communications efforts.

The campaign tied all R&D-related communications activities of DOST into one component, which helped target audiences associate individual council's and RDIs' initiatives with DOST's R&D programs. It also served as a rallying point for DOST research agencies as they rolled out their individual and joint communications activities. Approved in March 2020, the campaign has helped synergize the R&D Comms Team's efforts.

The R&D agencies under DOST released communication materials that highlighted the campaign theme. These included an appreciation video for research frontliners during the

COVID-19 pandemic, social media posts, and other collaterals used for webinars, virtual press conferences, etc.

STRIDE's support in the MCH campaign included the facilitation of the R&D Comms Team's brainstorming sessions, consolidation of concepts and inputs into a three-year communication campaign plan, and development of the campaign's visual brand. STRIDE has also recruited and fielded a multimedia artist at the DOST-OUSECRD to support creative requirements for the MCH campaign and other R&D communication materials.

Communication on DOST's COVID-19 Response

At the onset of the pandemic in the Philippines, DOST officials observed how each R&D agency was working on its own in relation to communicating the Department's response to COVID-19. The leaders agreed on the need to create a unified communications effort to ensure that news and information related to DOST's R&D initiatives against the impact of the disease will reach the target audience.

STRIDE developed a media outreach strategic plan to help DOST gain momentum and traction for its publicity efforts specific to its COVID-19 response.

The media outreach plan formed part of the bigger and overarching MCH campaign. Covering a two-month period, the plan helped DOST deliver the message that R&D plays a significant role in addressing a pandemic and its impacts. It generated positive media coverage on DOST R&D initiatives against COVID-19.

DOST Undersecretary for R&D is featured in a STRIDE-assisted communications campaign on the benefits of R&D during the COVID-19 pandemic. / Photo: DOST

3.5.3 Members of the DOST R&D Communications Team enhanced their communications competencies after participating in a series of capability building programs on communications.

For over two years, DOST and STRIDE jointly organized training on various communications topics, which included public relations 101 for R&D communications, newswriting, video editing and production, strategic communications planning; crisis communications, and science storytelling.

The first course delivered was "Public Relations 101 for R&D Communications," a three-day onsite training that gathered 30 participants. The course covered topics such as strategic communications, message development, media relations, and social media communications.

STRIDE also delivered a multi-session training and mentoring on strategic communications planning to help trainees improve their respective communications plan and learn best practices in implementing strategies. Thirteen teams of communications officers completed this program. Aside from lectures and best practices sharing, the course featured a series of consultations with internal and external mentors and a presentation of the trainees' refined strategic communications plan.

Other training courses delivered were news writing, post video production, science storytelling, and crisis communications.

3.5.4 The DOST and STRIDE leveraged the staging of the NRDC in 2020 and 2021 as platforms to deliver R&D key messages.

In 2020, STRIDE supported the DOST in the conduct of the first virtual NRDC, maximizing the opportunity to generate and capture a larger online presence. It assembled a creative team to work with the NRDC Committee and the R&D Communications Team in producing the conference's communication materials, which included the conference key visuals and social media art cards. The creative team also worked with DOST videographers to provide creative direction and ensure video output consistency.

In 2021, STRIDE assisted the DOST R&D agencies in producing videos for the NRDC by delivering training on video editing and production.

3.5.5 Inputs to the development of the DOST Manual for the Operationalization of R&D M&E Protocols were submitted to DOST. The inputs focused on the role of communication in research management, including M&E.

STRIDE's inputs include recommendations on the following areas: process alignment between communications teams and the M&E team, role and task description of the personnel involved, and the types of communications that may be initiated to support each component of the R&D project/process. The inputs were adopted by the TWG and have been incorporated in the M&E manual.

IR 3. Key Accomplishment No. 6

INCREASED NUMBER OF RELEVANT, IMPACT-GENERATING R&D AND INNOVATION-RELATED EVENTS

STRIDE supported various government conferences that seek to help improve the R&D and innovation landscape.

A panel discussion among RIIC stakeholders on bridging the digital transformation divide during the 2019 Inclusive Innovation Conference.

3.6.1 The Philippine Government convened and hosted several conferences that seek to spur conversations and gather more stakeholder support for research- and innovation-related policies and programs. STRIDE supported several of these events.

STRIDE supported the government in the conduct of the following conferences:

▪ Inclusive Innovation Conference. The annual gathering provides a platform for government, industry, and academic leaders to discuss developments on the innovation ecosystem. It looks into opportunities to harmonize innovation strategies and maximize its impact for inclusive economic growth. STRIDE has been a key partner of the government in convening the event since its inaugural in 2017.

   The most recent IIC had the theme "Leadership in Innovation: Key to Sustained Competitiveness and Economic Growth." The two-day event was hosted by Batangas State University. USAID/Philippines Mission Director Ryan Washburn delivered a Message of Support during the event. In his message, Director Washburn highlighted USAID's support through STRIDE in conceptualizing the inaugural IIC back in 2017, which has since witnessed major milestones such as the launch of DTI's I^{3}S, the Philippine Government's IFER, and the RIICs.

▪ Manufacturing Summit. Held annually, the summit seeks to discuss the state of the Philippine manufacturing sector, hoping to explore opportunities and find ways to address industry challenges and roadblocks.

   The most recent Manufacturing Summit was held on June 21, 2022, with the theme "Shaping the Future of Philippine Industries: The Road to Resiliency through Innovation." Featured topics were STI and advanced manufacturing policies, future skills requirements amid digital transformation, incentives for the manufacturing sector, and the opportunities and challenges in the e-vehicle industry.

- Synergy Conference. A two-day conference that brought together international and local speakers, created spaces for knowledge sharing and partnerships, and helped strengthen the network of technology transfer professionals and advocates. The conference was designed and launched by STRIDE and the IPOPHL to strengthen the commercialization pathway in the Philippines, as well as to support IP management, KTTOs, and other technology transfer mechanisms.

  There have been three synergy conferences held since 2015. In 2017, STRIDE formally turned over the conference to IPOPHL, the conference co-convenor.

- Grand Intellectual Property Forum. STRIDE partnered with IPOPHL in the holding of the 2nd Grand IP Forum last April 22, 2022. Convened under the theme "IP and Youth: Innovating for a Silver-Bright Future," the forum showcased IPOPHL's programs, as well as government and private institutions' initiatives that bring IP closer to the youth. It formed part of the year-long celebration of IPOPHL's 25th anniversary.

IR 3. Key Accomplishment No. 7

STRENGTHENED GOVERNMENT CONVERGENCE SPARKED BY THE PARTICIPATION OF HIGH-RANKING STAKEHOLDERS IN INNOVATION MISSIONS OVERSEAS

STRIDE organized two innovation missions and study tours for key stakeholders who are central to the drive toward advancing the Philippines' R&D and innovation ecosystem.

Members of the Philippine Government delegation with USAID/Philippines Senior Education Advisor Mir Tillah (leftmost) during the research and innovation US study tour organized by STRIDE in 2017.

3.7.1 A research and innovation study tour to the United States was organized by STRIDE, paving the way for collaborative learning and convergence among high-level officials from the government and academe who are central to advancing the Philippines' innovation ecosystem.

The delegation was composed of DTI Secretary Ramon Lopez, DTI Undersecretary Rowel Barba and then Assistant Secretary Rafaelita Aldaba, DOST Undersecretaries Rowena Cristina Guevara and Brenda Nazareth-Manzano, CHED Director Napoleon Juanillo, Jr., and then PASUC President Ricardo Rotoras. Also joining the delegation were USAID Philippines Senior Education Advisor Mir Shariff Tillah, then STRIDE Chief of Party (COP) David Hall, and STRIDE COP Richard Abendan who was at that time STRIDE's Research and Industry Partnerships Lead.

The study tour included four stops for meetings with technology accelerators at Silicon Valley, a visit to the Research Triangle Park in North Carolina, and discussions with the RTI International executive team. The delegation also visited the Centennial Campus of North Carolina State University to better understand how it encourages collaborative research.

The tour's final stop was in Washington, DC, to learn from government-funded programs on commercializing R&D outputs. Discussed during the visit were programs such as the Government University Industry Research Roundtable; Small Business Innovation Research Program; and the grants management, measurement, evaluation, and commercialization system of the National Science Foundation.

Partnerships were realized among the agencies represented by the delegation team. They served as a catalyst in the design and rollout of an "all-of-government" innovation approach that has been instrumental in the achievement of various results under STRIDE.

3.7.2 Key stakeholders from the government and the industry formed part of the Philippine's Innovation and Entrepreneurship Mission Team in 2018. They gained new insights, saw best practices, and identified possible applications of learning after completing their study tour in Israel.

STRIDE provided logistical assistance to the Innovation and Entrepreneurship Mission to Israel that was held November 11-16, 2018.

Led by the DTI and the Philippine Embassy in Israel, the Mission gave the Philippine delegation the opportunity to see and learn on-ground innovation strategies, policies, and best practices of Israel.

The mission delegation noted a key policy applied by Israel in R&D funding, to which the dynamic start-up environment and innovation ecosystem is attributed. The country's Israel Innovation Authority co-funds start-ups and expects no repayment from businesses that fail. Dubbed as a "Start-up Nation," Israel is ranked as the third most innovative country in the world next to Switzerland and the United States.

Mission participants included representatives from DTI, CHED, DOST, as well as industry partners SEIPI and IMI. This Mission is important to DTI and DOST officials, who are key stakeholders in the rollout of the country's R&D and innovation strategies and roadmap.

Gender Considerations

The STRIDE Cooperative Agreement provided that gender equality is essential for achieving USAID's development goals. The new USAID Gender Policy advances equality between women and men, and empowers women and girls to participate fully in and benefit from the development, through the integration of gender in the entire program cycle—from design and implementation to M&E.

This integrated approach focuses on achieving three overarching outcomes: (1) Reducing gender disparities in access to, control over, and benefit from resources, wealth, opportunities, and services—economic, social, political, and cultural; (2) Reducing gender-based violence and mitigating its harmful effects on individuals and communities, so that all people can live healthy and productive lives; and (3) Increasing the capability of women and girls to realize their rights, determine their life outcomes, and influence decision-making in households, communities, and societies.

STRIDE provided opportunities for Philippine researchers to incorporate gender within their own projects. It also examined how women researchers participate in research at various professional levels.

STRIDE ensured the integration of the Philippine Government's Harmonized Gender Development Guidelines to be not just gender sensitive but gender responsive. Activities in the first five years of the program included gender-related trainings for STRIDE-funded research teams conducted by expert consultants, and a national gender awareness workshop.

More recently, STRIDE conducted a gender study to analyze the current landscape for women's participation in science, technology, research, and innovation in the Philippines. The paper reinforces STRIDE's objectives of supporting scientific research by promoting the retention of women in the scientific workforce through equal opportunities and access to career development.

