COMING TOGETHER FOR MICRO-HYDRO POWERED RURAL ELECTRIFICATION

Laughter erupted across the room as a question popped up on the Zoom chat: “When is the Pangrok Sulap album coming out?” Rizo Leong — co-founder of the art, music and social activism collective — without missing a beat, responded cheekily in return, “Coming soon!” The lighthearted banter poked fun at the localised slang employed in the collective’s moniker, showing the friendship and familiarity that had grown amongst the group in the last three days.

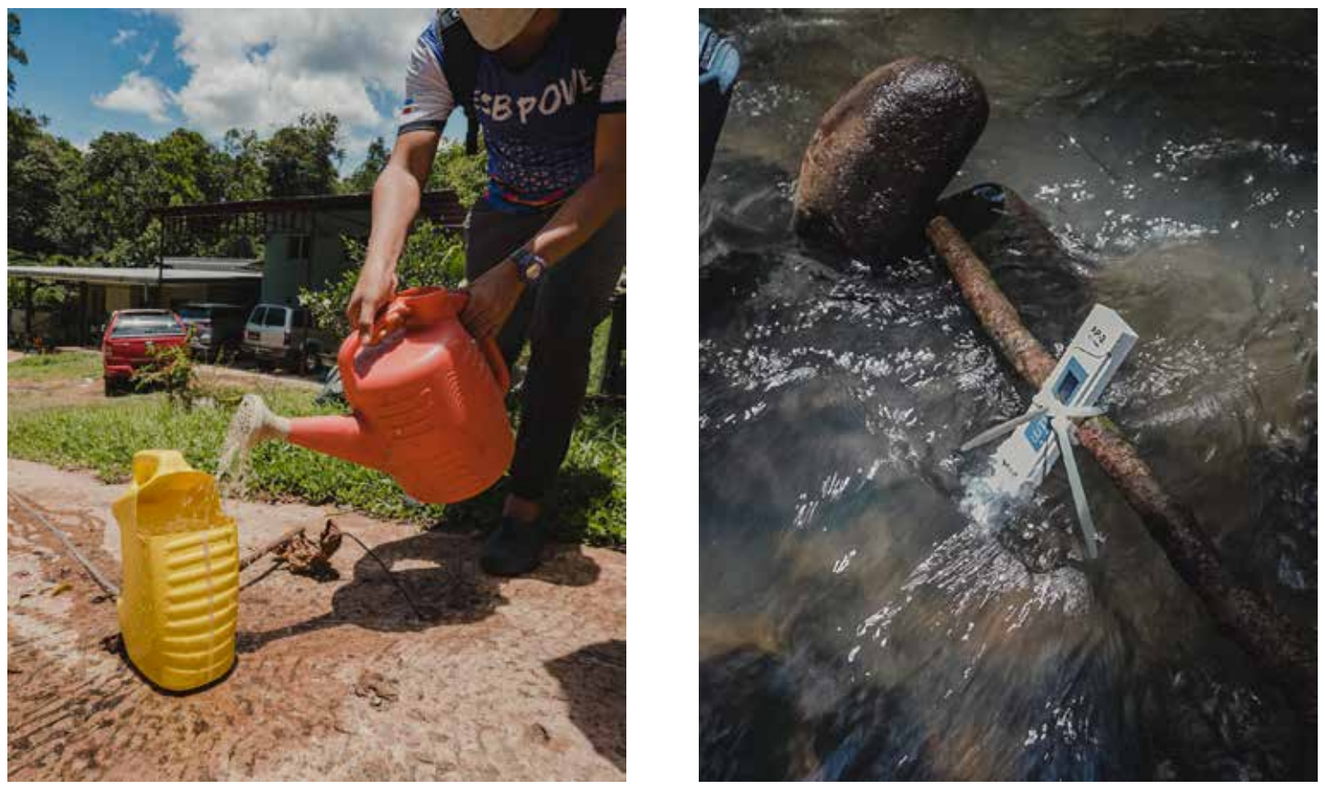
(TONIBUNG’s Adrian Banie Lasimbang doing a demonstration)

Alongside Rizo, Adi, and Ray of Pangrok Sulap were representatives from Sabah Electricity Sdn Bhd (SESB), Yayasan Sabah, and Sabah State Economic Planning Unit (UPEN Sabah). For three days, from 28th to 30th March 2022, the unlikely grouping of civil servants and community-based artists and activists came together at CREATE Borneo, Penampang in a shared desire to learn about micro-hydro power (MHP) design and structure from TONIBUNG, a non-profit group that develops sustainable alternatives for rural electrification and one of the Consortium Partners of Sabah Renewable Energy Rural Electrification Roadmap (RE2).

