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

Annual Report

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List of Acronyms

AdMU	Ateneo de Manila University
AIP	Annual Implementation Plan
ATTORP	Advanced Technical Training of Research Professionals
AUTM	Association of University Technology Managers
CARWIN	Collaborative Applied Research with Industry grants
CDI	Cities Development Initiative
CHED	Commission on Higher Education
COP	Chief of Party
CTA	Center for Technology Applications
DOST-PCIEERD	Director of the Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research and Development
DLSU	De La Salle University
EPAP	Ethanol Producers Association of the Philippines
FACTS	Foreign Assistance Coordination Tracking System
FSU	Florida State University
GRE	Graduate Record Examinations
HEI	higher education institution
HERA	Higher Education Reform Agenda
ICT	information and communications technology
IGZI	Industrial Group Zamboanga Inc.
IJPST	*The International Journal of Philippine Science and Technology*
IP	intellectual property
IPOPHIL	Intellectual Property Office of the Philippines
IR	intermediate result
ITSO	Innovation and Technology Support Office
KTTO	Knowledge and Technology Transfer Office
LIN	Learning and Innovation Network
LOP	life of program
M&E	monitoring and evaluation
MMSU	Mariano Marcos State University
MSU-IIT	Mindanao State University – Iligan Institute of Technology

MUST	Mindanao University of Science and Technology
NACE	National Association of Colleges and Employers
NGO	nongovernmental organization
NSHS	national science high school
PBEd	Philippine Business for Education
PCARI	Philippine-California Advanced Research Institutes
PFG	Partnership for Growth
PGUIRR	Philippine Government-University-Industry Research Roundtable
PID	participatory institutional diagnostics
PSM	Professional Science Master
PSMA	Philippine Sugar Millers Association
PSL	Philippine Science Letters
PSU	Palawan State University
WPU	Western Philippine University
PURE	Philippine-US Research and Exchange
R&D	research and development
RU	Rutgers University
S&T	science and technology
SCIE	Science Citation Index, Expanded
SPIK	*Samahan sa Pilipinas ng mga Industriyang Kimika* (Chemical Industries Association of the Philippines)
SPRIG	STRIDE Prototype and Innovation Grants
START	Skills in Technical and Advanced Research Training
STI	science, technology, innovation
STRIDE	Science, Technology, Research and Innovation for Development
STTA	short-term technical assistance
TBD	to be determined
TIP	Technological Institute of the Philippines
TTO	technology transfer office
UI	University of Iloilo
UP	University of the Philippines
USAID	United States Agency for International Development
USC	University of San Carlos
USG	United States Government

UST	University of Santo Tomas
VSU	Visayas State University
WDI-UM	William Davidson Institute of the University of Michigan
WMSU	Western Mindanao State University

1. Executive Summary

1.1 Brief Program Description

The goal of the Science, Technology, Research and Innovation for Development (STRIDE) program is to strengthen the science, technology, research, and innovation capacity in Philippine higher education—with a focus on disciplines that contribute to high growth economic sectors.

The objectives to be achieved to reach this goal are:

- Improved research capacity in science, technology, and innovation (STI) fields that contribute to high growth sectors, such as manufacturing and information technology, through improved research systems, increased research collaboration between U.S. and local universities and professors, and increased incentives for research and publications.
- Improved qualifications of faculty and research staff in higher education institutions engaged in the selected disciplines through support of graduate and post-graduate scholarships that utilize traditional and nontraditional, cost-effective approaches such as twinning or "sandwich" programs, enrichment programs, and faculty exchange programs between US and local universities.
- Strengthened partnerships between academe and industry in the identified sectors to support increased collaboration for applied research, increased technological adaptation or upgrading in firms, and improved quality of graduates of STI related disciplines.
- Strengthened policy and management capacity of higher education institutions for improving the STI ecosystem through capacity building and executive development.

These objectives map to and will deliver improvements in each of the Intermediate Results (IRs) defined by the United States Agency for International Development (USAID). These IRs are:

IR 1: Improved qualifications of faculty and staff in higher education institutions engaged in relevant STI disciplines

IR 2: Improved research capacity in critical STI disciplines

IR 3: Strengthened linkages between academe and industry in high growth economic sectors

IR 4: Strengthened policy and management capacity of higher education institutions in improving the STI ecosystem

The program will address these IRs through three missions:

1. **Mission 1** — The Industry/Private Sector Engagement Mission. The engagement mission will put emerging/high-growth/high-potential industry in the forefront of aligning research activities with real industry needs and setting up greater long-term industry participation in and support for the Philippine STI system. This mission primarily addresses IR 3.
2. **Mission 2** — The STI Capacity-Development Mission. The capacity development mission will drastically enhance the research and innovation capacity of Philippine universities in line with industry needs. This mission encompasses IRs 1 and 2, which are most effectively accomplished as a set of interdependent, sector-focused research capacity development programs that increase in depth, complexity, and industry (financial) support over the life of the program.
3. **Mission 3** — The University Policy and Management Mission. This mission will focus on assisting institutions in developing a supportive administrative, financial, and managerial climate for research—through improved policies, procedures, and institutional capabilities—resulting in a stable and well-understood platform for sustaining the efforts of STRIDE post-program. This mission primarily addresses IR 4.

1.2 Summary of Year 2 Activity

After the slower than expected start in Year 1, STRIDE has gained ground in most areas in Year 2, as evidenced by some measurement against the program's 20 performance indicators. Over 50 percent of the performance indicators for which there are current data are on target or are close to target. Some of the indicators will not register any data until later in the project, and for others, targets at this stage are low compared to the life-of-program (LOP) targets. In some instances where targets have not been met, the shortfall is small compared to the overall LOP target and the underlying evidence shows that activities will ramp up in the remainder of the program.

Of particular note are the following:

- The Advanced Technical Training of Research Professionals ([ATTORP] to be renamed the Skills in Technical and Advanced Research Training [START]) program delivers training in capacity building in those activities supporting research (proposal writing, writing papers, budgeting, and others). The demand for these courses is significantly higher than expected, and the targets have been exceeded. STRIDE will continue to endeavor to meet this demand within budgetary and resource constraints and will continue to finalize the plans to ensure a sustainable post-STRIDE provision of this training.
- US-Philippine research collaborations, resulting from the Philippine-US Research and Exchange (PURE) grant program and, in some cases, the Collaborative

Applied Research with Industry (CARWIN) grant program, are transferring knowledge, allowing access to equipment, and enabling US professors to visit the Philippines. Already some collaborators are engaged in dialog regarding longer term collaboration and rolling out project outcomes to industry, which serves to strengthen the foundations that STRIDE is building for future research activity.

- Knowledge and Technology Transfer Office (KTTO)/Innovation and Technology Support Office (ITSO) activities result in mentoring by US counterparts. Selected universities are aiming to set up KTTOs under the guidance of STRIDE, and through the Synergy 2015 conference and the upcoming intellectual property (IP) manager exchange program, Philippine universities will benefit from the experience of US counterparts. The study tour to the Association of University Technology Managers (AUTM) conference and the subsequent study tour add to the body of knowledge required in the Philippines to build the KTTO interface. This interface will enable much easier industry-university liaison, allowing industry to access the appropriate knowledge and helping universities to deliver quality and timely results.
- In terms of tools, technologies, and practices introduced to the commercial sector, although it is early in STRIDE to expect much accomplishment (as the first grants are only just reaching their conclusion), it is pleasing to report that already the outcomes of two grants are already available to the commercial sector and in use.

Most Cities Development Initiative (CDI) cities have been strongly involved with activities taking place in all cities. The response to these activities has been particularly pleasing. In Palawan more than the expected number of grant applications resulted in awards, and there is a career center under development; in Iloilo there is involvement in careers centers and KTTOs, as well as grant awards; in Leyte a KTTO is being mentored at VSU; and in Cagayan de Oro there is a KTTO at Mindanao State University – Iligan Institute of Technology (MSU-IIT), a careers center at Mindanao University of Science and Technology (MUST), and grant awards at MSU-IIT and Xavier.

The STRIDE Monitoring and Evaluation (M&E) Plan continues to be refined, and the database is now complete with a "dashboard" front end that is almost operational. The baseline now has a critical mass of data, although universities are still slow and/or reluctant to furnish the required data. The M&E team continue to collect these data, which remains valid as they are (or should be) a historical matter of record.

The program team is almost at full strength, with 22 full-time employees, supported by consultants and short-term technical assistance (STTA) where appropriate. There are plans to further increase the full-time complement by another three personnel.

1.3 Challenges and Remedies

With the STRIDE team at full strength there have been fewer challenges than during Year 1. Although some activities are lagging behind target, namely faculty externships,

industry guest lectures, and visiting professors, the reasons for this are clear, and the appropriate remedial action has been planned.

Although these activities might seem like "low value" they are, in reality, the foundation of sustaining the efforts of STRIDE beyond the end of the program. These, relatively day-to-day activities are the seeds that build relationships and grow into more significant activities. Thus, the STRIDE team will persevere to meet the targets and build the foundations for a sustainable research culture.

Specifically, the reasons for these shortfalls lie partly in lack of enthusiasm on behalf of the stakeholders (they fail to see the long-term value of such seemingly low value activities) and, in the case of faculty externships, a mutual lack of trust between academe and industry. Through the efforts of STRIDE in forums such as the Philippine Government-University-Industry Research Roundtable (PGUIRR) and Innovation Workshops, the message is slowly penetrating and stakeholders are starting to better understand the necessity of this type of activity. As a result, STRIDE is encouraging universities to take the lead more in setting up these activities; we feel that this will result in increased participation.

Underspend continues to be a problem, although less so than in Year 1. This is primarily due to underspend on career center activity; curriculum review; and low expenditure on industry grants and R&D roadmaps. Low take –up of PhD scholarships is also a contributory factor. Invoicing by US universities for scholars is problematic, as invoices are issued through September and October, which straddles the fiscal year end. Budgeting accurately for grants remains a problem due to delays in approvals, equipment procurement and invoicing.

Overall, as the program mid-point approaches, STRIDE is starting to influence the Philippine research sector. Individual successes are apparent for activities such as grants and scholarships but the 'bigger' messages are starting to result in interest from government departments in terms of identifying and adopting global pest practice and in the conduct of science, technology and innovation-based, industry-led research.

2. Performance Indicator Summary Table

The indicators in ***Table 1*** below are those proposed in the current M&E Plan, approved December 2014. The indicators are discussed in more detail in section 4.

Baseline is based on data collected to date. As more data are collected the baseline will change, and this may affect the indicators results against the target. It should be noted that all baseline data collected are historical so retrospective data collection is a valid approach. However, including the latest baseline data gives an indication of progress to date.

Table 1. Performance Indicator Summary Table

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
Project goal: Strengthened science, technology, and innovation (STI) capacity of higher education institutions in the Philippines						
PI01: Percentage change in STI R&D grant income by universities on the STRIDE priority list ***Activities: ALL ACTIVITIES***	100%	2% (Year 1: 0%)*	NA (Year 1: 32%)*	Captured under several STRIDE activities	Captured under several STRIDE activities	*Year 2 data are not available at the time of writing. Bracketed data are Year 1 data. Increase in Year 1 compared to the baseline is due to increase in 2014 grants among several universities.
IR 1: Improved qualifications of faculty and staff in higher education institutions engaged in relevant STI disciplines				*$2,243,907*	*$1,797,912*	
Sub IR 1.1 Number of Filipino academics with higher degree of training in STI disciplines increased						
PI02 (3.2.2-42): Number of tertiary institution faculty or teaching staff whose qualifications are strengthened through USG-supported tertiary education programs ***Activities: 1.7, 2.1, 2.2, 2.6***	110	30	1 completed in Year 2 24 scholars currently studying in U.S. (17 of these are faculty or teaching staff)	$1,397,850	$925,410	Total number of STRIDE scholarships awarded to date is 25, 10 in Year 1 and 15 in Year 2. Target originally based on number of awards. Now interpreted as number of programs completed/
PI03 (STIR 8): Person hours of training completed in formal science or science-related training courses supported by USG ***Activities: 2.7***	6,720	1,920	2,924	$26,244	$27,919	We exceeded the target in Year 2. Number of participants for each workshop exceeded our expectation.

