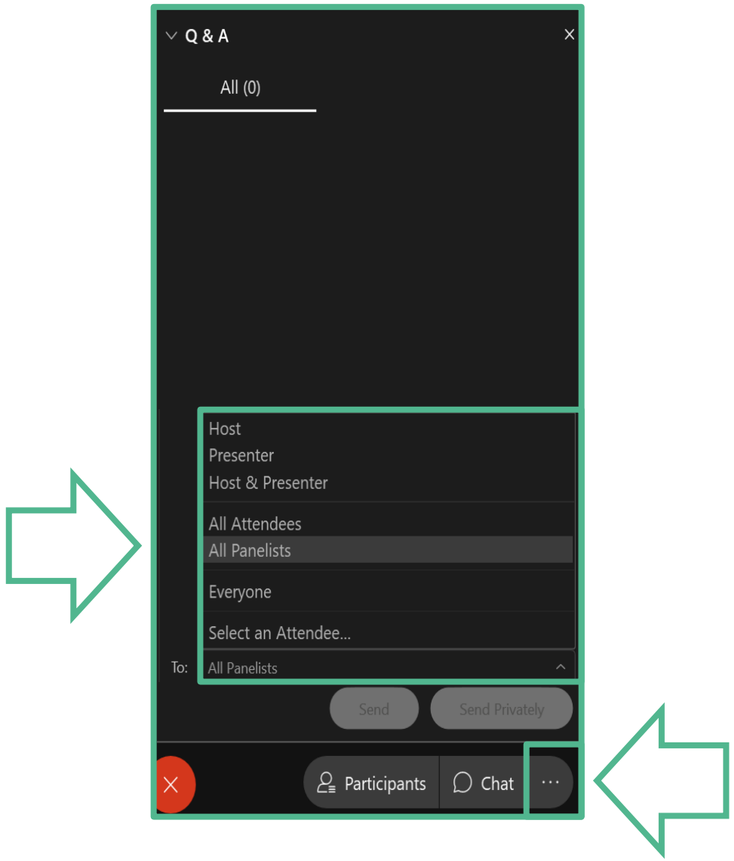
Member Update

Measuring and Reporting Greenhouse Gas Emissions

September 2021

How to engage

Asking questions and making comments in Cisco Webex



Submitting a Question Using the Q+A Function

1. *Click or tap on the three dots in the bottom right corner to view available panels*
2. *Select Q+A*
3. *Select 'All Panelists'*
4. *Type your question*

Note: *The presentation will be recorded.*

Anti-trust policy

The following topics are not to be discussed

- *Prices*
- *Market share*
- *Customer allocation*
- *Anything that could be construed as limiting competition*

Introductions

Kendra Park Pasztor

Better Cotton
Monitoring and Evaluation

Chris Morris

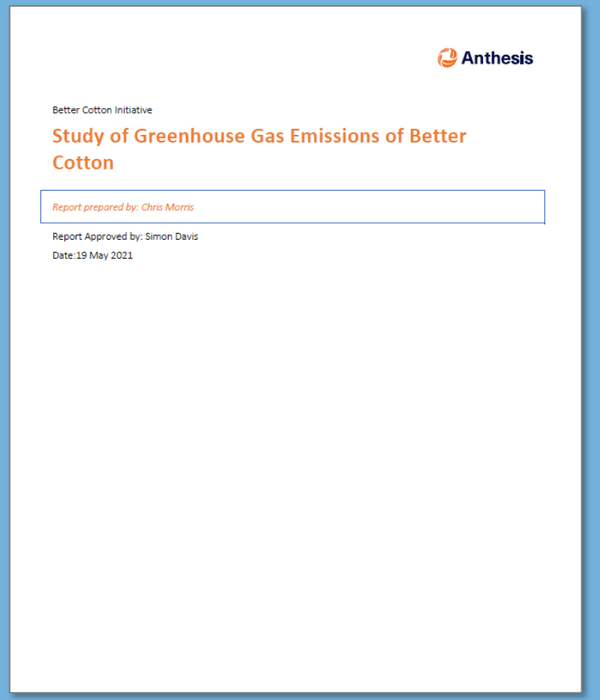
Anthesis

Agenda

- **Context**
- **Study details with Anthesis**
  - Scope and boundaries
  - Methodology
  - Results
  - Opportunities
  - Insights
- **Next steps**
- **Q&A**

Study of Greenhouse Gas Emissions of Better Cotton

Full report due to be published on the Better Cotton website in October 2021



Anthesis

Better Cotton Initiative

Study of Greenhouse Gas Emissions of Better Cotton

Report prepared by: Chris Morris

Report Approved by: Simon Davis

Date:19 May 2021

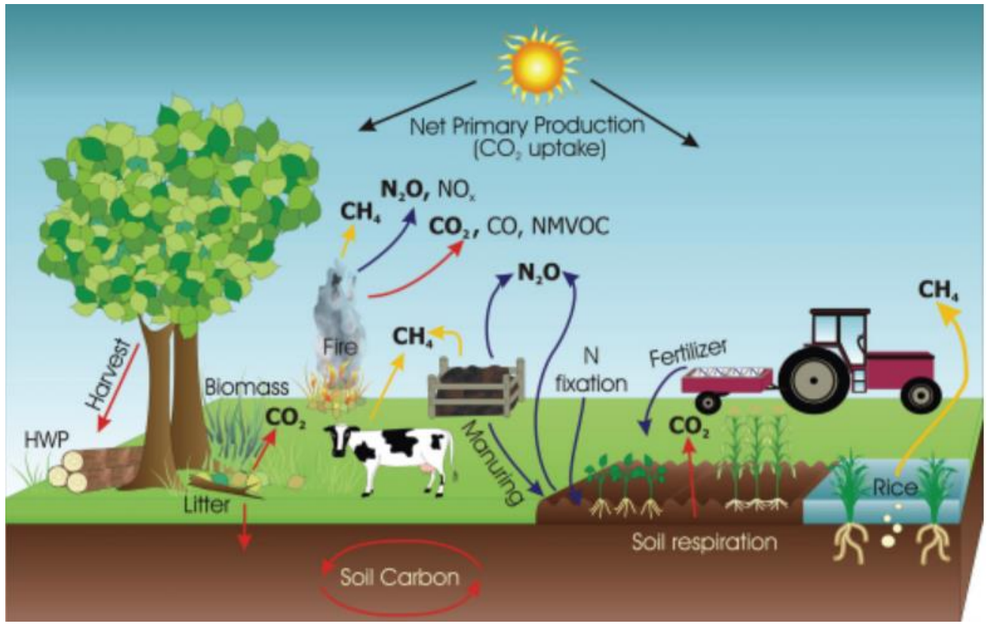
What are GHGs?

Greenhouse gases or GHGs

include carbon dioxide, methane and nitrous oxides. Sometimes 'carbon' is used as shorthand for 'GHG emissions.' Generally, emissions are expressed in 'carbon equivalent' – CO_2e.

GHGs are emitted in agricultural production

e.g. nitrogen fertiliser production and application, and electricity used for irrigation systems.



Why do GHG emissions matter?