Although the Philippines ranks high in gender equity worldwide and among the best among Asian countries, it does have a problem of a "leaky pipeline," which causes the loss of women in the fields of STI, particularly at a relatively senior level. The paper highlights how gender-responsive government policies for retention and incentives for Filipina scientists to return and practice in the Philippines could be an avenu to increase the overall pipeline of scientists in the country.

OVERALL IMPLEMENTATION EXPERIENCE

The STRIDE Program ran from July 1, 2013, to July 16, 2022. The program's implementation was characterized by a strong focus in creating linkages and promoting collaboration among key actors in the Philippine innovation ecosystem. It gravitated toward measures that served as a foundation to strengthening the research and innovation landscape, particularly in terms of fostering trust, supporting innovation-related policies, and capacitating stakeholders from government, industry, and academe.

Three themes of experiences stood out in the nine years of STRIDE implementation, namely: (1) Leveraging the growing convergence of innovation stakeholders, (2) Providing timely and flexible support to government partners, and (3) Pivoting strategies and activities amid the COVID-19 pandemic.

An additional theme "Learning from STRIDE Interventions" zoomed in on the specific learning from the activities of STRIDE under each of its three IR areas.

Leveraging the Growing Convergence of Innovation Stakeholders

STRIDE's transition between its first five years (2013–2018) and the extension years (2019–2022) is a story about growing convergence and leveraging gains.

From 2013 to 2018, STRIDE's activities were clustered into three missions: (1) industry engagement, (2) STI capacity development, and (3) university policy and management. All missions supported helping shape Philippine HEIs as leaders in driving innovation among the country's human resources and being instrumental in producing future talent, workforce, and leaders.

In the course of doing so, STRIDE was presented with various opportunities not only to strengthen universities' capacity to build an R&D-driven culture, promote innovation, and engage industries, but also to create stronger linkages among important actors in the innovation ecosystem, especially the government.

In 2018, STRIDE saw the need to leverage the momentum achieved in inspiring innovation stakeholders into action, especially as many had already begun to explore points for convergence and collaboration. Stakeholders were reaping the benefits of having worked together toward shared goals, armed with an improving trust environment.

As more local universities increased their capacity and confidence in applying for R&D funds from government agencies, thanks to experiences from prior research grants received from USAID through STRIDE, existing social networks between academe and government also widened.

Partnerships facilitated and brokered through STRIDE activities helped researchers, industry players, and government leaders build linkages and nurture relationships with stakeholders from other sectors.

With the continued rollout of innovation-related fora, round table discussions, and conferences, innovation actors found themselves presented with increased platforms to explore potential areas for synergy and collaboration.

A pivotal initiative in the innovation convergence journey was the high-level study tour to the United States that was organized by STRIDE in 2018. Present in this mission were high-raking officials from government and academe, all of whom committed to collaborate and find ways to synergize programs and policies to achieve common goals in the areas of research and innovation.

The mission served as a catalyst in the design and rollout of an "all-of-government" innovation approach, which was instrumental in the design and achievement of various results during the STRIDE's extension years.

In parallel with efforts to build the capacity of Philippine HEIs, STRIDE designed its extension activities to engage the government. The program crafted its roadmap inspired by the gains from expanding government convergence.

Its annual implementation plans, particularly its target IRs, evolved, guided not only by the changing environment but also by the level of achieved collaboration among key players.

Beginning in Year 6, STRIDE activities were organized via four IR segments: (1) Improved higher education capacity; (2) Strengthened linkages between government, industry, and academe; (3) Improved government capacity for innovation; and (4) Improved policy environment for innovation.

However, by Year 7, the IR on strengthened linkages among stakeholders was entrenched into the three other IRs owing to its critical role in facilitating STRIDE activities across all the IRs.

Providing Timely and Flexible Support to Government Partners

The Philippine Government plays an important role in enabling policy reforms and executing impactful programs to strengthen the country's science, technology, research, and innovation.

While the first five years invested a significant amount in capacitating Philippine HEIs, the next round of STRIDE activities gave equal importance, if not more, to capacitating and empowering government innovation actors, from leaders to staff, at both national and local levels.

Beginning in STRIDE Year 6, a significant percentage of STRIDE support went into technical assistance to government partners that are central to boosting R&D and innovation in the Philippines. STRIDE worked closely with the DTI and DOST, as well as with NEDA, IPOPHIL, and CHED, to create policies and strengthen their capacity to design and deliver relevant programs.

STRIDE's consistent presence and support to partner government agencies cannot be overemphasized. For several years, STRIDE demonstrated flexibility and agility in delivering technical assistance to partner agencies, especially DTI and DOST. The goal was to make a more impactful and long-term contribution to the agencies' R&D and innovation-driving initiatives and ensure that these become sustainable.

The assistance typically evolved and responded to whatever was most needed and prioritized by the partner agencies in R&D and innovation efforts.

Under its technical assistance to DTI, STRIDE conducted several studies and provided inputs to many other initiatives of the Department, including policy brief development, position papers on innovation-related legislative measures, and road mapping. STRIDE designed and facilitated various capacity-building programs that increased the ability of officers and staff in setting up a more exciting and empowering innovation arena in the years to come.

The DOST, on the other hand, received STRIDE technical assistance in the areas of improving its R&D grants management system, evaluating and measuring the impact of its R&D projects, communicating R&D outputs and benefits, and advocating for increased investments in R&D, among others. It also benefited from training and other assistance that sought to build skills and competencies in areas critical to their mandate, such as strategic foresight and planning, R&D communications, R&D project management, and technology transfer and commercialization.

By demonstrating the outcomes of its technical assistance and rolled-out activities, STRIDE encouraged partner agencies to unlock more funds and resources for activities supportive of boosting the R&D and innovation landscape.

STRIDE's technical assistance translated into continued investments of Philippine Government partners for innovation. The DTI secured over Php 100 million (~$2 million) worth of budget for innovation-driving initiatives, especially among start-ups and MSMEs. DOST was working with the executive and legislative branches of the government to institutionalize increased R&D allocation from the country's general appropriations act.

Other cases include the DOST-PCIEERD's fund allocation for technology transfer-related initiatives, including the KTTO-IMPACT training in partnership with STRIDE; DOST R&D agencies' ongoing proposals for R&D communications; and DOST and DTI regional offices' fund approval for RIIC-related activities in their respective areas.

Pivoting Strategies and Activities Amid the COVID-19 Pandemic

In March 2020, the COVID-19 pandemic was declared, resulting in the implementation of community quarantines that restricted travel and movement in areas where STRIDE activities were implemented. In an effort to slow down the COVID-19 infection rate, the government called on all sectors to apply work-from-home arrangements; in-person events and activities were not allowed; and business establishments were halted, with only the essential industries operating.

Imposed at varying levels for more than two years, the community quarantine led to a number of pivots in STRIDE operations. Partner institutions shifted their priorities toward addressing more urgent needs arising from the pandemic. Human resources from both STRIDE and partner institutions were affected due to some staff and/or other family

members getting sick from the COVID-19 virus. Concepts for the lined-up projects were no longer viable given safety protocols and movement restrictions.

Adapting to the new normal in the midst of the pandemic, STRIDE shifted its activities, including capability building programs and educational fora, into virtual mode or online modes. It conceptualized new programs to address concerns that emerged from the pandemic, especially those impact stakeholders at the regions. Approaches in terms of coordinating with innovation actors had to be rethought given lack of opportunities to engage in person and do face to face consultations.

Some of the capability building programs that STRIDE pivoted to online mode were the FAB LAB MMA courses, KTTO-IMPACT training program, Career Center training for succeeding cohorts, R&D communications-related training, etc.

STRIDE maximized technologies, and by doing so, reached a wider audience for its public educational programs, including Career Center-related webinars, public launch events, and conferences. One of the webinars that STRIDE helped organize was on the topic "The Future of University Career Centers in the Philippines in a COVID-19 Economy." Online live chat sessions were also held to continuously inform students about their career opportunities after graduation.

STRIDE pitched the concept of IBR Program to RIIC partners and helped facilitate its execution. IBR is a localized consultancy service aiming to help MSMEs rethink their operations through use of innovative practices, technologies, and tools in order to recover from the pandemic. It issued a call for applications for the WARP Grant, which offered USAID funding to help Philippine universities build on previous USAID-funded research to address challenges and changes brought about by COVID-19.

Learning from STRIDE Interventions

RTI International, as implementer of the STRIDE Program, recognizes that learning is key to improving practices. In the course of STRIDE implementation, RTI International has dedicated various research activities to capture system-level changes as well as learning from specific STRIDE interventions.

These learnings were documented through the standalone STRIDE Learning Brief (**Annex A**) as defined under the program's MEL Plan. The process involved the use of applied research to find answers to the learning agenda's key questions per STRIDE's IR. The research included the conduct of the Philippine IEA, RIIC Case Study, RIIC Guidebook, SNA, and a third party Final Performance Evaluation.

1. **Lessons from Implementing IR1 centered on the challenges and opportunities for HEIs in fostering a robust innovation ecosystem.** The two IEAs produced by STRIDE revealed that the innovation ecosystem had improved significantly since 2004, based on stakeholder interviews. However, despite increased interest and government support for research and development, including the passage of laws promoting innovation, stakeholders from academia noted that further investments were needed to address the threat of *brain drain* as promising STEM graduates pursue their careers abroad.

   Challenges identified include R&D procurement issues, slow collaboration among innovation actors, low awareness of increased investments in innovation, and lack of success stories on entrepreneurship as a viable investment option and career choice.

On the positive side, STRIDE research showed that PSM, KTTO, and Career Center programs were having a positive effect on enhancing industry-academe collaboration, which was found to be a driving factor of improvement in the innovation ecosystem.

It was further observed that KTTOs are likely to be sustained in the future given the creation of the STRIDE-supported AToP, a group of technology transfer officers and practitioners, and DOST-PCIEERD's institutionalization of the KTTO training program. Evaluation studies suggest that if IP requirements and concerns of industry partners can be further addressed, the KTTOs' long-term efficacy will be strengthened.

2. **Lessons from implementing IR 2 focused on policy actions that better enable the transfer of R&D outputs to the community, government, and industry.** Many of the linkages mechanisms that STRIDE facilitated have achieved substantial local ownership by government, industry, and academic institutions. However, additional improvements in policies, and broader adoption and investment in key mechanisms, should be considered a priority moving forward.

Results of the STRIDE research activities saw the need for government to prioritize the further uptake of public procurement regulatory reform, since this was needed to increase research outputs. The STRIDE experience likewise highlighted the importance of knowledge sharing among KTTOs in increasing the access to academic research and technologies by external partners. Toward this end, it is also a must to address IP issues that hinder the growth of start-ups and spin-offs.

