



U.S.-ASEAN Smart Cities Partnership

SEMI-ANNUAL NEWSLETTER

December 2023

Symposium on Accelerating Science, Technology, and Circular Innovation in Southeast Asia

At the U.S. Department of State-hosted *Symposium on Accelerating Science, Technology, and Circular Innovation in Southeast Asia* in Jakarta, Indonesia, on September 5-7, the U.S.-ASEAN Smart Cities Partnership (USASCP), Arizona State University, and Rochester Institute of Technology focused on three primary themes: (1) smart sustainable cities; (2) cooperation in science, technology, and innovation; and (3) circular economy and entrepreneurship. Circular economy approaches promote sustainable consumption and production of resources, including through greater rates of reuse, repair, and recycling to reduce e-waste and increase resource efficiencies across sectors and industries. This event convened more than 200 public and private sector stakeholders across multiple disciplines. Check out our [media note](#)¹ for a full event overview! Materials and presentations from the symposium can also be found on our website.



The EAP/MLA USASCP team stands in front of the photo booth at the symposium in Jakarta. (September 5)

Circular Innovation

Rochester Institute of Technology

Rochester Institute of Technology (RIT) recently developed a curriculum of university-level courses on circular entrepreneurship that it will share with other universities, with offerings available for undergraduate and graduate students. Online training for faculty will begin in the next quarter. RIT also developed an adaptable version of the curriculum to serve as an E-MBA module or as a standalone deliverable to incubators focused on flexible training programs. To increase accessibility, RIT finalized an agreement with RIT Certified to offer the curriculum online.

RIT invited partner incubators to join the formal launch of its Circular Entrepreneurship Program in Jakarta at the jointly hosted *Symposium for Sci-*



Dr. Clyde Erikur Hull and other attendees engage in a speed networking activity at the launch of the CE program in Jakarta. (September 7)

ence, Technology, and Circular Innovation in Southeast Asia. At the event, university partner representatives networked with other regional partners and incubators and attended lectures, such as [Dr. Eric Williams](#)² presentation on his material flow analysis survey of e-waste management in the ASEAN region. RIT will continue to identify partner universities and disseminate its curriculum. Visit their [page](#)³ for program updates!

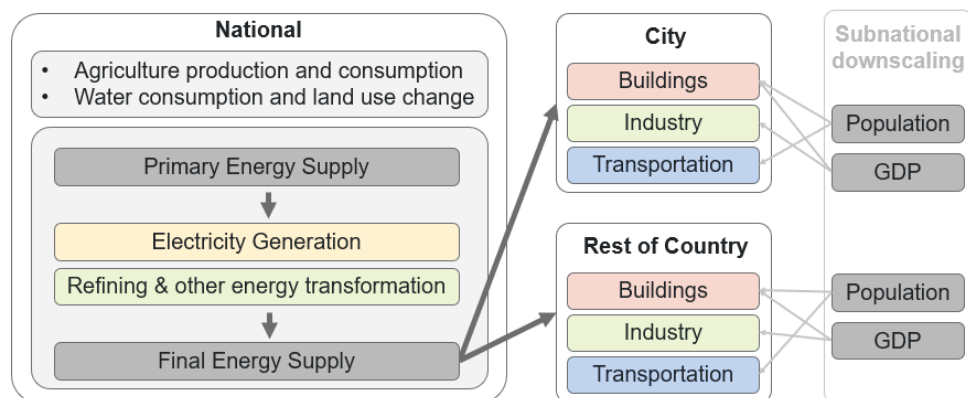
Energy Modeling

Pacific Northwest National Laboratory

Thammasat University University of Technology Malaysia

The [Pacific Northwest National Laboratory \(PNNL\)](#)⁴ hosted a series of virtual workshops with stakeholders from both cities and research partners on the use and multi-sector outcomes of the [Global Change Analysis Model \(GCAM\)](#)⁵. PNNL designed a cybersecurity program and trained 21 personnel from Thammasat University through its “Train the Trainer” program. Thammasat has also begun to train power utilities in the region, including the Metropolitan Electricity Authority, Provincial Electricity Authority, and Electricity Generating Authority of Thailand, and PNNL continues to support Thammasat during these trainings. The cybersecurity training of Thai electricity utilities strengthens their capacities to pre-

