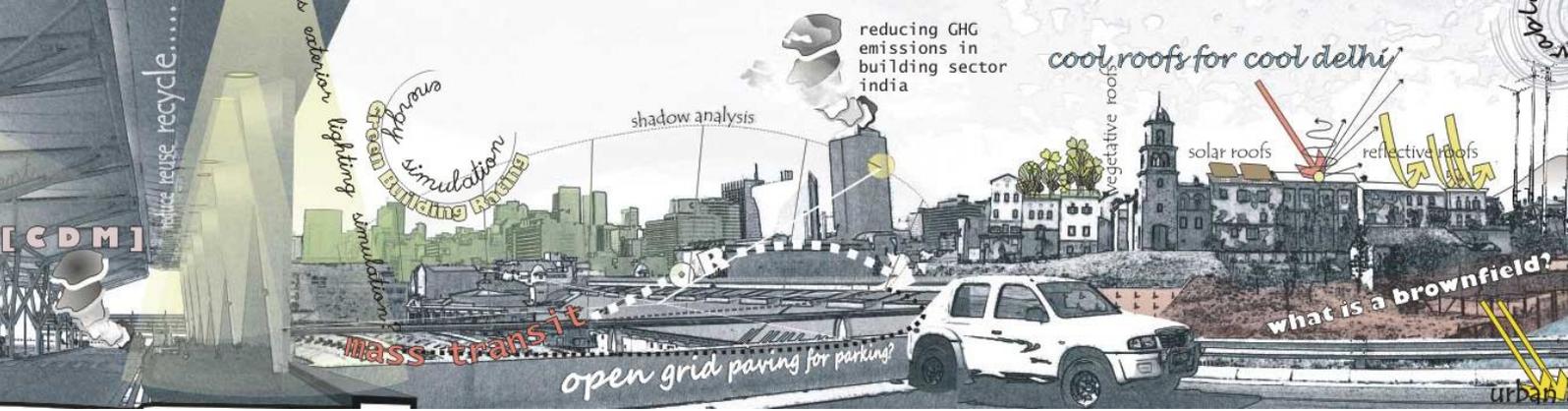




# SCALING SUSTAINABILITY

*Lessons from the State of Sikkim in India  
(Winner of FAO's Future Gold Policy Award 2018)*



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## About the Author

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Voyage has been working on research for capacity building of institutions, to tackle the problem of waste in high altitude regions, with focus on implementation and scaling of solutions.



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## Executive Summary

A small state in India, called Sikkim, has emerged as a model for sustainability by integrating policy and infrastructure to achieve 100% organic crop production. Part of the biodiversity-rich and fragile ecoregion of the Eastern Himalayas, the state offers many insights to the social-environmental benefits of ecological agriculture.

This article explores Sikkim's inspiring journey towards sustainable agriculture driven by strong leadership and community engagement.

While farms in Sikkim traditionally always had a low dependence on synthetic inputs, it was the government's call for a 'Total Organic State' in 2003 that heralded the state-wide Organic Mission.

What started out as a pilot program in a few hundred villages gradually spread across the entire state, with the help of robust policy and infrastructure support from the government. A 7-pronged approach saw the government, the industry and the citizens come together in a unique partnership for developing on-

farm organic input production capacity, setting up internal control systems by training farmers, or tapping into information and communications technology.

When in 2016, Sikkim succeeded in certifying its entire farmland as organic, the only state in the world to do so, it had become a global model for scaling sustainability. In 2018, the state received the prestigious UN Food and Agriculture Organization's *Future Policy Award* for agroecology.

With this successful experience, the Sikkim government is now working on many other areas such as animal husbandry. Sikkim is now also developing an umbrella legislation that targets all 17 Sustainable Development Goals.

Successive IPCC reports have concluded that we need to be chasing far-reaching and bigger sustainability targets. Sikkim can guide policymakers across the world in channelling political will and community participation towards scaling sustainability.

## Introduction

How can we achieve a large-scale transition of conventional, chemical-intensive farming to an all-organic production system? This article discusses the remarkable sustainable agriculture model adopted by a small mountain state in northeast India, called Sikkim.

Conventional agriculture contributes to climate change, destruction of ecosystems while also impacting our health. Sustainable food production is a key to the Sustainable Development Goals (SDGs).