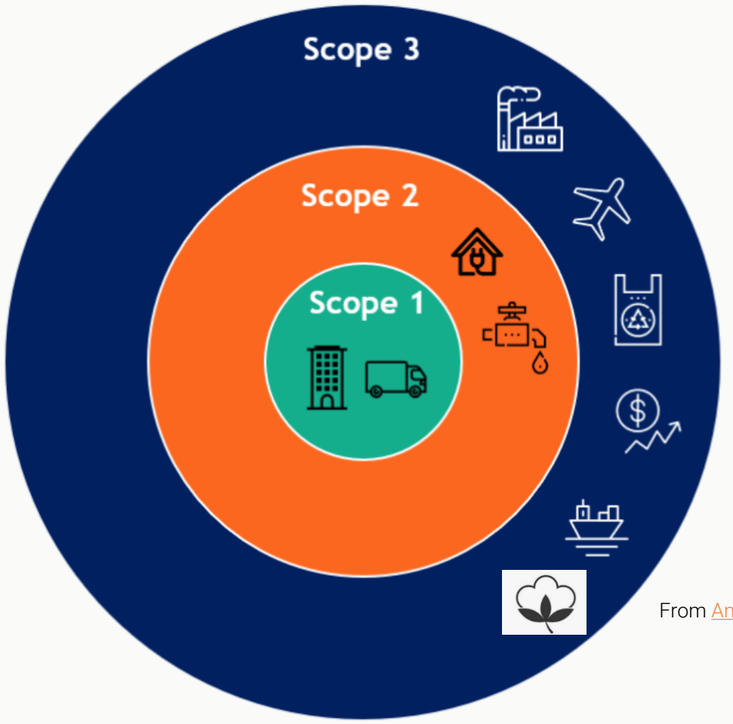
Impact

Reducing GHG emissions in cotton production is the primary way Better Cotton can contribute to **climate change mitigation**.

Reporting

Retailer/Brands and other supply chain actors in the **apparel & textile sector** *quantify and report on their 'carbon footprint' to help fight climate change and fulfill commitments to Science-Based Targets or other programmes.*

Production of cotton lint is a material contributor to Better Cotton Members' **Scope 3 emissions**.



From Anthesis

What is Better Cotton doing about GHG emissions?

Climate change projects and initiatives in addition to farm-level activities led by Implementing Partners

GHG-Focused

Anthesis GHG Study

- Commissioned by Better Cotton
- Comparative & global representative analyses
- Dec 2020 - May 2021

Gold Standard Project

- Better Cotton is project partner; 3 members funding pilot – Jan22
- Potential for impact claims – link to traceability

2030 Outcome Target

- Developing outcome target on GHG emissions reduction
- Expected end 2021

Climate Change

Better Cotton Climate Change Strategy

- Formal strategy to support producers to mitigate and adapt to climate change
- Draft strategy complete

Cool Farm Alliance

- Better Cotton a member
- Testing the Cool Farm Tool in Anthesis study and Delta pilots (SA, IN)
- May adopt the tool

Include GHG/climate change

Delta Project

- ISEAL-funded
- GHG emissions is one of the framework's 15 indicators
- 2018-2022

ATLA Project

- ISEAL-funded project to test landscape approach
- Farm-level pilots
- 2020-2022

Study objectives & scope

- **First-ever broad, international study of Better Cotton Greenhouse gas emissions.**
- We commissioned **Anthesis** - a global sustainability consultancy - for this project. They used the **Cool Farm Tool** to model the results.
- The study should be considered a **test of our existing Results Indicator data**. Anthesis analysed **217,499 datasets** from 3 years.
- The study identifies **emissions hotspots** per sub-region in several Better Cotton countries. It also provides a **comparison of Better Cotton emissions to non-Better Cotton**

Study objectives & scope

Objectives and countries

Objectives & Countries

1. *Representative emissions quantification -- Brazil, India, Pakistan, China, USA; Representing 80% of Better Cotton production (in 2015-16 to 2017-18).*

2. *Comparative analysis -- India, Pakistan, China, Turkey, Tajikistan*

Years of analysis

Average over 3 seasons
2015-16 to 2017-18

Primary data

Better Cotton Results Indicator data (e.g. fertilisers, irrigation water, pesticides, cotton area, production)

Study learnings

Part of ongoing work on traceability and deepening impact through 2030 Strategy

What can this study tell us/do?

- ***Tests GHG emissions quantification via the Cool Farm Tool.***
  We may integrate the tool into our monitoring & evaluation system.
- ***Gives an indication of how Better Cotton compares to non-Better Cotton production in some countries.***
- ***Identifies emissions hotspots in the Better Cotton portfolio.***
  Will inform country programme strategies and our upcoming 2030 target to reduce emissions in line with climate science.
- ***The results inform the Gold Standard project.***
  With this, we aim to ensure future GHG emissions quantification work will enable our members to make credible claims based on Better Cotton results.
  (*note: there will be dependencies on related traceability developments*)

*What can this study **not** tell us/do?*

- ***Do not recommend to compare to other cotton GHG studies.***
  Due to different LCA methodologies, different seasons and countries.
- ***Cannot yet be used for member-led claims.***
  Additional refinement of the emissions quantification needed and a layer of 3rd party data verification to be added. Also likely dependent on traceability being in place.
- ***Does not include soil carbon sequestration.***
  It also does not allow for the accurate allocation of emissions from land use change to cotton production.

