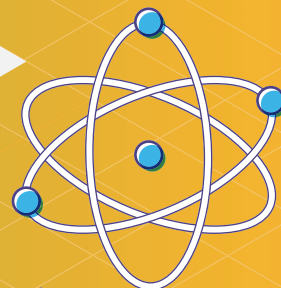
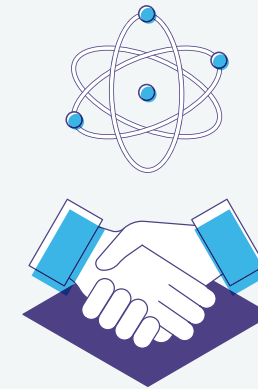


Science Beyond Borders

The partnerships of the
Newton Agham Fund





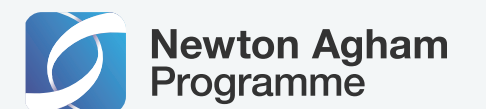
Science Beyond Borders

The partnerships of the
Newton Agham Fund

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Foreword



It has been an immense privilege to be involved with the Newton Fund at the British Council, and I am pleased to introduce this anthology of reflections on the scientific work shared between the UK and the Philippines.

The Newton Fund was a significant investment from the UK Government in bilateral partnerships in science and technology, working in 18 countries over seven years. The British Council managed over £90M of activity for the Department of Business, Energy, and Industrial Strategy from 2014-2023 in all 18 partner country settings. In the Philippines in particular, the British Council partnered with two government level funding bodies to jointly fund and support 28 Filipino and 39 UK institutions. Activities included capacity strengthening and networking workshops for early career academics, which involved 372 participants; support for PhD student mobility, with 27 scholarships and five travel grants; and a substantial number of research grants in multiple fields, with 21 projects engaging 210 researchers and 73 non-academic research organisations.

This has created significant opportunities for researchers in the UK and the Philippines, creating support mechanisms and building networks that lead to long lasting interactions. This has enormous benefits not only for the partners involved, but also the wider global science community. As we are increasingly able to internationalise science into a worldwide collaboration, we make it more representative, more diverse, and more accessible. We will not be able to solve borderless global challenges such as climate risk or global health as single countries or regions, nor will we be able to achieve the Sustainable Development Goals set in 2015 without true equitable partnerships. The Newton Fund, through its emphasis on co-design and co-ownership of projects and outputs, made significant progress in this direction. There is still a long way to go, but this is a significant first step.

Jen Hiller Bardsley, PhD

Global Head of Science
British Council

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Introduction

Just as Isaac Newton's work built the foundations of modern physics, investments in science, technology, and innovation are indispensable for ensuring shared peace and prosperity at a global scale.

Neither is possible without going beyond the limits of one's understanding—or beyond the limits of one's borders, whether geographic, institutional, or disciplinary.

This is the spirit behind the Newton Agham Programme, an nine-year partnership between the UK Government through the British Council, and the Government of the Philippines through the Department of Science and Technology (DOST) and the Commission on Higher Education (CHED).



As the Newton Agham journey draws to a close, this anthology of essays explores UK-Philippine scientific partnerships from the perspective of Filipino and British researchers at the frontlines of implementation. We cover stories across the six Newton priority areas, namely (i) health and life sciences; (ii) environmental resilience; (iii) energy security; (iv) future cities; (v) agritech; and (vi) digital, innovation and creativity, all of which were delivered through the four modalities of PhD scholarships, institutional links, researcher links workshops, and travel grants.

The next four sections attempt to show the human experiences and connections behind the science.

We begin with reflections from Dr Justine Perry T. Domingo and Dr Sherdon Niño Y. Uy, both DOST-Newton PhD scholars. Their innovative work on river sedimentation and offshore wind energy at the University of Glasgow and Birmingham City University notwithstanding, it is the personal transformations and paradigm shifts from their journeys in the UK that made the difference as they continue to tackle global challenges. This section also puts a spotlight on some of the many offshoot initiatives from Newton Agham-funded projects. These are the highly influential Newton Tech4Dev, the joint Miriam College and Goldsmiths, University of London Master of Arts TNE programme in Designing Education, and a startup company for mango waste processing that emerged from the work of the University of San Carlos and Coventry University.

The next section highlights how Newton Agham has contributed to developing Filipino talent and careers while expanding the reach of British science and innovation. Prof. Evelyn Taboada shares how she and her colleagues at the University of San Carlos have leveraged partnerships to support the Philippines' clean energy transition, particularly in far-flung island communities. A major product of these partnerships is the nurturing of early-career scholars and researchers forming the next generation of Filipino scientists. The Newton Agham and CHED partnership has also contributed to preparing STEM (science, technology, engineering, and maths) senior high school teachers in implementing a once-in-a-generation policy reform in the Philippine K to 12 education.



Collaboration between Philippine and UK institutions translates to global yet grounded approaches to real-world problems. Prof. Sarah Cardey of the University of Reading recounts her experiences working with the Aurora State College of Technology (ASCOT) to develop creative solutions to climate issues affecting indigenous farmers and fisherfolk. Prof. Aleyla de Cadiz and her colleagues at the University of the Philippines Mindanao have been popularising bioinformatics tools in the island-region, in partnership with the London School of Hygiene and Tropical Medicine and the Philippine Genome Center in Mindanao. Prof. Leah Punongbayan-de la Rosa and her team at the University of Santo Tomas collaborated with the University of Reading to conduct eco-social asset mapping exercises with vulnerable neighbourhoods in the city of Sta. Rosa, Laguna. All initiatives were informed by basic principles and aspirations of gender equality, geographic and ethnolinguistic diversity, and social inclusion, which are built into the very design of the Newton Agham Programme.

The fourth section features an overview of the benefits of investing in UK-Philippine science partnerships from Dr Leah J. Buendia, DOST Undersecretary for Research and Development. The Philippines has designated the UK as one of twenty priority countries for science and technology cooperation, acknowledging the Newton Agham experience as a best practice for healthy bilateral engagement in terms of co-design, co-financing, and co-implementation.

This was made possible through the work of the British Council, which has been at the forefront of creative engagement in arts, culture, education, and—now with Newton Agham—science partnerships since its creation in 1934. While the British Council is not the only Newton Fund delivery partner, it is the only UK institution with a local presence in the Philippines, having worked in the country since 1978. The release of this anthology coincides with the 45th anniversary of the British Council in the Philippines and is one of the highlights of a year-long celebration of the British Council's work in Education, Arts, English and Exams.

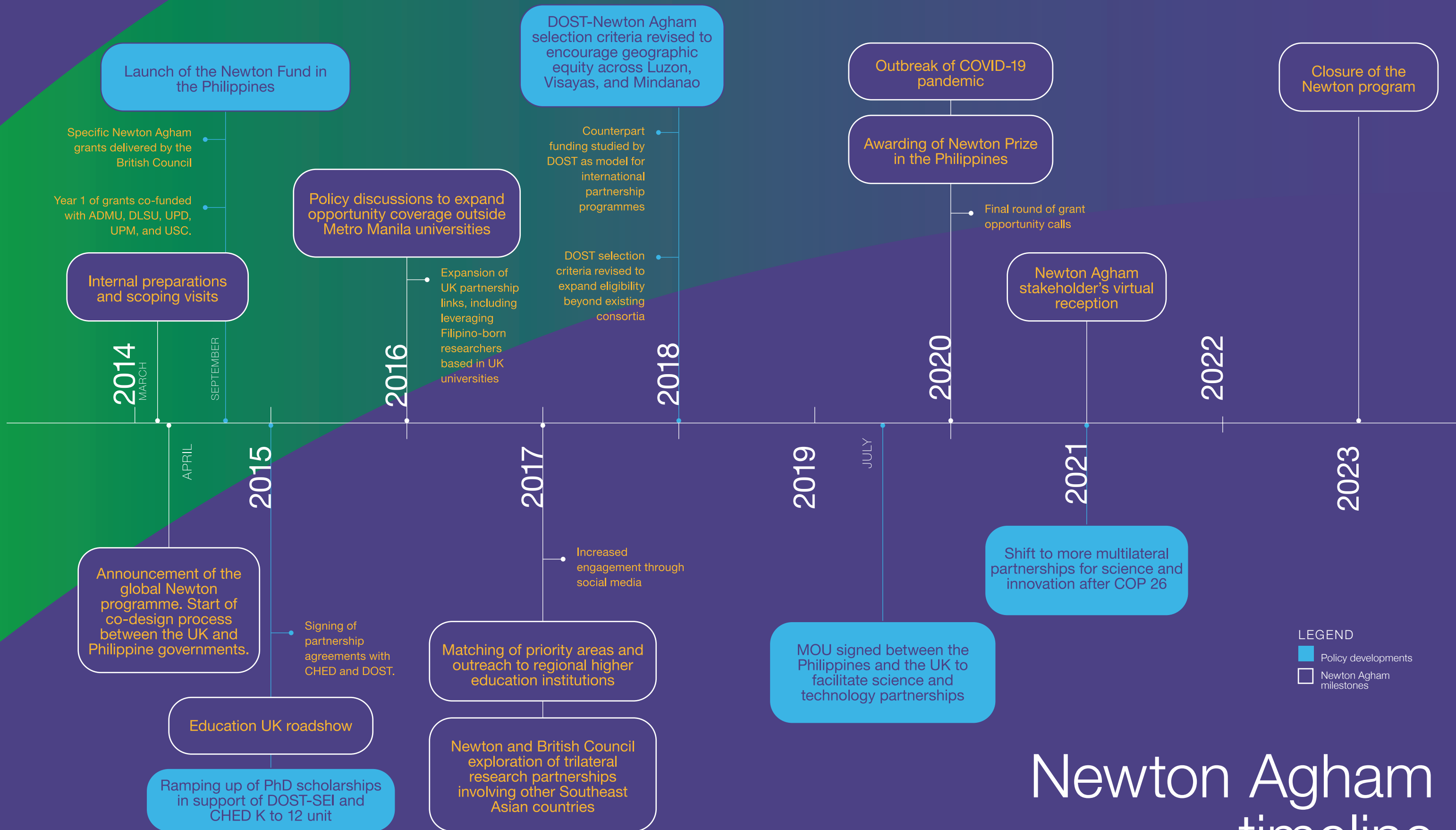
The final pages of the volume feature the master list of projects supported by Newton Agham spanning nine years of support covering 28 Filipino and 39 UK institutions. Taken together, these offerings surface a tapestry of vibrant intellectual and relational linkages that were nurtured through the Programme's journey from 2014 to 2023, in the face of major policy shifts in the Philippines and the UK, as well as the global effects of the COVID-19 crisis. And this is only the beginning. As Newton himself famously remarked, "if I have seen further it is by standing on the shoulders of giants."¹ Just as Newton Agham builds on the work of all the Filipino and British scientists and researchers who have come before, we hope that these partnerships will catalyse the next wave of UK-Philippine scientific innovation, for the benefit of the communities we come from and continue to serve.

To everyone involved in the Newton Agham Programme: *padayon*. Onward and upward.

Maria Carmen (Ica) Fernandez

Lead editor
DOST-Newton PhD scholar, University of Cambridge

¹ Letter to Robert Hooke (5 Feb 1675-6). In H. W. Turnbull (ed.), *The Correspondence of Isaac Newton*, 1, 1661-1675 (1959), Vol. 1, 416.



Newton Agham timeline

Newton in numbers

FIGURE 1
Number of grants and recipients

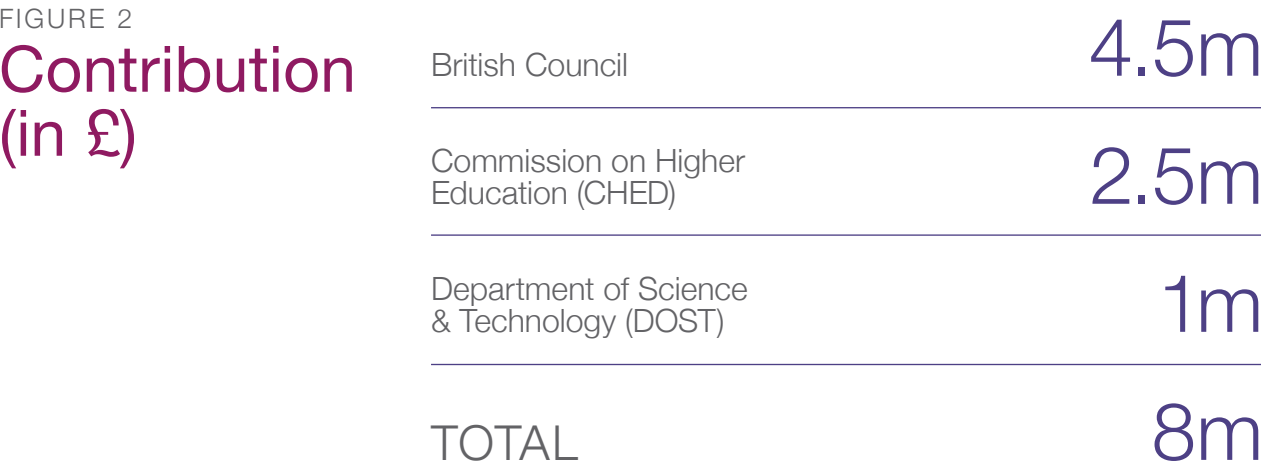
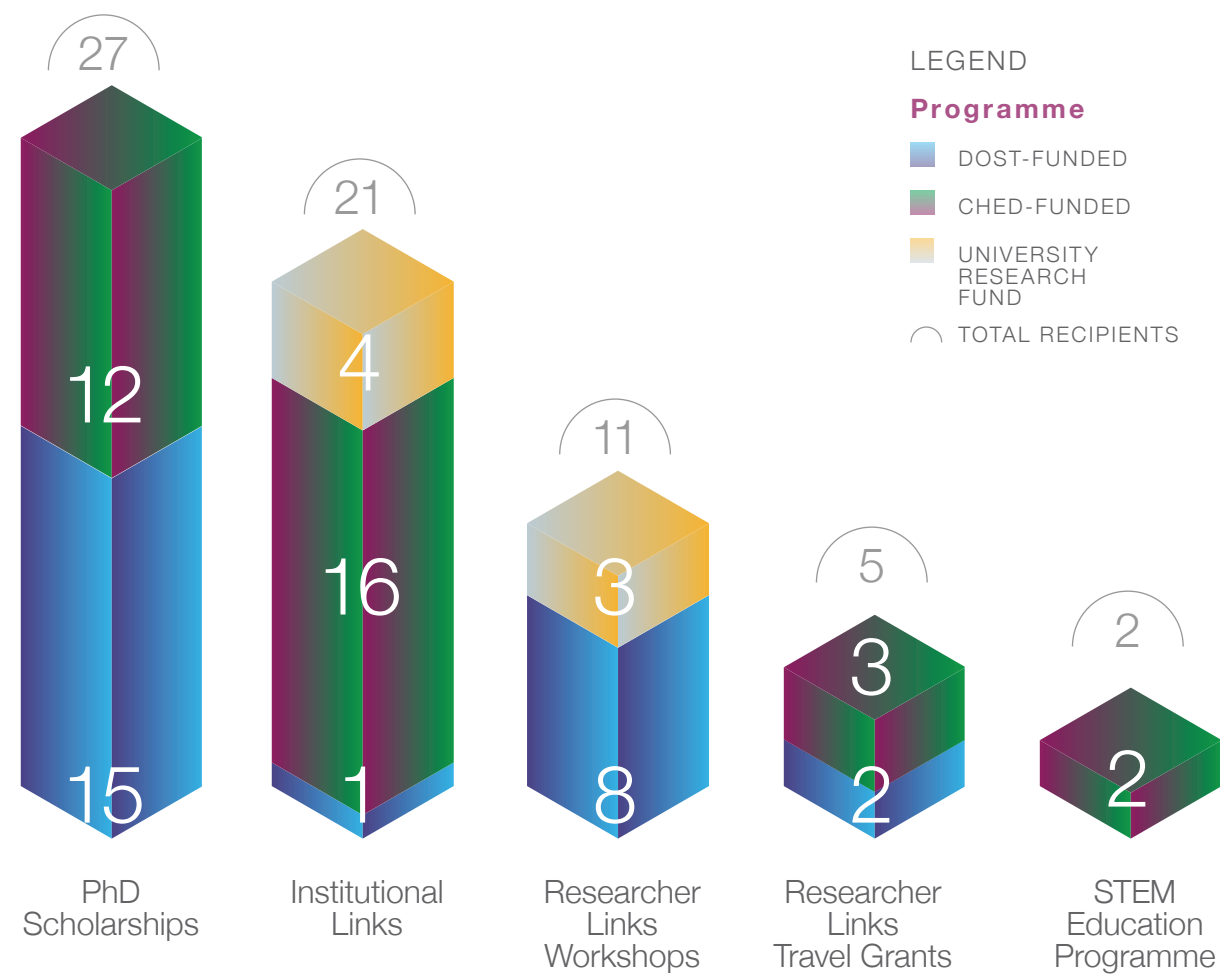