Innovation linkages at RIICs would also benefit from institutionalization efforts of RIIC activities, along with the expansion of the roles and involvement of local stakeholders. Increasing the number of government agencies involved in RIICs should also be encouraged to increase avenues for linkages.

3. **Lessons from implementing IR 3 tackled government innovation mechanisms where STRIDE has made the most impact, and the role of the government in increasing convergence among innovation stakeholders.** The IEA and final performance evaluation highlighted procurement funding as where the greatest regulatory impact STRIDE can achieve, although the widespread adoption of regulatory changes could take time and will likely lag any interventions.

More immediate and tangible impacts are observed through STRIDE's other supported activities with government. It was shown how greater program and policy coordination between government agencies have grown through the RIICs. These centers are expected to serve as a platform for stronger partnerships within the local innovation ecosystem while providing benefits to small and medium enterprises.

The STRIDE SNA, as previously discussed in the Key Project Outcomes section of this report, shows that the role of government officials has grown and is highly central to the innovation ecosystem network. This increasing role and prominence are attributed in large part to convergence and collaboration between DTI and DOST.

See **Annex A** for a copy of the full STRIDE Learning Brief.

RECOMMENDATIONS FOR FUTURE IMPLEMENTATION STRATEGIES

Learning from its nine-year implementation, the STRIDE Program puts forward the following recommendations on implementation strategies:

1. **Creating mechanisms for building trust-based relationships.** Trust is essential in making friends and nurturing relationships, both of which have been significant drivers in achieving STRIDE's goals. To build trust, however, requires investment in terms of time and effort. Aside from delivering on commitments, trust-building means having a more active participation in bringing people together and creating platforms for shared experiences.

   The STRIDE-organized U.S. innovation mission and study tour is one example of a shared experience that sparked a deeper and more collaborative relationship among key stakeholders in the innovation landscape. The 10-day mission resulted in high-level government officials' improved trust in STRIDE and strengthened commitment to work with the program toward innovation.

   STRIDE recommends that development programs be encouraged to design and implement a more proactive and purposive approach in trust-building efforts. Program teams may be asked to find ways to integrate social components in their activity designs to encourage collaborative learning, shared experiences, and substantive relationship building while also producing measurable outputs and outcomes.

2. **Addressing complex development challenges through diverse multi-functional tools.** Assistance to implementing partners need not always be on a large scale. STRIDE's experience showed that impactful initiatives do not always require substantial resources and need not always be pre-programmed. The key is to support partners in achieving mutual goals at a time when they need it the most.

   Working with one of its partner government agencies, STRIDE learned that workshop activities that are key to developing the implementing rules of an innovation-related policy could be delayed due to financing protocol-related roadblocks. Knowing how pivotal this activity is, STRIDE helped its partner by hosting a venue and providing an expert to facilitate the workshops.

   STRIDE recommends designing mechanisms that will enable program teams to provide multi-functional support to implementing partners. This approach requires development programs that are agile and flexible enough to help ensure that high-impact and pivotal activities are realized despite barriers—whether the barriers are procedural, technical, or resource-related—from the side of implementing partners.

3. **Beyond technical programs, strengthening of cross-functional services.**
Development programs on complex advocacies such as innovation require seeing things from multiple lenses and angles. Doing so allows insight and solutions-thinking processes to be more holistic and effective.

   Using this approach, STRIDE saw that in order to help government partners boost technical programs directly related to the advocacy, it is equally important to enable them to improve their competencies in fields or offices that may be considered outliers from the program's purview. STRIDE's experience showed that horizontal functions in organizations such as communications, financial management, and stakeholder relations building, among others, were critical in enabling government partners to deliver their mandate.

   It is recommended that development programs take a more in-depth assessment of the value of supporting these functions in realizing advocacy goals. Program activities may wish to integrate in their strategic approaches specific interventions to address challenges related to horizontal functions.

4. **Preparing partners for VUCA.** The COVID-19 pandemic caught many stakeholders around the world by surprise, with many unprepared to manage such a wide-scale crisis. Its life-changing impact compelled organizations to pivot projects and activities on an unparalleled scale. In the case of STRIDE and its partners, adapting to the new normal was an unprecedented experience. The program's implementation in the last two years was quite different from what was initially programmed.

   Integrating strategic foresight planning and scenario planning upon the start of a USAID-supported program is a recommended strategy. The goal is to anticipate and prepare for possible random, unexpected, but high-impact events that could significantly affect development initiatives.

   It can also be requested that contractors and program teams craft possible scenarios, and action plans for each, to prepare for extreme changes in the future. Programs may be encouraged to expand annual implementation planning to include strategic foresight planning with key partners. This planning program could serve both as a capacity-building initiative for partner agencies and as a more robust planning mechanism for program teams, especially in light of a future that is becoming more volatile, uncertain, complex, and ambiguous.

[REDACTED]

ANNEXES

Annex A. STRIDE Learning Brief

INTRODUCTION

This Learning Brief presents some key lessons and recommendations gathered from the nine years of implementation (2013–2022) of the Science, Technology, Research and Innovation for Development (STRIDE) Program of USAID/Philippines. It is specifically in response to the Learning Agenda component of the STRIDE Monitoring, Evaluation, and Learning (MEL) Plan. Though most of the learnings here have contributed to the learnings identified in the Final Report, this brief is meant to be a standalone document with a defined set of learning questions.

As an international research institute, RTI has brought its global experience in developing and implementing applied research activities of high technical quality to STRIDE. It is recognized that learning improves practices and enables the project team to regularly reflect on activities and outcomes. STRIDE's Learning Agenda includes active learning approaches addressing specific outcome-related questions related to the program's formal Intermediate Results (IRs).

STRIDE implemented research activities to deliberately capture system-level changes and key outcomes of its interventions. The program also underwent an independent final performance evaluation commissioned by USAID/Philippines, which due to the timing of STRIDE's latest costed extension, was available for inclusion as a Learning Agenda resource. Results and key learnings identified through these processes support the development of stronger future programming in the field of higher education and innovation in the Philippines. The findings presented below reflect the critical participation of STRIDE's government, industry, and university stakeholders in the program's activities.

STRIDE LEARNING AGENDA

STRIDE's Learning Agenda was defined in the program MEL Plan as an important Collaboration, Learning, and Adaptation activity with questions spanning the program's three IRs, shown in **Exhibit A-1** below. Some of the questions have since been modified to better reflect the more recent learnings and experiences.

Exhibit A-1. Learning Agenda Questions

STRIDE Intermediate Result	STRIDE Learning Agenda—Key Learning Questions	Applied Research Activity (Data Source)
IR 1 Improved higher education capacity for innovation	- What are the challenges and opportunities for higher education institutions (HEIs) to foster a robust innovation ecosystem? - Are HEIs addressing the underlying causes for achieving sustained improvements in the innovation sector? - What effect have the Professional Science Master's (PSM), Knowledge and Technology Transfer Office (KTTO), and Career Center activities had on university-industry collaborations? How can KTTOs be further developed and improved to meet industry needs and expectations?	Innovation Ecosystem Assessment Final Performance Evaluation KTTO and PSM Manuals

Exhibit A-1. Learning Agenda Questions

STRIDE Intermediate Result	STRIDE Learning Agenda—Key Learning Questions	Applied Research Activity (Data Source)
IR 2 Improved regulatory environment for innovation	▪ What are future policy actions that can better link innovations and research and development (R&D) outputs to being adopted or transferred to the community, government, and industry?	Innovation Ecosystem Assessment Social Network Analysis Final Performance Evaluation Regional Inclusive Innovation Center (RIIC) Guidebook
IR 3 Improved government capacity for innovation	▪ Revisiting the Innovation Ecosystem Assessment, on which government-related mechanisms (such as R&D procurement and funding, intellectual property policy) has STRIDE made the greatest impact? Which have lagged? Why? What does this imply for further Philippine Government or donor action/investment? ▪ How have the Department of Trade and Industry (DTI)-Department of Science and Technology (DOST) RIICs contributed to change in the innovation ecosystem? ▪ Has the Philippines innovation ecosystem demonstrated increased convergence in the past three years? Do government officials play a central, connecting role in the network? ▪ Has trust and collaboration between government, private sector, and academia improved?	Innovation Ecosystem Assessments RIICs Best Practices Case Study Social Network Analysis Final Performance Evaluation

APPLIED RESEARCH ACTIVITIES

During the course of implementation, STRIDE identified and piloted research activities that contributed to program learning and addressed the Learning Questions. Such activities included documenting case studies of the RIICs model, an update of the first STRIDE Innovation Ecosystem Assessment, and a 2022 Social Network Analysis of STRIDE stakeholders who are active in the Philippines Innovation Ecosystem. A final, third-party performance evaluation complements STRIDE's research efforts. STRIDE research activities are described below.

RIICs Case Study: The STRIDE team selected pilot RIIC regions with relevant government partners active in convergence activities. A senior STRIDE technical consultant led the development of these case studies, which were aimed to document the journey of establishing RIICs, a main activity from STRIDE's extension period. The case studies captured STRIDE's overall approaches, including facilitating collaboration between government agencies, academia, and industries and supporting government partners' capacity through a set of interventions at a regional and sectoral level. Cases were also intended to document learnings and best practices throughout the establishment and

implementation of various activities under the RIICs initiative through stakeholder interviews and review of secondary materials.

Innovation Ecosystem Assessments: In support of the Learning Agenda, STRIDE carried out a follow-up longitudinal formative evaluation of the original STRIDE Innovation Ecosystem Assessment (in fiscal year [FY]2015). This second study was completed in FY2019; and aimed to answer Learning Questions related to STRIDE and its innovation stakeholders' collective improvements and performance in the innovation space five years after the project started in 2014. Both assessments relied on stakeholder perceptions of various enabling factors crucial to innovation productivity.

Social Network Analysis (SNA): This learning activity (FY2021/FY2022) aimed to take a snapshot of the established social network of STRIDE's stakeholders and to qualify their relationships and dynamics. SNA characterizes and visualizes social networks, wherein *nodes* represent network members and edges connecting nodes represent relationships or exchanges among them. SNA can help researchers and practitioners understand the social, political, and economic relational dynamics at the heart of international development programming. It can inform program design, monitoring, and evaluation to answer questions related to where people get information; which stakeholders are most valued or central; who has power and influence; and how these dynamics change over time. The SNA included a retrospective look at how the network has changed (and grown) since the beginning of the program, and sought to characterize levels of trust among stakeholders sampled

Final Performance Evaluation: Commissioned by USAID/Philippines[8] and carried out by the Panagora Group, this evaluation report presents a comprehensive end-of-project assessment focused on questions of effectiveness, design (relevance), and sustainability. This evaluation was created with feedback from STRIDE stakeholders participating in focus group discussions, key informant interviews, and surveys, in addition to a robust literature review.

