SOCIO-ECONOMIC AND ENVIRONMENTAL ASPECTS OF COTTON FARMING IN MADHYA PRADESH, INDIA

WEBINAR: QUESTION AND ANSWERS

Webinar hosted by:

Textile Exchange | December 2018

Studies commissioned by:

C&A Foundation

Life Cycle Assessment conducted by:

Thinkstep International

Socio-economic Impact Assessment conducted by:

American Institutes for Research

Study partners:

Textile Exchange & Better Cotton Initiative

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C&A Foundation commissioned a life-cycle assessment (LCA) and socio-economic impact assessment (SEAI) to understand the baseline conditions in the cotton producing region of Madhya Pradesh, India. On December 17th, 2018, Textile Exchange organized a webinar for presenting the findings of these studies. The studies were conducted by researchers from Thinkstep International and American Institutes for Research. The webinar had 72 attendees and several questions/ comments were submitted post the session. The various organisations involved took the last few months to discuss these comments in detail to arrive at the most helpful and productive responses. This document will provide responses to those questions. Any further clarification needed can be addressed directly to the researchers.

American Institutes for Research (AIR) and its partner Outline India conducted the SEIA with 1) organic cotton farmers, 2) cotton farmers licensed by the Better Cotton Initiative (BCI), and 3) conventional cotton farmers in the Khargone district of Madhya Pradesh, India. For this assessment, AIR and Outline India administered a survey among a large sample of 3,628 households. They also implemented qualitative research to understand the experiences of the farmers. These results were triangulated with the results of the quantitative survey.

Thinkstep India conducted the environmental impact assessment through a screening Life Cycle Assessment in line with the principles of the ISO 14040/44. For this assessment, Thinkstep India used a modelling approach in the GaBi Software based on primary data of 100 organic cotton farmers, 100 cotton farmers licensed by BCI, and 100 conventional cotton farmers. The LCA approach to environmental assessment is a snapshot within a specific scope and identifies hotspot areas within the complex agricultural system for attention and further analysis. Because it sampled just 100 farmers per cotton production system in the state of Madhya Pradesh, India during one season, it was not designed for absolute values to be directly compared; production decisions cannot be made based on this in isolation. These results do not reflect the broader base of work that is happening in India, or in other countries, or averages across several years in that would establish trends based upon rainfall and other climatic conditions.LCAs also do not capture the investment that is being made in farmer training, building bio-diversity and the broader ecosystem.

Q1. Why do water and climate change impacts seem higher in BCI vs Conventional?

Thinkstep and BCI: In this specific study conducted with a sample of farmers from Madhya Pradesh, India, it was found that BCI farmers had a slightly lower yield and slightly higher water consumption as compared to conventional cotton, since water irrigation requires electricity, GWP impacts were also slightly higher. Besides, as the yield was lower for BCI farmers that season, the climate change impact, which is calculated per kg of cotton produced, appears slightly higher than for conventional. However, the life cycle assessment approach does not determine definitive long-term system-wide differences between BCI and conventional on any parameter due to inherent limitations in length of study (one season's data for agriculture is insufficient) and the small number of farmers surveyed. The design of the approach itself is meant to highlight areas of potential impact. This does enable prioritisation of programme activities to strengthen improvements.

BCI overall is having a positive impact on climate change and water. Potential climate change impact is measured in GHG emissions. For agriculture in India, the majority of those impacts come from the application of synthetic fertiliser and electric consumption for irrigation. BCI's own performance monitoring data indicate that, on average, across India in the 2016-17 season, synthetic fertiliser application (kg/ha) by BCI Farmers was 17% lower than the volumes applied by Comparison Farmers while BCI Farmers' yields were 8% higher, on average, than Comparison Farmers' operating in the same areas. (Source: Farmer Results 2016-17). In that same season, in India, BCI Farmers used 5% less water for irrigation than Comparison Farmers. Below is further information on what BCI and its Implementing Partners are working on with regards to water and climate change.