FIGURE 3
Priority Areas

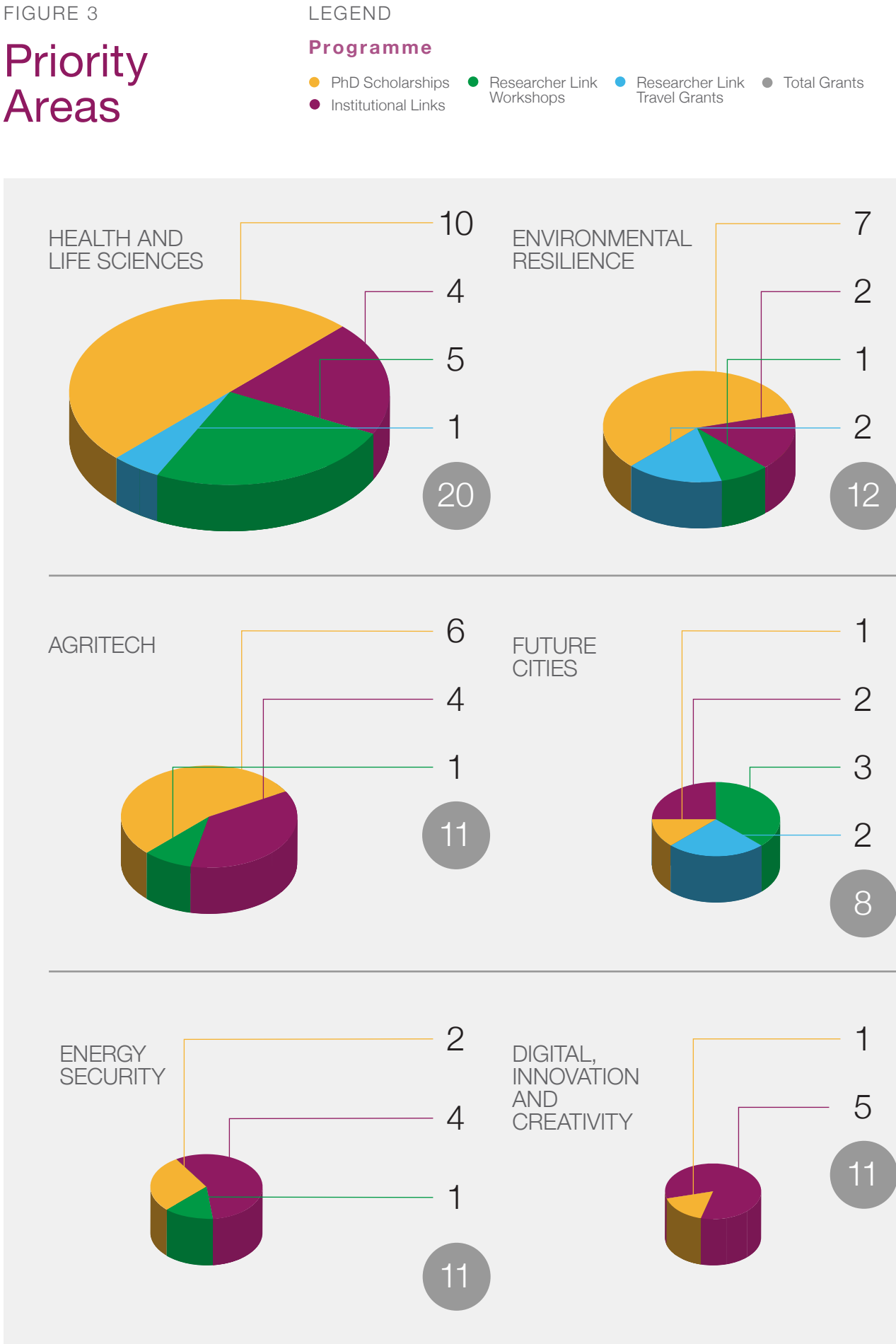


FIGURE 4

Number of grants and recipients

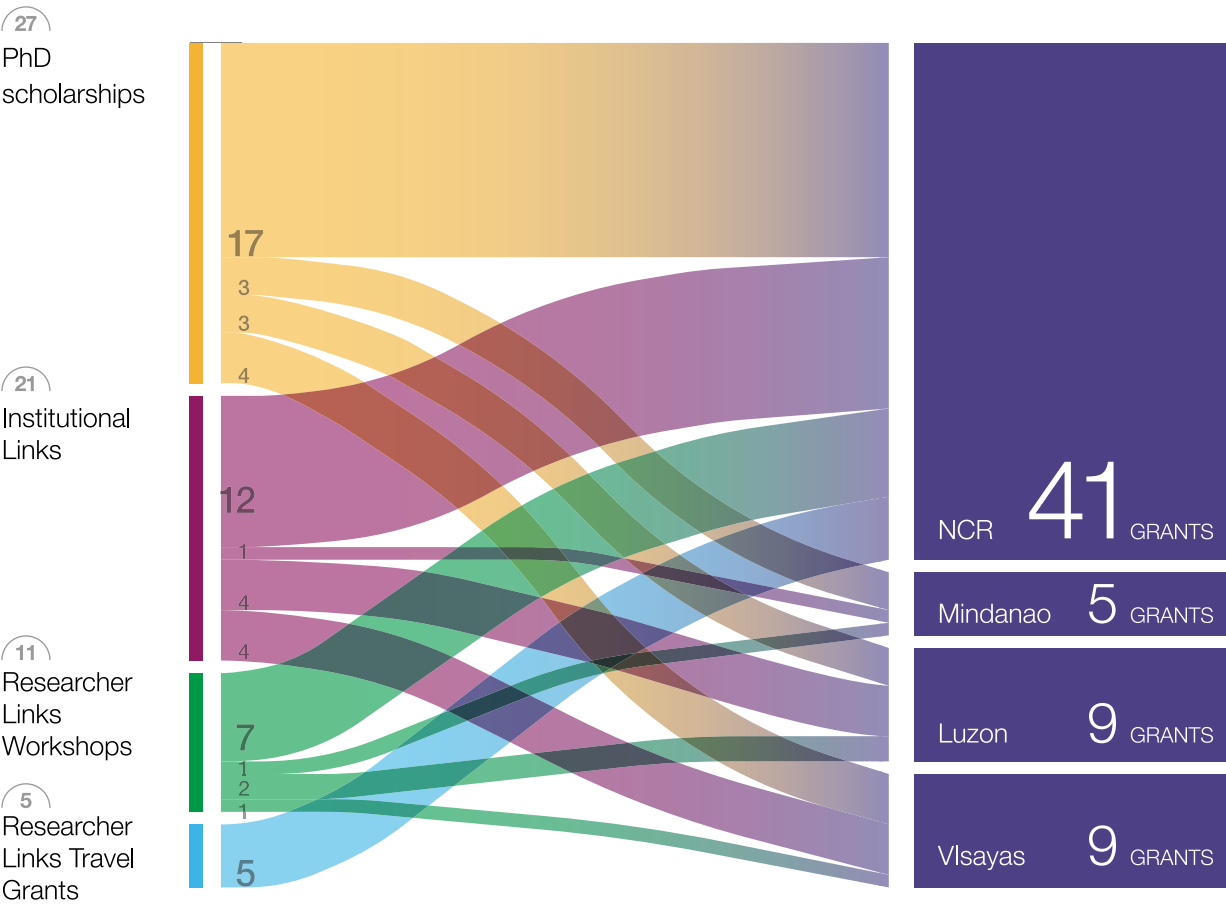
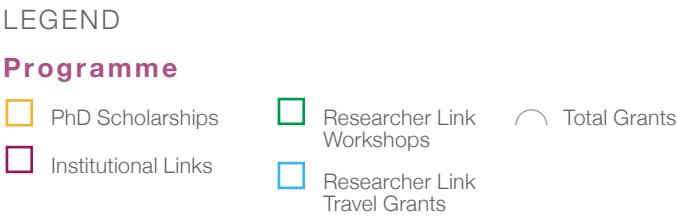


FIGURE 5

UK Universities



Tackling global perspectives

Perspectives: UK-Philippine research partnerships from three points of view

Justine Perry T. Domingo, PhD

DOST-Newton Agham PhD Scholar,
The University of Edinburgh
Research Fellow / Consultant,
Environment Monitoring Laboratory

“

*Whits fur ye'll no go by ye.
(What's for you will not go by you.)*

I have always been a believer that if something is meant to be, then it will be. This Scottish expression perfectly captured how I felt when I found out I was one of the recipients of the DOST-Newton PhD scholarship in 2017.

Looking back, it also perfectly captures how fortunate I have been to journey with DOST and Newton Agham not only as a scholar, but also as a government research fellow. I also had the pleasure to witness my wife's experiences as a fellow scholar, and see a fresh perspective as an observer in her journey.

From these perspectives, I was able to immerse the different dimensions that the Newton Agham Programme had made possible: the idea-sharing culture, the strong international partnerships, and the limitless opportunities that await us all.

Justine's work before becoming a PhD scholar

- Researcher and Consultant
- Environmental and water resource studies

Inspiration to pursue further education

- Seeing the need for support on water resource research
- Lack of studies on sediments that are potential carriers of toxic elements in rivers

As a Newton Agham PhD scholar

My involvement in projects for environmental and water resource studies in the country made me realise the seriousness of the issues associated with erosion, sedimentation and their relationship to water quality. For me, getting a PhD scholarship under Newton Agham programme was the sign that I was meant to carry out this research.

Up to this point, I had neither been to the UK nor personally met the international experts in my field. When I finally began my studies and met experts Dr. Mikaël Attal (France), Prof. Simon Mudd (USA), and Prof. Bryne Ngwenya (Malawi) for the first time, they told me I was the first Filipino they had ever met despite many years of living in Edinburgh. This came as a surprise. That remark reinforced my resolve to be a good ambassador, to help Philippine and UK institutions work on mutually beneficial interests.

I vividly remember the first academic meeting I attended at the University of Edinburgh. It was a joint seminar between the Land Surface Dynamics and the Glaciology research groups. And as I sat in the round-table meeting surrounded by European and American scientists, it finally dawned on me that I was really in the UK—on the other side of the world—to do this PhD. It made me realise the importance of my work, and I was more than determined to make the most out of my experience.



Traversing streams affected by siltation (indicated by reddish-brown colour) in the study area (Photo taken in April 2018 in Zambales, Philippines)

Justine's PhD Research: "Spatial and temporal variations in the sediment fluxes and metal contamination in nickel mining-impacted catchments"

My PhD project examined the behaviour of fine sediments in a river system affected by nickel mining in the Philippines. This is essential to help mitigate siltation, or the excessive deposition of fine sediment that is prevalent in mining-impacted areas. None of my supervisors had been to the Philippines before, and had limited experience with mining-related research in general. Hence, it was crucial to gain a shared understanding of the rationale and goals of the study.

Initially, they thought that the study was ambitious and akin to a large-scale government programme with multi-year funding. The logistical challenge was highlighted during the confirmation panel meeting (equivalent to a thesis proposal defence) where the reviewers remarked that I was "to be commended on [my] approach to a very difficult topic with multiple constraints, not made easier by the fact that [my] project field work is based on the other side of the world."

Fortunately, we were able to cover the fieldwork expenses and laboratory analysis fees using the research fund from the scholarship and additional grants from the university. It was also helpful to conduct the first fieldwork with Mikaël as it allowed us to formulate a practical sampling approach and contingency plan.

A big factor in the success of our field campaign was how we were able to nurture good relationships with stakeholders, specifically the host communities, mining companies, local government units, and Philippine universities. Doing the study would have been tremendously challenging without their assistance. New academic partnerships were also formed in the process. My PhD supervisor returned to the Philippines in 2019 as a visiting professor at UP Diliman after linking him with my MSc advisor and mentor Prof. Carlos Primo David.

Funded by the Global Change Research Institute and the Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD), Mikaël gave lectures in the Environmental Geology and Geochemistry courses and outlined ideas for a large grant proposal between UK and Philippine research groups.

My viva voce (the UK version of the thesis defence) turned out to be one of the high points of my doctoral journey. It was a highly engaging academic discourse with experts in my fields of study, validating the body of work achieved by the PhD project. At a personal level, knowing that my supervisors are proud of what I have achieved has inspired me to keep moving forward as an early career scientist.

As a research fellow in a government institution

I returned to the Philippines in December 2020 when international travel restrictions due to the COVID-19 pandemic started to ease. At this point, universities transitioned to remote work, allowing me to finish and hand in my thesis online.

A significant part of my re-entry plan after the PhD was to continue a research-intensive placement and further strengthen partnerships between the UK and the Philippines. An excellent opportunity presented itself in the form of the DOST Science and Technology (S&T) Fellows Programme. I was fortunate to be selected for the S&T Fellow II position at the Philippine Nuclear Research Institute (DOST-PNRI), which officially began a day before my viva voce in December 2021.

Justine's Role as an S&T Fellow at DOST-PNRI

Allied researcher in Philippines Remediation of Mine Tailings (PROMT) UK-Philippines joint project funded by DOST-PCIEERD and the UK Research and Innovation-Natural Environment Research Council (UKRI-NERC) under the Sustainable Mineral Resources in the Philippines Programme, led by Prof. Carlo Arcilla of DOST-PNRI and Prof. Gawen Jenkin of the University of Leicester.

Project PROMT aims to produce interdisciplinary innovations for the management, remediation, and rehabilitation of mine tailings. Beyond the technical side of things, the project also has a strong social component, conducting stakeholder engagement workshops with indigenous people and local communities.

My new role allowed me to expand my network and develop synergies with the public and private sectors in the Philippines and the UK. Currently, I am collaborating with scientists from the British Geological Survey on side projects related to my PhD and Project PROMT. I was also able to make the most out of the good research relationships that I have built while studying in the UK, connecting with colleagues from universities worldwide such as Brown University in the United States and the National University of Singapore. The Newton Agham Programme helped me foster these relationships and I am glad that I am able to work with them even beyond my time in the UK.



Water and sediment sampling at one of the monitoring sites
(Photo taken in July 2018 in Zambales, Philippines)

After a year of working on the project, learning new skills, and seeing rivers through the lens of her UK colleagues, Pammie realised the worth of pursuing higher education in this field of study. Her good working relationships with project partners gave her the confidence to take on a doctoral degree. This led her to join the final batch of DOST-Newton PhD Scholars in 2020 with Richard as one of her PhD supervisors.

Pammie's work on the project continues, along with other opportunities to help shape Philippine river management policy. She says that seeing how project outputs can result in policy and behavioural change felt like a sneak peek of what could happen when we do science with rigour. I am more than happy to have witnessed her journey, something that has an entirely different approach to mine.

The Newton Agham Programme has provided an outstanding avenue to forge international linkages between the UK and the Philippines, whose proverbial seeds have been sown during the PhD. Its impact in our lives as scholars cannot be overstated. It has helped us expand our networks while building transferable skills for career development. Having several platforms to communicate our research to a wide range of international audiences – from young students to renowned scientists – allowed us to gain relevant feedback that ultimately improved our body of work. As a researcher, I would like to be able to use science for the betterment of the public and hopefully can empower others to do the same.

