

ComSSA

HACKATHON

REGROWTH



LIFE. REWRITTEN



PROBLEM STATEMENT

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IO AR

10 years After Rebuild (AR) – following systemic collapse of global energy and supply infrastructure – the world is settling into a brighter, post-scarcity future harnessing the renewable powers of the natural world; solar, thermal, wind, and hydro power provide for most of our needs, and our major cities are flush with carefully managed greenery.

Still in this era of renewal, communities work to modernise and close the gap; rural healthcare systems, urban water supplies, and island energy distribution systems are strained by their reliance on old-world systems and technologies, and are in need of updating to more reliable and sustainable methods.

The path forward remains open for those bold enough to take it, and fresh minds and innovative solutions are needed to carry that momentum into the future. The Rebuild has given us stability, but true progress depends on those ready to rethink and redefine what's possible. This is your chance, to imagine, design, and build the systems that will ensure society can thrive in our future of regrowth.



DOMAIN I: HEALTHCARE

Dispersed across the arid deserts of northern Kenya, Marsabit County is home to nearly 1 million people. With clinics often over 100 km apart, access to treatment is slow, unpredictable, and often arrives too late.

Limited road infrastructure further restricts the movement of medical supplies, leaving communities waiting when urgent intervention is needed. Summers bring intense heat and prolonged dryness, typically around 28–32°C. Shifting wind patterns also add natural unpredictability to outdoor operations.

At the same time, non-communicable diseases (NCDs) – such as diabetes, hypertension, and cardiovascular conditions – are prevalent, and can quickly become life-threatening without access to medical treatment.

In response, the County Executive Committee seeks new approaches to improve accessibility to essential medicine and improve early detection of chronic disease within Marsabit's unique environmental and infrastructural constraints.

IMG: ALEXIS CISNEROS

DOMAIN I: HEALTHCARE

CHALLENGE I: VITAL ACCESS

Marsabit County's **sparsely populated** terrain and **limited road system** make the delivery of medical supplies slow and unreliable.

Intense heat, dryness, and shifting **desert winds** further complicates movement across the region.

Your task is to develop a **sustainable logistics** solution that improves access to essential medical supplies for communities across the County.

A map of the area is provided on page 10



CHALLENGE II: GUARDIAN OF LIFE

Due to the poor road networks restricting the use of vehicles, **timely diagnosis** and **ongoing monitoring** of non-communicable diseases remains inadequate.

The Committee has deemed it necessary to implement a **monitoring solution** to reduce unnecessarily lengthy trips to health centres, and enable **early intervention**.

Your team must develop a solution to **detect** early risk indicators of NCDs, **monitor** key health metrics, and **relay data** to healthcare providers.



DOMAIN II: WATER

The government of India has made great strides to resolving their various water supply issues; major air and water pollution has been remedied, major rivers and groundwater sources have been restored to their natural state, and new water treatment facilities have been constructed to service the population. There still remains, however, the issue of actually getting this clean water to the population.

The aging water delivery infrastructure needs replacing, but the task has been made difficult by a variety of historical reasons. Lack of accurate documentation, insufficiently enforced standards and practices, the privatisation of supply and delivery, and rapid unplanned urbanisation – all this and more has resulted in a water supply ecosystem convoluted beyond the abilities of the municipality to reliably service it as issues arise, or replace it anew without great difficulty.



IMG: HIROO ISONO

DOMAIN II: WATER

CHALLENGE: HEART DRY WITH THIRST

With the current state of the old water delivery systems, simply replacing en masse all *known* infrastructure runs a **high risk** of severely disrupting the water supply to an **unknowable population** which could be connected to a particular system.

Traditional surveying methods have proven **too cumbersome and disruptive to accurately map** the extent of the undocumented network in India's crowded cities, which has hindered attempts to figure out how to replace the system without significant disruption.

Your team has been contracted by the government of **West Bengal** to provide a solution for a **system to aid in the upgrading** of their water supply and delivery infrastructure. Its major cities are its focus, but your solution should **ideally be extensible** to rural farming regions, and replicable to other areas of the country.