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
IR 2: Improved research capacity in critical STI disciplines				*$3,365,861*	*$3,116,840*	
Sub IR 2.1: Partnerships for coaching/mentoring on STI research between universities in the United States and the Philippines established and operational						
PI04 (3.2.2-35): Number of US-host country joint research projects ***Activities: 2.3, 2.4***	30	12	10	$790,000	$495,303	This indicator counts PURE grants and those CARWIN grants with tripartite partnerships with both US industry and universities.
PI05: Number of visits (trips) of faculty from the United States working to strengthen host Philippine university research capacity ***Activities: 2.3, 2.4, 2.9***	34 (0)*	10 (0)*	4 (16)*	$48,950 (0)*	$16,326 ($55,640)*	Behind in target for Year 2, but STRIDE has pipeline of 26 interested U.S. faculty. *Bracketed data is PCARI.
PI05a: Number of days spent by visiting faculty from the United States working to strengthen host Philippine university research capacity ***Activities: 2.3, 2.4, 2.9***	476 (0)*	140 (0)*	71 (35)*	Same as PI05	Same as PI05	Behind in target for Year 2, but STRIDE has pipeline of 26 interested U.S. faculty. *Bracketed data is PCARI.
PI06: Number of hours (per year) Philippine faculty spend undertaking research on collaborative US-Philippine research projects ***Activities: 2.3, 2.4, 2.9***	15,000	4,000	NA	Captured under PI11	Captured under PI11	The data are not available; first batch of grantees is about to close and final report is not available till 1st quarter of Year 3.

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
PI07: Number of ITSOs receiving mentoring/coaching by US technology personnel ***Activities: 1.6***	16	4	10	$20,313	$88,873	Ahead of the target for Year 2 and will continue support to identified ITSOs through Year 3
PI07a: Number of person days of mentoring/coaching by US personnel ***Activities: 1.6***	160	40	88	Same as PI07	Same as PI07	
Sub IR 2.2: Research publications and journals done by Filipino academics published and acknowledged by international critics						
PI08 (STIR 6): Number of scientific studies published or conference presentations given as a result of USG assistance for research programs ***Activities: 1.7, 2.7, 2.8***	72	16	12	Captured under grants and scholarship expenses	Captured under grants and scholarship expenses	9 presentations from research grantees and 3 from scholars Note: In addition, 19 case studies have been published.
Sub IR 2.3: Number of faculty active in STI research in Philippine universities						
PI09: Percentage change in number of faculty members in universities on STRIDE priority list undertaking STI research ***Activities: 1.1, 2.1, 2.2, 2.3, 2.4, 2.7, 2.10***	40%	10% (Year 1: 0%)*	NA (Year 1: 26%)*	Captured under several STRIDE activities	Captured under several STRIDE activities	*Year 2 data are not available at the time of writing. Bracketed data are Year 1 data. Linked to the increase in grant revenue reported in Year 1.

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
IR 3: Strengthened linkages between academe and industry in high growth economic sectors						
PI10 (STIR2): Number of tools, technologies, or practices introduced to commercial sector ***Activities: 1.10***	8	1	2	Captured under grants expenses	Captured under grants expenses	Tools resulting from approved research grants: coffee variety tool and multi-feedstock village-scale kit for bioethanol production.
Sub IR 3.1 Research needs and priorities of both universities and industries are the subject of mutual collaboration						
PI11 (STIR 9): Number of new research collaborations established between USG-supported beneficiaries and other institutions ***Activities: 1.3, 1.10, 2.4***	54	27	26	$905,000	$821,076	CARWIN = 18 grants PURE = 8 grants Exceeded target for Year 2 and in line with STRIDE's AIP catch up plan for Year 1; expect follow-on awards and focus grant calls in specific sectors.
PI12: Percentage change in number of faculty members on STRIDE priority list undertaking STI research with industries ***Activities: 1.1, 1.3, 1.10, 2.4***	40%	10% (Year 1: 0)*	NA (Year 1: 39%)*	Captured under several STRIDE activities	Captured under several STRIDE activities	*Data not yet available for Year 2. Linked to increase in grant revenue. Majority of the sample universities have increased number of faculty during Year 1. Year 2 data are expected in Q2 2016.
PI13: Number of firms assisted with technological adaptation or upgrading by universities in STRIDE priority list ***Activities: 2.6, 1.10, 2.4***	52	4 (Year 1: 0)*	NA (Year 1: 52)*	Captured under several STRIDE activities	Captured under several STRIDE activities	*Data not yet available for Year 2. Target of 52 is incorrect in M&E Plan. Will be revised to 525.

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
PI14 (STIR 3): Number of new businesses established based on a new technology or innovation ***Activities: 1.3, 1.6***	8	1	0	Captured under KTTO expenses	Captured under KTTO expenses	No new businesses established in Year 2, but we expect to have new businesses out of the current grants and with the help of KTTOs.
Sub IR 3.2: Support of the industry sector for STI initiatives established						
PI15: Value of leverage from private firms to support program goals ***Activities: 2.4***	$2.5M	$200K	0	Captured under several STRIDE activities	Captured under several STRIDE activities	In the previous reports all cost share revenues from partner universities and US-based sub-recipients were included. However the indicator should only count private sector leverage. We expect leverage to increase in Yr 3.
PI16 (3.2.2-36): Number of USG-supported tertiary programs with curricula revised with private and/or public sector employers' input or on the basis of market research ***Activities: 2.6***	10	2	1	$349,500	$182,700	PSM on construction management was developed by TIP. Preliminary meetings with other universities that have expressed interest are on-going.
Sub IR 3.3: Improved engagement, interaction, dialog, and communication between universities and industry						
PI17: Number of new specific entities/mechanisms for engagement in place and functioning ***Activities: 1.2, 1.3, 1.4, 1.5, 1.6, 1.9***	7	2	5	$79,705 ($984,705 with grants included in PI11)	$44,618 ($821,076 with grants included in PI11)	Mechanisms include: grants, faculty externships, PGUIRR, AUTM-type conference, LIN

Indicator	Overall Life-of-Program Target	Planned Target for Reporting Period (Year 2)	Actual for Reporting Period (Year 2)	Planned Expenditure (IRS Only)	Actual Expenditure (IRS Only)	Explanatory Notes
IR 4: Strengthened policy and management capacity of higher education institutions in improving the STI ecosystem				*$92,407*	*$39,809*	
Sub IR 4.1: Strengthened management and administrative ability to successfully execute STI research among higher education institutions in the Philippines						
PI18: Percentage change in Participatory Institutional Diagnostics (PID) scores for partner universities ***Activities: 1.6, 3.2, 3.4, 3.5***	100%	0	0	$17,056	$20,490	No score in this indicator until the second round of PIDs commences in Year 4
PI19: Percentage change in time to file patent and utility model applications (with emphasis on time reduction in universities) ***Activities: 3.5***	50%	-10% (Year 1: 0)	NA (Year 1: -66%)	Captured under several STRIDE activities	Captured under several STRIDE activities	Data not available for year 2 The data shows there is a decrease in time to file patent and utility model applications among partner universities
Sub IR 4.2: Improved national policies and actions that enable more relevant and valuable STI research						
PI20: Number of national STI policy improvements plausibly attributable to STRIDE support ***Activities: 3.7***	6	0	0	Captured under several STRIDE activities	Captured under several STRIDE activities	No target until Year 3

3. Correlation to M&E Plan

The latest approved M&E plan was approved in December 2014 and the second Annual Implementation Plan (AIP) was closely linked to that plan. The M&E plan will be updated once the third AIP is approved. This will result in some minor revisions.

In Year 2, activities have closely followed the AIP and the M&E plan. ***Table 2*** shows the methods used to collect data for the performance indicators. Data relating to these targets are updated regularly in the STRIDE M&E database, and an M&E "dashboard" to enable easy assessment of progress against targets is under development. The prototype version is available for viewing.

Baseline data collected have reached critical mass, but we are still awaiting data from some universities more than one year after the data were requested. Persistence has shown that these data are available—universities are simply slow to respond. STRIDE will continue efforts to add baseline data—a valid approach as the nature of the data required is historical and (in theory) a matter of record.

Table 2. M&E Plan Methods Used for Monitoring Performance Indicators

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
Project goal: Strengthened science, technology, and innovation (STI) capacity of higher education institutions in the Philippines				
PI01: Percentage change in STI R&D grant income by universities on the STRIDE priority list	Percentage change	Survey data based on university records	Secondary data (forms and templates) Individual interviews/testimonials among industry and education institutions	Primary data collected with baseline survey instrument and interviews from partner universities on the amount of research grants they received from external funders in 2013 and 2014. Interviews with industry are scheduled for Year 3.
IR 1: Improved qualifications of faculty and staff in higher education institutions engaged in relevant STI disciplines				
Sub IR 1.1 Number of Filipino academics with higher degree of training in STI disciplines increased				
PI02 (3.2.2-42): Number of tertiary institution faculty or teaching staff whose qualifications are strengthened through USG-supported tertiary education programs	Number of persons	Project records and diplomas which include CV, application letter, scholarship agreements, certificates, final research report signed by mentoring professor	Secondary data	Primary data collected at the completion of academic training validated through transcripts and other project documents.
PI03 (STIR 8): Person hours of training completed in formal science or science- related training courses supported by USG	Number of hours	Project records which includes training attendance register, curriculum, agenda, evaluation, site visit forms	Secondary data	The number of person hours is validated through the training attendance based on the actual number of participants multiplied by the actual number of hours.

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
IR 2: Improved research capacity in critical STI disciplines				
Sub IR 2.1: Partnerships for coaching/mentoring on STI research between universities in the United States and the Philippines established and operational				
PI04 (3.2.2-35): Number of US-host country joint research projects	Number of projects with US university partner	Project records which include PURE grants documents (letter of commitment-application stage, MOA, milestone reports, quarterly progress reports), site visit forms	Secondary data	Originally, the number of grants with US collaborator includes only PURE grants, in practice tripartite collaborations also contributed to this indicator.
PI05: Number of visits (trips) of faculty from the United States working to strengthen host Philippine university research capacity	Number of trips	Program records (agreement form, site visit forms, activity report, evaluation completed by Philippine universities)	Secondary data	The number of visits is validated through the agreement form between the university, professor and STRIDE. Activity report is required from the professor 30 days after the activity is completed.
PI05a: Number of days spent by visiting faculty from the United States working to strengthen host Philippine university research capacity	Number of days	Program records (agreement form, site visit forms, evaluation completed by Philippine universities)	Secondary data	The number of days is validated through the agreement form between the university, professor and STRIDE. Activity report is required from the professor 30 days after the activity is completed.
PI06: Number of hours (per year) Philippine faculty spend undertaking research on collaborative US-Philippine research projects.	Number of hours	Grant documentation which tracks hours spent on research based on approved budget validated by HR at university	Secondary data	Grantees are required to report on number of hours dedicated to research by PIs and collaborators. We encourage University Presidents' support to research hours to ensure de-loading among faculty/researchers

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
PI07: Number of ITSOs receiving mentoring/coaching by US technology personnel	Number of ITSO offices	Program records (agreements with ITSO and IP technology managers, reports completed by trainees, site visit forms, workshop attendance registrar, agenda, proposal and reports for pilot projects)	Secondary data	The number of ITSOs receiving mentoring is recorded based on monitoring tool completed and signed by the DCOP. Supporting documents are participants lists, registration confirmation from AUTM conference and project records
PI07a: Number of person days of mentoring/coaching by US personnel	Number of person days	Project documents (agreements with IP managers, site visit forms)	Secondary data	The number of person days of ITSO managers receiving mentoring is recorded based on monitoring tool completed and signed by the DCOP. Supporting documents are participants lists, registration confirmation from AUTM conference and project records
Sub IR 2.2: Research publications and journals done by Filipino academics published and acknowledged by international critics				
PI08 (STIR 6): Number of scientific studies published or conference presentations given as a result of USG assistance for research programs	Number of publications/ conference presentations as a result STRIDE funding	Grant documents (date and titles of published articles and presentations), monitoring reports for scholars, individual interviews, published case study, grantee M&E form	Secondary data	This is the output of grantees and scholars captured in grants reports and through scholarship monitoring. This is validated through conference agenda, activity program, conference materials and copies of the publications