GREENHOUSE GAS EMISSIONS OF BETTER COTTON

September 2021

Anthesis

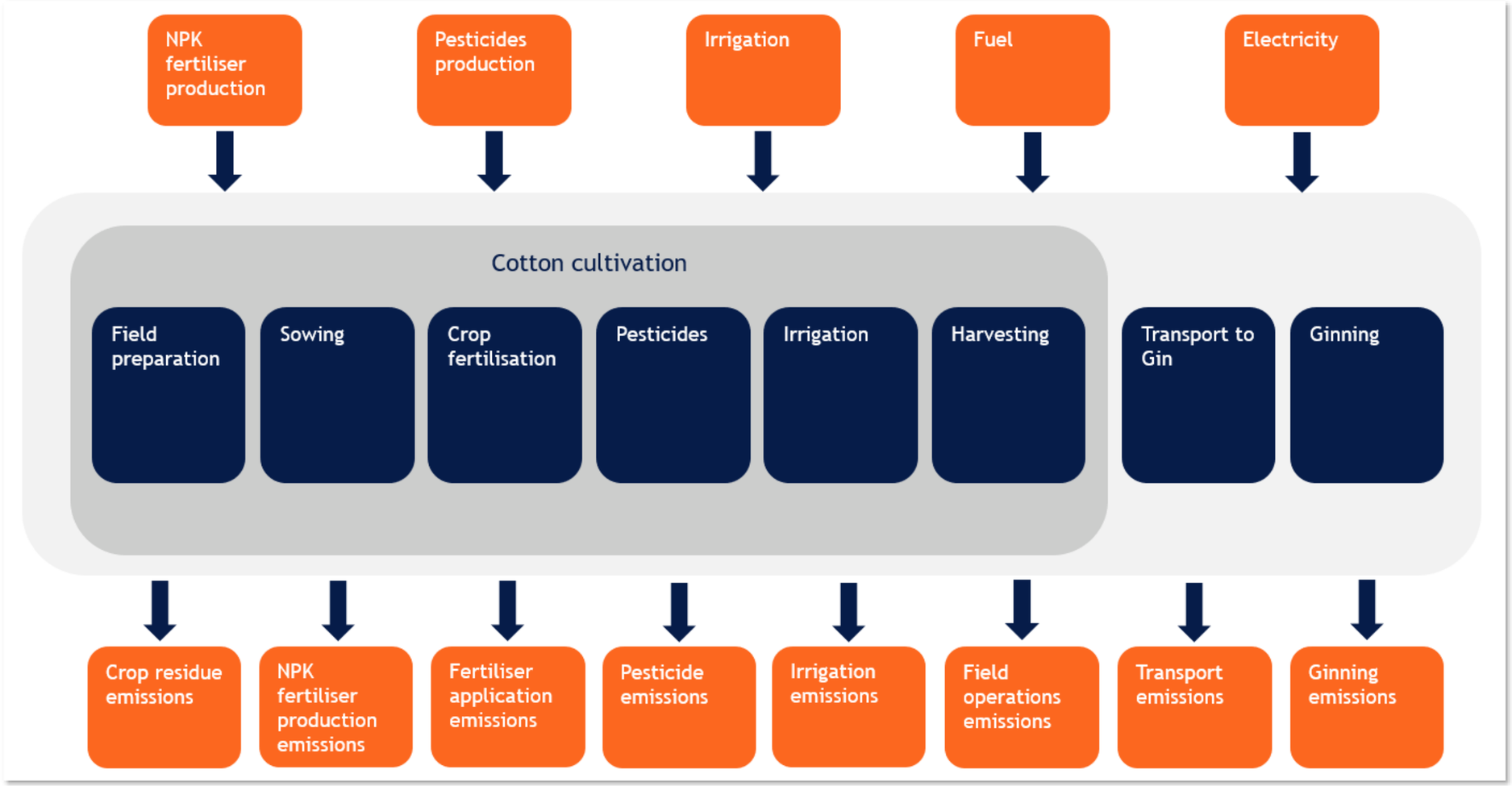
GOAL, SCOPE AND BOUNDARIES

GOALS OF STUDY

1. Calculate the average GHG emissions for countries contributing over 80% of Better Cotton's total production.

2. Calculate the comparative GHG emissions for Better Cotton Production and comparable production across India, Pakistan, China, Tajikistan, Turkey

SYSTEM BOUNDARIES



Exclusions:

- Human and livestock labour
- Construction of capital equipment
- Maintenance of farm machinery
- Transportation of inputs to farm
- Production and transportation of any packaging materials used
- Carbon stock changes relating to land use change, tillage or cover cropping

METHOD

EMISSIONS CALCULATION

GHG emissions

- Crop residue
- Fertiliser production
- Fertiliser application
- Pesticides
- Field operations
- Irrigation
- Transport to gin
- Ginning

Cool Farm Tool (CFT)

- Online GHG, water & biodiversity calculator for farming
- CFT members include food retailers, manufacturers, input suppliers, NGOs, universities and consultancies
- Tool emissions factors from IPCC and peer reviewed studies

RESULTS: REPRESENTATIVE ANALYSIS

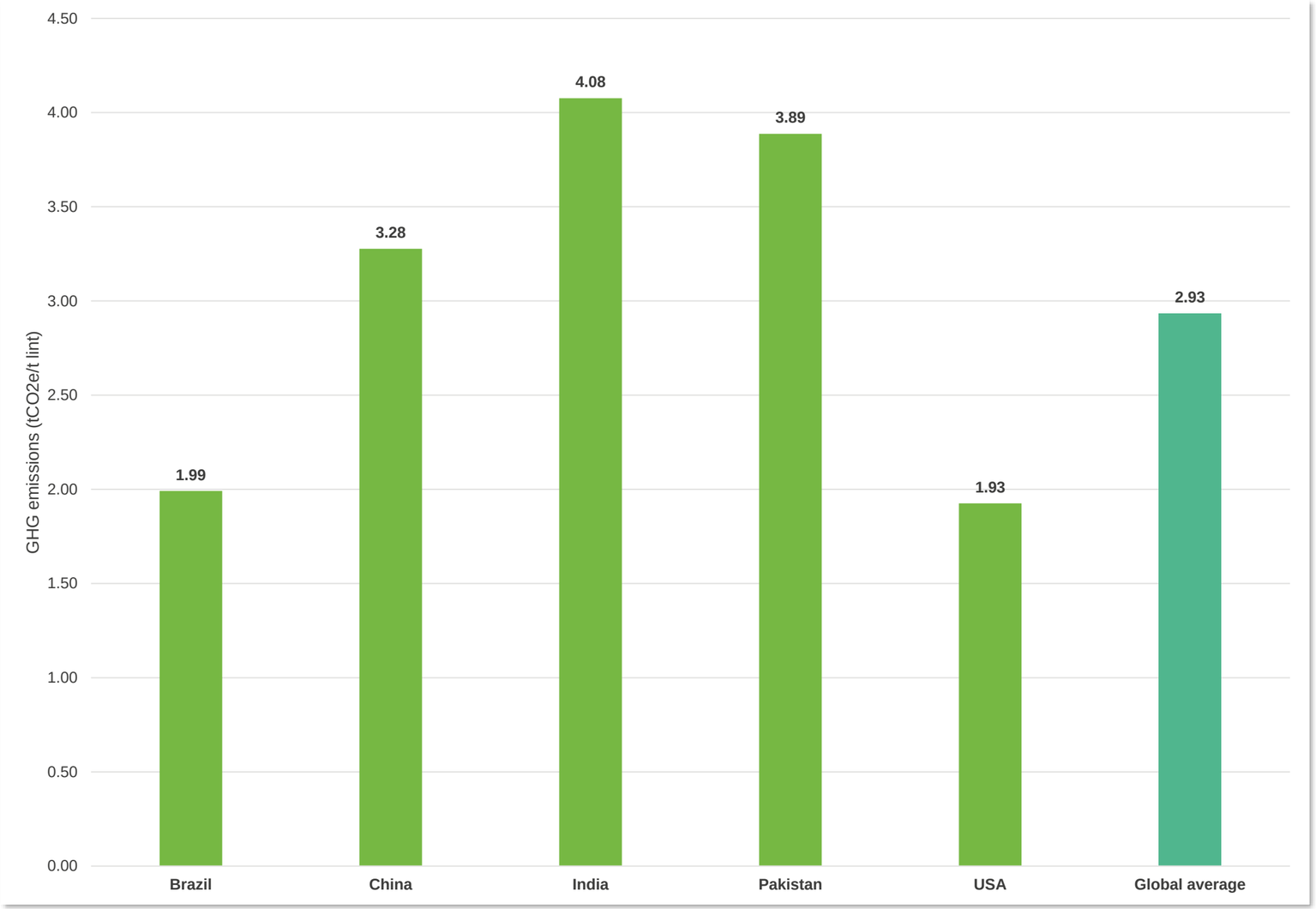
COUNTRIES CONTRIBUTING 80% BETTER COTTON PRODUCTION

GHG EMISSIONS PER TONNE LINT BY COUNTRY: 2015/16 TO 2017/18

Key insights

- GHG emissions varied between Better Cotton producing countries.
- USA and Brazil had lowest emissions intensities.
- India and Pakistan had highest emissions intensities.