IMG: SOLARPUNK-ART

DOMAIN III: ENERGY

In the Pacific, a drastic change in ocean currents has favoured Indonesia's Maluku province with a boon of fishing. Pulau Damer in particular has seen a surge in population as new fisheries are established on the island, providing a great economic boost.

The island's existing infrastructure was not built for such populations, however. Previously, its villages relied on small-scale solutions such as semi-portable generators and limited solar, with new connections made as needed; but now, a more robust grid is needed.

Indonesia has chosen the island as a testing ground for new offshore wind & wave energy generators - planned to supply further islands in the province - but the Pulau Damer energy delivery system needs to be upgraded so that its increased population may harness this new energy.



IMG: TOM CRAIG

DOMAIN III: ENERGY

CHALLENGE: THREADS THROUGH FORESTS

Pulau Damer requires an **innovative power transmission** system to distribute power to its scattering of villages from the new offshore generator array - 10km East of the island and with a capacity of 2 GWh.

Separated by **mountainous terrain and dense forests**, most of the population occupies places along the North and North-East coasts where fishing is plentiful, but some smaller villages have been established inland for dry-farming.

Vitally, whilst being as **efficient** as possible, your solution must also **minimise short and long-term disruption** to the natural environment.

Since 2025, the population of the island has roughly doubled; locations of villages and details of population estimates in 10 AR are provided on Page 11.

PEOPLE AND PLANET

When crafting your solutions to these pressing issues, it is important to consider **the people and the planet** to ensure your solutions are wholistic, taking into consideration all factors to make your solution more sound and effective:



PEOPLE



PLANET

When considering the social aspect, it is essential to evaluate the impact of your solutions on individuals and communities. Aim to enhance the well-being of those involved, from workers to local residents. Think about fair labour practices, community engagement, and how your solution can provide social benefits, such as improved living conditions, education, and health. A socially responsible approach ensures that your innovations contribute positively to society, fostering a supportive and inclusive environment.

The environmental pillar focuses on the sustainability of your solutions. Consider how your ideas can minimize harm to the environment and promote ecological balance. This involves reducing waste, conserving natural resources, and minimizing emissions and pollution. Innovate with green technologies, renewable energy sources, and sustainable practices that protect and restore our planet. An environmentally conscious approach ensures that your solutions contribute to the health of our ecosystems and the overall well-being of future generations.

FINAL ADVICE

It is crucial to focus on just **one challenge** from the problem statement. While it might be tempting to address multiple issues, a comprehensive and well-researched solution for a single problem will leave a more significant impact.

Your final submission will involve a **short 7-minute presentation** to our panel of expert judges, followed by **5 minutes of questions**. While the final decision will be left purely to the judges, your solution will be graded on the following metrics: **Research/Contextual Background, Creativity of Solution, Demonstration of Feasibility, and Overall Presentation**. A copy of the marking guide will be made available to you.

Approach your solution as if you are pitching an idea to an advisory board. While coding a demo or designing parts of the solution can be helpful, **no part of your solution needs to be implemented** as long as you can convince the panel that it is a feasible and effective solution. We understand that there is a wide range of technical skill levels participating in the Hackathon, so the focus for marking will **prioritise creativity and innovation over technical skills**.

