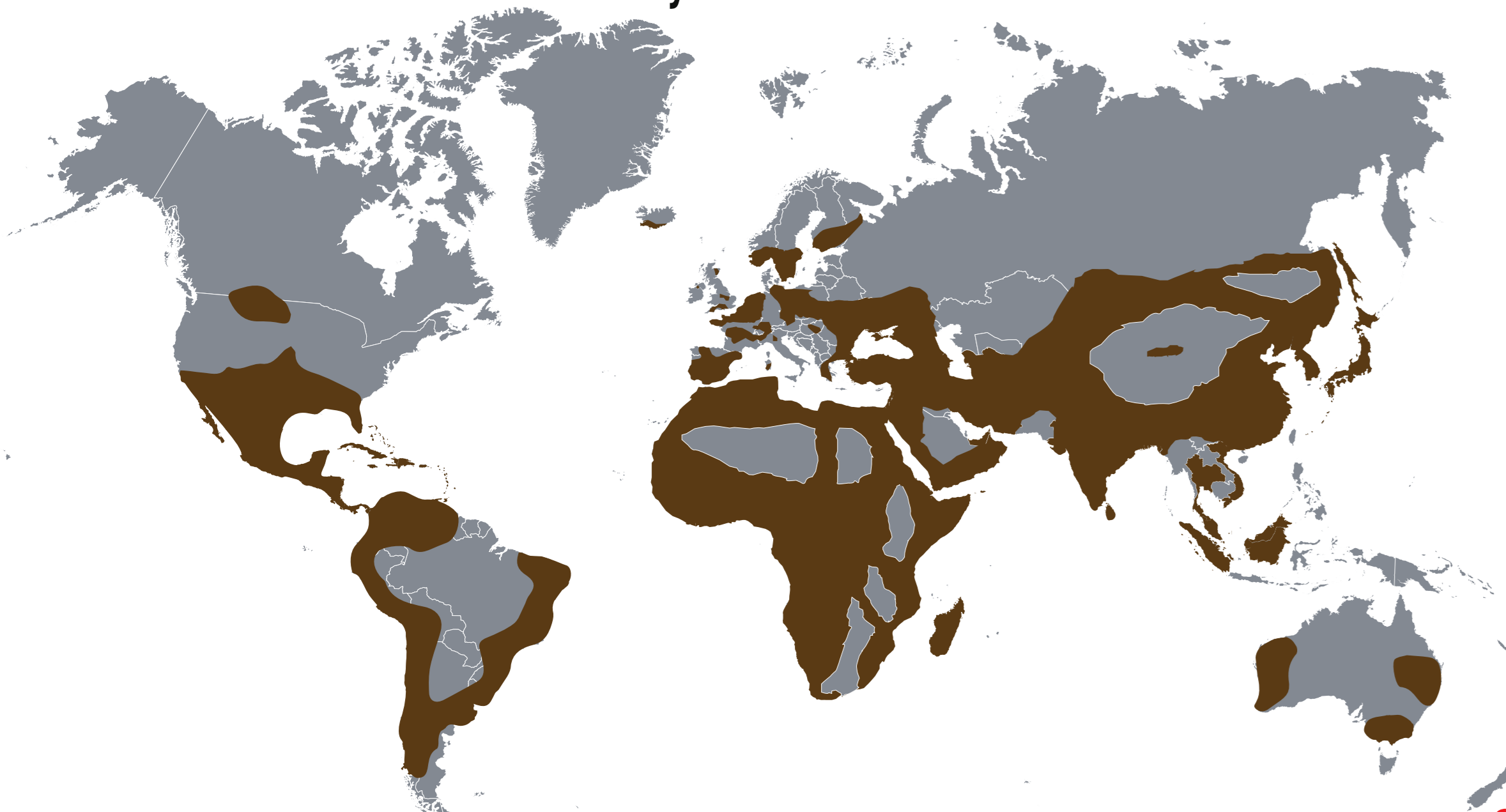
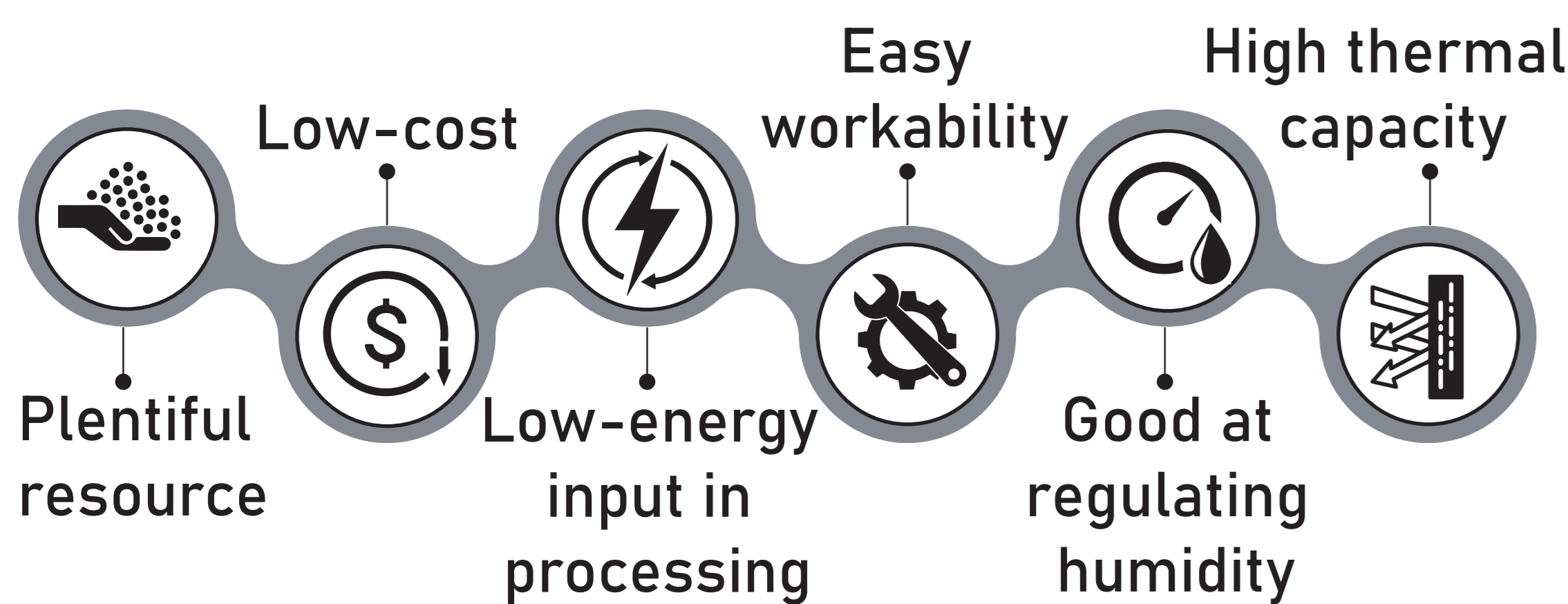


