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Cotton Made in Africa: A Case Study of Sustainable Production through Responsible Consumption

Roger Peltzer & Michael Brüntrup

Summary

Responsible consumption and production are key to sustainable development, and are therefore a Sustainable Development Goal (SDG 12) in their own right. Consumption and production patterns also need to be socially responsible and economically viable. Private-sector requirements and state supply chain regulations, which have become more widespread in recent years, are designed to ensure that products consumed in high-income countries but manufactured (at least partially) in low-income countries are produced in line with certain social and environmental standards. Although progress has been made, many questions remain, particularly regarding whether the local social and economic impacts are sufficient.

Cotton made in Africa (CmiA) is a certification initiative within the textile industry. Established 18 years ago as part of one of the largest public-private partnerships of German Development Cooperation with private foundations and private companies around an agriculture-based supply chain, CmiA – like its sister scheme the Better Cotton Initiative (BCI) – seeks to ensure compliance with specific environmental and social conditions in the cotton production process. Wherever it is implemented and monitored, the CmiA-standard provides retailers and consumers with the assurance that the cotton in the textiles and garments in question has been produced in line with CmiA-requirements. Up to now, about one million smallholder households with six to seven million family members in Africa produce under the label. This Policy Brief reflects on the impact that the introduction of CmiA has had on certified farmers, as well as on the challenges facing this standard following its successful market launch, and draws broader lessons learned for sustainability standards. The key findings are as follows:

- CmiA shows that sustainability standards do not only work for high-priced niche markets but can also be implemented in the mass market.
- While cotton is a non-food cash crop, the revenues it generates can boost food security among smallholders via the income channel and can also promote local food production through a number of other impact channels.
- Standard-setting must be accompanied by support for farmers so that they are able to comply and activate impact channels. It remains a huge challenge not only to guarantee social and ecological standards but also to achieve a “living income” for smallholder farmers.
- For all the benefits of publicly funding the start-up phase of implementing sustainability standards, it must be ensured that these standards are subsequently financed from the value chain itself. Textile retailers and consumers ultimately have to pay for the goods they consume and which have been manufactured under sustainable conditions.
- As the mass-market implementation of sustainability standards takes time and patience, we cannot expect to see dramatic improvements in the local living conditions and incomes of the farmers in the short to medium term. Instead, this will require continuous investment in smallholder production and in the local environments over many years.
- Transitioning from pesticide-intensive production to a system that does not use such products without major productivity losses is challenging but seems feasible.
- In order to determine whether, and to what extent, the wellbeing of smallholder farmers is increased by complying with sustainability standards, good and continuous impact assessment is needed and this must be adapted to the especially complex conditions of African smallholder agriculture.

Smallholder cotton production in Africa: a starting point for reducing poverty

Fifty per cent of Africa's 1.3 billion population live in rural regions, where some 51 million farming households are engaged in agriculture, livestock breeding or fishing. Ninety-five per cent of these households consist of smallholders working between 0.5 and 12 hectares of land. There is broad agreement that properly supporting the agricultural sector and smallholders is a highly effective means of reducing poverty (IAASTD, 2009; Yumkella, Kormawa, Roepstorff, & Hawkins, 2011).

One way of improving smallholder production and living standards is to boost incomes through the cultivation of cash crops for export, particularly to wealthier nations, where higher prices can be achieved than on domestic markets. Nonetheless, the issue of cash crops is a contentious one, with consumers and interest groups taking a critical view of the social and environmental conditions under which they are grown. The main issues from a social perspective are child labour; workers' rights; occupational health and safety; incomes; and food security. The chief concerns at environmental level relate to deforestation; biodiversity; water consumption; and the use of pesticides. High expectations and stringent demands from wealthy nations often collide with the very limited means of low-income countries and their smallholder farmers to fulfil them.