GCAM City Scale Modeling Framework



pare for the country's energy transitions, ensuring a more stable and secure future as energy demands increase and renewables play a larger role. In June, PNNL held the last of four workshops with the Thailand stakeholders: Bangkok Metropolitan Administration (BMA), Metropolitan Electricity Authority (MEA), the Energy, Policy, and Planning Office (EPPO), and the Office of Natural Resources and Environmental Policy (ONEP). These workshops presented the modeling results and recommendations, solicited stakeholder feedback, and discussed the use of the GCAM analysis to inform legislative decisions and guide policies and investment plans.



Representatives from PNNL, TU, UTM and the U.S. Embassy met with the Bangkok Metropolitan Authority on August 9th.

In August, PNNL undertook its final field visits to the target cities. In Kuala Lumpur, PNNL modeled GCAM capabilities for the city council (DBKL) and participated in a joint event between the

U.S. Embassy Kuala Lumpur and Malaysia Women in Energy, that addressed the critical role of women in just energy transitions and a sustainable energy



PNNL participated in a joint event hosted by the U.S. Embassy Kuala Lumpur and Malaysia Women in Energy on August 16th.

future. U.S. Ambassador to Malaysia, Brian D. McFeeters, and the Malaysian Deputy Secretary General of the Ministry of Economy both attended. While in Bangkok, PNNL met again with MEA, ONEP, and the Thailand Greenhouse Gas Management Organization (TGO) to discuss avenues to reduce energy consumption. The Mayor of Kuala Lumpur and other city officials from Bangkok continue to support modelling for carbon neutral cities and will explore the scale and replication of the work in other cities in their respective countries. Summaries and findings from PNNL's work in [Bangkok](#) and [Kuala Lumpur](#) can be found on our website.

Green Buildings Innovation Program

University of North Carolina at Charlotte

[University of North Carolina at Charlotte](#) has signed MOUs with three partner universities, including Gadjah Mada University in Indonesia, Chulalongkorn University in Thailand, and Ho Chi Minh City University of Technology in Vietnam. UNC Charlotte has developed 11 green building education modules: Bioclimatic Design, Building Life-Cycle Assessment, Dedicated Outdoor Air Systems, Carbon Neutral Design, Tools for High-Performance Building Design, Sustainable Facades, Auditorium Acoustic Design, Energy Efficiency for Hotels, Dynamic Facades and Daylighting, Building Performance Simulation with Revit, and Building Performance Simulation with Climate Studio. The team delivered ten online lectures to Gadjah Mada University in Indonesia and Chulalongkorn University in Thailand. These lectures have served almost 400 students, 67 percent of whom are female. UNCC also launched its project website to post the training modules and multiple resources.

Integrated Urban Services

National Renewable Energy Laboratory & Regenerative Impact Ventures

In February, [National Renewable Energy Laboratory's \(NREL\)](#) Project Manager, Katrina Woodhams, and [Regenerative Impact Ventures \(RIV\)](#)¹⁰ visited the Integrated Urban Services pilot program cities of Iskandar, Malaysia, and Cagayan de Oro, Philippines to review the technical assistance and capacity building phase of the program to introduce Integrated Urban Services, and to build relationships with local stakeholders. In Cagayan de Oro, the NREL IUS team, in partnership with the project

lead Agricultural Productivity Office (APO), launched the project by holding workshops with government, local, private, and non-governmental stakeholders relevant for designing urban agricultural production and innovation hubs in the city and nearby districts (barangays). NREL IUS also visited EcoPark, a former landfill site in Barangay Carmen, to explore how the surrounding areas may benefit from a circular economic agricultural site. Overall, the visit helped the team understand the local challenges, goals, and context, which will help frame the project scope and inform a technical work plan.



The NREL IUS team visited the EcoPark in Cagayan de Oro with partners in February.