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
Sub IR 2.3: Number of faculty active in STI research in Philippine universities				
PI09: Percentage change in number of faculty members in universities on STRIDE priority list undertaking STI research	Percentage of monitored value	Project and university records	Secondary data	Baseline conducted among priority universities on the number of faculty members conducting research in 2013 and 2014
IR 3: Strengthened linkages between academe and industry in high growth economic sectors				
PI10 (STIR2): Number of tools, technologies, or practices introduced to commercial sector	Number of tools, technologies, or practices	Milestone reports from grantees, agreement documents, site visit form end of grant review/closing activities to introduce tools, website	Secondary data	Number of tools is validated through primary data from grant documents and structured interviews using site forms. Introduction to commercial sector validated through participants' list and meeting/workshop agenda
Sub IR 3.1 Research needs and priorities of both universities and industries are the subject of mutual collaboration				
PI11 (STIR 9): Number of new research collaborations established between USG-supported beneficiaries and other institutions	Number of research collaborations with other Philippine institutions and industry	Project records which include CARWIN and PURE grants documents (letter of commitment, MOU, milestone reports, quarterly progress reports)	Secondary data	The number of PURE and CARWIN research grants is validated through letter of commitment and MOA provided by the grants team.
PI12: Percentage change in number of faculty members in universities on STRIDE priority list undertaking STI research with industries	Percentage change in the number of faculty	Baseline survey	Secondary data/interviews	Baseline conducted among priority universities on the number of faculty members conducting research with industries in 2013 and 2014. Interviews for representative universities conducted in year 1

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
PI13: Number of firms assisted with technological adaptation or upgrading by universities on STRIDE priority list	Number of firms	Baseline survey	Secondary data/interviews	Baseline conducted among priority universities on the number of firms assisted in 2013 and 2014. Interviews for representative universities conducted in year 1
PI14 (STIR 3): Number of new businesses established based on a new technology or innovation	Number of new businesses	Grantee documents, KTTO records, patent records at universities, business records	Secondary data/interviews	No data collected at this stage
Sub IR 3.2: Support of the industry sector for STI initiatives established				
PI15: Value of leverage from private firms to support program goals	Value in US dollars	Financial Records and site visit form	Secondary data	Cost share documentation from STRIDE activities and grantees
PI16 (3.2.2-36): Number of USG- supported tertiary programs with curricula revised with private and/or public sector employers' input or on the basis of market research	Number of programs	Project records (workshop agenda, training agendas), syllabus from STRIDE priority university	Secondary data/interviews	As proposed
Sub IR 3.3: Improved engagement, interaction, dialog, and communication between universities and industry				
PI17: Number of new specific entities/mechanisms for engagement in place and functioning	Number of new entities/ mechanisms	Attendance registrars, meeting notes, workshop agenda	Secondary data	The number of new mechanisms in place and functioning is recorded based on project records. Supporting documents are signed attendance, program/workshop agenda

Performance Indicator	Unit of Measure	Data Source(s)	Data Collection/Analysis Method(s) Proposed in First M&E Plan	Method(s) Used
IR 4: Strengthened policy and management capacity of higher education institutions in improving the STI ecosystem				
Sub IR 4.1: Strengthened management and administrative ability to successfully execute STI research among higher education institutions in the Philippines				
PI18: Percentage change in Participatory Institutional Diagnostics (PID) scores for partner universities	Percentage	Project survey (PID)	Primary	No data collection at this stage
PI19: Percentage change in time to file patent and utility model applications (with emphasis on time reduction in universities)	Percentage change	Baseline survey	Secondary data	Baseline conducted among priority universities on the number of patent and utility model applications they filed with corresponding number of days consumed in 2013 and 2014.
Sub IR 4.2: Improved national policies and actions that enable more relevant and valuable STI research				
PI20: Number of national STI policy improvements plausibly attributable to STRIDE support	Number	Project records, copy of policy, minutes of meetings, innovation white paper	Secondary data	No data collection at this stage

4. Result by Result Analysis

4.1 Analysis of Performance Indicators

The results listed in the Summary Table (***Table 1***) are described in more detail below. The activities supporting these indicators are noted and a description of these activities is included in 4.2. The relationship of the activities to the performance indicators is shown in ***Figure 1***.

P01: Percentage change in STI R&D grant income by universities on the STRIDE priority list. Supported by all Activities.

The Year 2 data will not be available until Q2 Year 3, so the Year 1 data are shown in the table (target 0 percent; achieved 32 percent). This indicator seems particularly sensitive after one year. However the nature of this sensitivity will become more apparent following the analysis of the Year 2 data. It will only be over the life of the program that real improvement attributable to STRIDE will be evident.

PI02 (3.2.2-42): Number of tertiary institution faculty or teaching staff whose qualifications are strengthened through US Government- (USG-) supported tertiary education programs. Supported by Activities 1.7, 2.1, 2.2, 2.6.

Target 30; achieved 1. The target for this indicator is misleading. In the M&E Plan the original intent was to count awarded scholarships for all scholars (not just faculty). However, the intent of the Foreign Assistance Coordination Tracking System (FACTS) indicator is to count faculty who have completed their studies. This will be changed in the upcoming M&E Plan revision.

At the end of September 2015, only 1 scholar had completed but 24 scholars are still studying in the US and will complete during Year 3. Of these, 17 are faculty or teaching staff).

Other reasons the target has not been reached are the effect of awarding two-year scholarships rather than the intended one-year scholarships and the low take-up of research scholarships. Again, the target in the M&E Plan revision will take this factor into account.

PI03 (STIR 8): Person hours of training completed in formal science or science-related training courses supported by USG. Supported by Activity 2.7.

Target 1,920; achieved 2,924. Demand for the ATTORP courses was significantly larger than expected so the target was easily achieved. These were delivered over 10 workshops.

PI04 (3.2.2-35): Number of US–host country joint research projects. Supported by Activities 2.3, 2.4.

This indicator is almost on target (target 12; achieved 10). It was originally thought this indicator would apply mostly to PURE grants, but it has been used increasingly to capture those CARWIN grants with US collaborators. STRIDE plans to encourage tripartite partnerships with both US industry and universities to remain on target for this indicator (PURE/CARWIN "hybrids").

PI05: Number of visits (trips) of faculty from the United States working to strengthen host Philippine university research capacity. Supported by Activities 2.4, 2.5, 2.9.

This indicator is behind target (target 10; achieved 4) but the dynamics of setting up and timing visiting faculty are now fully understood, and there is significant demand for visiting professors in the next 12 months, with 26 interested faculty in the pipeline. The bulk of these placements will happen during the summer months of 2016. (Note that PCARI data is included in this indicator however the performance is not influenced by any of the STRIDE activities.)

PI05a: Number of days spent by visiting faculty from the United States working to strengthen host Philippine university research capacity. Supported by Activities 2.4, 2.5, 2.9.

This indicator, directly related to PI05, is behind target (target 140; achieved 71). The future demand described for PI05 is also applicable for this indicator. (Note that PCARI data is included in this indicator however the performance is not influenced by any of the STRIDE activities.)

PI06: Number of hours (per year) Philippine faculty spend undertaking research on collaborative US-Philippine research projects. Supported by Activities 2.3, 2.4, 2.9.

Target 4,000; achieved n/a. Data are not yet available as first grants are closing at the time of writing and final reports are not due until Quarter 1 Year 3.

PI07: Number of ITSOs receiving mentoring/coaching by US technology personnel. Supported by Activity 1.6.

This indicator is ahead of target (target 4; achieved 10) due to the decision to work with a network of Iloilo universities, rather than just individual universities. As well as broadening the impact of the KTTO activity, the development of the Iloilo network will be a useful test case for the viability of this type of collaborative approach.

PI07a: Number of person days of mentoring/coaching by US personnel. Supported by Activity 1.6.

Related to PI07, this indicator is ahead of target (target 40; achieved 88) and, given the level of activity around this aspect, will continue to improve over the life of program.

PI08 (STIR 6): Number of scientific studies published or conference presentations given as a result of USG assistance for research programs. Supported by Activities 2.7, 2.8.

This indicator is slightly lagging at this stage (target 16; achieved 9 by grantees, 3 by scholars); however, it is expected that the life of program target will be easily achieved. As STRIDE grants conclude, most grantees are preparing presentations and publications, so we would expect to make up the shortfall in Year 3. It is also worth noting that not counted in this indicator are the published case studies arising from the case study writing activity (activity 1.7). After the first case writing workshop, studies for 19 cases have been published in the William Davidson Institute of the University of Michigan (WDI-UM) website http://wdi-publishing.com/stride/ and the cases developed during the second workshop are in preparation. These are not strictly scientific studies so are not within the scope of this indicator.

PI09: Percentage change in number of faculty members in universities on STRIDE priority list undertaking STI research. Supported by Activities 1.1, 2.1, 2.2, 2.3, 2.4, 2.7, 2.10.

The Year 2 target is 10 percent, but data will not be available until Quarter 2 Year 3. Year 1 target 0 percent; achieved 26 percent. This result is linked to the increase in grant revenue reported in PI01. As such, this indicator seems particularly sensitive after one year. However the nature of this sensitivity will become more apparent following the analysis of the Year 2 data. It will only be over the life of the program that real improvement attributable to STRIDE will be evident.

PI10 (STIR 2): Number of tools, technologies, or practices introduced to commercial sector. Supported by Activity 1.10.

This is a small target for outcomes which are difficult to achieve. However, the target has been exceeded for Year 2 (target 1; achieved 2). The De La Salle University (DLSU) PURE grant has produced a tool for determining the best coffee varieties to be grown in specific locations over all of the Philippines, and the Mariano Marcos State University (MMSU) CARWIN grant has developed a multi-feedstock bio-ethanol generation technology that is in use in rural locations in Northern Luzon.

PI11 (STIR 9): Number of new research collaborations established between USG-supported beneficiaries and other institutions. Supported by Activities 1.3, 1.10, 2.4.

This indicator is ahead of target (target 27; achieved 26). The 26 collaborations consist of 18CARWIN grants and 8 PURE grants.

PI12: Percentage change in number of faculty members in universities on STRIDE priority list undertaking STI research with industries. Supported by Activities 1.1, 1.3, 1.10, 2.4.

The Year 2 target is 10 percent, but data will not be available until Quarter 2 Year 3; Year 1 (target 0 percent; achieved 39 percent). This result is linked to the increase in

grant revenue reported in PI01. As such, this indicator seems particularly sensitive after one year. However the nature of this sensitivity will become more apparent following the analysis of the Year 2 data. It will only be over the life of the program that real improvement attributable to STRIDE will be evident.

PI13: Number of firms assisted with technological adaptation or upgrading by universities on STRIDE priority list. Supported by Activities 1.6, 1.10, 2.4.

The Year 2 target is 4, but data will not be available until Quarter 1 Year 3; Year 1 target 0; achieved 0. The Year 1 result is as expected, as STRIDE had insufficient time to influence activity. The target of 52 in the M&E Plan is incorrect. It should be 525 as described in the Technical Proposal. This will be corrected in the next M&E Plan revision.

PI14 (STIR 3): Number of new businesses established based on a new technology or innovation. Supported by Activities 1.3, 1.6.

This is a small target for an indicator that is difficult to achieve (target 1; achieved 0). We expect to hit the life-of-program target through outcomes arising from STRIDE grants and the increasing competence of the KTTOs. The profile of this target across the life of STRIDE is difficult to predict accurately.

PI15: Value of leverage from private firms to support program goals. Supported by Activity 2.4.

Year 2 target is $200k, achieved to date is 0. Clearly the indicator is lagging, but it may be some time before true leverage is recognized. It is expected that leverage will increase drastically as the grants start to close out. In previous reports, all cost share revenues from partner universities and US-based sub-recipients were included. However, it is now understood that the indicator should include only private sector leverage.

PI16 (3.2.2-36): Number of USG-supported tertiary programs with curricula revised with private and/or public sector employers' input or on the basis of market research. Supported by Activity 2.6.

This indicator seemed to be on target earlier in the year, with four Professional Science Master (PSM) programs in preparation. However only one program was launched so the indicator is lagging behind the target (target 2; achieved 1). The lack of positive outcomes was the result of internal inertia in the respective universities as well as the lack of incentive or will. It is clear that in some universities there is simply not the will to change. However, some universities clearly understand the benefits of the PSM, and we will continue to work to stand up the PSM programs.

The PSM that was launched was focused on construction management and developed by TIP.