Introduction

Why Earth?

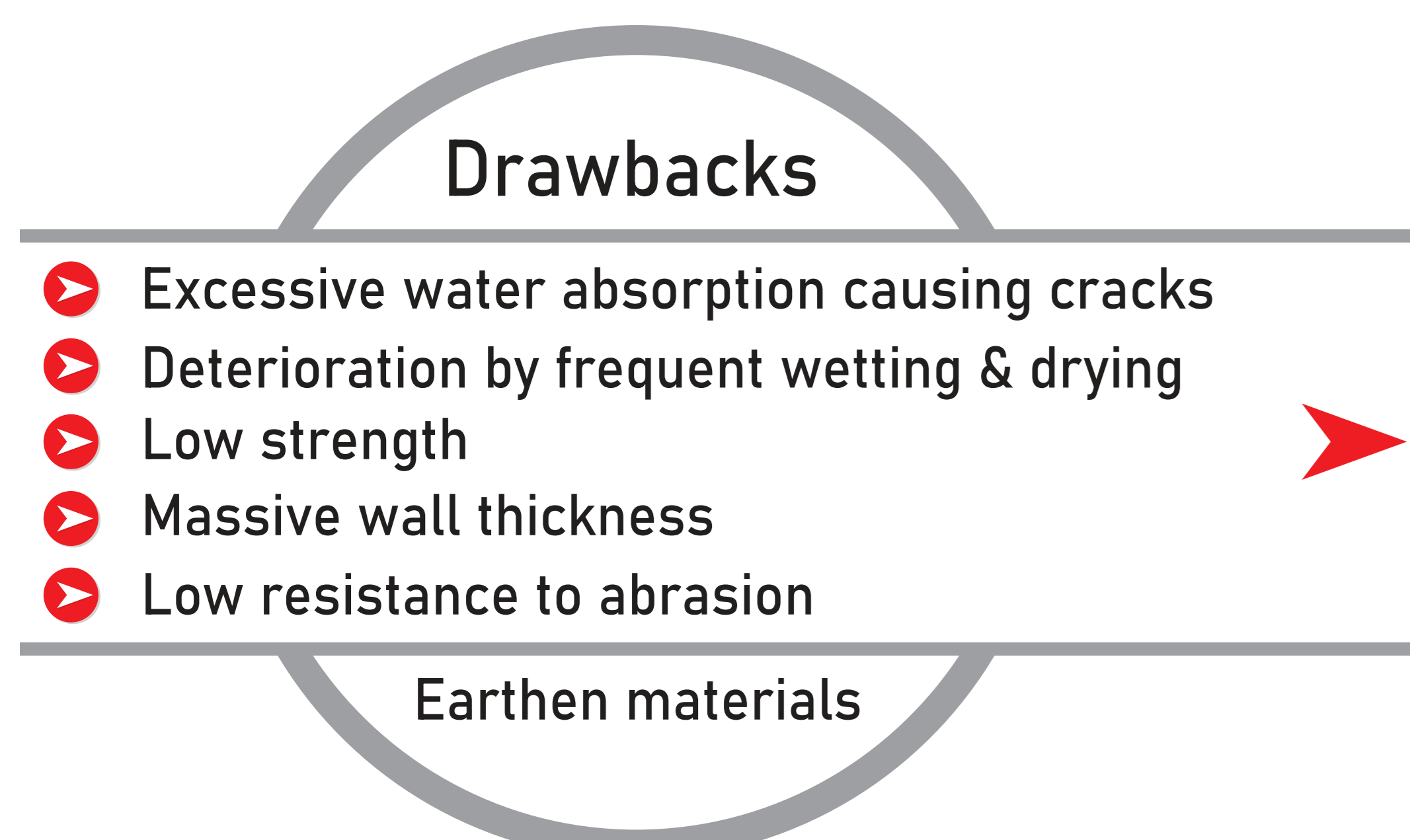


■ Areas of earthen architecture (Auroville Earth Institute 2009)