The Study

Catchment Susceptibility to Hydrometeorological Events: Sediment flux and geomorphic change as drivers of flood risk in the Philippines

Aimed to make an impact on river management in the Philippines
Awarded with joint funding by NERC-UK and DOST-PCIEERD

Pammie Tolentino
Philippine Supervising Research Specialist

Richard Williams
UK Principal Investigator

As a partner and husband of a Newton Agham PhD scholar

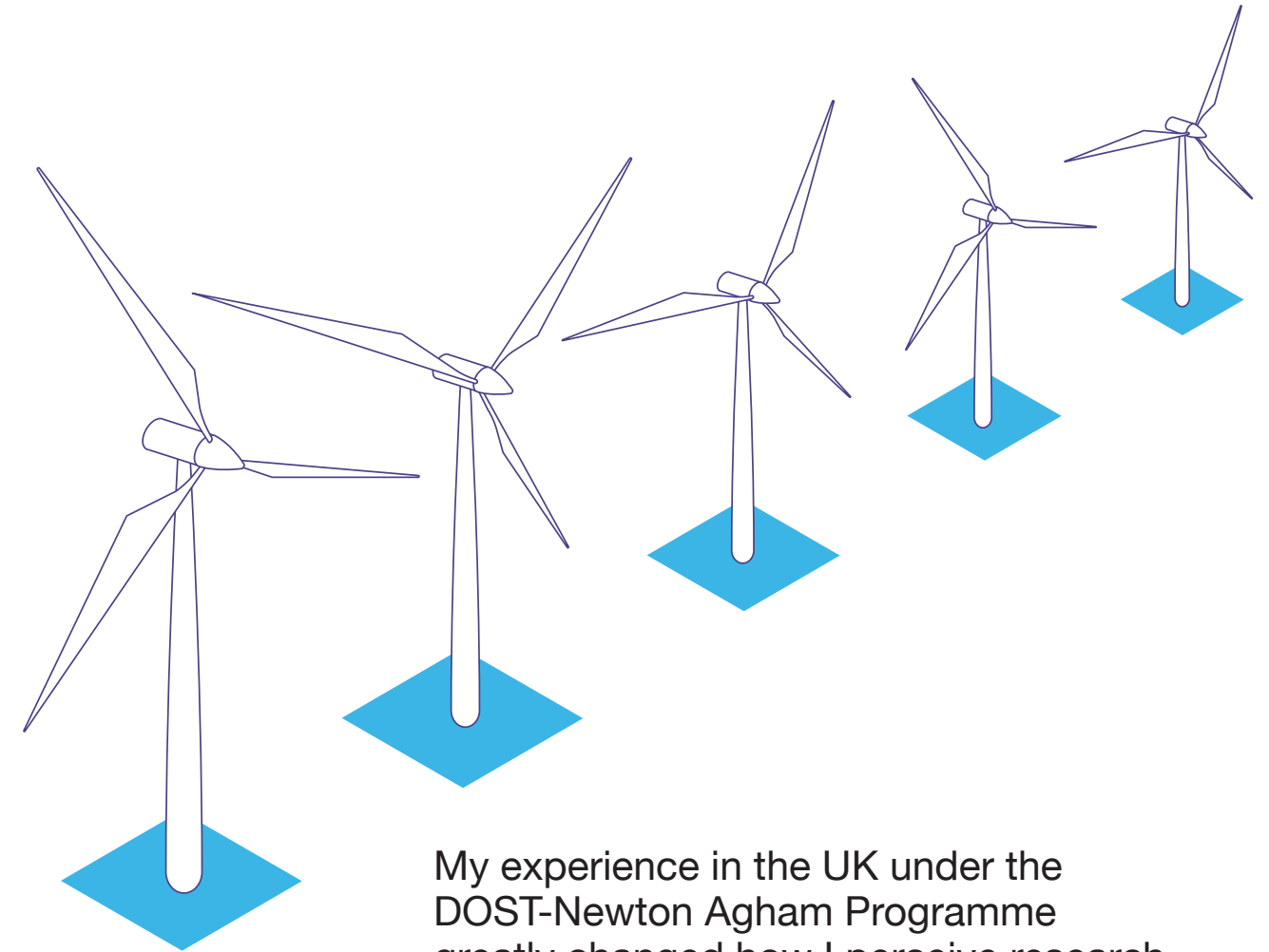
The only definite thing in a career in science is that there is no exact step-by-step instruction on how to go about life. In my case, my Newton Agham PhD Scholarship paved the way for the expansion of my academic network. As for my wife, Pammie, it worked the other way around.

My wife, Pamela Louise (Pammie) Tolentino is also a Newton Agham scholar who pursued her degree in the University of Glasgow. But unlike me who came from a different path, it was her experience as a professional researcher that paved the way for her doctoral journey in the UK. While finishing her MSc Geology programme at UP Diliman, Pammie participated in networking workshops between the UK and ASEAN countries, where she met Prof. Richard Williams from the University of Glasgow. This led to a successful proposal that eventually received funding and that Pammie had the opportunity to pursue.



Pammie doing fieldwork in the Bislak River, Vintar (Photo taken in February 2018 in Ilocos Norte, Philippines)

Going offshore to learn about offshore wind energy



My experience in the UK under the DOST-Newton Agham Programme greatly changed how I perceive research, influencing my path as a scientist and a scholar. There have been many changes in my life since. This experience continues to shape my career as I work on sustainable technology solutions in the Philippines.

It all began in 2015 when I applied for the Department of Science and Technology (DOST) Newton Agham Scholarship. My mentor Dr. Gregory Tangonan told me about it and encouraged me to seek out possible mentors in the UK. He urged me to pursue my studies and learn about offshore wind energy, seeing its importance for the future of sustainable power generation.

Since I did not know much about the UK, I sought help in finding a university that would align with my research interests. The International Relations Office of the Newton Programme connected me with Birmingham City University (BCU) where Prof. Craig Chapman and Dr. Pathmeshwaran Raju interviewed me and extended an invitation to join their Knowledge-Based Engineering (KBE) Laboratory. From the beginning, they made it clear that my skills and knowledge of atmospheric science should complement their expertise. This made me realise that being a PhD student does not necessarily mean that all the knowledge solely comes from the mentor. Both supervisor and student can bring something to the table.

Sherdon Niño Y. Uy, PhD

DOST-Newton Agham PhD Scholar,
Birmingham City University
Research Associate,
Manila Observatory

Early on, I considered getting into urban wind energy as my area of research, but little did I know that these plans would change completely. At BCU, I realised how many people coming from different backgrounds are necessary to formulate a strong research idea. It was there that I discovered the importance of networking and building relationships, and opened myself to meeting people from different backgrounds and who can offer a variety of perspectives. In fact, it was people from outside BCU who encouraged me to shift to researching offshore wind energy.

The concept of placing wind turbines offshore has been around since the 1990s, with most operations concentrated around the North Sea. It was exactly one of the topics that Dr. Tangonan wanted me to pursue and being in the UK was ideal given the concentration of academic expertise and industry players working on offshore wind technology in the country. During this time, offshore wind energy was no longer an exotic and expensive option; instead, I saw it as the practical side of the technology. After speaking with experts who showed me how applicable it could be to the Philippines, I was convinced that this was something that could be done.

Attending conferences in Germany, Taiwan, Switzerland, Sweden, Denmark, and Norway further influenced my research. My BCU mentors helped me in this new direction, acknowledging the novelty of applying offshore wind knowledge to complex weather patterns in the tropics. My colleagues in the KBE lab were also part of the work as they generously gave their time to discuss my topic and situated it in a wider context.

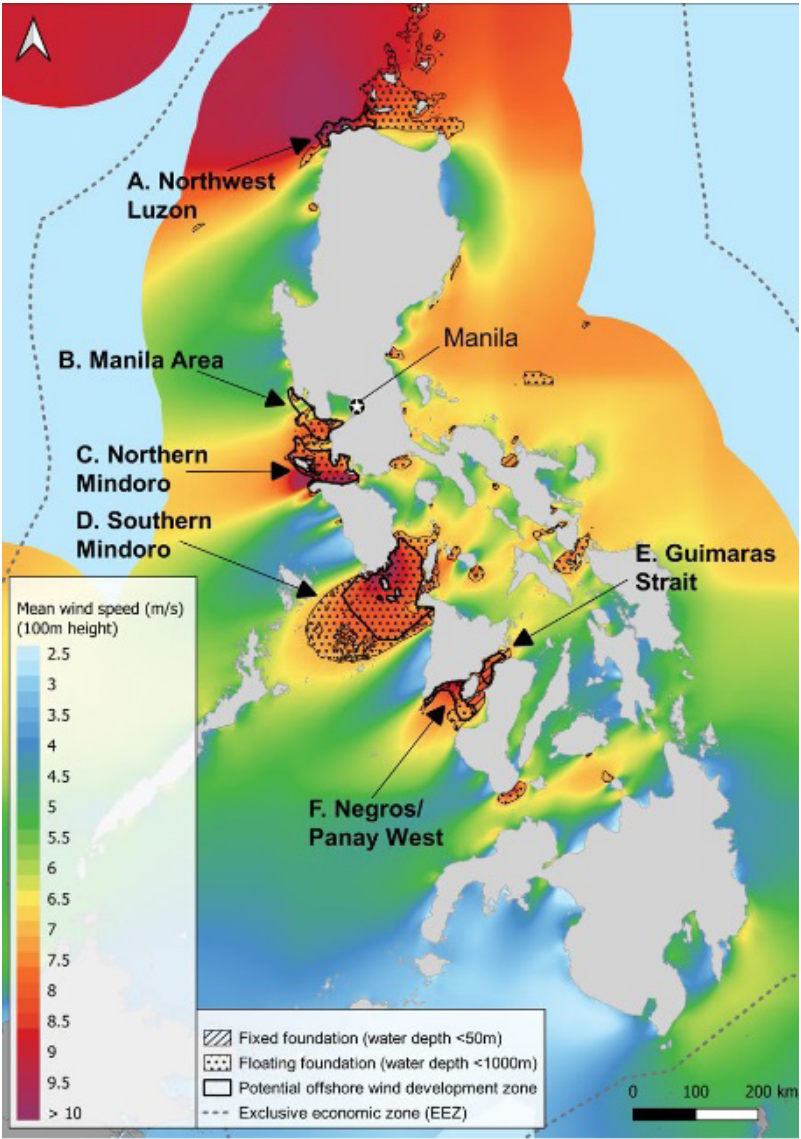
Research: Offshore Wind Farms

Determining the location for the development of offshore wind farms is challenging. Aside from the technicalities, there are also social and economic considerations. Thus, my research development had to undergo stakeholder consultations to ensure practical viability and social acceptability.

This perspective that innovation must consider all stakeholders, especially the community affected by the outcome, has been enlightening for me. It highlights how formulating scientific solutions also requires negotiation and compromise.

In the beginning, it was difficult to convey ideas to supervisors and colleagues who were coming from different research backgrounds. We had to break down assumptions and proposed solutions must account for the various perspectives of my supervisors. This in-depth scrutiny enriched the research, forcing me to be clear and practical while considering multiple points of view.

As recently done by the World Bank Group, identifying potential offshore wind farm developments for the country must involve meticulous study and factor in many criteria to produce meaningful offshore wind maps. Offshore wind has great potential as an energy source; however, it is necessary to carefully study possible areas for development given the rich and diverse marine ecosystem of the Philippines. Aside from those considerations, the current economic activity at sea must be carefully considered, alongside the invaluable input of local communities.



Source: World Bank Group and ESMAP, BVG Associates²

After finishing my PhD, I understood that I had to go beyond the technical aspects of a problem and must consider multiple ideas from various disciplines in finding the most effective answers.

While I now pursue different research topics in atmospheric science at the Manila Observatory, I tend to implement the same process I followed while working on offshore wind research—seeking inputs from diverse experts, consulting stakeholders, and ensuring that I see multiple perspectives before I move forward with my project.

Looking back, I honed the most important skills when I was a Newton Agham PhD scholar: learning how to network, being open to ideas, and continuously seeking out learning from others. It was a very positive shift that I am thankful for.

² World Bank, 2022. Offshore Wind Roadmap for the Philippines. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO <https://documents1.worldbank.org/curated/en/099225004192234223/pdf/P1750040b777da0c30935a0e2aa346f4e26.pdf>

Newton offshoot projects

The Newton Agham Fund supported multiple spin-off activities to ensure sustained impact on communities, institutions, and systems even after the original projects were completed.

Newton Tech4Dev Network

Newton Tech4Dev is an offshoot of a 2015 Institutional Links project between the University of Leicester and the De La Salle University to apply evidence-based knowledge in developing information and communication technology (ICT)-enabled participatory solutions in disaster response.

A consortium was created to develop policy recommendations and enhance stakeholder capacity in using ICT for government, humanitarian, and private sector disaster response models. The consortium later conducted developmental digital research on disaster readiness in the wake of Super Typhoon Haiyan (Yolanda), as well as digital engagement with communities affected by armed conflict. In 2017, they published 'Architects of Networked Disinformation', a ground breaking report on the fake news ecosystem in the Philippines.



MA Designing Education (Transnational Education)

A 2017 Institutional Links collaboration between Goldsmiths, University of London and Miriam College supported the development of a dual-degree transnational education (TNE) programme that explored relationships between critical design thinking and critical pedagogy to uncover new areas for learning and teaching practice. The Master of Arts in Designing Education was the first of its kind when it was offered to the Philippines in 2018. It has since produced 10 graduates to date with support from the Commission on Higher Education's international scholarships.

Wireless sensor networks for waste processing

In 2014, the University of San Carlos (USC) partnered with Coventry University to work on the use of wireless sensor networks (WSN) for agriculture. By using WSN technology, it supported the viability of a USC-founded startup company that converts mango waste to high-value products such as gluten-free flour, polyphenols, and pectin. The use of WSN technology helped the startup optimise waste drying, made the use of solar energy more efficient, and minimised health hazards to facility workers.

Developing talents and careers

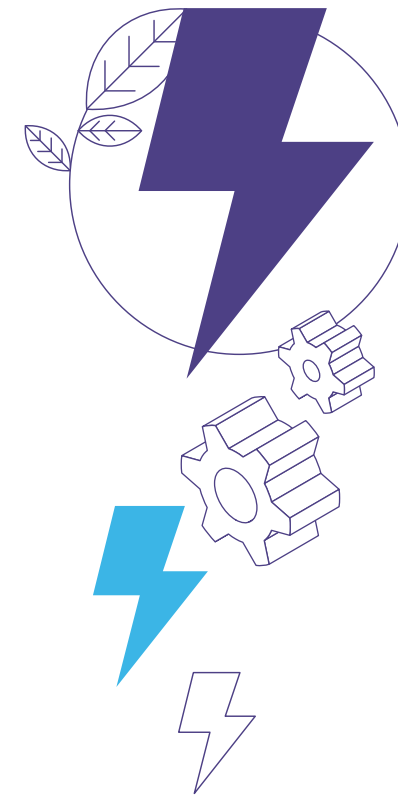


ARTICLE
03

Shaping the future of clean and just energy transitions in the Philippines through the Newton Agham Fund

Evelyn B. Taboada, PhD, LLM

Former Dean and Professor,
School of Engineering, University of San Carlos
Institutional Links Grantee (with the University of Coventry)
and Researcher Links Workshops Grantee (with the University of Southampton)



The Philippines has renewed its commitment to undertake a clean and just energy transition for a brighter future. This is enshrined in key policy documents such as AmBisyon Natin 2040, a collective long-term vision for the Philippines' development across 25 years, and its sectoral equivalent, the Philippine National Renewable Energy Plan 2020-2040. Through the Newton Agham Fund implemented by the British Council, opportunities were made available for Philippine energy researchers and institutions to move forward on this agenda. This is one of Newton Agham's six priority areas, namely, improving energy security: reducing carbon emissions by improving energy efficiency and provision of renewable energy.

In this section, we share our experiences of the catalytic collaboration between University of San Carlos (USC) and UK partner universities University of Southampton and Coventry University, all of whom have been leading efforts in their respective fields. USC has developed extensive knowledge in renewable energy systems for local applications, whereas University of Southampton is a pioneer in sustainable energy research. Coventry University, on the other hand, leads in pervasive computing systems, which refers to the Internet of Things, or the use of (wireless) sensors and microprocessors in various systems.

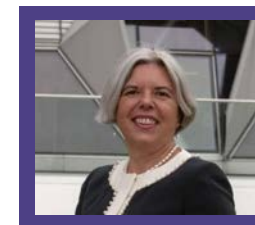
This allows everyday devices to constantly collect, process, and communicate data through the internet. The support of several Newton Agham grants enabled interdisciplinary collaboration that benefits the socio-economic climate of the Philippines, while also producing innovation within these fields. At the same time, Filipino scientist-engineers were enabled to pursue PhD-level training on clean energy, in the hopes of advancing energy security in the Philippines.

Clean Energy Initiatives supported by Newton Agham

- A 2014 Institutional Links project run by USC and Coventry University entitled PULP-SEED (Philippines UK coLLaborative Partnership-System for Environmental and Efficient Drying). The project made use of Wireless Sensor Network (WSN) technology to improve and optimise existing mango waste processing; thus improving viability and increasing the scale of operation. The outcome led to better mango waste processing, job creation, and increased social wealth in disadvantaged communities in the local region. A secondary goal was to inspire Filipino industry players to make greater use of local academic institutions for technological innovation. This Institutional Links project led one of USC's engineering faculty, Gene Fe P. Palencia, to pursue a PhD on wireless sensor networks for cleaner energy with Prof. Elena Gaura of Coventry University under a DOST-Newton Agham grant in 2015. Gene's work used household data from a remote village in Cebu whose residents survived Super Typhoon Haiyan (Yolanda) in 2013. The village is powered by a solar power system microgrid built by the Philippine Red Cross and its partners.
- USC also received a Research Links workshops grant with the University of Southampton to host a catalytic workshop-conference on Renewable Energy, Energy Efficiency, and Energy Storage Systems towards a Sustainable Energy Ecosystem for Urban, Rural, and Island Microgrids of the Philippines. This led to the first Sustainable Energy Ecosystems Conference (SEECON) jointly hosted by USC and UoS in 2016, which has since been held annually except during the height of the COVID-19 pandemic.
- With the Southampton team led by Prof. AbuBakr Bahaj, USC explored future work on the integration of renewables, improving energy efficiency through the use of hybrid AC/DC grids, and appropriate use of energy storage, all of which are needed to develop a Sustainable Energy Ecosystem for clean and renewable energy in identified cluster communities and in other developing countries. These efforts evolved into USC's establishment of a Center for Research in Energy Systems and Technologies (CREST), which houses all renewable energy research endeavors, projects, programmes, and activities at the School of Engineering.
- The two previous grants prepared USC to implement another Institutional Links grant in 2017, this time with the University of Southampton, which resulted in many Filipino engineers being trained to conduct research and develop projects towards clean energy transition in both urban and rural communities.
- In 2018, Stephen S. Doliente of UP Los Baños and visiting lecturer at USC CREST was awarded a CHED-Newton Agham PhD scholarship at the University of Bath. His PhD focused on the development and application of whole-systems, optimisation, and data-driven approaches to biomass value chains and the environment-food-energy-water nexus in the Philippines. To date, this is the first large-scale and comprehensive study of resource-efficient and sustainable implementation of Philippine biomass systems.