PI17: Number of new specific entities/mechanisms for engagement in place and functioning. Supported by Activities 1.2, 1.3, 1.4, 1.5, 1.6, 1.9.

This indicator is ahead of target (target 2; achieved 5). Promoting this type of dialog is crucial for the sustainability of STRIDE activities, so we use every opportunity to develop a mechanism or path for engagement and encourage an entity to participate. Entities and mechanisms in place in Year 2 are the grant program, the faculty externship program, the PGUIRR, Learning Innovation Networks (LINs), and the AUTM-type conference, Synergy 2015.

PI18: Percentage change in Participatory Institutional Diagnostics (PID) scores for partner universities. Supported by Activities 1.6, 3.2, 3.3, 3.4, 3.5.

There will be no score in this indicator until the second round of PIDs commences in Year 4.

PI19: Percentage change in time to file patent and utility model applications (with emphasis on time reduction in universities). Supported by Activity 3.5.

The Year 2 target is -10 percent, but data will not be available until Quarter 2 Year 3; Year 1 (target 0 percent; achieved -66 percent). Compared to the 2013 baseline data, the data for 2014 show a significant decrease in the average number of days needed to prepare utility model/patent applications for filing. This may be due to a number of factors including increased efficiency of the HEI staff and more active participation of the inventors in preparing the applications. It may also be possible that the utility model and patent applications filed in 2014 in the aggregate involved inventions that were less complex and thus required less effort.

PI20: Number of national STI policy improvements plausibly attributable to STRIDE support. Supported by Activity 3.7.

There is no target until Year 3, but activity in Year 2 suggests that the program will be on target for this indicator.

Other achievements are covered in the description of activities below.

4.2 Analysis of Activities

The STRIDE activities directly support each performance indicator as shown in ***Figure 1***. The progress of each activity over the year is shown in the sections below, with an update on progress in the last quarter.

Figure 1. Diagrammatic View of the Log-Frame Showing How Activities Support Each Performance

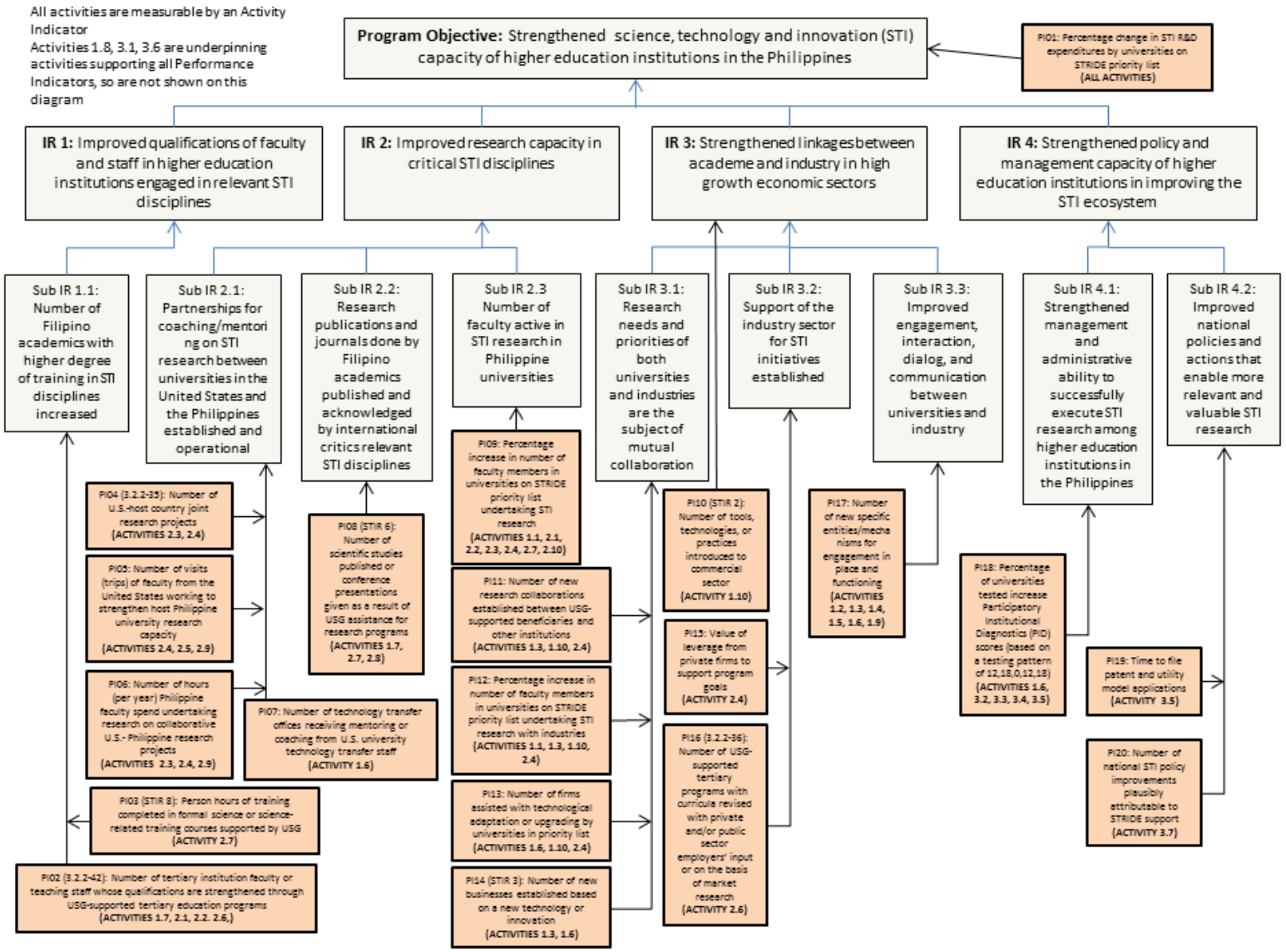

Table 3. Summary of Activity Performance

Indicator	Target (Year 2)	Actual (Year 2)	Overall Life-Of-Program Target	CDITarget
Mission 1				
1.1 Faculty Externships	33	17	110	10 in CDI cities
1.2 Career Centers	5	6	18	3 centers in CDI
1.3 Innovation Workshops	12	12	44	Regional events in CDI
1.4 Curriculum Review	5	5 (tbc)	10	No CDI target
1.5 Number of PGUIRR meetings	4	4	15	TBD
1.6 KTTO (Number of universities)	6	10	12	At least 2 of each set of 6
1.7 Case Writing	2	1	3	1 in CDI sites
1.8 Industry sectors/R&D Roadmaps	No specific target	1 roadmap (tbc)	No specific target	TBD
1.9 Guest Industry Lecturers	35	6	110	1 in each CDI city
1.10 Industry Grants	5	0	10	2 in CDI cities
Mission 2				
2.1 PSM Scholarships	15	1	55	50% from CDI sites
2.2 PhD Scholarships	15	0 (4 took up studies: awards made in year 1, completion in year 3)	55	30% from CDI sites
2.3 PURE grants	12	8	30	At least 1 award in each CDI sites
2.4 CARWIN grants	13	18	27	At least 1 award in each CDI sites

Indicator	Target (Year 2)	Actual (Year 2)	Overall Life-Of-Program Target	CDITarget
2.5 Visiting Faculty	10	4	34	50%
2.6 PSM Curriculum Dev	2	1	10	No specific target
2.7 ATTORP/START	1920	2924	6720	30%
2.8 STRIDE Journal	1	1	1	No CDI target
2.9 PCARI	TBD	0	TBD	TBD
2.10 NSHS Pipeline	3	0	18	2 CDI sites
Mission 3				
3.1 Innovation White Paper	1	1	1	No specific target
3.2 PIDS	15	15	60	All CDI
3.3 IP Manager exchange	2	0	10	50%
3.4 Number of Learning Innovation Network (LINs)	2	2	6	No target
3.5 AUTM Conference	1	1	4	No CDI target
3.6 Gender	0	0	0	TBD
3.7 National Policy	0	0	6	N/A

Mission 1 Accomplishments

Activity 1.1 Faculty Externships

Target: 33 (13 carried over from Year 1, plus original Year 2 target of 20). Target is to achieve 33 in Year 2, with at least 10 in CDI cities.

Progress

A total of 17 STRIDE faculty externships have been completed for 2014–2015, of which 2 faculty are from MSU-IIT, considered to be within the area covered by CDI city Cagayan de Oro.

In the last quarter a professor of Electrical, Electronics and Communications, and Computer Engineering from MSU-IIT completed her faculty externship with Lattice Semiconductor Philippine Corporation this quarter. STRIDE supported this long distance externship engagement, which required travel from Iligan City in Mindanao to the Laguna operations of Lattice Semiconductor near Manila.

Additional companies that have expressed interest in hosting faculty externs include Messy Bessy (personal care products), Merck Sharpe and Dohme (pharmaceuticals), and Texas Instruments (electronics). Currently there are faculty from Ateneo de Manila University (AdMU), Batangas State University, Central Philippine University (in CDI Iloilo), Technological Institute of the Philippines (TIP), and University of the Philippines (UP)-Diliman who are still waiting for placement with industry.

The shortfall against the Year 2 target of 33 externships can primarily be attributed to difficulties in getting industry hosts to commit to hosting externs, and more importantly to put in the required effort to develop work assignments or temporary positions for faculty externs within their operations. The lack of existing externship mechanisms or faculty training programs within most of the willing industry hosts has hindered any quick uptake of faculty externs. This is highlighted by the fact that there are a relatively high number of potential faculty externs (currently 35) who still require a host industry.

Activity 1.2 Careers Centers

Target: Five centers will be mentored throughout Year 2. Three centers will be in CDI cities. Two one-week visits to each center, which will each include one "open" session for all interested careers centers. Two career center directors will attend the National Association of Colleges and Employers (NACE) conference in June 2015. One career center will receive NACE membership through the end of STRIDE.

Progress

STRIDE has achieved primary targets for career centers in 2014–2015. Six (exceeding the target of five) universities have received direct technical assistance towards career center development from STRIDE through both WDI-UM and Florida State University (FSU). Four are in CDI cities: University of Iloilo (UI), MUST, Palawan State University (PSU), and Western Philippine University (WPU). The remaining universities are in Manila: the University of Santo Tomas (UST) and TIP. Three career center directors attended the NACE conference and participated in a study tour of US university career centers in June 2015.

During this quarter, career center consultants from FSU conducted their technical visit and workshops at their three mentored career centers in MUST, PSU, and WPU. A

workshop open to universities in the region was also conducted at the end of the week-long visit of the FSU consultants at MUST. Eighteen career and guidance professionals from the largest schools in Region 10 attended and participated in the workshop.

During the last quarter of the fiscal year, preparations were made for the upcoming technical visit of WDI career center consultants to UST and TIP in November 2015. An open workshop for career center professionals from other Metro Manila schools is expected to be held during the technical visits.

The achievement of targets in this activity has been facilitated by the strong interest and participation of the beneficiary universities. UST, TIP, and MUST, for example, have put significant resources in staffing and physical space towards their career centers upon the advice given by the US-based career center consultants. The university to win the NACE membership that will be awarded through the end of STRIDE will be selected from among the model universities in the coming year.

Activity 1.3 Innovation Workshops

Target: At least one major workshop per month, focused on either a sector or a region. Regional events will be based in CDI venues. Follow-up events as required.

Progress

STRIDE has achieved the target of 12 innovation workshops for 2014–2015, with four innovation workshops being held this quarter. Of the 12 workshops, 5 have been held in CDI cities.

The first innovation workshop for this quarter was the Next Technical and Research Ideas for the Sugar Milling Industry. This workshop was co-organized with the Philippine Sugar Millers Association (PSMA), and was held July 29, 2015, in Makati City. About 35 participants from academe and the sugar industry were present. Speakers from the sugar industry presented key statistics and viewpoints on the economics and operations of sugar mills in the country. This included opportunities in alternative energy and product diversification in their operations. The PSMA also presented a summary of priority technical needs that were determined by a survey administered to its members prior to the workshop. Academic and government participants also presented some of their work that would have some relevance to sugar mill processes, with speakers from the Philippine Sugar Technologists Association and the Sugar Regulatory Administration. The PSMA is currently pursuing some collaborative research ideas that have garnered interest from academic participants of the workshop.