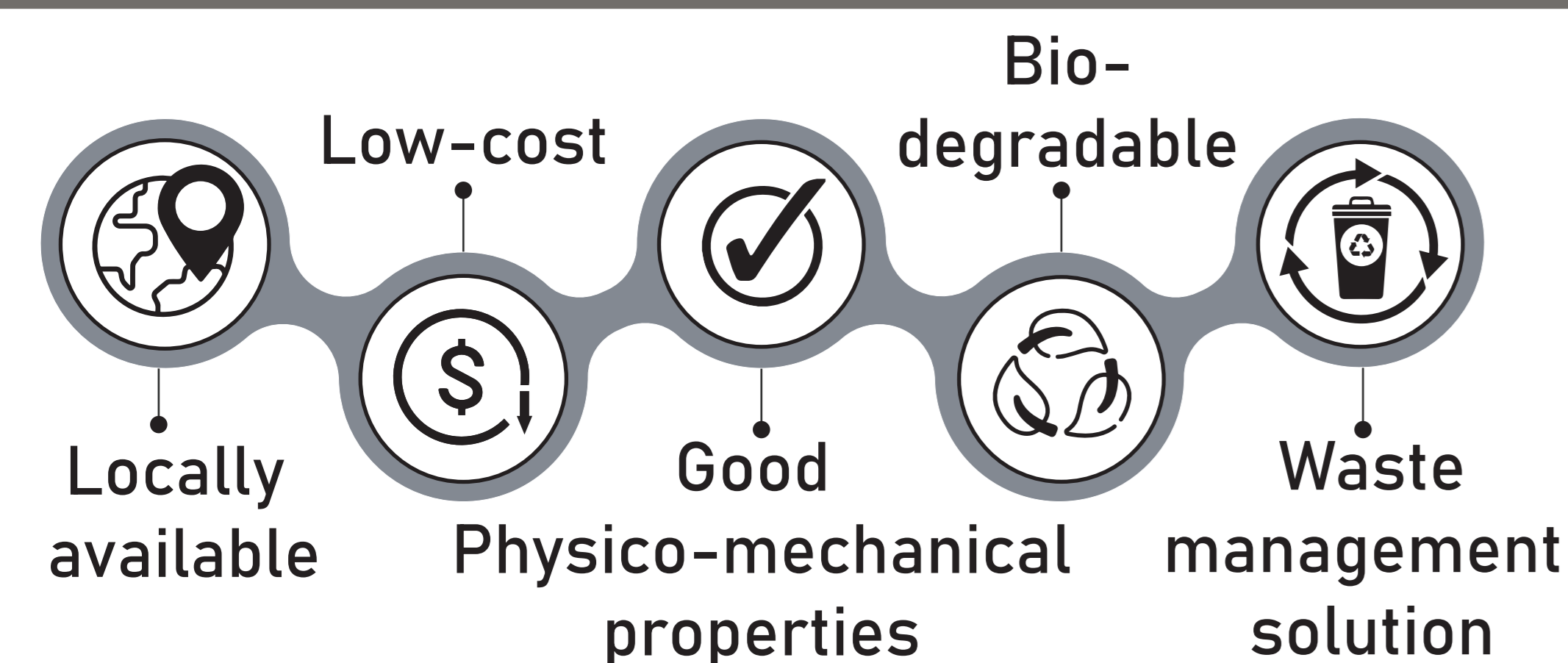


Why Stabilisation?

To overcome the drawbacks of earthen materials



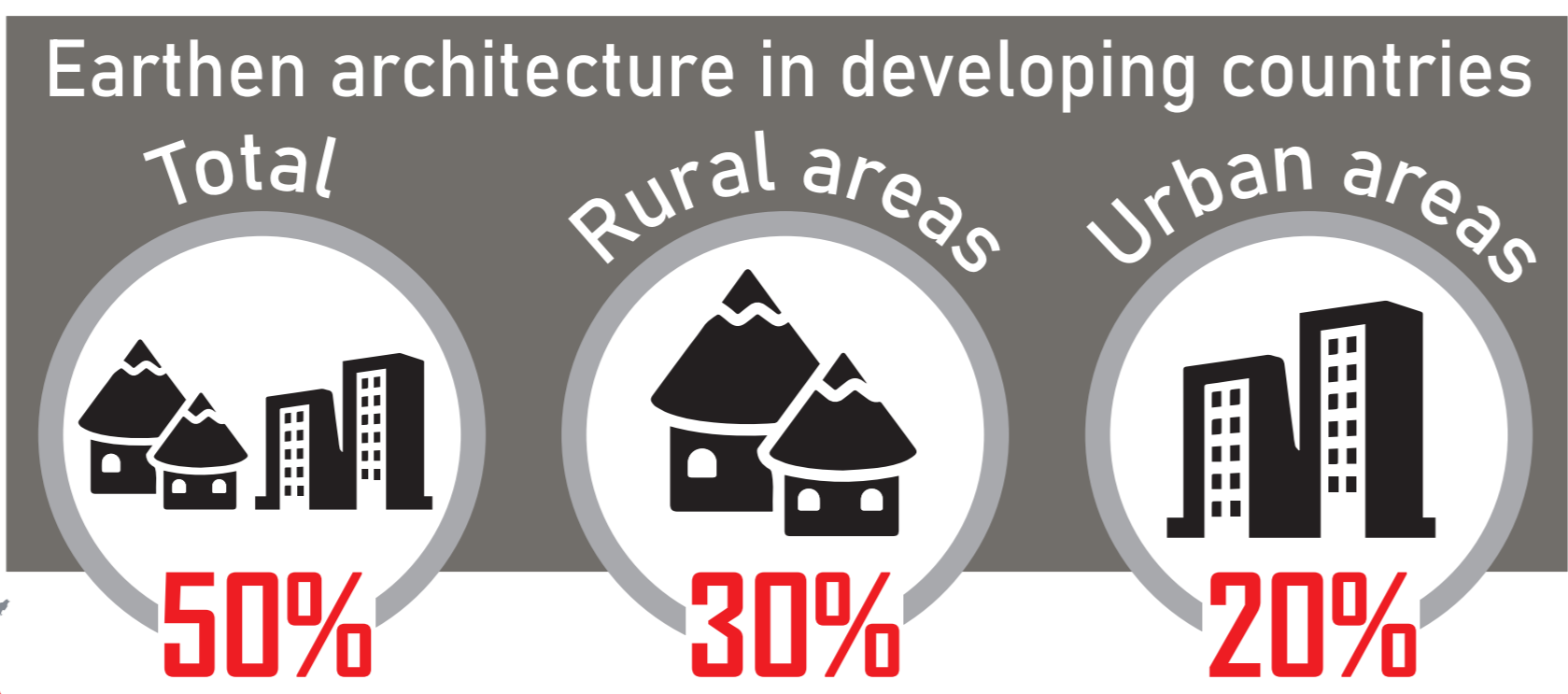
Why Agro-wastes?