Cotton made in Africa (CmiA) serves as an instructional case study for these challenges. Established in 2005, this textile sustainability label set out to achieve three interlinked goals: a) improving the living conditions of cotton-growing African smallholders; by b) setting environmental and social standards for primary production while increasing productivity; and c) ensuring that the sustainably produced cotton could be traced all the way from the consumer back to the producer. Massive investment has been made in training for smallholders. CmiA is of particular interest due to it operating on the mass market, rather than in

premium niche markets. Consequently, "CmiA certified" reaches about one million cotton-producing smallholder farm-households, representing at least six to seven million family members. These farms work an average of six hectares of agricultural land, with around one-third of it dedicated to cotton-growing and the remainder typically used for cultivating maize and other foods.

The experience of these smallholders is also of interest to a further 30 to 40 per cent of African smallholders who also grow conventional cash crops such as coffee, cocoa, rubber, palm oil and cashews.

Organisational arrangements of Africa's cotton sector are a key factor for the operation of sustainability standards

The organisational structures of national cotton sectors have a major impact on the production and sales processes, on the incomes of smallholders and on the ease of introducing and operating sustainability standards. The cotton sector in West and Central Africa is structured differently to that in East and Southern Africa (for a more detailed description and in-depth discussion of organisational structures in the African cotton industry, see Peltzer & Röttger, 2013). The integrated system introduced by the French in Francophone West and Central Africa saw cotton growers contracted by what were initially parastatal monopoly cotton companies (now largely privatised, though this does not change the system). The cotton farmers are provided with a contractually guaranteed purchase price prior to sowing. They also receive seed, fertilisers and pesticides for cultivation purposes, pre-financed on the basis of loans. After harvesting, the cotton companies (prefinancing the input purchases of farmers and operating the gins) then purchase and gin the cotton before selling it on the global market. The costs of the pre-financed inputs are deducted from the purchase price for the cotton. As a result, unlike many of their African colleagues

in other agricultural sectors, the cotton farmers are given systematic access to agricultural inputs. In numerous countries, the system also allows for the pre-financing of investments, that is, the issuing of loans to be paid back over several years for purposes such as animal traction. This has enabled yields of around 1,000 kg/ha of cottonseed to be achieved in West and Central Africa.

Contractual ties between cotton companies and farmers are typically not as strong in East and Southern Africa. Purchase prices are based on the prevailing global market prices at harvest time and are thus unknown to farmers in advance. Growers can also switch cotton buyers from season to season, which is why the cotton companies are reluctant to pre-finance farmers' inputs. The pre-financing of inputs is further complicated by the widespread problem of side selling, a practice whereby producers sell their cotton to the companies offering the highest price at harvest time rather than to the company that pre-financed their inputs. Consequently, companies generally limit their pre-financing activities to seed and pesticides. As a result, per-hectare yields are significantly lower in East and Southern Africa, averaging around 500 kg/ha, though this of course means that input costs are also lower.

Despite the high productivity levels of the integrated West African model, the World Bank and other donors spent many years pushing the East and Southern African non-integrated models, arguing that non-integrated models would give the farmers more freedom, promote competition among cotton buyers, and finally allow farmers to make more profit than in a system with cotton prices fixed pre-planting. However, it has since been documented that the integrated model achieves not only higher yields, but also on average higher prices (Röttger, 2017), as the pre-financed production process gives cotton companies the necessary confidence to sell cotton forward on the futures markets. This allows them far greater flexibility, positions them more effectively than purely reactive sellers, and, despite ever-present bad speculation incidences,

enables them to achieve higher average prices, at least part of which they pass on to producers.

The way in which the cotton sector is organised is thus certainly a decisive factor for farmers' incomes. This has also now been recognised by the World Bank, which has changed its position and now recognises the benefits of the integrated cotton sector organisation model.

Importantly for this text, the prevailing model plays a key role for CmiA in relation to the approach used for supporting producers, as will be seen below. The more integrated the cotton sector organisation is, the better sustainability standards can be implemented.

The history of CmiA

The described organisation of Africa's cotton sector with cotton companies and contract farmers is also at the origin of CmiA. CmiA is a public-private-partnership. Representatives of the Otto Group, the Deutsche Investitions- und Entwicklungsgesellschaft (DEG) and the then Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (now the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH) came together in Bonn in the summer of 2005 at the invitation of the German Federal Ministry for Economic Cooperation and Development (BMZ), to consult on ways to assist African cotton growers to contend with highly-subsidised competition from large US cotton landowners. The cotton issue was high on the global political agenda due to tensions in the Doha Development Round negotiations of the World Trade Organization.