On August 24, 2015, the Next Technical and Research Ideas in the field of Corrosion and Material Degradation on Maritime Equipment and Facilities workshop was held in Makati City. A diverse number of participants (57 attendees) from academe, industry, the Philippine Navy, and the US Department of Defense attended the event. The team from the US Department of Defense and the Philippine Navy first presented their collaborative research projects on material degradation in the country, and possible avenues for

collaborations with academe. Representatives from the Philippine Navy in particular presented a list of projects and technical needs that they want to open to technical partnerships with universities. Industry representatives from the resins manufacturing sector also shared their product development efforts, while an active discussion ensued on feasible projects that can be pursued.

The third workshop for the last quarter of the fiscal year, titled Innovation Challenges in Alternative Energy, was held in Laoag City September 29, 2015. Academics from universities in the Northern Philippines such as University of the Philippines – Baguio, Don Mariano Marcos State University, Isabela State University, Northwestern University, and Benguet State University sent their experts in bioethanol and biogas production. A delegation from UP Los Banos travelled all the way from Laguna as well to attend the workshop. The industry sector was represented by the Ethanol Producers Association of the Philippines (EPAP), whose executive director served as one of the resource speakers. The USAID B-leaders program also attended the event and shared their successful model on alternative energy with their community project in Green Island, Palawan. The Office of the Governor also sent a representative to attend and participate in the event, which had a total of 53 attendees.

The last workshop for this final quarter of FY2015 was a regional focused workshop in Zamboanga City, which is a USAID CDI city. The Next Technical and Research Ideas for Industry-Academe Collaborations in Zamboanga City was held September 30, 2015, with 88 attendees from academe, industry, and government sectors of Zamboanga. The Industrial Group Zamboanga Inc. (IGZI), which is mainly composed of the commercial sardine canning operations in the city, first presented a list of technical needs and challenges that they want to pose to academe. One example given was the need for a commercial supply of tomatoes to be used as tomato paste that is typically mixed with sardines. With the sardine industry providing about 30,000 jobs in the Zamboanga City area, product and process innovations can potentially bring about inclusive economic benefits to the city. The head of the Zamboanga chapter of the Philippine Chamber of Commerce and Industry also enjoined the participants to maximize research activities and provide with their research output more investment opportunities for Zamboanga businessmen. Both business chambers have expressed willingness to meet again with a smaller group of academics in order to hear in more detail some of the research proposals being crafted. The workshop also served as a venue for STRIDE grantees from the city to give examples of their collaborative activities with industry. A participant from a previous STRIDE case writing workshop presented his teaching case on academe-industry partnerships in the city, while a CARWIN grantee from Ateneo de Zamboanga discussed her work on cacao fermentation using cacao beans sourced from the areas around Zamboanga. The workshop discussion was particularly active with the regional director of the Department of Science and Technology and officers of the Department of Agriculture and the Mayor's Office giving input on current research opportunities available. The information and communications technology (ICT) industry of the city

also garnered a lot of activity, with presenters from the local ICT Council enumerating their initiatives. The keynote presentation was also given by STRIDE guest speaker Leo Querubin of the Philippine Computer Society, who presented recent trends in ICT workforce development.

DOST Regional Director Brenda Nazareth-Manzano discussing research initiatives during the STRIDE regional focused innovation workshop in Zamboanga City. Photo by: RTI International

Activity 1.4 Curriculum Review

Target: Review of the initial five STRIDE industry focus sectors (likely to be four or five). Follow-up activity depends on outcome of review. (Note: the target was set at the beginning of the fiscal year, prior to the selection of the six industry sectors.)

Progress

Philippine Business for Education (PBEd) has completed the review work and is in the process of compiling the report. This was presented informally before the August 2015 planning week, but at the time of writing, we are still awaiting the final report.

Activity 1.5 Philippine Government–University–Industry Research Roundtable (PGUIRR)

Target: Initial meeting in November 2014, with subsequent meetings quarterly (four meetings in Year 2). We will attempt to move the venue around the Philippines, but this will be monitored closely as attendance may be affected.

Progress

The third and fourth PGUIRR meetings were held in the final quarter of FY 2015, achieving the total target of four meetings held in 2014–2015.

Held on July 22, 2015, in Ortigas Center, Metro Manila, the third PGUIRR meeting aimed to set concrete tracks for action among the different industry subsectors represented. More than 50 participants were divided by the STRIDE priority sectors they represent: agribusiness, alternative energy, chemical industries, electronics, ICT/mobile computing, and translational medicine. Each group was then tasked to discuss and identify the challenges that limit research and innovation in their respective sectors. Afterwards the groups presented a summary of their output, and a lively discussion followed on what were deemed priority and common issues across the groups. For example, a common gap identified is the lack of enough scientific and technical human resources in these industry fields. However groups also highlighted how the industries themselves do not have the financial capacity or the interest to cultivate and hire such technical experts. STRIDE has documented such overarching challenges and will include some of them as focus topics for future plenary PGUIRR meetings to tackle. One final output of this meeting was the consensus to have smaller, sector-focused PGUIRR meetings that will tackle topics or issues that specifically impact each respective sector.

As a result of the feedback to have subsector PGUIRR meetings, the fourth PGUIRR meeting was a Chemical Industries Subsector PGUIRR held September 17, 2015, in Makati City. This was organized in partnership with the *Samahan sa Pilipinas ng mga Industriyang Kimika* (SPIK), which is the largest association of chemical industries in the Philippines. Held in conjunction with SPIK's general membership meeting, there was a strong participation of industry representatives, which allowed a greater audience (76 total attendees) for the objectives of the PGUIRR being presented. The president of SPIK first discussed current efforts on the most pressing issues of government regulation of certain industrial chemicals deemed as dangerous and explosive. The restriction of supply has not only affected industrial operations, but has also impacted research and development activities as well. Academic and industry participants afterwards presented examples of existing academe-industry collaborations in the chemical sector, which would serve as a guide for future partnerships that can form. One highlight of the meeting was the presentation of Dr. "CP" David, Director of the Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD). Dr. David presented initiatives of the research council that can benefit the chemical industry and expressed his strong interest in listening to industry's needs and challenges so that the council can deliver commercially relevant research output. Favorable feedback was given overall by the key attendees, with the SPIK leadership keen to pursue concrete next steps to foster partnerships and cooperation among the other stakeholders in chemistry and chemical engineering towards addressing concerns that affect the field of chemical industries.

Activity 1.6 Knowledge and Technology Transfer Offices

Target: Initially six ITSOs to be adopted as "role models" for other interested universities to emulate. Study tour for two ITSO managers' visits to the United States.

Progress

Following an assessment of demand, potential, and capacity, two further universities were added, namely TIP and Mapua Institute of Technology. This brings the total being mentored to 8, one of which is a network of three Iloilo-based universities.

A further visit from RTI Innovation Advisers Dr. Jamie Jones and Dr. Brandy Salmon took place in August with a training workshop for the KTTOs. Dr. Jones also visited the Iloilo universities to discuss local issues in more detail and to witness the nature of interaction with local industries.

Two of the KTTOs (DLSU and University of San Carlos [USC]), along with a representative from the UP-Diliman Technology Transfer Office (TTO) represented STRIDE at the Geeks on a Beach conference in August, where STRIDE hosted a session identifying what universities could do for start-ups. Also, Dr. Danny Largo and Atty. attorney Chris Cruz presented their work on KTTOs to the STRIDE Synergy 2015 conference in September.

The KTTO workbook continues to be rolled out to the participants, who continue to work with the Innovation Advisers at distance.

Activity 1.7 Case Writing

Target: Two workshops with 30 participants each, one to be delivered in a CDI site (only one is listed in the M&E Plan, but STRIDE believes two will be possible). Two faculty to visit WDI-UM to observe cases as a teaching method, May 2015.

Progress

One workshop was conducted in April 2015, achieving the M&E Plan target of one workshop in 2014–2015. A subsequent workshop is being planned for Quarter 2 2016 in a CDI city, which would be the third case writing workshop activity for the project. The plan for Philippine faculty to observe cases at WDI-UM will be deferred to 2016 as well to allow for screening of participants from the two workshops held so far.

In the last quarter of FY 2015 the 35 participants from the recent workshop held in April 2015 were still in the process of completing their manuscripts under the remote mentorship of WDI-UM case writing consultants. By the end of Quarter 4 2015 it was expected that almost all of the teaching cases would be completed and published under the WDI Publishing portal.

The currently published case studies can be found at http://wdi-publishing.com/stride/

Activity 1.8 Identify Industry Sectors/R&D Roadmaps

Target: This is an underpinning activity, and while a number of industry sectors will be selected, there is no specific target.

Progress

Six industry sectors were identified, namely:

- Electronics
- Translational medicine
- Chemical industries
- Agri-business
- ICT and mobile computing
- Alternative energy

with the cross-cutting themes of manufacturing and new product development. In concert with the PGUIRR activity, efforts have been focused on developing interest and activity in each sector.

The research and development (R&D) roadmap for the electronics sector is nearing completion, but the R&D roadmap for the chemical industries is delayed pending the sourcing of a suitable research team. Planning continues for an ecosystem study of agri-business using a similar methodology to that used for the Innovation Ecosystem Assessment.

In preparation for Year 3 data are being studied to assess the definition of further sectors or subsectors. It is intended that some of the new set of sectors and subsectors will be prioritized to provide greater focus for STRIDE in Year 3.

Activity 1.9 Guest Industry Lectures

Target: 35 (15 carried over from Year 1, plus original Year 2 target of 20). The target is to achieve this total of 35 lectures in Year 2 with at least one in each CDI city.

Progress

Two Guest Industry Lectures were organized in the final quarter of the year, with a total of six lectures held in 2014–2015. One of these events was held in CDI city Iloilo. STRIDE recognizes that this total is well below target numbers for this activity and a plan is underway to encourage more universities to be 'self-organizing' in setting up these events.

Mr. Jay Fajardo, founder and chief executive officer of Proudcloud and program director of Launchgarage, gave a talk on open collaboration and industry perspectives on being a technopreneur to 100 participants at the Leong Hall Auditorium in Ateneo de Manila on September 9, 2015. This lecture was organized in partnership with the Ateneo de Manila University School of Science and Engineering. On September 24, 2015, Ms. Melissa

Yeung, president and founder of Got Heart Foundation, gave a lecture at the Asian Institute of Management to graduate students. Her topic was the role of development workers in social enterprises. Twenty participants from the MDM and MBA program attended the lecture and an in-depth discussion commenced right after.

Four more Guest Industry Lectures are scheduled for the upcoming quarter. More are planned in the coming months, as cooperation is being sought with student organizations of various universities to help set up and organize such lectures. The high target number of lectures was not achieved because of the significant amount of time and effort needed in organizing each of these lectures. Academic departments need continued encouragement to set up and invite an industry speaker, with many academic programs or courses without a dedicated time slot for external speakers to help facilitate scheduling. STRIDE is also considering opportunities for these events to be run as *kapihans* or other social events as a mechanism for university-industry interaction.

Gene Go, president of GNSP Contractors, delivers a guest industry lecture at DLSU. Photo by: RTI International

Activity 1.10 Industry Grants

Target: A fund of US$150,000 will be created to fund grants to industry of up to US$30,000 over the period of Year 2. Target is to award at least five grants, with at least two in CDI cities.

Progress

Given the lack of interest in this mechanism, it will be dropped in Year 3 and replaced by a grant supporting late-stage prototypes—STRIDE Prototype and Innovation Grants (SPRIG)—as a way of encouraging either start-ups or licensing activities.

Mission 2 Accomplishments

Activity 2.1 Professional Science Masters (PSM) Scholarships

Target: 15 in Year 2. We will aim for 50 percent of scholarships to be awarded to CDI cities.

Progress

In Year 2, 15 PSM scholars took up their studies in the United States. One scholar graduated in Year 2.

During the last quarter of FY 2015, the Scholarship Evaluation Committee selected three new PSM scholars for spring 2016 admissions (January 2016). Their fields of study are in alternative energy, food science and technology, and power systems engineering. Including those on awards made in Year 1, 20 USAID STRIDE PSM scholars are currently in the United States.

Activity 2.2 PhD/Research Scholarships

Target: 15 in Year 2. We will aim for 30 percent of scholarships to be awarded to CDI cities.

Progress

In Year 2 four PhD/research scholars took up their studies in the United States. (The awards were actually made in Year 1 but the scholars did not commence studies until Year 2.)