Mean annual GHG emissions per tonne lint for countries representing 80% of Better Cotton production - 2015/16 to 2017/18



GHG EMISSIONS PER COUNTRY BY SOURCE: 2015/16 TO 2017/18

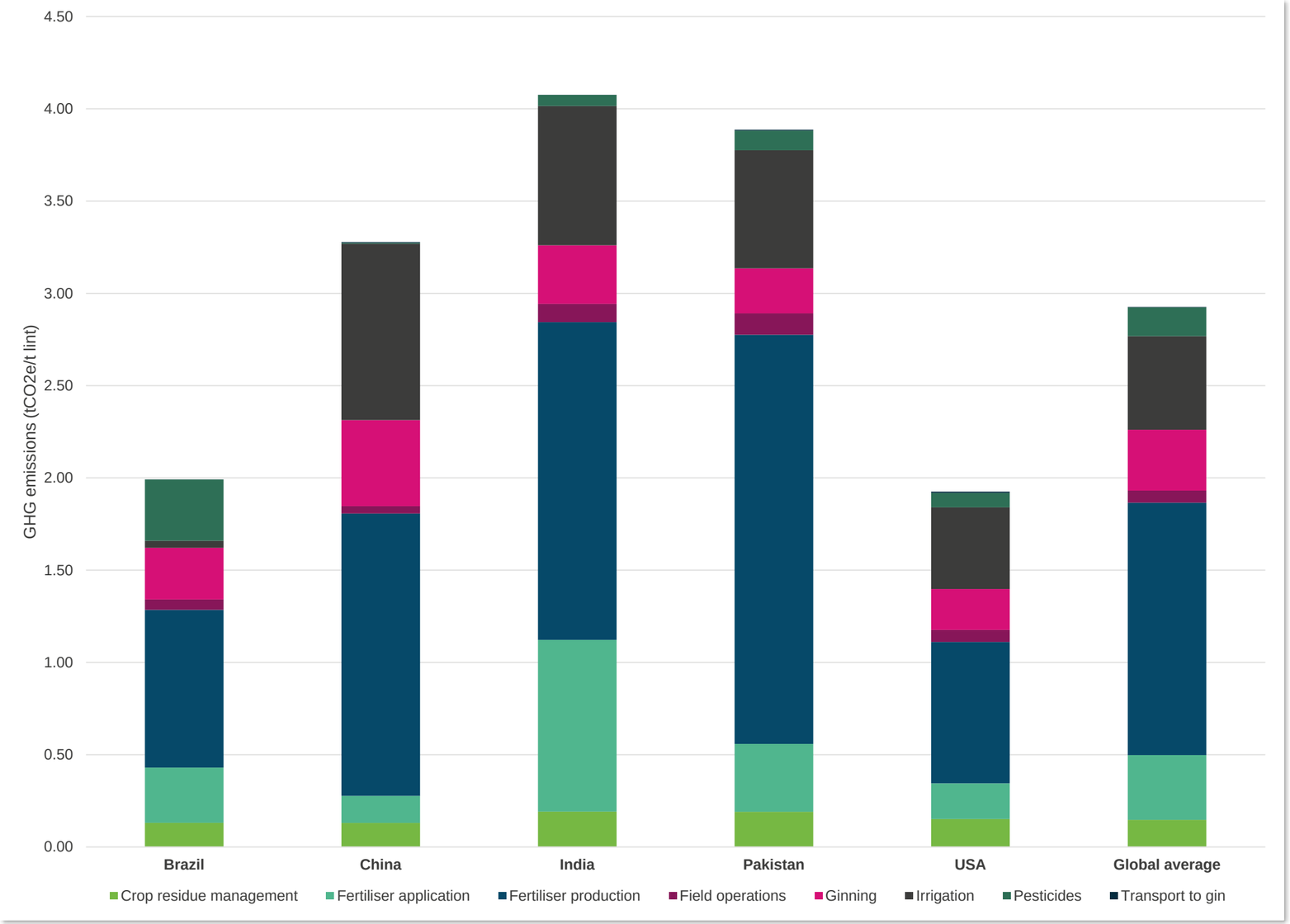
Key insights

- GHG emissions varied between Better Cotton producing countries.
- Differences in the emissions factor for fertiliser production between regions was key driver in accounting for varying emissions intensities between countries.
- Countries in which irrigation is key to production have higher emissions intensities.

Emissions hotspots – global average

1. Fertiliser production – 47% total emissions
2. Irrigation – 17% total emissions
3. Fertiliser application – 12% total emissions

Mean annual GHG emissions per tonne lint for countries representing 80% of Better Cotton production by emissions source - 2015/16 to 2017/18



GHG EMISSIONS BY SOURCE - INDIA: 2015/16 TO 2017/18

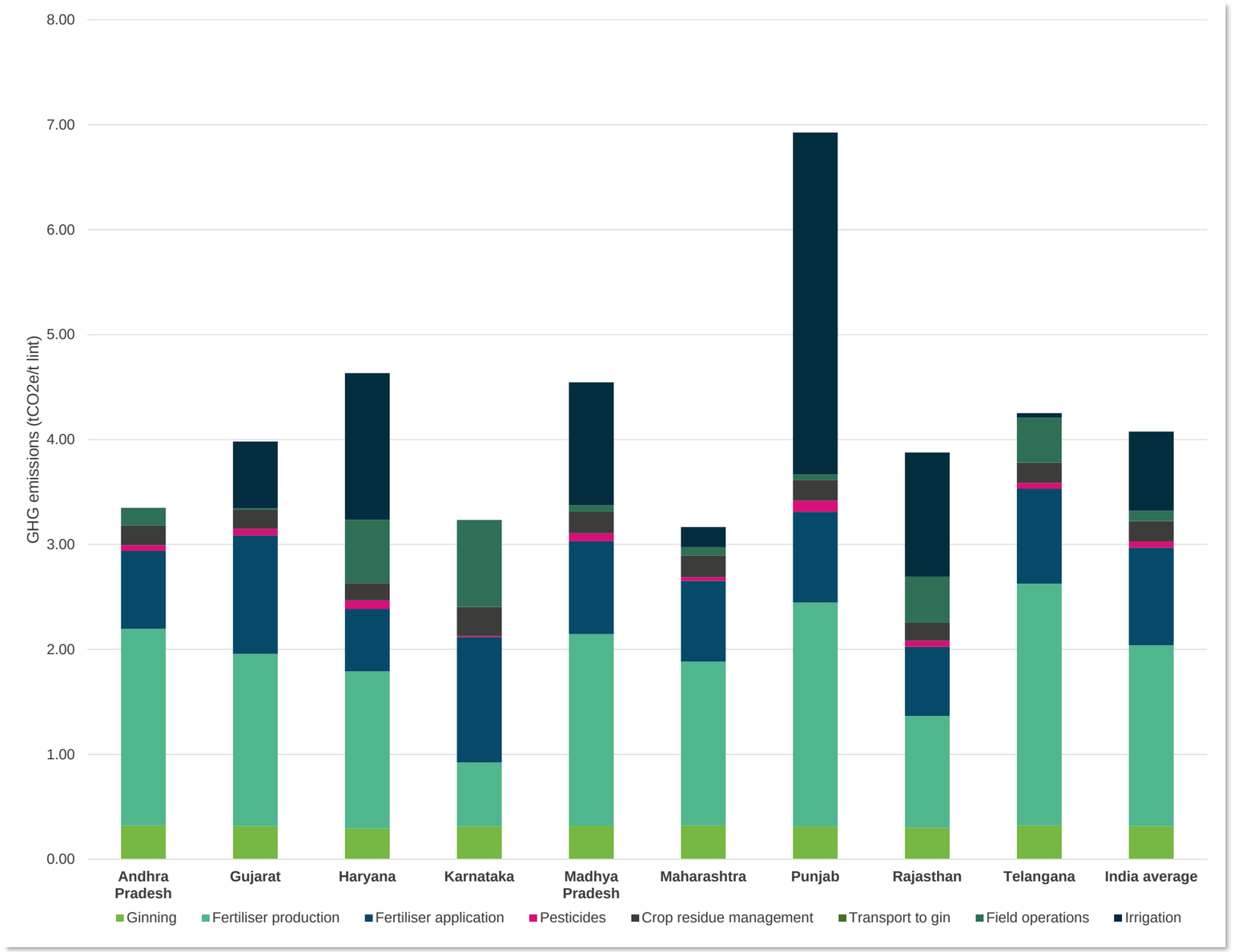
Key insights

- The relative contribution of emissions from fertiliser production, fertiliser application and irrigation were highly variable between states due to growing systems and soil type.
- Punjab's high emissions intensity was driven by large volumes of irrigation applied and the energy needed to move the water.
- Karnataka experienced significantly higher emissions from fertiliser application (N2O volatilisation) due to climate and soil type.