The Otto Group proposed the idea of establishing a brand for sustainable cotton from Africa, with the DEG and GTZ sharing their practical experience of working with cotton companies on the continent. The basic idea was to assist CmiA-farmers and cotton companies with producing socially and environmentally responsible cotton, financing this support with revenues from the purchase of licences for selling CmiA-textiles, while making it

possible to trace the origin of the cotton from the consumer back to the farmer.

The environmental and social standards of CmiA consist of the following elements:

- Exclusion criteria, among others the prohibition of utilising extremely and highly hazardous pesticides according to the World Health Organization (WHO), planting of cotton in protected areas and in areas with high conservation value, and of the practice of worst forms of child labour.
- Performance criteria concerning the continuous improvement of environmental effects in cotton-growing by training farmers in soil conservation methods, integrated pest management, responsible use and storage of pesticides, etc.
- Performance criteria concerning the improvement of income of farmers through farmer business training, transparency of input and of selling prices, etc.
- Labour conditions in ginning mills such as the right to a written contract, maximum six working days during the week, maximum ten working hours per day, etc.
- Management criteria to be fulfilled by the cotton companies which should enable them to manage the process towards more sustainable cotton production.
- An independent audit conducted every two years to review compliance with the above-mentioned criteria. A certificate for CmiA marketing is only issued on the basis of successful auditing.

The underlying “theory of change” is that compliance with the criteria also finally leads to an improvement in the income of smallholders.

While CmiA deals only with African Cotton, the sister standard Better Cotton Initiative (BCI) covers cotton production globally. The social and ecological criteria of the BCI are similar to the ones of CmiA. The main difference is that CmiA deals only with smallholder farmers, while the BCI also integrates large cotton farms, for instance, in the

United States, Brazil or Australia. Another difference is that the BCI allows for the utilisation of genetically modified (GMO) cotton seeds, while these are not allowed under CmiA. CmiA also includes standards for ginning operations, unlike the BCI.

The CmiA-concept was first tested as part of a pilot project launched in three African countries (Benin, Burkina Faso and Zambia) in 2006. The pilot project showed that the integrated contract farming model was especially effective at reaching tens of thousands of farmers with relatively little effort and at fairly low cost. This was primarily achieved through agricultural advisors employed by the cotton companies. These advisors possessed far better knowledge of cotton-growing practices than the state advisory services and were deployed at only a fraction of the cost that would have been incurred by a development project involving international experts.

In fact, the pilot project proved so successful that it was rolled out to 12 countries, 22 cotton companies and one million cotton farmers from 2009 onwards, with additional funding provided by the BMZ, the Bill and Melinda Gates Foundation (BMGF), the Walmart Foundation, and the Gatsby Foundation. This enhanced project received the name Competitive African Cotton Initiative (COMPACI). Figure 1 shows the key actors and the relation between COMPACI and CmiA.