The first day of MHP Fundamentals Training introduced participants to the programme and renewable energy mini-grids, specifically micro-hydro systems. In many interior regions of Sabah, electricity is scarce.

“At the conservation areas we manage, we still rely on diesel generators for electricity,” shared Livon from the Conservation & Environmental Management unit at Yayasan Sabah that oversees Maliau Basin, Imbak Canyon, Danum Valley, Silam Coast, Taliwas River, INFAPRO, and INIKEA. But the cost of operating a generator is high, “We need something more cost efficient so we are keen to develop micro-hydro systems at those sites.”

On the second day, we got the chance to test out what we had learned in theory the day before. For most of us, this was our first on-ground exposure to MHP systems. Amirul Umara bin Nasruddin from SESB’s Sustainable Energy Development arm shared, “We have always been curious about micro-hydros but rarely get the opportunity to go onsite to see how these things work, so this is a very valuable learning experience for us.”



(Some of the tools used in conducting feasibility studies)

The nerves and excitement in the air were palpable as we arrived at Kampung Kipovo that morning. Here, TONIBUNG guided us in four methods of conducting feasibility studies to assess a site’s micro-hydro potential. Armed with ping pong balls, gallon bottles, pressure gauges, and a variety of technical tools, the four groups set out onto different parts of the site for their studies.

Part of TONIBUNG’s objective is to design systems and tools that are accessible for rural communities to carry out the studies themselves. Each of the four methods need only three to four items to perform. The most technical of the four required a total station theodolite, prism reflector, ranging pole, and tripod. Participants had to ensure that the theodolite was programmed with the correct GPS coordinates, instrument height, reflector height, and various other inputs to ensure accurate readings.

We headed back to CREATE after lunch — full, tired, but buzzing from the anticipation of what we might discover from the field data collected that day. Back at the training centre, we were shown how to input the data into TONIBUNG’s systemised spreadsheets to get an estimation of the power that can be generated at the Kipovo site, as well as the cost and other resources needed to build a system for it.

(Participants learning how to operate a total station theodolite)

Prior to this, the only participants with practical exposure to micro-hydros were Pangrok Sulap, who regularly collaborate with Lightup Borneo, a local civil society group on a mission to light up and bring electricity to off-grid interior rural villages. “Our experience with them has been entirely on ground, where we were involved in measuring water flow and collecting data,” shared Rizo. “We don’t have any experience with costing or selection of materials. That is why we’re here, we’re hoping to learn more.” The day ended with a lesson on turbines followed by a lively Q&A session where participants took turns asking questions of all sorts about crossflows, dynamo generators, blades, and anything else that had sparked their interest over the last couple days.

The next – and final – day began with a quick recap, followed by a briefing on the spreadsheets from the day before and an introduction to solar PV panels. The programme closed off with a session on community management, preparing us for some of the usual issues and challenges that might arise in MHP implementation.

(Participants sharing moments of learning and joy)

Muhd Azif Affendy from Yayasan Sabah suggested that training courses like this should be further developed, “We have learned so much about micro-hydros throughout this programme. It should be further encouraged, so that more people can learn as well.” Amirul echoes the same sentiment, citing TONIBUNG’s Adrian Banie Lasimbang as a great source of MHP knowledge, “This programme is great for people like me who don’t have much experience with micro-hydros. We got to learn about the process from start to finish.”

The facilitation of knowledge sharing and collaborating across different spheres and sectors is a brick in the foundation of RE2’s journey towards clean energy access and a low carbon future for Sabah. With MHP fundamentals taking root in a diverse group like this, representing both government and grassroots circles, the potential for renewable energy generation in Sabah’s interior regions grows clearer.

(Group photo at participants)

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