RIIC Guidebook: As part of the efforts to ensure the sustainability and replicability of the RIICs, STRIDE in partnership with the DTI co-developed a RIIC Guidebook that aimed to provide guidance on how stakeholders could operationalize and institutionalize the RIICs. These are mostly based on the learnings that were gathered from the iterative process that was employed in operationalizing both the pilot and expansion RIIC sites.

INTERMEDIATE RESULT 1—LESSONS LEARNED

What are the challenges and opportunities for HEIs to foster a robust innovation ecosystem?

Are HEIs addressing the underlying causes for achieving sustained improvements in the innovation sector?

STRIDE produced Innovation Ecosystem Assessments in 2014 and in 2019, which were interview and survey-based studies querying key higher education, government, and industry stakeholders; looking at how the Innovation Ecosystem (IE) had changed; and investigating what challenges persisted after the first five years of STRIDE. In 2019, almost 70% of respondents agreed that the IE had improved since 2014. A small percentage felt

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[8] USAID Philippines STRIDE. (2021). Final Performance Evaluation Report, Panagora Group. Available at: https://pdf.usaid.gov/pdf_docs/PA00XWRX.pdf

that the IE had worsened, and under 30% thought it had remained the same (**Exhibit A-2**). It was noted that 20% of the total 249 respondents were academic stakeholders.

Academic stakeholders reported that progress toward sustained improvement in the innovation sector was happening. Research and knowledge creation had improved significantly since 2014. Government-funded programs and facilities were expanding, including outside the National Capital Region. Legislation had been passed in support of addressing innovation challenges in the education sector. The supply of research and the enabling environment had improved. Interest in research was growing, as were connections between industry and academia. However, stakeholders from academia also noted that further investment was still needed to slow the prevalent *brain-drain* of promising science, technology, engineering, and mathematics (STEM) graduates who were leaving to seek careers outside of the country.

More broadly, stakeholders identified the following ongoing challenges in the 2019 IEA.

Exhibit A-2. 2019 IEA

68.4% Improved or Increased

IEA 2019 Survey Result – *Has the IE improved, stayed the same, or worsened since 2014? n=249*

27.9% No-Change

3.7% Worsened or Decreased

- **Procurement regulations remained a challenge:** Science, research, and development remained limited by administrative burden, delays, and access to equipment and supplies. Procurement issues were contributing to industry reticence to collaboration.

- **R&D investments and mechanisms were still needed:** Government-funded industry research was needed to enable R&D talent, awareness, and access. R&D enablers were especially needed to increase innovations for new products and services by industry.

- **Collaboration among IE actors was still low:** Collaboration, across stakeholder groups as well as across government agencies, needed improvement beyond coordination, into real collaboration with holistic goals and mutually beneficial outcomes.

- **Awareness of opportunities was low:** Following increased investments in innovation in education and programs, stakeholders called for parallel investments to drive uptake by raising awareness about opportunities and reducing barriers to participation.

- **Need for success stories:** Interest in entrepreneurship was increasing but examples of local successes were needed to solidify this as a valid investment option and career choice.

The 2019 Innovation Ecosystem Assessment, 2022 SNA, and STRIDE's final performance evaluation suggest that collaboration has further increased between universities and industry stakeholders. Improvements in various ecosystem elements were attributed to factors
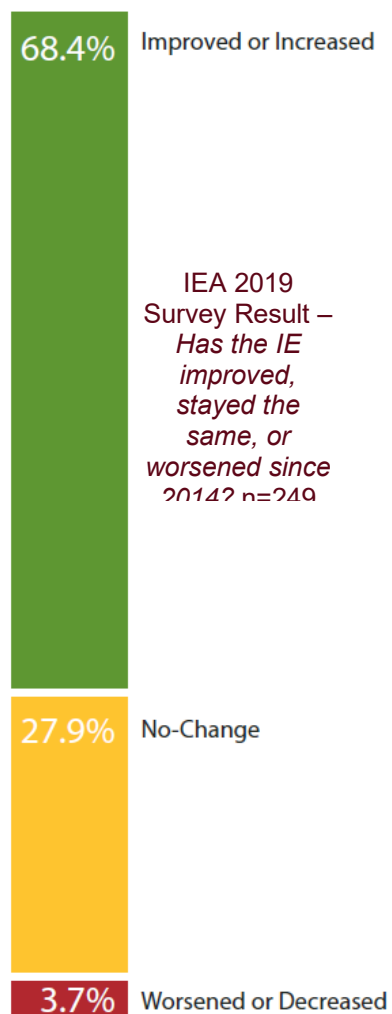
including more intentional interventions from government, an increased focus on academic alignment to industry, and industry's increased willingness to collaborate with academia on curricula (human capital development) and on R&D.

It is in these same improving factors that HEIs should seek more opportunities to expand their impact on innovation productivity. The Philippine Government, primarily through DOST, has increased its efforts and resources for industry-academe research. HEIs in turn will have to significantly increase their research capacity to match both higher funding opportunities and the perceived willingness of industry to collaborate. Though there are many interventions and corresponding improvements for HEI research collaborations with industry, HEIs will still need to show that these improvements are scalable and bring tangible value to external partners.

What effect have the PSM, KTTO, and Career Center activities had on university-industry collaborations?

The 2019 IEA suggested that efforts to enhance knowledge transfer were having a positive effect. At that time, academic stakeholders expressed optimism that knowledge transfer would continue to improve due the government's push to establish KTTOs. Many universities were then actively connecting to industry actors to emphasize valuable research areas and to leverage (and protect) intellectual property (IP).

STRIDE's final performance evaluation also highlighted university-industry collaboration as a driving factor of improvement in the IE. Specifically, the evaluation findings suggest that HEI innovation capacity under IR1 improved more than under the two other IRs, a success that was attributed to earlier STRIDE investments in the intellectual capital of HEIs. The evaluation team attributed improvements in science, technology, and innovation (STI) to capacity-building activities, including the PSM curriculum support, Career Center development, and trainings under KTTO, Filipinnovation Entrepreneurship Corps, and Skills in Technical and Advanced Research Training (START).

In terms of effectively linking actors in the *research-driven knowledge economy* and those in the *marketplace-driven commercial economy*, the final evaluation also credits STRIDE interventions at HEIs for having developed industry-oriented curricula through PSM efforts, creating student-industry links through the Career Centers, and advancing the use of research products through the KTTOs. The evaluators also linked the increased number of Career Centers to enhanced engagement between HEIs and industry and suggested that increased engagement will help to support local labor markets by providing competencies required for economic growth.

How can KTTOs be further developed and improved to meet industry needs and expectations?

The STRIDE final performance evaluation identified KTTOs as an element of STRIDE expected to be sustained into the future. The recent creation of the Alliance of Techtransfer Professionals of the Philippines (AToP), which is mostly comprised of STRIDE-trained technology transfer officers, is another signal of the sustainability of the KTTO intervention beyond the STRIDE Program. The further expansion of AToP, particularly with industry-based practitioners, would be an important piece in creating more venues for commercialization with industry.

KTTO trainings were institutionalized by the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) by linking it with

its own IP Management Program for Academic Institutions Commercializing Technologies (IMPACT) grant activity. As such, alternative resources should be explored to increase the capacity of technology transfer officers in advanced topics such as IP valuation and spin-off creation. If these and other pressing IP requirements and concerns of industry partners can be effectively addressed by KTTO and AToP personnel, then this strengthens the business case for resourcing KTTOs at HEIs and the demand for specific services of technology transfer professionals in the long-term.

INTERMEDIATE RESULT 2—LESSONS LEARNED

What are future policy actions that can better link innovations and R&D outputs to being adopted or transferred to the community, government, and industry?

The support of STRIDE for an enabling policy and regulatory environment has the goal of increasing innovation productivity. This is ultimately manifested in increased R&D outputs that have a tangible impact to various stakeholders from government, industry, and academia. However, further improvements in the adoption and investment in key mechanisms and policies are still needed and should be a priority for all stakeholders. The following are some approaches to policy that can be adopted by stakeholders.

Promote Further Uptake of Procurement Regulatory Reform

The performance evaluation noted that STRIDE's funding of research on R&D procurement can enable an improved regulatory process. The research work was one of the few initiatives in the Philippines that closely studied the data and role of procurement challenges in innovation. This effort on R&D procurement seems to be the only activity described by the performance evaluation that contributed to a positive regulatory change. However, the performance evaluators noted that while STRIDE pushed for the procurement framework to improve the regulatory environment for innovation, the uptake of these interventions will take time. Improving public procurement regulation should remain a priority for all stakeholders, requiring sustained and collaborative efforts. Interventions will have to be multi-faceted, tackling certain limitations in existing policies, systems, and human capacity. Policy efforts by stakeholders should also span different levels, from systems at individual HEIs to legislative efforts in Congress.

Knowledge Sharing in IP Issues

STRIDE demonstrated that KTTOs are a promising means of increasing the availability of research and technology in the IE, while working to ensure the rights and ownership of industry and academic actors and institutions. A more robust knowledge sharing environment among technology transfer practitioners will further enhance the Philippines' capacity to innovate in economically impactful ways. The performance evaluation recommends an ongoing and future focus on commercialization challenges, specifically patents and trademarks, to help start-ups and spin-offs to grow and be sustainable. The previously described AToP also highlights the need for policies and certifications that would help in the recognition of technology transfer as a profession.

Sustain Policy Support for RIICs

The performance evaluation noted that the government-academe-industry link within the RIICs will need mutually agreed policy support that can strengthen and sustain existing partnerships. RIIC stakeholders see further inroads to be made with both National Economic and Development Authority (NEDA) and Commission on Higher Education (CHED) regional offices in new RIIC sites to be established. RIICs will also need more policy support in terms

of easing business relationships between academia and industry, while also cultivating trust that encourages more disclosures from HEI innovators. Other parallel issues such as internal HEI policies on faculty loads and the difficulty in finding matching expertise, will also need to be tackled for more linkages within RIICs. In line with the RIICs, it was also recommended that regional HEIs are encouraged to launch START Centers where appropriate. Regional training centers would offer easier access to training and modules that could be targeted at specific needs of local faculty and research staff, which further expands the impact of academics at RIICs.

Further Enhance the Role of Government as an Innovation Ecosystem Actor

STRIDE's SNA results suggest that the roles of certain government agencies have grown substantially within the IE, though interconnectedness and collaboration are not evenly distributed among all critical government agencies. The study suggests that DTI and DOST are becoming more influential actors, largely driving the growth in prominence of government in innovation. Other key government offices and institutions should also be engaged and leveraged to bolster the rather central role of government in supporting innovation.

INTERMEDIATE RESULT 3—LESSONS LEARNED

Revisiting the Innovation Ecosystem Assessment, on which government-related mechanisms (such as procurement, R&D funding, IP policy) has STRIDE made the greatest impact?