Climate Change

The Better Cotton Principles and Criteria address climate change and provide a framework for farmers to adapt to the effects of climate change and mitigate greenhouse gas emissions. Climate change mitigation involves reducing the level of greenhouse gases in the atmosphere. For example, a

cotton farmer can achieve this by improving soil and fertiliser management to absorb rather than emit greenhouse gas emissions. A big challenge is that measures will differ depending on the geographic location of farmers, and in each case, farmers need to understand their environment and their soils in order to effectively mitigate emissions. Find out more about BCI's approach to climate change mitigation and adaptation within the Better Cotton Principles and Criteria (pages 152-153).

Water Savings

The Better Cotton Principles and Criteria address the sustainable use of water through the Water Stewardship principle. BCI is running a water stewardship pilot project with Helvetas and the Alliance for Water Stewardship and is currently rolling out a new water stewardship approach in India, Pakistan, China, Tajikistan, and Mozambique.

Q2. To whom are the cotton farmers indebted?

AIR: The study shows that a significant percentage of farmers get their agricultural inputs on credit. The lenders in this case include shopkeepers (48% of organic farmers, 68% of BCI farmers and 58% of conventional farmers), co-operative societies (15% of organic farmers, 15% of BCI farmers and 1% of conventional farmers), money lenders (2% of organic farmers and 1% of BCI farmers) and implementing partners (4% of organic farmers, 1% of BCI farmers and 14% of conventional farmers). AIR has information on the reasons farmers need credit, this can be found in the "Indebtedness" sections of AIR and ThinkStep's report (page 59 and page 86 of the "Social, Economic & Environmental Impact Assessment of Cotton Farming in Madhya Pradesh").

Q3. Why does BCI seem more profitable (51%) than conventional (44%) and organic (45%), despite having significantly lower yields according to the study? Is the difference only linked to the lower expenses in terms of inputs compared to conventional? As organic doesn't use any chemical inputs and receive a premium, shouldn't it show higher profitability?

AIR: The study design does not allow AIR, as the research partner, to state with confidence why BCI farmers appear more profitable than conventional and organic farmers. This would require either a randomized controlled trial or a quasi-experimental study. Qualitative data indicates that organic farmers engaged with in this study are not receiving a premium for their crop, potentially fuelling lower profits for organic farmers.

Q4. What is the percentage of BCI farmers and Conventional cotton farmers using pesticides?

AIR: In the sample of this study, 99% of exclusive BCI cotton farmers, 98% of non-exclusive BCI cotton farmers, 33% of exclusive organic farmers, 95% of non-exclusive organic farmers and 99% of conventional cotton farmers used chemical pesticides.

Q5. Does a premium provision apply in organic cotton producer?

AIR: The qualitative evidence that we have collected suggests that most organic cotton farmers that comprised the sample of this study did not receive a premium for their crop (page 46 of the "Social, Economic & Environmental Impact Assessment of Cotton Farming in Madhya Pradesh"). This excerpt from the report illustrates this point: "…despite an expectation that they would receive higher premiums for their cotton, many farmers noted that they did not receive higher premiums and organic cotton was treated as largely the same in terms of quality and price in local markets."

Q6. Was any carbon credit considered in the LCA results for GWP (meaning carbon stored in the fibers)?

Thinkstep: Yes, carbon sequestration during cultivation was considered in the GWP calculations

Q7. Should BCI cotton be cheaper than conventional cotton? or at least same?

BCI: This question is beyond the scope of the study that was shared during the webinar on December 17th, 2018. BCI does not set a fixed price or premium for Better Cotton, and BCI recognises that pricing is a function of the market – BCI does not interfere when the farmer is selling his/her cotton at the market. Additionally, the price a licensed BCI Farmer sells his/her crop for varies – it depends not only on the market, but also on the geographic location.

Licensed BCI Farmers benefit from growing Better Cotton by reducing the costs of the inputs they use for cotton production and by maintaining or improving their crop yield. By spending less on inputs (fertilisers, pesticides, and irrigation), farmers can increase the margin they make on sales of Better Cotton. For example, in the 2016-2017 cotton season, licensed BCI Farmers in India had a 21% higher profit on average than Comparison Farmers (farmers in the same area not implementing the Better Cotton Standard System). Additionally, they used 30% less pesticides and 17% less synthetic fertilisers on average than Comparison Farmers in India. (Source: Farmer Results 2016-17). The better productivity and higher margins the farmers experience are a reward for their efforts in using more sustainable practices, and this should not be used as an argument to lower the price of Better Cotton.

