

## Birla Cellulose's Global Leadership in Carbon Neutrality

Global warming and climate change have come to the forefront as key sustainable development issues. The [Paris Agreement](#) adopted on 12<sup>th</sup> Dec-2015, within the UN Framework Convention on Climate Change (UNFCCC) binds to reduce emissions and aims to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHG). In order to limit global warming to 1.5°C, Intergovernmental Panel for Climate Change (IPCC) suggests that carbon neutrality by 2050 is essential. This target is laid down in the Paris Agreement signed by 195 countries, including the European Union (EU). The [UN Sustainable Development Goal 13](#) (SDG 13) asks for urgent action to combat climate change and its impacts.

### **Carbon Neutrality:**

According to the definition of IPCC, carbon neutrality, or net zero CO<sub>2</sub> emissions, refers only to carbon dioxide emissions and is a state of balance between the CO<sub>2</sub> emitted into the atmosphere and the CO<sub>2</sub> removed from the atmosphere. Net zero carbon dioxide emissions are achieved when anthropogenic CO<sub>2</sub> emissions are balanced globally by anthropogenic CO<sub>2</sub> removals over a specified period. In actual business practice, organizations often use the term “carbon neutrality” to include all greenhouse gas (GHG) emissions when they announce their ambitious emissions reduction targets.

### **Carbon sequestration and Carbon cycle:**

As forests grow, CO<sub>2</sub> is removed from the atmosphere via photosynthesis, converted into organic carbon and is stored in woody biomass. This is termed as Carbon Sequestration (in plants). Trees release the stored carbon when they die, decay, or are combusted, thus completing the carbon cycle. The net impact of these processes is that CO<sub>2</sub> flows in and out of forests or organized plantations. Overall, the flow of forest CO<sub>2</sub> is carbon positive when forests/plantations are sustainably managed.

### **GHG Protocol and accounting carbon sequestered in Biomass based Industry:**

Greenhouse gas (GHG) Protocol developed by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), establishes comprehensive global standardized frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.

For companies in biomass-based industries, such as man-made-cellulosic-fibre (MMCF), some of the most significant aspects of a company's overall impact on atmospheric CO<sub>2</sub> levels will occur as a result of impacts on sequestered carbon in their direct operations and in their value chain. Consensus methods have yet to be developed under the GHG Protocol Corporate Standard for accounting of sequestered atmospheric carbon as it moves through the value chain of biomass-based industries. Nonetheless, existing guidance provided by the GHG Protocol Corporate Standard can be adopted for sequestered carbon in corporate inventories as briefed below:

- Setting organizational boundaries: Different types of contractual arrangements involving land and wood ownership, harvesting rights, and control of land management and harvesting decisions
- Setting operational boundaries: Provide description of the value chain capturing impacts that are material to the results of analysis
- Tracking removals over time: Base year data for impacts on sequestered carbon need to be averaged over multiple years to accommodate the year-to-year variability expected of these systems
- Identifying & calculating GHG removals: Quantification methods used in national inventories can be adapted for corporate level quantification of sequestered carbon
- Accounting for removal enhancements: In the forestry sector, projects take the form of removal enhancements
- Reporting GHG removals: Information on sequestered carbon in the company's inventory boundary should be kept separate from project-based reductions at sources that are not in the inventory boundary.

## Scope 1, 2 & 3 GHG emissions

To help delineate direct and indirect emission sources, improve transparency, and provide utility for different types of organizations and different types of climate policies and business goals, three “scopes” (scope 1, scope 2 and scope 3) are defined for GHG accounting and reporting purposes.

- Scope 1-Direct GHG emissions: Occur from sources that are owned or controlled by the company, e.g. emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment (excluding direct CO<sub>2</sub> emissions from biomass combustion, CFCs, NO<sub>x</sub>, etc.).
- Scope 2-Indirect GHG emissions: Accounts for GHG emissions from the generation of purchased electricity or steam consumed by a company.
- Scope 3-Other Indirect GHG emissions: Is an optional reporting category. These emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. According to GHG Protocol, Scope 3 emissions are categorised into 15 sections under 2 main types- Upstream and Downstream:

Upstream	Downstream
<b>Purchased Goods &amp; Services</b>	<b>Downstream transportation &amp; distribution</b>
Capital Goods	Processing of sold product
<b>Fuel &amp; Energy related activities</b> (excl. Scope 1 & 2)	Use of sold product
<b>Upstream transportation &amp; distribution</b>	End-of-life treatment of sold product
<b>Waste generated in operations</b>	Downstream leased assets
<b>Business travel</b>	Franchises
Employee commuting	Investments
Upstream leased assets	

Birla Cellulose’s list of Scope 3 emissions is based on the [GHG Protocol Scope 3 Standard](#) (*Corporate Value Chain Accounting and Reporting Standard*). From above list of 15 types, 6 types as highlighted in above table, were considered due to their relevance and data availability. The reason for not considering some of the other types is that those activities are happening outside our factory premises or not applicable, and access to consistent data is a challenge.