In Iskandar, RIV visited the future site of the Agritech Hub Park within Flagship F's Ladang Air Manis (LAM) site and led the first of several planned executive-level consultative workshops, attended by Iskandar Regional Development Authority (IRDA) and other key stakeholders from all levels of the Malaysian government, site owners, and potential partners. During the workshop, RIV introduced a wide range of design options and solicited feedback from the workshop participants. Following the review, the IRDA team selected the initial list of anchor projects to propose for the Agritech Park.

In September, NREL, RIV, and representatives from both pilot cities traveled to Jakarta to join other USASCP programs and present the pilot projects at the Symposium. The Iskandar Malaysia team also presented their Agritech

Park project at the ASEAN Indo-Pacific Forum, where it solicited interest and funding from potential investors to support future phases of development. Following the Symposium, the NREL IUS team conducted site visits with the pilot cities to continue technical assistance efforts for designing integrated energy-food-water-waste projects with the goal of increasing food security through agricultural innovation and productivity, circular economy approaches, and public-private partnerships.



In September NREL IUS and city partner representatives presented at the Symposium in Jakarta. From left to right: Paterno Gonzalez (CDO APO), Cameron Weiner (NREL), Paul Christian Tape (CDO APO Chief Engineer), Idzuan Azam Abdullah (IRDA Project Manager), Hamizah A. Rahman (IRDA Assistant Vice President), Katrina Woodhams (NREL Project Manager), Jan-David Mueller-Vollmer (RIV), and Joshua Foss (RIV)

The IUS project team met with the city project leads and key project enablers to discuss the next phases of development. The outcome of the technical assistance will result in both cities' development of a business plan that will serve as a roadmap for identifying project components, champions, market-based approaches, and public-private partnerships for investing in the next phase and development of the projects. The IUS program concludes early next year. Please reach out to our [NREL contacts](https://www.usascp.org/nrel-contacts)₁₁ if interested in partnering on future phases of the city projects!

Research & Innovation

National Science Foundation

Pennsylvania State University
Prarie View A&M University
University of Dayton
University of Virginia
University of Washington

Air Quality Sensing and Worker Conditions in Bangkok (UW): Private Investigator (PI) Kurtis Heimerl's project is partnering with the Asia Institute of Technology in Bangkok to better understand the working conditions of ASEAN gig workers. The project plans to deploy an air quality sensor network in Bangkok during both low-pollution (summer/fall) and high-pollution (winter/spring) months. Concurrently, PI Heimerl is working with the AIT team on "smart helmets" for gig workers that similarly collect air quality and transportation data. The team is in the early prototyping phase with deployments planned during the outlined periods.

Artificial Intelligence-Based Traffic Monitoring and Planning for Ho Chi Minh City (UD): PI Tam Nguyen's project continued development of AI-based anomaly detection and weather-aware traffic planning simulations for Ho Chi Minh City. The project had three papers recently accepted to journals, namely, the Journal of Ambient Intelligence and Humanized Computing, Multimedia Tools and Applications, and the Journal of Artificial Intelligence Review.

Flood Monitoring in Ho Chi Minh City (UVA): PI Rich Nguyen is working to enhance the accuracy and timeliness of flood alerts and forecasts through incorporation of data sources like rain and other sensor networks. In April 2023, a pilot phase successfully incorporated data from rain gauges in Charlottesville and Ho Chi Minh City, employing LoRa WAN for transmitting measurements to the researchers' network and application servers.



Smart Garden Alleys in Makassar City (PSU):

Principal Investigator Wangda Zuo's team deployed an air quality sensor network system for a smart garden alley project in Makassar, Indonesia. The sensor data is being collected in a data logger that allows for real-time data visualization on a website and enables monitoring using a computer or mobile phone. The City of Makassar has allocated resources for an additional five sensors and a pilot project focused on the energy-water-food nexus.

Sustainable Energy Bike Lanes in the City of Kuala Lumpur (PVAMU):

PI Binzaid is working with Sunway City township in Kuala Lumpur, the first smart sustainable low-carbon city in Malaysia, on the deployment of sustainable energy bike lanes. The PVAMU team established a new team of three researchers in renewable energy at Monash University Malaysia (MUM), and PI Binzaid received a supplemental award from NSF to support project adjustments as he builds a new partnership with MUM.