Q8. Can you explain further the child labour findings in organic cotton farming?

AIR: As indicated on page 8 of AIR and ThinkStep's report ("Social, Economic & Environmental Impact Assessment of Cotton Farming in Madhya Pradesh"), the results do not show much evidence for differences in child labour or education outcomes between organic and conventional cotton farmers. AIR do not find statistically significant differences between the children of organic and conventional cotton farmers in the number of school days missed due to working on the household farm or the number of days missed due to working on another farm or business. We also do not find differences in education attendance and enrolment between the children of organic and conventional cotton farmers. 96 percent of organic cotton farmers reported that children in their household (between 5 and 14 years old) were enrolled in school, compared to 95% of conventional farmers. This difference is not statistically significant. Most farmers interviewed as part of the qualitative portion of the study reported that they do not employ children, but some farmers reported that their own children help with routine farming tasks, such as weeding and picking. They do not perceive this assistance as "child labour", but instead view children's help on the farm as part of their role as members of the household. The majority of the child labour is allocated to picking in the form of wage labour and picking and weeding in the form of family labour. For organic farmers that do report child labour days, 0.36 days are spent picking in the form of wage labour, 0.28 days are spend on picking in the form of family labour, and 0.22 days are spend on weeding in the form of family labour.

Q9. Were the sample farms (100) included in this assessment growing cotton as a monocrop?

Thinkstep: For organic and BCI farms, around 65% of farmers planted gram and maize along with cotton, however no intercropping was found for conventional farms

Q10. Was the contribution of intercrops and border crops taken into account while assessing the impact through the listed impact indicators under different systems (BCI, Organic & Conventional).

Thinkstep: Yes, intercrops and border crops were taken in to account while assessing the impacts

Q11. Does the indebtedness ever lead to bonded or forced labour?

AIR: We did not examine bonded or forced labour in our study.

Q12. Did we see any farmers doing both organic and BCI?

AIR: Yes, there were 93 farmers (3% of the sample) who applied both organic and BCI cotton farming practices.

Q13. Do we know the reasons why farmers with better socio-economic status choose to do BCI and organic farming?

AIR: We surveyed the reasons farmers provided for adopting BCI and organic cotton farming. These can be found in tables 17 and table 37 in AIR and ThinkStep's report and in more detail in the sections titled "Reasons for Adoption." Farmers reported adopting organic cotton farming for three main reasons: 1) they believed their income would remain the same, but organic farming would require fewer inputs (36%); 2) they believed their income would be higher under organic farming as opposed to conventional farming (33%); and 3) they expected higher future profits as a result of organic farming (32%). The top three reasons BCI farmers adopted this approach to farming cotton include: 1) farmers' friends and neighbours grew BCI (41%); 2) they perceived BCI cotton to be of "better quality" (39%); and 3) they believed that they would receive a higher income farming BCI as opposed to farming conventional cotton (36%). Qualitative data gathered for this study confirms these findings.

Q14. Thanks for showing BCI with Conventional, Organic with Conventional. Is there any study AIR for BCI & Organic?

Thinkstep: The objective of the study is not meant to compare organic and BCI. Both the systems focus on sustainable cotton production. Thinkstep is not aware of any study which compares BCI and organic.

Q15. Why are we talking about environmental impact related to LCA only, why not in terms of CO2 emission during transportation of BCI & Organic cotton giving CO2 footprint?

Thinkstep: The system boundary of the LCA study was cultivation and production of seed cotton in which upstream transportations of raw materials, fuel, fertilizers etc. were considered and the various environmental impacts (including GWP) were assessed.

Q16. How has BCI responded to these findings?

BCI: BCI values the findings of this study and will use them to deepen its understanding of cotton farming practices and their potential environmental and socio-economic outcomes in Madhya Pradesh, India.

The LCA approach to environmental assessment identifies hotspot areas within the complex agricultural system for attention and further analysis. Because it sampled just 100 farmers per cotton production system in the state of Madhya Pradesh, India during one season, it was not designed for absolute values to be directly compared; production decisions cannot be made based on this in isolation. The environmental results do support BCI's understanding that, for example, synthetic fertiliser use and the power source for irrigation are key factors in climate change impact. The study results indicate that BCI farmers may have room for improvement in those areas, and therefore, should be priorities, when promoting improvements with cotton producers.