Which have lagged? Why?

What does this imply for further Philippine Government or donor action/investment?

STRIDE has provided technical assistance to various government initiatives on policies, programs, and capacity-building to strengthen its enabling role in innovation-led growth. The performance evaluation highlighted STRIDE efforts on tackling R&D procurement challenges where the greatest regulatory impact can be achieved. The performance evaluation noted that widespread adoption of regulatory changes takes time, with any improvements to lag well after inputs are made. However, it remains to be seen how R&D procurement has significantly improved, with recent STRIDE-supported surveys among HEI faculty and staff indicating that systemic challenges remain.

More immediate and tangible impacts are observed through STRIDE's other partnerships with government partners. Both the RIIC Case Study and the performance evaluation showed how greater program and policy coordination between government agencies grew through the RIICs. This is an indicator of improvement in knowledge sharing among government actors and local stakeholders, which was identified as a major challenge in previous Innovation Ecosystem Assessments. RIIC activities were also continued by DTI with its own staff and resources as STRIDE headed for closeout.

KTTO is also a mechanism worth noting as an impactful program to government, with DOST recognizing its value and adding its own resources to the KTTO training in recent years. The KTTOs have also been instrumental in building a new cadre of innovation professionals to carry the Philippines' economy into the future.

The support to training of technical staff at DOST, DTI, and NEDA has also been well-received. The DTI Competitiveness and Innovation Group has grown in recent years with organizational and staffing assistance from STRIDE. DOST has also instituted internal policies and practices crafted out of STRIDE assessments and workshops. Examples

include stronger capacity of grants officers at DOST and the creation of a new R&D Communications Team.

As documented in the final performance evaluation, STRIDE's stakeholders identified several mechanisms and functions that improved because of STRIDE's assistance and their own participation in STRIDE-led events and initiatives. Frequency analysis of key informant interviews identified actions and mechanisms that stakeholders thought reflected STRIDE's *value proposition*, presented in **Exhibit A-3**.

Exhibit A-3. Stakeholders' View of STRIDE

STRIDE Unique Value Propositions Identified by Stakeholders (KII Data, Final Performance Evaluation, 2021)
Improving industry linkages, establishing the KTTO, providing technological solutions to the problems of industry partners, IP commercialization
Integrating industry concerns into curriculum, PSM
Building innovative database and recognition through strategic planning and ideation workshops
Establishing good relationships among partners in the region through mapping, aligning, linking, and building trust
Institutionalization of RIICs through the passage of Regional Development Council resolution, competitiveness index
Technical assistance in the crafting of the Implementing Rules and Regulations of the Philippine Innovation Act, pandemic-related activities, policy support for DOST and DTI
Building confidence in others' competence and consistency of performance

How have DTI-DOST RIICs contributed to change in the IE?

STRIDE's sources strongly suggest that RIICs serve as a platform for further strengthening the IE especially at the regional level. The RIIC Case Study, covering two RIICs from Davao and Cagayan de Oro, presents how these RIICs have brought about change in the local IE.

Lessons learned, captured in the case studies report, show that establishing a RIIC is a major undertaking, requiring champions among key stakeholder organizations, resources, and dedicated staff. However, the emergent results of these initiatives show the value of this investment. RIICs have resulted in greater collaboration around innovation among industry stakeholders, government, and academe, and have presented numerous benefits to Philippine small and medium enterprises in their regions.

OROBEST

RIIC stakeholders in Region 10 have observed and reported improved convergence across innovation sector actors. Optimizing Regional Opportunities for Business Excellence Through Science, Technology, and Innovation (OROBEST) is now a recognized entity that actively consolidates innovation and entrepreneurial activities in Region X. Because of OROBEST, industry and academic interactions are reported to be stronger, more collaborative, and more frequent.

Local firms appear to be benefiting from greater convergence and support provided through the RIIC. Eight companies/consortia have successfully applied for innovation funding grants (the most recent grant was awarded in 2022). OROBEST has also streamlined the development of new joint programs to respond to emerging needs. For example, the

OROBEST Building Resiliency and Innovation to Drive Growth of Enterprises in Bicol (BRIDGE) program is assisting micro, small, and medium enterprises (MSMEs) in developing robust mitigation and recovery plans in response to coronavirus disease 2019 (COVID-19) disruptions. The BRIDGE program created opportunities for MSMEs to partner with universities and research organizations for technical consultancy and research partnerships; start-ups for automation, e-commerce, or digitalization of operations; government partners for access to specific funding or grants; and financial institutions for new capital loans. Several local firms established links to other firms, government, foundations, and research institutions, leading to investments, research, and product innovations. Under OROBEST, convened R&D enabled 15 industry-academe partnerships to be established and matching, ideation, and project design activities, which led to the establishment of three academic and seven industry R&D partnerships.

iSTRIKE Davao

According to RIIC stakeholders, a major change in the context of the IE was the establishment of a network of organizations collaborating through highly structured industry engagements. Increased convergence is enabling assimilation of technologies for practical use and gaining the support of stakeholders to create competitive products, services, and business processes. The RIIC now serves as a mechanism linking various stakeholders for a dynamic and robust innovation and entrepreneurship ecosystem.

Innovation Through Science and Technology and Risk Resilient-Based Initiatives Toward Knowledge Economy (iSTRIKE) Davao stakeholders also reported that awareness of the importance of innovation, particularly for small and medium enterprises, has substantially increased. The case study report highlighted that innovation actors were beginning to work together more strategically, in terms of innovation intervention and assistance to MSMEs. Stakeholders involved in innovation efforts were placing more importance on the need of small and medium enterprises to scale-up their business through innovation.

In relation to the iSTRIKE Davao RIIC, Davao City also took encouraging steps toward encouraging innovation. An ordinance was passed in April 2021 establishing the Davao City Inventions and Innovations Center, intended as a start-up enabler helping in prototype building, feasibility studies, and IP protection among others. The ordinance also enabled the creation of the Davao City Invention and Innovation Board, which serves to develop Davao City's innovation goals, priorities, and long-term strategies.

Has the Philippines IE demonstrated increased convergence in the past three years?

Do government officials play a central, connecting role in the network?

Two STRIDE learning questions center on how the Philippines IE has changed, and how specific actors' roles have evolved over time. The answer to the first of these questions is *yes*. The sources suggest that convergence and network growth have both occurred and are attributable to STRIDE. Performance evaluation respondents overwhelmingly said that the convergence of national, regional, and interdepartmental government efforts concerning innovation is STRIDE's most significant contribution.

STRIDE's SNA further demonstrates how the network of IE stakeholders has both grown and strengthened during the period of performance. STRIDE's activities turned informational relationships into strong partnerships, and institutionalized collaboration mechanisms in key institutions (**Exhibit A-4**).

Exhibit A-4. SNA Result by Affiliation
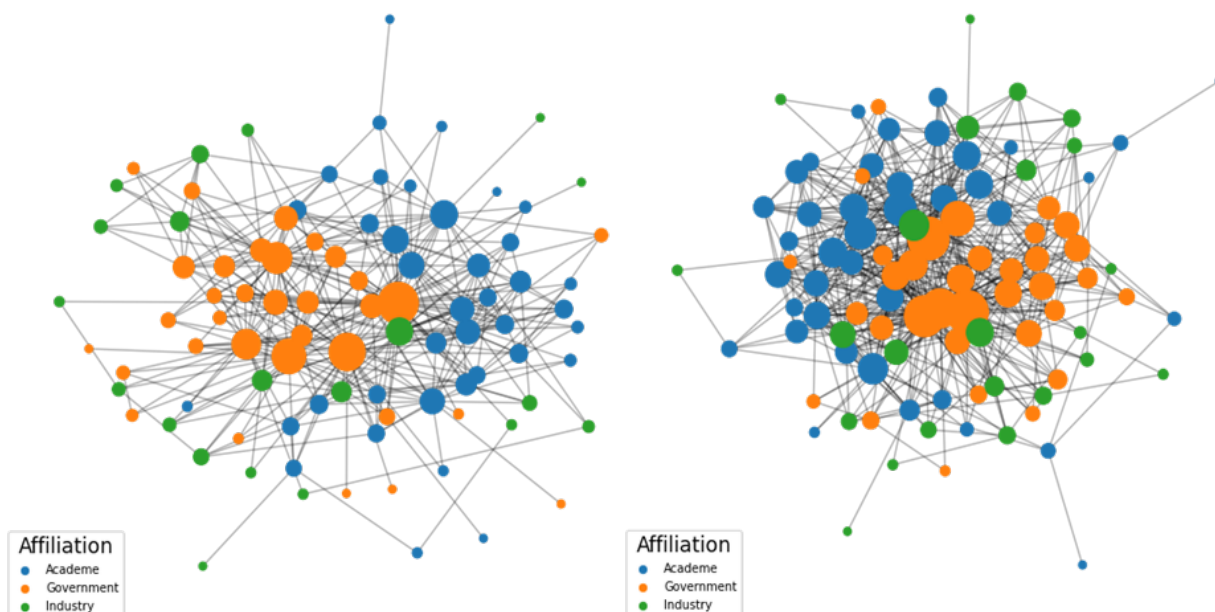
Past (left) and present (right) STRIDE Social Network by Affiliation

STRIDE's SNA was designed to capture a retrospective from the network of innovation stakeholders to facilitate comparisons to the present day; differences between the past and current network are significant. The above graph represents the past and current state of the network, with the current picture (right) showing more stakeholders, more connections, and more density. The number of connections between stakeholders grew from 366 to 611 (a 67% increase), and the mean number of connections (number of connections identified by an individual stakeholder) changed from 8.04 to 12.6 (a 57% increase). Stakeholders generally reported that they believed the gains made in growing and strengthening the innovation network would be sustained.

SNA Measurement	Past Network	Present Network	Change
Total Connections	366	611	+66.9%
Total Mean Connections	8.04	12.60	+56.7%
Govt. Connections	111	221	+99.1%
Mean Govt. Connections	7.16	13.0	+81.6%

SNA results also show that the role of government officials grew and is highly central to the innovation network. Government affiliated stakeholders' connections numbers roughly doubled during STRIDE, and we can observe a shift toward a strong, central role for government officials in the network. The study suggests that structurally, the government network is trending toward dominance in the innovation space, driven by its most influential actors. The prominence of government's role is attributed in large part to convergence and collaboration between DTI and DOST. The analysis also suggests the need to develop and engage more innovation actors from other government agencies.

