D13.40 Sub-committee on Sustainability in Textiles

1st Meeting

Jayanti Mishra
Jan 31st 2012
Introduction of attendees
Rising temperature & Disappearing Rain forests

Disappearing Rainforest

Rising temperatures affecting Fresh water availability
Species migration and extinction

- Gray Whale
- Birds
- Frogs
- Fishes
World scenario

- Climate change
- Toxic chemicals
- ‘fast fashion’
- Water consumption
World scenario contd..

- Recycling
- Consumer choice.
- Technology.
Water consumption

14000 to 20000

1450-1750
World scenario contd..

• Social concern
• Environmental performance dependency
• Energy Use
• life of the product
Impact of textiles

• Resource depletion
• Pollution
• Energy use
• Biological Environment
300 Gigatons of CO₂ released into the atmosphere

Textile industry contributes 10% of total impact

60 million tons of annual textiles global usage

9 trillion liters of water used annually...

Large parts of Toxicity added during use

A significant quantity of used textiles goes into landfills.
The Growing Importance of Sustainability in Textiles
Eco labels out there

- **430 ecolabels** in 246 countries, and 25 industry sectors.
Agenda

- Meeting Agenda
  D13.40 on Sustainability of Textiles
- Mishra, Jayanti
- **Date:** January 31, 2012  **Time:** 8.30 am to 10.30 am
- **Place:** Atlanta, GA
- Call to order and introduction of attendees 10 minutes
- Approval of Agenda 2 minutes
- Approval of Previous Meeting Minutes Presentation 25 minutes
- Membership Updates 5 minutes
- Ballot Results (since last meeting)
  - a) Main/Concurrent Items
    *** None ***
  - b) Subcommittee Items
    *** None ***
- Outstanding Negatives Needing Resolution (prior to last meeting)
- Main/Concurrent Items
  *** None ***
- Subcommittee Items
  *** None ***
- Standards Requiring Review
  *** None ***
• New Standard and Reinstatement Work Items (Not Currently on Ballot)
  – WK33688 New Standard Guide For Fibers Sustainability (Technical Contact: Mishra, Jayanti)
• To discuss the members interested and discuss the objectives of the Task Group
• Revision and Withdrawal Work Items (Not Currently on Ballot)
  *** None ***
• Task Group Reports (Other than Work Items) None yet
• Liaison Reports
• With Textile Exchange and Sustainable Apparel Coalition 5 minutes presentation
• Old Business
• Workshop in June. To discuss the agenda and outline of the workshop and Speaker confirmations. Presentation 10 minutes
• New Business/Committee Correspondence
• TRSA Proposed Standard Discussion 10 minutes
• Administrative Deadlines
• Open to discussion and feedback- 30 minutes
• Future Meetings
• Event Name: June 2012 Committee Week
  Dates: Sunday, June 24th 2012 - Wednesday, June 27th 2012
  Location: Sheraton San Diego Hotel & Marina; San Diego, CA US.
Agenda contd..

Planned conference to cover;

- **General Objectives** – The Objectives laid down are -
  - To draw the technical minds already associated with D13 for a focused workshop on sustainable fiber standards development.
  - To attract Senior Management/ Buyers / Designers to associate with ASTM D13 and D13.40 through a highly interactive, strategic workshop on sustainable business.

The workshop can be called “Vision in Action” and will include two exclusive workshops

- On Sustainable textile fiber standards - An Insight into available global sustainable fiber guidelines and standards and future development. Participation of Subject matter experts, material specialists, technologists from producers, retailers, testing agencies, industry organizations & research analysts
  
  &

  From Concept to consumption - Create a powerful, holistic, integrated sustainable textile business strategy. Lead management consultants will facilitate a unique, highly interactive workshop bringing together business strategists, brand managers, buyers, designers, material specialists, technologist and CSR to create a blueprint for success.