Emissions hotspots – India average

1. Fertiliser production – 42% total emissions
2. Fertiliser application – 23% total emissions
3. Irrigation – 19% total emissions

Mean annual GHG emissions per tonne lint per state of Better Cotton production in India by emissions source - 2015/16 to 2017/18



GHG EMISSIONS BY SOURCE - BRAZIL: 2015/16 TO 2017/18

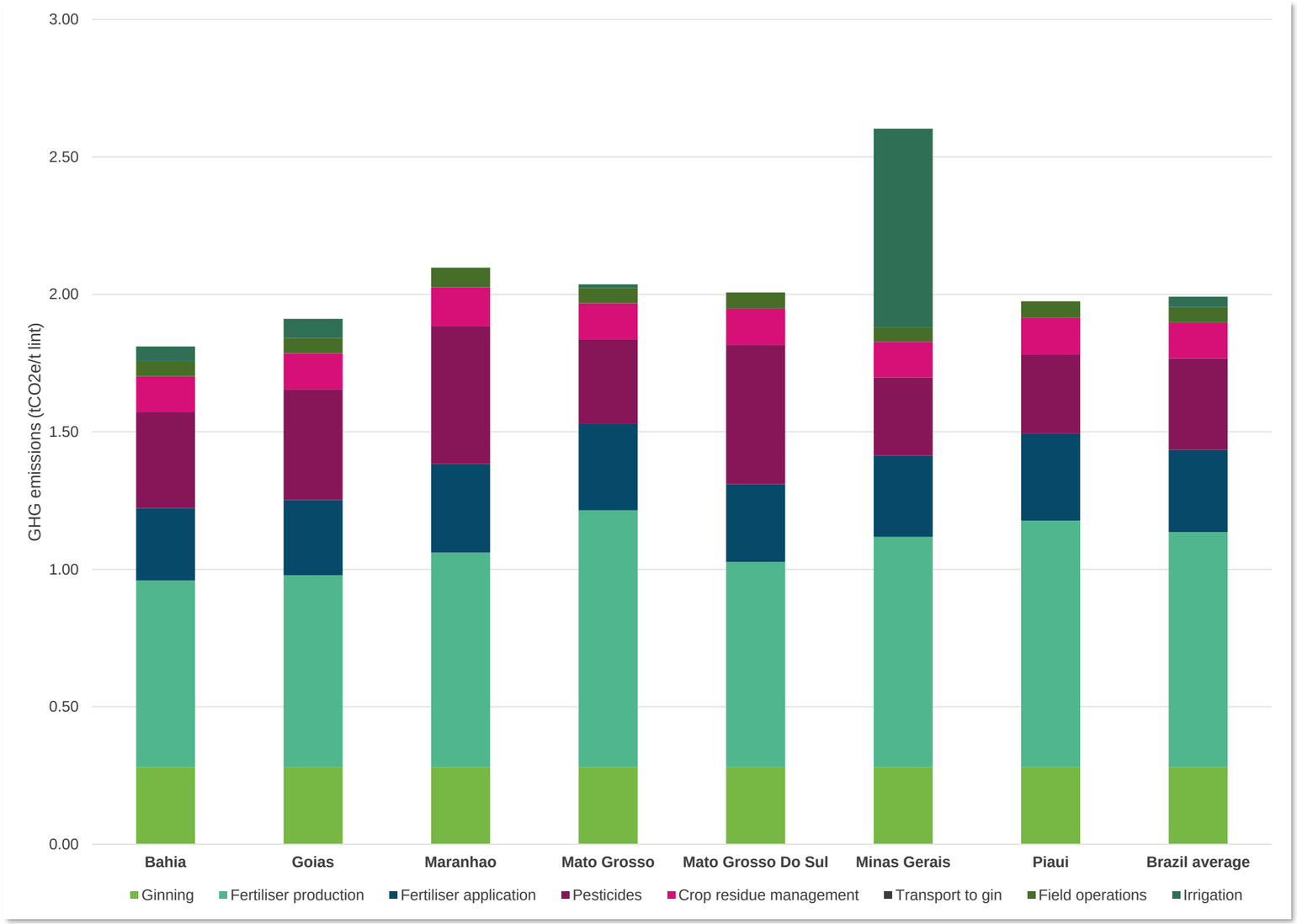
Key insights

- Minas Gerais has the highest emissions intensity as it had a higher proportion of irrigated production than other states which are predominantly rain fed.
- Brazil growers use more pesticides per tonne lint than other countries in this study.
- Relative contribution of emissions from ginning are higher in Brazil than other countries in this study due to total emissions intensity being lower overall.

Emissions hotspots – Brazil average

1. Fertiliser production – 43% total emissions
2. Pesticides – 14% total emissions
3. Ginning– 12% total emissions

Mean annual GHG emissions per tonne lint per state of Better Cotton production in Brazil by emissions source: 2015/16 to 2017/18