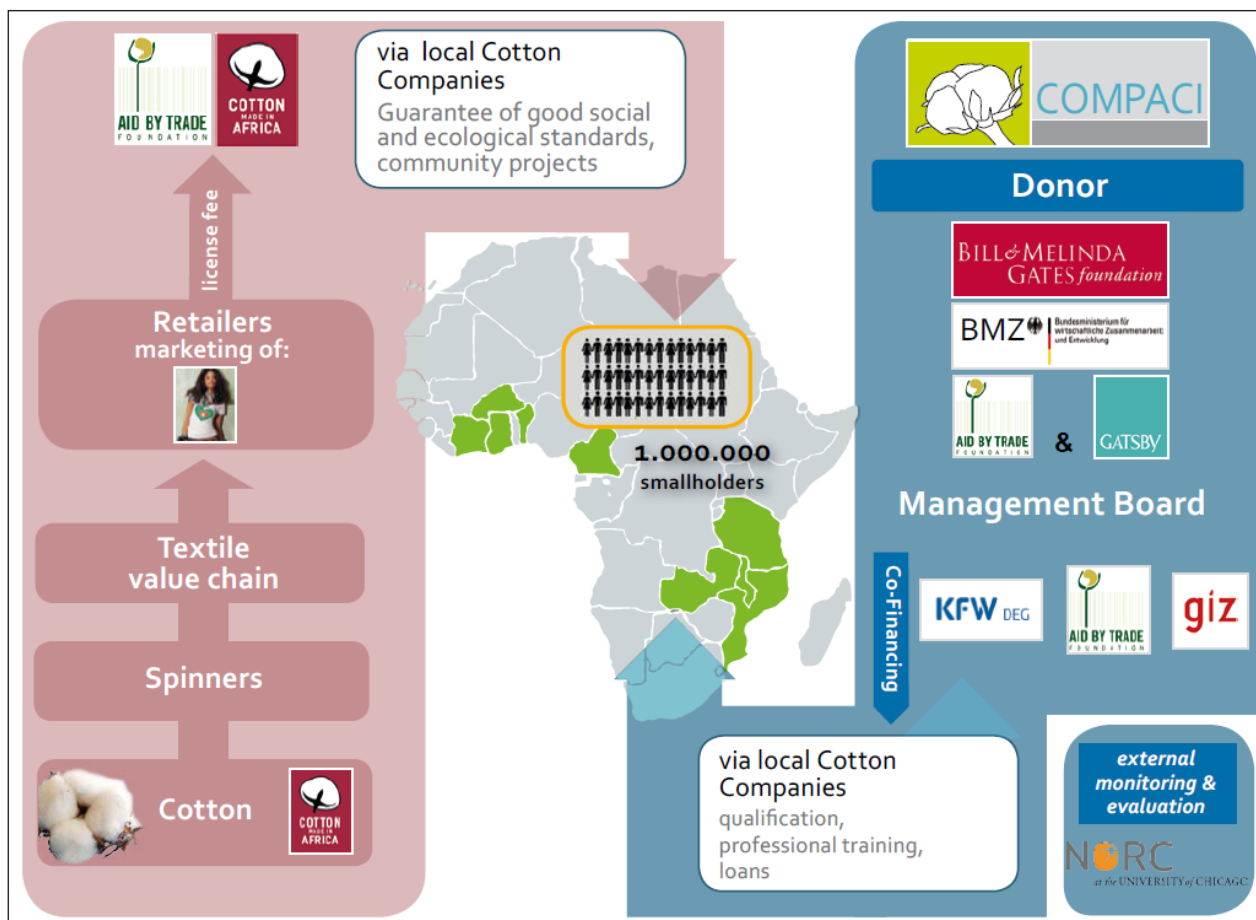
A total of some EUR 57 million public and private funding (foundations) was invested in implementing the package of CmiA-measures in the participating countries between 2006 and 2017. The majority of the funding was spent on training producers. Support was also provided for the establishment of credit unions and women's cooperatives, as well as for the development of new varieties of seed.

Unfortunately, the Demand Alliance, initially consisting primarily of the Otto Group and Tchibo, that was set to purchase the CmiA-certified textiles was far less successful than planned. Even within the Otto Group, in which the owner Dr Otto advocated strongly for CmiA, buying agents

found it extremely difficult to purchase the new CmiA-products. One reason was the need to establish entirely new supply chains for end-to-end traceability, from the cotton companies and cotton traders over the spinning mills and textile producers to the retailers. As a new and unfamiliar product, almost all participants levied substantial surcharges at first. It took 14 years for CmiA to establish itself on the German and European

mass textile markets and to sell a billion CmiA-labelled garments, which it only managed to do in 2022. Pioneers Otto Group, Tchibo, REWE and Ernstings Family have now been joined by discount supermarket chains such as Aldi Nord, Aldi Süd and Lidl, as well as brands such as Hugo Boss. CmiA-cotton is now even being used to produce bank notes.