The journey of Sikkim's organic revolution is sure to get you thinking of practical, achievable goals towards a global transition to ecological practices for food production. Nestled amongst the mighty Eastern Himalayas, Sikkim shares three of its borders with Tibet, Bhutan and Nepal. While the state covers only 0.2 % of India's geographical area, it is home to 26% of the country's biodiversity and identified as part of an Ecological Hotspot in the Eastern Himalayas. An Ecological Hotspot is a biologically rich area, threatened by the loss of 70% of its original habitat.



Figure 1: Location of Sikkim-27°N 88.5°E (Gangtok city)

It has a predominantly agrarian economy and is the world's second largest exporter of cardamom.

The local culture of the state reflects the affinity that people have towards nature. One of the biggest festivals here

celebrates the consecration of the Mt. Khangchendzonga peak as the guardian deity of Sikkim. The state even allows people to forge fraternal ties with trees, by encouraging the local tradition of *Mitini* in order to preserve trees.



Figure 2: Sikkim lies in the biodiversity-rich eco-region of the Eastern Himalayas

Sikkim stayed relatively insulated from India's Green Revolution that led to chemical-intensive agriculture across rest of the country, in the 1960s. At a fertilizer consumption rate of 5.8 kg/hectare, Sikkim was the third-lowest consumer of fertilizers among Indian states even before the structured shift towards organic agriculture. Today, Sikkim is widely regarded as one of the most sustainable regions of the world today.



In 2016, Sikkim became the only state in the world whose entire farmland is organic certified.

Behind this landmark achievement was the government driven program -the **Sikkim Organic Mission (SOM)** which

sought to protect soil fertility, the environment and ecology and ensure health of its citizens.

You may have come across organic farming practiced within a single farm or at a household, mostly always at a local level. However, Sikkim stands out as an example of successfully scaling organic farming from local to regional level.

In 2018, the state was awarded the United Nations Food and Agriculture Organisation's (FAO) Future Policy Gold Award 2018 for its visionary policies promoting agroecology.

The region sets an excellent example of how other Indian states and countries worldwide can successful upscale sustainable food production.

## Why Organic Farming

Sikkim principally produces cash crops, such as cardamom, ginger and turmeric. It's also a significant exporter of orchids. While fertilizer inputs in farms was low before the Organic Mission, they were certainly penetrating the mainstream at an alarming enough rate.

The effects of synthetic inputs in our food is well-known. Chemical fertilizers and pesticides are toxic and contaminate the air, food, water and soil. In the long run, it can cause adverse effects in humans like cancer and mineral depletion in the soil.

Organic farming steers clear of chemical inputs. Instead it employs environmentally friendly fertilizers and pesticides...which are often produced on the farm itself in a circular process.

An even higher goal is agroecology, which is a system of food production where plants, animals, humans and the environment are in perfect economy. While it is not associated with any one farming method, it has a synergy with organic and integrated farming.

Large-scale agroecology can help tackle malnutrition, social injustice, climate change, and loss of Biodiversity.



The Principle of Health.



The Principle of Ecology.



The Principle of Fairness.



The Principle of Care.

Figure 3: Principles of Organic Farming (source: IFOAM)

At the heart of Sikkim's transformation lies a transformation framework based on synergy between the **Government (Policy)**, the **Industry (Hardware)** and **Citizens (Software)**.

In 2003, the state government passed a visionary resolution to adopt organic farming across the entire state, towards a '**Total Organic State**'.

Much of the visionary policymaking that followed can be credited to Sikkim's Chief Minister, Pawan Chamling.

## Early Steps

The initial thrust was on promoting organic crop production. Farmers had long since abandoned traditional organic farming practices and as a result, local solutions were hardly available.

Thus, the state had to rely on procuring organic alternatives to fertilizers and pesticides from other states. At the same time, the government realized the importance of on-farm production of organic resources in due course of time.

The early policies focussed on grassroot behavioural change and creation of markets. There was a pressing need for establishment of basic infrastructure and laws in the absence of national policy, standards, certification and marketing systems. This paved the way for a 7-year long pilot program to test different methods at smaller scales, before targeting the goal of 'Total Organic State'.

### *Seven-year Pilot*

The seven-year pilot launched in 2003 helped identify the best solutions for the state. The objectives of this pilot were formulated keeping in mind the core fundamentals of agroecology including **socio-economic aspects** such as consumption and market expansion, **cultural aspects** as well as **health, education, rural development and sustainable tourism** in addition to **organic farming and conservation**. The activities undertaken can be broadly bucketed as per the Transformation Framework.

### *Policy Interventions*

Instead of an outright ban, the government phased out chemical fertilizers over a 10-year plan by reducing

the fertilizer subsidy at the rate of 10% per year. This meant that users would have to pay double eventually. Meanwhile, all sale points of fertilizers were gradually closed.