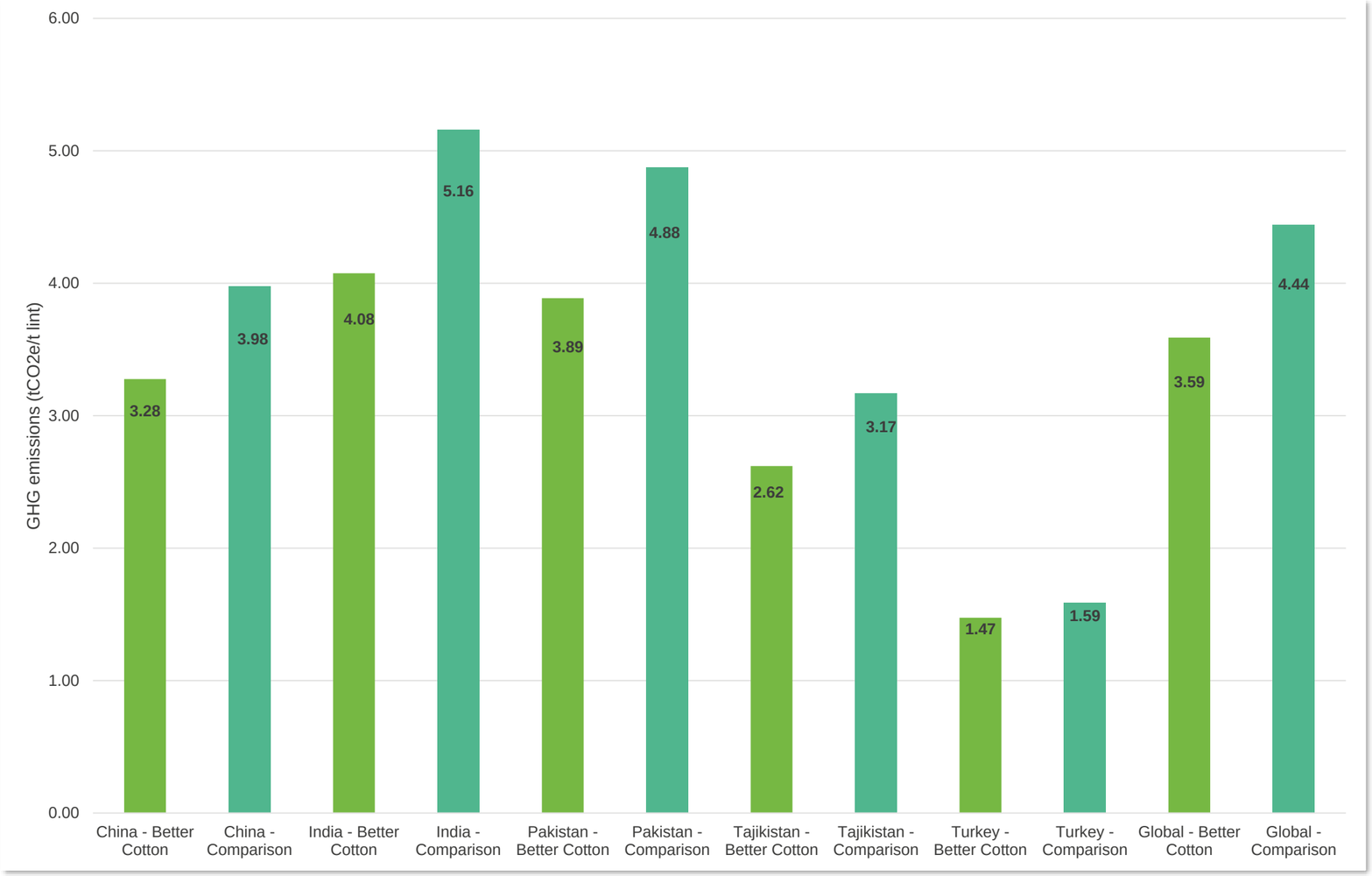
RESULTS: COMPARATIVE ANALYSIS

BETTER COTTON PRODUCTION VS. COMPARABLE PRODUCTION

GHG EMISSIONS – BETTER COTTON VS. COMPARABLE PRODUCTION: 2015/16 TO 2017/18

At a global level, Better Cotton produced 19% lower GHG emissions than comparable production.

Comparison of Better Cotton mean annual GHG emissions per tonne lint with comparable production: 2015/16 to 2017/18

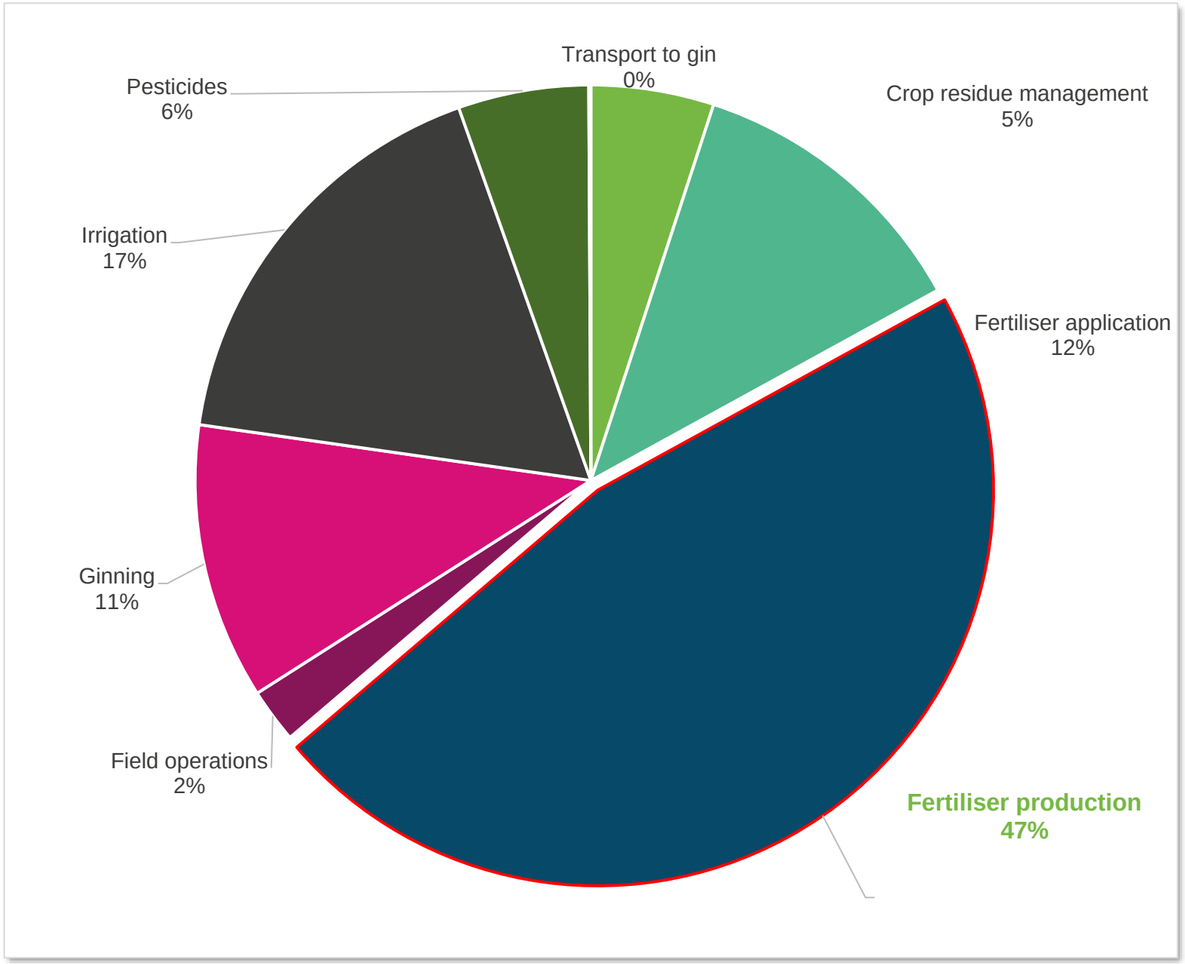


Key insights

- At a global level, Better Cotton production had 19% lower GHG emissions than comparable production due to Better Cotton farmers achieving higher yields per unit of input used (synthetic fertiliser, irrigation, pesticides).
- Better Cotton emissions were lower than comparison production in all countries included in this study.
- India had the largest difference in performance – Better Cotton 1,082 kgCO2e/t lint (21%) lower than comparison production.
- Turkey had the smallest difference in performance - Better Cotton 112 kgCO2e/t lint, (7%) lower than comparison production.