- Event Name: January 2013 Committee Week
  Dates: Sunday, January 27th 2013 - Wednesday, January 30th 2013
  Location: Hyatt Regency Jacksonville Riverfront; Jacksonville, FL US

- Meeting Adjournment

- For a complete list of standards see
  [http://www.astm.org/COMMIT/SUBCOMMIT/D1340.htm](http://www.astm.org/COMMIT/SUBCOMMIT/D1340.htm)
The earlier defined objective were:

- The need of sustainability in production and consumption of Textiles.
- Provide a venue for networking among participants and sharing of best practices.
- To draw the technical minds already associated with D13 for a focused workshop on sustainable fiber standards development.
- To attract Senior Management/ Buyers / Designers to associate with ASTM D13 and D13.40 through a highly interactive, strategic workshop on sustainable business.
Objectives Today

• Currently established standards, test methods, specifications
  Cotton and polyester - 2 most consumed fibers - Need to study the standards in depth and work on establishing the test methods/filling in gaps in existent standards
  Review GRS Standard and establish guidelines/test methods filling gaps in the existent standard

• Test Methods for recycle content
• Measuring footprint
• Rating basis
• Organic seed cultivation Test methods
• SAC/Nike Fiber grading and rating methodology
• Why the scoring is the way it is and are test methods identified/specifications laid down
• Review current certifications, training certifiers help create/improve standards
• New standards for Polyester Recycling and Organic Cotton
Gaps today

• **Organic Cotton**
  1) No measurement /rating of the processes involved
  2) Current ensure traceability and basic environmental compliances
  3) No scoring/evaluation of the integrity- currently based on audit system max twice a year
  4) No test methods to confirm authenticity- adulteration not traceable in current standard
Recycle Standard

1) Stress on traceability
2) No rating or measurement of processes
3) Current standard asks for basic environmental performance of organization but does not evaluate the efficiency or performance of the manufacturing process specific to recycle
4) No scoring/evaluation
5) No test methods to confirm authenticity-adulteration not traceable in current standard
Long Range Planning

- Standards on Fibers
  - A look at the Material Index By Nike
  - Eco Index by Sustainable Apparel Coalition

- Standards on Processes-
  Identifying the major impacts and devising standards to improve them.

- Sharing Of Best Practices
- Regular Conferences
- Not duplicating work being done outside ASTM
## NIKE MAT V2 FRAMEWORK SUMMARY

### QUANTITATIVE METRICS

<table>
<thead>
<tr>
<th>IMPACT CATEGORY</th>
<th>MAXIMUM POINTS</th>
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| NOTE: The maximum point for any category is 10.

### QUALITATIVE INDICATORS

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<tr>
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**Total Quantitative Score**: 50  
**Total Qualitative Indicator Score**: 50  

**MAT V2 HIGHEST POSSIBLE POINTS = 100**

*This program has not yet been launched by Nike. Nike confidential and proprietary information. Any unauthorized use, copying, or disclosure of this information without prior written consent of Nike is strictly prohibited.*
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**TOTAL POSSIBLE QUALITATIVE INDICATOR POINTS**: 50

* Awarding points in any certification or program type is in lieu of any Nike mandatory programs.

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NIKE MATERIALS ANALYSIS TOOL V2 SUMMARY

WHAT IS IT?

SCORING SYSTEM: Measures the environmental impacts of materials used in Nike products
IMPACTS COVERED: Energy & CO2 intensity, water intensity & quality, land use, chemistry, & physical waste
POINTS STRUCTURE: Up to 100 points awarded using LCA based data (50 points) & qualitative indicator points (50 points)
SCORING CRITERIA: Combines material-specific data with vendor performance in Nike & third-party programs
LIFE CYCLE PHASE: Cradle to gate – from farm/wellhead to finished material

WHY IS IT NEEDED?

ALIGN FW & AP INDEX: Provides a common framework to score materials for all Considered product indexes.
INCENT & RECOGNIZE VENDORS: Rewards vendors for participation in sustainability programs & gives clear direction on Nike priorities.
EASE OF USE: Reduces costs and time required for MAT maintenance by streamlining LCA based methodology.

WHO IS AFFECTED?

CATEGORIES: Updates guidance on EPMs for Index goals & product strategies.
PRODUCT CREATION: May alter EPM scores for Considered Index scoring.
MATERIALS OPERATIONS: New processes for collecting & reporting sustainability information from vendors.
MATERIALS SOURCING: New vendor approval process must include MAT v2 program & process guidance to vendors.
NLOS: NLOS will serve as liaisons between Considered and vendors to collect & record program data.
VENDORS: Performance in sustainability programs directly affects material scores.

