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ACRONYMS AND ABBREVIATIONS

ABC+	Advancing Basic Education in the Philippines
ADDU	Ateneo de Davao University
AIP	Annual Implementation Plan
AGILA	Academic Grants for Industry-Led Applications
BIST	Business Innovation through Science and Technology
CARWIN	Collaborative Applied Research with Industry grants
CDO	Cagayan de Oro
CHED	Commission on Higher Education
CITU	Cebu Institute of Technology University
CLA	collaborating, learning, and adapting
COP	Chief of Party
CRADLE	Collaborative Research and Development to Leverage Philippine Economy
DA	Department of Agriculture
DACUM	Developing Curriculum
DCOP	Deputy Chief of Party
DLSU	De La Salle University
DOST	Department of Science and Technology
DQA	data quality assessment
DTI	Department of Trade and Industry
FACTS	Foreign Assistance Coordination and Tracking System
FEC	Filipinnovation Entrepreneurship Corps
FGD	focus group discussion
FSU	Florida State University
FY	fiscal year
GIA	government, industry, academe
GII	Global Innovation Index
GPPB	Government Procurement Policy Board
HEI	higher education institution
HEIRIT	Higher Education Institution Readiness for Innovation and Technopreneurship

ICO	Innovation and Collaboration Office
ICT	information and communications technology
IEA	Innovation Ecosystem Assessment
IIC	Inclusive Innovation Conference
IMPACT	Intellectual Property Management Program for Academic Institutions Commercializing Technologies
IR	intermediate result
IRR	Implementing Rules and Regulations
KTTO	Knowledge and Technology Transfer Office
LOP	life of program
M&E	monitoring and evaluation
MEL	monitoring, evaluation and learning
M-L-A	mapping, linking, aligning approach
MSMEs	micro, small, and medium enterprises
MSU-IIT	Mindanao State University – Iligan Institute of Technology
NCR	National Capital Region
NGO	nongovernmental organization
NRCP	National Research Council of the Philippines
OROBEST	Optimizing Regional Opportunities for Business Excellence through Science, Technology, and Innovation
PAASE	Philippine-American Association of Science and Engineering
PASUC	Philippine Association of State Universities and Colleges
PBST	Philippine Business for Science and Technology
PCAARRD	Philippine Council of Agriculture, Aquatic, and Natural Resources Research and Development
PCHRD	Philippine Council for Health Research and Development
PCIEERD	Philippine Council for Industry, Energy and Emerging Technology Research and Development
PEA	political economy analysis
PI	performance indicator
PID	participatory institutional diagnostics
PISI	Platform for Innovating SUCs for Industry 4.0
PPP	public-private partnership
PSM	Professional Science Master's
Q	quarter
R&D	research and development

RDI	research and development institution
RIIC	Regional Inclusive Innovation Center
S4CP	Science for Change Program
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
STTA	short-term technical assistant/ce
SUCs	state universities and colleges
TBI	Technology Business Incubator
TIP	Technological Institute of the Philippines
TTO	Technology Transfer Office
TWG	technical working group
UniFAST	Unified Financial Assistance System for Tertiary Education Act
UP	University of the Philippines
UPSCALE	University of the Philippines Sustaining Collaboration in an Advanced Learning Environment
USAID	United States Agency for International Development
USG	US Government
USTP	University of Science and Technology of Southern Philippines
WIPO	World Intellectual Property Organization
Y	year

EXECUTIVE SUMMARY

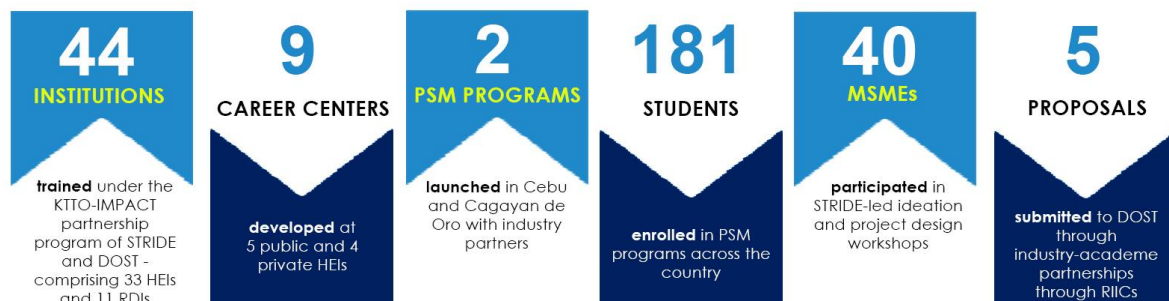
RTI International is pleased to present the sixth Annual Report for fiscal year (FY) 2019 of the Science, Technology, Research and Innovation for Development (STRIDE) Program, a United States Agency for International Development (USAID) Philippines initiative that strengthens the country's science, technology, and innovation (STI) capacity as a driver for inclusive economic growth.

Year 6 is the first year of implementation in the STRIDE extension phase that advances the Philippines' journey to self-reliance by directly partnering with government, industry, and academic (GIA) institutions to increase their capability to deliver their own effective innovation programs, policies, and services. Because of the transition to the extension phase, this report covers an extended duration of 15 months, from July 1, 2018 to September 30, 2019.

SIGNIFICANT ACHIEVEMENTS

Many positive developments in the country's innovation ecosystem were seen during the year, perhaps none more comprehensive than the Philippines' rise of 19 places to rank 54th in the 2019 Global Innovation Index (GII). This result shows the significant momentum that has been generated by innovation stakeholders and GIA institutions, many of which have received capacity development assistance from STRIDE since 2013.

STRIDE technical assistance and capacity building sustain and enhance innovation programs that are primarily owned by Philippine stakeholders. STRIDE implementation strategies seek to complement and leverage the significant resources invested by the country to realize the promise of science and technology in creating better economic opportunities for all Filipinos.



- **The Department of Science and Technology (DOST) allocates Php40 million (~\$780,000) for partnership with STRIDE on institutionalizing technology transfer at 33 academic and 11 government research institutions.** The grant from DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) can provide human resources and tools in the implementation of technology transfer activities for eligible institutions that successfully complete the STRIDE Knowledge and Technology Transfer Office

(KTTO) training program. All 107 participants representing these 44 institutions have already begun this part-time training, which will conclude next fiscal year.

- **Mentors from Florida State University and STRIDE model Career Centers are helping develop nine new Career Centers.** Five public and four private higher education institutions (HEIs) are establishing more dynamic career services with linkages to industry with the help of previous STRIDE trainees from neighboring regions.
- **Two new Professional Science Master's (PSM) programs in Industrial Automation and Construction Management were launched with industry partners.** US-based Knowles Electronics partnered with Cebu Institute of Technology University to further high-value manufacturing in Cebu, while a consortium of regional construction firms is working with the University of Science and Technology of Southern Philippines to make Cagayan de Oro the next construction hub of Mindanao. As of the end of Year 6, there were 181 students enrolled in STRIDE-initiated PSM programs at HEIs across the country.
- **Public HEIs committed to be more competitive in the age of Industry 4.0. STRIDE assisted in the development of the Philippine Association of State Universities and Colleges (PASUC) Platform for Innovating State Universities and Colleges (SUCs) for Industry 4.0 (PISI) and its Innovation Diagnostic Tool to help SUCs identify needed interventions.** Speaking at the PASUC General Assembly, United States Ambassador Sung Kim encouraged members on their efforts: "As a friend, partner, and ally, the United States remains committed to support you as champions of innovation."
- **Ongoing Innovation Ecosystem Assessment (IEA) to build on the well-received 2014 STRIDE study.** With the Philippine Development Plan and multilateral agencies citing the first IEA, STRIDE kicked off the second run of the IEA to gauge improvements as well as lingering challenges that local stakeholders can tackle in the future. And since linkages are vital to an innovation ecosystem, STRIDE continued to organize 31 linkages events along with a study tour to Israel spearheaded by government partners.
- **Government embarks on Inclusive Filipinnovation Roadmap, establishes multi-agency council and new undersecretary position for innovation.** By supporting a Technical Working Group on Inclusive Innovation, STRIDE has enabled the convergence of seven government agencies on innovation programs. The TWG has met for the first time this year and will meet again to cover important topics for future collaboration of these agencies, such as the two recently signed laws on innovation and start-ups. The Department of Trade and Industry (DTI) has also created a Competitiveness and Innovation Group headed by newly-appointed Undersecretary Rafaelita Aldaba, a long-time partner of STRIDE in crafting the Roadmap and other innovation policies.
- **Regional Inclusive Innovation Centers (RIICs) were identified as a regional development priority. STRIDE is supporting the efforts of DTI and DOST to build RIICs in four pilots regions; three Regional Development Councils have formally adopted and endorsed the RIIC initiative.** STRIDE has conducted over 30 engagements with stakeholders under its Mapping-Linkages-Alignment approach to building a cohesive regional network of innovation programs.

- **Seven formal industry-academe collaborations were created from RIIC activities, as DOST and regional partners adopt the STRIDE Ideation Framework.** In addition to the two PSM programs already mentioned, there were five Collaborative Research and Development to Leverage Philippine Economy (CRADLE) grant proposals to DOST that were borne out of the 11 STRIDE-conducted ideation and project design workshops attended by over 40 micro, small, and medium enterprises (MSMEs). The framework of these workshops for solidifying relevant partnerships is being adopted by government stakeholders that wish to address industry and academe gaps while increasing MSME access to grants.
- **DOST formally adopts alternative metrics policies to better capture impact of research and development (R&D) projects.** The new DOST Monitoring and Evaluation (M&E) Protocol launched this year incorporates concepts and guidance provided by a STRIDE short-term technical assistant with experience in research metrics at US funding institutions. These alternative metrics will help measure the complex “return of investment” of costly R&D projects for the department.
- **DOST enhances the translation of R&D benefits to the public, creates R&D Communication Committee.** Positive outcomes such as those captured by the DOST M&E Protocol will need to be communicated effectively for a better public appreciation of funding R&D. STRIDE is thus supporting the Office of the Undersecretary of Research and Development in its strategic communications efforts by providing a senior communications consultant and capacity-building activities for the committee.

PROJECT CHALLENGES

Overall the project has encountered only minimal implementation and management challenges. Slight delays have been encountered in ramping up major tasks during the first year of the implementation in the extension phase; however, by the end of the year almost all tasks are in line to meet targets. Some subtasks have been delayed or modified mostly as a response to complex monitoring and shifting priorities and needs of stakeholders, particularly those of government partners. Such subtasks will be discussed in the Accomplishments section where appropriate. The launch of the Skills in Technical and Advanced Research Training (START) Center in particular was delayed due to the exploration of a willing government partner that could be an institutional and funding partner.

STRIDE is continuing recruitment efforts to fill the Deputy Chief of Party (DCOP) position vacant since July 2019. The initial search has yet to find a suitable candidate willing to accept the position, and STRIDE has increased the participation of its Senior Consultants Group in the technical management and delivery of its activities, which has significantly minimized any disruptions from the DCOP vacancy.

STRIDE GOAL AND INTERMEDIATE RESULTS

The STRIDE program is a USAID/Philippines initiative that has a **goal to strengthen the STI capacity for inclusive growth in the Philippines**. It builds upon the shared vision with the 2017–2022 Philippine Development Plan in which self-sustaining, inclusive development can be achieved by “promoting science, technology, and creative arts to enhance innovation and creative capacity.” The program’s support to Philippine institutions that are creating their own innovative solutions to the country’s developmental goals is also in line with USAID’s Journey to Self-Reliance framework.

During the preceding year of implementation (Year 5), a modification was issued by USAID to the STRIDE Cooperative Agreement increasing the total award by [REDACTED] and extending the completion date for an additional three years from June 30, 2018, to July 16, 2021. STRIDE will produce the key deliverables and outputs desired by USAID in its application request for the program extension. The general request parameters include: technical assistance to government efforts, strengthened links between innovation stakeholders, policy improvements, and institutionalization of STRIDE capacity-building programs with partner universities.

STRIDE, in consultation with USAID and stakeholders, has defined technical tasks in the Annual Implementation Plan (AIP) for FY 2019 that will operationalize the delivery of outputs and outcomes to meet program goals. The tasks seek to deliver improvements to four Intermediate Results (IRs) as described in **Table 1** and **Figure 1**.

TABLE 1. STRIDE INTERMEDIATE RESULTS





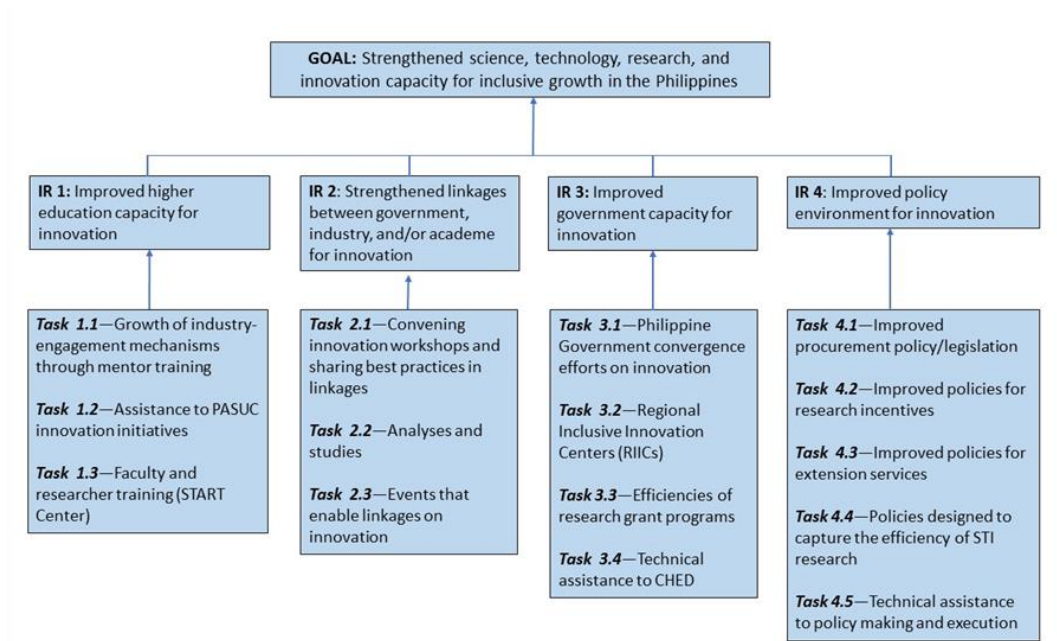
IR 1	IR 2	IR 3	IR 4
			
Improved higher education capacity for innovation	Strengthened linkages between government, industry and academe for innovation	Improved government capacity for innovation	Improved policy environment for innovation
STRIDE conducts mentor training that will help higher education institutions (HEIs) institutionalize industry-engagement mechanisms. It provides Philippine universities and colleges assistance in their innovation activities and helps establish a post-doctoral training center for faculty and researchers engaged in innovation.	STRIDE provides technical assistance and support in strengthening links between industry, academe, and government. This involves convening of innovation workshops and forums, conduct of studies, and supporting or organizing events that enable linkages on innovation.	STRIDE helps strengthen innovation ecosystem development efforts of Philippine Government agencies and institutions that are central to the innovation ecosystem. Technical assistance is provided in relation to Philippine Government's convergence efforts on innovation, establishment of Regional Inclusive Innovation Centers, research grant efficiency, and Commission on Higher Education (CHED) initiatives.	STRIDE supports science, technology, and innovation (STI) research and development policy improvements in government and in universities, particularly in the areas of procurement, research incentives, extension services, and STI research efficiency. Where necessary, support and/or training will be given in both the formulation and the execution of policy.

FIGURE 1. RELATIONSHIP OF STRIDE TASKS TO IRs AND PROGRAM GOAL



PERFORMANCE INDICATOR SUMMARY TABLE

The indicators in *Table 2* are those listed in the project's Monitoring, Evaluation, and Learning Plan submitted in August 2018. The STRIDE monitoring approach tracked performance indicators (PIs) at the output and outcome levels. In addition, STRIDE tracked and monitored context indicators. These context indicators formed the basis of the program's complexity awareness approach by tracking trends in the larger national and international STI ecosystem external to STRIDE.

TABLE 2. PERFORMANCE INDICATOR SUMMARY TABLE

Indicator	Year 1 – 5 Targets	Year 1–5 Accomplish- ments	Target for Reporting Period (Year 6)	Actual for Reporting Period (Year 6)	Percentage achieved of actual vs Y6 target	Overall Life of Program (LOP) target	Actual to date	Percentage achieved of actual vs LOP target	Notes
GOAL: Strengthened science, technology, research, and innovation capacity for inclusive growth in the Philippines									
PI28. University-industry research collaboration in GII (context)	NA	56 th (2018)	NA	25 th (2019)	NA	NA	NA	NA	
PI29. State of cluster development in GII (context)	NA	59 th (2018)	NA	48 th (2019)	NA	NA	NA	NA	
Intermediate Results (IR) 1: Improved higher education capacity for innovation [REDACTED]									
PI21 (ES. 2-1). Number of host-country tertiary education institutions receiving capacity development support with US Government (USG) assistance (FACTS) (Tasks 1.1, 1.3, 3.1)	177	191 (110 unique)	6	39 (8 new)	650%	233	230	99%	Captured under several STRIDE activities

TABLE 2. PERFORMANCE INDICATOR SUMMARY TABLE

Indicator	Year 1 – 5 Targets	Year 1–5 Accomplishments	Target for Reporting Period (Year 6)	Actual for Reporting Period (Year 6)	Percentage achieved of actual vs Y6 target	Overall Life of Program (LOP) target	Actual to date	Percentage achieved of actual vs LOP target	Notes
PI24. Number of new STRIDE programs adopted by tertiary education institutions as a result of USG-assisted activities (Tasks 1.1, 1.2, 1.3)	NA	57	4	14	350%	109	71	65%	
IR 2: Strengthened linkages between government, industry, and academe for innovation [REDACTED]									
PI26. Number of partnerships between two or more GIA stakeholders (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)	NA	NA	3	7	233%	18	7	39%	
PI25. Number of workshops implemented jointly with one or more government, academe, and industry (GIA) stakeholder (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)	NA	NA	14	27	193%	26	27	104%	Exceeded LOP target
IR 3: Improved government capacity for innovation [REDACTED]									
PI27. Number of Philippine Government-run initiatives developed or improved with USG assistance (Tasks 3.1, 3.2, 3.3, 3.4)	NA	NA	2	NA	NA	8	NA	NA	Data not available; Data collection did not commence since the MEL Plan is undergoing revisions
IR 4: Improved policy and regulatory environment [REDACTED]									
PI20. Number of STI-related policies developed or improved with USG assistance (Tasks 1.2, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5)	6	3	4	8	200%	15	11	73%	

CORRELATION TO M&E PLAN

The Monitoring, Evaluation, and Learning (MEL) Plan submitted in August 2018 was used as the basis for the AIP for Year 6. *Table 3* shows the methods used to collect data for the PIs, Foreign Assistance Coordination Tracking System (FACTS) indicators, and context indicators.

The FACTS indicator STRIDE uses for reporting, ES.2-1, is described below:

- **PI21 (ES.2-1):** Number of host-country tertiary education institutions receiving capacity development support with US Government (USG) assistance

In addition, STRIDE monitored two related context indicators from the Global Innovation Index (GII). The GII aligns with the STRIDE program objectives in recognizing “the key role of innovation as a driver of economic growth and prosperity” and in that it focuses on “improving the journey toward a better way to measure and understand innovation and with identifying targeted policies and good practices that foster innovation.”