OPPORTUNITIES FOR EMISSIONS REDUCTIONS

REDUCED FERTILISER USE

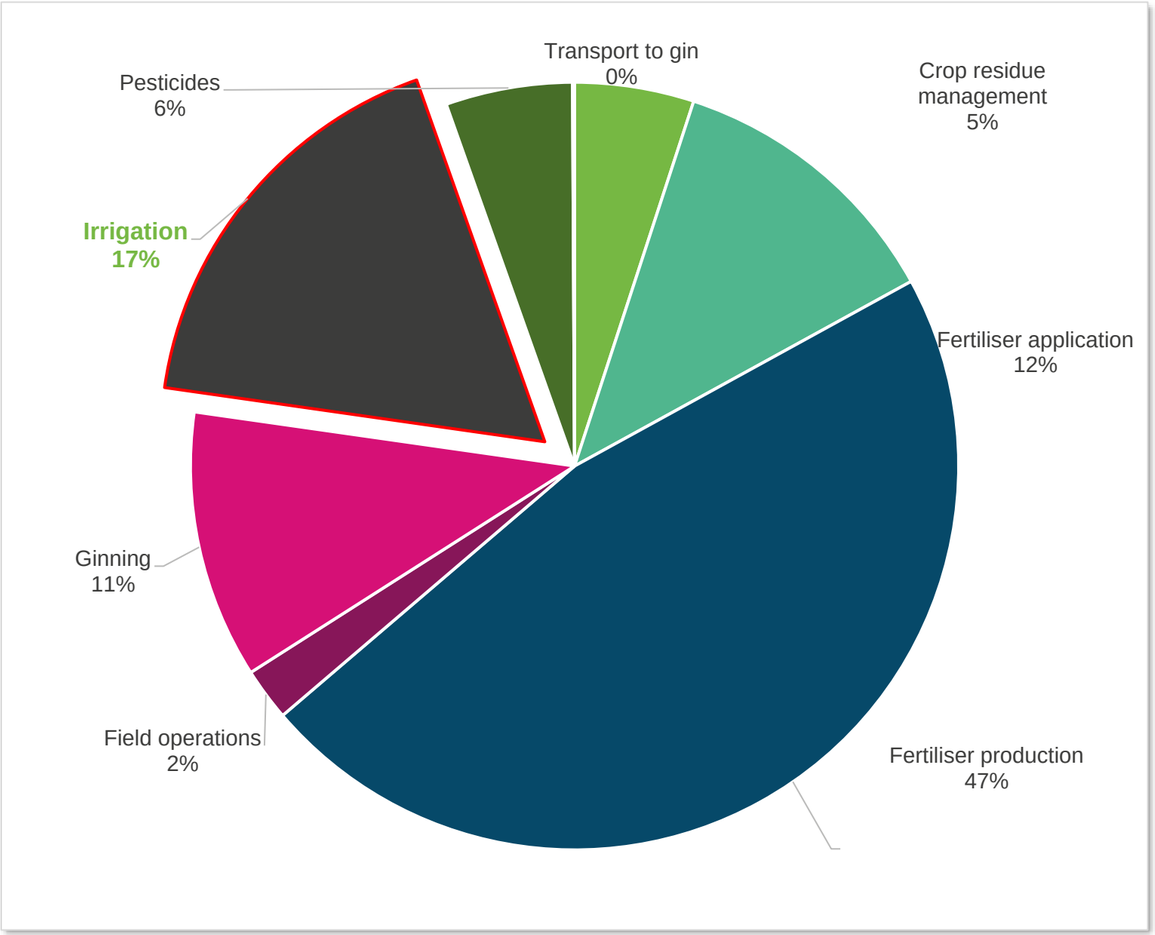


Opportunity – better matching of fertiliser application to crop requirements

Illustrative savings: if N fertiliser use was reduced by 10 kg / ha, emissions from fertiliser production could be reduced by:

- USA – 10%
- India – 9%
- Pakistan & Brazil – 6%
- China – 4%

IMPROVEMENTS IN IRRIGATION EFFICIENCY



Opportunity 1 – more targeted application of irrigation

Illustrative savings:

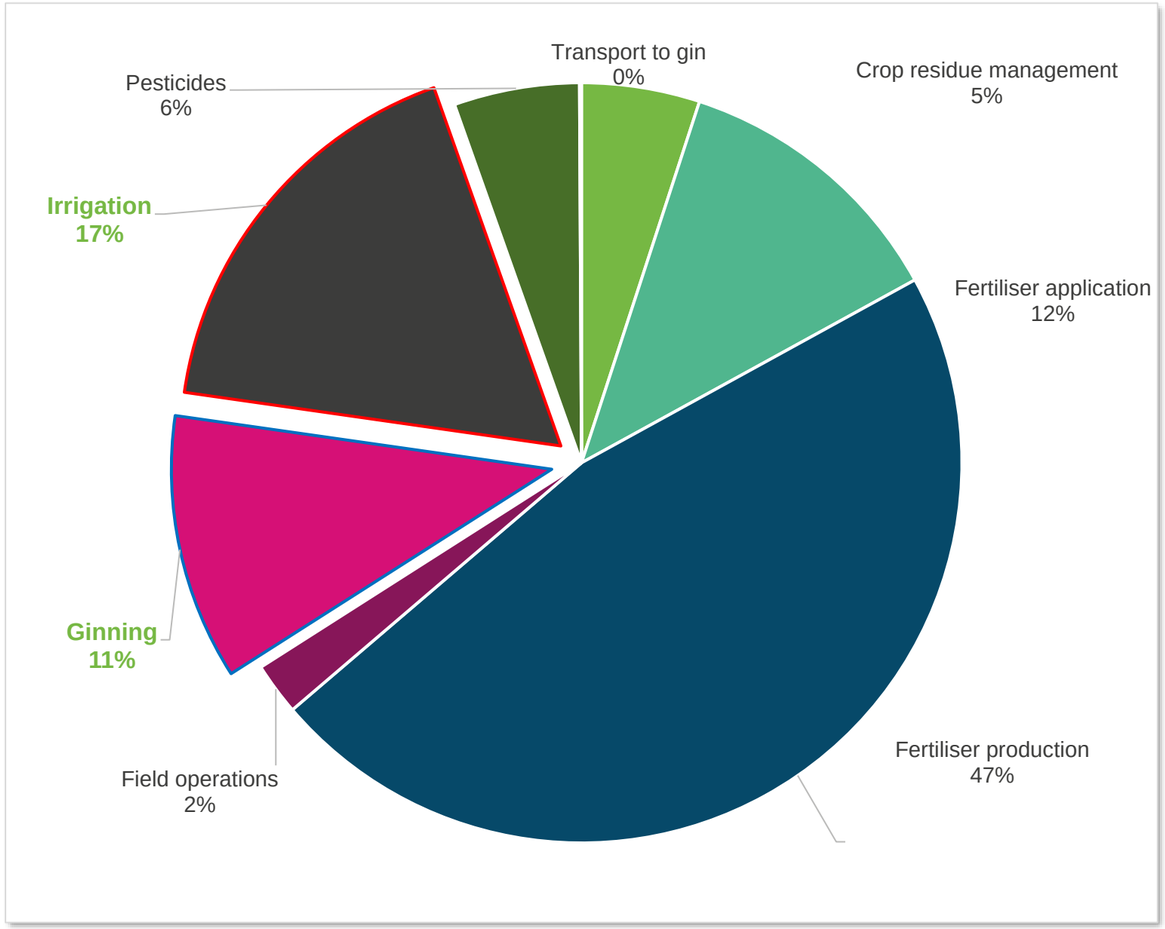
- 10% reduction in irrigation = 10% reduction in irrigation emissions

Opportunity 2 – adoption of precision irrigation technologies

Illustrative savings:

- From raingun to drip – 34% reduction in irrigation emissions
- From pivot to drip – 26% reduction in irrigation emissions

USE OF RENEWABLE ELECTRICITY



Opportunity 1 – advocate for gins to be powered by renewable electricity

Illustrative saving: if 50% of cotton harvested was processed through gins powered by zero carbon renewables this would reduce Better Cotton's total footprint by over 5%.