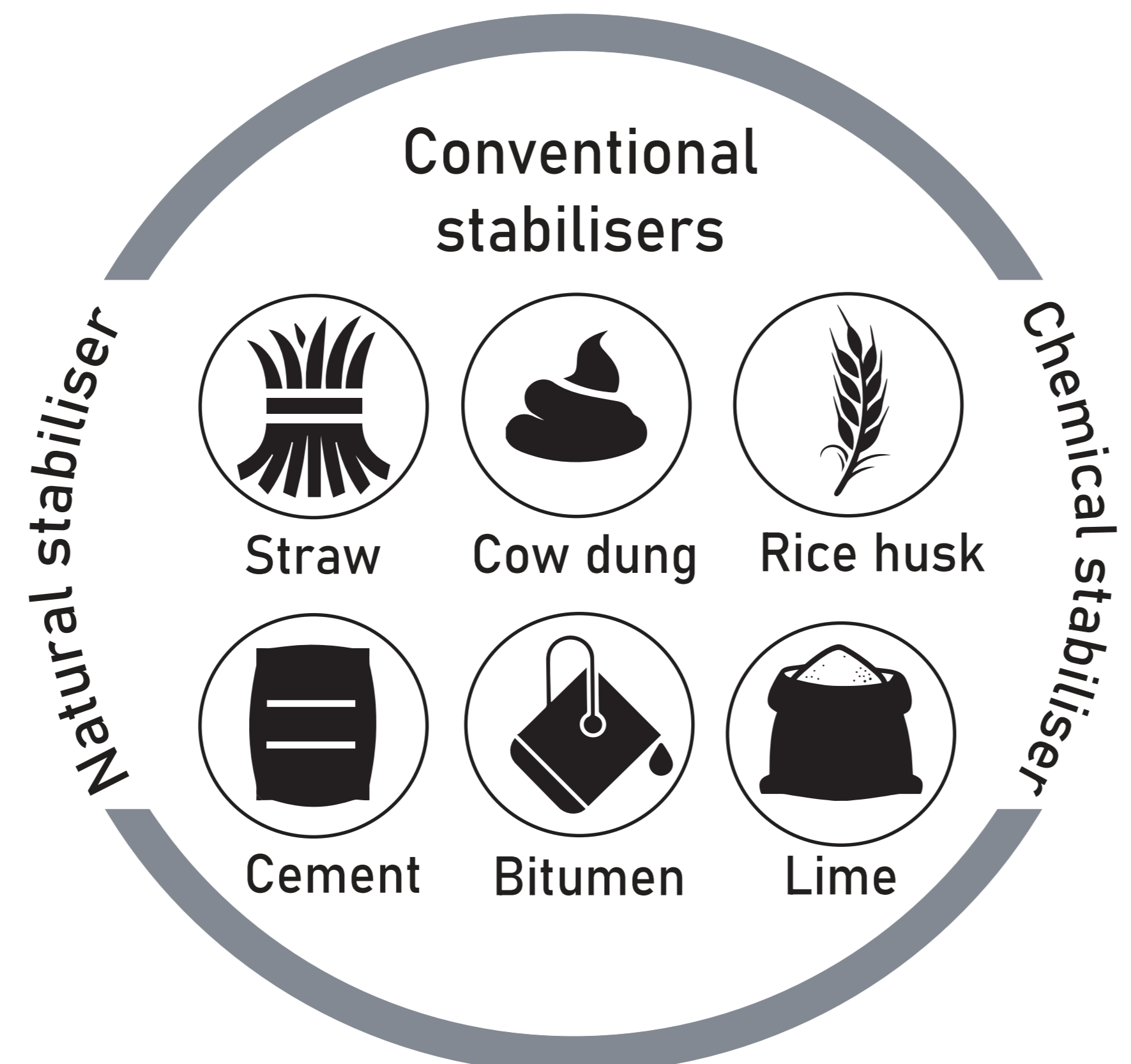
DEVELOPMENT OF BIO-BASED EARTHEN MATERIAL TO IMPROVE INDOOR THERMAL COMFORT IN TROPICS