By facilitating collaboration amongst research groups, the Newton Agham grants have allowed Filipino and UK researchers to share knowledge and expertise, hone capabilities, and soar higher towards more impactful research and education endeavors.

One of the University of San Carlos's strategic goals is for the university to be "socially responsible" and conscious of the needs of the local, national, and global communities in a rapidly changing world. I think it is fair to say that the Newton Agham projects align with that institutional goal, along with our sector's guiding UN Sustainable Development Goal 7 of ensuring affordable and clean energy for all. At the national level, these concrete demonstrative examples are designed towards achieving the Philippine national targets of 100% household electrification, 50% renewable energy mix in power generation by 2040, and to contribute to net-zero greenhouse gas (GHG) emissions.

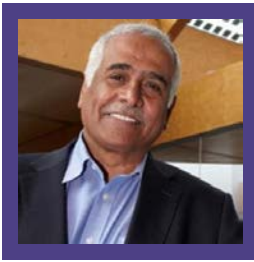


Prof. Elena Gaura

Professor of Pervasive Computing, FWES
Coventry University, UK

When it comes to collaborative projects, the best outcomes emerge when the research colleagues share the same values, aspirations and motivations in carrying out the work. It is essential that the goals for the research overall have to do with “doing good” one way or another—they have to be profound goals in order to warrant the difficulties that come in the way for researchers in multinational, multi-cultural teams, across vast geographies.

When brought together around sound, robust and aligned goals, relationships that form between researchers are long lasting and so are the outcomes and impacts of the funded work. Sometimes, the “additional” and unforeseen outcomes are just as important as the ones stated in the funding applications—continuing to learn from each other and help each other upon the grant ending for example is of tremendous value. Patience, understanding, preparedness, fairness, clarity, and respect are all traits that must be present in any international research collaboration relationship. They sound common, but they need to be lived all along the projects and beyond them.



Professor AbuBakr S. Bahaj, PhD, FICE, FIET, FRSA

Professor of Sustainable Energy
Head, Energy and Climate Change Division, University of Southampton

Both the UK and the Philippines are committed to global climate goals and the response to these through low carbon sustainable technologies and processes. It is with this in mind that we made an application to the CHED Newton Institutional Links. The awarded grant enabled the Energy and Climate Change Division (ECCD) at the University of Southampton, UK to work with the Centre for Research in Energy Systems and Technologies (CREST) at the University of San Carlos in two key thematic areas of (i) electricity access for off-grid islands and rural communities, and (ii) energy efficiency and power generation from buildings in urban areas. A range of capacity building packages were developed and delivered by ECCD covering the two themes to a cohort of ~50 Filipino researchers including academics and postgrad students between 2017 and 2019. The training encompassed the utilization of software tools, group work, workshops, laboratory observations, and field trips. Outcomes and learning from these collaborative activities had been disseminated through several stakeholder engagements in the Philippines, journal publications and at international conferences. **This CHED-Newton Fund grant entitled the Philippine-UK collaboration to address research and development embedded in the UN SDG-7. Learnings and experiences gained by the collaboration can be adapted and replicated in other countries in Southeast Asia and in the broader geographical regions.** Furthermore, the capacity development and the grant support have strengthened CREST's potential in research and further international collaborations.



Engr. Isabelo A. Rabuya, M.S.

Assistant Chair, Department of Electrical and Electronics Engineering,
University of San Carlos
CHED-Newton Institutional Links grantee with University of Southampton

The Newton Fund Institutional Links grant widened USC's horizons on energy systems research with the mentorship of the University of Southampton. It allowed USC to train its energy researchers onsite in the UK with a six-week research attachment to learn energy research tools and observed the importance of a research lab, not mainly referring to facilities and equipment, but of people led by top researchers with teams working cohesively around interrelated themes. Beyond the training, however, what was very valuable also was for the researchers to experience the research dynamics and culture of the UoS team. We saw the importance of a research lab, not mainly referring to facilities and equipment, but of people led by top researchers with teams working cohesively around interrelated themes. After the research attachment, the visits of key UoS researchers led by Prof. AbuBakr Bahaj was significant in guiding the USC team's research on energy access in off-grid areas and energy efficiency in buildings. Real-world problems take a multidisciplinary or even a transdisciplinary approach. **The grant has ended, but what it taught us remains fresh as we continue researching and engaging with stakeholders to contribute to the Philippines' energy transition.**



Engr. Arben S. Vallente, M.Eng.

Research Associate, Institutional Links with University of Southampton
Former Faculty Staff, Department of Electrical and Electronics Engineering
University of San Carlos

The BC-CHED Institutional Links Project between USC and UoS was the first research project that I worked on as a full-time research associate. **The project inspired me to do more impactful and grass-root level research that directly addresses the needs of people in vulnerable communities especially on energy access. It has also made me aware of the importance of working with faculty mentors and being part of a research team where I could successfully lead a team, analyse data, and present it in a meaningful way for both myself and the audience.**



Faculty training workshops at USC with Prof Bahaj and team.



Panel discussion during the SEECON conference with Engr Rabuya, Senator Sherwin Gatchalian, Prof Bahaj, and Dr Abundo (left to right).



Gene Fe P. Palencia, PhD

DOST-Newton Agham PhD Scholar, Coventry University

My PhD journey in the UK was an experience I will treasure for life.

I found my PhD journey both frightening and thrilling! It was frightening since I was halfway across the globe, away from home and alone. Thrilling, since I was doing something that could change my life forever.

My PhD study at Coventry University was designed for the benefit of remote communities in the Philippines. My research focuses on energy allocation for households in remote communities powered by renewable energy with limited generation capacity. This setup is typical in communities on islands where a traditional grid is impossible and financial aid to build a power system is scarce.

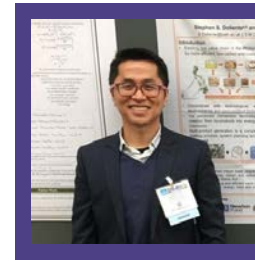
With the guidance of the supervisory team from Coventry University and my supportive home institution at the University of San Carlos, I successfully finished my PhD degree in the UK under the scholarship programme of the British Council and DOST-SEI.

I learned a lot on this journey in the technical aspect of my research interest, as well as the life lessons that could make anyone stronger to face any life trials.

I want to thank the British Council and DOST-SEI for all the support they gave during my PhD journey. Indeed, it was a once-in-a-lifetime opportunity to do a PhD in a country where you emerge in a world with different cultures and traditions, away from home, but do not feel like you are halfway across the globe.



Gene's interview with a stakeholder at the rooftop solar PV installation.

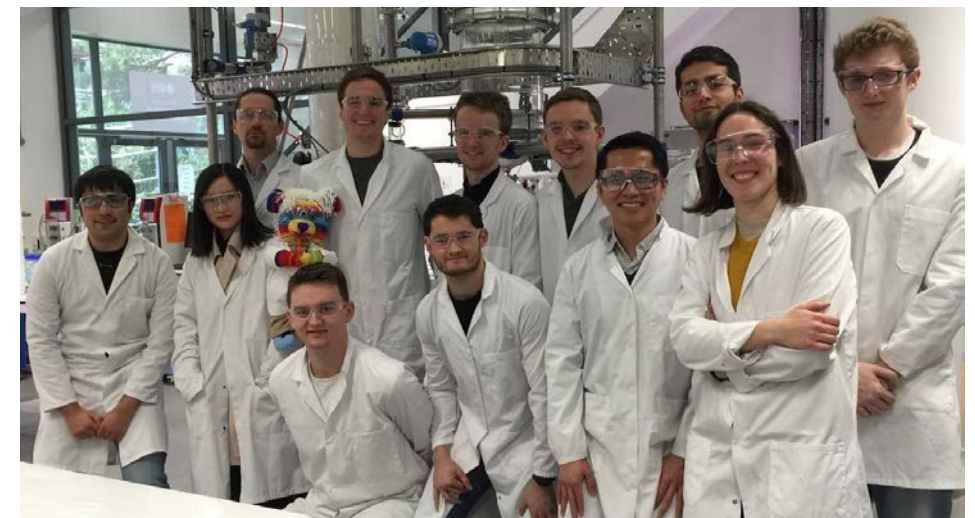


Stephen S. Doliente, PhD

CHED-Newton Agham PhD Scholar, University of Bath

I was awarded the prestigious Newton Agham PhD Scholarship for the 2018 cohort at the University of Bath. My PhD research deals with humanity's primary resources: food, energy, water, and the environment, which are becoming even more interconnected driven by ballooning world population, rise of megacities, and a warming planet.

Instead of prevalent silo-thinking, these resources have been managed as one in order to maintain the delicate balance of this nexus. However, the renewed interest and rapid utilisation of biomass in many countries as a renewable source of power, fuels, and materials threatens the nexus. Biomass cultivation requires large quantities of land, water, and energy.



Stephen among his peers in the lab at University of Bath, UK.

I would like to express my deep gratitude to CHED and the British Council for the financial support that made my dream in achieving a PhD possible. I extend my heartfelt gratitude to UK-PH diplomatic relations, which is instrumental in the success of many grantees like me. This journey made me a better researcher and academic, it made me a mature person who can give back to society in meaningful ways. It was a "PhD in Life". It was memorable and life-changing as it happened during the pandemic, which brought along many personal and societal challenges.

I thank University of Bath for providing world-class supportive student experience such as the doctoral workshops and seminars. It equipped students with technical and soft skills, access to various research resources and opportunities, activities that promote mental health and well-being, and avenues for mentoring and collaboration.

My PhD studies have broadened my network of collaborators who are based in the UK, Europe, USA, and Southeast Asia. Beyond academia, I have won friendships from many walks of life, which I treasure forever.

CHED and STEM Education for K to 12

Newton Agham supported the Philippines' once-in-a-generation educational reform initiative, the K to 12 Basic Education

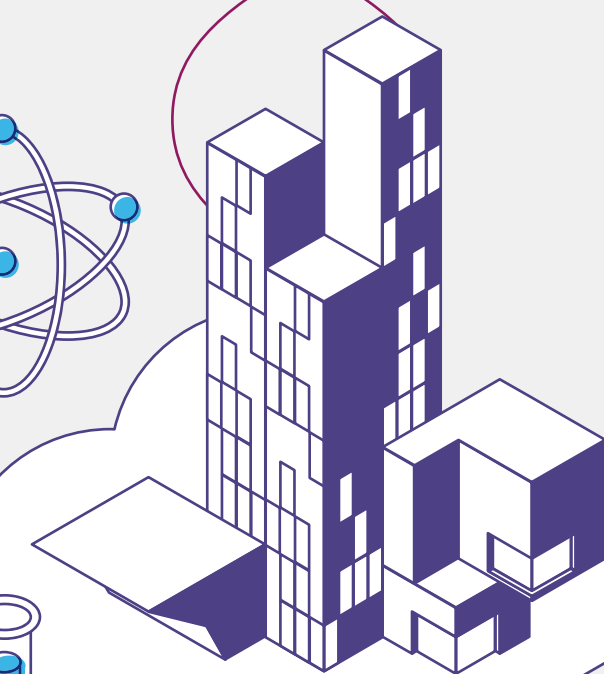
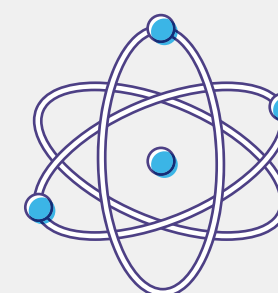
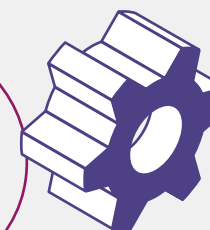
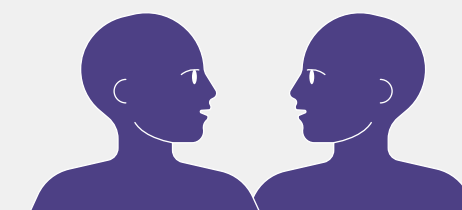
The passage of Republic Act No. 10533, or the Enhanced Basic Education Act of 2013, expanded the original 10-year Philippine pre-university process by adding two years of Senior High School (SHS), allowing Filipino learners to better prepare for the future—whether through additional academic training, technical-vocational career opportunities, creative arts, sports, or entrepreneurial activity. This meant, however, that Filipino teachers themselves had to prepare to implement these reforms.



In 2015, the British Council partnered with the Commission on Higher Education (CHED) for the STEM Education Programme, a two-year partnership to benchmark the UK's education system to help prepare incoming senior high school teachers to teach science, technology, education, and mathematics subjects. The collaboration enabled the Commission to develop a capacity-building toolkit for Higher Education Institutions (HEIs) who were designing and implementing continuous professional development (CPD) programmes to better equip STEM educators in SHS. These covered graduate study programmes, teacher training, seminars, and workshops. Consultants from Sheffield Hallam University and University of Leicester also provided feedback and insights to enhance the 21 SHS teaching guides being developed at the time.

The learning materials and training toolkit developed under the Newton Agham partnership helped CHED ensure that STEM educators throughout the Philippines were equipped with content and pedagogy in time for the K to 12 rollouts.

Working local, thinking global



ARTICLE
04

Empowerment through collaboration: Supporting capacity building for indigenous communities in Aurora, Philippines

Sarah Cardey, PhD

University of Reading
CHED-Newton Institutional Links grantee
(partnered with Aurora State College of Technology)

We cannot deny the importance of agriculture in the Philippine economy: it accounts for up to 40% of the labour force and up to 20% of the national gross domestic product.¹ While agriculture plays an important role in national food security, the sector is one of the most vulnerable when it comes to climate variability and change, and extreme weather events.

The Philippines has the dual burden of high dependence on natural resources and agriculture for economic and food security goals, as well as being one of the most disaster-prone areas globally. This poses a huge threat to different communities if not addressed.

In typhoon alleys such as the province of Aurora in northern Luzon, communities in the area are particularly vulnerable. This is not only due to the high likelihood of encountering extreme weather, but also because indigenous communities rely heavily on fishing and farming as their main source of livelihood. On top of that, social inequalities, insufficient access to agricultural support, insecure land systems and fewer adaptation resources mean that they experience the impact differently, and often, more severely.

With this in mind, our Newton Agham project focused on bridging support to the community, working with those who knew the people and the area well – Aurora State College of Technology (ASCOT). Together, we worked on possible solutions based on climate adaptation strategies in agriculture and fisheries, fusing them with indigenous knowledge and natural science technologies.

The research

Local approaches to supporting agricultural productivity and managing impacts of climate variability and change in indigenous communities in Aurora Province, Philippines

Why the University of Reading partnered with ASCOT

ASCOT has worked closely with indigenous communities in Aurora, through extensive outreach programmes to communities beyond their base in Baler. They also have a centre near Casiguran, offering training for students unable to go to their main campus.

With ASCOT's close ties with the community, the team from the University of Reading (UoR) was able to better support them through increasing research capacity, generating teaching materials to support climate change mitigation, and developing a better understanding of the community's specific challenges and concerns.

As a team, ASCOT and UoR sought a participatory approach to understanding existing climate change adaptation processes, directly working with the communities to strengthen their capabilities to meet their own needs.

¹ FAO, 2003

Phase 1: Participatory research on community experiences of climate change, livelihood, and food security

In the initial part of the project, we worked together to understand the community's experiences, their key issues, and how they access services necessary to meet the challenges posed by environmental change.

During this phase, debate was key. With ASCOT's strong relationship with the participants, we were able to refine tools to make sure they were appropriate and could be used in a realistic timeframe. We took the time to visit several communities, with ASCOT introducing the UoR team, and this helped us better understand the realities of the rural context. The project was truly a collaboration not only between universities, but among everyone involved. We obtained community consent across all five sites, discussing the project with local government officials, community leaders and residents—the most important stakeholders of this effort.