The following GII indicators were tracked by the STRIDE program:

- **PI28:** University-industry research collaboration in Global Innovation Index
- **PI29:** State of cluster development in Global Innovation Index

Going forward, a revised MEL Plan was submitted in August 2019, which contains an updated list of performance, context, and FACTS indicators, which will be used for future program management and reporting (*Table 3*). The revised MEL Plan includes 2 FACTS indicators, 12 project performance indicators, and 5 context indicators. This revised MEL Plan also reflects the programmatic changes based on the Year 7 AIP.

In Year 7, the MEL team plans to conduct an internal data quality assessment (DQA) to ensure data collected for the program meet the USAID quality criteria—validity, integrity, precision, reliability, and timeliness. The DQA will be conducted on 10–20% randomly selected indicators to assess the quality of data collected for each indicator.

TABLE 3. M&E PLAN METHODS USED FOR MONITORING PERFORMANCE INDICATORS

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Used
Goal: Strengthened STI capacity of HEIs in the Philippines			
PI28. University-industry research collaboration in GII (context)	Rank	GII report	A composite index of this particular sub-indicator was collected from the official GII report released last July 2019. The GII report contains third-party data co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, an agency of the United Nations). The core of the GII report consists of a ranking of world economies’ innovation capabilities and results.

TABLE 3. M&E PLAN METHODS USED FOR MONITORING PERFORMANCE INDICATORS

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Used
PI29. State of cluster development in GII (context)	Rank	GII report	<p>A composite index of this particular sub-indicator was collected from the official GII report released last July 2019.</p> <p>The GII report contains third-party data co-published by Cornell University, INSEAD, and the WIPO. The core of the GII report consists of a ranking of world economies' innovation capabilities and results.</p>
IR1: Improved higher education capacity for innovation			
PI21 (ES. 2-1). Number of host-country tertiary education institutions receiving capacity development support with US Government (USG) assistance (FACTS) (Tasks 1.1, 1.3, 3.1)	Number of universities	Project reports, attendance sheets for STRIDE activities	<ul style="list-style-type: none"> ▪ Number of universities participating in STRIDE capacity development activities. These activities include establishing a Professional Science Masters curriculum (PSM), Career Centers, KTTOs; and attending Filipinnovation Entrepreneurship Corps (FEC), and Skills in Technical and Advanced Research Training (START). ▪ Information collected from source documents for each type of STRIDE activity. <p>A university participating in more than one capacity-building activity will be counted only once.</p>
PI24. Number of new STRIDE programs adopted by tertiary education institutions as a result of USG-assisted activities (Tasks 1.1, 1.2, 1.3)	Number of programs	Project reports, attendance sheets for STRIDE activities, STRIDE program records, syllabus from partner universities (PSM), third-party validation of staffing, services provided, completed training module (KTTO only), contract or letter on institution letterhead stating the commencement of activities (KTTO, or Career Center), proof of mentorship (if applicable)	<p>Number of universities establishing their own STRIDE programs, which include PSM curricula, KTTOs, and Career Centers.</p> <p>Information collected from source documents for each type of STRIDE activity.</p>
IR 2: Strengthened linkages between GIA for innovation			
PI26. Number of partnerships between two or more GIA stakeholders (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)	Number of partnerships	STRIDE project records, Technology Business Incubation Program mentorship agreements (optional), attendance sheets, third-party validation for proof of continuation of partnership (letter or contract, or memorandum of understanding [MOU]).	<p>Partnerships counted once during life of the program; Portfolio Performance Review reporting period for the life of any award(s) or agreement(s) supporting the partnerships.</p> <p>Third-party data collected from partners.</p>

TABLE 3. M&E PLAN METHODS USED FOR MONITORING PERFORMANCE INDICATORS

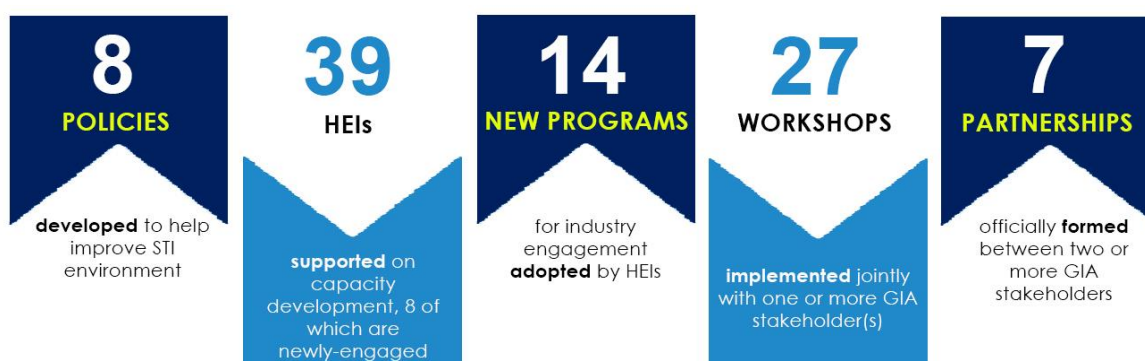
Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Used
PI25. Number of workshops implemented jointly with one or more government, academe, and industry (GIA) stakeholder (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)	Number of workshops	Project reports, attendance sheets for STRIDE activities	Implemented workshops are counted if the GIA partner has provided fund matching or collaborated with planning and implementation of the activity. Information collected from source documents for each type of STRIDE activity.
IR 3: Improved government capacity for innovation			
PI27. Number of Philippine Government-run initiatives developed or improved with USG assistance (Tasks 3.1, 3.2, 3.3, 3.4)	Number of developed or improved government-run initiatives	STRIDE program records, third-party validation, i.e., calls for applications, government-issued announcements, media coverage, verbal/written confirmation of improvement from agency official, or evidence-based confirmation of improvement (i.e., outcomes harvesting confirmation form)	Data not available. Data collection did not commence since the MEL Plan is undergoing revisions.
IR 4: Improved policy and regulatory environment			
PI20. Number of STI-related policies developed or improved with USG assistance (Tasks 1.2, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5)	Number of policies	Project records, copy of policy, minutes of meetings, evidence-based confirmation of improvement	Policies counted are already implemented, adopted, or launched by partner government or academic institutions. Number of policies should be counted only once per annual, PPR reporting period for the life of any award(s) or agreement(s) supporting the relevant institution in the creation, development, or improvement of a policy.

RESULT BY RESULT ANALYSIS

ANALYSIS OF PERFORMANCE INDICATORS

The results listed in the Summary Table (**Table 2**) are described in more detail below. The tasks supporting these indicators are noted. The relationship of the activities to the performance indicators (PIs) is shown in **Figure 2**.

FIGURE 2. PERFORMANCE INDICATORS



PI20. Number of STI-related policies developed or improved with USG assistance (Tasks 1.2, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5)

Target for Year (Y) 6: 4; Achieved 8. This indicator has exceeded the Y6 target by 200%. Instead of only counting policy work supported under IR4, the national, regional, and institutional policies covering all IRs were included. These policy inputs were not part of the original implementation designs and were only identified during Y6. Policies included were the following: DOST M&E protocols, the DOST R&D communications strategy, the PASUC PISI, the PASUC Innovation Diagnostic Tool, DTI's creation of the Competitiveness and Innovation Group, and three Regional Development Council resolutions on the creation of RIICs.

PI21 (ES. 2-1). Number of host-country tertiary education institutions receiving capacity development support with US Government (USG) assistance (Tasks 1.1, 1.3, 3.1)

Target 6; Achieved 39. This indicator has exceeded the Y6 target by 650%. During Y6 planning, STRIDE originally intended to train mentors to build their capacity in mentoring and training other higher education institutions (HEIs) and eventually establish mechanisms by themselves. Hence, the initial targets were set to be low in Y6. In the middle of Y6, STRIDE shifted its strategy to lead KTTO and Career Center trainings and integrating mentors' training in the implementation; this provided the opportunity for more HEIs to be trained. Thirty-nine public and private tertiary education institutions received capacity development

support through the different STRIDE programs. In addition, STRIDE has engaged with eight new tertiary education institutions (Far Eastern University, Cebu Institute of Technology University, Jose Rizal University, and Miriam College, Cagayan State University, Nueva Vizcaya State University, Technological University of the Philippines–Visayas, and University of Mindanao), which are not among the HEIs capacitated from FY 1–5.

PI24. Number of new STRIDE programs adopted by tertiary education institutions as a result of USG-assisted activities (Tasks 1.1, 1.2, 1.3)

Target 4; Achieved 14. This indicator has exceeded the Y6 target by 350%. During Y6 planning, STRIDE originally intended to build a pool of local mentors to train other HEIs to establish their own Career Centers, hence the projected targets were set low. However, during Y6, STRIDE pivoted its strategy to implement Career Center training while integrating mentors' training in the implementation. This led to a higher take-up by HEIs of Career Center training. Two new PSMs were launched in this fiscal year, and 12 Career Centers commenced career servicing activities through a letter of commitment signed by HEIs.

PI25. Number of workshops implemented jointly with one or more government, academe, and industry (GIA) stakeholder (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)

Target 14; Achieved 27. This indicator has exceeded the Y6 target by 193%. The original targets for Y6 were set without considering RIIC activities. The RIICs-based activities were identified in the middle of Y6; direct linkages workshops would be conducted within the regions. As such, the results have dramatically increased this fiscal year. A huge number of workshops conducted were targeted to increase the GIA collaboration through ideation, project design, program alignment, and other mechanisms.

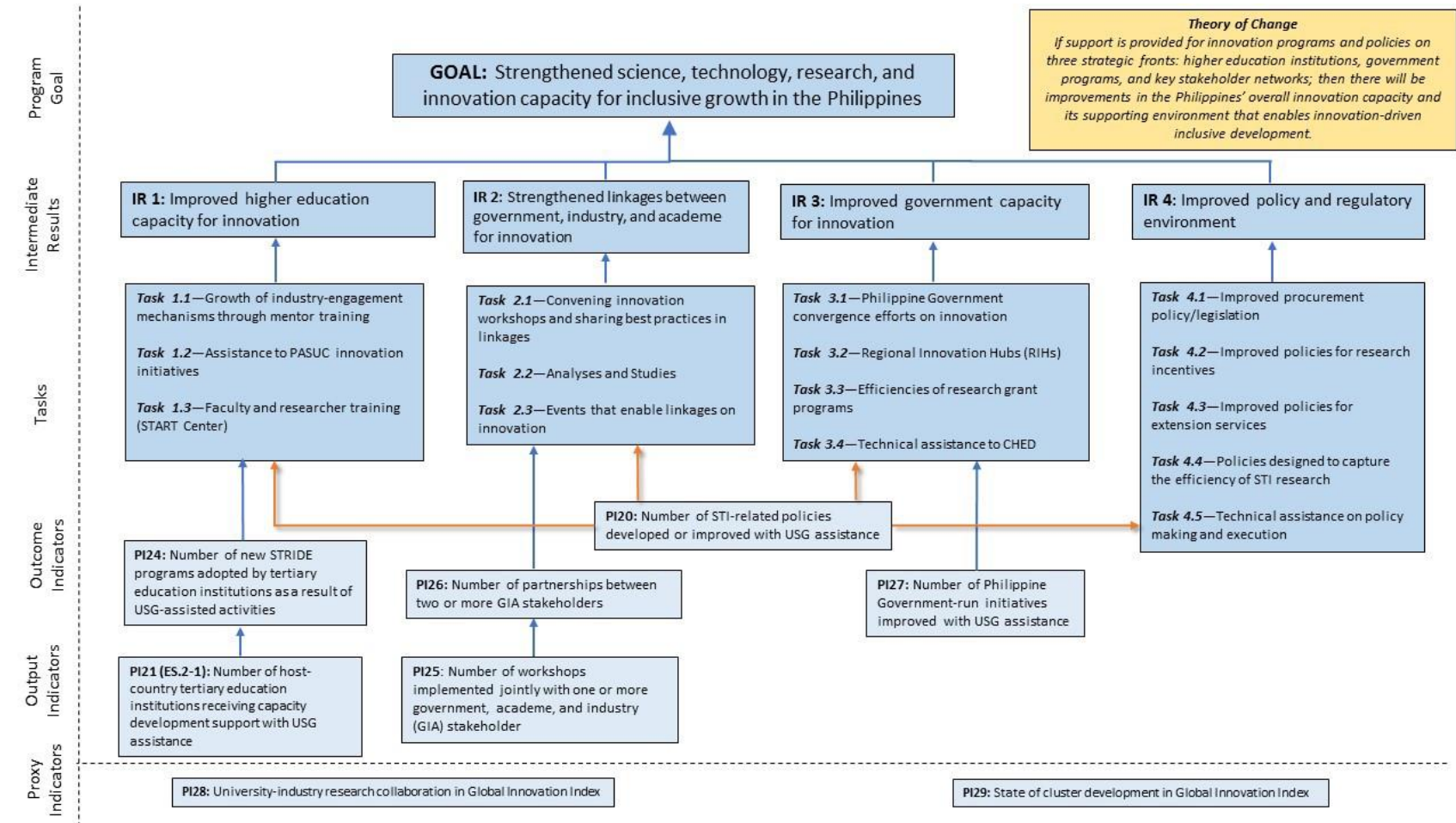
PI26. Number of partnerships between two or more GIA stakeholders (Tasks 2.1, 2.2, 2.3, 3.1, 3.2)

Target 3; Achieved 7. This indicator has exceeded the Y6 target by 233%. Initially, the targets for Y6 were set without covering RIIC-based activities. Only within Y6 were RIIC initiatives identified and direct linkages activities conducted within the regions. As such, these partnership activities have dramatically increased in Y6. Five CRADLE program proposals were submitted through academe-industry collaboration activities and two PSM programs were launched in partnership with an identified partner industry.

PI27. Number of Philippine Government-run initiatives developed or improved with USG assistance (Tasks 3.1, 3.2, 3.3, 3.4)

Target 2; Achieved 0. No data available. Data collection did not commence because the MEL Plan is undergoing revisions.

FIGURE 3. STRIDE RESULTS FRAMEWORK



SUMMARY OF ADJUSTMENTS ON MEL PLAN

Moving forward for Year 7 and beyond, the revised MEL Plan submitted in August 2019 will be used as the basis for project management and reporting activities. **Table 4** illustrates each indicator and its corresponding targets.

TABLE 4. PERFORMANCE INDICATOR TABLE OF AUGUST 2019 MEL PLAN

Indicator Number	Indicator name	Indicator Type	Data Source	Frequency	LOP Targets
GOAL: Strengthened science, technology, research, and innovation capacity for inclusive growth in the Philippines					
CI1	Philippines Ranking in Global Innovation Index (GII)	Context	GII Index	Annual	NA
IR 1: Improved higher education capacity for innovation					
CI2	QS Asia University Rankings	Context	QS ranking	Annual	NA
PI16	Number of USG-supported tertiary programs with curricula revised with private and/or public sector employers' input or on the basis of market research	Output	Program documents	Annual	17
PI21 (ES.2-1)	(ES.2-1) Number of host-country tertiary education institutions receiving capacity development support with USG assistance	FACTS	Program documents	Annual	252
PI24	Number of tertiary education institution faculty or staff whose qualifications are strengthened through USG-supported STI-related training programs	Outcome	Program documents	Quarterly	289
PI25	Number of individuals attending tertiary education institutions with curricula revised with private and/or public sector employers' input or on the basis of market research	Outcome	University records	Annual	300
PI26	Number of new partnerships between tertiary education institutions, government and/or private-sector firms developed as a result of USG-supported programs	Outcome	Program documents and industry interviews	Annual	97
IR 2: Improved regulatory environment for innovation					
CI3	Changes in ranking on Innovation Linkages (GII 5.2)	Context	GII Index	Annual	NA
PI27	Number of initiatives of innovation policy, strategies, or plans approved or implemented attributable to USG support	Outcome	Program documents	Annual	17

TABLE 4. PERFORMANCE INDICATOR TABLE OF AUGUST 2019 MEL PLAN

Indicator Number	Indicator name	Indicator Type	Data Source	Frequency	LOP Targets
PI28	Percentage change in time to procure scientific research equipment and materials at HEIs (with emphasis on time reduction)	Outcome (Baseline)	Baseline	Annual	-50%
PI29	Percent change in required number of signatures needed to procure scientific research equipment and materials at HEIs	Outcome (Baseline)	Percentage change	Annual	-25%
PI30	Percent change in new grant applications	Outcome	DOST records	Annual	20%
IR 3: Improved government capacity for innovation					
CI4	Change in ranking on university/industry research collaboration (GII 5.2.1)	Context	GII Index	Annual	NA
CI5	Change in percentile ranking on government effectiveness (USAID self-reliance metrics)	Context	World Bank data	Annual	NA
PI31	Number of public sector-funded programs or offices that have improved management practices or technologies as a result of USG assistance	Outcome	Program documents, case studies, weekly/quarterly reports	Annual	4
PI32 (EG.5.2-2)	(EG.5.2-2): Number of private-sector firms that have improved management practices or technologies as a result of USG assistance	FACTS (Outcome)	Survey, industry reports	Annual	15
PI33	Amount of mobilized funds from Philippine Government on innovation-related activities as a result of USG-supported interventions	Outcome	Government records, program records	Annual	4M
PI34	Number of government staff whose qualifications are strengthened through USG-supported STI-related training programs	Outcome	Program documents	Quarterly	35
PI35	Number of established Regional Inclusive Innovation Centers (RIICs)	Output	Official documents	Annual	5

LEARNING AGENDA AND ACTIVITIES

STRIDE Innovation Ecosystem Assessment

As part of its Learning Agenda, STRIDE is currently conducting the follow-on Innovation Ecosystem Assessment Study. The first Innovation Ecosystem Assessment Study, released

in November 2014, informed several Philippine Government policies (e.g., the Philippine Development Plan 2017–2022).

This follow-on study aims to review and assess the previously identified strengths and weaknesses in the innovation ecosystem as identified by principal GIA stakeholders. A longitudinal evaluation will be completed by closely replicating (when appropriate) the original innovation assessment methodology as a comparison to show any changes to the Philippine innovation ecosystem during STRIDE implementation. It will also attempt to determine if and to what degree STRIDE and its stakeholders have addressed the underlying challenges to achieving sustainable improvements in innovation performance as defined in the assessment.

The study is being led by RTI Innovation Advisors Molly Dix and Adam Klich, who visited the Philippines in August 2019 and conducted face-to-face key informant interviews with over 30 key GIA stakeholders. STRIDE also collected data through a wider online survey that was disseminated to relevant stakeholders to gather the perspectives and opinions on any perceived changes in the Philippine innovation ecosystem over the past five years. The Assessment Report is expected to be finalized by Quarter 1 of Year 7.

Learning Activities

The STRIDE MEL team conducted a total of six learning sessions during the past fiscal year, focusing on adaptive management, learning, and sharing risks and opportunities in relation to the project’s internal and external environments. STRIDE also conducted a political economy analysis (PEA) exercise, which is a part of USAID’s Collaborating, Learning, and Adapting (CLA) approach, during its annual retreat last February 2019. Facilitated by



STRIDE staff members participate in the PEA exercise facilitated by RTI International MEL Specialist Matthew St. John | Photo: RTI International

Matthew St. John, MEL Specialist from RTI International, the PEA exercise, according to the USAID’s PEA framework, is “intended to be used in an iterative and ongoing manner to deepen understanding of the context, and then reflect upon the implications of this understanding for adjusting and adapting programs as the context changes or new information becomes available.”

This activity allowed STRIDE staff to assess their respective

tasks and activities in relation to the current state of the country’s political economy with regards to the innovation ecosystem. Staff took into account any changes in leadership as well as any critical policy changes and major budget impacts that could positively or negatively affect STRIDE’s progress.