Figure 1: The structure of CmiA and the support project COMPACI



AbTF: Aid by Trade Foundation is the owner of the brand CmiA. It manages the standards and decides on the utilisation of licence-fee income.

BMZ: German Federal Ministry for Economic Cooperation and Development.

COMPACI: Competitive African Cotton Initiative, the programme financed by the BMGF, BMZ, Walmart, the Gatsby Foundation and AbTF to enable implementation of CmiA-standards between 2009 and 2017.

Cotton Companies: Ginners, which contract smallholder cotton farmers and which as "management units" are in charge of implementing the CmiA sustainability criteria.

GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit, Co-Manager of the COMPACI programme.

KfW DEG: German Development and Investment Bank, Manager of the COMPACI programme.

NORC: National Opinion Research Center in charge of the Impact Evaluation.

Source: Authors

The mass-market breakthrough can be explained to some extent by the application of ongoing pressure from an informed public, with comparison portals, such as Christliche Initiative Romero's Label Guide, providing information on sustainable products. Ultimately, however, former Federal Development Minister Gerd Müller's Textiles Partnership, which evolved into the German Government's Green Button textile label in 2019, was the decisive factor, along with discussions of the German Supply Chain Due Diligence Act, which was adopted in 2022 and became law in early 2023. These public initiatives led to mounting pressure on textile retailers to review and verify the sustainability of their entire supply chains, all the way back to the origins of the raw materials. CmiA provides them a verified source of sustainably produced cotton, significantly reducing environmental, social and human-rights risks and potentially removing the need for costly, yet inevitably patchy, in-house investigations into production conditions in the cotton fields. With CmiA becoming a mass-market product, surcharges in the supply chain disappeared making the product even more attractive to textile retailers.

CmiA's sales growth is also being reflected in the finances of the Aid by Trade Foundation (AbTF), with EUR 4.6 million generated in licences and other fees in 2021. This equates to an interest rate of eight per cent per annum on the EUR 57 million of start-up funding provided by public and private donors.

There is now a permanent contractual linkage between traders, the AbTF, and cotton companies with their extension workers and farmers, so it is possible to ensure that one million included smallholders are quickly enabled to become compliant with tightening of regulations, such as the WHO list of banned pesticides or supply chain laws. Retailers and, by extension, consumers, are assured of a high degree of transparency concerning the sustainability criteria applied and the findings of the independent audits (certification). The AbTF's Hard Identity Preserve System (cotton traced from the field until the final textile product) prevents CmiA-cotton coming from a field in a

location where forced labour is practised, such as Xinjiang, China, ending up in the CmiA-system.

Impact of the CmiA

Currently, 690,000 tonnes or 40 per cent of Africa's cotton is produced by around one million farmers under CmiA-certified conditions. Through monitoring and audit, it is assured that CmiA's social and environmental standards are respected. However, compliance with these standards does not yet guarantee that the certified cotton farmers will also see improvements in their incomes.

At the request of the BMGF, COMPACI set up an extensive impact evaluation with the particular aim of determining whether the incomes of smallholder households had improved as a result of the programme. The evaluation strategy involved conducting a survey of thousands of farm-households within and outside of the project (control group), recording data at the beginning (baseline) and at the end (endline) of the project. The project also carried out sample-based surveys on an ongoing basis, collecting information on per hectare yields and rates of adoption of the training content covered.

For some indicators, the findings of this complex evaluation were mixed and inconclusive: While a high adoption rate of between 60 and 80 per cent was verified for the different training contents, significant difficulties encountered when conducting the surveys made it impossible to issue any firm statements concerning the development of incomes for CmiA-smallholder households relative to those of the control group in five out of the six countries examined. The only valid data obtained was for Benin and demonstrated that the yields of the project farmers remained stable while those of the control farmers declined (Röttger-Jann & Bidlingmaier, 2017).

Evidence of impact was lacking due to the many challenges arising when implementing the impact analysis, even though the project commissioned a highly renowned US institute (National Opinion Research Center, NORC) to conduct it. The main problems related to an inability or unwillingness on

the part of the interviewees (farmers) to provide reliable information on production, fields or yields, and to the fact that most control group members joined CmiA or received similar training elsewhere over the course of time.