- Purchased Goods and Services: Emissions due to GHG released in the process of extraction and production of raw materials used in the production of pulp or fibre
- Fuel & Energy related activities: GHG emissions generated during coal extraction and processing
- Upstream transportation and distribution: Emissions due to GHG released in the process of transportation of raw materials purchased, such as wood, DG pulp and caustic soda
- Downstream transportation and distribution: Emissions due to GHG released in the process of transportation and distribution of products sold to the location of the immediate customer, e.g. viscose fibre, sodium sulphate, caustic soda and hydrochloric acid. DG pulp considered under upstream for fibre sites to avoid double accounting
- Waste generated in operation and Business travel: Emissions due to GHG released during transportation of waste from factory to Treatment Storage and Disposal Facility (TSDF) and employee business travel (air, rail & road)

### **Assessment of GHG Emissions for Birla Cellulose operations:**

Birla Cellulose evaluated its greenhouse gas (GHG) emissions across its entire global operations, and is the first company in the man-made cellulosic fibre (MMCF) industry to be carbon neutral w.r.t. Scope 1 & 2 GHG emissions. Ernst & Young (EY) Associates LLP, was appointed to review and assure the GHG evaluation done for Scope 1, 2 & 3 emissions and carbon sequestration for the period of FY 2018-19 using GHG Protocol & IPCC Guidelines.

The boundary of the assessment covered for Birla Cellulose sites is as under:

Pulp Sites	Fibre Sites
AV Cell, Canada	Staple Fibre Division-Nagda, India
AV Nackawic, Canada	Grasilene Division-Harihar, India
Domsjo Fabriker, Sweden	Birla Cellulosic-Kharach, India
Harihar Polyfibers, India	Grasim Cellulosic Division-Vilayat, India
AV Terrace Bay, Canada	Thai Rayon Public Co. Ltd, Thailand
	PT Indo Bharat Rayon, Indonesia
	Birla Jingwei Fibres Co. Ltd, China

The key elements of assessment scope are as under:

- Evaluation of cradle-to-gate Scope 1 & 2 GHG emission
- Evaluation of Scope 3 GHG emission across value chain
- Validation of data on managed forests by company and wood removals such as harvesting
- Review of carbon sequestration calculations in accordance with [IPCC guidelines](#) and GHG protocol

GHG Emissions & Removals	million tCO <sub>2</sub> e
Scope 1 emission	3.07
Scope 2 emission	0.15
<b>Total (Scope 1 &amp; 2) - A</b>	<b>3.22</b>
Scope 3 emission	1.95
<b>Total carbon sequestered by Birla Cellulose's directly managed forests - B</b>	<b>3.44</b>
<b>Net Carbon Neutrality (A-B)</b>	<b>-0.22</b>

**3.44 million tCO<sub>2</sub>e carbon sequestering is completely offsetting 3.22 million tCO<sub>2</sub>e Scope 1 & 2 GHG emissions from the operation of entire Pulp & Fibre sites of Birla Cellulose making the business "Carbon Neutral"**

This is a result of years of focused efforts in making the process energy efficient, renewable energy utilization at our Pulp and Fibre sites along with ensuring net positive growth of forests that are managed by us in Canada. The impact due to eucalyptus clone distribution has not been considered here as its growth in farmers' plantation is not under our control.

Birla Cellulose has invested substantially in conservation solutions at identified nearby forests where our pulp operations are located maintaining socio economic values by supporting forest management activities, creating environment for employment and job creation, tree planting and silviculture treatments to increase yield.

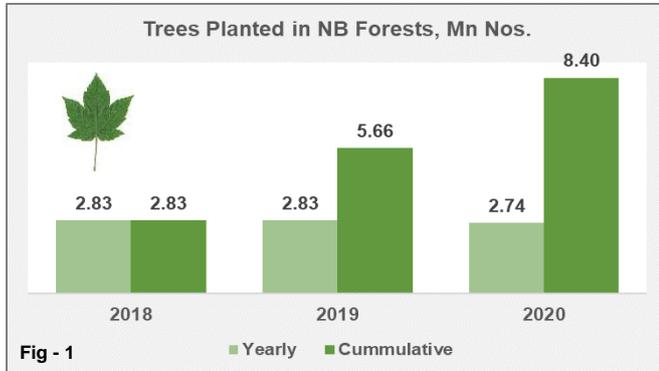
Birla Cellulose has a stringent [Wood Sourcing Policy](#) in place which ensures no sourcing of wood fibres from ancient & endangered (A&E) and high conservation value (HCV) forests.