Aside from learning sessions and the PEA exercise, STRIDE staff was also able to share important learnings and pivots from continuous implementation and engagement with different GIA stakeholders during STRIDE’s strategic planning process in July 2019. Dr. Richard Abendan, STRIDE Chief of Party (COP), also presented stakeholders’ recommendations and feedback from a preceding stakeholders’ engagement meeting as well as from direct consultations with government stakeholders. Requests for STRIDE

technical assistance in various innovation-driving initiatives were put forward. These include providing technical support for DOST's Grants in Aid program, capacitating DTI's Innovation and Collaboration Office, and developing an Artificial Intelligence Country Strategy, among other items. The need to continue RIIC initiatives and target significant outcomes by 2020 was also emphasized.

Key lessons, pivots, and opportunities were deliberately documented and served as a significant foundation in crafting the AIP for Year 7. It also helped document key milestones and/or successes that could inform stories to be shared to the stakeholders in various communications platforms. The USAID Agreement Officer's Representative participated in this planning session and was able to provide significant inputs in these discussions.

RTI Philippines MEL Community of Practice Kick-Off Meeting

The RTI Philippines MEL Community of Practice was established during a kick-off meeting in September 2019. The purpose of the Philippines MEL Community of Practice is to create a self-sustaining platform for exchange, support, capacity building, and collaboration across RTI projects and sectors in the Philippines with regards to MEL and CLA/Adaptive Management. This is to further RTI's strategic objective for constantly improving our implementation excellence.

STRIDE, along with other RTI projects in the Philippines (ReachHealth, Act to End Neglected Tropical Diseases, and Advancing Basic Education in the Philippines [ABC+]) participated in the kick-off meeting. The event served as an avenue for the different projects to share current practices on MEL and CLA. Succeeding meetings will be conducted next fiscal year to create a formal structure and identify opportunities and strategies in which the projects can collaborate.

Fiscal Year 7 Learning Activities

STRIDE will continue the follow-on Innovation Ecosystem Assessment Study and will publish the results in Quarter 2 of Year 7. In Year 7, STRIDE will commence the creation of a RIIC case study. This will be a documentation of the STRIDE program's overall approach including supporting HEIs, facilitating collaboration with industry, building government capacity, and building linkages and synergies with the different innovation key players through the RIIC model at a regional and sectoral level.

Additionally, STRIDE will continue to document key learnings and pivots in program implementation resulting from changes in the project's external environment. These activities will help the team to analyze and make necessary adjustments to achieve the project's goals.



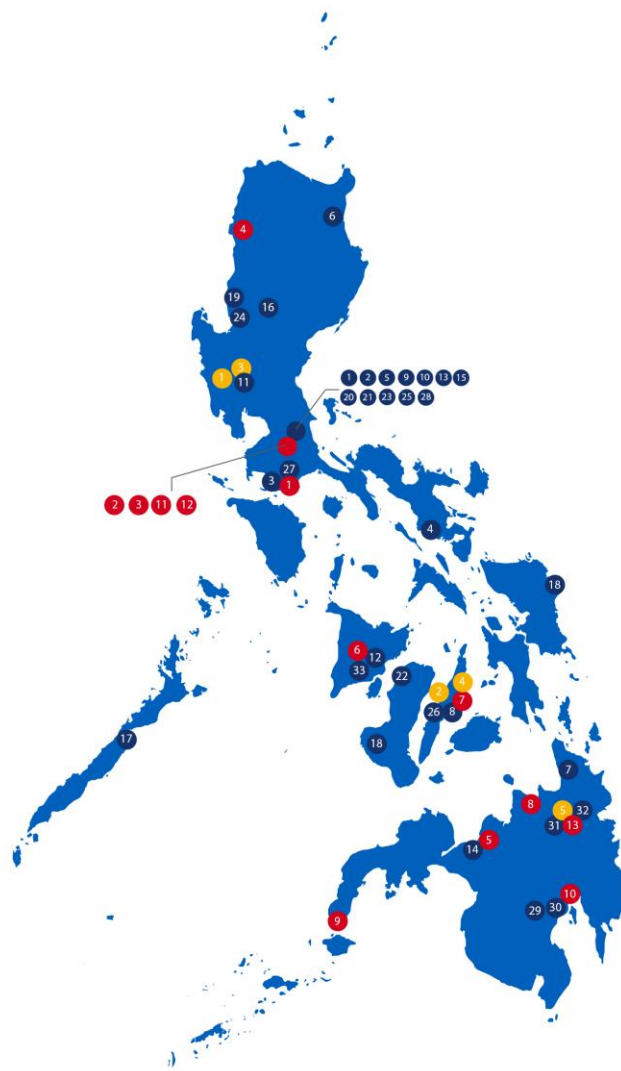
IR 1. IMPROVED HIGHER EDUCATION CAPACITY FOR INNOVATION

In its 6th year of implementation, STRIDE advanced efforts to institutionalize industry-engagement mechanisms among HEIs while, in parallel, providing full support to efforts that seek to improve the innovation competencies of Philippine SUCs.

STRIDE PARTNERSHIP WITH PHILIPPINE HEIs

In the course of STRIDE's effort to improve higher education capacity for innovation during Year 6, it has worked with a number of universities nationwide. STRIDE has engaged 39 HEIs for its Career Center program, PSM development, and KTTO training as seen in **Figure 4** (follow on next page).

FIGURE 4. STRIDE HEI NETWORK IN THE PHILIPPINES*



● KTTO

- 1. ADAMSON UNIVERSITY
- 2. ATENEO DE MANILA UNIVERSITY
- 3. BATANGAS STATE UNIVERSITY - MALVAR
- 4. BICOL UNIVERSITY
- 5. BULACAN STATE UNIVERSITY
- 6. CAGAYAN STATE UNIVERSITY
- 7. CARAGA STATE UNIVERSITY
- 8. CEBU INSTITUTE OF TECHNOLOGY UNIVERSITY
- 9. DE LA SALLE UNIVERSITY
- 10. FEU INSTITUTE OF TECHNOLOGY
- 11. HOLY ANGEL UNIVERSITY
- 12. ILOILO SCIENCE AND TECHNOLOGY UNIVERSITY
- 13. MAPUA UNIVERSITY
- 14. MSU – IIGAN INSTITUTE OF TECHNOLOGY
- 15. MIRIAM COLLEGE
- 16. NUEVA VIZCAYA STATE UNIVERSITY
- 17. PALAWAN STATE UNIVERSITY
- 18. SILIMAN UNIVERSITY
- 19. ST. LOUIS UNIVERSITY

● CAREER CENTER

- 20. TECHNOLOGICAL INSTITUTE OF THE PHILIPPINES
- 21. TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES (TUP) MANILA
- 22. TUP VISAYAS
- 23. UNIVERSITY OF SANTO TOMAS
- 24. UNIVERSITY OF THE CORDILLERAS
- 25. UNIVERSITY OF THE PHILIPPINES (UP) DILIMAN
- 26. UP CEBU
- 27. UP LOS BANOS
- 28. UP MANILA
- 29. UP MINDANAO
- 30. UNIVERSITY OF MINDANAO
- 31. UNIVERSITY OF SCIENCE & TECHNOLOGY OF SOUTHERN PHILIPPINES (USTP)
- 32. UNIVERSITY OF SOUTHEASTERN PHILIPPINES
- 33. WESTERN VISAYAS STATE UNIVERSITY

● PSM PROGRAM

- 1. ANGELES UNIVERSITY FOUNDATION
- 2. CEBU INSTITUTE OF TECHNOLOGY
- 3. HOLY ANGEL UNIVERSITY
- 4. UNIVERSITY OF SAN JOSE RECOLETOS
- 5. USTP CAGAYAN DE ORO

**List of universities and colleges that STRIDE has engaged in Program Year 6*

GROWTH OF INDUSTRY-ENGAGEMENT MECHANISMS

STRIDE continues to highlight the vital role of HEIs in developing talent and generating knowledge that are highly relevant to the country's innovation ecosystem. Throughout the year, STRIDE has seen a significant increase in interest among top universities to establish mechanisms to engage industry on different fronts: in talent development through the strengthening of *Career Centers*; in curriculum design and delivery through the *offering of PSM programs*; and in collaborative research and innovation through the establishment of *KTTOs*.

Beginning Year 6, STRIDE shifted its approach to growing these mechanisms by building a pool of local mentors from the pioneering universities that first adopted KTTOs, PSMs, and Career Centers. Mechanisms to build 'mentor's guides' and conduct train-the-trainer activities were implemented for KTTOs and Career Centers, and STRIDE proactively sought to integrate partnerships with government and other stakeholders in efforts to sustain these initiatives post-STRIDE. The DACUM (or Developing a Curriculum) framework was introduced in developing PSM program curricula, with opportunities to work closely with the Commission on Higher Education (CHED) in enabling PSM programs as a best practice for industry-support graduate degrees.

STRIDE also learned of challenges raised by the local mentors and other early adopters in sustaining and growing the operations of the three mechanisms. Several PSM program coordinators identified areas where they need support aside from curriculum development, such as organizing industry-student engagement activities and exploring new industry partnerships. Career Center mentors from the University of Science and Technology of Southern Philippines (USTP) and Technological Institute of the Philippines (TIP) and KTTO mentors from Mindanao State University – Iligan Institute of Technology (MSU-IIT) also identified the need for training new staff. This led the STRIDE team to recognize the need to continue supporting the first adopters of KTTOs, PSMs, and Career Centers, and not just focus on establishing new ones. As such, aside from the planned KTTO/Career Center trainings, and PSM workshops, there have been various instances of post-training activities such as Innovation Workshops for PSM programs and staff participation in KTTO and Career Center sessions, which were supported by STRIDE at the request of the university.

Joining Forces with DOST-PCIEERD to Strengthen KTTOs

STRIDE has been running the KTTO development program since 2015. During the course of focus group discussions (FGDs) and meetings with DOST-PCIEERD, there was an opportunity for synergy in terms of supporting the pipeline for technology commercialization. DOST-PCIEERD is running two programs that would be helped by the KTTO training. The Intellectual Property Management Program for Academic Institutions Commercializing Technologies (IMPACT Program) works on capacitating Technology Transfer Offices (TTOs) in universities by providing them monetary resources to upscale their TTO initiatives/activities. Higher Education Institution Readiness for Innovation and Technopreneurship (HEIRIT) works on capacitating Technology Business Incubators (TBIs) that were located in universities, to set up and grow start-ups and technologies. The STRIDE KTTO program worked on capacitating individuals in setting up TTOs in universities. Working together and aligning interventions of these three initiatives can mean greater impact in technology transfer capacities of HEIs.



(Seated, left to right) PCIEERD Deputy Executive Director Raul Sabularse, PCIEERD Executive Director Enrico Paringit, and STRIDE COP 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 PCIERRD Research Information and Technology Transfer Division Chief Russell Pili. | Photo: DOST-PCIEERD

Through this discovered synergy, STRIDE partnered with DOST-PCIEERD in collaboration with University of the Philippines Sustaining Collaboration in an Advanced Learning Environment (UPSCALE), which led to the KTTO-IMPACT Development Program. This would help DOST-PCIEERD unlock greater resources for TTOs in universities, help expand the KTTO network, and give KTTO trainees a sustainable pathway toward funding their offices as well as strengthen the pipeline of technologies for business incubation.

In June 2019, STRIDE inked a memorandum of agreement with the DOST - PCIEERD to boost the capacity of universities for technology transfer and commercialization through training, funding, and program implementation support.

With this agreement, the partners are working together in completing a series of KTTO-IMPACT Training, which seeks to build universities' capacity to establish and run KTTO initiatives. Beyond co-organizing the training, PCIEERD also allocated at least \$780,000 to help university trainees build and implement their own TTOs, a move that signals the government's strong commitment to pursuing knowledge and technology transfer initiatives in HEIs in partnership with STRIDE initiatives.

The KTTO-IMPACT Training has two segments: a three-day basic cohort training and a two-day mentors' training. The basic cohort training introduced the KTTO concept and its role in bridging gaps between universities and industry. It also discussed topics on articulating KTTO goals and identifying tactics to achieve these goals, developing KTTO communication strategies, and setting up and managing KTTOs. Trainees are paired with a pre-identified mentor who will help keep them on track with regard to targets, as well as give them access to knowledge and best practices.

The mentors' training is designed to capacitate technology transfer officers in organizing, developing, and delivering the KTTO training as developed by the STRIDE program. The mentors' training has three components. The first is the pre-cohort workshop where mentors are walked through the module materials and are trained on their delivery of the materials. The second component involves the mentors shadowing the RTI Innovation Advisors as they deliver the workshop for the first cohort of trainees. They also do one-on-one mentoring and experience sharing with KTTO trainees. The last component is about facilitating the workshop for the trainees of Cohort 2, where mentors take charge of delivering a majority of the content of the module. After each day, they receive feedback from the RTI Innovation Advisors on their technique and style.

STRIDE and the RTI Innovation Advisors have already started working on the KTTO mentor's guide. This will serve as a manual that will help mentors deliver more KTTO workshops in the future. It will contain all the exercises for the modules, facilitator's guides, and best practices. The mentor's guide is a living document and is continuously being edited as the workshops progress. This is being done to reflect the local culture and context that become evident during the implementation of the workshop. The mentor's guide aims to be consolidated and distributed by Year 7.

In Year 6, the program began with the identification of HEIs, per agreement with DOST-PCIEERD and UPSCALE. The initial selection pool was primarily based on the DOST-HEIRIT cohort as the KTTOs/TTOs were aimed at creating stronger pipelines for university technology to commercialization, with the TBI becoming an important pathway. The list was then expanded to include other DOST councils and government research institutions.

Cohort 1, which began its workshop in June 2019, was composed of 22 institutions, of which 15 were HEIs and 7 were government. DOST-Philippine Council for Health Research and Development (PCHRD) and DOST-PCIEERD participated in the training. Other Philippine Government department research institutes also sent representatives, such as the Department of Agriculture (DA) Philippine Center for Postharvest Development and Mechanization. Cohort 2, which started workshops in September 2019, had 28 institutions, with a breakdown of 21 HEIs and 7 government. However, some HEIs represented in Cohort 2 will be moving to Cohort 1 in the next round. This occurred because of changes in personnel and dynamics within certain HEIs. To ensure that the right people were being trained, STRIDE and DOST-PCIEERD agreed to accept individuals in Cohort 2 so they could catch up to their colleagues who attended the workshop in June (**Table 5**). Each cohort will be comprised of four modules: Plan, Learn and Operationalize, Connect, and Do. Only individuals who have completed all four modules will receive a certificate of completion, although trainees who have completed any module will be given a certificate of participation. To date, Cohort 1 has completed two of the four modules, and Cohort 2 finished the first module in September 2019. By June 2020, all cohorts with a total of 80 trainees have to complete the entire program, as this is the start of DOST-PCIEERD's IMPACT application cycle.



SPOTLIGHT

In 2015, 10 individuals from select universities across the Philippines participated in STRIDE's initial KTTO training. Four years after, the trainees gathered again to join another KTTO training, but this time as local mentors. Soon they will run similar KTTO training and will help other universities set up and implement their own KTTOs.

Now referred to as KTTO-IMPACT Training, this capability building program was implemented by STRIDE in partnership with PCIEERD, which allocated at least \$780,000 to help trainee-institutes build and operate their own KTTOs after the training.



Participants of Cohort 1 KTTO Basic Training Workshop held in Makati City. In the background is RTI International Innovation Advisor James Redden. | Photo: RTI International

TABLE 5. LIST OF KTTO TRAINEES

HEI	RDI
COHORT 1 Trainees	
Batangas State University- Jose P. Laurel Polytechnic College Malvar	DA Philippine Center for Postharvest Development and Mechanization
Bicol University	DOST Food and Nutrition Research Institute
Bulacan State University	DOST Forest Products Research and Development Institute
Cebu Institute of Technology University	DOST Industrial Technology Development Institute
Holy Angel University	DOST-PCAARRD
MSU-IIT	DOST-PCHRD
Miriam College	DOST-PCIEERD
Saint Louis University	
TIP	
Technological University of the Philippines– Visayas	
University of Santo Tomas	
University of the Cordilleras	
UP–Diliman	
UP–Los Baños	
UP–Manila	
COHORT 2 Trainees	
Adamson University	DOST - Metals Industry Research and Development Center
Ateneo De Manila University	DOST Advanced Science and Technology Institute
Cagayan State University	DOST Philippine Nuclear Research Institute
Caraga State University	Research Institute for Tropical Medicine
De La Salle University	DOST-FNRI
Far Eastern University Institute of Technology	DOST-PCHRD
Iloilo Science and Technology University	DOST-PCIEERD

TABLE 5. LIST OF KTTO TRAINEES

HEI	RDI
Mapua University	
Nueva Vizcaya State University	
Palawan State University	
Silliman University	
TIP	
Technological University of the Philippines Manila	
University of Mindanao	
USTP	
University of Southeastern Philippines	
UP–Cebu	
UP–Diliman	
UP–Manila	
UP–Mindanao	
Western Visayas State University	

The mentors' cohort for the KTTO has three individuals who were part of the pilot run of the KTTO Development Program in 2015 (**Table 6**). They are Michael Peralta from the University of Santo Tomas, Christopher Cruz from De La Salle University (DLSU), and Marietta Esperanza Cruz, formerly from MSU-IIT. Ms. Maria Gracia Corazon Cayanan was initially part of the mentors' cohort, but had to pullout due to health reasons. STRIDE and DOST-PCIEERD are looking at the remaining pilot program cohort to see if they can identify a replacement.

TABLE 6. KTTO MENTORS

KTTO Mentors	
Mentor	Institution
Russell Pili	DOST-PCIEERD
Edward Apigo	DOST-PCIEERD
Christopher Cruz	De La Salle University–Manila
Michael Peralta	University of Santo Tomas
Marietta Esperanza Cruz	Formerly from MSU-IIT
Agnes Batingue	UP–Diliman
Abigail Gueco	DOST– Philippine Council of Agriculture, Aquatic, and Natural Resources Research and Development
Maria Gracia Corazon Cayanan	Formerly from TIP
Crisille Villaluna	UPSCALE
Maria Bernadette Leonor	UPSCALE

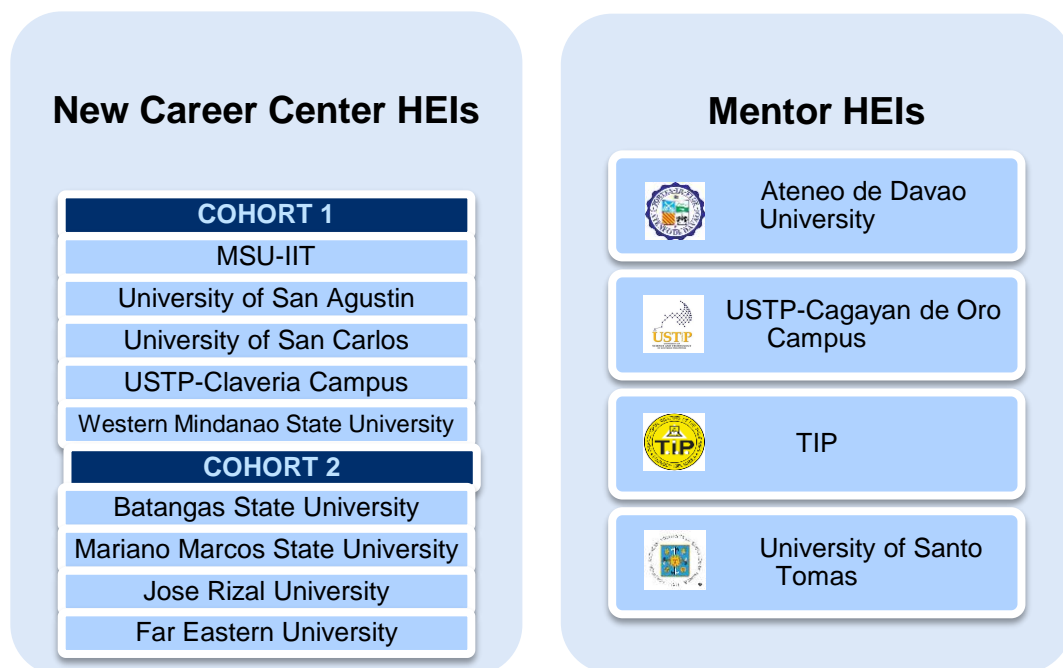
Building the KTTO Network

Having undergone a series of mentoring activities under the guidance of RTI Innovation Advisors, KTTO mentors initiated the creation of a local technology transfer/ KTTO organization. To be called the Alliance of Techtransfer Professionals of the Philippines, the organization shall be patterned after the US-based Association of University Technology Manager. The local mentors have been meeting to discuss the association’s formal registration, membership, goals and objectives, and focal persons.