During the fourth quarter, USAID STRIDE received five applications for the PhD Dissertation/Postdoctoral Research Scholarship. Out of the five, one applicant was rejected outright and two were encouraged to reapply. Two were selected by the STRIDE Technical Team for their research on the production of bioethanol in Northern Luzon and production of high-value products from mango peels and seeds in Cebu.

The Scholarship Team is focused on the re-launch of the PhD/Research Scholarships with new initiatives. Small group, roundtable discussions instead of roadshows were initiated, sometimes in conjunction with other STRIDE activities, such as research grant visits. During the quarter, the Scholarship Team visited USC, CLSU, MMSU, Adamson University, UP-Baguio, Don Mariano Marcos Memorial University, Benguet State University, and St. Louis University. Earlier in the year, visits were made to universities in CDI cities of Zamboanga, Iloilo, Cagayan de Oro, and San Fernando. The plan is to visit the other CDI universities in Palawan and Tacloban during the first quarter of Year 3.

Materials for an advertising campaign for the re-launch, including new posters, brochures and other handouts are being readied. Two half-page advertisements are being finalized with a press date in October 2015.

Roundtable meetings are being conducted at universities in addition to promoting the scholarship through newspaper advertisements, posters, and conducting roadshows. There have been many verbal expressions of interest from faculty to pursue research studies in the United States in light of the transition to K+12 is ongoing that will reduce enrollment at universities in the next four years (hence creating a temporary over-staffing in most universities). Letters promoting the scholarship have been sent to presidents of partner universities to disseminate this opportunity to their respective faculties. STRIDE has received responses and queries from several universities in response to the letters sent, but actual applications have yet to be received from these interested parties.

In addition to the call for applications, an initiative was started to identify potential US-based "Fil-Am" scientists to be host professors to post-doc and PhD "sandwich" scholars. We have received expressions of interest from Fil-Am senior scientists at Oklahoma State University, Kansas State University, Texas A&M University, and FSU. STRIDE is also tapping the membership roster of the Philippine-American Academy of Science and Engineering and former participants of the DOST Balik-Scientist Program for this new initiative.

Activity 2.3 Philippine-US Research and Exchange (PURE) Grants

Target: 12 in Year 2. Over both grant types (PURE and CARWIN), we will aim to award at least one in each CDI city.

Progress

In Year 2, eight PURE grants were awarded in Metro Manila, Benguet, and Laguna with collaborators from the CDI area, Iloilo and La Union.

During the fourth quarter, one PURE grant from the first call was completed, while the other project is progressing well towards the achievement of its milestones and is nearing project completion.

Four of the five PURE grants from the second call are on-track with their program timelines and are progressing well towards achievement of their milestones. The UP Diliman-Rutgers University grant faced minor challenges due to the operational systems within the university and finalization of the training design with Rutgers University. This has been resolved but entailed the need to facilitate a no-cost extension for the project.

Two PURE grants under the third call have been approved and are on-track with their program timelines. The other project is currently being reviewed for approval by USAID.

Activity 2.4 Collaborative Applied Research with Industry (CARWIN) Grants

Target: 13 (3 carried over from Year 1 plus the original target of 10) in Year 2. Over both grant types (PURE and CARWIN), we will aim to award at least one in each CDI city.

Progress

In Year 2 18 CARWIN grants were awarded in Northern Luzon, Metro Manila, Mindanao, Visayas, Laguna, and Palawan. Of these 18, 7 were in CDI cities.

To date STRIDE has awarded a total of 26 grants under both the CARWIN and PURE Grants. Three projects under the first call have been completed.

During the fourth quarter, two of the three completed CARWIN grants from the first call have applied for Phase II extensions. Completed projects were publicly presented at UP Diliman for the Rubber Project of Dr. Bryan Pajarito and MMSU for the Bioethanol Project of Dr. Shirley Agrupis.

The USAID STRIDE-funded Village Scale Ethanol biorefinery at MMSU was launched and commissioned on September 28, 2015. Photo by: RTI International

The CBSUA-Bigfis grant faced minor internal challenges that have now been resolved. A request for a no-cost extension for the project is currently being facilitated.

Four of the remaining 5 from the 15 identified potential CARWIN grants from the second call have been awarded and are on-track with their program timelines and are progressing well towards achievement of their milestones.

Three of the nine identified potential CARWIN grants from the third call have been awarded and are on-track with their program timelines and are progressing well towards achievement of their milestones. Two projects are currently under the negotiation process. Three projects are currently being further developed based on USAID's feedback.

Activity 2.5 Visiting U.S. Professors Program

Target: 10 in Year 2, with at least 50 percent in CDI cities.

Progress

In Quarter 4, Year 2, three visiting professors were hosted by Philippine universities. For the whole of the year, a total of four visiting professors were deployed, with one professor deployed in a CDI city. The annual target was not achieved due to a delay in the applications of local universities during the first three months of Year 2; and the active recruitment of potential visiting professors. While applications have been steadily increasing after the first quarter, deployments are scheduled for Year 3, to accommodate the availability of the visiting professors.

The three visiting professors for Quarter 4 were:

1. Dr. Danilo Romero, Research Scientist and Lecturer, Department of Electrical and Computer Engineering, University of Maryland.

   Dr. Romero was hosted by Western Mindanao State University (WMSU) in Zamboanga City, July 8 to 28, 2015. The main objective of this engagement was to establish a research program on the analysis and potential fabrication of photovoltaic devices and solar cells within the local university. This research program is highly relevant in the area, as it seeks to address the longstanding problem of the lack of electricity, which hampers economic growth and social development. Dr. Romero participated in a series of workshops with university faculty and students, as well as consultations with industry and government stakeholders, which resulted in various research proposals to be submitted for funding. The research team of Dr. Romero and the university was also able to construct a prototype solar-powered charging station, primarily to aid in future research activities, but also for the benefit of the university.

Dr. Danilo Romero (in green shirt) demonstrating the mechanics of photovoltaic devices to students of WMSU. Photo by: Western Mindanao State University

2. Dr. Tania Datta, Assistant Professor, Department of Civil and Environmental Engineering, Tennessee Tech University

   Dr. Datta was invited and hosted by the Technological University of the Philippines in Manila from July 27 to August 16, 2015. By engaging Dr. Datta, the university sought to improve its current initiatives in the scientific analysis of water quality and sanitation in specific rural communities in the Philippines. Also, the university sought to expand its research programs to relevant industries and government agencies. Dr. Datta participated in a series of lectures, research discussions, and field visits, resulting in the identification of potential research areas, as well as follow-up activities.

Dr. Tania Datta (in purple shirt) interviewing personnel from a water treatment facility in Lopez, Quezon. Photo by: Technological University of the Philippines

3. Dr. Joel Cuello, Professor of Agricultural and Biosystems Engineering, University of Arizona

   Dr. Cuello was invited and hosted by DLSU in Manila from September 18 to 27, 2015. For this visit, the local university sought to tap into his research expertise on sustainable algae bio-production (with applications in nutraceuticals, biofuels, and pharmaceuticals) and bioprocess engineering (specifically on photo-bioreactor design and scale-up, integrated algae systems, wastewater reuse for alternative growing media, algae waste CO_2 capture, algae lighting strategies, algae nutraceuticals, bio-hydrogen production). Dr. Cuello participated in a series of conferences, university lectures, and research discussions, one of the results of which is a joint research proposal with the local university and a national university in Taiwan.

Activity 2.6 PSM Curriculum Development

Target: Two programs developed for enrollment of students in September 2015. For this pilot year no CDI universities are targeted; it will be easier to introduce PSM to CDI universities once the pilot is underway.

Progress

In Year 2, one PSM program was launched.

During the fourth quarter, STRIDE continued to pursue various universities interested in offering PSM degrees. Dr. Fiorello Abenes was plenary speaker at the 2015 UP-Los

Baños Graduate School Planning Workshop and presented background information about the PSM program as envisioned by STRIDE. This was followed by Dr. Mark Robson of Rutgers University who conducted a series of orientation meetings with the Los Baños and Manila campuses of the University of the Philippines, as well as with Batangas State University. As a result, UP- Los Baños has already expressed its commitment to conduct curriculum development workshops with Dr. Robson and Dr. Aubteen Darabi of FSU, scheduled for Year 3. STRIDE also continues to monitor the progress of current PSM curriculum initiatives at the Technological University of the Philippines (TUP) and DLSU.

Launching a PSM program at state universities continues to be a challenge. Although initial interest is high, reality sets in quickly. Most state universities do not have the financial and human resources to launch new programs as easily as private universities. The process itself is daunting because of the layers of approval required, even in state universities that are autonomous. Nonetheless, at every opportunity, we will continue to follow up on state universities that have expressed initial interest including UP-Diliman, UPV, MMSU, TUP, PUP, CPU, MSU-IIT, MUST, and CLSU as well as private universities such as DLSU, AdMU, and Adamson University during visits in conjunction with STRIDE's other activities. A key message to deliver is that the program requires little in terms of additional resources.

Activity 2.7 Advanced Technical Training for Research Professionals (ATTORP)

Target: Deliver at least 1,920 person hours of training in Year 2 across the Philippines, with at least 30 percent of the courses delivered in CDI cities.

Progress

In Year 2, 2,924 person hours of training were delivered. Ten courses were delivered, with four in CDI cities.

The courses delivered were:

- Workshop on Writing Research Proposals, 10/24/2014, Iloilo
- Workshop on Writing Effective Papers for Peer-Reviewed Journals, 12/16/2014, NCR
- Workshop on Writing Research Proposals, 1/10/2015, Bohol
- Workshop on Writing Research Proposals, 1/17/2015, CDO
- Seminar on Good Laboratory Practices, 2/11/2015, NCR
- Workshop on Writing Effective Papers for Peer-Reviewed Journals, 2/17/2015, Palawan
- Seminar on Good Laboratory Practices, 2/18/2015, Iloilo
- Lecture on Publication and Journal Publishing, 3/13/2015, NCR

- Lecture on Research Management, Ethics and Governance, 3/18/2015, NCR
- Forum on Maximizing Research Outcomes, 3/30/2015, NCR

Targets for this activity were reached early in the year, with STRIDE delivering 2,924 person-hours of training by the end of Quarter 2 of Year 2 (March 2015). Nearly 50 percent were delivered in CDI cities (Iloilo, Bohol, Cagayan de Oro, and Palawan). For the rest of Year 2, efforts were focused on developing a framework for evaluating the short-term impact of the ATTORP courses and improving the training curriculum in preparation for Year 3.

Activity 2.8 STRIDE Journal

Target: To set up the STRIDE journal in Year 2.

Progress

The STRIDE-sponsored journal, *The International Journal of Philippine Science and Technology* (IJPST) is in operation and, as of September 30, 2015, had published 13 scientific articles; 4 "pop science" articles; 4 short communications; 1 review; 1 feature and 1 white paper.

The managing editor team of Dr. Giselle Concepcion, vice president of academic affairs at University of the Philippines; Dr. Mark Robson of Rutgers University; and STRIDE Chief of Party (COP) Dr. David Hall are currently expanding the editorial board to encompass the entire science and technology spectrum.

To assist in the management of manuscripts and reviews, the journal management package, ScholarOne, has been purchased.

IJPST publishes not only referred papers of scientific and technical merit but also "pop science" articles of general interest. There is also a section for readers to communicate via social media and a section to announce funding opportunities and events.

The IJPST is currently online at www.philscitec.org and is processing submissions as they are received. STRIDE is continuing work to register IJPST with the appropriate organizations and to ensure international recognition. Elsevier has committed to running a workshop in early 2016 to explain the requirements for Scopus listing.

Activity 2.9 Philippine-California Advanced Research Institutes (PCARI)

No target until PCARI is operationalized and any revised scope is understood.

Progress

The PCARI initiative launched in January 2015, and STRIDE has, to date, supported travel and accommodation for US-based faculty on visits to the Philippines. The process of identifying US-based consultants to monitor progress on the PCARI-funded projects has commenced, and these consultants should be in post towards the end of 2016.

As the Commission on Higher Education (CHED) Higher Education Reform Agenda (HERA) has rolled out, STRIDE is establishing mechanisms to engage consultant assistance for CHED, initially in support of the higher education aspects of the K-12 initiative.

An administrative assistant will be appointed early in Year 3 to coordinate the PCARI and HERA activity, to be based in the STRIDE office.

