Cuba has introduced a large-scale conversion to agroecology, and farmers have learned to drought-proof their farms as a result. Photograph: Desmond Boylan/REUTERS

The food price rises of 2007-8 triggered some alarming forecasts about the future of food. By 2050, said the FAO, there would be another 2 billion mouths to feed. Production would need to increase by 70%.

These dire warnings were met with widespread commitments from governments to invest in agriculture: a new Green Revolution.

But is increasing production the only challenge? Many observers say no, because there’s actually already enough food in the world, it’s just that the poorest – mostly struggling small-scale producers themselves – can’t afford to buy it.

As one position paper at Rio+20 this year put it, the call to double food production by 2050 is only necessary if we continue to prioritise livestock and automobiles over hungry people. Instead, improving the livelihoods of small-scale producers should be the priority.

The issue, then, is not just how much we invest in agriculture: it’s how we do it, and who does it.

Calls for a different kind of agricultural investment have been led by the UN’s Special Rapporteur on the Right to Food, Olivier de Schutter, who urges a transition to agriculture underpinned by agroecological practices.

Agroecology can be summarised as an approach where nutrients and energy are...
recycled on the farm in closed loops, rather than relying on external inputs. Crops and livestock are integrated to build balanced local ecosystems, in contrast to monocrop farms, which require extensive use of fertilisers and pesticides.

De Schutter’s influential report, Agroecology and the Right to Food, pointed to evidence of how this approach has the potential to dramatically increase yields. In the report, he cites a study of 286 agroecological projects, which found that yields increased by 79% on average.

Crucially, investing in an agroecological approach also creates sustainability by building greater resilience to the effects of climate change.

Cuba – which in recent years has introduced a large-scale conversion to agroecology – is a case in point.

"After the break-up of the Soviet Union, Cuba lost 70% of agrochemical and fuel imports and 50% of livestock feed imports," explains Julia Wright, deputy director of the Centre for Agroecology and Food Security at Coventry University. "It couldn’t produce those inputs itself, and since then Cuba has developed some fine examples of ecological agriculture."

Drought mitigation is one of them. A severe drought in part of the country meant farmers were unable to plant their staple crop of maize, and Cuba did not have the resources to implement a high-tech solution like a new drought-resistant variety or major pipelines.

"Instead, we worked with farmers to increase their understanding of the water cycle in the landscape," says Wright.

"We introduced simple techniques of planting crops of different rooting depths, keeping bare soil covered all year round, increasing shade, and testing nationally sourced crop varieties that are more drought tolerant. All these together increased production rapidly and households gained a new income. Critically, farmers felt that drought was no longer a problem to them. Their farms were drought-proofed."

Scaling up is the challenge

It is these combined benefits of improved livelihoods and climate-resilience that are thought to make agroecological systems more sustainable, leading to mounting support for agroecology among major policymakers including the United Nations Environment Programme (UNEP) and the United Nations Conference on Trade and Development (UNCTAD). It's also not limited to small-scale farmers.

"Agroecology is relevant for both small-scale farmers and large-scale production, in both temperate and tropical countries," says Michel Pimbert, former principal researcher and team leader for agroecology and food sovereignty at the UK-based International Institute for Environment and Development (IIED), and now a fellow at the Rachel Carson Center for Environment and Society in Munich.

"The relevance of agroecology for the future of large-scale industrial farming is becoming more apparent as policymakers, scientists, farmers and citizens realize that business as usual is no longer an option in the face of peak oil, climate change, water scarcity and the social, public health and environmental costs of industrial and Green Revolution farming."

Scaling up agroecological systems is the challenge, and while governments have plenty to do in that regard there are also opportunities for forward-thinking businesses who can see beyond proprietary seeds and fertilisers.

"Patents are a feature of industrial food and farming, so large corporations will not invest in agroecological innovations," says Pimbert.

"But this does not mean the entire business sector has nothing to contribute to
agroecology. Co-operative businesses, for example, can play a potentially huge role in supporting agroecology and resilient local food systems. Novel types of partnerships between agroecological innovations and this part of the private sector should probably be developed more.”

This could happen downstream, where there's potential for more overt connections between agroecological production and consumers. In the US, for example, the Community Agroecology Network (CAN) – which works to advance agroecological systems in Central America – has launched AgroEco Coffee, a single-origin coffee from a small co-operative in Costa Rica producing coffee as part of an agroecological farm system.

"CAN creates links between agroecology and consumer markets to support agroecological practices and the creation of sustainable livelihoods for small rural farmers," says Rose Cohen, assistant director of CAN. "We work to create a 'supply network' rather than a supply chain; one in which the players know about each other rather than a chain where one end doesn't know the other."

Upstream, too, there is room for partnerships. In Cuba, producers have emerged to supply biological and pest control products – not chemicals, but insects and bacteria.

The opportunities are there, and may only increase under favourable policy frameworks. But the difference with industrial agriculture is that there is no one-size-fits-all approach to agroecological systems. Efforts to scale-up must be equally localised in design, but this doesn't necessarily mean they have to be small-scale or restricted to local markets.

"There's no reason why we can't have larger-scale agroecological farms," says Wright. "But ecological farming is very location-specific. So there would be lots of smaller-scale ecological product and service providers – relative to the current scale, at least. That, in a sense, is good. Hopefully it would spread wealth around, rather than concentrate it in the hands of the few."

The challenge now for sustainable business investment in this area is to find the right niches.

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