This phase brought together the entire state government machinery, where they joined hands by curtailing supply, trade requirements and transportation.

### *On-ground support*

To support these policies, the government adopted a 100 villages as **Bio-Villages** to demonstrate organic farming practices. Farmers were provided EM (Effective Micro-organism) Solution and trained to prepare Organic Manure and *Bokashi* (a composting technique that uses anaerobic bacteria). Over the next six years, the number of bio-villages grew to 396.

The government also set up model organic farms, seed processing units, vermiculture hatcheries and farm science centres. To encourage organic practices, it provided subsidies for the construction of compost pits and *azolla* as well as blue-green algae tanks for nitrogen fixation. It also set up large scale production units for biofertilizers like *azotobacter* and *azospirillum*.

The food processing industry in Sikkim also came out in support of the movement by attempting to market the produce in the early days of the organic transition.

For example, one of the notable industry players in the regions, *Mevedir*, offered to export the organic produce at its own expense. This was a significant effort considering that the land was still undergoing organic conversion and official organic certification was still about three years away. This was followed by similar certification projects by multiple government agencies. Meanwhile, a grassroots level awareness campaign brought farmers and other stakeholders on board the organic mission.



Figure 4: Farmer training workshops

Urban and local government bodies conducted intensive training programmes for on-farm production of inputs including manure, seeds and bio-fertilizers.

**Internal Control System (ICS)** development is compulsory for organic

certification. Three livelihood schools on ICS development were set up in order to generate employment opportunities for the youth of the state. The grass root level workers who toured villages and collected data on a door to door level became a key part of the organic conversion and certification process.

## Sikkim Organic Mission

Encouraged by the learning and experience of the pilot program, the government launched the **Sikkim Organic Mission (SOM)** in 2010 which provided clear-cut policy and implementation roadmap.

The Mission followed a multi-pronged approach that included infrastructure support, Information and Communication Technology based data management systems, training of farmers for ICS, input management setting up of processing units, organic technology research, branding and marketing. With the launch of SOM, the proportion of certified land in Sikkim saw a steady increase.



Figure 5: The Sikkim Organic Mission's 7-prong strategy

## Organic certification

India has two types of certification systems for organic production: **Third Party Certification, which is essential for exports,** and **Participatory Guarantee System (PGS), meant only for domestic sales.** Sikkim targeted third party certification.

By the end of the pilot, 8,165 hectares of farmland were certified, along with approximately 10,000 hectares of cardamom farms historically untouched by chemicals. The target now was conversion, certification and maintenance of 74,000 hectares.

Third-party certification takes roughly three years after which a pre-certification is provided. The entire process is followed again in 2 years to finally give organic certification to the land, which must be renewed again every year.

This procedure for conversion and certification is very time and resource consuming, considering the government must pay for it. This created a need for an alternative or twin certification system. Participatory Guarantee System (PGS) was envisaged as a quality assurance system taken up by farmers on their own based on mutual trust and transparency. This would be for areas with non-exportable crops, whereas the other farms followed the standard procedure for exportable crops.



Figure 6: Organic cardamom cultivation in Tarikharkha, Rongli, Sikkim

As mentioned earlier, ICS providers are an integral part of the certification process. Initially, reliable service providers were brought on-board, who helped train local youth to carry out ICS. Participation of farmers was recognized as key, as they

were directly involved in the process. They needed to maintain a farmer's diary which included details on land holding, standing crops, infrastructure, nurseries, cattle heads, input used, and practices followed.