After the ASCOT team trialled and further refined the tools, we were able to run the participatory research activities in the five sites, later reviewing the results together in Aurora. It was a collaborative effort that helped us build a strong foundation for the next phases of the project.

This first phase of the project was designed to gather information about the communities, so that education and training packages that we designed were based on evidence of community needs and interests. Each time the team met, we added capacity building workshops in research design and data analysis, to build ASCOT's capacity to conduct this research in the future.

Phase 2: Film-based curriculum development using Visual Problem Appraisal



Visual Problem Appraisal (VPA) is a film-based learning tool that we used to create a unique curriculum for the project. Stakeholders on a particular issue – in this case, climate change in Aurora – are interviewed to gain their perspectives and insights into the problem. VPA is then used by educators to bring the 'field' into the classroom, letting the students meet the stakeholders and understand their complex challenges through this medium.

The narratives form the evidence for students to design projects and interventions for change. Our goal was to create a small VPA that we could use in ASCOT and UoR to teach our students and the main advantage of this methodology meant that students learned directly from the community and are guided by their context, something that can be difficult to achieve in a classroom.

Loes Witteveen, the creator of the VPA methodology, worked with ASCOT and trained them on creating and executing VPA. The team at ASCOT created the 14-interview VPA set for this project.

Phase 3: Preparation of community-relevant training packages on fisheries, crops, and agricultural production

The final part of the project focused on creating curricula for use by ASCOT in the classroom and directly with the participating communities to address the specific concerns that arose from our research.

The ASCOT team developed community-relevant training packages in fisheries, crops, and agricultural production to build community capacity to address the issue that came out of the research. The collection of these training packages forms a curriculum for training indigenous communities to increase their capacity to address climate change.



The project's impact

This project was ambitious as we are constantly collaborating across great geographical distances to work on activities that had very local significance to Aurora. Our research team from UoR had not visited the area prior to the project, which meant we needed to understand the context and livelihood issues faced by the communities quickly.

ASCOT's wealth of expertise and unique position helped us make the most out of this experience—they had excellent knowledge of the area, a strong relationship with the community, and a great understanding of the complexities and opportunities of the community. During the research, we have seen first hand how their activities were valued, as communities identified them as key resources and sources of information.

While the team from UoR had extensive research and field experience, we all gained additional understanding engaging with our colleagues at ASCOT in learning the different approaches to working with the communities, seeing their technical expertise in education. Throughout the project, they documented the activities of the participatory research using videos that demonstrated excellent practice in community engagement, making the participatory research a fun experience. I was struck even by the process of making the videos—we don't often have the opportunity to document to such an extent the process of research, so this initiative by ASCOT was really insightful for us.

Working on collaborations is great, but it's not always easy. In our case, one of the biggest challenges that we had to face was the COVID-19 pandemic, right when we were to start implementing our community training. Alongside with the training, we were also working on building an expanded network in the Philippines, and during this time were meant to work together with colleagues from the University of the Philippines Los Banos.

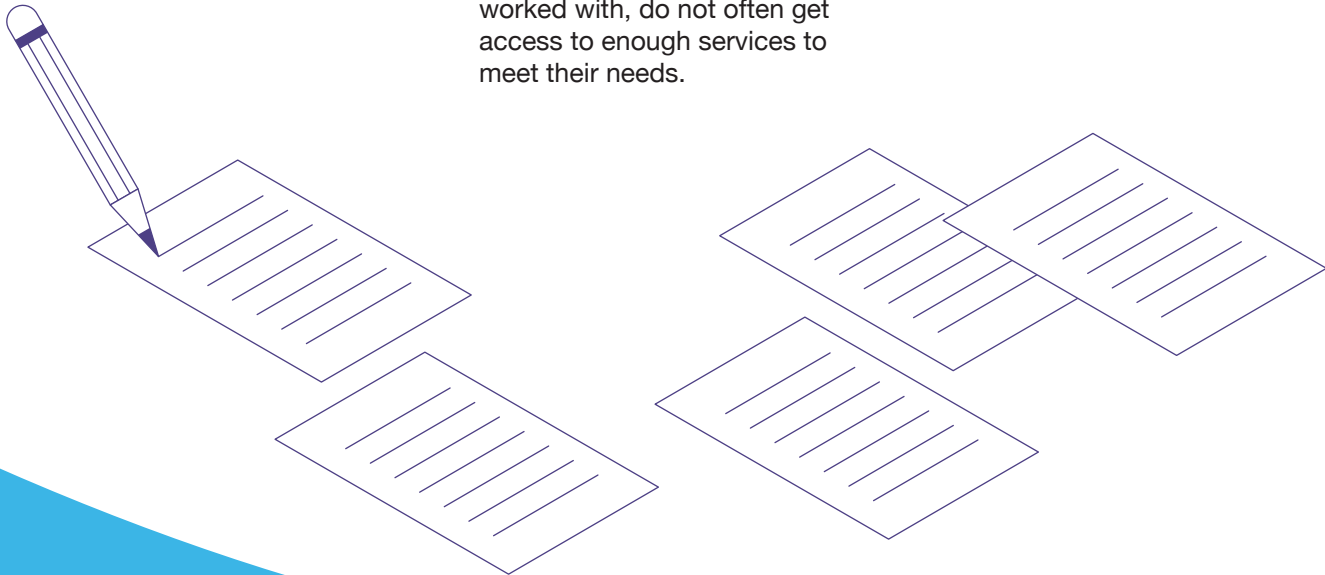
With the regional lockdowns and global travel bans, it was hard for us to move forward with our plans. Aurora's topography meant that mobile phone and internet connections could be intermittent, and with the diverse geography of our participants, it made communications all the more difficult. Our ASCOT team sped up the delivery of the training as best they could, testing the training curriculum at a remarkable speed to get it underway before they were no longer able to visit the participating communities. Throughout this ordeal, it definitely highlighted the challenges that the communities are facing in getting access that they need, as well as the difficulties faced by institutions who want to deliver their extension mandate, but often have to deliver under complicated circumstances.

Lessons learned

The process of research, reflection, and implementing capacity building activities that can then be embedded in a local institution is a lesson that I think is important to take away from this project. ASCOT has an important role to play in providing locally-relevant and contextually-driven extension and education. We could see the ripple effect of how education has an impact across an entire community.

One of the ASCOT team members introduced us to a young woman in Casiguran. She had been trained at ASCOT, and everything she learned, she then took back to her community. As a result, there had been changes in a number of areas of agricultural practice that benefitted her entire community. The impact of examples like this cannot be underestimated, particularly when rural communities in general, and indigenous communities such as those we worked with, do not often get access to enough services to meet their needs.

Working with ASCOT on a project that allows us to generate evidence about community perspective and issues on wicked problems like climate, then reflecting on these findings and translating them into a curriculum or training package that can continue to be delivered by an institution like ASCOT beyond the length of the project teaches us important lessons about sustainability and impact.



ASCOT researchers and university president Dr Doracie Nantes with communities in Aurora, Philippines

Impact on UK classrooms

The VPA curriculum has allowed us to continue learning and engaging with the myriad of issues that arose during this project. At UoR, we have undergraduate and postgraduate programmes in International Development. We cannot, for practical reasons, give all of our students the opportunity to visit communities. The VPA has brought Aurora into our classrooms. We have integrated this VPA into our undergraduate and postgraduate teaching. This has had an impact in a number of ways. Indigenous communities in the Philippines continue to face substantial challenges with food security, insecure livelihoods, and the impacts of environmental change. They are often socially marginalised, facing misunderstanding of their core values, and their own resilience. We can teach our students to value the insights from community members by introducing them to stakeholders through the VPA. Students gain an appreciation for the “wicked” problems they face through the VPA. In my classes, my postgraduate students have learned how to design communication projects that support the resilience of indigenous communities using VPA. The VPA challenges them to design projects built on the stakeholder concerns, building their capacity in not only project design but listening and understanding. We are able, through the VPA, to teach lessons about responsibility and ethics in working with indigenous communities, which is fundamentally important when training people who would like to be practitioners in the field in the future.

As someone who continues to collaborate with institutions in the Philippines, it has also built my understanding of the unique opportunity for community impact through institutional collaboration. In partnering with Philippine institutions – as I continue to do with the University of the Philippines Los Baños – we are able to work in a collaborate way that creates a space for us to learn from one another, generate community-relevant research and hopefully have an impact on global development goals.

Collaborative linkages: Mindanaoan researchers on bioinformatics

Aleyla Escueta-de Cadiz, PhD
(with contributions from Dr Taane Clark)

University of the Philippines Mindanao
DOST-Newton Researcher Links Workshops grantee
with the London School of Hygiene and Tropical Medicine

“We want to expose Mindanaoan researchers to bioinformatics tools and techniques which can be helpful in their research focus and future research endeavours in the region.”

This was the message of the One Health (OH) Omics project team from the University of the Philippines Mindanao during the series of bioinformatics workshops conducted in partnership with the London School of Hygiene and Tropical Medicine (LSHTM) and the Philippine Genome Center Mindanao, with support from DOST-Newton Agham.

OH Omics was designed as a robust bioinformatics research training programme where trainees—ranging from students, young researchers, early career faculty, medical doctors, and allied health professionals across human and animal health sectors—are brought together to pursue bioinformatics training, undergo mentorship, and develop integrated OH projects. A total of 22 institutions participated in the programme, providing professional opportunities and collaborative linkages for the mentors and the 34 trainees alike.

The bioinformatics workshops were held online and in-person to capacitate Filipino researchers in Mindanao on omics tools for the local surveillance, management, and control of infectious diseases.

As Professor Taane Clark of LSHTM explained, the skills learned during the workshops will allow participants to apply big data methods to genomics questions, such as those that arose in the aftermath of the COVID-19 pandemic.

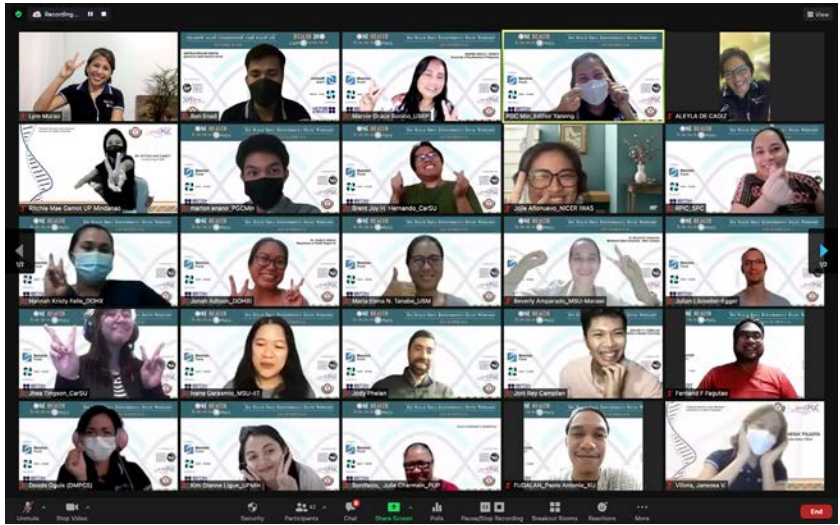
What is bioinformatics?

Bioinformatics is an interdisciplinary field that combines biology, computer science, and statistics to analyse and interpret biological data. It is used to identify genetic variations associated with diseases, to study the evolutionary relationships among different species, to predict protein structures and functions, and to design new drugs and therapies.

Bioinformatics is a growing field with important applications in medicine, biotechnology, agriculture, and environmental sciences.

What is ‘omics’?

Omics technology is an emerging tool in biology and biotechnology wherein diverse new approaches are utilized to study and understand biological systems in large batches of data.



Representative participants and LSHTM mentors during the online One Health Omics Workshop

Mindanao, as the second-largest island grouping in the Philippines, is rich in research opportunities across a wide range of fields including biodiversity and natural resources. With its cultural and ecological diversity, the island offers a wealth of knowledge and insight for scientific inquiry across a variety of disciplines. The application of advanced computational tools and techniques to Mindanao’s bioinformatics-related challenges is an exciting and rapidly-growing frontier for research.

ARTICLE
06

DEEP-C Impact: Developing Empowered and Engaged Partnerships in Newton Communities

Leah M. Punongbayan-Dela Rosa, PhD
(with the Newton UST Team Leads Augusto De Viana,
Sylvia Clemente, Antonio Fernandez and
Maria Magdalene Guevarra)

University of Santo Tomas

CHED-Newton Institutional Links Grant Awardee
with the University of Reading



The pandemic provided the context for the training, inspiring early career bioinformatics researchers in Mindanao to use advancements in computational biology to benefit both science and society. It also reminded participants that collaboration and mentorship are essential in building a pipeline to link researchers to new understanding and insights--and that we need people from diverse disciplines to address some of the biggest challenges today.

Feedback from the OH Omics mentees:

“The bioinformatics training was timely and relevant to the region, emphasising the lack of experts in Mindanao doing bioinformatics research.”

“The training has widened our horizons in metagenomic analysis, and I look forward to more clinical research projects in the field of omics for disease investigation and patient management.”

“It was also an amazing journey to meet new people in different fields and be trained by experts.”

“The workshop gave us the technical experience and knowledge in handling datasets in different omics approaches.”

“This will be very useful to a researcher like me who is interested in doing omics approach studies.”

This is the integral mission of the OH Omics in UP Mindanao: to build a bioinformatics workforce in Mindanao that can push the boundaries of knowledge and contribute to both science and the community.

The workshop supported by the DOST-Newton Agham is the start of a longer journey. By exposing Mindanaoan researchers to bioinformatics tools and techniques, UP Mindanao and LSHTM are leveraging the success of the initial workshop to initiate new OH ‘omics projects and further capacity-strengthening activities.



One Health Omics Team with the participants for the Bioinformatics Training

Community-based participatory action research (CBPAR) emphasises working with community members as co-equal partners in all phases of research. This makes CBPAR a good model for citizen science in areas with vulnerable populations such as Sta Rosa City, Laguna, which was the study site for the 2018 Newton-funded Institutional Links grant entitled *Eco-Social Surveying: Mapping Social Assets, Urban Greenery, and the Connection Between Them in Rapidly Changing Cities*.

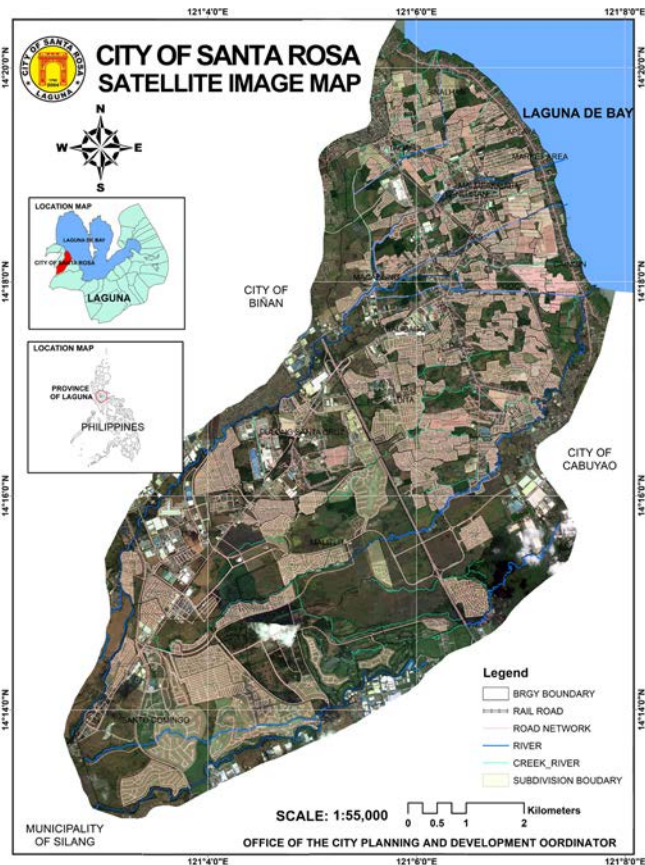


Fig. 1. Map of the City of Sta. Rosa City, Laguna showing the 18 *Barangays* (Office of the City Planning and Development Coordinator, 2018)

The University of Santo Tomas (UST) College of Architecture collaborated with our counterparts at the University of Reading (UoR) to test a participatory approach to mapping eco-social assets. Eco-social assets refer to things that communities value the most. Drawing on residents' knowledge, the resulting composite maps show various levels of information—from physical and social assets and resources to local stakeholders, to residents' emotive and cognitive associations—revealing some of the socio-cultural dimensions not normally seen in traditional maps. These maps can be used for planning guidance while generating recommendations that can form the basis for inclusive placemaking—a multi-faceted approach to the planning, design, and management of public spaces. At the same time, the spatial data can be used to calculate the approximate monetary value of a community's eco-social assets, a pioneering approach that has been acknowledged by the Royal Institute of British Architects, stating that “the profession is now for the first time in a position to measure the social value of their projects and communicate it to clients and end users.”³

The project's eco-social mapping toolkit was localised for two sites, at different scales. In the UK, this was the Orts Road neighbourhood of Reading, UK, while in the Philippines, UST entered into a partnership with all eighteen *barangays* (villages, or the country's smallest administrative unit) of Sta Rosa in Laguna. In the spirit of collaborative urban research, the social value toolkit designed by UoR was enhanced through a localised placemaking framework developed by UST.