U.S.-ASEAN Smart Mobility Program

U.S. Department of Transportation

In July, the USASCP-DOT partnership hosted participants from their U.S.-ASEAN city pairings in Los Angeles, CA, to discuss challenges, opportunities, and best practices for the development of transit systems in smart cities. Nina Hachigian, former Deputy

Mayor of International Affairs of Los Angeles, and former U.S. Ambassador to ASEAN, opened the workshop and emphasized the value of urban planning at the sub-national level to improve the livelihood of residents. Experts from the ASEAN partner cities of Jakarta, Johor Bahru, and Phuket joined their peer counterparts from Los Angeles, Portland, Las Vegas, and Boston in discussions around modal integration, pedestrian safety, bus rapid transit design, and ridership behavioral patterns. The workshop highlighted the importance of public engagement in the development of transportation policy, planning, and technology, and helped advance the respective city pairs transit toolkits. A site visit to Los Angeles DOT facilities, including its signaling operation center and multi-modal infrastructure, provided direct experiences for learning and knowledge-sharing across international regions as well as among the U.S. and USASEAN cities.



Workshop participants visit the LA Metro on July 12th.

A delegation from Johor Bahru, Malaysia, recently visited their peer city partners in Portland, Oregon, to discuss efforts to extend transportation to communities beyond the main transit pipelines, filling the gap between the last stop and people's homes with solutions such as bike and scooter shares. The U.S. delegation from Boston is set to visit their ASEAN city pairing of Phnom Penh in December.

U.S.-ASEAN Water Smart Engagements

U.S. Water Partnership
Global Ties U.S.
Water Environment Federation

WiSE had a busy year of engagement throughout Southeast Asia and the United States. Beginning in mid-January, WiSE coordinators hosted a series of video conferences with its five water utility city partner pairs to review priority topics identified during prior bilateral visits and preview attendance at [Singapore International Water Week \(SIWW\)](#)₁₂ Spotlight 2023 in June. Singapore serves as an important regional anchor for the WiSE program, allowing for enhanced linkages, training opportunities, and innovation exchanges among ASEAN-based utilities. In March, WiSE coordinators harnessed participation at the United Nations Water Conference, a forty-year in the making call for action on the global water agenda, to highlight the WiSE program and the model it presents for future water operator partnerships.



Dennis Herrera of San Francisco Public Utilities discusses their engagement with Saigan Water Corporation (SAWACO) in Ho Chi Minh City in June.

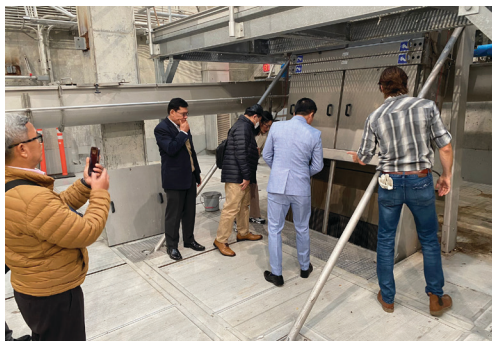
In May and June, four of the WiSE U.S. utility partners visited their ASEAN counterparts' operations and participated in the SIWW 2023 Spotlight event, engaging in a CEO-roundtable and sessions focused on climate resilience and smart utility digitalization. Delegates also toured Singapore Public Utilities Board's (PUB) state-of-the-art advanced tech water treatment facil-

ities, the most advanced in the region. Clean Water Services of Hillsboro, Oregon, visited its counterparts in Vientiane for the first time; San Francisco, Milwaukee, and DC Water partners each made a second visit to their respective partners.



Delegates from Milwaukee Water Works visit Phuket Provincial Water Authority's control room in May.

This round of visits deepened the institutional relationships between program participants, who engaged in substantive exchanges on mutual water management challenges including mitigating water waste and utilizing nature-based solutions for wastewater treatment. WiSE delegates identified capacity development opportunities, which resulted in training program agreements with Vietnam and Thailand and scoping of a potential pilot project in Laos. In Malaysia, Permodalan Darul Ta'zim, Johor Bahru's regional utility partner, signed a Memorandum of Agreement with DC Water, further solidifying its interest in a long-term relationship.



The delegation from Vientiane City Office of Management Services (VCOMS) visits Clean Water Services' facilities in Hillsboro, OR in September.

