

UNRAVELLING RWANDA'S SILK DREAM: A fine line between flourishing and faltering

In 2003, silk production was earmarked as a huge potential contributor to Rwanda's economy. A recent HSRC study determined that the industry has alleviated poverty to some extent. Yet, by 2013, the diffusion of sericulture, the process of silk production, had begun to falter. The HSRC's Dr Alexis Habiyaemye explores some of the unforeseen challenges of introducing a new type of industry to a country that is entrenched in its traditional culture and how these might be overcome.

By *Andrea Teagle*



Cocoons ready for processing
Photo: Gilberto Mello, Pixabay

What do you do with thousands of demobilised soldiers? This was the question confronting Rwandan president, Paul Kagame, after scores of Rwandan troops returned home from the bloody war in neighbouring Congo in 2003. The question was particularly pressing given the fragile stability of a country that had experienced a genocide less than a decade earlier. Despite significant economic growth, poverty remained rife, and most of the population depended on subsistence farming.

The solution that Kagame settled on – the inspiration of Indian textile technologist, Raj-Rajendran, who had been tasked with closing down an ailing textile factory – was not an obvious one. Together with farmers, the war veterans would command one of the most luxurious textiles in the world: silk. The shimmering material might not be gold or cobalt, but it does fetch a consistently high price on the international market. And, unlike precious metals, it grows on trees – or at least, its creators do.

The business case

Rwanda's temperate climate conditions are kind to crops; however,

its hilly landscapes, dotted with villages and prone to soil erosion, do not provide the large sweeps of farmland that can achieve economies of scale. But silk has a high value-to-volume ratio, meaning that even a small amount could be exported for a significant profit.

According to 2012 estimates, the annual profit potential of silk per hectare of mulberry plantation is 65% higher than that of cassava, the starchy tuberous root of a tropical tree, which is Rwanda's most profitable traditional crop (about \$2861.40 compared with \$1729,60). Mulberry trees were even pegged as being environmentally friendly, using little water, guarding against erosion, and providing green cover.

Sericulture – the entire process of silk production from mulberry farming to spinning silk – is labour intensive, and has successfully absorbed workers in countries like India, where labour is a competitive advantage. Silk could thus be used as a long-term tool for poverty alleviation, creating employment and raising incomes.

For the tiny, landlocked country, it seemed like a godsend: shimmering, lightweight silver. In 2003, sericulture

was officially introduced. Mulberry trees imported from India began to shade the hills, and Rwanda even reportedly supplied silk ties to Barack Obama's first presidential campaign.

The Ministry of Silk unravels

In 2013, some 10 years after its inception, HSRC economic development researcher Dr Alexis Habiyaemye set about investigating whether the lofty goals of Rwanda's silk industry had been achieved.

The study, published in 2019, comprised 1343 randomly selected households in districts where sericulture had been introduced. Of these households, 413 had adopted sericulture. How had they fared? Average income could not simply be compared across the groups, since sericulture may have attracted farmers who, for other reasons, were more likely to earn more in any case.

To account for external influences on income discrepancies, Habiyaemye calculated the probability that each household would adopt sericulture based on factors such as income, education, size of land, geographical location, access to infrastructure, social capital etc. Then, in an analysis method known as 'propensity score matching', he matched each silk-producing household with its "twin" – the non-silk household with the closest score.

What he found was that farmers who had opted in to the new industry, earned on average about 25% more income that could be attributed to sericulture. However, the study warned that the findings may have been biased, due to the small sample of sericulture adopters.

This profit differential was smaller than the government's predictions back in 2003. But it was remarkable that any higher income had been achieved at all, given that, 10 years after its introduction, diffusion of the innovation had mostly stalled.

The Ministry of Defence's silk dream had rapidly unravelled, and when short-run profits were not forthcoming, it withdrew its backing. What had gone wrong?

Spinning a yarn

It may once have been a currency akin to gold, but, unlike precious metals, silk did not have cultural capital in Rwanda. It had no history, and the laborious process was not a respected intergenerational craft. In a foreign context, the rather strange reality of silk was laid bare: tending to caterpillars to collect thread secreted from their salivary ducts – killing them in the process – and then painstakingly transforming the thread into shiny fabric that no one in Rwanda actually wanted. So, despite some efforts to cultivate internal demand for silk, the industry was primarily aimed at international markets.

Most Rwandans would rather have a cow, says Habiyaemye. Despite the promised magical profits of silk, trading cows for caterpillars seemed the wrong way around, like a Cinderella coach exchanged for a pumpkin.

Silk was, in essence, a foreign, rural innovation that was introduced top down, without adequate training to equip farmers with the skills and perception shift necessary to embrace the industry. Growing mulberry trees was promoted as an easy activity. But, in reality, sericulture – rearing silkworms, softening the cocoons, unwinding the fibres and spinning them into silk strands (3 to 10 fibres make one strand) – comprised complex activities requiring a degree of technology and expertise that was underestimated.

And the new industry was introduced with two narratives: short-run profit, to appease the veterans, and long-term poverty alleviation. As Habiyaemye writes, these narratives were at odds with one another. "The eagerness to quickly generate profits and ensure employment to Kagame's war veterans led to... a series of miscalculations regarding the timing and coordination of the various activities."

For example, not enough land was put aside to produce enough silk for a reeling factory. As a result, reeling was done by hand-operated looms, and critical economies of scale were lost.

A bureaucratic burden

Farmers were expected to switch over to the new, apparently profitable farming, but they were not consulted, and nor were they empowered to drive the process. The mulberry farms were organised into collectives. Heavy state direction put a great bureaucratic burden on farmers and public interest in the industry declined.

"Because of the way the economy is structured, farmers could only see one part of the value chain," Habiyaemye explains. "Either they are just cultivating the mulberry trees... or they're rearing the silkworms or harvesting the cocoons." The whole system is controlled, and the political leadership decides how the benefits are distributed, leading to little farmer buy-in. These challenges point to the advantages of innovations informed and driven by the intended beneficiaries.

Despite these stumbling blocks, Rwanda is not done with its silken experiment. In January this year, the opening of a new silk factory was announced, and Habiyaemye's study suggests that silk could still be spun into a working industry, if a long-term view is taken.

It will start by empowering farmers to make decisions and by setting up an incentive system to encourage participation. "The government should subsidise knowledge, rather than subsidise the physical assets," says Habiyaemye.

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Villagers clear land for farming in rural north-western Rwanda (July 2019). Rwanda's soil and weather conditions are ideal for mulberry plantations. Photo: Javan Mfitumukiza