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The socio-economic findings highlight the importance of economics and social networks as key drivers for participation in sustainable cotton programmes. They also indicate the many challenges present for cotton farmers in the region, such as indebtedness and the reliance on loans for farming inputs. This understanding will inform programmatic focus areas.

Q17. Would Fair Trade certified cotton help with the shortfalls and hardships for BCI/organic cotton farmers?

BCI: The Better Cotton Standard System (BCSS) offers a holistic approach to more sustainable cotton production covering all three pillars of sustainability: environmental, social, and economic. Supporting farmers is at the heart of BCI's work and its focus is on providing training and development opportunities for farmers to adopt more environmentally, socially, and economically sustainable production practices. The social and economic dimensions include criteria aiming to eradicate child labour, enhance women's empowerment, and increase profitability for smallholder farmers. This study's socio-economic research by AIR found evidence that cotton farmers licensed by BCI are less likely to use child labour than conventional cotton farmers and have higher levels of school attendance among children than for children of conventional cotton farmers.

BCI's own performance monitoring data indicates that, on average, across India in the 2016-17 season, profit was 21% higher for BCI Farmers than for Comparison Farmers, while BCI Farmers' yields were 8% higher, on average, than Comparison Farmers operating in the same areas. (Source: Farmer Results 2016-17, based on data from 68,717 farmers). BCI is also increasingly working to support women's inclusion and empowerment through the launch of a global gender project in late 2018 in collaboration with expert gender consultants in India and Pakistan. A global BCI gender equality strategy is currently under development, along with an implementation plan, and it will be communicated externally once finalized.

Cotton farmers around the world face numerous hardships and BCI continues to work to address them over the long term. The Fairtrade certification also offers an interesting approach and BCI encourages their important work to continue as well.

Q18. BCI is supposed to be a stepping stone for farmers to move into organic farming practices. Isn't there a problem to promote BCI as the best sustainable option i.e. as a final destination rather than a stepping stone?

BCI: BCI was not designed as a stepping stone for organic farming. It is a different programme with a different approach. BCI delivers change at scale across socio-economic and environmental dimensions. What is important is that both are progressing in the same direction and can achieve synergies together. In that sense, BCI can be a stepping stone for cotton producers, who choose to focus on integrated pest management, to convert to organic because they have become accustomed to what it takes to comply with sustainability criteria, to attend trainings, and to participate in audits.

BCI supports farmers having the ability to choose which farming system or sustainability programme is best for them. Less than 20% of the world's cotton is grown more sustainably. BCI, organic, Fairtrade, myBMP (Australia), ABR (Brazil), Aid by Trade Foundation, and others work towards the same goal: to ensure that all cotton is produced in a more sustainable manner. BCI is not considered as a "final destination" because it was designed and built around the concept of continuous improvement, and even the most sustainable farmers in the system are expected to keep improving over time.

Q19. Were the differences between BCI and Conventional farmers statistically significant?

AIR: AIR found several statistically significant differences between the different groups. In terms of environmental impacts, BCI and Conventional Cotton results were clearly presented in the webinar as well as the LCA report.

Q20. Water demand is marked as hotspot for organic, does it mean that organic cotton needs more water/electricity than conventional?

Thinkstep: For organic cotton, water demand is a hotspot for GWP impact- here it means pump's electricity consumption for water contributes to GWP. The water consumption is calculated separately.

Q21. How was the question asked for child labour? Was the same question asked both in a qualitative manner and indirectly?

AIR: To measure child labour, AIR asked direct and indirect questions about child labour in the farmer survey as well as in the qualitative interviews with farmers. For instance, in the quantitative survey AIR asked: “How many days a child in the household had missed school due to work?” and AIR inquired about the number of total child labour days hired for various farm activities such as land preparation and sowing, among others. We also asked an indirect question to measure child labour in the survey. Specifically, researchers asked: “Generally, do any children below 14 years of age work on the farms?” in an attempt to account for the social desirability bias associated with self-reporting child labour. For the qualitative portion of the study, a similar question about how common it is for children in the community to work on farms in order to assess community-level perceptions of child labour was asked. Members of the study’s advisory panel provided advice on how to frame these questions to obtain the most reliable data on child labour.