Nusrat Jannat

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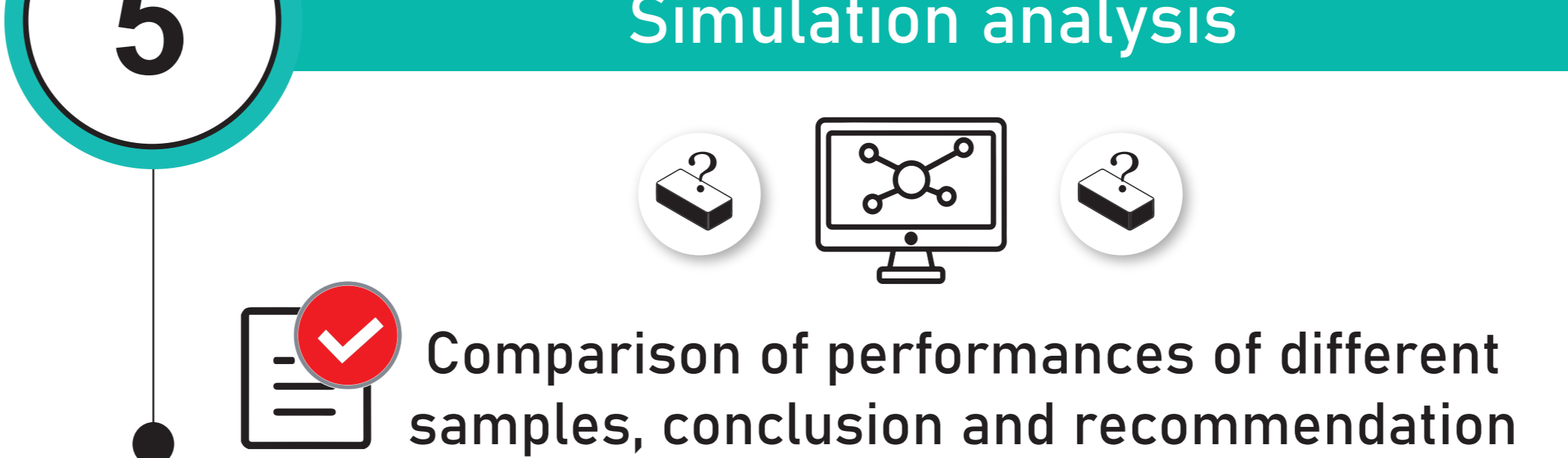
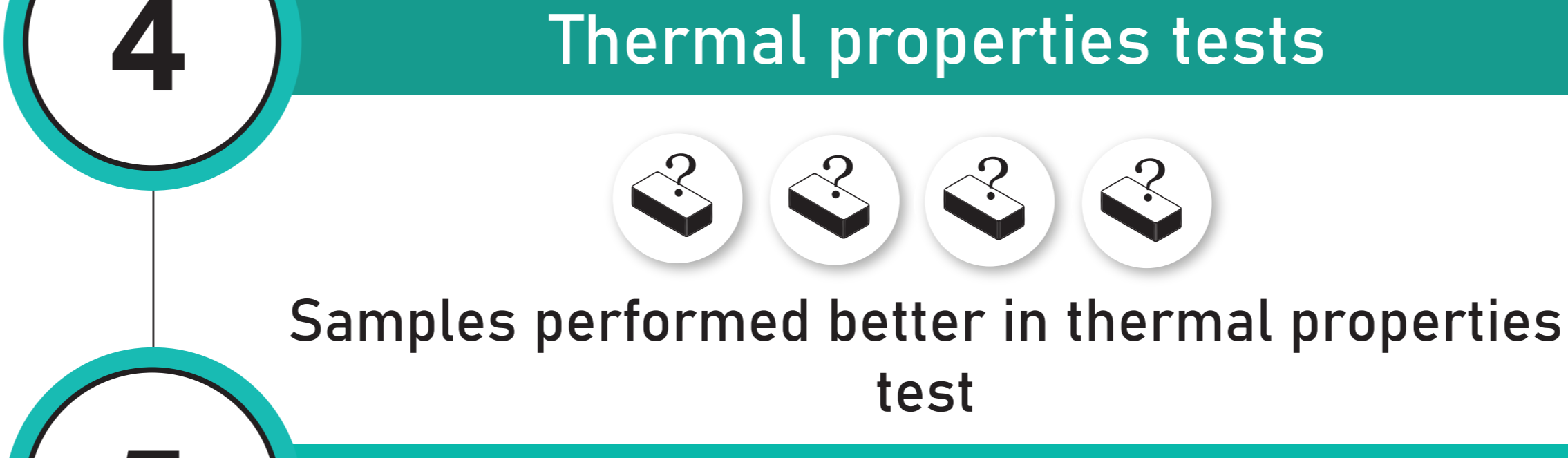
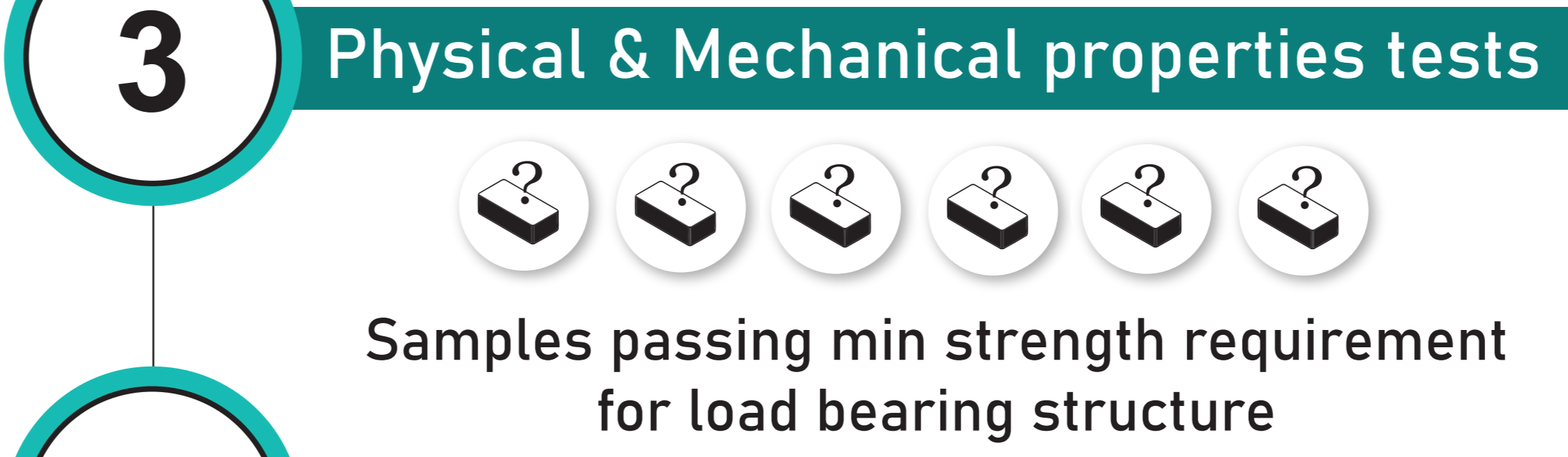
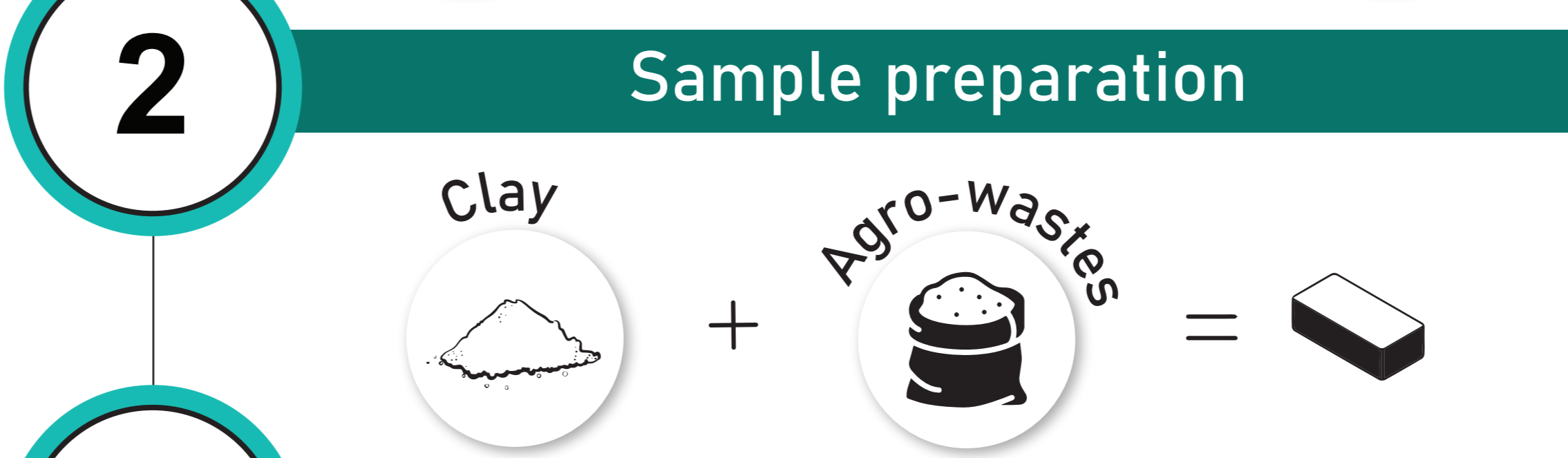
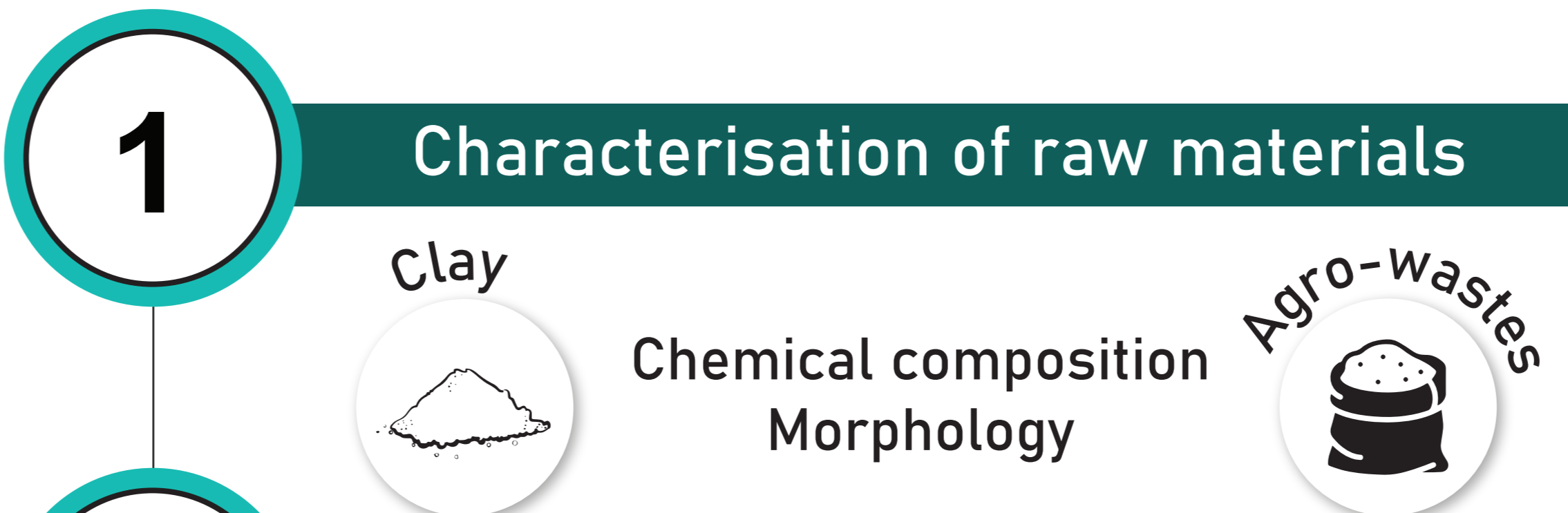
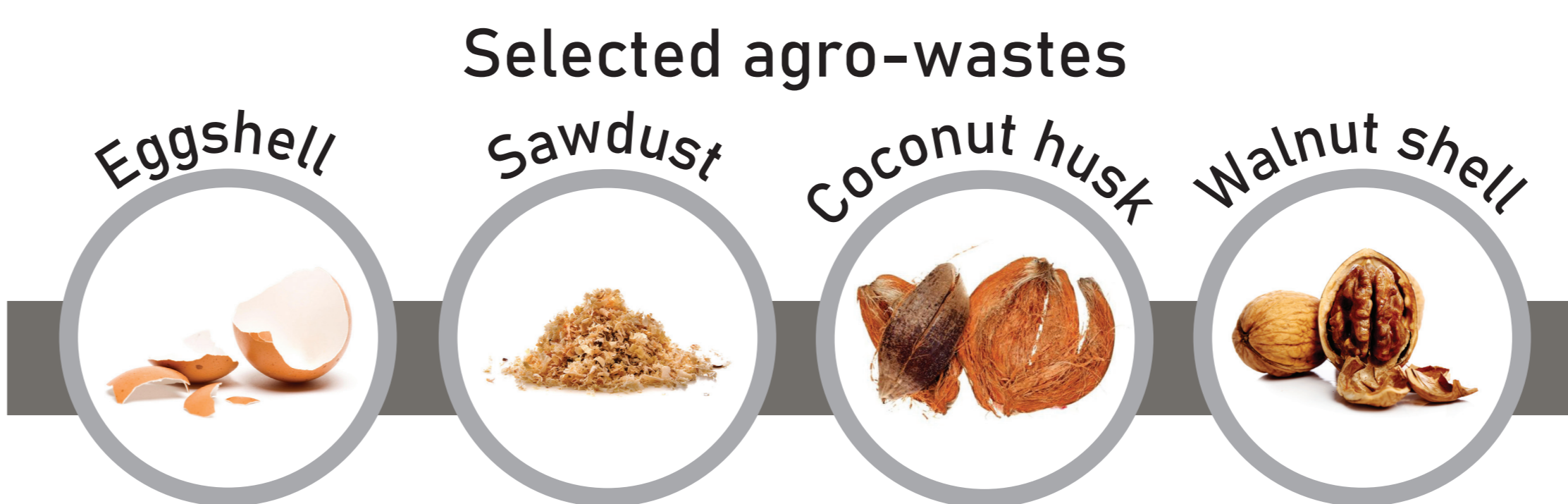
“When the indoor thermal conditions are not controlled by mechanical means, the materials affect the temperatures of both the indoor air and surfaces and thus have a very pronounced effect on the occupant’ comfort. Even when control is used, in the form of heating or air-conditioning for instance, the thermophysical properties of the materials used determine the amount of heating or cooling which is provided and also the temperature of the internal surfaces (radiant temperature). Therefore, even in these circumstances, the materials have an effect on the comfort of the occupants, as well as on the economical efficiency of the control systems (Givoni, 1976).”