Community Engagement in Eco-Social Assets Mapping: Collaborative Citizen Science for Empowerment

In situ Research

Research location: Sta Rosa, Laguna
More than half of the city's residents experience serious difficulties in accessing livelihood opportunities and social services.

Participants:
Approximately 3,200 stakeholders
102 student researchers
10 faculty researchers

Ran more than 100 activities across two years

This is as much a science as an art, with artistry coming from understanding, skill, and sensitivity used to apply and adapt the science in ways that fit the community and the purposes of specific engagement efforts. Another key concept is that of community empowerment, which is often stated as central to regeneration policy and practice, but what this means is rarely explained. Following Kearns (2016), an empowered community like Santa Rosa, therefore, combines the following: (i) the ability to identify its own needs and the capability to raise questions and issues with others (e.g. community service providers) in the proper place and time; (ii) opportunities to make choices about the community's future or to influence decisions being made by others that affect the community; and (iii) the ability, through its organisations or through its associations with other organisations, to motivate and monitor actions in pursuit of the decisions that were made or influenced by the community.⁶

Participants during the activities were identified according to the sectors they represent. A Local Advisory Council (LAC) was formed, comprising residents and other local stakeholders who could ensure continuity with all the other community engagement involvements with the City Planning/Engineering Department of Sta Rosa.

Participatory design processes, the importance and complexity of which that are widely recognised⁴, were used to elicit responses to the developing maps from all sectors of society. Collaborative creativity is a well-established best practice in urban planning.⁵ The basic principle is that you are likely to get people engaged if you can persuade them to create together, do something bigger than themselves, and make the experience interesting.



Community Mapping Sessions with Barangay Residents of Sta. Rosa

⁴ Mansuri, Ghazala, and Vijayendra Rao. 2012. *Can Participation Be Induced? Some Evidence from Developing Countries*. Policy Research Working Papers. The World Bank. <https://doi.org/10.1596/1813-9450-6139>.
⁵ Carlos Nunes Silva. 2013. *Citizen E-Participation in Urban Governance: Crowdsourcing and Collaborative Creativity* (Advances in Electronic Government, Digital Divide, and Regional Development) 1st Edition
⁶ Ade Kearns. January 2016. Evidence to the Local Government and Regeneration Committee.

³ Caroline Buckingham, Chair of the Practice and Profession Committee, RIBA. See Samuel, & Hatleskog, E. (2020). *Social value in architecture*. Hoboken : John Wiley & Sons, Inc.



The participants' capacity to choose relates to the sustainable use and services of their identified eco-social assets. This capability involves prioritising the use of a basket of services available to the *barangay* concerned. Potential supply considers the ability of these economic commercial places to generate service-oriented industries regardless of the demand for these services.



Community Mapping Sessions with Barangay Residents of Sta. Rosa

Localising Social Value Impact in the Philippine Context: *Bayanihan* and post-Taal response

To map eco-social assets, we first had to define them. We grounded our understanding of Sta Rosa's socio-economic, environmental, and economic assets and their implications for social value impact the participants' local culture and context. The *barangays* as a socio-political institution used Filipino values, which are characterised by informality, close personal relationships, and cultural affinities. These manifest in social aspects such as *damay* or feeling the other's emotion in an empathetic manner; *loob*, which translates to the innateness or being of one's character; *pakikisama* or sense of belongingness in a group or community, and *hiya* which is connected to propriety or social pressure to act properly.

A major concept for social value impact, however, is *bayanihan*.

Central to the *bayanihan* system is the *barangay*, in which the *barangay* captain and its officials reach out to the community and help in organising ways to improve the community, i.e., maintaining sanitation and disaster-preparedness. The *barangay* officials have a direct way of communicating with the city officials; while the needs that can be supplied by the city government are made known to the top government officials. As services and needs in the form of assistance to the senior citizens, health care, sanitation, and peace and order maintenance are satisfied, the people in the *barangays* developed a partnership with the city government held by trust. Thus, the relationship between the *barangays* and the city government or even within the *barangay* itself is not adversarial as most "democratic" governments are characterised but rather there is a benign and mutually beneficial partnership.

For example, the respondents who came from the lower-income *barangays* of Kanluran, Aplaya, and Tagapo were interviewed and asked what the common problems of their communities which they answered were the occurrence of crime, poor sanitation, lack of potable water, and the assistance in case of emergency. Their aspiration was to achieve a comfortable and liveable community. In the case of *barangay* Kanluran, they needed the help of others in taking turns to keep the peace through watch patrols, sweeping the streets as a way of maintaining cleanliness, and helping others in need. All of these happen without the consideration of money, given that money or any material reward is secondary in *bayanihan*.

Bayanihan

- The Filipino sense of community wherein individuals show empathy towards others to solve common problems
- Comes from the word '*bayan*' meaning town or country
- Concept of *bayanihan*, at its heart, means community.

Thus, when natural disasters strike, people easily organise themselves. Safe zones are identified, and these are common areas to which everyone has access such as the covered basketball court, and open public areas that are still existing.

Our findings saw *bayanihan* as a form of social exchange.⁷ In Santa Rosa, that partnership is multilateral and between the households of the *barangay*. The *barangay*, on the other hand, partners with the local government to help each other. The *barangay* helps keep the peace at the grassroots level, ensures the cleanliness of the locality, and maintains the lines of communication between households and individuals. In itself, the *barangay* is a self-sustaining community that is bound by volunteerism. However, these conditions need to be sustained by support from the local government.

Example of *Bayanihan*: Taal Volcano eruption in Santa Rosa

During the phreatic-magmatic eruption of Taal Volcano, Santa Rosa received a heavy dose of volcanic debris, being only 14 kilometres away from the active volcano. People in the *barangays* organised themselves and formed teams to haul ashes and put them into piles or into sacks. This was done even before the city government began to act. Soon, the government through the *barangays* supplied brooms, dustpans, and other hauling materials. The government also added an incentive by paying the volunteers for their work. In just three days, the main streets of Santa Rosa were free of debris.

As the people were already organised, the local government from the *barangays* to the city government supported the people in the effort. Everything was done voluntarily.



Volunteer ash fall cleanup during the Taal volcanic eruption.

Early impacts

Ultimately, the documentation of eco-social assets is intended to inform local programmes, policies, and practices that can enhance the community’s capacity to be a healthy and safe environment.

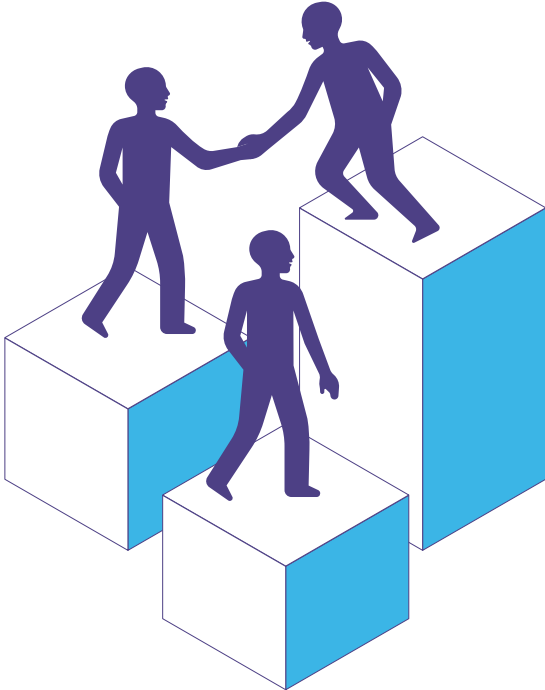
The project’s Local Advisory Council with representatives from the City Planning and Engineering Departments of Sta Rosa shows great potential as an effective vehicle for citizen engagement and planning programmes or projects that are more responsive to their community. In terms of social transformation, the participatory approach to identifying eco-social assets has become instrumental in raising the residents’ awareness of the value of these assets which they normally take for granted in their own personal lives, i.e., cemeteries. It made them aware, as well, of the assets of other *barangays* which contributed to its progress, and which are lacking in theirs. There is the camaraderie developed among LAC members that developed and they share these personal experiences with their family and *barangay*. They appreciate the value of the participatory approach because it made them think of the positives and negatives or those that need improvement in their community, such as *sari-sari* stores, parking, industries, environmental concerns, etc. It made them proud to be part of the LAC knowing that their opinion was important and can contribute to their *barangay*’s progress. As a framework for research conducted in, for, and by communities, the use of eco-social mapping recognises many things:

- That community knowledge is irreplaceable and provides key insights that ground-truths administrative data;
- Complex social issues often cannot be well understood or resolved by “expert” research;
- Interventions from outside of the community have often had disappointing results; and,
- Communities should have equal inclusion and collaboration in the identification, research, and resolution of community issues.

Initial recommendations being addressed by local government

- Installation of solar streetlights and a materials recovery station (Barangay Dila)
- Construction of a covered basketball court (Barangay Malusak and Barangay Ibaba)
- New tricycle terminal servicing
- Barangay Malusak and Barangay Kanluran
- Addition of dentist and obstetrician-gynaecologist in barangay health centre (Barangay Malusak)
- Road clearing in Barangay Kanluran where the plaza, museum, and church (tourism loop) are located.

Community engagement, therefore, seeks to better involve the people to realise long-term and sustainable outcomes, processes, relationships, discourse, decision-making, or implementation. To succeed it must encompass strategies and processes that are sensitive to the community context in which it occurs. All the stakeholders contributed their expertise to enhance understanding of a given phenomenon in the identified eco-social assets and integrated the local knowledge gained with action to benefit the communities involved.



⁷ Jacek Tittenbrun Adam Mickiewicz. November 2012. The Theory of Social Exchange of G.C. Homans

Equality, diversity, and inclusion (EDI) in Newton Agham

From the very beginning, the implementation of the Newton Agham Fund has been designed around the core policy of ensuring gender equality, diversity, and inclusion (EDI) in science and innovation. This policy builds on commitments set by both the UK and Philippine governments, and the British Council as a Newton Fund delivery partner. In practice, this means that all Newton Agham processes were delivered with a conscious effort to support gender equality, provide opportunities to research institutions across regions and provinces in the Philippines, and produce knowledge that directly benefits marginalised populations. The embedding of EDI in Newton Agham ranged from the selection of panel reviewers, review of eligibility requirements, to the positioning of statements in our communications and thought pieces, to the funding of research directly supporting EDI in the Philippines and the UK.

Some Newton Agham-supported research with an EDI perspective include:

- Zyra Evangelista’s PhD research at the University of Glasgow on the academic integration and well-being of lesbian, gay, bisexual, and trans (LGBT) students;
- Joan Talubo’s PhD research at the University of Surrey for assessing Batanes island’s spatial resilience for disaster risk and recovery;
- Maria Carmen Fernandez’s PhD at the University of Cambridge on mapping land governance and property rights issues affecting internally-displaced populations in the Bangsamoro Autonomous Region in Muslim Mindanao; and
- Engr. Isabelo Rabuya’s research with the University of Southampton on energy in the built environment and rural electrification for Gilutongan Island in Cebu, Philippines.

Recipients



Male



Female

PhD Scholars	Institutional Links	Researcher Links Workshops	Researcher Links Travel Grant
<div> <div></div> <div></div> </div> <div>1611</div>	<div> <div>UK</div> <div> <div></div> <div></div> </div> </div> <div>147</div>	<div> <div>UK</div> <div> <div></div> <div></div> </div> </div> <div>74</div>	<div> <div></div> <div></div> </div> <div>23</div>
	<div> <div>PH</div> <div> <div></div> <div></div> </div> </div> <div>813</div>	<div> <div>PH</div> <div> <div></div> <div></div> </div> </div> <div>74</div>	



Investing in UK-Philippine partnerships

How UK partnerships contribute to the Philippines' STI efforts

Dr. Leah J. Buendia

Undersecretary for Research and Development,
Department of Science and Technology



Researcher Links Workshop activity with the Philippine Genome Center and the London School of Hygiene and Tropical Medicine

The Philippine Department of Science and Technology (DOST), the government agency mandated to lead, direct, and coordinate the country's scientific and technological efforts, acknowledges the strategic role of international cooperation in improving science, technology, and innovation (STI). As of 2017, the DOST's International Cooperation Framework has identified twenty priority countries for bilateral cooperation. The United Kingdom has been included as one of the priority countries, in recognition of the UK's strengths in STI as well as the successful joint implementation of the Newton Agham Programme.

We believe that STI cooperation has been instrumental in the country's steady improvement in global rankings such as the Global Innovation Index and the UNCTAD's assessment of the country's readiness for frontier technologies. As of 2021, the Philippines was ranked 51st out of 132 economies in the Global Innovation Index (GII). This is a marked improvement from the 100th position in 2014 and the 83rd slot in 2015, with the Philippines reaching the 50th rank in 2020. The Philippines performs above other lower middle-income countries in all GI, pillars particularly in two areas, namely (i) business sophistication; and (ii) knowledge and technology outputs. These changes have been made possible through the DOST's scholarships for multidisciplinary science and technology professionals, as well as funding for research and development (R&D), covering technology transfer, knowledge diffusion, and human resource development activities. However, the government through its various research and development institutes can only do so much due to limited resources. Hence, the Department sees the value of establishing strategic linkages with bilateral and multilateral partners whose interests align with the country's science and technology agenda.

This is where fruitful partnerships such as Newton Agham come in. The British Council in the Philippines, along with other UK Newton Fund Delivery Partners working on behalf of the UK's Department of the Business, Energy and Industrial Strategy (UK-BEIS), has been collaborating with the Government of the Philippines to deliver projects under the programme that benefit Filipino researchers. This covers the six Newton priority areas of (i) health and life sciences; (ii) improving environmental resilience; (iii) improving energy security; (iv) future cities; (v) agritech; and (vi) digital, innovation and creativity.

The Newton Agham Programme does this through four modalities: (i) PhD Scholarships; (ii) Researcher Links Travel Grants; (iii) Researcher Links Workshops; and (iv) Institutional Links Grant. These modalities cover both the partnership with DOST and the Commission on Higher Education. Since the establishment of the DOST-Newton Agham partnership in 2015, it has supported fifteen (15) PhDs, two (2) Researcher Links Travel Grants, eight (8) Research Links Workshop Grants, and one (1) Institutional Links Grant.

Considering the multidisciplinary nature of Newton Agham, multiple DOST Agencies are involved in the coordination, implementation, and monitoring of Newton Agham activities. These are the four DOST Councils, namely the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), the Philippine Council for Health Research and Development (PCHRD) and Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD); the DOST Science Education Institute (SEI), and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

Non-government scientific institutions as well as universities from across the country have also participated in the programme. These include the Asian Institute of Management (AIM), De La Salle Medical and Health Sciences Institute (DLSMHSI), Research Institute for Tropical Medicine (RITM), St. Luke's Medical Center, PhilMECH, Kinovett Scientific Solutions, various universities in Luzon, Visayas, and Mindanao, among others.

PhD scholars

Scholarships are one of the DOST's primary modalities for capacity-building, which are usually either fully funded by the Department or jointly with its partners. The goal of all DOST scholarship programmes is to respond to the human resource development needs of the country in a particular subject area. The goal is to upgrade the country's research and technological innovation capabilities by developing a pool of high-quality researchers who can contribute to the country's global competitiveness and economic development.

Fifteen (15) scholars from the three (3) batches were sent to the UK universities to pursue PhD degree programmes in the field of engineering, biomedical science, computer science, virology, pharmacy, environmental biology, land economy, earth sciences, infectious diseases, and atmospheric and environmental science. The DOST gives strong emphasis on providing opportunities for all regions in the country as scholars are coming not only from Luzon but also from Visayas and Mindanao.

In implementing the DOST-Newton PhD Programme, the Science Education Institute (DOST-SEI) covers the travel expenses, monthly accommodation and living allowance for the duration of the study while the British Council provides for the tuition fees and special needs support. DOST-SEI gives holistic support to PhD scholars from the start until the end of the course, including in the implementation of a re-entry action plan to ensure that their newly-gained skills and knowledge will contribute to the improvement of the STI in the country. The scholarship also includes in-country and residential training offered to scholars by UK and Philippine institutions.

To date, nine (9) out of fifteen (15) PhD scholars have completed their degrees in the UK.