In future, this activity will be re-defined as support for CHED, as the PCARI activity and the HERA are both CHED activities.

Activity 2.10 National Science High School (NSHS) Pipeline

Target: To pilot programs in three NSHS sites, with at least two in CDI sites.

Progress

PBEd is finalizing the outcomes of the study, presented informally during the August 2015 planning week. A formal presentation is expected in October 2015.

Mission 3 Accomplishments

Activity 3.1 Innovation White Paper

Target: To launch in November 2014

Progress

The White Paper was completed in November 2014 and presented at the inaugural meeting of the PGUIRR. Follow-up actions are described under activity 3.7 National Policy. The paper can be downloaded from http://stride.org.ph/resources

Activity 3.2 Participatory Institutional Diagnostics (PIDs)

Target: To carry out 30 PIDs in Years 2 and 3. Sites will be revisited in Years 4 and 5 to assess progress. All CDI universities in the STRIDE priority list will be assessed.

Progress

In Year 2, 15 PIDs have been conducted. This lags behind the intended plan largely due to scheduling the PID visits around other activities. It is intended that the first round of PIDs will be completed by March 2016.

In the last quarter PID visits were conducted at 8 HEIs: Ateneo de Zamboanga University, VSU, Xavier University, Benguet State University, Central Bicol State University of Agriculture, University of Iloilo-PHINMA, Iloilo Science and Technology University (formerly the Western Visayas College of Science and Technology), and MMSU.

Now that the "critical mass" of PID data is building up, the nature of assistance required is starting to become more apparent. Thus for the year, the PID visits have been a great mechanism to identify challenges and bottlenecks impeding the efficient conduct of science and technology research in Philippine HEIs. The information gathered from the

PID visits will help inform the interventions, including workshops, trainings, and short-term technical assistance, that will be implemented.

Activity 3.3 Intellectual Property Manager Exchange

Target: To carry out a diagnostic on IP practices and attitudes in the ITSOs and wider IP community using an RTI Innovation Advisor (provisionally November 2014). Depending on diagnostic outcomes, set up IP manager exchanges for two ITSO personnel and training to address policy and management capacity deficiencies.

Progress

Because of the high level of activity in Activity 1.6, KTTOs, and the schedule of the RTI Innovation Adviser, the diagnostic visit was pushed back to Year 3 and will take place in October 2015.

The STRIDE team has finalized the schedule of the RTI Innovation Adviser who will conduct the IP diagnostic. Specifically, in October 2015, the RTI Innovation Adviser will visit five institutions, namely, University of the Philippines-Visayas, VSU, MSU-IIT, DLSU, and Mapua, and interview the ITSO managers and various university personnel. These visits will provide detail as to the particular IP practice needs and challenges in each institution as they relate to the institution's goals and vision. This information will refine the design of the exchanges so as to make the exchanges more effective in addressing each institution's situation.

Activity 3.4 Learning Innovation Networks (LINs)

Target: To initiate at least two LINs in Year 2.

Progress

The target of initiating two LINs during the year was achieved, having conducted the kickoff meetings for the alumni relations and biofuels LINs.

In the last quarter, on September 29, 2015, the biofuels LIN was launched at Fort Ilocandia, on the heels of the project launching and commissioning of the Multi-Feedstock Village-Scale Bioethanol Facility funded by STRIDE, held the day before. Participating in the biofuels LIN launch were representatives from seven higher education institutions, including MMSU, UP–Los Baños, WMSU, Benguet State University, University of Northern Philippines, Northwestern University, and Ilocos Sur Polytechnic State College. Industry and government sectors were also represented. Efforts of the USAID B-LEADERS program on renewable energy were also presented and served to promote networking among the participants.

It has been previously reported that the alumni relations LIN was launched on April 24, 2015, at UST. It was attended by 24 university personnel involved in alumni relations, representing 19 different HEIs. At the inaugural meeting, attendees introduced themselves, their respective universities, and the activities they conduct relating to alumni relations. They elaborated on their strengths and offerings, and the issues and challenges

they face. This led to a vigorous discussion among the attendees, with others relating similar stories, asking questions for further clarification, and offering possible solutions or their perspective based on experience. Next steps are to encourage further meetings with the development of an online discussion forum.

Activity 3.5 Association of University Technology Managers (AUTM) Activity

Target: To enable attendance for two ITSO delegates at the US AUTM conference in February 2015 and to organize one AUTM-type meeting to be held May 2015.

Progress

The target for the year was achieved, having sent five ITSO delegates to the US AUTM conference in February 2015 and holding the Synergy conference in September 2015.

Entitled "Synergy 2015: Seeking to Increase Innovation Throughput in the Philippines," a Philippine AUTM-type conference was held September 21–22, 2015, in collaboration with the Intellectual Property Office of the Philippines (IPOPHIL). The conference was run in parallel with the National Academy of Science and Technology conference, "Toward an Innovation Economy: Building the Philippine Innovation Ecosystem." A plenary session opened both conferences with opening remarks from US Ambassador Philip S. Goldberg and USAID Philippines Mission Director Dr. Susan K. Brems.

In the Synergy 2015 conference, former AUTM president, John Fraser, and RTI International Senior Director of Innovation Dan Winfield gave presentations and participated in panel discussions on various topics relating to technology transfer and innovation. More than 250 people attended, coming from all corners of the Philippines, representing academe, industry, and government sectors. More than 40 ITSOs participated.

There was significant demand for a similar event next year, and this will mark beginning of the transition of handing the event over to IPOPHIL along with the initiation of a Philippine AUTM.

USAID Philippines Mission Director, Dr. Susan K. Brems addresses the plenary session of the Synergy 2015 conference. Photo by: RTI International

Participants filled the ballroom at the Synergy 2015 conference. Photo by: RTI International

Activity 3.6 Gender

No specific targets

Progress

Following the initial exploratory STRIDE gender study, project performance on gender issues was assessed according to the National Economic Development Authority guidelines. The result was that STRIDE is "gender sensitive." STRIDE is making plans to enable the project to become "gender responsive."

In June, Jacques Gimeno of STRIDE attended the USAID Annual Gender Action Planning meeting.

During the Annual Planning Week in August 2015, a plan was formulated to raise awareness among STRIDE beneficiaries regarding gender issues and to address gender issues in select industries. In accordance with this plan, STRIDE has begun an analysis of gender equality in industry.

Activity 3.7 National Policy

No target for Year 2, but will work towards two policy improvements for Year 3.

Progress

Following the publication of the Innovation Ecosystem Assessment and consultation with a range of government stakeholders, STRIDE has determined that the initial target of the Innovation Ecosystem Assessment will be the procurement problem.

The initial way forward on procurement will be to fully understand the relative legislation (a lawyer has been hired for this purpose) and to map the procurement process in a range of different universities. The process mapping will determine whether the bottlenecks are caused by legislation or by practice, enabling the root causes to be resolved.

During the Annual Planning Week, additional areas were identified where STRIDE may work toward other national policy improvements. These included de-loading of faculty and incentives to industry conducting research collaborations, such as free-zone status and tax benefits. Plans will be formulated for exploring the possibility of STRIDE involvement in shaping national policy in these areas.

5. New Opportunities

As STRIDE has gained traction and credibility in the Philippines, it is clear that there is a benefit to being able to react to ongoing activities outside of the program. For example the efforts of a number of stakeholders to create "innovation hubs" are something that perhaps STRIDE could support, if the circumstances were correct. Other examples of this type of intervention include involvement with the various movements around "fablabs" and shared service facilities.

Also, as it becomes more clear which industry sectors will demonstrate the greatest impact from STRIDE support, we need to be able to respond to execute ecosystem assessments or to enable R&D roadmaps where appropriate.

Annex A. Success Stories

Six success stories are included on subsequent pages.

USAID
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Success Story

Sugar Fuels Livelihoods in Ilocos Norte

Lead Investigator Dr. Shirley Agrupis (left) examines the bioethanol facility installed at the Nipa Wine Making Cooperative in Pamplona, Cagayan. Photo by RTI International.

The biomass potential of the Philippines is generally neglected when energy generation is considered. However the team of Dr. Shirley Agrupis at the Mariano Marcos State University (MMSU) had the vision to combine energy generation with the enhancement of livelihoods for farmers and villagers in Ilicos Norte.

In September 2015 in the city of Batac in Ilocos, farmers, students, scientists, and businessmen gathered as Dr. Agrupis prepared for the launching of the first low-cost multi-feedstock bioethanol generator—the easy-to-set-up facility that turns sugar into fuel. This is a welcome development for the people in Ilocos, as they've been struggling to solve the power shortage and as new businesses offering renewable energy started trickling into the province.

Ilocos Norte has an estimated 128,000 households and 98 percent of them are dependent on electricity as their source of energy for lighting and cooking. Dr. Agrupis and her team believe that the type of ethanol they are producing in their facility can be used as biofuel to substitute for or supplement current sources of energy that are costly.

But this team of scientists from MMSU and the Central Luzon State University (CLSU) are doing more than just producing bioethanol. They are also sharing the technology with others in nearby provinces and training farmers and producers in bioethanol production. They hope that very soon, the whole country could benefit from their innovation.

Funded by USAID through its STRIDE Program (Science, Technology, Research and Innovation for Development) under the Collaborative Applied Research with Industry

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The village-scale bioethanol facility was launched on September 28 was celebrated by USAID STRIDE, the project team, farmers, government officials, and industry representatives. Photo shows (2nd from left): USAID Office of Environment, Energy and Climate Change Director Jeremy Gustafson, (3rd from left) Lead Investigator Dr. Shirley Agrupis, and (4th from left) USAID STRIDE COP Dr. David Hall. Photo by RTI International.

(CARWIN) grant, the village-scale bioethanol plant holds much potential as an alternative source of fuel for farmers and small business owners who can't afford commercial petroleum.

The idea is to produce biofuel in a simple facility that can perform distillation and fermentation as effectively as big commercial plants can, but in a village setting. The facility costs no more than a tricycle (a popular mode of mass transportation in the country that runs on diesel) and can produce 60 liters of ethanol a day. The renewables could be nipa sap, coconut, and sweet sorghum—all of which are readily available in many provinces and will be extracted for their sugar compound.

As of June 2015, the team distributed three units of the bioethanol facility, one to a farmers' cooperative in Batac, one to a nipa wine making cooperative in Cagayan, and one to a producers' cooperative in Quezon.

The team has also trained 25 coconut growers and copra makers and four sweet sorghum producers in ethanol production, business planning, yeast activation and fermentation, and distillation and operations.

Although there's still much work to be done Dr. Agrupis believes that people will come to appreciate the project for its long-term benefits. "Our project is not just about science and innovation," she stressed. "It is about development and inclusive growth. It is about how we can move our rural workers to become, not simply gatherers and sellers of raw materials, but innovative entrepreneurs who have control over their production line."

True enough, following the successful completion of Phase I and the launching of the bioethanol facility, the Philippines' National Economic and Development Agency and the Department of Energy approved the funding for Phase II of the project.

Next stop for Dr. Agrupis and her team is to scale up the bioethanol facility for deployment nationwide and to conduct a market analysis of the identified feedstock.

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Success Story

Filipino Academics Publish Case Studies in Global Repository

Dr. John Branch of WDI gives pointers to workshop participants on writing their case studies. Photo by RTI International.

Workshop participants focus on writing their case studies. Photo by RTI International.

There was nervous laughter as 34 university professors in science, technology, and management gathered for the first time to participate in a case writing workshop. Only a handful of them had heard about case writing as part of university teaching, and they were both anxious and excited to find out what it was all about.

This advanced training for science and technology educators is funded by USAID through the STRIDE Program (Science, Technology, Research and Innovation for Development) and conducted in different cities in the Philippines by the William Davidson Institute (WDI) at the University of Michigan.

Teaching using case studies to connect classroom lectures and industry experiences is largely unheard of in the Philippines where teaching methods have not evolved significantly in the last few decades. Although routinely used in law and medical schools (the two institutions that produce among the highest number of graduates in the country), students in other disciplines have no opportunities to experience this type of engagement with content.

The "real-world" feel and personal approach to writing a case study was a hit with the participants, as they learned how a case study could help students sharpen their analytical skills by tackling actual cases. With guidance from WDI, the professors were encouraged to tap into their experiences or those of others', prominent cases in in their respective locality, or cases about pressing social issues in the country.