QUICK REFERENCE

MAT V2 FRAMEWORK

HOW AND WHEN WILL IT BE ROLLED OUT?

Train NLOS and vendors on data collection processes. Ramp up period for vendors to participate in MAT v2 program. April 7 vendors begin uploading program documents. In Vendor Certifications & Programs Review. Complete MAT v2 systems development.
Roll-out vendor-specific MAT v2 points for Index scoring. Implement decisions to apply points in unique scoring scenarios. Refresh scores biannually every December 1 and June 1. Continue engaging vendors in MAT v2 program participation.

PHASE 1

March 11 – June 11

PHASE 2

June 11 & Beyond

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**Sustainability:**

- Eco 1H4S Certification: 1
- ESG Sustainability: 1
- Green Building 2020: 1
- Sustainable Cotton Certification: 0
- Recycled certification - SCS Recycled Certification: 4
- Recycled certification - Induced Recycled Standard: 4
- Recycled cotton certification - Induced Cotton Certification: 4
- Sustainable forestry certification (Joining, Joining Certification): 4
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- New Green Chemistry (Vendor Lead): 7
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- NRE Program: 5
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- Sustainable forestry certification (Joining, Joining Certification): 4
- Sustainable leather production - Sustainability text: 4
- GHG and Arsenic Exposure/Carbon Disclosure Project: 1
- Eco 1H4S Certification: 1
- ESG Sustainability: 1
- Green Building 2020: 1

**Cost:**

- Eco 1H4S: 3
- ESG Sustainability: 1
- Green Building 2020: 1
- New Green Chemistry (Vendor Lead): 2
- NRE Program: 5
- Water Conservation (Vendor Lead): 5
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- Sustainable forestry certification (Joining, Joining Certification): 4
- Sustainable leather production - Sustainability text: 4
- GHG and Arsenic Exposure/Carbon Disclosure Project: 1
- Eco 1H4S Certification: 1
- ESG Sustainability: 1
- Green Building 2020: 1

**Summary:**

- NIKE has a strong commitment to sustainability by focusing on life cycle analysis, recycled content, sustainable cotton certification, and other environmental initiatives. The cost associated with these initiatives varies, with some being relatively low and others requiring significant investments.
Three Index Building Blocks

Sustainable Apparel Coalition
V1.0 Apparel Index

OIA Eco Index

Materials Sustainability Index

Social/Labor Indicators*

* Under development; based on best available frameworks
OIA Eco Index
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<td>Pariti, Siva Rama Kumar</td>
<td>DyStar India Private Limited</td>
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<td>Ryan, David T</td>
<td>Wearbest Sil-Tex Mills</td>
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<td>Schneider, Joanna Z</td>
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<tr>
<td>Shaw, Anugrah</td>
<td>UNIV. OF MARYLAND EASTERN SHORE</td>
<td>General Interest</td>
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<td>Simonson, Steve</td>
<td>Burlington Industries Inc</td>
<td>Producer</td>
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<td>Smith, Ian C</td>
<td>Coloursmith, Ltd</td>
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<td>Somasundaram, Jaganathan</td>
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<tr>
<td>Sperduto, Kathleen H</td>
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<tr>
<td>NAME</td>
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<td>VOTE</td>
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<td>Srinivasan, Srivatsa</td>
<td>E&amp;T Textiles</td>
<td>General Interest</td>
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<tr>
<td>Subramaniam, Sundari</td>
<td>Global Resources Mgmt Group</td>
<td>General Interest</td>
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<td>Taylor, Vicky J</td>
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<td>Thangavelu, Ramkumar</td>
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<td>Trivedi, Rahul</td>
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<td>Turner, Richard</td>
<td>Mohawk Ind.</td>
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<tr>
<td>Wallace, Michele L</td>
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<td>zhuo, zhang</td>
<td>Guangdong Inspection and Quarantine Technology Center</td>
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<tr>
<td>Carrasco, Sherry</td>
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<td>Delhom, Chris</td>
<td>USDA</td>
<td>General Interest</td>
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<td>Lake, Barbara</td>
<td>ASTM International</td>
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<td>Rodgers, Jennifer</td>
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Committee Balance
Producer Votes Available: 16