From L-R: DOST Undersecretary Leah J Buendia, Scholars Maria Carmen Fernandez, Carla Mae Pausta, Ma Jowina Galarion, Criselda Bautista, Pamela Tolentino, Julianne Vilela, and British Council Country Director Pilar Aramayo-Prudencio

Researcher Links Workshops

The Researcher Links workshops were instrumental in bringing together early-career researchers from the UK and the Philippines in making international connections which improved the quality of the various research and studies. Although some of the activities were undertaken during the pandemic, the researchers were able to deliver significant outputs on health and life sciences, and environmental resilience, among others. Both teams from each side used various platforms to ensure that the goals and objectives of the projects were met.

Examples of successful projects include “One Health Omics”, a partnership between the University of the Philippines-Mindanao and the London School of Hygiene and Tropical Medicine (LSHTM) that equipped Mindanao’s researchers and field epidemiologists to perform genomic surveillance and analyses locally.

Another is “Developing Smart Environmental Resilience Solutions for Coastal areas in the Philippines: Susceptibility, Adaptation and Mitigation Measures (SEACAP)” jointly implemented by the Batangas State University and the University of Wolverhampton. According to Dr. Tirso A. Ronquillo, programme leader, there is a need to strengthen the efforts to promote environmental resilience in the coastal communities of the Philippines. As an output, gaps and issues in coastal resiliency were identified, leading to the crafting of a research framework and roadmap for the adoption and implementation of climate-smart technologies for the resilience of coastal communities.



Researcher Links Workshop activity between the University of the Philippines Los Banos and Pirbright Institute in 2018

Institutional Links (IL)

As of this writing, there is an ongoing joint project under the Institutional Links on “*Utilising Marine Renewable Energy to Satisfy Community Energy Demands and Stimulate Socio-Economic Development with the Philippines*” between the Ateneo de Davao University and the University of Strathclyde.

This has continued despite pandemic restrictions, with the Philippine team conducting resource validation and community demand profiling for Talikud Island in Samal, Davao del Norte as well as profiling of the Surigao Strait, with planned activities in Sitangkai in Tawi-Tawi. The exchange of information and knowledge sharing led by the UK Principal Investigator, Prof. Johnstone Cameron, had been an instrument in developing models for simulation in the three (3) identified islands such as a turbine model for 3 m/s tidal velocity and a prototype turbine (scaled down) to be developed in Year 2 with actual testing in wave tanks.

DOST is of the view that the Institutional Links programme will ensure more sustainable research collaboration, as this transcends the work of individual researchers.

The Philippines has supported this initiative through funding assistance amounting to Php10 Million for research collaboration. Moving forward, the partnership intends to help establish a Center of Excellence in marine research that can serve as a hub and focal point for future activities.



Institutional Links 2019 grantee, Dr Nelson Enano of Ateneo de Davao University with DOST and British Council leaders



Balanced Partnerships

Overall, the DOST considers the Newton Agham partnership with the United Kingdom as a best practice for international cooperation, ensuring that the benefits of cooperation are balanced and mutual. This translates to both a fair exchange of knowledge and expertise, as well as the use of match funding. As former Undersecretary Rowena Cristina L. Guevara notes, “We didn’t want to be perceived as a donee—we want to be a partner. If our partner is ready to put in funds into a project, we too, are ready to match those funds”. Together with the UK through the British Council in the Philippines, the DOST contributed funding of approximately Php 60,437,910.00 (sixty million four hundred thirty-seven thousand nine hundred ten pesos and zero centavos) to match the £1,103,192.00 (one million one hundred three thousand one hundred ninety-two pounds sterling and zero pence) for awards across Institutional Links, Researcher Links Workshops, Travel Grants and PhD Scholarships under the Terms of the DOST-British Council Operational Alliance Agreement for Newton Fund signed by both parties since 2016.

While UK partners gained first-hand experience and raw data from topics ranging from emerging infectious diseases, to tropical cyclones, to coastal systems, Philippine researchers and institutions are able to expand their horizons and upgrade tools and innovation systems. Both countries share the benefits, while continuously addressing societal challenges through these programmes.

Building on the Newton Agham experience, the DOST believes that international cooperation in science, technology and innovation must be pursued more aggressively to support knowledge and technology and exchange, and translate them into innovative solutions to global challenges.

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Newton Prize 2019

The Newton Prize is an annual award that celebrates outstanding research and innovation partnerships between the UK and international Newton Fund partners. It aims to enable further efforts to address some of the world’s most pressing science and economic development challenges.

Two cutting-edge studies from the Philippines were recognised in 2019. DOST-Newton PhD Scholar Jopeth Ramis of the University of Nottingham was a finalist for the Newton ‘Chair’s Prize’, a special category for research addressing key UN Sustainable Development Goals, along with other researchers from China and Indonesia. Ramis’s research focuses on engineering bronchiolar tissue, which is a highly adaptable 3D model for studying airway pathologies. By building a clinically relevant human tissue model of airway physiology, scientists can test new drugs to treat asthma and other respiratory diseases.

The Water-Energy-Nutrient Nexus in the Cities of the Future project by the De La Salle University and the University of Surrey bagged the Newton Prize in recognition of their innovative solutions for converting wastewater into nutrient-rich fertiliser. This project can positively impact the society by enhancing agricultural practices and productivity, increasing food security and improving sanitation and the provision of clean water. Consequently, the Surveillance integrating Phylogenetics and Epidemiology for Elimination of Disease: Evaluation of Rabies Control in the Philippines project was also nominated, along with two projects funded by the Department of Agriculture. The following year, one of the Institutional Links grantees, Dr Leah dela Rosa of the University of Santo Tomas, joined the Newton Prize team of jurors for the 2020 cohort.



Afterword

Almost a decade since its inception, the statistics presented at the outset of this report, while testifying to the reach, growth, and impact of the Newton Agham Fund in the Philippines, only tell one part of this astonishing story. What makes me proud as Country Director of the British Council is hearing how this programme has changed people's lives, professionally and personally. In countless meetings, coffee breaks, workshops, and seminars I have been treated to the enthusiastic accounts, narratives, and experiences of researchers, invariably painting a picture of how people-to-people partnerships have boosted their life-long goals for discovery of new and important knowledge.

As we can see from the accounts in this report, our researchers have been engaging in powerful work which will ensure a safer and more sustainable world for future generations. The sheer scope of research and innovation areas is striking, ranging from localized climate change adaptation support for Mindanao indigenous communities, mobile applications for precision farming, and resource-efficient and sustainable biomass systems, to bioinformatics capacity building and practical solutions to offshore wind energy. Through the discovery of solutions and innovations, the works of our researchers have the potential to empower and bring real change to whole communities, livelihoods, and ways of life.

Many of the opportunities created by the Newton Agham Fund stretch even further beyond the research itself. Grantees share with us how the programme has brought them in touch with professional networks from not only the UK, but across the globe, offering a wider platform from which to communicate their work with others, and to shape a profile within this community of global collaborators. It is a joy to know how the programme has opened up collaborations with those beyond their own respective disciplines, bringing about a real fusion of different knowledge, experiences and perspectives, which, in turn, foster greater understanding, respect and trust. Sherdon Nino Uy sums this up succinctly when he refers to the challenges of compromise in a culturally diverse group, eventually leading to enriched research by "considering multiple perspectives".

The British Council, alongside our strong partners in both countries, is immensely proud of how this groundbreaking Fund has enabled and influenced research professionals to step outside their comfort zones, and to experience the challenges of living and working in completely different cultures. It is clear, from the narratives we have gathered together here, that the Newton Fund has succeeded in acting as a catalyst for growth, a confidence booster, and a motivator for change in people's lives through connecting with people who share the same passion. Our participants in both the Philippines and in the UK have shown both a hunger for new knowledge but also for engaging with others of a completely different culture, approach, and perspectives, many relishing playing an ambassadorial role in cultural bridging between the Philippines and the UK, and other countries.

While our grantees and scholars have gone from strength to strength, leading the way in their significant research fields, so has the consortium of close partners in Science, Technology and Innovation which has been driving the Newton Agham Fund since the outset. Truly effective, collaborative, and warm partnerships over the last 9 years with the Department of Science and Technology, Commission on Higher Education and 28 Philippine institutions together with the 39 institutions in the UK have led to many milestones. As Gene Fe Palencia affirms in this report, professional skills have been given the opportunity to flourish, alongside "life lessons that could make anyone stronger to face any life trials." The British Council will build success on success, leverage on our big gains so we may inspire more innovative minds to create positive change towards more inclusive and resilient communities. Thank you to all who have journeyed with us and grown in this learning experience so far and long may your adventures and discoveries in the collaborative world of knowledge innovation continue.



Lotus M. Postrado

Country Director
British Council in the Philippines

Annex

PHD SCHOLARSHIPS

YEAR	SCHOLAR	FUNDING PARTNER	HOST INSTITUTION	HOME INSTITUTION	SUPERVISOR	RESEARCH TITLE
2015	Angelo Aquino	DOST	University of Sheffield	St. Paul University	Ben Hughes	Energy Efficiency and Effectiveness of the Windbelt Technology for Urban Installations in the Philippines
	Charlie Lavilla	DOST	Nottingham Trent University	Mindanao State University-IIT	Mark Turner, PhD	Carnosine: biological actions and therapeutic implications
	Gene Fe Palencia	DOST	Coventry University	University of San Carlos	Elena Gaura	Wireless sensor networks to enable user-driven control of micro-power generation devices
	Sherdon Niño Uy	DOST	Birmingham City University	Manila Observatory	Craig Chapman	Wind Resource Design Decision Support
2016	Jhud Mikhail Aberilla	CHED	The Univ of Manchester	UP Diliman	Adisa Azapagic	Sustainable Options for Micro-Polygeneration Systems in Remote Communities
	Dave Buenavista	CHED	Bangor University	Central Mindanao University	Morag McDonald	Ethnobotanical Knowledge and Nutraceutical Potentials of Indigenous Plants Utilized by the Local Communities of Mindanao, Philippines
	Sheen Mclean Cabaneros	CHED	University of Sheffield	University of Santo Tomas	Ben Hughes	Modeling of Air Pollution levels in the Philippines using artificial Neural Networks and stochastic simulation technique for accurate air quality forecasts
	John Dale Dianala	CHED	University of Oxford	UP Diliman	Richard Walker	Remote sensing and field investigations of the earthquake cycle
	Luiza Galarion	CHED	University of Leeds	UP Diliman	Alex O'neil	Towards A Renaissance in Antibiotic Discovery
	Kevin Jace Miranda	CHED	University of Aberdeen	Adamson University	Marcel Jaspars	Discovery of novel pharmaceuticals from marine and desert microorganisms
	Patrick Simon Perillo	CHED	University of Cambridge	Ateneo de Manila	Markus Gehring	Human Rights Violations through Environmental Degradation: Exploring the Responsibility of Non-State Actors in International and Comparative Law
	Peter Paolo Rivera	CHED	University of East Anglia	UP Diliman	Jonathan Todd	Sulfur Cycling in Harmful Algae
	Merell Billacura	DOST	Nottingham Trent University	Mindanao State University	Mark Turner	Impact of Diet on Gene Dysfunction in Type 2 Diabetes
	Justine Perry Domingo	DOST	The University of Edinburgh	UP Diliman	Mikael Attal	Assessment of spatial and temporal variation in the sediment, nutrient, and metal flux in mine-affected catchments
	Marciana Galambao	DOST	Manchester Metropolitan University	Visayas State University	Jennifer Rowntree	Population Genetics and Endosymbiont Studies of the Banana Aphid, Pentalonía nigrónervosa Coquerel in the Philippines
	Rommel Gestuveo	DOST	University of Glasgow	UP Visayas	Alain Kohl	Interactions of Zika virus (ZIKV) with mosquito vector cells: investigating viral persistence and immune evasion
	Francis Legario	DOST	University of Stirling	Iloilo Science & Technology University	Margaret Crumlish	Investigating thermal influences from climate change on disease outbreaks in tropical aquaculture systems.
	Jopeth Ramis	DOST	University of Nottingham	Technological Institute of the Philippines	Lee Buttery	Development of Taylor-Couette-Poiseuille flow perfusion bioreactor for tissue engineering of trachea
	Paul Dominick Baniqued	CHED	University of Leeds	De La Salle University	Raymond John Holt	Development of an EEG-Driven Soft Robotic Hand Exoskeleton for Neurorehabilitation
2017	Zyra Evangelista	CHED	Unviversity of Glasgow	De La Salle University	Jason Bohan	Assessing Campus Climate and its Relation to the Academic Integration and Well-being of Lesbian, Gay, Bisexual, Transgender University Students in the Philippines and the United Kingdom
	Stephen Doliente	CHED	University of Bath	UP Los Banos	Sheila Samsatli	Biomass value chains and the environment-food-energy-water nexus: whole-systems analysis and optimisation
	Joan Pauline Talubo	CHED	University of Surrey	UP Los Banos	Devendra Saroj	Assessing the Spatial Resilience of an Island Community in the Philippines through Companion Modelling for Disaster Risk and Recovery Planning
	Criselda Bautista	DOST	University of Glasgow	Research Institute for Tropical Medicine	Katie Hampson	Using Molecular Epidemiology to Understand the True Burden of Rabies in the Philippines and develop Surveillance to Inform Elimination Strategies
2019	Ma Jowina Galarion	DOST	University of Glasgow	UP Manila	John McLaughlan	Developing a sample-to-sequence approach for the MinION device as field-deployable tool in enhancing molecular surveillance and diagnostics of dengue virus in the Philippines
	Maria Carmen Fernandez	DOST	University of Cambridge	FEU Public Policy Center	Elisabete Silva	Mapping land governance and property rights in neighborhoods with protracted forced displacement: evidence from Mindanao, Philippines
	Carla Mae Pausta	DOST	University of Surrey	De La Salle University	Devendra Saroj	The assessment of the impact of nutrient recovery for improving urban wastewater management and protecting water quality in lakes using the case study of Laguna de Bay, Philippines
	Pamela Louise Tolentino	DOST	University of Glasgow	UP Diliman	Richard Williams	Investigating the role of catchment characteristics in the response of different basins across the country to hydrometeorological events
	Julianne Vilela	DOST	Lancaster University	UP Los Banos	Muhammad Munir	Utilization of next-generation technologies to develop novel and advanced vaccines against viral diseases affecting poultry production

INSTITUTIONAL LINKS

LEGEND:					
HEALTH AND LIFE SCIENCES					
ENVIRONMENTAL RESILIENCE					
ENERGY SECURITY					
FUTURE CITIES					
AGRITECH					
DIGITAL, INNOVATION AND CREATIVITY					
YEAR	UK INSTITUTION	PRINCIPAL INVESTIGATOR (UK)	PH INSTITUTION	PRINCIPAL INVESTIGATOR (PH)	RESEARCH TITLE
2014	University of Manchester	Sophia Ananiadou	UP Manila	Marilou Nicolas	Conserving Philippine bIODiversity by Understanding big data (COPIOUS): Integration and analysis of heterogeneous information on Philippine biodiversity
	University of Oxford	David Banister	De La Salle University	Raymond Girard Tan	Sustainable Cities and Resilient Transport
	University of Strathclyde	Tom Baum	UP Diliman	Miguela Mena	Low skills work in a smart city: Supporting capacity development for research into tourism employment in Glasgow and Manila
	Coventry University	Elena Gaura	University of San Carlos	Dr Evelyn Taboada	PULP-SEED (Philippines UK coLaborative Partnership-System for Environmental and Efficient Drying)' to utilise wireless sensor networks (WSN) in the improvement of an existing mango waste processing facility
2015	London School of Hygiene and Tropical Medicine	Martin Hibberd	UP Manila	Carmencita Padilla	Characterising dengue fever outbreak clusters in the Philippines, using molecular epidemiology and modelling, to allow targeted interventions
	University of Leicester	Jonathan Ong	De La Salle University	Sherwin Ona	UK-Philippines ICTs in Disasters Consortium
2016	University of Southampton	AbuBakr Bahaj	University of San Carlos	Isabelo Rabuya	Capacity in research and development embedded in case studies related to energy in the built environment and for rural electrification
	University of Warwick	Gregory Challis	UP Los Banos	Edwin Alcantara	Assessing chemical and genetic diversity of Philippine microbes for discovery of novel natural products with applications in medicine and agriculture
	London School of Hygiene and Tropical Medicine	Taane Clark	Philippine Genome Centre	Eva Maria Cutiongco-Dela Paz	Unfolding the genomic diversity and origin of multi-drug resistant Mycobacterium tuberculosis in the Philippines
	University College London	Dina D'Ayala	De La Salle University	Lessandro Estelito O. Garciano	PRISMH: Philippines Resilience of Schools to Multi-Hazard
	Keele University	Andrew Hassel	Ateneo School of Medicine	Manuel Dayrit	Transforming Primary Healthcare in the Philippines: An Innovative Pilot Postgraduate Professional Development Programme for Primary Physicians in the Province of Northern Samar
	University College London	Rose Luckin	Ateneo de Manila University	Ma. Mercedes Rodrigo	JOLLY: Jokes On-line to improve Literacy and Learning digital skills amongst Young people from disadvantaged backgrounds.
	Newcastle University	Mohammed Mamlouk	UP Diliman	Mary Donnabelle Balela	Affordable electrolyser technology based on transition metal catalyst for energy storage
	Cefas	Joanna Murray	University of Cebu	Rose-Liza Eisma-Osorio	Marine spatial planning of aquaculture facilities in the Philippines: protecting biodiversity whilst maximising economic returns for local communities
	University of Reading (Agriculture)	Sarah Cardey	Aurora State College of Science and Technology	Doracie Nantes	Local approaches to supporting agricultural productivity and managing impacts of climate variability and change in indigenous communities in Aurora Province, Philippines
2017	University of Reading	Flora Samuel	University of Santo Tomas	Leah dela Rosa	Eco-social surveying: Mapping social assets, green infrastructure and the connections between them in rapidly changing cities
	University of Reading	Flora Samuel	University of Santo Tomas	Leah dela Rosa	Eco-social surveying: Mapping social assets, green infrastructure and the connections between them in rapidly changing cities
2018	London School of Hygiene and Tropical Medicine	Taane Clark	Pampanga State Agricultural University	Geraldine Sanchez	Understanding bacterial enteric diseases and antimicrobial resistance in the food chains in Pampanga, Philippines
	London School of Hygiene and Tropical Medicine	Julius Hafalla	Palawan State University	Ronald Edilberto Ona, Jr	Intensified surveillance for the control of soil-transmitted helminthiasis in the Philippines
	Goldsmiths, University of London	Mark D'Inverno	Miriam College	Trixie Sison	A Sustainable Framework for Design Thinking in Education
	University College London	Carmine Galasso	University of the Philippines, Visayas	Rhodella Ibabao	CHeRISH - Cultural Heritage Resilience & Sustainability to multiple Hazards
2019	University of Strathclyde	Cameron Johnstone	Ateneo de Davao University	Mr Nelson Enano	Utilising Marine Renewable Energy to Satisfy Community Energy Demands and Stimulate Socio-Economic Development within the Philippines.