Annex B. List of Philippine HEIs Supported by STRIDE

1. Adamson University
2. Aklan State University
3. Angeles University Foundation
4. Asia Pacific College
5. Asian Institute of Management
6. Ateneo de Davao University
7. Ateneo de Manila University
8. Ateneo de Zamboanga University
9. Bataan Peninsula State University
10. Batangas State University
11. Benguet State University
12. Bicol State College of Applied Sciences and Technology
13. Bicol University
14. Bohol Island State University
15. Bukidnon State University
16. Bulacan State University
17. Cagayan de Oro College - PHINMA
18. Cagayan State University
19. Capitol University
20. Capiz State University
21. Caraga State Univerity
22. Cavite State University
23. Cebu Doctors' University
24. Cebu Institute of Technology - University
25. Cebu Normal University
26. Cebu Technological University
27. Central Bicol State University of Agriculture
28. Central Luzon State University
29. Central Mindanao University
30. Central Philippine University
31. Centro Escolar University
32. De La Salle College of Saint Benilde
33. De La Salle University - Dasmarinas
34. De La Salle University - Lipa
35. De La Salle University - Manila
36. Don Mariano Marcos Memorial State University
37. Eastern Samar State University
38. Eulogio Amang Rodriguez Institute of Science and Technology
39. Far Eastern University
40. First Asia Institute of Technology and Humanities
41. Guimaras State College
42. Holy Angel University
43. Holy Name University
44. Ilocos Sur Polytechnic State College
45. Iloilo City Community College
46. Iloilo Science and Technology University
47. Iloilo State College of Fisheries
48. Isabela State University
49. JH Cerilles State College
50. Jose Rizal Memorial State University
51. Jose Rizal University
52. Lipa City Colleges

53.   Lyceum of the Philippines University - Batangas
54.   Lyceum of the Philippines University - Manila
55.   Malayan Colleges
56.   Manila Central University
57.   Manuel Enverga University Foundation
58.   Mapua University
59.   Mariano Marcos State University
60.   Marinduque State College
61.   Mindanao State University - Iligan Institute of Technology
62.   Miriam College
63.   Misamis University
64.   Negros Oriental State University
65.   New Era University
66.   Northwestern Mindanao State College of Science and Technology
67.   Northwestern University
68.   Nueva Ecija University of Science and Technology
69.   Nueva Vizcaya State University
70.   Our Lady of Fatima University
71.   Palawan State University
72.   Pangasinan State University
73.   Philippine Marine Merchant Academy
74.   Philippine Women's University
75.   Polytechnic University of the Philippines
76.   Rizal Technological University
77.   Samar State University
78.   San Pablo Colleges
79.   Sapphire International Aviation Academy
80.   Silliman University
81.   Siquijor State College
82.   South Western University
83.   Southern Leyte State University
84.   St. Louis University
85.   St. Rita's College of Balingasag
86.   Systems Plus College Foundation
87.   Tagoloan Community College
88.   Tarlac State University
89.   Technological Institute of the Philippines
90.   Technological University of the Philippines - Manila
91.   Technological University of the Philippines - Visayas
92.   Unibersidad de Zamboanga
93.   University of Asia and the Pacific
94.   University of Cordilleras
95.   University of Iloilo - PHINMA
96.   University of Mindanao
97.   University of Northern Philippines
98.   University of Pangasinan
99.   University of San Agustin
100.   University of San Carlos
101.   University of San Jose Recoletos
102.   University of Santo Tomas
103.   University of Science and Technology of Southern Philippines - Cagayan de Oro
104.   University of Science and Technology of Southern Philippines - Claveria
105.   University of Southeastern Philippines
106.   University of Southern Mindanao
107.   University of St. La Salle

108.   University of the Immaculate Concepcion
109.   University of the Philippines - Baguio
110.   University of the Philippines - Cebu
111.   University of the Philippines - Diliman
112.   University of the Philippines - Los Banos
113.   University of the Philippines - Manila
114.   University of the Philippines - Mindanao
115.   University of the Philippines - Visayas
116.   University of the Philippines Open University
117.   University of the Visayas
118.   Virgen Milagrosa University Foundation
119.   Visayas State University
120.   West Visayas State University
121.   Western Institute of Technology
122.   Western Mindanao State University
123.   Western Philippines University
124.   Xavier University - Ateneo de Cagayan
125.   Zamboanga State College of Marine Sciences and Technology

Annex C. Network of STRIDE-Supported University Career Centers in the Philippines

Pioneer batch of Trainees	Cohorts 1 and 2 (Year 6 Trainees)	Cohort 3 (Year 7 Trainees)	Cohort 4 (Year 8 Trainees)
Ateneo de Davao University	Batangas State University	Angeles University Foundation	PUP
Palawan State University	Far Eastern University	Bicol University	USTP-Jasaan
Technological Institute of the Philippines	Jose Rizal University	Holy Angel University	USTP-Panaon
University of Iloilo-PHINMA	Mariano Marcos State University	Mapua University	USTP-Villanueva
University of Santo Tomas	MSU-IIT	University of Cordilleras	USTP-Cagayan de Oro**
University of Southeastern Philippines	University of San Agustin		USTP-Claveria**
University of Science and Technology of Southern Philippines (USTP)-Cagayan De Oro	University of San Carlos		USTP-Oroquieta**
Western Philippines University	USTP-Claveria		
	USTP-Oroquieta		
	Western Mindanao State University		

Bold font: STRIDE-recognized Model Career Centers   **Also took part in previous career center training

Annex D. List of STRIDE-Supported PSM Programs in the Philippines

HEI	PSM program
▪ Mariano Marcos State University	▪ Renewable Energy Engineering
▪ Holy Angel University	▪ Cybersecurity
▪ Angeles University Foundation	▪ Data Science
▪ Technological Institute of the Philippines	▪ Construction Management, Data Science, and Engineering Management
▪ Polytechnic University of the Philippines	▪ Railway Engineering Management
▪ Western Mindanao State University	▪ Food Processing and Management
▪ Saint Louis University	▪ Manufacturing Engineering and Management
▪ University of the Cordilleras	▪ Information Technology
▪ Central Luzon State University	▪ Dairy Products Technology
▪ Cebu Institute of Technology University	▪ Industrial Automation
▪ University of San Jose-Recoletos	▪ Electro-Acoustic Engineering
▪ University of Science and Technology of Southern Philippines	▪ Power Systems Engineering and Management, and Construction Management

Annex E. List of HEIs and RDIs/Agencies That Benefited from the KTTO Program

HEI	RDI/Agency
▪ Adamson University	▪ Department of Agriculture - Philippine Center for Postharvest Development and Mechanization (DA-Philmech)
▪ Angeles University Foundation	▪ Department of Health - Research Institute for Tropical Medicine
▪ Asian Institute of Management	▪ Department of Science and Technology - Advanced Science and Technology Institute
▪ Ateneo de Manila University	▪ Department of Science and Technology - Food and Nutrition Research Institute
▪ Bataan Peninsula State University	▪ Department of Science and Technology - Forest Products Research and Development Institute
▪ Batangas State University	▪ Department of Science and Technology - Industrial Technology Development Institute
▪ Bicol University	▪ Department of Science and Technology - Metals Industry Research and Development Center
▪ Bulacan State University	▪ Department of Science and Technology - Philippine Nuclear Research Institute
▪ Cagayan State University	▪ Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
▪ Capiz State University	▪ Department of Science and Technology - Philippine Council for Health Research and Development
▪ Caraga State University	▪ Department of Science and Technology - Philippine Council for Industry, Energy, and Emerging Technology Research and Development
▪ Cavite State University	▪ Department of Agriculture - Philrice
▪ Cebu Institute of Technology - University	▪ Design Center of the Philippines
▪ De La Salle - Dasmarinas	▪ Intellectual Property Office of the Philippines
▪ De La Salle University – Manila	▪ Commission on Higher Education
▪ Eastern Samar State University	
▪ Eulogio Amang Rodriguez Institute of Science and Technology	
▪ FEU Institute of Technology	
▪ Guimaras State University	
▪ Holy Angel University	
▪ Iloilo Science and Technology University	
▪ Isabela State University	
▪ Mapua University	
▪ Mindanao State University - Iligan Institute of Technology	

HEI	RDI/Agency
▪ Miriam College	
▪ Nueva Vizcaya State University	
▪ Our Lady of Fatima University	
▪ Palawan State University	
▪ Polytechnic University of the Philippines	
▪ Saint Louis University	
▪ Samar State University	
▪ Silliman University	
▪ Southern Leyte State University	
▪ Tarlac State University	
▪ Technological Institute of the Philippines	
▪ Technological University of the Philippines - Manila	
▪ Technological University of the Philippines - Visayas	
▪ University of Mindanao	
▪ University of San Carlos	
▪ University of San Jose - Recoletos	
▪ University of Santo Tomas	
▪ University of Science & Technology of Southern Philippines	
▪ University of Southeastern Philippines	
▪ University of the Cordilleras	
▪ University of the Immaculate Conception	
▪ University of the Philippines - Cebu	
▪ University of the Philippines - Diliman	
▪ University of the Philippines - Los Baños	
▪ University of the Philippines - Manila	
▪ University of the Philippines - Visayas	
▪ University of the Philippines Mindanao	
▪ University of Visayas	
▪ Virgen Milagrosa University Foundation	
▪ Visayas State University	
▪ West Visayas State University	
▪ Western Philippines University	

Annex F. Information About USAID Scholars Through STRIDE

	Scholar	Field of Study	Host U.S. University
1.	Tristan Joshua Alba	Bioprocess Engineering	State University of New York - ESF
2.	Jayson Balansag	Biotechnology	University of Delaware
3.	Ma. Fatima Carla Bertulfo	Biotechnology	Pennsylvania State University
4.	Ryan Jayson Bragais	Electric Power Systems Engineering	North Carolina State University
5.	Christi Florence Calina	Computer Science	Valparaiso University, Indiana
6.	Katrina Carino	Food Science and Technology	Cornell University
7.	Carla Alessandra Anna Dario	Marine Conservation	University of Miami
8.	Givette Kristine Esguerra	Sustainability	Rutgers State University of New Jersey
9.	David Lloyd Henson	Sustainable Energy Systems	State University of New York - Cortland
10.	Marc Francis Hidalgo	Materials Science and Engineering	Binghamton University
11.	Julieane Camile Lacsina	Global Agriculture	Rutgers State University of New Jersey
12.	Jerrilee Laspinas	Pharmaceutical Engineering	Rutgers State University of New Jersey
13.	Anne Brigitte Lim	Solar Energy Engineering and Commercialization	Arizona State University
14.	Yusoph Manalundong	Drug Discovery and Development	Rutgers State University of New Jersey
15.	Grace Vergie Nillama	Land and Water Resources Engineering	University of Idaho
16.	Jason Occidental	Electrical and Computer Engineering	Rutgers State University of New Jersey
17.	Micaela Cristina Perlada	Biotechnology & Genomics	Rutgers State University of New Jersey
18.	Gratz Dale Noel Redoble	Electric Power Systems Engineering	North Carolina State University
19.	Arlan James Rodeo	Global Agriculture	Rutgers State University of New Jersey
20.	Janella Mae Salamania	Materials Science & Engineering	Cornell University
21.	Melanie Salinas	Bioinformatics	University of Delaware