Q22. How does this data stand against other published data on cotton from M.P. India?

AIR: Unfortunately, there is a lack of published data on cotton (BCI, Organic and conventional) from Madhya Pradesh (MP), India. For this reason, AIR is unable to assess how this research compares to existing evidence. However, the study provides the most representative sample of organic cotton farming in MP until now.

Q23. What is the use of sustainable cotton certification if there is no social, economic and environmental benefit for farmers, except for supply chain monitoring?

BCI: BCI does find that Better Cotton Farmers experience benefits. BCI takes measurement of benefits and challenges seriously and this is why BCI engages in annual performance monitoring at farm level complemented by more in-depth research like this study and impact evaluation. See BCI’s Research webpage for more information. BCI also collaborates with organisations like the ISEAL Alliance, of which it is a member, to ensure quality monitoring and evaluation. More resources on BCI’s and other standards’ results and impacts can be found at **standardsimpacts.org**, a microsite curated by ISEAL.

BCI is concerned about ensuring that farmers investing in sustainable improvements see social, economic, and environmental benefits. We believe this is happening, although the benefits will be different for farmers depending on their geographic location, the level of mechanisation, access to inputs and finance, among many other factors. The results of this study provide insights into potential impacts and also benefits to the farmers and their communities in Madhya Pradesh, India and BCI will follow up on this. Considering the limited scope in terms of location, timeframe, and methodology, however, it should not be considered as definitive about an entire system’s benefits.

It should be noted that BCI does not engage in supply chain monitoring. Its standard is only applicable at farm level.

Q24. How is BCI cotton sustainable in comparison to organic cotton?

BCI: It is difficult to make a one-to-one comparison of the Better Cotton Standard System and organic cotton certification because, although they both aim to contribute to more sustainable cotton production, they have very different focuses and approaches.

While organic standards achieve fundamental environmental change in a few key areas, BCI delivers incremental change at scale across socio-economic and environmental dimensions. What is important is that both are progressing in the same direction and can achieve synergies together.

BCI's performance monitoring data indicates that, on average, progress is made by BCI Farmers compared to non-BCI farmers on both environmental and socio-economic dimensions. As demonstrated in the table below, the average yield and profit among BCI Farmers in India were higher than among non-BCI farmers between cotton seasons 2014-2015 and 2016-2017. And at the same time, BCI Farmers used on average less water, pesticide and synthetic fertilisers than non-BCI farmers.

BCI Farmer Results compared to non-BCI Farmers in India				
	2016-17 Season	**2015-16 Season**	**2014-15 Season**	**2013-14 Season**
Yield	**8%** more	**9%** more	**11%** more	**18%** more
Pesticide	**30%** less	**20%** less	**20%** less	**22%** less
Synthetic fertiliser	**17%** less	**20%** less	**33%** less	**28%** less
Organic fertiliser	**11%** more	**8%** more	**68%** more	**22%** more
Water	**5%** less	**20%** less	**4%** less	**14%** less
Profit	**21%** more	**23%** more	**32%** more	**44%** more
Sample BCI Farmers	*30,073*	*33,922*	*22,129*	*14,548*
Sample Comparison Farmers	*8,488*	*9,614*	*6,697*	*4,298*

BCI supports organic cotton's efforts to promote robust and environmentally sustainable practices. Less than 20% of the world's cotton is grown more sustainably. There is ample space in the market for all cotton sustainability standards and certifications to grow, and BCI actively supports such growth.

Q25. Can you explain why material costs are so high for organic? Are labour costs included in "materials"?

AIR: Labour costs are provided separately in the tables as "Family Labour Value" and "Wage Labour Cost" and not included in material costs (pp. 54-55 of AIR and ThinkStep's report). However, this study design does not allow for answering why material costs are higher for organic farmers because organic farmers differ from other farmers in many other ways.

Q26. Why isn't there any information about pesticides poisoning of farmers and families for conventional and BCI cotton?

BCI: At the moment there are only a few anecdotal studies evaluating the effect of pesticide use in cotton farming on human health. The main reason for this is the disconnect between data on pesticide usage and data from health services, making it impossible to have reliable statistics on the issue. Nonetheless, BCI considers the use of Highly Hazardous Pesticides (HHPs) an area of great concern, especially in the smallholder farming context in developing and emerging economies. BCI prioritises interventions aimed at the progressive elimination of HHPs.