Also, the BCI experienced special challenges with the income impact analysis of African smallholders. While the BCI's rigorous impact analyses in Asian countries such as India, Pakistan and Kyrgyzstan recorded yield increases of between 9 and 15 per cent as well as income improvements of between 18 and 35 per cent, relative to the respective control group in each case (BCI, 2020), the BCI abandoned impact analyses entirely in its African operations of Mali and Mozambique due to the above mentioned problems.

Overall, it is not yet possible to determine with accuracy whether the CmiA (and the BCI) certification processes have improved the incomes of smallholders in Africa. However, the high level of acceptance of the training content, the shift of many smallholders into the CmiA-system, and the results of comparable studies in Asia (BCI) imply a positive impact. However, devising realistic methods for continuous measuring of impacts remains an important issue to be resolved.

However, whatever the precise impacts of CmiA and the BCI are, the vast majority of cotton producers in Africa still live on a per-capita income of less than USD 1.50. To date, the only households that have been able to grow out of poverty have been the larger ones. Consequently, sustainability standards like CmiA and the BCI must face the challenge of not only securing minimum environmental and social conditions in the production process, but also achieving living incomes for farmers. This is key for their claim to improve farmer livelihoods. The methods to achieve this will be discussed below.

Potential use of surplus revenue from CmiA licences

The implementation of sustainability standards as well as the achievement of higher incomes for

smallholders require investment and maintenance costs. Apart from public funding such as that provided by COMPACI, private funding must also be raised to assure the long-term economic sustainability of the scheme. Revenues for such funding can be achieved by means of licence revenues per garment (CmiA) or volume-based fees (BCI). Approximately EUR 2.5 million of CmiA's EUR 4.6 million revenue were used for this purpose in 2021⁶ (AbTF, 2021), as were USD 14 million of the BCI's earnings (BCI, 2021). However, this is not a particularly large sum when we consider the huge number of farmers participating. Significantly increasing the CmiA licence fee from its current rate of 0.004 Euro cents per item of clothing purchased to 0.02 Euro cents per item would bring in estimated annual revenues of up to EUR 20 million from the sale of one billion CmiA-articles of clothing. Consumers would barely notice this price increase.

When it comes to improving farmers' incomes by distributing the surpluses generated from such licence fees, there are essentially two options:

- a) The first involves distributing the surpluses of EUR 20 million to farmers directly and paying a premium on each tonne delivered. With 22 CmiA-affiliated cotton companies buying the cottonseed, passing on the corresponding premium would be very straightforward. With one million farmers, the present price of cotton would allow a smallholding with a yield of one tonne per hectare in a country such as Benin, where the present seed cotton price is EUR 450 per tonne, to realise a premium of 4.4 per cent, respectively an EUR 34 increase in earnings per hectare.
- b) The second option would see the label revenues being invested in measures to boost productivity, in cooperation with the agricultural advisory services of the cotton companies. A farmer that thereby increased her/his productivity from one tonne to 1.2 tonnes per hectare, for instance, would earn EUR 540 rather than EUR 450 per hectare, which represents an increase of EUR 90, or 20 per cent.

The conclusion is that price premiums as outlined in option a) are not always the best solution, though the benefits of option b) are dependent on the cotton price and the impact of the measures on production and earnings. Option b) also helps to promote food crops and thus avoid a unilateral reliance on cotton. A range of possibilities will be presented below for this second option.

Apart from income improvements, farmers could also benefit from price stabilisation schemes aimed at income stabilisation and resilience to price shocks. Such a scheme sees savings paid into a fund when global market prices are high and pay-outs made to farmers from this fund when prices are low. Burkina Faso and Cameroon have been implementing this approach successfully and without corruption for many years.

On the whole, when designing cotton sustainability standards, it is advisable to exert as far as possible influence on the organisation of the national cotton sectors and not only on individual companies.

