GREEN SKILLS

Green skills to help nature repair itself – Training more experts in South Africa and Senegal

Africa's population is growing. This means more landscape change and development of supporting infrastructure. Ecosystems are under pressure, made worse by natural disasters induced by climate change. So writes Matthew Weaver, Sinetema Xoxo and Sukhmani Mantel.

In response, governments, scientists and environmentalists are turning their attention to nature-based solutions. These are environmental strategies that aim to address environmental change, including the impact of disasters, climate change, and water and food insecurity. For example, wetlands are a natural resource for humans and create a habitat for wildlife. They filter water and control floods. But they've been degraded all over the world, which threatens biodiversity and human livelihoods. Wetland restoration is a nature-based solution. Other examples are reforestation, and setting up green infrastructure in cities, such as urban forests and roof gardens.

Nature-based solutions are taking off all over the world. In Kenya, about 8 000 mangrove or coastal forests are being restored every year. These shield communities who live on the coast from storms, and absorb large amount of greenhouse gases. The Great Green Wall landscape restoration initiative in Africa's Sahel region is also a nature-based solution. In China, 30 pilot 'sponge cities' have been set up. These contain bioswales (ditches filled with plants that absorb stormwater during heavy rains and prevent floods), and rain gardens made up of plants grown on hillsides that also soak up heavy rains.

However, nature-based solutions are not being established fast enough to decrease global warming. In Africa, particularly, there is a shortage of people who have the green skills needed. Engineering with the skills to design green infrastructure, and environmental scientists who oversee environmental and social impact assessments, are in short supply. Nature-based solutions can't be set up without them.

Until now, universities have not offered specific degrees in this field. And there are very few professional training courses for ecologists and scientists. The result is a green skills gap. We are a team of ecologists, engineers, sustainability scientists, hydrologists and social scientists who are working on filling this gap. We are revamping curricula at South African and Senegalese universities. Our academic project, 'Nature-based solutions for African resilience', aims to identify the missing green skills in university degrees, and develop nature-based solutions curricula.

If we do not take urgent action to integrate these green skills into education and training, Africa could miss out on opportunities to build a sustainable future.

The green skills education gap

We conducted interviews and surveys with more than 50 experts at South African universities, professionals in consulting firms, and decision-makers in government bodies, to see what kind of training was missing from university degrees and short courses for professionals.

They identified these gaps:

- Design and implementation: There is a shortage of training courses for designers of environmental projects, such as wetland restoration and urban greening.
- Interdisciplinary knowledge: Ecology, hydrology and climate change are mainly taught as part of the environmental sciences. These subjects haven't yet been included in engineering degrees. So there is a shortage of environmental engineers – people with the skills to incorporate natural solutions into engineering projects.
- Community engagement: Nature-based solutions projects are long-term projects designed in partnership with the people of an area. Skills need to be taught in how to set up and run community meetings where everyone has an equal voice.
- Policy and funding: This involves training in fundraising, policy writing and lobbying for support for projects.
- Ethics and engagement: Universities need to teach students how to engage with communities in ways that are ethical. Practitioners therefore need to be trained in how to involve indigenous knowledge systems.

Building green skills

Having identified these gaps, our project decided to set up training and professionals in these areas:

- Nature-based solutions for water management: How to restore city stormwater systems and urban wetlands.
- How to plan for climate change adaptation and conservation
- How to conserve the environment so that it absorbs as much carbon as possible: this needs training in ecosystem preservation such as reforestation and habitat restoration.
- Training people to monitor whether the nature-based solutions are making a difference.

Educational institutions will need to develop specialised courses and integrate this kind of interdisciplinary learning into their curricula:

- Multidisciplinary understanding: Balancing specialised knowledge from different university departments with broader environmental understanding.
- Interdisciplinary modules: For example, courses linking nature-based solutions with water and catchment management.
- Practical learning: Taking students out into the field to analyse successful nature-based solutions,

Why green skills matter for Africa's future

African countries need to act now to set up nature-based solutions to the problems caused by global warming and environmental damage. There is still time to do something. If the continent does not act quickly, the cost will be high. The United Nations Environment Programme has found that developing countries need to adapt to climate change urgently if they want to protect their food, water and agriculture systems.

The International Federations of Red Cross and Red Crescent Societies found that doing nothing to adapt to climate change could result in 200 million people needing humanitarian aid as a result of climate-related disasters by 2050 – up from the 108 million who need it today.

Nature-based solutions can drive sustainable development and create new jobs in climate-change related work. Rhodes University's Nature-based Solutions for African Resilience project is a start. However, this task goes beyond academia. It needs partnerships between universities, business, non-profit agencies, communities and others to develop the skills for society to become resilient to global warming.

- To read more about the Nature-based Solutions for African Resilience project at Rhodes University, visit https://www.ru.ac.za/nbs4afrres/
- This article was first published by The Conversation, https://theconversation.com