WiSE was pleased to welcome all five ASEAN program partner utilities back to the United States at the end of Sep-

tember, to visit their U.S. utility partners and attend WEFTEC, the Water Environment Federation Technical Exhibition and Conference in Chicago. EAP/MLA's Foreign Assistance Unit Chief, Katie Jo Younkins, accompanied the Vientiane City Office for Management and Services representatives to Hillsboro, OR, where the partnership focused on utilizing nature-based solutions to reduce energy costs, filter storm water, and enhance septic tanks' wastewater systems throughout Vientiane city limits. USASCP Program Manager, Helen Santiago Fink, joined the Malaysian delegation in Washington D.C. for discussions on flood mitigation strategies,



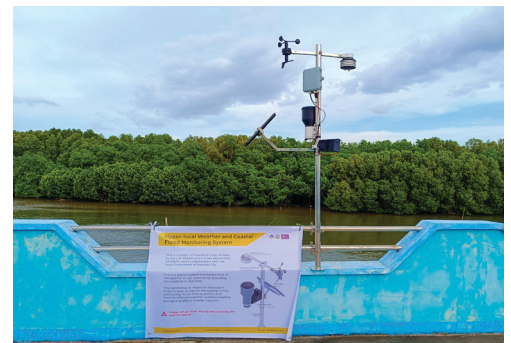
Delegates from Johor Bahru, Malaysia, met with DC Water and other SMEs at Xylem's Reservoir Center in Washington D.C. on October 5th.

urban water resilience, and non-potable water re-use to meet industrial demand. Phuket Provincial Water Authority operators attended a five-day training program hosted by the Milwaukee Water Works, in coordination with the Milwaukee-based Water Council. Metro Cebu Water District board members' visit with their Miami Water Sewer Department partners addressed non-revenue water, treatment plant capacity, pipe scaling, and utility governance. Saigon Water Corporation representatives reached an agreement with San Francisco's Public Utility Commission on future training on water quality testing and lab management. This is the final round of U.S. site visits under the WiSE program which will conclude at the end of fiscal year 2024.



USASCP Program Manager Helen Santiago Fink leads a panel discussion with Viengvilay Phimmasone of Patihoub, Norywati Mulyono of BioPac, and Dr. Do The Can of 5RTECH in Jakarta on September 6th.

All six U.S.-ASEAN Smart Cities Partnership Business Innovation Fund (BIF) grant recipients were invited to participate in a panel at the Symposium on Accelerating Science, Technology, and Circular Innovation in Southeast Asia in September. Three Business Innovation Fund recipients, 5RTECH, BioPac, and PatiHoub, participated in another panel discussion on ASEAN Cities' Decarbonization and Dematerialization Activities during the ASEAN Circular Economy Seminar. The Symposium provided a forum for all BIF recipients to meet each other and the EAP/MLA team in person, as well as network among other symposium participants.



Kloudtech: [Kloudtech₁₃](https://www.kloudtech13.com) is developing a localized 3D printed climate and weather monitoring system with integrated web and mobile applications to provide early flood warnings. Over the summer, the firm launched the Kloudtech website, which houses the weather monitoring dashboard. The team

6 continues to make site visits and host workshops with local communities affected by flooding to ensure a human-centered design approach.

Patihoub: [Patihoub](#)₁₄ recently developed a standard board composition that can be used for construction and has even integrated it into the construction of its own factory. Patihoub began selling the recycled plastic boards at shops in Luang Prabang, and is conducting a survey to better understand its market. In response to its growing operations, Patihoub recently hired two new full-time staff, created three pilot community collections points for plastics at popular destinations in Luang Prabang, and established regular plastics collection schedules and trainings with hospitality and tourism businesses in the area.



Biopac: The Indonesia Coordinating Ministry for Maritime and Investment recently recognized [Biopac](#)₁₅ as one of the strategic contributors improving the value and utilization of seaweed through its commitment to utilize ten percent of the sea to improve the livelihoods of coastal communities. Biopac has experienced significant market growth, particularly in Japan, since expanding to two distributors in February and May 2023. BioPac now supplies products for various business sectors in 25 countries. Biopac will now showcase its products at Expo(RT) Briliana, December 7-10, and BNatural, their reseller in Dubai, will showcase Biopac at the Organic and Natural Expo in Dubai, December 12-14.