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WDI's Dr. Branch provides a personal review for workshop participants' case studies. Photo by RTI International.

It didn't take long for them to get into the spirit of writing for their students and in the days that followed, many of them produced case studies worthy of publishing. Dr. John Branch of WDI was impressed with the output and shared that educators from other countries would benefit from the case studies.

Months after the workshop, which was followed by close coordination with editors at WDI, 19 case studies were published and made freely available to educators around the world by WDI Publishing. Needless to say, word got around fast, and many other educators in the Philippines took a stab at using cases studies in their teaching.

The second workshop with new participants wrapped up early in FY 2015 and many are already finding satisfaction in the experience.

Prof. Noel Tarrazona, a lecturer at the Unibersidad de Zamboanga and at the Western Mindanao State University (WMSU), couldn't contain his gratitude after making use of the things he learned from the workshop and shared that his students found renewed interest in his courses.

"The case teaching method allowed us to be in the real-life situation and to be a quick thinker and decision maker," Nizam, a student at WMSU, said. "It was a nice experience. One semester in his class is quite short to learn empowering virtues of leadership; overall I am happy that I chose to enroll in the class."

USAID STRIDE is expecting to hear more positive news from workshop participants and others who are learning about the initiative. More and more educators are being encouraged to use case studies in their lectures to make academic exercise more than just rote learning by helping students, especially in science and technology, engage issues that matter to their industries

USAID
FROM THE AMERICAN PEOPLE

Success Story

PhD Scholar Brings Scientific Expertise to Northern Mindanao

USAID STRIDE PhD research scholar Richard Licayan in his work station at Rutgers University. Photo by RTI International.

The deployment of hordes of Filipino workers to several countries is not a recent phenomenon. In the last five years alone, more than 1 million Filipinos left every year to take higher paying jobs in other countries. In 2012, almost 2 million workers were deployed to mostly Middle Eastern countries.

The mass exodus of workers includes not just laborers but knowledge workers as well. This is becoming a serious problem for the Philippines, because the country is also losing its best and brightest scientists to countries that are investing more in research and innovation. As a result, the government is hard-pressed to look for thousands of experts in agricultural, fisheries, and marine sciences; biotechnology, energy, and environmental sciences to replace those who left in the last few years.

Recognizing the challenge of building a pool of well-trained scientists and technologists in the Philippines, USAID began offering PhD and post-doctoral research scholarships through its STRIDE Program (Science, Technology, Research and Innovation for Development) under the Graduate Scholarship in Science and Technology (GraSST). Since 2014, five individuals have embarked on their journey to conduct doctoral-level research under the supervision of experts in leading US universities.

One of them is Richard Licayan. He had high hopes of training in the US to upgrade his research skills in chemistry. The head teacher of Macabalan National High School in Cagayan de Oro City, Richard has had big dreams for Filipino students since he started teaching 11 years ago. His hopes and dreams came true after being granted a GraSST.

"This scholarship program has strengthened my knowledge and skills in the field of natural products chemistry," he said. "My expertise in this field will be of great help in the implementation of K-12 curriculum track

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[in] Science, Technology, Engineering and Mathematics Program in Region 10."

Northern Mindanao or Region 10 has performed poorly in the National Achievement Test (NAT), a standardized test given to Years 3, 6, and 10 students in the Philippines and covers five categories including English, science, and mathematics. The region's average in the last five years was below the standard of 75 percent.

The current pool of college students in science and technology are only doing slightly better, and the government stresses the need to upgrade the knowledge and competencies of instructors who are preparing the country's future science and technology (S&T) experts.

USAID believes that it can help improve S&T innovation in the Philippines by investing in advanced training of experts who will cultivate an atmosphere of innovative thinking that would lead to economic growth.

Richard's work at Rutgers University is a fine example of a good investment. He identified and analyzed several characteristics of 11 medicinal plants native to the Philippines. These plants have the potential to yield a high therapeutic value and can be further developed into functional foods that are rich in antioxidants or into pharmaceutical products that would target degenerative diseases.

With enough funding for further research and development into these plants, many industries in the health and chemical sectors can look forward to exciting innovations in the coming decades, which would entice local experts to stay and participate in the endeavor.

After completing his PhD research at Rutgers University, Richard believes that his new assignment as assistant principal in Northern Mindanao's Gusa Regional Science High School is a great opportunity to give back.

"With my rigorous training in Rutgers University, I gained many insights into how to improve the quality of science in our school," he said with determination. "I am confident that my training in a US university will [help] escalate the academic performance of our students."

USAID
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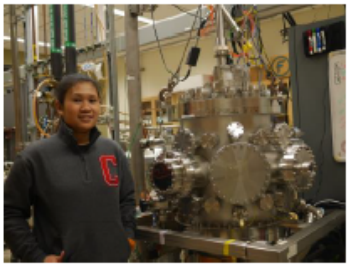
Success Story

Professional Science Degree Equips Young Filipino Scientist for Industry Work



USAID STRIDE PSM scholar Janella Mae Salamania at a lab in the Department of Materials Science and Engineering at Cornell University. Photo by RTI International.

Philippine universities produce an average of 500,000 college graduates a year. But instead of being a boost to the workforce, more than half of them end up jobless for at least a year after graduation.

Graduates in the science and technology (S&T) fields find it most difficult to get into an industry where they can use their education and training. For technology and innovation companies, the problem is not the lack of applicants to fill vacancies but the lack of skills of graduates to translate scientific discoveries into products and business ventures.

It was clear that university training in S&T disciplines needed to go beyond the basics. In 2014, USAID began offering Professional Science Master's (PSM) scholarships to outstanding young Filipino scientists through its STRIDE Program (Science, Technology, Research and Innovation for Development) under the Graduate Scholarship for Science and Technology (GraSST). PSM degrees are hybrid programs created by American universities to advance college-level science or engineering training by including a professional component such as business, management, and entrepreneurship.

A year later, USAID STRIDE's first PSM scholar graduated with a degree of Master of Engineering in Materials Science and Engineering from Cornell University.

Back in 2013, Janella Mae Salamania was one of over half a million college graduates in the country. While most of these graduates scrambled to land their first professional job, she decided to pursue higher studies. Fresh from gathering accolades for her undergraduate work, the high-achieving applied physics major embarked on a new adventure as a PSM scholar with the Department of Materials Science and Engineering at Cornell.

Janella took to heart the rich experience of learning from experts in one of the leading universities in the world. She

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shared that she appreciated the independence given to her by her mentors.

"American students prefer to work individually, which is quite different from the Philippine academic culture," she said. "In research [in the US], the professors and colleagues give us enough freedom to decide how to go on with our research."

Most importantly, Janella is grateful that her PSM scholarship gave her a whole new understanding of the role of S&T in economic development.

"I used to believe that a graduate of science and engineering only had three destinations in the Philippines: industry, government, or academia," she recalled. "But studying in the US had led me to believe that there is an additional path towards inclusive economic growth—entrepreneurship." She now works for a multinational semiconductor manufacturer as a failure analysis engineer, a vital role in new product development.

Together with 20 current PSM scholars of STRIDE, Janella is leading the way for future Filipino scientists as technopreneurs—a new breed of experts that would jumpstart innovation towards economic development in the country.

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Success Story

Scientists Work to Make Rubber Cheaper, Safer for Environment

Lead Investigator Dr. Bryan Pajarito works in the Polymer Research Laboratory at the University of the Philippines. Photo by RTI International.

Sometimes, proper disposal and recycling of certain products are not enough to ensure the safety of the environment. For example, rubber products (like tires, gloves, etc.) go through a complex manufacturing process that involves mixing rubber with other materials that may cause adverse damage to the environment.

Filipino scientist Dr. Bryan Pajarito at the University of the Philippines is well aware that industrial-grade materials added into rubber carry harmful properties. Carbon black and silica are known examples of materials that have been found to harm people and the environment. But these are essential ingredients in making high-quality rubber products, and manufacturers in the Philippines are spending so much to import carbon black in huge amounts. This is making it difficult for the industry to perform well.

While the Philippines is one of the leading global exporters of natural rubber, its manufacturing of rubber products pales in comparison. In 2014, the Philippines exported $78.6 million worth of natural rubber; but local rubber products accounted for less than one percent of the GDP at $528,000.

Determined to make rubber manufacturing safer and cheaper for the Philippines, Dr. Pajarito collaborated with Case Western Reserve University and with the Philippine Rubber Industries Association (PRIA) to make expanded organo-bentonite (EO-BNT), an alternative to carbon black and silica.

Funded by USAID through its STRIDE Program (Science, Technology, Research and Innovation for Development) under the Collaborative Applied Research with Industry (CARWIN) grant, the research team successfully prepared EO-BNT from bentonite clay, a cheap and abundant natural clay found in the Philippines.

In the course of breaking down bentonite into a useful filler in rubber products, the team was able to prepare 17 types

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of EO-BNT fillers that were all tested in a rubber processing plant by mixing them with natural rubber. The rubber sheets produced were then cut into different shapes and were sent to the Polymer Research Laboratory at the University of the Philippines to be measured for their density, hardness, tensile strength (how long it can withstand stress until it breaks) and compressive properties, and water resistance.

The research team believes that with a few more tests and adjustments, EO-BNT would replace harmful rubber fillers for good in the near future. And Dr. Pajarito is confident that this breakthrough will continue to evolve in the hands of the young chemical engineering students he invited to join the project. Ten undergraduate and graduate students in chemical engineering from UP-Diliman were tasked to accomplish the technical requirements of the project by testing the material properties of the rubber sheets.

The results of the research are encouraging and reflective of Dr. Pajarito's words during the proposal stage of the project.

"The use of EO-BNT nano filler in rubber products will be a new concept in the Philippine rubber manufacturing industry," he said. "The concept can be capitalized upon as a viable way to introduce new formulations, improve product performance, lower processing cost, and promote environment friendliness in rubber manufacturing—a high valued added proposition, which can improve competitiveness in Philippine rubber companies."

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Success Story

Coffee Registry Maps Future of Local Bean Varieties

Lead Investigator Dr. Ma. Carmen Lagman examines coffee beans collected by the research team before the launching of the coffee museum. Photo by RTI International.

Scientists in the Philippines have just given the local coffee another chance at global prominence. Determined to put coffee production back in tip-top shape, as it was in the 1980s, Dr. Maria Carmen Lagman of De La Salle University (DLSU) leads a team of researchers in profiling the rich diversity of coffee in the country.

Thirty years ago, the Philippines was one of the leading exporters of coffee when it controlled 4 percent of the global market and shipped out as much as $100 million worth of coffee beans every year. Nowadays, countries that used to buy from the Philippines have been supplying the country with coffee amounting to almost $60 million in 2012 alone.

The Philippines is one of very few countries where all four major varieties of coffee are grown. But Arabica, Robusta, Liberica, and Excelsa are produced in the country at an average of only 450 kg each for every hectare of farmland. Compared to other countries, this is a very low yield. This problem exists because small farmers are doing most of the coffee farming in the country and are therefore unaware of poor farm practices and new ways of producing coffee.

The good news is, the need to rehabilitate the industry is gaining widespread attention. At the mention of rehabilitation, Dr. Lagman and her team offered their expertise to create a national coffee registry funded by USAID through its STRIDE Program (Science, Technology, Research and Innovation for Development).

Funded under STRIDE's Philippine-US Research Exchange (PURE) grant, this endeavor is a

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collaboration between DLSU and Oregon State University and aims to help the industry with a scientific approach to determining where each variety of coffee would grow best based on, among many, regional characteristics of land, climate, and production traits.

Months into the project, USAID STRIDE and the project team launched the Wonders of Philippine Coffee Museum on June 9, 2015. Housed at the National Coffee Research Development and Extension Center of the Cavite State University, it holds a collection of coffee varieties gathered by the team from different parts of the Philippines. The significant information gathered and stored in a database created at DLSU was used to properly and effectively curate each variety using genetic marking to distinguish regional differences.

Dr. Lagman described coffee production in the Philippines as hit-and-miss and this, she believes, is due to the lack of information about best practices. With the development of a national coffee registry, her team envisions the coffee farmers and other stakeholders as having a deliberate and scientific approach to growing coffee with the knowledge of the best areas for propagation and the quality and consistency of coffee products, both helpful in improving existing varieties and cultivating new ones.