### Forestry management practices at AV Group NB, Canada:

In New Brunswick province - Canada, Birla Cellulose operates two Dissolving Wood Pulp mills ([AV Cell and AV Nackawic](#)). In order to fulfil the upstream supply, the company directly manages nearly 0.70-million-hectare forest land (both Freehold and Crown License) in line with norms given by law of the land. Following are our forestry management key aspects:

- Adoption of sustainable forest management practices supported by laws, regulations & policies
- Independent third-party certification meeting internationally accepted standards
- Planting nearly 3 million saplings annually, in 3:1 ratio w.r.t. wood harvesting (Fig-1)

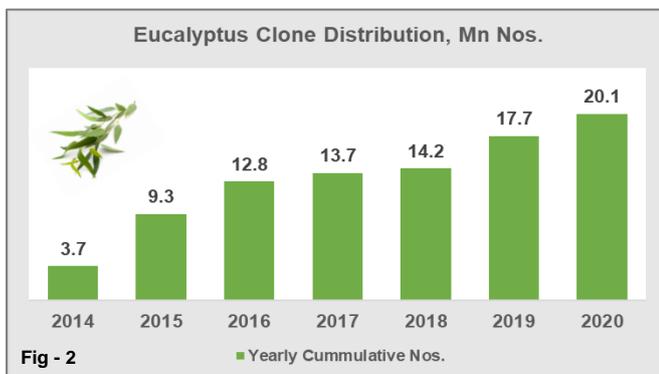
- Investing in infrastructure creation/road building within the forest to protect water bodies, and assisting in protection of indigenous protected areas, parks, conservation reserves
- Working actively in collaboration with Canopy to protect ancient and endangered forests by adopting sustainable forestry management practices. We also have close co-operation with First Nations communities in ensuring sustainable development of forest



### Clonal Production Centre, Grasim Harihar:

Birla Cellulose's Grasim Harihar Unit had set up Clonal Production Centre (CPC) in the year 2010 at its factory premises with following facilities:

- CPC, a state-of-the-art R&D Centre under Social Forestry program for various eucalyptus species clone production
- Production capacity of 7.5 million clones per annum, distributed 20.1 million saplings in last 7 years (Fig-2)
- Additionally, CPC team is assisting the farming community with technical guidance from planting to harvesting and marketing of their produce



### Sustainable Forestry Credentials:

The wood used in the process is controlled wood, comes from sustainably managed forests and has been certified by leading certification bodies. We continue to implement strict controls on wood sourcing to ensure our sustainability practices start right from the first stage of procurement. Apart from ensuring certifications of harvested wood from leading organisations working towards forest management, we keep a check on the source of the wood procured, valid across all our operations.

For its continuous efforts on conservation of Ancient and Endangered forests, Birla Cellulose has been ranked No. 1 by not-for-profit Canopy in the latest [Hot Button Report 2020](#) and has been accorded with Dark Green shirt.



**Transparency and Traceability:**

Textile value chain is very complex as it is highly unorganized and is mostly opaque to stakeholders on how the material has travelled in the supply chain before it reaches to the end-consumer. Traceable supply chains can offer transparency to consumers and all stakeholders.

With GreenTrack™ platform based on blockchain technology with unique molecular additive inside the fibre, we are able to provide complete transparency of entire fibre journey right from forest to value chain partners to the end consumer hands with a simple QR code scanning on the apparel tag. This also gives the flexibility to end consumer for informed purchasing decision



**Benefits of Birla Cellulose products w.r.t. Carbon footprint:**

Based on the assessment of FY 2018-19, the net GHG intensity with Scope 1+2 emissions and Scope 1+2+3 emissions and carbon sequestered from directly managed forests comes to -0.38 tCO<sub>2</sub>e and 2.39 tCO<sub>2</sub>e per ton of fibre respectively.

MMCF is renewable and produced from sustainably managed forests. Viscose fibres are biodegradable at the end of life and do not contribute to microfibre pollution unlike the synthetic fibres which remain in the environment for a very long time.

As per Higg Material Sustainability Index (MSI), the Livaeco by Birla Cellulose is much better in comparison with generic viscose in fossil fuel consumption and global warming impact parameters including water consumption (Fig-3)

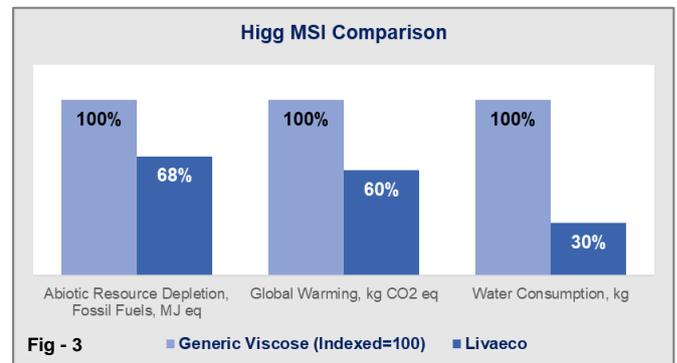


Fig - 3

**Way Forward:**

Birla Cellulose has set ambitious goals to reduce its GHG emissions and aspires to remain ahead of the curve when it comes to sustainable practices.

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