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<th></th>
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<th>User</th>
<th>Consumer</th>
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<td>0</td>
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<td>Non official Voting Member</td>
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<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>6</td>
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<td>Total</td>
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<td>1</td>
<td>0</td>
<td>30</td>
<td>2</td>
<td>49</td>
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Liaison report

- Textile Exchange
- Sustainable Apparel Coalition
Ballot result

• Nothing To ballot Yet

Outstanding –ve ballots

• Nothing in Ballot Yet

Standard requiring review

• No standard made as yet
Revision and withdrawal of work item

• Not applicable
Task group report

• Suggested New Task Group To Be Formed on studying available Standards on Sustainable Textile Fibers and gaps in the same

• Task Group Formation
  – Interested members
    • Matthew Thurston (REI sustainability analyst)
    • Jing Chung (Dupont)
    • Tim Cole (Forbo Flooring System, Director-Envo Initiatives
    • Beth Jenson (Outdoor Industry)
    • Pratik Ichhporia (Intertek USA)
    • Anne Gillespie (TE)
    • Michele Wallace
Workshops in June’12

2 Workshops

- On Sustainable textile fiber standards
- From Concept to Consumption
Potential Identified Speakers

• Earlier we had outlined speakers as follow from:
  – Textile Exchange
  – USA’s EPA
  – Nike Representative
  – Walmart Representative
  – Toyota
  – AATCC
  – NCSU
  – Outdoor Industry Association/Sustainable Apparel Coalition
  – WWF
  – Apple
  – FTC

• Considering representations from leading consultants to moderate the workshops and experts on fibers
New Business: TRSA

Purpose
To identify, define, and rate Green Best Management Practices (BMPs) which are used in commercial laundry facilities.

Reason/Need for proposed standard
The commercial laundry industry has made a commitment to sustainability. We are looking to further reduce our carbon footprint and enhance our environmental stewardship by developing this voluntary standard. Our goal is to encourage the implementation of these green BMPs at all laundry facilities.

Scope of proposed work
This standard describes a methodology for assessing and rating green BMPs used in the commercial laundry industry. The proposed BMP list includes water reuse technology, boiler heat recovery, wastewater heat recovery, environmentally friendly detergents, wastewater pre-treatment (mechanical), advanced wastewater treatment, energy efficient lighting, solar energy, recycling, fleet optimization, spill-prevention plan, and preventative boiler maintenance.

Stakeholder Groups
Commercial laundry facilities
Users of reusable textiles, e.g. companies in the hospitality, healthcare, and industrial industries
Case studies

• Patagonia
• Pratibha Syntex
1% For the Planet

- Policy of contributing 1% of all sales to environmental organizations since 1985, the 1,486 members of 1% For the Planet each contribute 1% of their total sales to over 2,000 different environmental organizations every year.
- Patagonia has committed:
  - Social Activism- USD 243,976
  - Water Marine –USD 720,217
  - Sustainable Agriculture- USD 71,240
  - Forests- USD 170,314
  - Alternative Energy-USD 24,408
  - Resource Extraction-USD 34,630
  - Toxics /Nuclear-USD 103,559
  - Biodiversity USD 704,798
  - GRANTS: USD 4,280,585 in 2011
Carbon, Water & Waste Profile Footprints
Pratibha Syntex

- Is one of the world’s largest full vertically integrated textile supplier.
- Works with over 20 renowned brands worldwide.
- Commitment to Sustainability & Social Responsibility is unquestionable with active involvement in many initiatives.
- Certifications include: OHSAS 18001, Oe100, GOTS, NOP, USDA, Fair Trade, Oeko Tex 100, WRAP, NPOP, ISO 14001

* Source: Pratibha; Info unverified by Cool Earth
Pratibha Syntex Initiatives – Farm side

**Organic Cotton Farming**
- Initiated in 1999.
- Conscious Choice taken with foresight of helping People, Planet and better Profits.
- Pratibha see themselves as pioneers in the country, initiating this even before the international demand arose.