Scholar	Field of Study	Host U.S. University
22. Arnel Sicam	Biomanufacturing and Bioprocessing	University of Georgia
23. Juan Paolo Sicat	Bioinformatics	University of Delaware
24. Norence Aaron Tan	Information Systems & Technology	Rutgers State University of New Jersey
25. Peter Immanuel Tenido	Personal Care Science	Rutgers State University of New Jersey
26. Joji Marie Teves	Applied Biosciences - Cellular and Molecular Biology	University of Arizona
27. Jasmine Angelie Albelda	Physics	Purdue University
28. Richard Licayan	Natural Products Chemistry	Rutgers State University of New Jersey
29. Mercy Quilantang	Fisheries	Michigan State University
30. Cristina Tiangco	Chemistry & Chemical Engineering	University of Maryland - Baltimore County
31. Kramer Joseph Lim	Food and Waste Engineering	Case Western Reserve University
32. Roque Ulep	Chemistry	Kansas State University
33. Alberto Paulo Cercado	Environmental Engineering	Texas A&M University
34. Reuben Lingating Jr.	Environmental Engineering	Wright State University
35. Leni Dejeto	Marine Science	University of California - Santa Cruz
36. Rolly Fuentes	Natural Products Chemistry	Virginia Polytechnic Institute and State University
37. Lovelia Mamuad	Agriculture / Animal Sciences	Ohio State University
38. Nathaniel Alcantara	Microbiology / Biological Sciences	North Carolina State University
39. Judith Antonino	Food Technology and Processing	Oklahoma State University
40. Jose Paolo Bantang	Chemistry	University of Texas at San Antonio
41. Lilia Fernando	Microbiology / Nano Technology	Massachusetts Institute of Technology
42. Lance O' Hari Go	Electrical Engineering	University of California - Berkeley
43. Andres Philip Mayol	Biological Engineering	University of Arizona
44. Josept Mari Poblete	Biomedical Sciences	Ohio State University

Scholar	Field of Study	Host U.S. University
45. Iris Bea Ramiro	Biochemistry	University of Utah
46. Al Rey Villagracia	Physics	University of Arizona / University of Florida
47. Flora Yrad	Biomedical Sciences	Michigan State University
48. Arniel Ching Dizon	Chemical Engineering	University of Missouri - Columbia
49. Bernadeth Ticar	Natural Products Chemistry	University of Georgia
50. Julianne Vilela	Agriculture / Animal Science	Iowa State University
51. Joyce Ibana	Biomedical Sciences	Washington State University
52. Lawrence Vitug	Agricultural Engineering	University of Arizona
53. Hilario Taberna Jr	Natural Products Chemistry	University of Georgia
54. Francis Fontanilla	Biomedical Sciences	Washington State University
55. Ivan Henderson Gue	Agricultural Engineering	University of Arizona
56. Rainie Rich Chucky Yambao	Agriculture / Animal Science	University of Illinois at Urbana-Champaign

Annex G. List of USAID Research Grants Awarded through STRIDE

	Grantee	Project title
1.	Don Mariano Marcos Memorial State University	Business and Engineering Technology (UBE-Tech) for the Purple Yam Industry in the Northern Philippines
2.	Don Mariano Marcos Memorial State University	Characterization of Anthocyanins from Purple Yam (Ube) and Purpled Corn for Nutriceutical and Food Product Formulations
3.	Mariano Marcos State University	Pilot Deployment and Research and Development of Multi-Feedstock Village-Scale Modularized Kits for Bioethanol Production
4.	Mariano Marcos State University	Phase 2: Multi-Feedstock Village-Scale Modularized Kits for Bioethanol Production Phase II. Establishment of S & T -Based Sustainable Village-Scale Bioethanol Industry
5.	Mariano Marcos State University	Technology Franchising of the Village-ScaleNipahol Technology (VSNPT) for Community Empowerment During the Pandemic
6.	Mariano Marcos State University	Developing New Patterns and Design for the Local Weaving Industry in Paoay, Ilocos Norte
7.	University of the Philippines Los Baños Foundation, Inc.	Philippine Local Forages as Sustainable Feed Alternative for Dairy Cattle
8.	University of the Philippines Los Baños Foundation, Inc.	Developing a Sustainable Dairy Cattle Genetic Stock in the Philippines: Establishing the Base for Future Breeding (Phase I)
9.	University of the Philippines Los Baños Foundation, Inc.	Developing a Sustainable Dairy Cattle Genetic Stock in the Philippines: Phase II - Crossbreeding with Aussie Red
10.	University of the Philippines Los Baños Foundation, Inc.	Functional Genome Analysis of Gold Nanoparticle-Producing Plant Growth Promoting Bacteria Isolated from Philippine Soil
11.	University of the Philippines Los Baños Foundation, Inc.	Recombinant Buffalo Antibodies as a Resource for Diagnostics and Therapeutics: Proof-of-Concept and Applications in Schistosomiasis
12.	University of the Philippines Los Baños Foundation, Inc.	Survey and Comparative Detection of the Fungi Associated with Vascular Streak Dieback (VSD) Disease in Cacao-Growing Areas of the Philippines
13.	University of the Philippines Los Baños Foundation, Inc.	Reducing Agricultural Post-Harvest Loss by Developing a Cost-Effective Cold Storage Facility
14.	University of the Philippines Los Baños Foundation, Inc.	Isolation, Purification and Characterization of Proteins with Bioactive Peptides Exhibiting Blood Pressure and Cholesterol Lowering Activities from Pineapple
15.	Western Philippines University	Increasing the Production of Abalone Haliotis asinina Juveniles in Hatchery and Nursery for Grow-Out Farming as Supplemental Livelihood in Coastal Communities (Phase I)
16.	Western Philippines University	Increasing the Production of Abalone Haliotis asinina Juveniles in Hatchery and Nursery for Grow-Out Farming as Supplemental Livelihood in Coastal Communities (Phase II)
17.	Western Philippines University	Protocol development for the culture of two high value marine finfish species as a livelihood opportunity for the people of Palawan

Grantee	Project title
18. Western Philippines University	Development of Simplified Backyard Hatchery Propagation and Grow-Out Culture Methods for Pearl Oysters as Alternative Livelihood Opportunities for Palaweños
19. Central Bicol State University of Agriculture	Finding Solutions to Precocious Flowering of Stevia rebaudiana in the Philippines
20. Iloilo Science and Technology University	Bioactive Hyaluronic Acid from Heads of Silver-Banded Whiting for Nutraceutical Use (Phase I)
21. Iloilo Science and Technology University	Bioactive Hyaluronic Acid from Heads of Silver-banded Whiting for Nutraceutical Use, Phase 2: Characterization and Biocompatibility Assessment of the Extracted Hyaluronic Acid.
22. Iloilo Science and Technology University	Valorization of Brown Seaweeds through Alginate Extraction for Fruit and Fish Post-Harvest Preservation
23. Iloilo Science and Technology University	Multi-Powered Drying System for Food Processing
24. Iloilo Science and Technology University	Design, Fabrication and Evaluation of a Water-Driven S-Turbine Pump
25. University of San Agustin	Chemical Profiling and Characterization of Pharmaceutical Biomarkers of Iloilo Honey
26. University of the Philippines Visayas Foundation, Inc.	Application of Plant Extracts and Essential Oils as Natural Preservative and Flavoring in Low-Salt Dried Fish and Fish Jerky (Phase I)
27. University of the Philippines Visayas Foundation, Inc.	Technology Verification, Pilot Scale Production and Test Marketing of Low-Salt Dried Fish and All Natural Tuna Jerky (Phase 2)
28. University of the Philippines Visayas Foundation, Inc.	Launching of Tuna "Tapa" (Tuna Jerky) Products: Taking on the Challenge Towards Spin-off Startup Enterprise Amidst the Pandemic
29. University of the Philippines Visayas Foundation, Inc.	Dietary Proteins from Endemic Philippine Fish Species
30. University of the Philippines Visayas Foundation, Inc.	Production and Evaluation of High-Protein Fermented Sweet Potato (Pro-Enk) as Feed Ingredient for Economically Important Aquatic Organisms
31. University of San Carlos	Characterization of Mango-Derived Nutraceuticals Produced by Spray Drying Technology
32. University of San Carlos	Development of patches from pectin nanofiber scaffolds with polyphenolic bioactive compounds for skinrestorative applications
33. Samar State University	Wearable Evasion Device
34. Mindanao State University-Iligan Institute of Technology	Optimized Chip Implementation of Indoor Light Energy Harvesting for Sensor Network and Battery Charging (Phase I)
35. Mindanao State University-Iligan Institute of Technology	INLIGHT-Chip Fabrication and testing of Indoor Light Energy Harvesting for Sensor Network and Battery Recharging (Phase II)
36. Mindanao State University-Iligan Institute of Technology	Development and Production of High Value Yacon (Smallantus sonchifolius) Products
37. Mindanao State University-Iligan Institute of Technology	Rigid Polyurethane Insulation Foams Made from Lignocellulosic Rice Straw
38. Mindanao State University-Iligan Institute of Technology	Improving the Gardner color index and homogeneity of a developed coconut fatty acid distillate (CFAD)-based polyol for commercialization.
39. Xavier University	Fast Pyrolysis of Napier Grass in a Fluidized Bed Reactor