Leading the discussions about the proposed organization is KTTO mentor Atty. Chris Cruz from DLSU. He is joined by other KTTOs from the 2015 batch and the current cohort, such as the University of Santo Tomas, MSU-IIT, Bicol University, Technological University of the Philippines, UP–Diliman, Samar State University, Adamson University, Caraga State University, University of Southeastern Philippines, and USTP.

Supporting Career Centers in HEIs

FIGURE 5. HEIs ENGAGED FOR NEW CAREER CENTERS



The STRIDE Career Center initiative aims to build the capacity of universities in helping students jumpstart their careers after college. Through Career Centers, universities are able to design learning experiences for students that are aligned with workforce requirements and support students in job seeking, network building, and career development. For



Dr. Jeff Garis of Florida State University leading the Career Center training for the first cohort. | Photo: RTI International

Year 6, STRIDE continued its partnership with Florida State University (FSU) in rolling out two batches of trainings together with four Career Center directors from the pioneering universities, i.e., TIP, USTP-Cagayan de Oro (CDO), Ateneo de Davao University (ADDU), and University of Santo Tomas, as local

mentors. The first cohort catered to five universities from Visayas and Mindanao, while a second batch is composed of four Luzon universities (**Figure 5**). The universities were identified based on a balanced representation of private and public universities, those with existing STRIDE engagements or potential for immediate adoption of Career Centers, or those that are USAID or RIIC (see IR 3) focus areas.



Norman Lou Padilla ADDU

What convinced you to be a Career Center mentor?

I see the value of having a Career Center in universities. It's good for the students.

What do you like about being a mentor?

I love the connections that I make with different universities. I feel like while I'm helping them they are also helping me.

What is your dream for Career Centers in the Philippines?

The dream is for all these schools that we are mentoring to have a fully functional Career Center. Ultimately, I want to see all the Career Centers that we mentor and supported by STRIDE to link-up, form a network, maybe put an organization that will be geared toward career development.

What do you think could be the impact of Career Centers?

The biggest impact we could make is on curriculum development. Right now, when I talk to private companies, they say that there really is a gap between what is being taught and what is needed in actual practice. Hopefully, we can help make what we teach more applicable in the real world. We hope we can increase permeability between employers and the students.

Career Center trainings were reconfigured into grouped face-to-face sessions led by FSU, followed by individualized mentorship by the local mentors. The added dynamics among the Career Center directors-in-training and the mentors enabled the contextualization of learnings in a localized setting, and catch of best practices, early on. For STRIDE, the availability of local mentors also enabled more flexibility to mobilize resources and reduce the dependence on foreign mentors in the long term. Beginning in Q3, local mentors held mentoring visits and continuing virtual consultations with individual universities with the aim of helping new Career Centers launch their first industry collaborations. STRIDE and FSU also agreed to curate and provide a 'starter kit' for both training



Lera Fay Dela Rama USTP-CDO

What convinced you to be a Career Center mentor?

Career Centers would really be a big help for the Philippines. I see the vision and understand why we need a Career Center. I can also empathize with Career Centers in state universities. I also started with no staff. I was alone. Now we are five in the office. I want to share our success story. For as long as you know the importance of Career Centers, you will have the passion to work hard no matter how difficult it is.

What are the best practices that you can share to other universities?

At USTP, we thought of ways to engage students and help them plan their careers. In early 2018, we started implementing unstructured, informal programs such as talk shows, brown bags, classroom exploration visits. Next year, we shall start a bridging program to help incoming freshmen start their career planning at an early stage.

How does your work impact you?

Career Center work is fulfilling. While the results/outcomes of the program that we implement such as addressing skills and jobs mismatch take time, it remains fulfilling because we know that we've done something.

participants and local mentors composed of several books, testing materials, and other references.

People in Focus

Paying It Forward: The Career Center Mentors

Four Philippine university Career Center directors were tapped by STRIDE as Career Center mentors in the Philippines. Previously trained by STRIDE on Career Center initiatives, the four directors have made significant strides in the establishment and advancement of Career Center services in their respective universities. In May 2019, they served as understudies of FSU's

Dr. Jeff Garis, who led the recent batches of Career Center trainings that were organized by STRIDE and FSU.

Mr. Norman Lou Padilla of ADDU and Ms. Lera Fay Dela Rama of USTP-CDO are two of these local mentors. Beginning May 2019, both worked on their responsibilities as mentors and joined the implementation of group training sessions led by Dr. Garis. In August, they headed the follow-on individual mentoring sessions with their assigned universities. Ms. Dela Rama visited Batangas State University, which is constructing a new building that will house its Career Center. Mr. Padilla went to Western Mindanao State University and provided the Career Center team some advice in relation to the transformation of the university's Job Placement Office into a Career Center.

The universities of the local mentors also received recognition as "Model Career Centers"—with TIP in Manila and USTP-CDO signing partnership agreements with STRIDE in supporting the growth of Career Centers beginning in Year 6. During the May 2019 signing with TIP, President Elizabeth Quirino-Lahoz recognized STRIDE and shared how the program's visit to TIP five years ago made the university realize the value of having a Career Center. She shared the positive impact of the center on students' learning experience and graduates' employability.



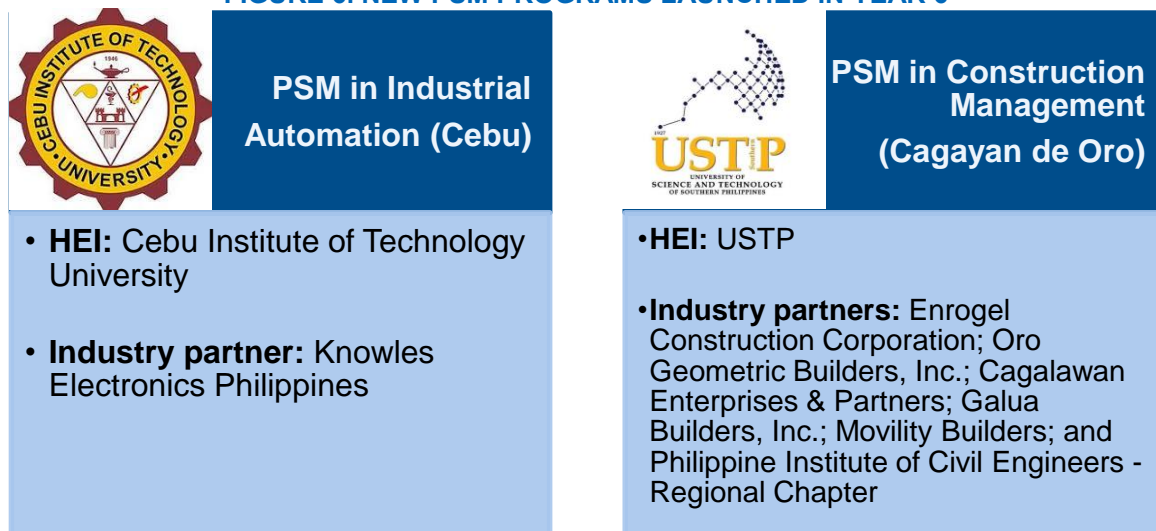
MOU signing ceremony led by TIP President Elizabeth Quirino-Lahoz and STRIDE COP Richard Abendan on May 16 in Quezon City. | Photo: RTI International

“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 the USAID through the STRIDE program,” TIP President Quirino-Lahoz said.

Meanwhile, TIP's Dr. Frank Alejandrino talked about the university's Career Center initiatives. He also noted the support of USAID STRIDE, which contributed to some of their notable accomplishments. A 2018 report by JobStreet Philippines ranked TIP as the seventh most-preferred university by employers for fresh graduate hires. Six to seven years ago, he said, TIP had an 85% employability rate. The latest data show 92.5% of TIP's graduates are able to secure jobs either one year (for non-licensure programs) or two years (for licensure programs) after graduation.

Developing PSM Programs

FIGURE 6. NEW PSM PROGRAMS LAUNCHED IN YEAR 6



The eight pioneering PSM programs that were developed from 2014 to 2017 currently have 181 students enrolled across all universities for this academic year. Beginning last year, which saw the first set of PSM program graduates, three universities have now produced a total of 26 PSM graduates.

The last quarter of Year 6 saw initial PSM leads at the start of the year come into fruition, with partnerships launched for new PSM programs in Cebu Institute of Technology University (CITU) and USTP (**Figure 6**).



MOU signing for the launching of a new PSM program in Industrial Automation. | Photo: CITU

On August 13, 2019, CITU and Knowles Electronics Philippines formally launched a collaboration to develop the *PSM in Industrial Automation* program, considered the first in the Philippines to focus on automation systems in the manufacturing sector. Knowles and the university are spearheading the industry efforts for the PSM, which is expected to address an emerging need for an Industry 4.0-ready workforce in several electronics and manufacturing companies in Cebu. This initiative

is also part of the STRIDE-supported RIIC efforts in Region 7, where advanced manufacturing is the priority sector.

US-headquartered Knowles Electronics is among the top manufacturers of advanced audio components worldwide with major operations in Cebu. Knowles Philippines General Manager Joe Liwag highlighted that the PSM program is "putting the industry-academe collaboration into action" and that it responds to their plan of building a Philippines-based R&D Center of Excellence attuned to the company's future plans for growth. CITU President

Bernard Villamor committed that, "come June 2020, CITU will be offering the [PSM] Program to equip graduates and professionals with necessary skills, especially in the discipline of Industrial Automation."

On September 24, USTP signed a partnership agreement with six industry partners to develop a PSM in Construction Management. Five local construction firms along with the regional chapter of the Philippine Institute of Civil Engineers formed the pioneering group of industry partners for the PSM. USTP-CDO Campus Vice Chancellor Consorcio Namoco shared that the new PSM program will contribute to the local government's vision of transforming the city into the Philippines' newest metropolitan areas by 2025—joining the ranks of Metro Manila, Cebu, and Davao.



MOU signing for the launching of the second PSM program at USTP. | Photo: RTI International

The PSM in Construction Management is the second PSM program of USTP-CDO, with the first program focused on Power Systems Engineering and Management, launched in 2017. Chancellor Ruth Cabahug expressed gratitude to USAID through its STRIDE program “for continuously supporting USTP’s mission of providing demand-driven, industry-led programs.” In turn, STRIDE COP Abendan echoed that “PSM programs greatly enable stakeholders to work together effectively on their shared journey toward self-reliance” by jointly developing talent much needed by industry and boosting local economic activity down the line.

A third PSM program on Electro-acoustic Engineering also began curriculum development activities this year at the University of San Jose Recoletos with Knowles Electronics Philippines, but was postponed to Q1 of Year 7 due to scheduling conflicts between the officials of both agencies.

A significant addition to the PSM development process beginning this year is the adoption of the DACUM (or Developing a Curriculum) framework, which emphasizes industry-led competency profiling as the starting point for formulating an academic curriculum. In the three PSM programs that began development during this project year, STRIDE observed that the DACUM approach is highly appreciated by both the universities and their industry

partners. The approach enabled the industry partners to lead the curriculum development process, which before was more dependent on the university faculty. On the other hand, several faculty expressed that this process will make their curriculum outputs more valid and reliable.

Coordinators of existing PSM programs also reached out at the beginning of the year regarding the need for support aside from curriculum development, such as in organizing industry-student engagement activities and exploring new industry partnerships. This led STRIDE to recognize the significance of continuing support for the first adopters of PSMs. In March 2019, STRIDE assisted Angeles University Foundation in organizing a data science conference entitled “Data Science: Developing the Human Capital for a Growing Industry” as part of efforts to promote and encourage enrollment in the PSM in Data Science program. Similarly, STRIDE supported Holy Angel University’s First Regional Conference on Cybersecurity during the same month. The conference highlighted the importance of cybersecurity as an emerging industry and aimed to showcase several PSM students’ capstone projects to both existing and potential industry adopters.

Recent discussions with CHED may also provide further support for the PSM initiative. A June 6, 2019, meeting with CHED Office of Programs and Standards Development Officer-in-Charge Director Sylvette Gunigundo centered on the release of the revised guidelines on offering graduate programs in all universities across the Philippines. Director Gunigundo highlighted that professional degrees, such as the PSM, will potentially have university-industry partnerships as part of their minimum requirements.

At present, CHED is imposing a temporary suspension, which began in April 2017, on authorizing universities to offer new graduate programs. It should be noted that this situation may have caused initial hesitation from HEIs in setting up PSMs this year. STRIDE’s focus while awaiting the release of the new guidelines is on conducting curriculum development activities for all PSM programs in its pipeline, with the aim of opening the programs for enrollment when the suspension is lifted.

Several jointly organized activities with STRIDE and other potential partners have been initially identified once the CHED memo is released. Both STRIDE and CHED noted the alignment of the PSM with the new guidelines and are exploring the use of the PSM experience as a model of best practice in delivering industry-relevant curricula. There is also an opportunity to work with CHED in advocating the DACUM framework as a best practice in curriculum design. Further, STRIDE sees the possibility under this revised policy for PSM program coordinators to mentor other universities on establishing effective industry collaborations toward curriculum development.

ASSISTANCE TO PASUC INNOVATION INITIATIVES

Speaking at the PASUC General Assembly, United States Ambassador Sung Kim assured the country’s SUCs of the USG’s support in their thrust toward innovation and competitiveness. “As a friend, partner, and ally, the United States remains committed to support you as champions of innovation,” he said.

The USAID through STRIDE has been providing technical assistance to PASUC, supporting the SUCs’ efforts to innovate and remain relevant amid disruptions brought about by the 4th industrial revolution.

STRIDE supported PASUC in developing the **Platform for Innovating SUCs for Industry 4.0**

Spotlight

The country's SUCs have demonstrated their commitment to become more innovative, competitive, and relevant in today's disruptive landscape. In February 2019, the PASUC launched PISI, a seamless and intertwining cord of programs that will re-engineer the SUCs' intellectual capital to become Industry 4.0-ready. PASUC has also adopted the Innovation Diagnostics Tool for SUCs, a tool that seeks to analyze the state of SUCs' operations relative to science, technology, research, and innovation.



STRIDE has been providing technical assistance to PASUC in the development and implementation of the PISI, particularly on training university officials in implementing the STRIDE-supported Innovation Diagnostic Tool.

called 'Strands', helped define STRIDE's entry-points in providing technical support to PASUC for the succeeding years. Some of these Strands are directly aligned to the targets of STRIDE initiatives.

- This year, STRIDE led the development of the Innovation Diagnostic Tool for SUCs (see IR4). An important component of PISI, the tool seeks to assess the research readiness of SUCs and analyze their operations relative to science and technology research and innovation. The nationwide implementation of the Innovation Diagnostics Tool was launched in front of more than 500 officials and faculty at the STRIDE-supported PASUC General Assembly in July 2019. Results of the study are slated to be presented at the year-end PASUC convention in December.

- STRIDE has started linking PASUC with potential long-term capacity-building partners such as the Philippine-American Association of Science and Engineering (PAASE), which for the first time engaged a large group of SUC vice presidents and senior research directors for a forum on "Transforming into a Research University" in May 2019. It is envisioned that capacity-building activities for SUC officials and

4.0 (or "PISI", which translates to 'thread' in Tagalog), a seamless and intertwining set of programs intended to re-engineer the SUCs' intellectual capital to be Industry 4.0-ready. The PISI 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.

The PISI was launched on February 12, 2019, in an event attended by leaders and officials of all 112 SUCs in the Philippines. The document symbolizes the SUCs' drive to proactively join the government's goal of innovation-led, talent-driven economic growth under the Filipinnoation Roadmap. At the event, then USAID Acting Mission Director Denny 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."

The four major strategies under the PISI, also



(L-R) PASUC President Tirso Ronquillo, US Ambassador to the Philippines Sung Kim, CHED Chairperson J. Prospero de Vera III, and Singapore Polytechnic Deputy General Manager Andrew Tan during the PASUC General Assembly in July 2019. | Photo: RTI International

faculty will be provided by such partners working with the STRIDE-supported START Center (see below) beginning Year 7.

FACULTY AND RESEARCHER TRAINING (START CENTER)

STRIDE spent most of Year 6 exploring with stakeholders appropriate business models to sustainably deliver START courses by a host institution. During the first months of the year, STRIDE met with four local training institutes (Southeast Asia Regional Center for Graduate Study and Research in Agriculture, International Rice Research Institute, University of the Philippines-National Engineering Center, and UP Open University) to analyze particular aspects of their operations and solicit their inputs in managing an effective training center for science, technology, engineering, and math (STEM) researchers. Leaders from these institutes shared best practices, which will be integrated to the criteria for selecting a START Center host. These include parameters such as gauging training demand; training design and implementation; defining, measuring, and communicating success indicators; and managing financial and administrative operations.



Beginning in the second quarter of this year, STRIDE pursued a recommendation by DOST to reach out to its attached agencies including the National Research Council of the Philippines, the National Academy of Science and Technology, and Science Education Institute to also gather information on the conduct of similar trainings and assess their capacity and willingness to host the START Center. Through various exploratory meetings, STRIDE learned that these agencies are not expressly mandated to train faculty researchers, with policy and funding restrictions limiting the level of participation that the agencies can provide. In light of this, STRIDE has reverted to its initial plan to call for proposals from universities and training institutes that have both interest and ability to host the START Center. Potential hosts will be identified and invited to apply on the basis of their demonstrated capacity for sustainably delivering effective professional training courses.

With the extended deliberation process for selecting the START Center host, STRIDE also moved forward with the development of the training syllabus of two START modules for a pilot run at the beginning of Year 7. STRIDE intends to independently pilot the first START courses in the extension period on “Writing Scientific Papers for Publication” (Q1 FY2020) and “Managing Research and Research Teams” (Q2 FY2020). These pilots are intended to further refine these modules, which will be regularly offered by the selected START Center host, with some support from STRIDE and possibly even DOST, in the latter half of FY2020.



IR 2. STRENGTHENED LINKAGES BETWEEN GOVERNMENT, INDUSTRY AND ACADEME FOR INNOVATION

In Year 6, STRIDE remained steadfast in its effort to establish and strengthen linkages

NCR Ideation and Project Design Workshops



The Department of Science and Technology's Science for Change Program (S4CP) and National Capital Region (NCR) Office partnered with STRIDE to deliver ideation and project design workshops on August 27-28 which were specifically targeted for industries in NCR. The partnership led to pilot the adoption of STRIDE's ideation framework to help facilitate the prioritization of R&D solutions for industry needs, particularly through a collaboration under DOST's Collaborative Search and Development to Leverage Philippine Economy (CRADLE) Program. At the end of the two-day workshop, 10 capsule proposals were assessed by members from STRIDE, DOST Councils and the S4CP team. DOST-S4CP has reiterated their willingness to adopt the ideation framework, especially to help in their regional S&T assessments.