BioPac Site Visits



EAP/MLA Director Holly Lindquist Thomas receives a tour of the seaweed farm in Nusa Lembongan, a small island located off the coast of Bali.

Following a successful symposium, U.S. ASEAN Smart Cities Program Manager, Helen Santiago Fink, and the Office of Multilateral Affairs (MLA) Office Director, Holly Lindquist Thomas, visited Biopac, a biodegradable seaweed packaging company supported through our Smart Cities Business Innovation Fund. Biopac founder, Nory Mulyono, and BioPac's technical director, Dr. Asaf Kleopas, gave the MLA team a tour of the Biopac factory in Tangerang, Indonesia, west of Jakarta.

Biopac recently received U.S. and Indonesian patents for seaweed packaging. The company is expanding its product offerings to include cosmetic and medicinal capsules. MIT short-listed the company for its capsule technology, and Nory Mulyono traveled to Cambridge, MA to pitch Biopac's proposal. The MLA team, along with local partners, also traveled to the island of Nusa Lembongan to visit one of the seaweed farming collectives that supplies seaweed for Biopac's operations. Together, Kebula Enterprise/Seaweed Center and Kalimajari Foundation are working to improve the quality of seaweed in Indonesia to attract private sector investment, increase public awareness, and promote market demand for bioplastics, while also supporting the urban rural nexus.



BioPac employees assemble products at their factory in Tangerang, Indonesia.

5RTECH: [5RTECH](#)₁₆ is a solar panel recycling startup based in Da Nang, Vietnam that recently completed the fabrication of parts for modules two and three of its solar panel recycling system. 5RTECH will continue to work on system fabrication and assembly as it strives to complete the five modules needed for its solar panel recycling process.



Agroecology Gardens 4 the Future (AG4F): The agroecology gardens in four Phnom Penh schools came to fruition over the course of the past year, re-

sulting in the formerly empty plots now being filled with a variety of flourishing plants. Irrigation systems were also installed in all four gardens to ensure year-round watering. These gardens make use of many horticultural practices to bring urban gardening at schools to life. [AG4F](#)₁₇ is completing a draft of an agroecology manual and plans to disseminate it once completed. AG4F hosted training sessions in March and June on the basic principles for developing agroecological gardens for teachers from the four schools with whom it has partnered.

Greener Wheels: [Greener Wheels](#)₁₈ recently secured Safe Truck as its second fleet management company partner. This collaboration will assist Greener Wheels in providing the necessary logistics emissions data to the state government of Penang for the 2023 annual

emission report. The firm continues to finetune its product as it attends various conferences. One highlight includes an invitation to the International Electric Mobility Showcase, where Greener Wheels was recognized

as one of the green logistics providers through the Malaysian Green Technology and Climate Change Corporation, a government agency under the Malaysian Ministry of Natural Resources, Environment and Climate Change.

Looking ahead, Greener Wheels plans to organize workshops to educate Malaysia-based logistics operators on the data collection needed for carbon emission calculations.

Links

1. <https://www.state.gov/symposium-on-accelerating-science-technology-and-circular-innovation-in-southeast-asia/>
2. <https://www.rit.edu/directory/exwgis-eric-williams>
3. <https://www.rit.edu/business/asean-circular-entrepreneurship-training>
4. <http://www.pnnl.gov/>
5. <https://gcims.pnnl.gov/modeling/gcam-global-change-analysis-model>
6. <https://greenbuilding.charlotte.edu/>
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8. <https://jgcri.github.io/seasia/malaysia.html>
9. <https://www.nrel.gov/international/integrated-urban-services.html>
10. <https://www.riv.global/>
11. <https://www.nrel.gov/research/staff/katrina-woodhams.html>
12. <https://www.siww.com.sg/>
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14. <https://patihoub.com/>
15. <https://biopac.id/>
16. <https://5rtech.com.vn/>
17. <https://www.eclosio.org/>
18. <https://www.greener-wheels.com/>