



JOB DESCRIPTION: TECHNICAL DIRECTOR OF SUSTAINABLE BUILDING AND INNOVATION

Company: EarthEnable
Reports to: CEO
Location: Rwanda – based in Kigali, with significant time in rural villages and the R&D lab in Nyamata

Who We Are

At EarthEnable, we believe that our clients deserve our very best, that morning high-fives are the best way to start the day, and that the best ideas could come from any part of the company. We celebrate each other's wins, learn from our setbacks, and are deeply proud of the impact we make every day. We believe that a clean, dust-free floor means more than living in a healthy home. It means pride and dignity in the place our customers most treasure: their homes. Being a part of our team means more than building floors: it means building an organization and building a better future for rural families.

What We Do

EarthEnable is transforming the way people live, by making homes healthier for families across rural Rwanda and Uganda. 80% of Rwandans and Ugandans live in homes with dirt floors which are dusty, unsanitary, and fertile breeding grounds for parasites and germs. While replacing a dirt floor with concrete has significant health benefits (e.g. reducing diarrhea by 50% and parasitic infections by 80%), concrete is unaffordable for many who need it.

EarthEnable addresses this pressing and ubiquitous problem by selling high-quality, earthen floors that are 80% cheaper than concrete with 90% less embedded energy. Earthen floors are prevalent in modern homes in the United States and are composed of natural materials (gravel, clay, sand, and laterite). EarthEnable trains and hires local masons to install the floors which are sealed using a proprietary drying oil that makes them waterproof, strong, and polished.

About the Role

This is a dream-job for someone who wants to make a serious mark on rural housing in Africa through sustainable building. We are looking to bring break-through innovations for rural families, to make their homes more durable, healthy, and beautiful. After spending the past 5 years building 5,000 earthen floors for rural customers in Rwanda and Uganda, and we are ready to do more. This role would improve our existing products and design sustainable housing products for rural families to transform their homes and lives. We have 600 teammates eager to distribute the new products, so your work would make an instant impact.



This person will be a key member of the Senior Management team, as the in-house expert and leader on research efforts. The person will drive a clear research agenda to prioritize testing high-impact ideas, and then work with the senior team to scale them up.

The responsibilities of this role will include, but certainly not be limited to:

Identify Key R&D Needs

- Meet with clients and analyze other sources of feedback and data to identify product failures and product components or attributes that need improvement
- Work with Senior Management Team to understand priorities for new products to be designed
- Understand what drives perceived value in clients, in order to prioritize various initiatives in the R&D pipeline
- Examples of innovation and research needs we know about today are as follows, but these will evolve and change:
 - Researching new stabilization materials or techniques for earth
 - Speeding the drying time of earth construction (our floor currently takes 1 month)
 - Developing a way to analyze local clays and sands and work with them (sieve them, wash them, add natural stabilizer to them, etc.) to prevent the need of using trucks to bring material in from quarries several kilometers away
 - Designing new ways to protect earth foundations from sliding in heavy rains
 - Researching alternative roof sheets (e.g. corrugated bamboo) that is cheaper, longer-lasting, or better quality than tin roof sheeting.
 - Writing and contributing research to an ASTM standard for an earthen floor which we can use as a base standard for new countries we expand to
 - Designing a lower cost way to prevent moisture infiltration in Uganda (lower-cost than a damp proof membrane)
 - Determining whether rammed earth or CSEBs can be manufactured in lower cost ways when done at-scale

Develop Research and Design Agenda

- Recruit and manage a technical advisory board to advise and support research agenda development
- Research existing options that we could learn from or adopt that would solve our clients' problems
- Develop research and design agenda by weighing priorities and considering criteria such as: potential for impact, cost-benefit, and likelihood of success
- Allocate resources from the R&D budget towards this pipeline of research and design projects
- Create a decision trees to present to management that indicate next steps based on broad outcomes of every project

Execute Against R&D Agenda

- Hire team of engineers and/or scientists necessary to execute on the research agenda



- Coach, lead and manage the innovation team of 5 to ensure quality research methods and outputs
- Create research protocols, and ensure rigorous execution and analysis
- Track and push forward multiple research projects simultaneously
- Develop partnerships with external stakeholders (e.g., partnerships with universities and corporate bio-resin and flooring labs for research we cannot do-in-house) to outsource aspects of our R&D
- Closely manage external partnerships to ensure steady progress, lead innovations to get field tested, and provide feedback on their success or failure

Communicate Across Internal Company

- Communicate findings and tradeoffs effectively to CEO and management team to make decisions about where to invest next (e.g. at specific forks in the road)
- Communicate research agenda to full company and get feedback when appropriate
- Communicate research findings to full company along with accompanying changes to the operation

Transition Learnings to Implementation or Additional Research

- Transition unsuccessful experiments to a new research arm or document reasons for failure
- Transition successful experiments to implementation, partnering closely with Quality Assurance and Construction departments to ensure smooth implementation
- Publish findings that may be helpful or relevant to the scientific community

Qualifications

- 10 years work experience, preferably having led an R&D / design department or an R&D/design team
- Master's degree in material science, structural engineering, earthen construction, or a related field (PhD preferred)
- Ability to be creative, strategic, analytical, and think outside the box to solve problems
- Humble and patient team-player who loves to coach and develop junior teammates
- Excellent attention to detail, commitment to excellence, and outstanding work ethic
- Flexible and adaptable to changing environments; thrives in a bootstrapped culture
- Optimistic attitude, entrepreneurial spirit, curiosity to learn new things
- Ability to work on a variety of tasks at the same time, and keep track of a variety of workstreams
- Sense of humor and enjoys a good pun

Apply online:

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