**Fair Trade**
- Was also Initiated in 1999
- Encouragement & support provided to Farmers registered as Fair Trade Cotton Producer Group.
- Initially had 26 villages with 126 farmers grown in 2011 to 140 villages with 3885 farmers
- Majority of the farmers are experienced in organic cultivation practices.

**Better Cotton Initiative**
- Initiated in one of the backward & poorer regions of India (Rayagarha, Orissa), 2011 in areas inhabited by Tribal societies.
- First step in direction of Organic Farming.
- Slowly converts farmers and their mindsets from conventional to Clean cotton and then move towards in transition organic to gradually Organic farming.

* Source: Pratibha; Info unverified by Cool Earth
Pratibha Syntex Initiatives – Farm side

- 19000 farmers in Organic Cotton, Fair Trade & BCI practices.
- Farmers are provided with expert support, advice on organic cotton farming practices (five out of six regions).
- Farmers are supervised to ensure that no conventional fertilizers, pesticides, insecticides are used and only organic methods which help conserve the ecology are followed.
- Farmers are provided with training to produce and procure these organic implements.

* Source: Pratibha; Info unverified by Cool Earth

![Organic Fertilizers](image1)

![PSL Farm Team on inspection](image2)

![A demonstration of a Farm Bug trap for a farmer. Used in place of spraying pesticides on the crop](image3)
Good Initiatives from Pratibha:

- Zero discharge facility and makes good efforts to conserve water.
  Rain Water Harvesting

- Training to manufacture organic manures.

- Some farmers have been trained to even generate power on a small scale from a cow dung gas plant (seen in pic)

* Source: Pratibha; Info unverified by Cool Earth
Pratibha Syntex’s New Initiative & Vision

- embraced the concept of Sustainability Management whole-heartedly.
- pledged to go ‘Carbon Neutral’ in the near future.
- Other areas of concern include – reducing Water consumption and waste generation.
Factory Units

- Pratibha Syntex is a vertically integrated Textile company having Spinning, Knitting, Dyeing & Garmenting sections.
- Each of these sections require energy, usage of fossil fuels, consume water & generate waste.

Energy, Raw Material

Spinning ➔ Knitting ➔ Dyeing ➔ Garmenting

Emissions, Water Use, Waste
Carbon Footprint

- The Carbon Footprint of any entity is a measure of the total set of Greenhouse gases that are released into the atmosphere, as a result of existence of a country, company, event or person.

- A number of materials contribute to GHG emissions, some of which are fossil fuels and refrigerant gases. Emission Factors for each contributor, maintained in the verified database was used for the calculations.

- In this exercise, the Carbon Footprint was calculated as per the Greenhouse Gas Protocol using a CDP certified Tool ‘Our Impacts‘.
Carbon Footprint

• As per guidelines laid down in the GHG Protocol, the Carbon Footprint measurements there are various scopes of a Carbon Footprint. The diagram helps explain:

**Scope I**
- Direct Emissions
  - Production of electricity, heat & steam Onsite
  - Own Transport
  - Process & Fugitive Emissions

**Scope II**
- Indirect Emissions
  - Consumption of Electricity, Heat & Steam

**Scope III**
- Supply chain; other indirect emissions
  - All Business Travel
  - Transport of purchased goods*
  - Distribution of products*
  - Waste Disposal
  - Use of products
  - Staff commute on non-company owned transport

* from / to point of ownership

Companies shall account & report Scope I & II emissions at a minimum.
• The Carbon Footprinting for Pratibha Syntex was done using a CDP certified software called ‘Our Impacts’. Snapshots of the tool below.
Cool Earth Ideate

Key Performance Indicators:

Carbon Footprinting and Sustainability Metrics are a new concept, and while the norm in the industry is to measure Scope I, II & III of the Carbon Footprint, absolute measurements are not a true measure year on year.

If the Carbon Footprint were to increase it may also be due to expansion of the organisation and is unavoidable. If any reduction activities have been undertaken, they fail to get highlighted.