Options for productivity-boosting measures

Lessons can be learned from the COMPACI programme and CmiA's 18 years of experience regarding how to use label revenues as proposed in option b) for productivity-boosting measures and in addition, for social measures. The following measures showed to be particularly promising:

- Improve properties of conventional cotton seeds, such as drought resistance. While cotton farmers' associations in the United States, Australia and Brazil invest many millions in seed development, investments in seed development in Africa are only relatively modest. This should be changed by AbtF, which could invest in seed development in conjunction with national and suitable international research institutes, such as the French research centre CIRAD.
- Provide training and investment in the conservation and enhancement of soil fertility, including the simultaneous reduction of carbon emissions. This includes the use of compost,

which, depending on the method employed, may require the installation of concrete compost pits. It is also advisable to build stone walls to prevent soil erosion. Both of these tasks require investments that will not pay for themselves in the space of just one year, which is why it is helpful to provide investment grants for small farmers.

- For cotton production to be increased without reducing food production, it is often necessary to mechanise the cultivation process, that is, to employ animal traction or use tractors. This is also necessary in order to cater for the fact that young people in rural Africa no longer see a future in working with hand-hoes. The example of Côte d'Ivoire illustrates how the mass introduction of animal traction in cotton farming can significantly reduce the exodus of young people from rural regions. Loan guarantee funds or interest subsidies can be employed for the purchase of animals, tractors and equipment. This must be supported through the establishment of service centres and training for mechanics.
- Delivery of business training for farmers. For instance, under the Farmer Business School (FBS) scheme devised by GIZ, smallholders take a one-week course during which they come to understand their farm and their household as an enterprise that can be optimised. They participate in interactive training sessions where they calculate the cost-benefit ratio for a number of crops, factoring in prices and inputs, including their own labour. Around 240,000 producers, 80,000 of them women, completed FBS training during the term of the COMPACI programme. Participants and cotton companies were highly satisfied with this training, even when it resulted in some farmers in East Africa moving away from cotton to grow other more profitable crops, such as soybeans. From experience, FBS training must be monitored and updated on a regular basis. It requires the deployment of qualified instructors and master trainers, along with ongoing adaptation of the curricula. The costs must be financed externally.

- Establishment of and support for women's cooperatives. Cotton-growing households are typically male-led. Earnings from cotton sales are spent on larger purchases (such as a new roof), investments (mechanisation), durable consumer goods (such as mobile phones, bicycles, mopeds and televisions) and, in the case of wealthy farmers, even on the occasional pilgrimage trip to Mecca. By contrast, women are responsible for food and clothing needs, which they finance through secondary activities, including vegetable cultivation, small animal breeding, and trading activities. For self-employed women, the barriers to initiating and developing such activities are high. Establishing and funding women's cooperatives, or women's clubs as they are known in East Africa, makes it significantly easier to overcome such hurdles. Typical funding activities include the financing of start-up investments (such as for purchasing chicken coops) and, more particularly, the deployment of full-time, qualified mentors to assist with organisational matters, bookkeeping, and so on. The COMPACI programme launched over 1,000 such women's organisations throughout Africa. However, the number of clubs has fallen again dramatically since the programme ended; it appears that these cooperatives require ongoing support in order to establish themselves in the long term.
- Setting up credit unions. COMPACI succeeded in establishing a large number of credit unions for cotton farmers in Cameroon. In addition to financing agricultural inputs (provided by cotton companies), these cooperatives enable farmers to take out loans at affordable interest rates to cover other needs, such as their children's school enrolment (school uniform), doctor's appointments, the purchase of animals, or personal consumer purchases. Without this option, farmers would usually only be able to take out loans from local lenders at exorbitant interest rates, if such loans are available at all. The key source of liquidity of these credit unions are the revenues from the cotton harvest. The payments are made in cashless form, which is a

major advantage in rural Africa, not least for security reasons. Farmer loans are secured by these payments and are withdrawn automatically, securing high repayment rates and thus enabling the economic sustainability of the credit unions and low interest rates for farmers.