Encouraging more industry-academe joint research, STRIDE and DOST observed the need to create a mechanism that enabled strategic collaboration between both sectors. The DOST is the development of the Ideation Workshops.

Year 6 saw DOST utilizing the Ideation Framework in prioritizing R&D solutions for industry needs. In partnership with STRIDE, DOST and its NCR Office delivered the Ideation Workshop with the objective of generating research ideas that industry and academe could jointly pursue. The workshop was cited as the “missing link” to DOST’s efforts to entice more market-driven proposals for the CRADLE Grant.

between and among GIA stakeholders. Toward this end, STRIDE designed and organized innovation-related workshops, studies, and events that not only bring stakeholders together but also result in joint innovation initiatives.

CONVENING INNOVATION WORKSHOPS AND SHARING BEST PRACTICES IN LINKAGES

In August 2019, the DOST's Science for Change Program (S4CP) and National Capital Region (NCR) Office partnered with STRIDE to deliver the ideation and project design workshops for 10 teams of Metro Manila-based industries partnered with NCR-based HEIs. The event piloted DOST's adoption of STRIDE's Ideation Framework. The use of this framework aims to help facilitate the prioritization of R&D solutions for industry needs and generate more research ideas that could serve as core ideas in the development of proposals for DOST's CRADLE Program. At the end of the two-day workshop, the participants generated 10 capsule proposals for assessment with DOST.

DOST's push for the adoption of the Ideation Workshop will help ensure funding for the workshop's succeeding runs and increase possibilities of the workshop outputs feeding into future DOST grants applications.

While DOST has adopted STRIDE's Ideation Framework and has already funded the pilot run in August 2019, there remains a need to reconfigure some components and steps in the

Ideation Workshop. STRIDE and DOST S4CP are currently working to refine the Ideation Workshop to better align with DOST's writeshop. DOST and STRIDE are also looking to identify potential partners in the regions to run the Ideation Workshop and facilitate partnerships after the workshops.

STRIDE's Ideation Framework has come a long way from its pilot run that was held on April 2019 in Cagayan De Oro City. Initially designed to support RIICs, the workshop gained interest from DOST and other stakeholders. To address demand, STRIDE ran a training of trainers' session on Ideation with local stakeholders in Cagayan De Oro City and the RIIC-supported Optimizing Regional Opportunities for Business Excellence through Science, Technology, and Innovation (OROBEST) team. At the request of UPSCALE, STRIDE will also be facilitating a training of trainers' session for HEIRIT TBIs. This was initially scheduled for Year 6 as part of capacitation of UPSCALE in increasing industry engagement, but has been pushed to Year 7 due to conflicting schedules.

Building Capacity in Industry Engagement

Throughout the years in developing industry relationships, STRIDE has been able to compile best practices and engagement mechanisms in working with industry. In order to capacitate local stakeholders, STRIDE proposed the development of a toolkit of best practices in industry engagement and identified stakeholders in DOST and UPSCALE, who have requested training in building strategic partnerships with industry.

Throughout Year 6, STRIDE conducted FGDs with UPSCALE in order to better target the content and development of the toolkit. The original idea of the toolkit containing a checklist for events and a list of best practices evolved into the strategies in conducting needs assessments for industry and how to build a strong foundation for partnership. The toolkit development was shelved as work on delivering the Ideation Workshop ramped up. It was when STRIDE invited UPSCALE's Jacinto Asuncion to deliver the pilot run of the project design that clear synergies between the toolkit and the Ideation Workshop were identified. The facilitators' manual of ideation and training in workshop delivery was requested by UPSCALE. By the end of Year 6, it was decided that the ideation facilitation guide and the KTTO mentors' guide, which will contain best practices in negotiating and meeting with industry, will be distributed to both UPSCALE and DOST as a replacement for the originally planned toolkit.

ANALYSES AND STUDIES

The 2014 Philippine IEA study was cited by the Philippine Impact Assessment report released by the British Council. The report highlighted STRIDE's efforts in leading and funding initiatives aimed at bridging the gap in university-industry engagement for innovation and increasing collaboration. According to the report, the "STRIDE Programme has funded several successful initiatives to increase collaboration, which should have a positive effect on the ecosystem in the longer term."



Interviews for the follow-on Philippine IEA conducted by Innovation Advisors Molly Dix (left) and Adam Klich (right) | Photo: RTI International

In Year 6, STRIDE began a follow-on study to the 2014 assessment. This updated IEA aims to identify critical strengths and weaknesses impacting the country's R&D and innovation landscape. In addition, the ongoing study seeks to gauge the changes in the ecosystem as impacted by innovation-related programs from different sectors. STRIDE is working closely with the DOST planning office to ensure that the assessment's focus will be valuable in developing Philippine policy, as well as will aid the governments' inputs to the mid-cycle review of the Philippine Development Plan.

RTI Innovation Advisors Molly Dix and Adam Klich conducted two in-country visits this year to gather data for the study. They were able to interview over 60 representatives from government, industry, and academe from NCR, Calabarzon, Region VII, and Region X. Additional data were gathered in the form of an anonymous survey sent out to various stakeholders in the Philippines. Initial responses to the survey were low, but help from STRIDE partners such as DOST and Semiconductor and Electronics Industries in the Philippines Foundation, Inc. pushed the final total number to over 50. The data gathered from the survey helped in directing questions during the face-to-face interviews. The survey data were also helpful in validating experiences and perceptions of interviewees as well as in identifying topics that required further investigation. The assessment is due to be published in Quarter 1 of Year 7.

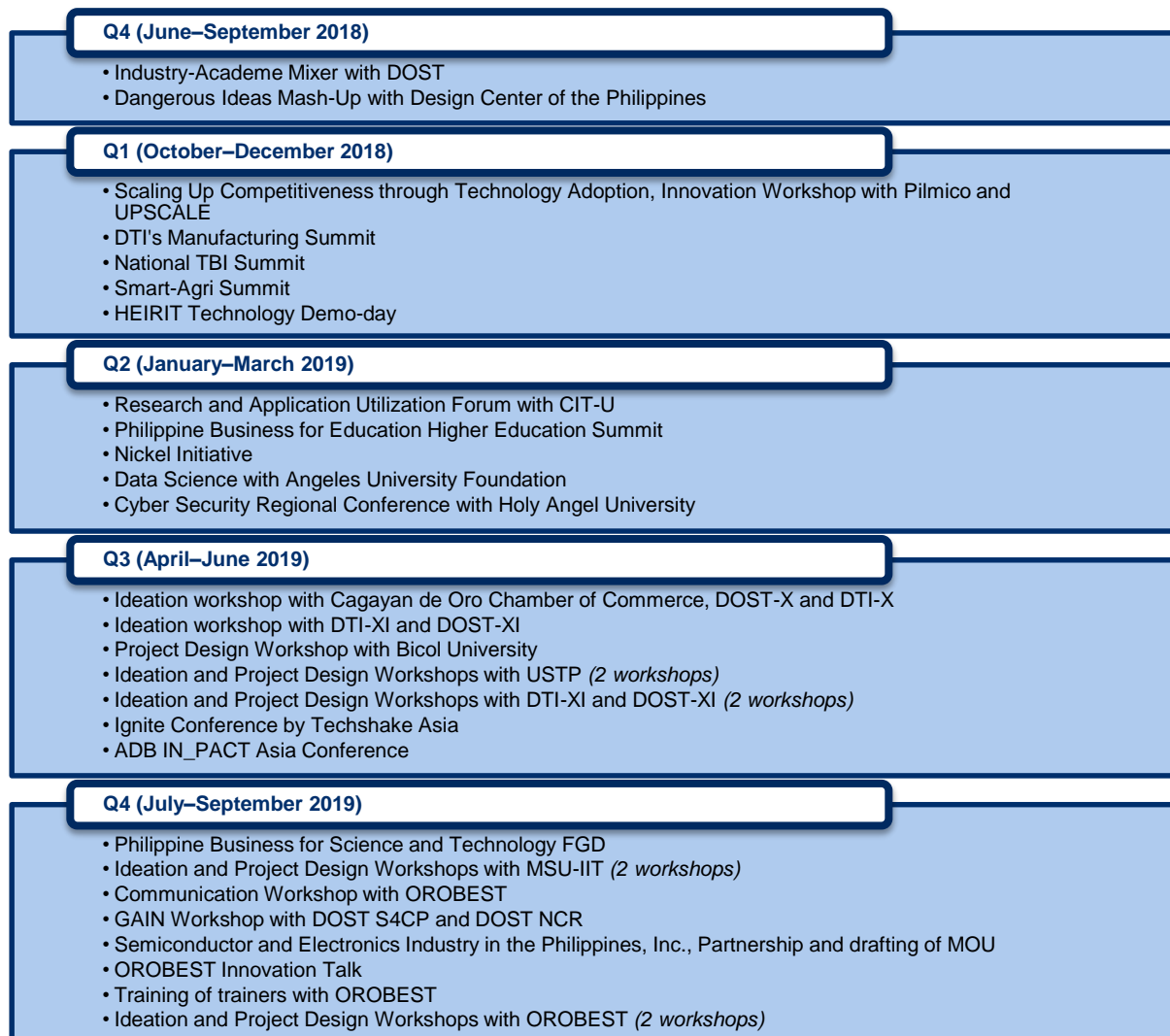
In the preparation for the follow-on study, STRIDE worked with high-level government officials from DOST and DTI in crafting the timeline and the scope. As a best practice, STRIDE should not only engage high-level government officials but also connect early with the planning or policy division of these agencies. Given the typically busy schedules of these officers, it took some time to hold meetings and gather feedback. This resulted in a compressed timeline for the assessment in order to meet reporting timelines of agencies for the Philippine Development Plan mid-cycle review.

EVENTS THAT ENABLE LINKAGES ON INNOVATION

Strategic and Grassroots-level Events Supporting Linkages

Throughout Year 6, STRIDE supported various events that have created opportunities for collaboration and facilitated sharing of knowledge and best practices on innovation. These events have taken the form of workshops, conferences, guest industry lectures, *kapihans*, forums, and summits. These linkages events are those that were managed under IR2 either on its own or in support of IR1 and/or IR3.

FIGURE 7. EVENTS AND LINKAGES-RELATED ACTIVITIES SUPPORTED UNDER IR2



STRIDE organized and collaborated on 31 events for Year 6 (see **Figure 7**). Support for the activities varied from providing technical assistance, identifying and inviting speakers, and facilitating workshops.

This year also saw STRIDE's engagement with Makati Business Club and Dr. Gonzalo Serafica's Philippine Business for Science and Technology (PBST) initiative. A series of meetings with Makati Business Club's Executive Director Coco Alcuaz was held to help frame the program, its goals, and proposed set of activities. STRIDE was involved as a consultant in the program design. Select industry stakeholders gathered for an FGD on the PBST initiative in August, and STRIDE also took the opportunity to present the IEA and other STRIDE linkages projects. While the initiative is still in its infancy, STRIDE will continue to support the growth of PBST as a potential link between government-funded researchers and R&D practitioners from industry.

STRIDE continued technical support to strategic cross-sectoral events such as the DTI Manufacturing Summit and Inclusive Innovation Conferences (both 2018 and 2019). These events have been pivotal in driving innovation policies, while ensuring high-level dialogue and networking between key stakeholders on innovation. The Inclusive Innovation

Conferences in particular have been an ideal venue for launching the STRIDE-supported Filipinnovation Roadmap and highlighting the results of RIIC work (see IR3).

Going forward, STRIDE will aim to strategically choose and prioritize how events will be selected with the resources available. STRIDE will come up with guidelines to identify events that would have significant impact for STRIDE initiatives or project indicators.

Study Tours

In Year 6 STRIDE provided logistical assistance to the Innovation and Entrepreneurship Mission to Israel led by the DTI and the Philippine Embassy in Israel. Participants were exposed to Israel's innovation strategy and policies and were able to identify best practices and potential applications of these learnings in the Philippine setting. Other participants of the mission included representatives from CHED, DOST, Semiconductor and Electronics Industries in the Philippines, Inc., and Integrated Micro-Electronics Inc.



The Philippine Government delegation to the Innovation and Entrepreneurship Mission to Israel. STRIDE COP Richard Abendan, DCOP Rossana Zetina-Beale, and Richard Umali joined the Mission, pictured here at the Office of the Israel Innovation Authority. | Photo: RTI International

Also this year STRIDE provided organizational assistance for a visit to Research Triangle Park in North Carolina for PASUC President Dr. Tirso Ronquillo and Batangas State University Vice President Engr. Amante. During their visit, they had meetings with officials of RTI International and North Carolina State University, while also visiting local business incubators. Dr. Ronquillo and Engr. Amante reported gaining new insights that they can apply in PASUC innovation initiatives, which are being

conducted with STRIDE support.

STRIDE is still open to supporting potential future study tours with key stakeholders. There are plans to hold a study tour for very successful KTTO trainees in Asia, while visits or conferences that provide opportunities for enhancing the viewpoints of key officials on innovation pathways will be considered going forward.



IR 3. IMPROVED GOVERNMENT CAPACITY FOR INNOVATION

Based on the STRIDE IEA conducted in 2014, issues such as low numbers of scientific collaborations and the slow creation of research and new knowledge hindered the innovation potential of the country. Back then the Philippines ranked just 100th in the GII. Fast forward to this year, and the Philippines has just jumped 19 notches higher in 2018 to rank 54th in the

GII. This rise in the rankings indicates that many stakeholders have come together for an improved innovation landscape, with the Philippine Government leading the way by providing significant financial and policy investments toward innovation.

With these developments, STRIDE is focused on working with the Philippine Government to help sustain the drive to make innovation lead economic growth, while continuing to leverage the significant investments made by government. In Year 6, STRIDE expanded its technical assistance to government partners by focusing in four areas: the implementation of the DTI–DOST Inclusive Filipinnovation and Entrepreneurship Roadmap (the Filipinnovation Roadmap), the establishment of RIICs in select pilot areas, R&D programs and processes of DOST, and select technical needs within the CHED.

PHILIPPINE GOVERNMENT CONVERGENCE EFFORTS ON INNOVATION

Following the technical support provided during the crafting and validation of the Philippine Government’s Filipinnovation Roadmap, STRIDE continued to work on the implementation of the Filipinnovation initiative throughout Fiscal Year 6. Assistance provided in this task centered around the Filipinnovation Technical Working Group (TWG), convened in April 2019, the technical content for select key events (such as the Inclusive Innovation Conferences [IICs] in 2018 and 2019), the implementation of innovation workshops on salient global innovation trends (a primer on Industry 4.0 with select DTI and DOST officials and local universities), and the staffing for the DTI Project Management Office (Innovation and Collaboration Office [ICO]).

Most notable among support efforts was that provided to the DTI ICO, as the office provides day-to-day and technical support to key DTI officials involved in innovation work. Work in the DTI ICO includes the mapping of innovation stakeholders at both the national and regional levels; provision of technical inputs on the formulation of the Implementing Rules and Regulations (IRR) of the Philippine Innovative Start-Up Act, and the Philippine Innovation Act; and inputs on the DTI position papers related to innovation. The DTI ICO is also essential in the technical design and coordination of the Filipinnovation TWG and regular correspondence with other agencies involved in innovation. STRIDE has provided two embedded personnel to support this office.

Year 6 started on a high note with the launch of the Filipinnovation Roadmap at the 2018 IIC held in October 2018. During the event, USAID Mission Director to the Philippines Lawrence Hardy II announced the extension of the STRIDE program “to further the momentum for innovation to boost inclusive and resilient growth in the Philippines.” The event also witnessed the expansion of the DTI-DOST partnership on innovation, as five more agencies (DA, Department of Information and Communications Technology, Department of Education,



Launched in October 2018, the Filipinnovation and Entrepreneurship Roadmap marked the Philippine government's convergence efforts on innovation. Aiming to make innovation and entrepreneurship key drivers for job generation and inclusive growth, Filipinnovation is initiated by the DTI and the DOST, with the support of USAID STRIDE.

Within its launch year, both DTI and DOST rolled out strategies to further strengthen and harmonize the government's innovation agenda. DTI established an undersecretary-led Competitiveness and Innovation Group, while the DOST funneled resource support for various R&D-driving activities, including the RIIC establishment in pilot regions.

National Economic Development Authority, and CHED) committed to support the Filipinnovation effort.

Fast forward to a year later at the recently concluded IIC in September 2019, and stakeholders have already begun to demonstrate progress achieved thus far. Main government partners in DTI and DOST are already highlighting individual milestones including the establishment of the RIICs, development and capacity-building given to start-ups, and cross-cutting plans for collaboration toward the continued realization of the Roadmap's thrust.

In addition, main partner agencies also pursued more structural organizational changes to increase their synergy with the government's broader innovation agenda. In the past year, DTI established and defined the Competitiveness and Innovation Group that will lead and coordinate innovation initiatives across the DTI, as it oversees the responsibilities of the Bureau of Trade and Industrial Policy Research, Competitiveness Bureau, and E-Commerce Office. The Competitiveness and Innovation Group, as a DTI unit, is also mandated to coordinate with the National Innovation Council and other innovation-related agencies. On the other hand, DOST continues to strengthen its R&D initiatives and has pledged resources for technology transfer, joint industry-academe research, and RIIC activities, among many other initiatives.

Some factors, however, have made the implementation of the Filipinnovation Roadmap challenging in the first few months following its launch. As the specific involvement of individual line agencies was yet to be crystalized in the early stages of the Roadmap rollout, there was a need to better define Filipinnovation's operationalization structure and programs in order to get buy-in from stakeholders.

Another challenge relates to the expansiveness and inter-disciplinary nature of agreed-upon pre-identified innovation topics, such as Industry 4.0 or advanced manufacturing. Designing more advanced innovation activities that go beyond the basics became demanding, as partners have varying concerns and perspectives on these issues (i.e., government partners' focus on Industry 4.0's labor impact, industries' primary interest in new technologies). In response, STRIDE, together with the RTI Innovation Advisors, opted to focus on delivering stylized facts and concrete insights on only particular dimensions of Industry 4.0, such as opportunities for HEIs to build the human capital necessary for Industry 4.0. This shift in strategy led to a more valuable discussion regarding next steps and concrete actions that partners may take in response to these global trends.

Following these realizations, STRIDE will be more selective in its participation and support of activities in its ongoing technical assistance related to the development of the Filipinnovation Roadmap effort. STRIDE will also continue to pursue various meetings either with key officials—individually or with the majority of the Roadmap signing agencies—moving forward. Meetings will be designed as targeted engagements that are relevant to the individual agencies' concerns. Conducting these will remain particularly important in Fiscal Year 7, especially as various government agencies prepare for the implementation of the Philippine Innovation Act and the Innovative Start-Up Act. Following these, STRIDE expects that new collaborating agencies, such as National Economic and Development Authority and the Department of Information and Communications Technology, will increase their support and ramp up their programs to strengthen the government's ongoing innovation efforts. STRIDE will also continue to provide technical inputs to specific requests from partner government agencies. This includes rendering comments to IRRs of the two newly signed laws on innovation.

REGIONAL INCLUSIVE INNOVATION CENTERS



management). Among the key participants include Cebu City (CIT-U) President Bernard Nicolas Villamor and Cebu resident Rosein Ancheta. Using both the Global Value Chain and Learning and Computer Science faculty in both universities were invited in any of the proposed frameworks.