998 million tonnes of agro-waste is generated every year globally (Agamuthu, 2009)



Methodology



Aim

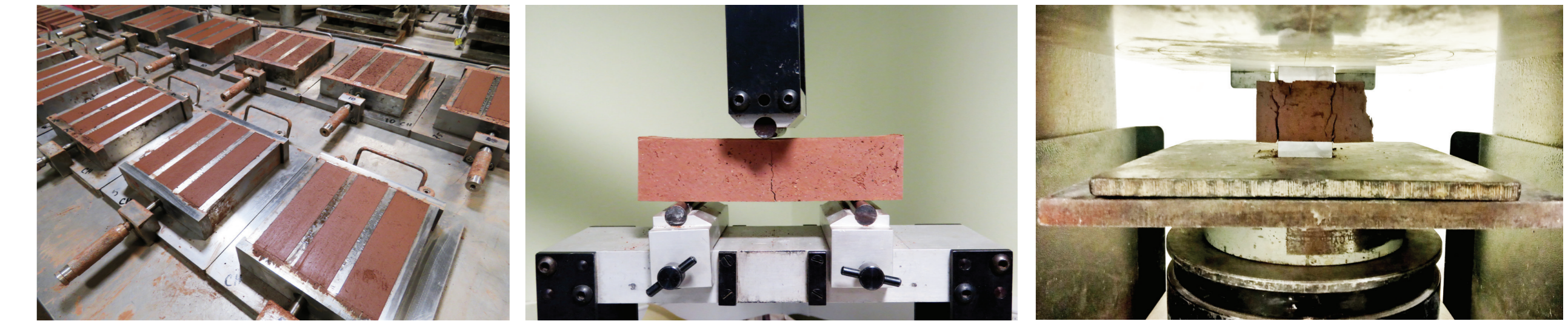
“To develop novel bio-based earthen material for sustainable rural housing construction in tropics.”