BCI is currently supporting the launch of an ambitious and ground-breaking new project aimed at developing and piloting a monitoring approach to the health effect of pesticides in cotton production in India and other countries.

In its standards, BCI has included several criteria to reduce pesticide poisoning and prevent the use of the most harmful products; for example, by making the systematic use of Personal Protective Equipment mandatory and by prohibiting active ingredients that present the most toxicity hazard for human health. In the past, BCI contributed to the eradication of the pesticide endosulfan in cotton production before it became targeted for eradication by the international community. Now, BCI and its partners are investing tremendous efforts to eradicate the use of the other HHPs that are still widely used in conventional farming, such as monocrotophos and triazophos.

Furthermore, BCI is rolling out its Toxic Load Indicator monitoring system, which aims to support farmers make better informed decisions in relation to the use of pesticides. A recent independent review of BCI's extensive Result Indicator data demonstrated that BCI's interventions have led to significant reduction in Toxic Load per Hectare across India, in effect reducing the hazard to both cotton communities and their environment.

Q27. Based on these results, can you consider BCI as a real sustainable alternative to conventional?

BCI: BCI's results demonstrate that BCI is making progress improving the sustainability of global conventional cotton production.

The Better Cotton Standard System is not designed to be an alternative or substitute for conventional cotton, rather, it is a set of principles and criteria that provide a roadmap for any cotton producer who wishes to engage in making improvements to his/her methods to become more sustainable across a range of socio-economic and environmental areas. BCI's standard sets a baseline and then encourages and measures progress along a roadmap of continuous improvement. BCI does not claim that licensed BCI Farmers are 'sustainable,' rather they constantly work to be 'more sustainable' than they were. Even the most sustainable cotton producers can and should improve.

The results of this study provide insights to support programmatic improvements, but, considering the limited scope in terms of location and timeframe, they cannot determine an entire system's global worthiness. The results enable BCI and its implementing partner to better understand the farmers' challenges and practices in this part of India.

Q28: How was water consumption calculated? Did you take into account the soil contamination of conventional/BCI cotton?

Thinkstep: For water consumption, blue water consumption (including and excluding rain water) indicator was used in the study. The soil contamination due to use of fertilizers and pesticides was taken into account using Thinkstep's agricultural LCA model discussed during the webinar.

Q29. Material costs: as organic pesticides are mainly based on cow urine and neem oil, they cannot be as expensive as chemical fertilizers and chemical pesticides. Seeds also are much cheaper. We would need some deeper understanding of this aspect.

AIR: Yes, we agree that there is a need for more research in this area.

Q30. If consumption of water is 60 percent lower in organic cotton then, why are certification organization like BCI, brands, and retailers pushing GMO BT cotton and calling it sustainable cotton?

BCI: As this study was focused on one small group of farmers in one part of India and data was taken for only one season, it is not possible to conclude that, in general, water consumption is x% lower or higher for one system than another. BCI and its implementing partner understand from this study that in that particular project area, water use may be an issue for participating farmers. Across the BCI system, however, water stewardship is one of its seven principles on which serious emphasis is placed. With the recent revision of BCI's Principles and Criteria, the standard strengthened this principle, going beyond efficient use of water to promoting and providing tools for the stewardship of water resources, whether a farmer irrigates or not. Also, BCI monitors performance on an annual basis. BCI's own performance monitoring data indicates that, for example, in the 2016-17 season, BCI Farmers in India used, on average, 5% less water for irrigation than Comparison Farmers. The season before that our data indicated 20% less water used on average.

Regarding GMOs, today, nearly three quarters of the world's cotton is grown with GM seeds and many of the farmers using them have no alternative. If BCI were to exclude the use of GM, it would be excluding millions of farmers and communities around the world from receiving training, support, and the opportunity to tangibly improve their sustainable agricultural practices. BCI does view the lack of diversity in seed options as problematic. In India, BCI has encouraged and supported some BCI Farmers to run trials of improved cultivars of local (non-GM) cotton varieties, which hold great promise for addressing climate change, especially in extremely dry areas where protective and supplemental irrigation is not available.