A year ago, the RIIC was a mere concept. Today, it is a regional priority. Pilot RIIC regions have adopted RIICs in their respective regional development agendas, raising optimism for increased stakeholder convergence in the areas of innovation, R&D, and science and technology.

A RIIC is a network of innovation agents that collaborate to commercialize R&D outputs for regional competitiveness. STRIDE has been among those in the forefront of establishing and championing RIICs in pilot regions in the Philippines, namely: Bicol, Central Visayas, Northern Mindanao, and Southern Mindanao.

As a major recommendation of the Filipinovation Roadmap, STRIDE provides technical assistance in the establishment of RIICs in four pilot regions: Bicol, Central Visayas, Northern Mindanao, and Davao. Throughout Year 6, STRIDE engaged in the design, crafting, and implementation of various workshops and activities to advance understanding of local innovation needs, promotion of better synergy and engagement of local stakeholders, and the adoption of a RIIC as a regional development agenda.

Months of technical assistance and on-the-ground engagements with RIIC stakeholders resulted not only in the adoption of the RIIC as a regional development agenda (by Regional Development Councils), but more importantly also in the identification of a common approach to building the RIICs in their early stages.

In each of the RIIC pilot sites, both local and national stakeholders have identified regional priority sectors to serve as the test cases for the demonstration of the concept. Pili was identified as the RIIC sector in Bicol, electronics and ICT for Cebu, processed foods and light metals for Northern Mindanao, and processed fruits and functional foods for Davao.

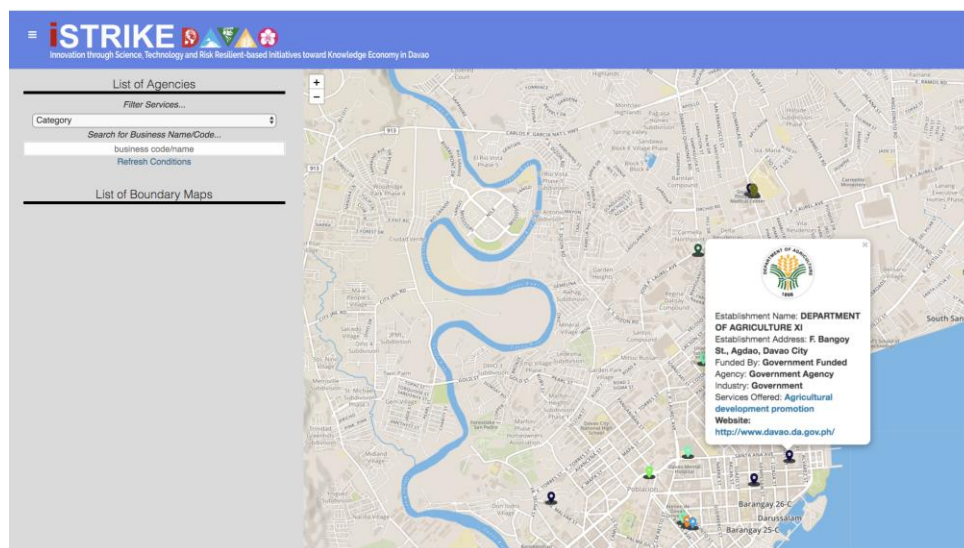
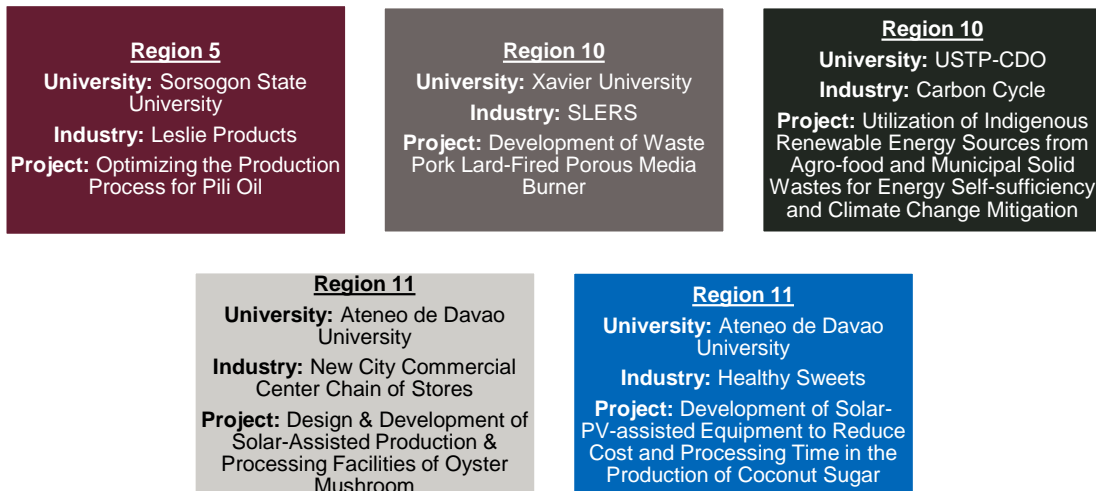
Once priority sectors were identified, STRIDE employed a variety of activities and engagement modalities that build on existing networks and partnerships. This collection of efforts has been grouped into three categories: 1) mapping of key

innovation actors, initiatives, and efforts; 2) linking of innovation players in GIA through strategic dialogue; 3) and aligning of key programs and services toward industry needs. STRIDE and its partners refer to this as the M-L-A approach in building up the RIICs.

In less than a year of implementation, approximately 36 M-L-A workshops and engagements have been carried out across the four sites. Introduced only in the latter-half of Year 6, R&D Ideation Workshops were the most-implemented activity (7 events). R&D project design workshops and program alignment workshops were also actively implemented. R&D workshops instantly helped create stronger R&D partnerships that became self-funded initiatives, such as the partnership between Pilmico, one of the country's largest flour milling companies, and MSU-IIT in the use of sensor technologies to increase the quality assurance processes of grain products. Also a result of these workshops were applications to ongoing DOST grant programs (see **Figure 8**), such as the collaborative R&D project between pili oil producer Leslie Products, an MSME located in Legazpi currently exporting low-grade pili oil to the US, and Sorsogon State University. Results of program alignment workshops and

analyses were leveraged to promote greater synergy among government agencies and local universities in their innovation-related services during stakeholder discussions. In some sites, such as Davao, alignment results are already being used to enrich the technical content for the region’s innovation database.

FIGURE 8. DOST PROPOSALS DEVELOPED FROM R&D IDEATION WORKSHOPS



As part of the effort to realize the RIIC initiative in Davao, local stakeholders have recently launched the iSTRIKE Davao website that houses innovation-related information for the Davao Region. | Photo: RTI International

As STRIDE continues to expand and refine the M-L-A approach, both local and national stakeholders have increasingly recognized the program’s technical assistance and have expanded the development of the RIICs. RIICs have been recognized as a key development agenda by the pilot sites’ Regional Development Councils and are being adopted by various industry associations as a model for innovation promotion in the regions. Local universities, such as USTP and MSU-IIT, and national government units, such as DOST’s S4CP, have also employed STRIDE’s approach to R&D workshops to promote collaborative research between industry and academe. Innovation management frameworks, such as those used in program alignment, have been key in driving inter-agency strategic planning and agenda setting, such as the one in Davao.

In the past quarter, STRIDE has continued to work in concretizing the M-L-A approach. Various M-L-A activities were carried out in the regions during this period, with four R&D Ideation Workshops being implemented across the RIIC sites. At the same time, local stakeholders also began forming their own strategic planning groups (referred to as the RIIC Core Groups) that will drive and sustain the implementation of the RIIC initiative in their respective sites. Following the formation of the OROBEST Innovation Program and Project Management Team in Cagayan de Oro, other regions have followed this example.



Participants in the Innovation Pathways Workshop” held in support of the RIIC initiative in Bicol. | Photo: RTI International



In one of the panel discussions during the IIC 2019, GIA representatives from each region shared their learnings, insights, and plans in relation to their respective RIIC efforts. | Photo: RTI International

Apart from the operational aspect, RIICs were also a focus during the recently concluded Inclusive Innovation Conference 2019. During the event, DTI Secretary Ramon Lopez recognized STRIDE’s technical assistance in the RIIC initiative. “In partnership with DOST and other agencies, we are building [RIICs] in different parts of the country under the i3S. For

this initiative, we have technical assistance from USAID's [STRIDE] program being implemented by RTI International," Secretary Lopez said.

Despite these successes, plenty more work remains in the establishment of the RIICs. Conveying the essence of the RIIC to both local and national stakeholders still requires some effort, given the uncertainties about its identity and the next steps in its implementation. There were also some headwinds in transferring STRIDE's insights and expertise in innovation ecosystem development, as preliminary assessments suggest that stakeholders' readiness to implement these new techniques is varied. Program rollout was further complicated by the varying buy-in from target partners, political dynamics among key actors at the RIIC sites, and the absence of dedicated RIIC funding mechanisms among the government partners.

The absorptive capacity and technical capabilities of possible academic partners in the RIIC sites are also worth noting. Private HEIs and SUCs have notable differences in terms of agility and access to resources. Both however tend to focus on accomplishing individualized school programs or promoting already-existing academic research and technologies.

STRIDE will continue to work with HEI administrators in further socializing the RIIC concept. The project will leverage its expertise in university-focused assistance such as training and structured capacity-building workshops in an effort to generate greater university commitment. As most of these are subsumed under IR 1, STRIDE works to synergize these initiatives with the broader goals of IR1.

STRIDE has increasingly paid attention to the stakeholder sensitivity in the RIIC pilot regions, with the intention of balancing national and local interests. Amid the various RIIC challenges and components, STRIDE has decided to focus its technical assistance on refining and delivering two RIIC dimensions in Fiscal Year 7. These are crystallizing the branding of the RIICs and creating various proof-of-concepts on RIIC-implementation. Once refined, STRIDE will pursue the transfer of these mechanisms in the latter half of the year.



SPOTLIGHT

As STRIDE continues to assist in establishing the RIICs in the regions, both local and national champions have increasingly recognized the value of the effort in regional development.

"We are also optimistic that through the RIIC initiatives, our efforts to solidify innovation across the regions will bear fruit," said DOST Secretary Fortunato Dela Peña in a September 2019 statement for the Manila Bulletin.

At the RIIC champion's get-together in July 2019, DOST Undersecretary for R&D Rowena Guevara recognized USAID and STRIDE in encouraging stakeholders to work together in developing the RIICs.

At the IIC 2019, the RIICs received further acknowledgement from other government partners. National Economic and Development Authority Director-General Ernesto Pernia expressed his anticipation of the scaling up of the RIICs beyond the pilot sites.

Program in Focus

FIGURE 9. OROBEST Activities

OROBEST Key Activities



OROBEST: A RIIC Initiative in Northern Mindanao

OROBEST demonstrates the success of the preliminary RIIC initiatives in Northern Mindanao (**Figure 9**). OROBEST is a regional innovation program that enhances industry productivity and competitiveness through the generation and adoption of scientifically developed technologies. It is initiated by the DOST and the ORO Chamber of Commerce in partnership with the DTI.

In July 2019, OROBEST, which stands for Optimizing Regional Opportunities for Business Excellence through Science and Technology, was launched. The DOST Region 11 Office, which serves as the Program's Project Management Office, awarded OROBEST Php1.8 million as funding support for operations.

STRIDE and the people behind OROBEST have been working together in championing increased R&D collaboration and innovation in Cagayan De Oro and the rest of Northern Mindanao. STRIDE has been providing OROBEST technical assistance to help it deliver a number of innovation-related programs in the region.

EFFICIENCIES OF RESEARCH GRANT PROGRAMS

This year STRIDE is working in close partnership with the DOST in efforts to maximize the outcomes from the significant investments made by the department in research and development projects. Joint initiatives focus on increasing the possibility of successful commercial outcomes of research (FEC program), improved policies and systems behind grants processes (tied to IR4), and targeted assistance to specific grant programs (Business Innovation through Science and Technology [BIST] study and Ideation Workshops in IR2). The long-term goal of these efforts is ultimately effective and cost-efficient R&D projects that bring measurable benefits to Filipinos and potentially to the greater global community.



The culmination of the 2nd Filippinnovation Entrepreneurship Corps Program held in April 2019. | Photo: DLSU

Continuing Support to the Filipinnovation Entrepreneurship Corps

The second FEC training program was conducted in Year 6 with the major funding [REDACTED] from the DOST-PCIEERD, co-implemented with DLSU-Manila. The program is an experiential training program for DOST-funded researchers to rapidly determine the commercial readiness of their research by working with a team of potential partners to conduct customer discovery and validation of their research.

The intention of the this program is for researchers to gain more information from potential customers, resulting in better targeted research output and allowing for identification of new potential customers or commercialization partners or any need for a pivot in the research, as well as to better attract additional funding. Documented success stories of the first cohort that was implemented in 2016, in addition to the early gains by the current cohort, have shown that the program can aid in commercialization aspirations of researchers.

The FEC 2 program was composed of 10 teams. Researchers were placed in teams with an entrepreneurial lead, an experienced industry mentor, a principal investigator, and a technology transfer officer. **Table 7** shows the list of project teams.

TABLE 7. FEC 2 PROJECT TEAMS

PROJECT TITLE	Research Institution or HEI
Team 01: Tuyo Agad	PhilRice
Team 02: DNA-based Nanobiosensor for Detection of E. Coli and Salmonella in Food, Feed, and Farm Produce	UP – Los Baños
Team 03: Development, Characterization, and Performance Evaluation of Polymeric Separation Membrane for Industrial Applications using Local Materials	UP – Diliman
Team 04: Extraction, Characterization, and Application of Natural Colorants in Nutritional Food Products	DOST – FNRI
Team 05: Jolt: A Stackable Multi-Functional Battery Energy Storage for Household Solar and Emergency Applications	UP – Diliman
Team 06: Chemical Synthesis and Characterization of Conducting Polymer / Metal Nanoparticles-Nonconducting Polymer Nanocomposite	University of Santo Tomas
Team 07: OneClick: Android / Web-based Student Response and Understanding Visualizer	Mapua
Team 08: A Vision-Based Vehicle Counter for Traffic Monitoring	DLSU
Team 09: FertiGroe* (Controlled-Release Nitrogen Nanofertilizer) and HormoGroe* (Nanoencapsulated Plane Growth Regulator); MykoPlus (Mycorrhiza-growth hormone) Plant Growth Promoter	UP – Los Baños
Team 10: Tuklas Lunas	UP – Manila

DLSU is in the process of documenting the stories of those that have undergone FEC trainings. This will be in the form of video testimonials and updates, which will be provided to DOST in Year 7.

Diagnostics and Sharing of Best Practices in DOST Grant Programs

For this year the subtasks on diagnostics for grants and scholarship programs (*Subtask 3.3.2*) and ideation and best practice sharing workshops (*Subtask 3.3.4*) were put on hold due to changing priorities articulated by DOST with regards to STRIDE technical assistance.

Priority was given to technical inputs on the new M&E Protocol for research and the Committee on R&D Communications, both of which were launched by DOST this year (see IR4).

Diagnostics of grant systems and processes is still of interest to DOST, particularly in the context of understanding how best to integrate the new M&E protocols in the entire process from grant design all the way to post-completion impact assessments. For Year 7 the subtask on diagnostics is evolving to a process mapping study of one willing DOST research council so that efficiencies can be identified where M&E indicators can be utilized to define project selection and outcomes harvesting. In this context, the best practice workshops may be eliminated altogether, unless such workshops are required to help introduce improvements to any hindrances identified during the grants process mapping.

Process Review for the BIST Grant Program

STRIDE has collaborated intensively with DOST's S4CP this year. While most of the focus has been on CRADLE grants and the ideation and project design workshops to support the RIIC initiative, STRIDE has also been working on a process review paper for the BIST program. This grant program provides credit assistance to companies that want to conduct advanced R&D activities. During a series of meetings with S4CP, there was a request to better understand the BIST application process from the perspective of the industry applicants given the low application rates for the grant program. In Q4 of this year the study commenced with pilot interviews to better define study questions, which were eventually grouped into the aspects of industry engagement, barriers to application, and clarity of approval criteria. Full interviews with industry stakeholders will begin in Q1 of Year 7. Some delay was encountered in finding an appropriate STTA to conduct this study, but eventually Dr. Neil Gana, a former Philippine-California Advanced Research Institutes principal researcher, was enlisted to work with STRIDE Senior Consultant Dr. Gonzalo Serafica. The study is slated to be submitted to DOST by Q2 of Year 7.

TECHNICAL ASSISTANCE TO CHED

Student Loans Review and Inputs to UniFAST

Republic Act No. 10931, known as the Universal Access to Quality Tertiary Education Act, aims to provide accessible education by providing free tuition, school fees, and other financial assistance mechanisms in SUCs, local universities and colleges, and technical-vocational institutions in the country. A significant component of this law is the establishment of the long-term student loan program. This is to further support students in their educational needs, particularly in pursuing undergraduate and graduate studies.

The CHED tapped STRIDE to provide technical assistance in the development of a Student Loan Program for Tertiary Education-Long-Term Basis. STRIDE created and presented a review of different existing student loan schemes in a global perspective. This included critical components such as the types of student loans, interest rates, required infrastructure, sources of funding, repayment procedures, and loan default rates. Challenged faced by the different country programs were also highlighted as pitfalls to avoid for a future program in the Philippines.



STRIDE Consultant Felipe Lozano presents the concepts on long-term tertiary student loan programs to CHED's UniFAST Board May 23, 2019. | Photo: RTI International

The review of existing mechanisms informed the roundtable discussion last May 2019, in which the agenda centered on exploring the possible student loan mechanisms for the country and critical elements such as affordability, target beneficiaries, and repayment and collection systems. This roundtable discussion was well represented by members of the Student Loan Program TWG, headed by Jose Rizal University President Vincent Fabella; officials from the CHED Unified Student Financial Assistance System for Tertiary Education (UniFAST); representatives from Philippine Institute for Development Studies, the Private Education Assistance Committee, universities, and financial institutions; Philippine Association of Colleges and Universities officers and members; and the Philippine Association of Private Schools, Colleges, and Universities.

At the event, STRIDE Consultant Felipe Lozano-Rojas presented insights from various student loan schemes across the world. He highlighted the income contingent loan as a possible model for the Philippines. The income contingent loan allows student-borrowers, upon graduation, to pay their loan based on their income level. It also allows student-borrowers to defer payment due to hardship or unemployment. Such a model has been relatively successful in Colombia, where Mr. Lozano-Rojas was part of the student loan program office. This is noteworthy given the similarities in the developing economies of Colombia and the Philippines.

In the same month, the output from the roundtable discussion was presented to the UniFAST Board, headed by CHED Chairperson Dr. J. Prospero de Vera. The Board approved the motion for the UniFAST TWG on student loans to create terms of reference for consultants who will develop a viable financial model for the student loan program. The model should provide the overall direction and strategies in managing and disbursing education loans to qualified students. The tasks also require the development of a student loan program handbook that will contain the program's implementing guidelines and processes.

Consultancy for Institutional Assessment

STRIDE in Q4 of this year has enlisted a consultant who will conduct an organizational assessment of CHED in relation to its new responsibilities under the free tuition law (Republic Act 10931). This effort is in response to a need identified by CHED leadership to better understand how CHED can respond to a changing tuition policy environment, and is a refinement of the initial plan to support CHED in meeting external quality standards in its

operations. As a first task, the consultant is designing a methodology for the study. Data collection will begin in earnest in Q1 of Year 7, with the study targeted to be completed by Q3 of Year 7.