In such cases KPI’s help provide a per unit basis measurement of the Carbon footprint of an entity and help discern whether the reduction activities are reflecting in the performance of an organisation.
Carbon Footprint

~Factory~

Carbon Footprint Section Wise (tCO2e)

<table>
<thead>
<tr>
<th>Segment</th>
<th>tCO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning</td>
<td>56028.50</td>
</tr>
<tr>
<td>Knitting</td>
<td>1919.09</td>
</tr>
<tr>
<td>Dyeing</td>
<td>32615.99</td>
</tr>
<tr>
<td>Garmenting</td>
<td>3687.39</td>
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<tr>
<td>Total</td>
<td>94450.97</td>
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</tbody>
</table>

* Only Scope I & II

(tCO2e)

- Spinning: 59%
- Dyeing: 35%
- Knitting: 2%
- Garmenting: 4%

SCOPE 1 & SCOPE 2

- SCOPE 1: 45477.00 tCO2e (48%)
- SCOPE 2: 48973.34 tCO2e (52%)
Carbon Footprint
~per T-shirt~

In Pratibha

<table>
<thead>
<tr>
<th>Process</th>
<th>kg CO2e</th>
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<tbody>
<tr>
<td>Spinning</td>
<td>0.72</td>
</tr>
<tr>
<td>Knitting</td>
<td>0.12</td>
</tr>
<tr>
<td>Dyeing</td>
<td>1.56</td>
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<tr>
<td>Garmenting</td>
<td>0.23</td>
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<tr>
<td>Total CF kg CO2e/T-Shirt</td>
<td>2.63</td>
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</table>
Carbon Footprint

~Farm~

Absolute Carbon Footprint - Farms excluding transport (tCO2e)

Carbon Footprint tCO2e/ha

Carbon Footprint tCO2e/t Cotton

Carbon Footprint tCO2e/Farmer
Water Footprint

- Water Footprinting is a novel concept which is slowly gaining acceptance among a number of companies across the globe.

- The corporate community is yet to give its broad based consensus of performing Water Footprints as there are different methods of performing calculations.

- However the guidelines for a water footprint developed by the Water Footprint Network (University of Twente & United Nations Environment Programme) is slowly gaining more recognition and acceptance. It is also more complex in performing.

- The Components of calculation include Green, Blue and Grey Water Footprints.

\[ WF_{proc} = WF_{proc, green} + WF_{proc, blue} + WF_{proc, grey} \]
Water Footprint

- Green Water Footprint – Rainwater consumed so far as water doesn’t become run-off
- Blue Water Footprint – Water consumed from surface sources
- Grey Water Footprint – Water consumed in assimilating load of pollutants from the plant

The traditional statistics on water use
Water Footprint
~Factory Units~

\[ \text{WF}_{\text{Business}} = \text{WF}_{\text{Business-Operations}} + \text{WF}_{\text{Business-Supply chain}} \]

\[ \text{WF}_{\text{Busi-Ops}} = \text{WF}_{\text{Busi-Op Inputs}} + \text{WF}_{\text{Busi-Op Overheads}} \]

\[ \text{WF}_{\text{Pratibha–Syntex Busi Ops}} = \text{WF Blue} = 1150296.549 \text{ Kl} \]

As we can see from above the Water footprint of a Business Unit is given by the summation of the Water Footprint of business operations and Supply Chain (which includes water footprint of all the products / ingredients used by the Business – excluded from this study).

The Water Footprint of the business operations is the summation of the water footprint directly associated with the operations of the organisation and overheads Related to consumption in Kitchens, Toilets, gardening, etc.
Water Footprint
~Factory Units Break-up~

WF (ops) - KL

- Spinning: 196676.55
- Knitting: 46983.86
- Dyeing: 809261.03
- Garmenting: 97477.21
- Total: 1150296.56

WF (ops) - KL

- Dyeing 70%
- Garmenting 9%
- Spinning 17%
- Knitting 4%
## Water Footprint per Tonne of Garment

(Total Consumption)

\[
(WF_{\text{Spinning}}) + (WF_{\text{Knitting}}) + (WF_{\text{Dyeing}}) + WF_{\text{Gar.}}
\]