Additionally, comprehensive and ongoing investment in the aforementioned initiatives serves to better mainstream sustainable cotton standards such as CmiA in rural Africa. While many of the cotton companies and farmers see the singular focus on certification as necessary to get access to the certified market, they also consider it a tedious obligation involving a great deal of red tape. It is only when the aforementioned ongoing investment is made in agricultural productivity and quality of life that local actors begin to identify positively with the certified cotton they produce and develop a sense of shared destiny or, better still, of being a community of actors.

Leaving chemicals behind in favour of biopesticides

Beside the income of smallholders, the use of pesticides is the second challenge facing CmiA (and the BCI). Cotton is extremely susceptible to diseases and pests. Just 2.4 per cent of the world's agricultural land is used for growing cotton, yet it consumes six per cent of all pesticides and 16 per cent of all insecticides used globally (Sustainable Fashion, n.d.)

CmiA (like the BCI) is geared to conventional cotton production (with the exception of CmiA Organic). The harmful impact of chemical pesticide use is expected to be mitigated by a ban on certain particularly hazardous pesticides and by means of the training of farmers on topics such as the wearing of protective clothing. With the introduction of pest thresholds, farmers should learn to only spray their crops when there is a massive incidence of pests (Integrated Pest Management). This practice alone can reduce the use of pesticides by 30 per cent.

However, in reality, many farmers do not apply the lessons from this part of the training. Protective clothing is very uncomfortable to wear in high temperatures, while repeatedly counting pests and beneficial organisms is a laborious task. Consequently, many CmiA and BCI farmers still apply too many pesticides in unsecured ways and suffer from headaches and skin problems. Environmental pollution also remains problematic. A truly systematic response to the pesticide issue would be to replace chemical pesticides with biological methods. Part of this involves using local plants (often considered to be weeds) to produce biological pesticides. Molasse traps are also set up to catch damaging insects. CmiA-partners in Tanzania and Zambia have proven in spectacular fashion over the last five years just how effectively these methods work and can replace chemical pesticides in full. As a side effect, new sources of income have been created for women who gather and, in some cases, process the plants.

CmiA and the BCI should take a strategic decision to switch the pest control system for the entire certified cotton production process to more biological methods (which not necessarily implies the direct shift to organic cotton) and convince their partners in the South of the necessity of this change in strategy. If this can be achieved, it will open up interesting prospects for African cotton producers. Reducing costs and possibly achieving significant licence fee income for such cotton, even on mass textile markets, could result in higher income rises than in non-certified cotton production (as explained above). As a result, even farmers with just a few hectares of growing could achieve a respectable standard of living and enjoy decent prospects for their local context, such as a brick house with a corrugated iron roof, a moped, or perhaps a solar panel, and a secondary school education for at least some of their children.

Lessons learned

- Implementing sustainability standards for consumer products and establishing these standards on the mass market can provide

direct leverage for improving the targeted social and environmental outcomes. There are good reasons to assume that they can also improve the incomes of smallholders and eventually lift many of them out of poverty.

- BMZ's sector policy, which funded the development and implementation of such sustainability standards, has proven effective in the case of CmiA for a mass-produced product that has an extremely broad coverage and is economically viable.
- In the case of CmiA, this also indirectly supports food production, as smallholders usually cultivate cotton in combination with food crops and are trained to improve both cotton and food crops. Crop rotation forms part of good agricultural practice in the CmiA-criteria matrix, and there are a number of spill-over mechanisms such as input use, mechanisation, business skills and cooperatives.
- For all the benefits of publicly funding the start-up phase of implementing sustainability standards, care must be taken to ensure that these standards are financed further on from the value chain. Textile retailers and consumers ultimately have to pay for the goods they consume being manufactured under sustainable conditions.
- Just as the mass-market implementation of sustainability standards takes time and patience, we cannot expect to see dramatic improvements in smallholders' living conditions and incomes in the short to medium term. Instead, it will take ongoing investment in smallholder production over many years and in the local environment in which these farmers live and work. Only then can a living income for smallholder farmers be achieved.
- Another major challenge, but one which is feasible in the long term, is the switch from pesticide-intensive cotton production to sustainable methods that do not involve the use of chemical pesticides. This is also an area in which sustainability standards should be applied.

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