IR 4. IMPROVED POLICY ENVIRONMENT FOR INNOVATION

The STRIDE program supports STI research policy improvements in both government and HEIs, particularly in the areas of procurement, research incentives, extension services, and STI research efficiency. During Year 6, STRIDE continued to partner with key stakeholders to find ways to fill the gaps and address challenges in the country's science and technology procurement system. It also explored new opportunities with PASUC to further inform the incentives and extension frameworks of public HEIs through an alignment with the Innovation Diagnostic Tool co-developed by STRIDE. Meaningful results were achieved in terms of crafting alternative metrics that will better capture research efficiency and the impact of R&D projects funded by DOST. STRIDE also commenced work toward strengthening R&D communication efforts at the office of the Undersecretary for R&D, with the aim to foster a better appreciation of the benefits of R&D by the public and other government agencies.

IMPROVED PROCUREMENT POLICY/LEGISLATION

Building on the previous efforts and lessons from the work on procurement in the past five years, STRIDE this fiscal year continued to engage with the UP system to enhance its internal policies to procure scientific goods and equipment through Republic Act 9184, or the Government Procurement Reform Act.

Earlier in the year, STRIDE sought to work with UP–Diliman in the development of an R&D procurement roadmap that would aim to amend provisions of Republic Act 9184 to help remove barriers to procuring equipment for scientific research. However, through a series of consultative meetings with several government and academic partners, STRIDE learned that certain provisions of the IRRs of the law (Article 53.6 in particular) had been included to benefit science and technology research. The provisions allowed negotiated procurement contracted with a particular supplier or contractor for scientific, academic, or scholarly work or research.

Additionally, the Government Procurement Policy Board (GPPB) recommended and offered to help increase HEIs' awareness and utilization of Article 53.6 for science and technology procurement. GPPB Deputy Executive Director Melissa Santiago-Yan said that the agency could conduct procurement training for university staff and researchers.

Keeping in mind the recommendations of GPPB, STRIDE pivoted from efforts to change the Republic Act 9184 IRR and instead focused on the implementation of Article 53.6, particularly in UP–Diliman. In May 2019, STRIDE took the opportunity to collaborate with the UP Procurement Office. The office, which was just established in 2018, is mandated by the UP President to streamline the overall procurement process and is in charge of leading the revision of UP's R&D Procurement Manual.

For the last two quarters of FY 2019, support to the UP Procurement Office included sharing of good practices and assisting in developing templates and responsibility matrices to hasten the utilization of the procurement manual. The revised draft manual also incorporated

GPPB's recommendation to utilize the alternative methods of procurement (Article 53.6 of Republic Act 9184) and to streamline small value procurement processes for science and technology-related equipment.



Dean Gani Tapang of the College of Science meets with UP Consultant Tom Syquia to socialize the draft R&D procurement manual. | Photo: RTI International

In addition, the Procurement Office was able to socialize the draft manual with key stakeholders (scientists and principal investigators), including the new Dean of the College of Science Dr. Giovanni Tapang and other UP–Diliman scientists. Inputs from the end-users further informed the draft manual, particularly in the area of

procurement planning and budgeting prior to grant approval. The draft manual is currently undergoing an internal review among UP offices. Once finalized, the draft manual is intended to be socialized with GPPB to ensure that the provisions of the manual are aligned with the current procurement law.

IMPROVED POLICIES FOR RESEARCH INCENTIVES AND EXTENSION SERVICES

For this fiscal year, STRIDE has conducted consultative meetings specifically with officials and representatives from select HEIs and documented good practices, identified key challenges, and provided key recommendations in reviewing the existing research incentives and extensions frameworks in HEIs.

From the Year 6 implementation plan, STRIDE originally intended to cover deloading policies as incentive mechanisms. Upon hearing the needs and recommendations of relevant stakeholders, STRIDE has instead adapted a larger view of incentives needed to facilitate research productivity among HEI faculty. This more holistic view of incentives policy will be developed in a reference paper.

Results of consultation meetings showed that research incentives are not merely confined through monetary awards. Instead, researchers are more keen and inspired to perform R&D activities if the structural and institutional support is present in the HEI environment.

Moreover, researchers look for opportunities that will allow them to grow in their respective fields and stressed that universities need to be equipped and innovation-ready to facilitate and boost research productivity.

Several FGDs facilitated dialogues with representatives from academia to discuss the existing science and technology-related extension initiatives and potential recommendations to further improve these mechanisms in HEIs. STRIDE conducted three FGDs with HEIs in Manila, Cebu, and Davao. Technology transfer, commercialization, collaborative activities with the private sector, and community adoption of university-generated technologies were some of the identified mechanisms that propel science and technology extension at the

forefront of innovation. Recommendations from stakeholders included the creation of metrics to measure social impact especially for science and technology extension work and also the creation of a central database that can store university-produced innovation and technologies, which then can be easily accessed by stakeholders.

Some key points and learnings are being gathered and compiled into reference papers now undergoing internal review. Two papers are planned to be disseminated with relevant stakeholders in the next fiscal year. The key outputs from the reference papers are currently informing the design of the Innovation Diagnostic Tool, which is being developed this year.



Research and extension focal persons and faculty from ADDU, University of Southern Mindanao, University of the Philippines Mindanao, and University of Southeastern Philippines participated in a STRIDE-led focus group discussion on extension April 10, 2019. | Photo: RTI International

Taking the First Step Toward Mapping the SUC Innovation Landscape

With the launching of the PASUC PISI this fiscal year (see IR1), PASUC requested the support of STRIDE through the development of an Innovation Diagnostic Tool as part of the PISI Strand 1: Innovation Diagnostics of SUCs.

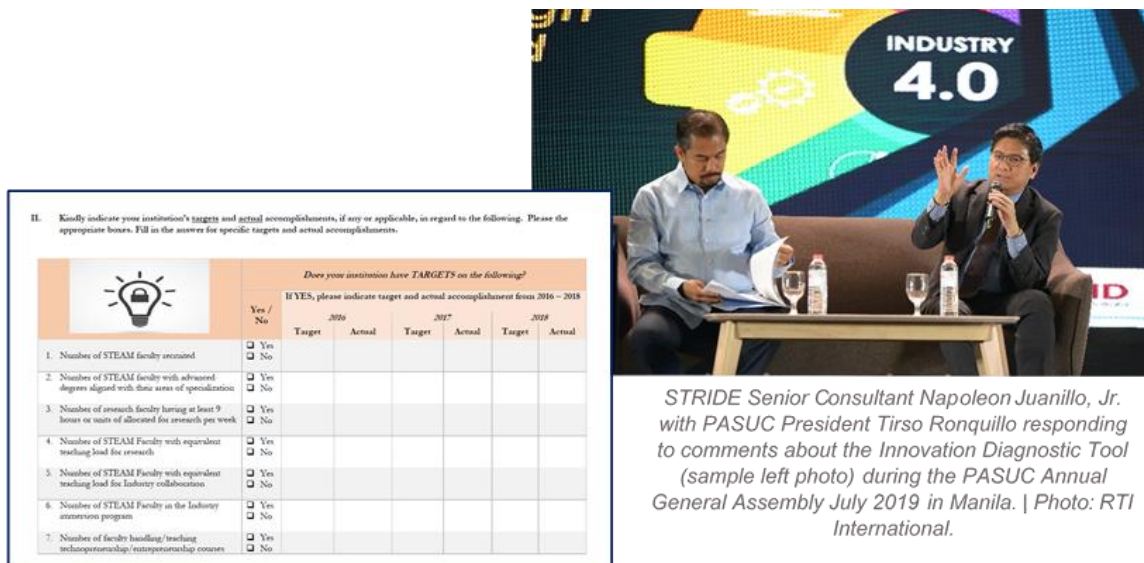
This diagnostic tool will allow SUCs to assess the research readiness and the level of capability of their respective institutions. The instrument, in a form of questionnaire, was informed by previous work on assessing research readiness, including STRIDE's Participatory Institutional Diagnostics. The new tool incorporates structural, human, and relational capital indicators for becoming an innovation-ready institution and measures readiness and capability in terms of human capital development; research production and output; knowledge transfer; and economic, policy, and civic outcomes. Aside from the conventional metrics on capturing research production and output, the tool also aims to capture alternative metrics for social, economic, and policy impact.

The Innovation Diagnostic Tool has gone through several iterations in collaboration with the PASUC Innovation Diagnostic Tool TWG, which is composed of key officials from different SUC levels. The tool was launched and presented by STRIDE senior consultant Napoleon Juanillo and PASUC President Tirso Ronquillo during the PASUC Annual General Assembly held in July 2019. A follow-on consultation with the TWG and PASUC-identified statisticians was also conducted this year to validate the instrument.

In the first quarter of the FY 2020, the tool is projected to be administered to all PASUC members. Using results from this study, we aim to map out and create a baseline of the SUCs' capacity and enabling landscape for innovation. The tool is also seen by PASUC to potentially facilitate directional changes and policy improvements in higher education programs concerning science, technology, engineering, agrofiseries, and mathematics.

From a policy perspective, this task is considered completed. Moving forward, STRIDE will continue to support PASUC-related initiatives post-implementation of the Innovation Diagnostics Tool.

POLICIES DESIGNED TO CAPTURE THE EFFICIENCY OF STI RESEARCH



II. Kindly indicate your institution's targets and actual accomplishments, if any or applicable, in regard to the following. Please the appropriate boxes. Fill in the answer for specific targets and actual accomplishments.

	Yes / No	Does your institution have TARGETS on the following?					
		If YES, please indicate target and actual accomplishments from 2016 - 2018					
		2016		2017		2018	
		Target	Actual	Target	Actual	Target	Actual
1. Number of STEAM faculty recruited	<input type="checkbox"/> Yes <input type="checkbox"/> No						
2. Number of STEAM faculty with advanced degrees aligned with their areas of specialization	<input type="checkbox"/> Yes <input type="checkbox"/> No						
3. Number of research faculty having at least 9 hours or units of allocated for research per week	<input type="checkbox"/> Yes <input type="checkbox"/> No						
4. Number of STEAM Faculty with equivalent teaching load for research	<input type="checkbox"/> Yes <input type="checkbox"/> No						
5. Number of STEAM Faculty with equivalent teaching load for industry collaboration	<input type="checkbox"/> Yes <input type="checkbox"/> No						
6. Number of STEAM Faculty in the Industry immersion program	<input type="checkbox"/> Yes <input type="checkbox"/> No						
7. Number of faculty handling/teaching technopreneurship/entrepreneurship courses	<input type="checkbox"/> Yes <input type="checkbox"/> No						

STRIDE Senior Consultant Napoleon Juanillo, Jr. with PASUC President Tirso Ronquillo responding to comments about the Innovation Diagnostic Tool (sample left photo) during the PASUC Annual General Assembly July 2019 in Manila. | Photo: RTI International.

In 2019, STRIDE expanded its technical partnership with DOST in line with creating a more enabling policy environment for innovation. Part of the policy support committed to DOST is the co-development of alternative metrics in capturing outcomes of DOST-funded research, and technical assistance in communicating the benefits of R&D investments to the public.

DOST Adopting Alternative Metrics in Capturing Research Efficiency

DOST assesses the efficiency of its research using the 6Ps Metrics: R&D output in terms of products, patents, publications, people, places, partnerships, and policies. With STRIDE assistance, this framework has evolved with the addition of academic, social, and economic impacts as metrics. The new metrics form part of the new M&E protocol, which harmonizes M&E processes and guidelines for all research conducted under DOST.

The change in the M&E indicators is a product of months-long work of DOST and the STRIDE team as both explored various approaches in assessing research efficiencies. In April 2019, STRIDE brought RTI Senior Manager for Innovation Policy Dr. Jeffrey Alexander to facilitate a two-day M&E session for the DOST M&E TWG. The participants were composed of M&E staff from three R&D sectoral planning councils: Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD); PCIEERD; PCHRD; and one advisory body, the National Research Council of the Philippines (NRCP). The workshop covered topics on the foundations of science and technology impact analysis, defining research project classification, and designing portfolios to capture R&D impact.

During the training, Dr. Alexander introduced the concept and underscored the advantages of using portfolio-based impact metrics as well as the Pathway Approach framework as a means to measure research impact. The Pathway Approach takes into consideration four forms or segments of engagements in measuring research outcomes: academic, economic, policy, and civic. This approach was eventually adopted by DOST as reflected in its new M&E Protocol, which was officially launched at the DOST R&D M&E Conference in April 2019. From a policy perspective, this task is considered completed. Going forward, STRIDE will continue to support the integration of the M&E protocols in the grants processes of DOST.

Fostering Better Public Appreciation of R&D Impact

As DOST hopes to better capture the efficiencies of the research projects it funds, it is also finding ways to strengthen its capacity to communicate such R&D benefits and impact to the public. STRIDE is thus providing technical assistance in the areas of research communication planning and the crafting of targeted messages and stories. This effort helps DOST achieve its objectives to increase awareness of its R&D programs, gather stakeholders' buy-in on the need to invest more in research, and improve the participation and engagement of industries in R&D activities.

In order to make DOST's R&D communication efforts more unified, STRIDE and DOST worked together to define and narrow down common messages to effectively communicate impact. Throughout the year, three workshops were conducted with the communications staff of the agency's R&D councils and R&D institutions. These workshops centered on identifying the agency's relevant stakeholders, crafting key messages, and identifying collaborative mechanisms the councils and R&D institutions could use as common platforms to promote the impact of R&D. The main output, in the form an R&D Message Box, was developed to serve as content guide for anyone at DOST who is tasked to communicate R&D programs and results.

In addition to advising DOST in the area of content strategy, STRIDE also supported DOST's efforts to strengthen the communication work structure within its R&D department. With the approval of Undersecretary for R&D Rowena Guevara, an *ad hoc* R&D Communications Committee was formed to harmonize R&D communications-related activities under her office. The committee is comprised of representatives from each of DOST's four research councils and seven R&D institutions. An officer from the Office of the Undersecretary for R&D serves as the committee's focal point, while STRIDE continues to work with the group to enhance strategic communication tactics and strategies for communicating R&D by placing a senior communications advisor on the committee.

SPOTLIGHT

For this year's program implementation, STRIDE contributed to the development and introduction of DOST's new M&E Protocol, which harmonizes M&E processes and guidelines for all agencies under the Department. The protocol adopts and integrates the Pathways Approach, which suggests the addition of social and economic impact as metrics in capturing DOST's R&D efficiencies.



With this development, it is hoped that DOST will better capture the value of its R&D projects and that more stakeholders will appreciate the positive impact that R&D has, not only for scientists and academia, but also for ordinary Filipinos and grassroots communities.

Since then, the R&D Communications Committee has come together to align communication efforts and resources for better impact. Only a month after being organized, the team worked to strengthen the delivery of R&D messages at the 2019 National Science and Technology Week in Pasay City. It produced a number of communication materials with the industry as specific target audience. It also conducted media coaching sessions to enhance the skills of its researchers in dealing and communicating with the media.

During this year, the committee has also agreed to roll out a communications campaign that prioritizes the following content pillars: DOST's R&D initiatives, the need for research collaboration between industry and academe, the Filipino talents behind R&D, and R&D impact to Filipinos. It has also scheduled a series of STRIDE-supported capability building initiatives on strategic communications to provide organic communication staff the

knowledge and skills needed to improve R&D storytelling initiatives. From a policy standpoint, this task is marked as completed. STRIDE will continue to support the R&D Communications Committee's activities in the pipeline for the next fiscal year.

Throughout the partnership with DOST in Year 6, STRIDE had a better understanding of the available resources, internal work structure, and dynamics in the context of co-creating the *ad hoc* R&D Communications Committee, and its interaction with the Office of Undersecretary for R&D, sectoral R&D councils, R&D institutions, and Science and Technology Information Institute, the lead agency for DOST-related communication efforts (**Figure 10**). Thus, both the R&D Communications Committee and STRIDE took into consideration the different factors in play during the collaborative design phase of future activities. This contextualization will further help the committee to maximize its resources and achieve greater impact in facilitating R&D-related activities.



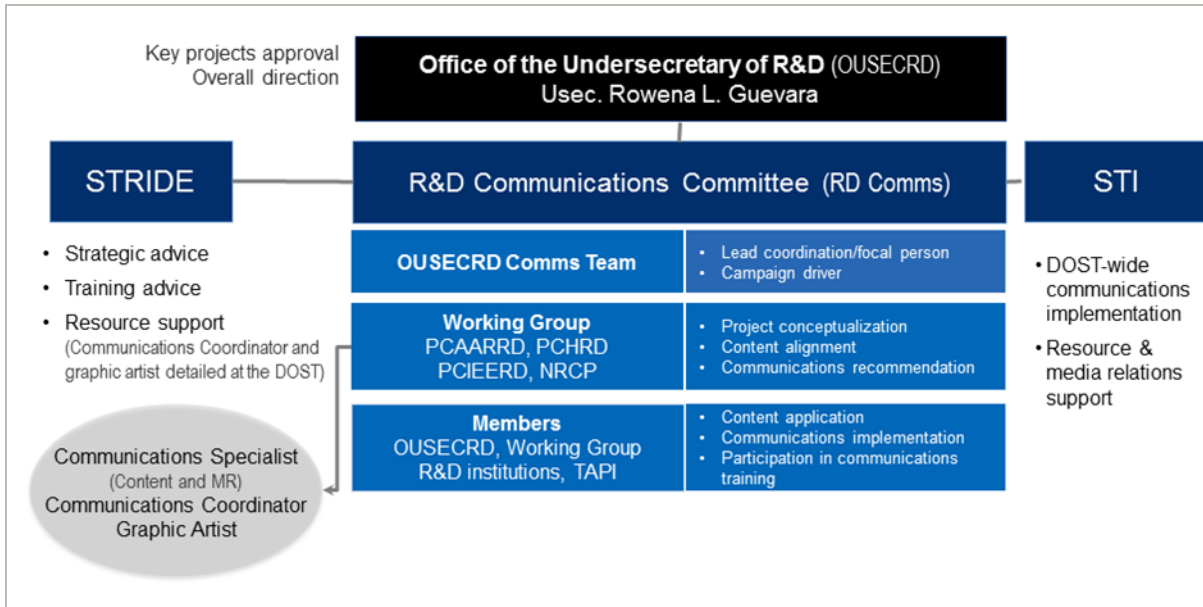
SPOTLIGHT

At the 2019 National Science and Technology Week, the newly formed R&D Communications Committee worked together to improve the delivery of R&D key messages and create greater impact.

Tasked to actively synergize and improve R&D storytelling, the Committee maximizes the resources and communications capability of DOST's research councils' and R&D institutions, enabling strategic DOST and awarding of IP to the DOST Region 10 to Ordo of ORBEST's Innovation Program. Undersecretary for Research and Development leads the R&D communication campaign, with technical



FIGURE 10. R&D COMMUNICATIONS ORGANIZATIONAL AND FUNCTIONAL STRUCTURE



TECHNICAL ASSISTANCE TO POLICY MAKING AND EXECUTION

In Year 6 STRIDE initially planned to identify potential champions and provide training in policy analysis and implementation methodologies to select policy champions to develop a common approach of STI policy making across government agencies. However, important learnings throughout the year led STRIDE to discontinue this task. One observation was that some officials being eyed as policy champions had already received similar training provided by other developmental organizations such as the British Council. In addition, many of these officials have already undergone study tours and exposure trips to learn foreign STI policy programs in other countries through other agencies or their home institutions. Ultimately STRIDE saw more value in providing direct technical inputs to policy when requested by key officials. Such requests are often recognized by officials as being very helpful given their busy schedules and the need for an external viewpoint or opinion to some of their own policy work.