Research Impact

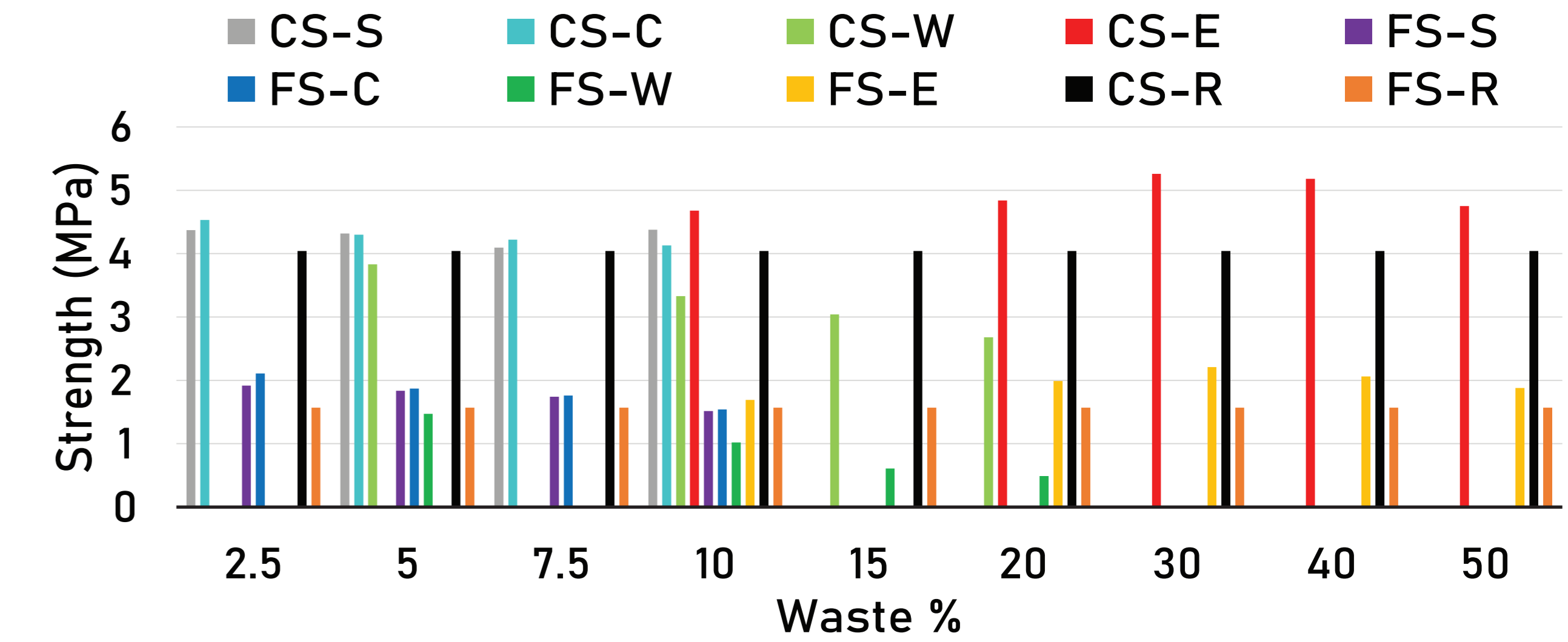
This research would be supportive of particular groups including:



Preliminary tests (Mechanical strength tests)

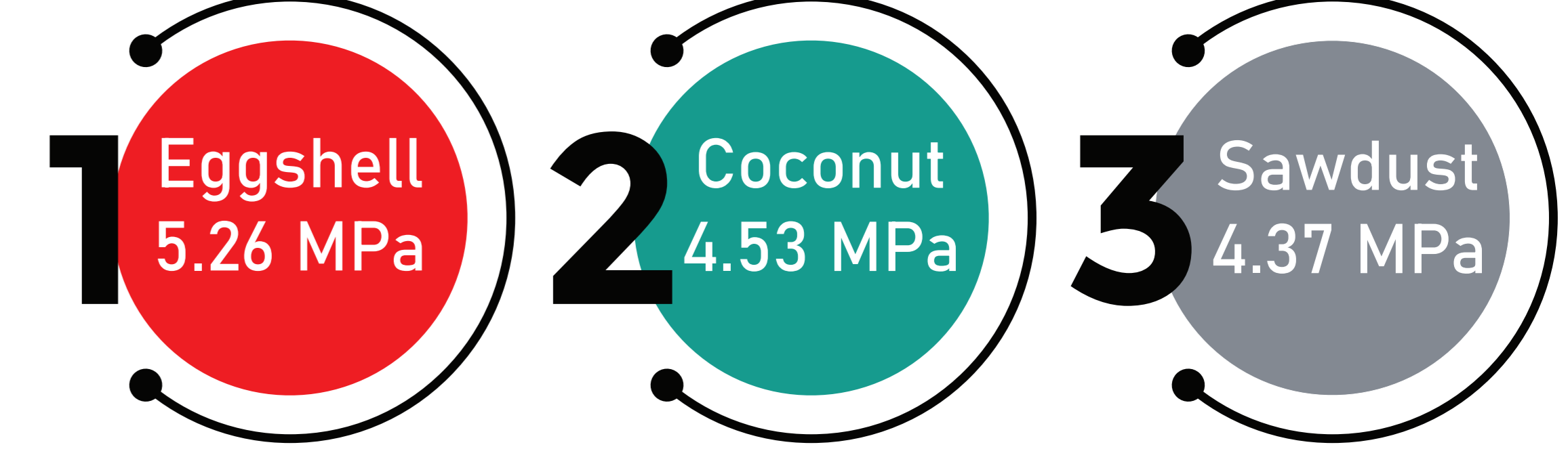


FS=Flexural strength; CS=Compressive strength; R=Reference sample (Waste-free); E=Eggshell; S=Sawdust; C=Coconut husk; W=Walnut shell



Conclusions

Eggshell, Sawdust and Coconut husk addition improved the strength while Walnut shell decreased the strength compared to the Reference sample.



References
 Auroville Earth Institute (2009) Building with earth, Technique Overview. Available at: http://www.earthauroville.com/world_techniques_introduction_en.php.
 Givoni, B. (1976) Man, Climate and Architecture. Applied Science Publishers, Ltd., London.
 Agamuthu, P. (2009) Challenges and opportunities in Agro-waste management: An Asian perspective. Inaugural meeting of First Regional 3R Forum in Asia, Tokyo, Japan.