<table>
<thead>
<tr>
<th>Unit Wise Break-up</th>
<th>WF (ops) – L/Kg</th>
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<tbody>
<tr>
<td>Spinning</td>
<td>9.86</td>
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<tr>
<td>Knitting</td>
<td>11.61</td>
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<tr>
<td>Dyeing</td>
<td>150.95</td>
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<td>Garmenting</td>
<td>27.50</td>
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<td><strong>Total</strong></td>
<td><strong>199.92</strong></td>
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</table>

**WF (ops) - Litres/Kg**

- Garmenting: 14%
- Spinning: 5%
- Knitting: 6%
- Dyeing: 75%
## Water Footprint per Tonne of Garment

(Freshwater Use Only)

\[
(WF_{\text{Spinning}}) + (WF_{\text{Knitting}}) + (WF_{\text{Dyeing}}) + WF_{\text{Gar.}}
\]

### Unit Wise Break-up

<table>
<thead>
<tr>
<th>Unit Wise Break-up</th>
<th>WF (ops) Freshwater - L/Kg</th>
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<tr>
<td>Spinning</td>
<td>8.63</td>
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<td>Knitting</td>
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<td><strong>Total</strong></td>
<td><strong>77.31</strong></td>
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### WF (ops) - Freshwater Litres/Kg

- Spinning: 11%
- Knitting: 13%
- Dyeing: 45%
- Garmenting: 31%

Excluding Recovered Water
## Water Footprint

~per T-shirt~

<table>
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<th>Total Water consumption (L)</th>
<th>Freshwater Consumption only (L)</th>
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<tr>
<td><strong>WF bus ops / T-Shirt</strong></td>
<td><strong>WF bus ops / T-Shirt</strong></td>
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<td>50.98</td>
<td>19.71</td>
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Waste Profile

There are no laid down guidelines or methodology for waste profile footprinting, so Cool Earth has helped broadly bifurcate the waste content into different Components:
Waste Profile

% Break-up Kg of Waste/Kg of Output Product
- Organic: 78%
- Inorganic: 12%
- Non-Classifiable: 10%

Recycling Profile
- Waste being sent for Recycling: 11%
- Waste being sent to Landfills: 89%
The Improvements that we suggest for Pratibha Syntex are three–fold:

a. Process Changes / Efficiency Improvements

b. Energy Efficiency Improvements

c. Sustainability Switches
Energy Efficiency

The ideas for energy efficiency can be subdivided into two components:

• Ideas obtained by the Energy Auditors on a walk through all three facilities of Pratibha Syntex at Pithampur (Main Factory, PSL-4 & SEZ) – Part A

• Additional ideas that we have obtained information upon from external sources & other observations – Part B
Part B

Research Ideas:

• Steam Traps
• Heat Recovery Systems
• Lighting Solutions
• Air Conditioning Solutions
Steam Traps

- Mechanical type Steam Traps discharge steam condensate to the return system. These traps must continually cycle between open and closed positions in order to properly release condensate to the return system.

- With this opening and closing cycle typically taking place thousands of times a day, wear and corrosion of moving parts take their toll, resulting in high maintenance; a need to purchase spare parts and replacements to reduce steam loss.
Steam Trap Solution

Use of Orifice Steam Trap:

* As claimed by Vendor
Steam Trap Case Study

* As claimed by Vendor
Heat Recovery Systems

Heat Recovery Systems hold immense potential:

- Indigenous Technology developed by prestigious IIT, Bombay
- Technology developed in collaboration with Union Textile Ministry, India
- Used from heat sources: Exhaust of Engines & Gensets Diesel / Gas / FO / Biogas, Turbines Gas / Biogas, Furnaces, Stenters, etc.
- Practically deployed so far ranging from 50 kW to 7.5 MW Gas Turbines, 135 kW to 6 MW DG Sets
- Applications: Heating Air / Water / Thermic Fluid, Generating Steam / NH3/H2O Solution / Liquid Desiccants
- Multi-Utility – Water Heating, Potable Water Cooling, Air Conditioning
Lighting Solutions

- LEDs & Induction Lamps
- Nano Reflectors
- Light Pipes
Discussions
Questions
Thank you