In **Table 2**, the planned and actual expenditures per activity are shown against each IR. During Year 6 (July 1, 2018–September 30, 2019), the total expenditure was [REDACTED] of the planned [REDACTED], representing a 96% spend on the projected extension budget. The 4% underspend is mainly attributable to changes in priorities of STRIDE’s government partners. The transition also entailed onboarding of new technical personnel including positions to be seconded to the offices of government institutions. Initially the STRIDE extension had planned on hiring up to six local nationals who would be seconded to government agencies starting in Q3 of FY 2019. By the end of this fiscal year, only two local national staff had been seconded to DTI. The remaining seconded staff have not yet been pursued due to changes in government stakeholder priorities such as the new R&D communications activity with DOST. Overall STRIDE maintained a healthy burn rate of [REDACTED] per month over 15 months of implementation into the new extension program. This burn rate increased to [REDACTED] per month for the last two quarters of FY2019, representing an increase in STRIDE’s implementation activities as most tasks begin to peak toward FY 2020.

Below is the breakdown of expenditures by IR.

IR 1: IMPROVED HIGHER EDUCATION CAPACITY FOR INNOVATION

- Budgeted amount of IR 1 per Year 6 AIP: [REDACTED]
- Actual expenditure: [REDACTED]
 - Most IR 1 Year 6 planned activities for KTTO, Career Centers, the START Centers, PSM, and support to PASUC were implemented according to plan. The movement of a PSM study tour and START Center are primarily the sources of the underspend.

IR 2: STRENGTHENED LINKAGES BETWEEN GOVERNMENT, INDUSTRY, AND ACADEME FOR INNOVATION

- Budgeted amount of IR 2 per Year 6 AIP: [REDACTED]
- Actual expenditure: [REDACTED]
 - The planned study tour of a relevant foreign innovation ecosystem for key stakeholders under the fiscal year was held in Israel with co-funding from DTI, which resulted in re-allocation of some funds to support IR 3 RIICs activities, which expanded in the last two quarters of Year 6.

IR 3: IMPROVED GOVERNMENT CAPACITY FOR INNOVATION

- Budgeted amount for IR 3 per Year 6 AIP: [REDACTED]
- Actual expenditure: [REDACTED]
 - The overspending in IR 3 was primarily due to the additional number of activities such as ideation workshops to support RIICs initiatives. The additional RIICs-based activities were identified in the middle of Year 6 as a response to stakeholder inputs.

IR 4: IMPROVED POLICY AND REGULATORY

- Budgeted amount for IR 4 per Year 6 AIP:[REDACTED]
- Actual expenditure: [REDACTED]
 - The underspending in IR 4 was primarily due to slower than expected start-up of activities on procurement during the transition phase. This caused the expenses associated with the revised procurement manual to be moved to Year 7. Part of IR 4 original budget allocation was thus re-aligned to support IR 3 on the expanded RIICs initiatives.



SUCCESS STORIES

Four success stories are included on subsequent pages.



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SUCCESS STORY

MSU-IIT: Institutionalizing stronger industry-academe research collaborations in Northern Mindanao



MSU-IIT's newly-inaugurated KTTO

Photo: MSU-IIT

A brand new four-story Knowledge and Technology Transfer Office (KTTO) building rises on the campus of Mindanao State University–Iligan Institute of Technology (MSU-IIT). The building houses a coffee shop-like venue for innovation-related talks, conference rooms, staff offices, and a display room for research and development (R&D) outputs and technologies.

Marietta Esperanza Cruz, KTTO Director, talks about the university's excitement over the new facility. "We made sure that the KTTO building has a venue specifically designed for industry-academe brainstorming and R&D chats. We see this as one of the ways to better engage private companies and entrepreneurs," said Cruz.

Building an innovation-ready university

Four years ago, MSU-IIT increased its efforts toward collaborative research and innovation. The goal was to ensure that research goes beyond publication and outputs lead to patents and commercialization.

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MSU-IIT worked closely with different government and nongovernment organizations—one of which is USAID, through the Science, Technology, Research, and Innovation for Development (STRIDE) program. In 2015, MSU-IIT sent Cruz, who was then leading the university's Intellectual Property office, to the KTTO training provided by STRIDE. Cruz ultimately became one of only 10 pioneer KTTO trainees from various academic institutions.

"I'm so grateful that I took part in it. The training opened our eyes to what KTTO is and how it could help bring a lot of research possibilities for the university," she said.

After the KTTO training, Cruz proposed to MSU-IIT administrators the establishment of a KTTO, as she led the university in utilizing lessons learned from the KTTO training. After four years of hard work from all across the university's leadership, MSU-IIT now has a new home for its KTTO.



Photo: RTI International

Dr. Arnold Lubguban, research principal investigator of USAID-supported research on alternative input chemicals for polyurethane foams.



Photo: MSU-IIT

MSU-IIT officials with KTTO Director Marietta Esperanza Cruz (3rd from right) lead the ribbon-cutting ceremony for the KTTO inauguration

Boosting research productivity

MSU-IIT officials recognized that a healthy research pipeline is needed to ensure a steady supply of products and technologies that the KTTO can provide to businesses and the community as a whole.

In 2019, the Board of Regents approved the Advancing Technology Commercialization (AdTechComm) Program, which provides grants to researchers who wish to develop prototypes and conduct activities to demonstrate a technology's commercial viability. Complementing this program is the university's granting of awards for faculty members and staff toward research publication and dissemination.

MSU-IIT also saw the completion of the Premiere Research Institute of Science and Mathematics Building, a physical space that encourages collaborations to produce quality research in science and mathematics.

Already making an impact

Dr. Roberto Malaluan, coordinator of MSU-IIT's College of Engineering and Technology Graduate Program, led a STRIDE-funded research in partnership with Filipino company NutraTech BioPharma and a group of farmers in neighboring Claveria, Misamis Oriental. Through this research, they developed a value-adding process for a local root crop.

"We partnered with NutraTech and looked for ways to help local farmers. Their crop could be utilized in producing food supplements. Through USAID's research grant, we invented a post-harvesting process and an optimized extraction process," explained Dr. Malaluan.

The research led to NutraTech's adoption of these technologies, which are now used to produce one of its food supplement products. The company also signed a contract with Claveria farmers for the continued supply of raw materials.

Other USAID-funded research produced polyols from waste rice straws. Polyols, typically sourced from petroleum, are used to manufacture foams that serve as insulation and padding materials. Because of the success of this initial research, the study has expanded into new phases and received an additional [REDACTED] grant from the Philippine Government's Department of Science and Technology–Philippine Council for Industry, Energy and Emerging Technology Research and Development.

"The USAID research grant allowed us to buy the thermal equipment that gave us data critical to the next stages of the research. Now, we seek to use the polyol-extracting process that we developed, applying such in a wider range of alternative, bio-based raw materials," explained Dr. Arnold Lubguban, research principal investigator.

An ever-expanding industry network

Taking off from its recent successes, MSU-IIT now collaborates with MERAV Pharmaceutical Enterprises for new market-driven studies. It also works with Chemrez Technologies, a global supplier of engineering resins, in exploring alternative raw materials for polyol production. Unilab, one of the largest Filipino pharmaceutical companies, is partnering with MSU-IIT in exploring the use of indigenous materials in Mindanao for nutraceutical products.

"USAID STRIDE planted the seeds that led us to building more linkages with industries. We have watered the seeds and years after, we now see the fruits of our efforts," said Dr. Malaluan.



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SUCCESS STORY

Opening new doors for Philippine private-sector engagement on innovation

The value of collaboration between industry and academia has been increasingly recognized as a driver of a nation’s economic growth and competitiveness. The Philippine Development Plan (2017–2022) recognizes this as it identifies strengthening industry-academe linkages as an essential strategy in increasing competitiveness, innovativeness, and resilience.

As a partner of the Philippine Government on innovation, USAID has helped forge research partnerships and encouraged private-sector engagement to support a stronger Philippine innovation ecosystem. As a result, it has implemented industry-facing mechanisms to better link innovation stakeholders and break the barriers between academia and businesses to conduct meaningful research and development (R&D) together.

In 2017, USAID through its Science, Technology, Research, and Innovation for Development (STRIDE) program, launched the Academic Grants for Industry-led Applications, or AGILA. This initiative created an avenue for universities to do joint research with a partner industry while receiving funding of up to 50 percent of the research project from USAID. Through the AGILA grant, Del Monte Philippines—one of the country’s largest processor of pineapple products—had the opportunity to work with the University of the Philippines–Los Baños (UPLB) to further study the health benefits of pineapple.

“It is imperative for us to know a lot about our core product. What are the other components that are in the pineapple that we can actually use, not just for information purposes, but to apply it into the actual product that we are selling in the market,” said Dave Clark Sison, Del Monte Philippines Manager for Nutrition, Technology, and Innovations.

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The grant paved the way for the research team to look into the valuable chemicals found in various parts of the pineapple plant that could give some medicinal benefits. While it was a relatively new experience for Del Monte to work with a university, it was a partnership that proved to be valuable.



(L-R) Dr. Mary Ann Torio (UPLB), Mr. Dave Clark Sison (Del Monte Philippines), and Dr. Antonio Laurena (UPLB) form part of the research team on pineapple supported under the USAID STRIDE AGILA initiative

Photo: RTI International

“One of the key success factors of making the partnership possible was that it was the academe coming to industry with a clear knowledge of what industry actually needed. It was a match-up of an industry need they were trying to find solutions for,” said Ma. Bella Javier, Chief Scientific Officer of Del Monte Pacific Limited.

The AGILA initiative has opened up more doors for a company like Del Monte to create even more partnerships with universities and access more resources for R&D. A year after the AGILA grant, Del Monte embarked on a project with the University of San Agustin in Iloilo City, a part of the USAID/Philippines Cities Development Initiative. This relatively small university is collaborating with an industry giant in Del Monte, this time to better understand the nutrient distribution in pineapple plants.

What is truly encouraging is that the Philippine Government is now investing in this fledgling partnership. The project is being funded by the Department of Science and Technology (DOST) under its Collaborative Research and Development

to Leverage Philippine Economy (CRADLE) grant. Under the collaboration, DOST provided almost [REDACTED] of funding support—with counterpart funding from Del Monte of at least 20 percent of the total project cost.

“USAID through its STRIDE program built the confidence of industry and academia to come together and collaborate for a research project. It was able to bridge the gap and differences in terms of goals and work culture,” Mr. Sison said. With product development and innovation among its growth drivers, Del Monte ultimately hopes to make more products that matter to society. “Many thanks to USAID for the opportunity of collaboration. We look forward to further partnerships in R&D and beyond,” Mr. Sison added.

Consistent with USAID’s efforts to leverage private-sector engagement, STRIDE will continue to create avenues that will further build industry’s confidence to partner in addressing developmental challenges. In creating models where university and industry can meaningfully work together, STRIDE has enabled the synergy of expertise and resources from cross-sectoral Filipino stakeholders to contribute to the Philippines’ journey toward innovation-led economic growth.



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SUCCESS STORY

USAID helps fuel “bayanihan” spirit among Philippine universities and government agencies on bioethanol research



Photo: RTI International.

USAID and STRIDE representatives during a visit to the village-scale bioethanol refinery facility at MMSU.



Photo: RTI International.

Dr. Shirley Agrupis (left), project investigator, explains the ethanol distillation process to partners.

Farmers in the northern part of the Philippines are mostly limited to producing low-value raw materials for large-scale industries producing ethanol, an alcohol that can be used as fuel additives. The lack of technology is one of the factors that limits

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farmers to producing and selling small quantities of their harvest to centralized refineries, resulting in less income for themselves. Farmers are thus seen as minor players in a larger industry that they help fuel.

This motivated Dr. Shirley Agrupis, currently serving as Mariano Marcos State University (MMSU) President, to help empower small farmers to produce and profit from the sale of fuel-grade ethanol. “We want to develop a technology that is adoptable and adaptable at the village level,” Dr. Agrupis said.

In 2014, MMSU was among the grantees of the USAID Science, Technology, Research, and Innovation for Development (STRIDE) Program. Through STRIDE’s Collaborative Applied Research with Industry (CARWIN) grant, the university was able to develop village-scale bioethanol production technologies using multiple feedstocks. The project was implemented in collaboration with Central Luzon State University and industry partners in the provinces of Ilocos Norte, Cagayan, and Quezon.

Dr. Agrupis shared how the grant has helped build MMSU’s research capacity and strengthen its position as a leading university in bioethanol research and development. “USAID STRIDE’s intensified mentoring program helped MMSU’s R&D team to pursue trainings that further honed the team’s technical skills. We were also able to put up two important laboratories and acquired equipment that helped us implement innovative research activities,” Dr. Agrupis shared.



Photo Dr. Shirley Agrupis.

The team of Dr. Shirley Agrupis at the industrial scale bioethanol plant in Pampanga.

One of the important outputs of the project was the identification of *nipa*, a common mangrove species, as the most promising alternative feedstock for sustainable bioethanol production.

MMSU was soon getting traction with their peers in the bioethanol research industry and was often invited to various consultations and forums. The project also resulted in award-winning research papers recognized both locally and internationally.

“The USAID STRIDE support was not only through funding but also technical expertise and mentorship. These built our capacity to generate knowledge that is relevant to economic growth, and our confidence to seek out new partnerships that will further our vision for our university,” Dr. Agrupis said.

“Bayanihan” spirit spurs national research efforts

As the university continued to deliver tangible research and development (R&D) outputs stemming from its STRIDE-funded research, MMSU has increasingly gained the trust and confidence of national key stakeholders. Inspired by the spirit of *bayanihan*, the traditional concept of community-building among Filipinos, the Senate and various government agencies provided new funding to MMSU totaling almost [REDACTED] for the implementation of various bioethanol-related R&D throughout the country. Funding includes:

A [REDACTED] senatorial initiative for setting up various R&D facilities and equipment, including the establishment and restoration of nipa plantations in partnership with the Department of Environment

and Natural Resources and seven state universities and colleges across the country

- [REDACTED] from the National Economic Development Authority for a feasibility study on nipa-based industries
- [REDACTED] from the Commission on Higher Education for a renewable energy park at MMSU to feature among other things, nipa bioethanol technologies
- [REDACTED] from the Department of Energy for the optimization of village-scale bioethanol production technologies
- [REDACTED] from the Sugar Regulatory Administration for the commercial trial run of village-scale bioethanol production

A step closer to achieving her dream for the farmers, Dr. Agrupis is now seeing the fruits of all their untiring efforts, which started with the STRIDE grant five years ago. “After our successful commercial trial run in Pampanga, our industry partner confirmed their willingness to buy the ethanol produced by the farmers in the village. In the near future, we will see vertically integrated farmers in the bioethanol industry—a real showcase of inclusive growth and sustainable development,” Dr. Agrupis concluded.

Since 2013, USAID has forged partnerships with over 110 Philippine academic institutions to help bolster research and innovation capacity toward achieving inclusive growth. Through its STRIDE program, USAID has awarded 68 research grants valued at over [REDACTED].



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SUCCESS STORY

Addressing Philippine cybersecurity workforce needs through industry-aligned curriculum



Photo: HAU

PSM student AJ Dumanhug attending the "BountyCon 2019" conference in Singapore organized by Facebook and Google.

The job-skills mismatch of Filipino graduates is still one of the prevailing concerns of the Philippine private sector. This gap—between the skills acquired by graduates through their college education and the expectations from their prospective employers—contributes to the country's unemployment and underemployment rates, which currently stand at 5.2 percent and 15.6 percent, respectively.

"Educators are tasked with the responsibility of designing a good curricula and practical activities that prepare students for the corporate world. Understanding today's work requirements is essential in achieving this goal," said Dr. Francisco Napalit, Dean of the College of Information and Communications Technology at Holy Angel University (HAU).

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Bridging science and business

Recognizing that university-industry collaboration plays a pivotal role in addressing this challenge, USAID through the Science, Technology, Research, and Innovation for Development (STRIDE) Program works with higher education institutions (HEIs) in developing Professional Science Master's (PSM) programs. A PSM is a professional graduate degree program where HEIs partner with science, technology, engineering, and math- (STEM-) focused industries to design and deliver advanced coursework in science and engineering, combined with business and management courses, that prepare graduates for future leadership and entrepreneurial roles.

HAU is one of seven universities in the Philippines currently offering enrollment in a PSM program. Given the country's constantly maturing information and communications technology (ICT) infrastructure, cybersecurity was chosen as the focus area for HAU's PSM initiative.



STRIDE technical assistant Dr. Aubteen Darabi of Florida State University conducting a curriculum design workshop with HAU faculty and industry experts.

Photo RTI International.

"Cybersecurity threats are developing rapidly and industry leaders depend on the educational system for a qualified workforce that is equipped to defend their systems. With the help of USAID STRIDE, we managed to collaborate with different industries and aligned our program to their needs," Dr. Napalit explained.

Led by STRIDE short-term technical assistant Dr. Aubteen Darabi of Florida State University, industry experts joined HAU professors in curriculum design activities. Considered the country's first and only PSM focusing on cybersecurity, the program that Dr. Napalit

describes is a “hybrid program that provides IT professionals with specialized knowledge in cybersecurity and related skillsets to meet the demands and challenges of economic and infrastructure security in a high-technology society.” Since its launch in 2017 with only seven enrollees, HAU has continually refined its PSM curriculum to respond to the emerging challenges of the local cybersecurity industry, and also to the evolving needs of its students—grown to 22 enrollees. Some of these students even come all the way from large Manila-based firms and agencies.

Becoming a leader in the field

Since the launch of its PSM program, HAU has increasingly been engaged by government agencies and nongovernment institutions to share best practices on cybersecurity education and management. The Philippine Department of Information and Communications Technology’s Cybersecurity Bureau tapped HAU to help in implementing the government’s National Cybersecurity Plan 2022, particularly in the campaign to integrate cybersecurity in the Philippine education system. In 2019, HAU was recognized as a Cisco Certified Network Associate (CCNA) Cybersecurity Specialist by Cisco Systems, an American company widely known for its portfolio of networking products and services. “The recognition was given to us for achieving excellence in teaching a curriculum,” Dr. Napalit shared.

Being equipped with the necessary competencies, many of HAU’s PSM students have already passed internationally recognized certification programs. Their participation in various conferences and awards received from several competitions have likewise brought prestige to the university.

One of these students is Allan Jay Dumanhug. In July 2019, Mr. Dumanhug represented the Philippines in an invitation-only “BountyCon 2019” conference in Singapore organized by Facebook and Google. The event gathered security researchers from Asia to exchange knowledge and experiences on improving security networks, during which he was rewarded by a group of international security engineers for presenting the best written technical report.

Innovative curricula for nation-building

HAU President Luís Maria Calingo acknowledges the contribution of the university’s PSM program to the country’s pool of talent, particularly in the field of ICT. “PSM graduates are expected to impact the IT sector not only in Central Luzon, but the nation as a whole. HAU seeks to create a cadre of academically qualified information systems security professionals to serve the needs of Philippine national development,” he said.

In an effort to sustain the program, HAU plans to offer a “Cybersecurity 3+2” Program Course in the near future. It will be a combination of a three-year bachelor’s degree and a two-year PSM degree. The five-year program is envisioned to “produce globally competent graduates who are mentored toward leadership roles in different organizations, and lifelong innovators in pursuit of developing IT and cybersecurity technologies,” Dr. Napalit stated.

Currently, STRIDE is working with partners from academe and industry to grow more PSM programs in Philippine HEIs. This is in line with supporting USAID’s work of helping universities align their research and curricula with industry needs, and further developing human capital that will drive the country toward a higher growth trajectory.