RESEARCHER LINKS WORKSHOPS

2014	University of Nottingham	Michele Clarke	De La Salle University	Luis Razon	Process Systems Engineering Approaches for the Provision of Supplies and Utilities for Sustainable Cities
	University of Southampton	ABuBakr Bahaj	University of San Carlos	Evelyn Taboada	Towards a Sustainable Energy Ecosystem for Urban, Rural, & Island Microgrids of the Philippines: A Workshop on Distributed Renewable Energy Generation & Integration, and Complementary Technologies
	London School of Hygiene Tropical Medicine	Andrew Haines	Ateneo de Manila University	Manuel Dayrit	Are Current Research Efforts on Universal Health Care (UHC) in the Philippines Showing Evidence for Achieving the Goal? A Multidisciplinary Workshop for Early-Career Researchers
2016	De La Salle University	Dilanthi Amaratunga	University of Huddersfield	Andres Winston Oreta	Localising Strategies for Making Cities resilient to Disasters
	London School of Hygiene Tropical Medicine	Taane Clark	Philippine Genome Centre	Maria Anita Mascarenas-Bautista	Genomics of Infectious Diseases
2017	University of Salford	Zeeshan Aziz	De La Salle University	Bienvenido Biona	Smart Transport System and Asset Management
	Pirbright Institute (formerly Institute for Animal Health)	Muhammad Munir	University of the Philippines Los Banos	Dennis Umali	Novel Vaccines and Diagnostic Technologies Against Emerging and Re-Emerging Veterinary Pathogens
	London School of Hygiene Tropical Medicine	Taane Clark	Philippine Genome Centre	Raul Destura	Infectious Disease Omics
2019	University of Wolverhampton	Chaminda Pathirage	Batangas State University	Professor Tirso A. Ronquillo	Developing Smart Environmental Resilience Solutions for Coastal areas in the Philippines: Susceptibility, Adaptation and Mitigation Measures: SEACAP
	London School of Hygiene and Tropical Medicine	Taane Clark	University of the Philippines Mindanao	Dr Aleyla Escueta-de Cadiz	One Health 'Omics
	Public Health England (PHE)	Emilia Vynnycky	Ateneo de Manila	Dr. Lourdes Bernadette Sumpaico-Tanchanco	Utilizing mathematical modelling to aid governance in Universal Health Care in the Philippines

RESEARCHER LINKS TRAVEL GRANTS

YEAR	HOST INSTITUTION	HOME INSTITUTION	RESEARCHER	RESEARCH TITLE
2014	University of Derby	De La Salle University	Charlle Sy	A Target-Oriented Robust Optimization (TORO) Approach to Sustainable Network Planning Systems
	University of Exeter	De La Salle University	Richard Hartmann	Utilizing carbon nanomaterials as the building blocks of terahertz detectors and emitters
	University of Nottingham	De La Salle University	Joel Ilao	A Vision-Based Vehicle Counter for Emissions Inventory and Traffic Monitoring (VIVEC-ET)
2015	University of Derby	De La Salle University	Krista Danielle Yu	Resilient Supply Chain Networks Under Climate Change Conditions
2018	University of Surrey	University of the Philippines Manila	Gayline Manalang	Assessment of internal timing and sleep among Filipinos: validation of Philippine variants of the Munich Chronotype Questionnaire for evaluating the circadian rhythm

STEM EDUCATION PROGRAMME

	PARTNER AGENCY	CONSULTANT
2015	Commission on Higher Education	Sheffield Hallam University
2016	Commission on Higher Education	University of Leicester

About the authors



Maria Carmen (Ica) Fernandez
Lead editor

Maria Carmen (Ica) Fernandez is a development professional and researcher working with spatial data for decision-making in transitional and post-crisis situations. As a consultant and evaluator for various international development organisations, national agencies, local governments, and civil society networks, her work has supported the Philippine peace processes, generally focusing on addressing the root causes of violence, supporting citizen power, and increasing social cohesion.

She holds an MA in Urban and Regional Planning from the University of the Philippines Diliman and an MPhil in Planning, Growth and Regeneration from the University of Cambridge. Ica is currently a DOST-Newton PhD scholar at the University of Cambridge, mapping land and property rights issues affecting displaced populations in Mindanao.



Danie Son Gonzalvo
Editor

Danie Son Gonzalvo is the Programme Manager for Education and the Newton Agham Fund at the British Council in the Philippines. He also took part in ensuring the Philippine education’s transition to the K to 12 through his work in materials development and teacher training at the Commission on Higher Education. Prior to working in the higher education sector, he was a literature and writing teacher at the Manila Waldorf School, and a writer for the national police force. Danie obtained his Bachelor’s degree in Creative Writing from the University of the Philippines Diliman.

Writers



Dr. Leah J. Buendia

Dr. Leah J. Buendia is the newly-appointed DOST Undersecretary for Research and Development. She served prior as the first Assistant Secretary for International Cooperation of the Department. As Undersecretary for R&D, Dr. Buendia leads the country's efforts for the advancement of science, technology and innovation. She oversees management of the DOST R&D funds through the Grants-in-Programme, Science for Change Programme through its components: CRADLE, NICER, BIST and R&D Lead, including bilateral and multilateral linkages. She also leads the implementation of the Balik Scientist Programme and the S&T Fellows Programme in support of the Department's capacity building efforts. Dr. Buendia also supervises the 4 DOST Councils, 7 R&D Institutes, and the Technology Application and Promotion Institute.

Dr Buendia earned a Bachelor's degree in Agriculture from the University of the Philippines Los Baños and obtained a Master of Science in Agronomy and Doctor of Philosophy in Community Development from the same institution.



Dr. Aleyla E. De Cadiz

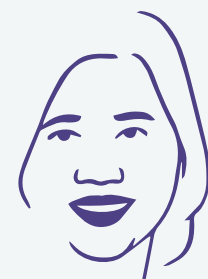
Dr. Aleyla E. De Cadiz is a Professor of Biology from the College of Science and Mathematics, University of the Philippines Mindanao and a technical expert of the Philippine Genome Center Mindanao. Dr De Cadiz finished her Doctor of Philosophy in Medical Science from the Gunma University Graduate School of Medicine in Japan through the Monbukagakusho Scholarship. Her research path started at the College of Public Health in UP Manila where she also obtained her Master of Science in Public Health major in Medical Microbiology.

Professor De Cadiz was the lead of the One Health 'Omics project grant through the DOST-Newton Agham Researchers Link Workshop in partnership with Prof. Taane Clark of London School of Hygiene and Tropical Medicine, UK. She was also part of the DOST-PCHRD Discovery and Development of Health Products team of UP Mindanao. She is currently working on neglected parasitic diseases (schistosomiasis and taeniasis) in collaboration with UP Diliman.



Dr. Sarah Cardey

Professor Sarah Cardey, PhD is Associate Professor in International Development and Director of the Graduate Institute for International Development, Agriculture and Economics at the University of Reading, UK. She is also Director for MSc Applied International Development and MSc Communication Development at the same institution. Dr Cardey's research interests include gender and development, development communication, farmer innovation and livelihoods and governance. She has worked with researchers in the FAO, Thailand, Indonesia, the Philippines, Uganda, India, Sudan, Kenya and Canada. She is currently working on projects related to gendered perspectives on innovation systems in smallholder farming and Rural Communication Services and participatory communication methodologies in development contexts. She is the co-chair of the Rural Communication Working Group of the International Association of Media and Communication Research. She is a visiting professor at the Tokyo Agricultural University (NODAI) and UP Los Banos. In 2017, Dr Cardey received a CHED-Newton Agham Institutional Links grant to work with Aurora State College of Technology on local approaches to supporting agricultural productivity and managing impacts of climate variability and change in indigenous communities in Aurora, Philippines.



Dr. Leah M. Punongbayan-Dela Rosa

Dr. Leah M. Punongbayan-Dela Rosa is an associate professor, architect and environmental planner from the University of Santo Tomas (UST). She holds a doctorate degree in environmental studies, and received qualifications in urban planning and cultural studies in Singapore, the United States, and the United Kingdom. Dr Dela Rosa chairs the PhD in Architecture and Built Environment, a dual transnational education degree offered by UST and University of Reading, UK. In 2017, she received a CHED-Newton Agham Institutional Links grant for the research, "Eco social surveying: Mapping social assets, urban greenery and the connections between them in rapidly changing cities" in collaboration with Dr Flora Samuel from the University of Reading.

De Dela Rosa's study interests are in urban studies, community planning, architecture and environmental management. Her research papers have been presented in international fora and were published in local and international journals. Since 2012, Dr Dela Rosa has been a consultant for the Asian Development Bank and the World Bank.



Dr. Justine Perry T. Domingo

Justine Perry T. Domingo is a geoscientist and a former DOST-Newton Agham PhD scholar. He recently obtained his doctorate degree from the University of Edinburgh where he studied the sediment routing and metal contamination in nickel mining-impacted areas in the Philippines. He holds a BSc in Biology and an MSc in Geology from the University of the Philippines Diliman, and a graduate of the United Nations University and Gwangju Institute of Science and Technology Joint Programme on Science and Technology for Sustainability. He worked as a Science and Technology Fellow at the Philippine Nuclear Research Institute where he contributed to the implementation of a UK-Philippines project under the Sustainable Mineral Resources Programme of the UK Natural Environment Research Council. He has served as a consultant for local companies and international organisations on environmental and water resources studies. He is currently a visiting researcher at the University of



Dr. Evelyn B. Taboada

Dr. Evelyn B. Taboada is an independent consultant and senior technical expert on green technologies, innovation, and resource mapping, which are instrumental in development and policy studies on energy-water-food-waste nexus, to promote circular economy and sustainable development in developing countries. She currently works as evaluator of development programmes/projects, climate change mitigation expert, ESIA consultant/expert, senior expert on plastic pollution studies, senior expert on renewable energy systems, consultant of food/waste/water/energy-related projects and MSMEs, consultant and lead trainer in higher education, and evaluator of engineering programmes.



Dr. Sherdon Niño Y. Uy

Sherdon Niño Y. Uy is a research scientist and the head of the Data and Sensor Development Laboratory at the Manila Observatory. He was a PhD Scholar under the DOST-Newton Agham Programme where he studied at Birmingham City University. By doing research on offshore wind resource assessment methods for the Philippines, he was able to earn his doctorate degree in Engineering. Prior to his studies in the UK, he graduated from Ateneo de Manila University with a BS Physics with Computer Engineering degree and obtained his MS Physics degree from the same institution. Together with the other laboratories at the Manila Observatory, he is now involved in meteorological research such as weather sensor development and solar/wind power production forecasting.

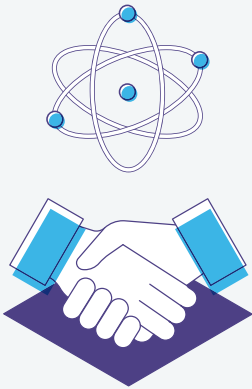
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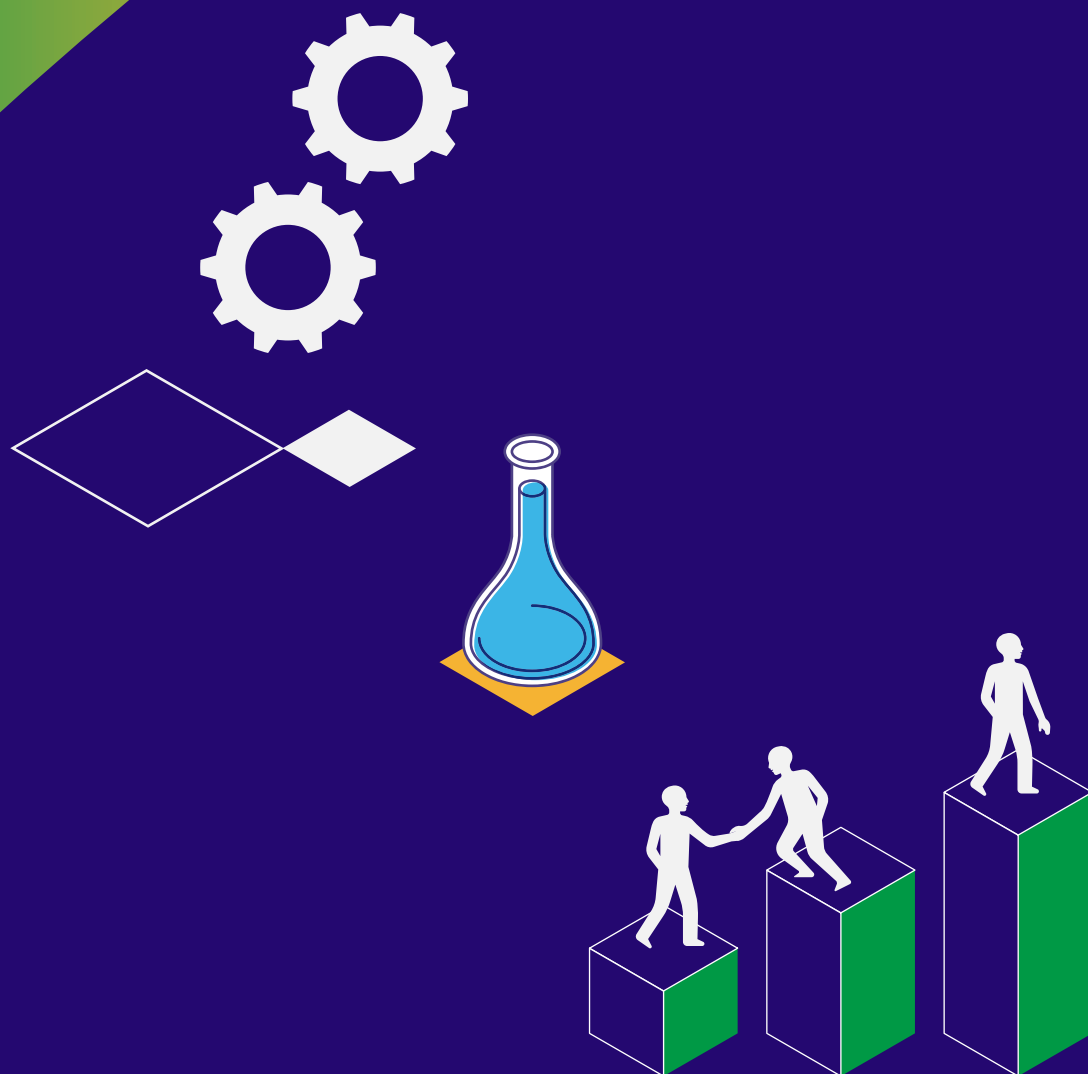
- Lotus Postrado, Country Director
- Pierre Pecson, Head of Education
- Danie Son Gonzalvo, Education and Newton Agham Manager
- Kris Anne Cortez, Programme Coordinator
- Raymond del Rosario, Support staff

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