Opportunity 2 – irrigation systems powered by renewable electricity sources

Illustrative savings: emissions from irrigation could be reduced to near zero if all irrigation pumping was powered by renewable electricity

INSIGHTS FOR BETTER COTTON

INSIGHTS FOR BETTER COTTON

1. Better Cotton understands the emissions drivers associated with agricultural production of Better Cotton at global, national, and sub-national levels

2. Better Cotton recognises where to focus GHG mitigation activities going forward

3. On a per unit basis, Better Cotton is making a positive contribution to lowering emissions from cotton production

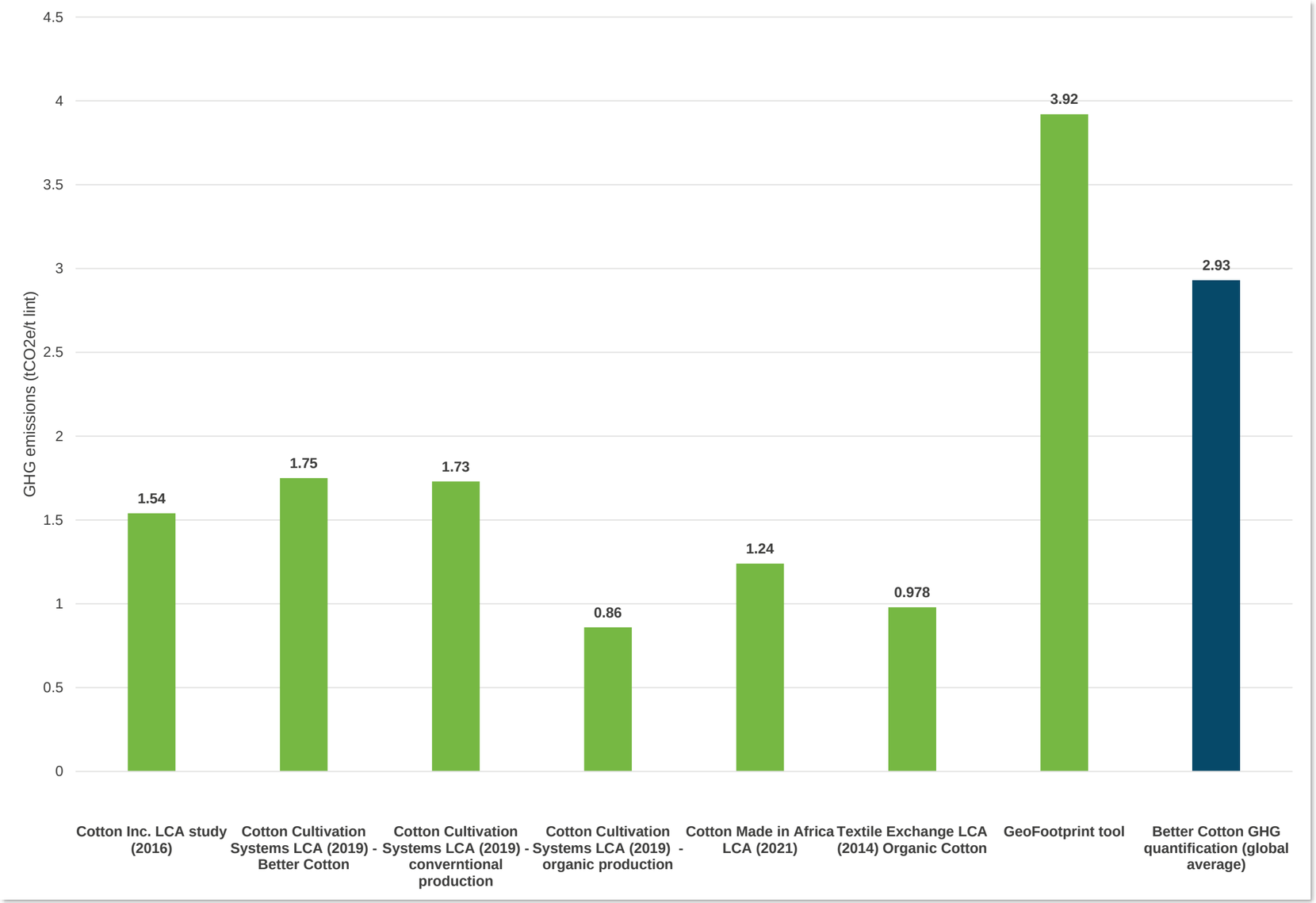
4. The Cool Farm Tool offers a robust method for quantifying cotton agricultural emissions at scale

COMPARISON WITH OTHER COTTON GHG STUDIES

COMPARISON WITH OTHER COTTON GHG STUDIES

Study	Geographical coverage	Year
Cotton Inc. LCA study (2016)	USA, China, India, Australia	2010 - 2014
Thinkstep LCA (2019) - Better Cotton	India (Madhya Pradesh)	2016/17
Thinkstep LCA (2019) - conventional production	India (Madhya Pradesh)	2016/17
Thinkstep LCA (2019) - organic production	India (Madhya Pradesh)	2016/17
Cotton Made in Africa LCA (2021)	Zambia, Cameroon, Côte d'Ivoire	2016/17 – 2018/19
Textile Exchange LCA (2014) Organic Cotton	India, Turkey, China, Tanzania	2011/12 - 2012/13
GeoFootprint tool	Various	2019
Better Cotton GHG quantification (2020)	Brazil, India, China, Pakistan, USA	2015/16 - 2017/18

Comparison of Better Cotton GHG emissions study with other studies and tools



How does Better Cotton compare to Conventional?

Better Cotton's Anthesis study found that in the 5 countries with comparison data, Better Cotton emissions were, on average, **19% lower** *than non-Better Cotton emissions.*

It is not advised to compare emissions factors from different LCAs and studies when the methodologies, background data, countries, and seasons are different.

- *This was a major conclusion of the recent UNFCCC Fashion Charter report on the emissions profiles of cotton and polyester.*

Next steps

Next steps

1. Model emissions reduction scenarios
2. Set Better Cotton reduction target in line with climate science
3. Validate GHG emissions quantification method
4. Build mitigation plans into country strategies
5. Measure and report progress through 2030

Upcoming webinars and Council elections

- **Better Cotton's 2030 Strategy: Climate Change**
  Thursday, 14 October 2021
  3:00pm – 4:00pm BST

- **Better Cotton's 2030 Strategy: Impact Target Setting**
  Thursday, 28 October 2021
  3:00pm – 4:00pm BST

- **Better Cotton's 2030 Strategy: The Theory of Change**
  Tuesday, 9 November 2021
  3:00pm – 4:00pm BST

The next **BCI Council Elections** *are scheduled for* **June 2022**.

All Better Cotton Members will receive the application package in October detailing how and when they may apply for a position on the Council.

Q&A

Thank you

Please complete the webinar survey

membership@bettercotton.org