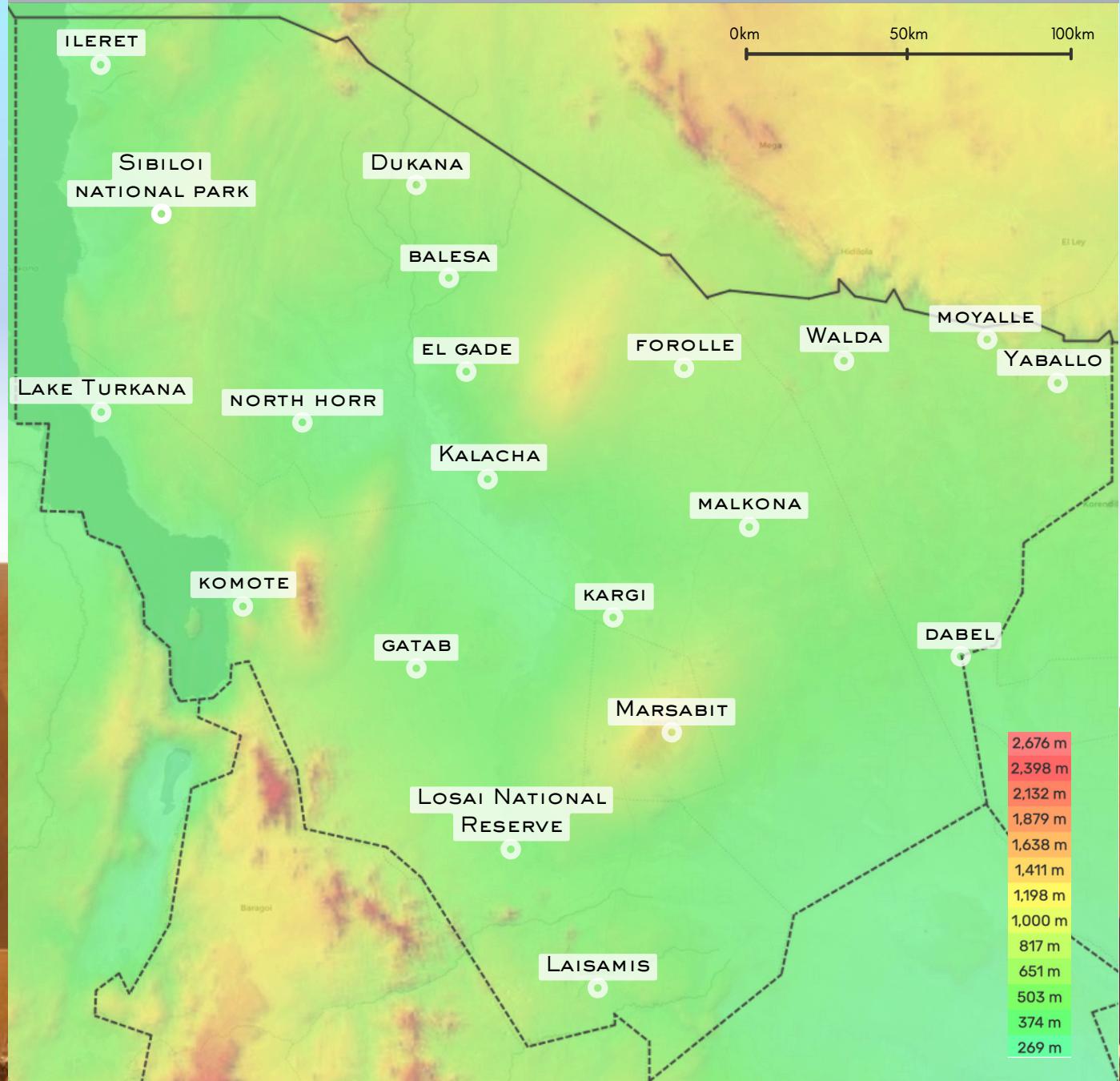
The Hackathon Team will be here to support you during the event so don't hesitate to reach out to us on Discord or in person if you have any further questions, and make sure to take advantage of the experienced mentors available both in-person and online at every opportunity. You also have the opportunity to book "personalised workshops" over the course of the event, which are a good opportunity to upgrade your practical skills and help enhance your solution or presentation.

If you encounter aspects of the scenario that are not clearly outlined in this document, you are allowed to **make reasonable and justified assumptions**.

Good luck!

DOMAIN RESOURCES

Domain I: Marsabit County, Kenya, 10 AR



Topographic map of Marsabit County, Kenya, with major towns and landmarks highlighted

IMG: JAMES WANG

DOMAIN RESOURCES

Domain III: Pulau Damer



Administrative Population Estimates (10 AR)

Desa	Population Estimate	Desa	Population Estimate
Wulur	3,350	Bebar Timur	2,284
Batu Merah	1,412	Illi	750
Kuay Melu	512	Kehli	2,102
Kumur	767	Total	11,177

IMG: MARCIO KOGAN