Grantee	Project title
40. Xavier University	Potential of Dehydrated Vegetable Production in Strengthening Sustainability of Smallholder Vegetable Supply Chains (Phase I)
41. Xavier University	Potential of dehydrated vegetable production in strengthening the sustainability of smallholder vegetable supply chains (Phase II)
42. Xavier University	Scale-Up of Freeze Concentrator for Coconut Water
43. University Science and Technology of Southern Philippines	Low Cost Intelligent Steam Education Robot (LISER)
44. Ateneo de Davao University	Optimization of Cacao Fermentation
45. University of Southeastern Philippines	Design, Development, and Packaging of an Internet of Things (IoT) Monitoring and Intelligent Control System for Crop Heat Stress
46. Benguet State University	Non-aflatoxigenic Aspergillus flavus Isolates in Northern Philippines as Potential Biological Control Against Pre-Harvest Aflatoxin Contamination of Peanut Phase I
47. Benguet State University	Phase 2: Development of Protocols for The Production of Inoculants and Field Application of Atoxigenic Strains of Aspergillus Flavus (ASAFs) As Biological Control Agents (BCAs) Against Pre-Harvest Aflatoxin Contamination of Peanut
48. Ateneo de Manila University	Field Quality Test Kits and Mobile App for the Medicinal Plant Industry: Water Activity and Plant Extract Profile (Phases I and II)
49. Ateneo de Manila University	Phase 2: Field Quality Test Kits and Mobile App for the Medicinal Plant Industry: Water Activity and Plant Extract Profile
50. Ateneo de Manila University	Analytics Monitoring for Power Systems (AMPS)
51. De La Salle University	Design and Manufacturing Feasibility of a Novel Smart Electric Folding Bicycles in the Philippines
52. De La Salle University	Synthesis and Characterization of Polymer-Based Graphene Nanomaterials with Anti-Corrosion and Anti-Barnacle Properties for Sea Vessel Hull Applications
53. De La Salle University	Microvascular Therapeutic Fields based on Resonance Phenomena Principles
54. De La Salle University	Automation of Coco Sugar Production
55. De La Salle University	Smart Farm for All-Seasons Tomato Production
56. De La Salle University	Establishing a Registry of Philippine Coffee Varieties and Developing SNPs Markers for Increased Production
57. De La Salle University	Life Cycle Assessment of Algal Biofuels in the Philippines (Phase I)
58. De La Salle University	Process Streamlining of the Algae Industry in the Philippines (Phase II)
59. De La Salle University	Sustainable Management of "Aqua" for Resilient 21st Century (SMART) Communities
60. De La Salle University	Microvascular Therapeutic Fields based on Resonance Phenomena Principles
61. Mapua University	Mapua Sikat Project Bathala Rocketstove
62. University of the Philippines - Manila	War on Worms and Water, Sanitation and Hygiene (WOW-A-WASH): Integration of Helminthiases Control with Wash in Selected Haiyan-Stricken and Armed Conflict Areas in the Philippines

Grantee	Project title
63. University of the Philippines – Diliman	Spatio-Temporal Controls on Gold Mineralization in Masara, Compostela Valley Philippines
64. University of the Philippines – Diliman	Pilot Scale Production of Halymenia durvillei Bory de Saint-Vincent: Post-Harvest Evaluation of Phycobiliproteins and Lambda-Like Carrageenan in H. durvillei
65. University of the Philippines – Diliman	Expanded Organo-Bentonite Nanofiller for High Value-Added Rubber Products (Phase I)
66. University of the Philippines – Diliman	Expanded Organo-Bentonite Nanofiller for High Value-Added Rubber Products: The "Mixture" Approach to Multi-Functionality (Phase II)
67. University of the Philippines – Diliman	Production of Halymenia durvillei Biomass in a Land-Based Culture Facility Using Vegetative Propagules and Spores
68. University of the Philippines – Diliman	Mining Bacteria-Derived Human Host Cell Signaling Modulators for Targeted Drug Discovery
69. University of the Philippines – Diliman	Development of Standardized Philippine Moringa oleifera-based Food Supplement with Validated Therapeutic Activity by Way of Untargeted Metabolite Profiling and Bioassay-Guided Fractionation
70. University of the Philippines – Diliman	Plasma Cleaning: Development of Efficient Methods for Processing Microelectronic Device Surfaces
71. University of the Philippines – Diliman	Brushed/Brushless DC Motor Controller and Battery Management System with Battery Authentication for Electric Vehicles
72. Technological Institute of the Philippines	Charge and Advertise (ChAd)
73. Technological University of the Philippines	Automated Chicken Manure Toxicity Level Reducer System Using Optimized Farm Probiotics Solution

Annex H. List of MSMEs Assisted through RIIC programs

Region	Industry/MSME	Activity
III- Bulacan	TLM Yema Buko Pie and Pasalubong Center	IBR
III- Bulacan	Mang Densio's Sweets & Delicacies	IBR
V- Legazpi	7As Pasalubing Shop	R&D Workshop
V- Legazpi	AviCrafts and Styles	R&D Workshop
V- Legazpi	Gapas Delight Food Product Manufacturing	R&D Workshop
V- Legazpi	J Emmanuel Pastries	IBR
V- Legazpi	JM Handicraft	IBR
V- Legazpi	Leslie's Pili Products	IBR
V- Legazpi	LGU-Sorosogon Province	R&D Workshop
V- Legazpi	PhilPili	R&D Workshop
V- Legazpi	Seph Pasalubong Shop	R&D Workshop
V- Legazpi	Shelmed Cottage Treasures	IBR
V- Legazpi	Harina Pastries	IBR
V-Legazpi	Bicol Agricultural Cooperative	IBR
VII- Cebu	ADAC SYS	R&D Workshop
VII- Cebu	Advanced Mindlab Technologies, Inc.	R&D Workshop
VII- Cebu	Agriko	IBR
VII- Cebu	Cebu Primera	IBR
VII- Cebu	Eco Hub Cebu	IBR
VII- Cebu	Golden Prince	IBR
VII- Cebu	Lifeline Tech Inc.	IBR
VII- Cebu	Magic Melt Foods, Inc.	IBR,
VII- Cebu	SPINGINE	R&D Workshop
VII- Cebu	Zoog	R&D Workshop
X- CDO	Iligan Light and Power Incorporated (ILPI)	R&D Workshop
X- CDO	Acupan Engineering	IBR
X- CDO	Ammara Ice Creams	R&D Workshop, IBR
X- CDO	Aspecon	IBR
X- CDO	Audio Bunny	IBR
X- CDO	Aura's Cake & Pastries Manufacturing	IBR
X- CDO	Bestfriend Goodies	R&D Workshop, IBR
X- CDO	Bighoop Charitable Institutuion, Inc	IBR
X- CDO	Cafe Franco	IBR
X- CDO	Carbon Cycle Processing	R&D Workshop, IBR
X- CDO	CDO Champion Corp.	IBR
X- CDO	Oro Handmade Innovations	R&D Workshop, IBR
X- CDO	CNQ Agricultural Consultancy/ CNQ Herbal Product And Manufacturing	IBR
X- CDO	Community Wireless and Power	IBR
X- CDO	COYCOY's Lechon, Atbp.	IBR
X- CDO	Daily Lifestyle Wellness Place	IBR
X- CDO	Darling Foods	R&D Workshop
X- CDO	Dirt Bag	IBR

Region	Industry/MSME	Activity
X- CDO	Dulcilitas Food Products	IBR
X- CDO	Ehatid	IBR
X- CDO	FAST Laboratories	IBR
X- CDO	First Gen Corp.	R&D Workshop
X- CDO	Folder and Goods Trading	IBR
X- CDO	Glenalbee Mushrooms Farm	IBR
X- CDO	Global Mindanaw Agriventures, Inc	R&D Workshop, IBR
X- CDO	Grace Trajera Engineering Works	IBR
X- CDO	Green Pastures Corp	IBR
X- CDO	Greenergy	R&D Workshop
X- CDO	Green Pastures Corporation	R&D Workshop, IBR
X- CDO	Halal Organic Feeds	R&D Workshop
X- CDO	Highland Fresh	R&D Workshop
X- CDO	Hyperstacks	IBR
X- CDO	Jamaican F&B Training and Assessment Center	IBR
X- CDO	JCreate	IBR
X- CDO	JDS Prime Inc	IBR
X- CDO	Josephus Fastfood	IBR
X- CDO	JVCare Food Specialty Company	IBR
X- CDO	Kimchi de Oro Homemade Foods	IBR
X- CDO	LG Electronics	R&D Workshop
X- CDO	Limonero Fruit Drinks	R&D Workshop, IBR
X- CDO	Living Space Cleaning Services	IBR
X- CDO	Ltops Preppysional	IBR
X- CDO	Mabuhay Vinyl Corporation	R&D Workshop
X- CDO	Meea's Ensaymadas Food Products	IBR
X- CDO	Modesto Cafe	IBR
X- CDO	Mustard Seed Systems Corp	IBR
X- CDO	Nenecitas Sorbetes	IBR
X- CDO	Pic-A-Talk	IBR
X- CDO	Pilgrim Christian College	IBR
X- CDO	Pilmico Foods Corporation	R&D Workshop
X- CDO	Poleen's Food Products	IBR
X- CDO	PR Dandan Agricultural Farm	IBR
X- CDO	Prito de Oro, Inc	IBR
X- CDO	Professional Organizers Unlimited Inc.	IBR
X- CDO	Pukot's Grill Catering Services	IBR
X- CDO	Republic Cement Iligan, Inc.	R&D Workshop
X- CDO	Republika Junk and Scrap Trading	IBR
X- CDO	RSPOT Solutions, Inc.	R&D Workshop
X- CDO	Salay Handmade Products Industries Incorporated	IBR
X- CDO	Skills Mastery Institute	IBR
X- CDO	SLERS	R&D Workshop

Region	Industry/MSME	Activity
X- CDO	THE STONEWARE POTTERY, INC.	IBR
X- CDO	Theo's Kitchen	IBR
X- CDO	Toti's Homemade Ice cream	IBR
X- CDO	Waga's Peanut Butter Manufacturing	IBR
X- CDO	Wela School System (Wela Online Corp.)	IBR
X- CDO	Yestech IT Solutions	IBR
XI- Davao	Adlawan Farms Corp.	R&D Workshop
XI- Davao	Agrigrowlive Farms	IBR
XI- Davao	As&Rs	IBR
XI- Davao	Bakeshoppe	R&D Workshop
XI- Davao	Coffee for Peace Inc.	IBR
XI- Davao	D'Farmers Market	IBR
XI- Davao	Ellen's Farms (NCCC chain of stores) and Davao Region mushroom growers cooperative	R&D Workshop
XI- Davao	Eng Seng Food Products	R&D Workshop
XI- Davao	Frux Food Products	R&D Workshop
XI- Davao	Healthy Sweets	IBR, R&D Workshop
XI- Davao	King's Baked Foods	IBR
XI- Davao	Lamee	R&D Workshop
XI- Davao	Lao Integrated Farms Inc.	IBR
XI- Davao	MalagosCheese farm	IBR
XI- Davao	Nakashin Davao International, Inc	R&D Workshop
XI- Davao	Nutricient, Inc.	IBR
XI- Davao	Rehoboth Cooperative	IBR
XI- Davao	Double S Food Products	IBR
XI- Davao	MS3 Agriventures	IBR
XI- Davao	Wit's Sweets and Savouries,	IBR
IX- Zamboanga	Marcus- Handyman Construction	IBR
IX- Zamboanga	Haus Staff Mart	IBR
IX- Zamboanga	Rommel Milk Tea	IBR
IX- Zamboanga	Mindanao Pasalubong center	IBR
IX- Zamboanga	Ktree Food Products	IBR
IX- Zamboanga	Ma'am Riz's Food Service	IBR
IX- Zamboanga	Farmers Cooperative and Marketing Association	IBR
IX- Zamboanga	Midsalip Farmers Multi-purpose Cooperative	IBR