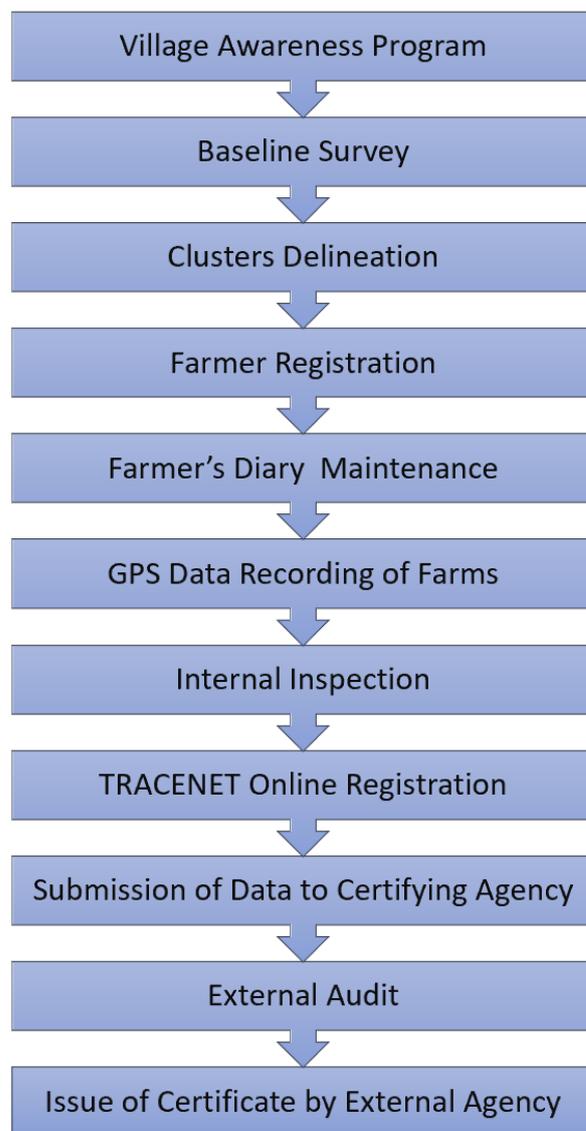


Figure 7: Process of Internal Control System (ICS) development

The SOM continued the process of setting up infrastructure for producing **on – farm inputs** (manure, seeds, bio-fertilizers etc.) across the state. Other infrastructure setup included soil testing labs for GPS Tagging and enabling digital soil health map.

use of Physical Traps, Friendly insects, Reactive sprays from plant-based materials and Bio-Pesticides were researched in the Integrated Pest Management Lab.

Processing units were established for crops like cardamom and ginger that had high demand but were perishable. By providing subsidies for transport and land, easy licensing and tax exemption, the state encouraged entrepreneurs in setting up these units.

### *Market Linkages*

Optimized farming operations for better prices, while eliminating middle-men helped in achieving economies of scale in the entire supply chain. For example, the **One Village One Crop** system encouraged bulk production by ensuring an uninterrupted supply of commodities, making marketing cost effective. A collective group called the **Farmer's Producer Organisation** improved the farmer's bargaining strength in the market.

The government developed and vigorously promoted the **Sikkim Organic brand** through trade fairs and media. Outlets were set up at local level and metropolitan markets for bulk sale of organic produce.



Figure 8: Sikkim's participation in BioFach, 2016 in Germany

### *Access to Organic farming know-how*

A compendium of organic practices for all major crops of Sikkim, prepared by a collaboration of various research institutes, was provided as a ready reference to farmers and researchers.

### **Interactive Communication Technology**

was used for real time monitoring and management. Farmers could interact directly with SOM officials through text messages. Authorities could access weekly data on area sown, estimate crop yields, production of commodities and so on. A **Quick Alert System** helped mitigate the effects of drought, floods, unfavourable market conditions and storage issues. The cumulative effect of these progressive strategies helped scale up the organic status of farms from small farms to the entire farmland. Certified farm area increased from 18,234 hectares in 2011 to the entire farmland by the end of 2015. On Jan 19<sup>th</sup>, 2016 Sikkim was formally declared as a Total Organic State under the *National Programme for Organic Production NPOP* regulations.

## Post Mission

The benefits of Sikkim Organic Mission were manifold. The state saw a phenomenal growth in tourism. Health, Education and Rural Development received a major impetus due to the mission initiatives.

Over the long-term, the success of the mission rests on the success of its marketing efforts. Economic returns from its organic transformation will allow Sikkim to realize all the 3Ps of sustainable development- People, Planet and Profits.

Currently, Sikkim is exploring less expensive models of organic certification like PGS (Participatory Guarantee Scheme) to make organic farming financially sustainable for farmers. At the same time, it's important to note that Sikkim has so far accomplished 100% organic crop production and still faces challenges in reducing chemical inputs in animal husbandry.

## Conclusion

While the agroecological zones differ across the world, Sikkim's policy measures apply everywhere. Its top down approach coupled with its commitment towards

implementation has proved very effective towards bringing positive change. By adopting organic practices, the state has aligned with the UN Sustainable Development Goal 2 to achieve Zero Hunger. The state further plans to implement the '**Well Being of Generations Act**', an umbrella legislation that seeks to meet all the 17 SDGs.

In the midst of grim news on climate change, the tiny mountain state of Sikkim is the beacon of light showing the way forward to rest of the world.

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