MERINO INDUSTRIES LTD.

SUSTAINABILITY REPORT

2021-2022

ECONOMY • EXCELLENCE • ETHICS

CONTENT

Our Inspiration	02
Objectives, Strategies and Focus Areas	03
Eco system and Partners	04
Achievements and progress	04
Aspirations and the journey ahead	18

Our Inspiration

Swami Vivekananda's values, virtues, his quotes and speeches are the guiding force behind Merino's Mission & Vision. And while all his words of wisdom inspire Merino's working; the following have a profound impact on its Sustainability program named **'Nirmal'.**

- Arise, awake and stop not till the goal is reached.
- A man is not poor without money. But a man is really poor without a ***dream and ambition.***

- Commitment to Sustainability program **'Nirmal'** also helps Merino fulfil its Mission of "Universal Weal through Trade & Industry" across its businesses and geographic presence.

- Being a Business entity, Trade and Industry are Merino's means to create wealth for its Stakeholders including Nature. The word *universal* stands for the entire World - the gamut of Stakeholders, Nature being one of these. The word *weal* ensures that the wealth is created without harming any Stakeholder.

- The word **'Nirmal'** has been carefully chosen for the Sustainability Program as it means pure or 'Devoid of Impurities'. Through **'Nirmal'** program, Merino strives relentlessly to protect constituents of nature.

The Nature or the Living World is made up of Five Great Elements as per ancient Indian wisdom, these are:

I. भूमि: - Bhumi, meaning Earth
II. आप: - Aapah, meaning Water
III. अगिन: - Agnih, meaning Fire/Energy
IV. वायु: - Vayuh, meaning Air
V. आकाश: - Akashah, meaning Space

Our conscious, sincere and continuous efforts are to keep the Nature pure and clean by taking care of above mentioned Elements while doing our bit of Purusārtha (पुरुषार्थ) that is, "an object of human pursuit".

Merino group is convinced that the sustainable actions and outcomes create long term values by achieving a balance between economic, environmental, and social performances.

Merino is an enterprise with diverse businesses that include manufacturing of Laminates (LPL & HPL), Value Added Surface Materials, Rest Room Cubicles and Solutions, Agro Products and IT Services. Hence the challenges of addressing objectives of Sustainability remain unique.

Objectives, Strategies and Focus areas

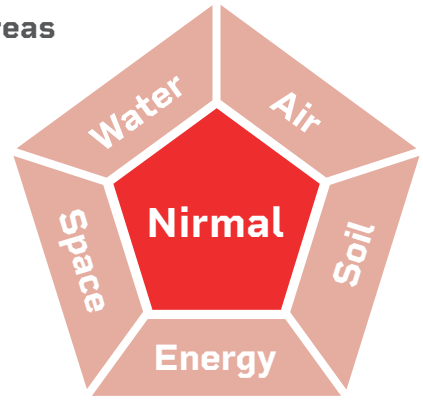
Key **objectives** of **Nirmal** Program are:

- Achieve and maintain compliance to the Statutory requirements as stipulated by the competent authorities from time to time for the geographies that Merino focuses.
- Anticipate emerging Statutory requirements, proactively prepare and selectively achieve compliance in the larger interest of the stakeholders ahead of Statutory compliances.
- Keep an eye on global developments/ other industries/competitors/customer needs and leverage from them, wherever feasible. Learn from other's experiences instead of re-inventing the wheel.
- Achieve global standards in verification, assessment and certification on tangible parameters related to Sustainability index.
- Align with SDG (Sustainable Develop ment Goals). These recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests – Source UN website.
- Establish ourselves as benchmark in the industry in terms of focus and commitment to environment protection and sustainability.

Program **Nirmal** remains driven by the following broad **strategies:**

- Sustained sponsorship by Merino leadership team.
- To be treated as a High Priority Mission mode holistic and integrated initiative.
- Excellence through continuous innovation.
- Develop, maintain and leverage from synergistic approach between Industry, Academia, Govt. and Research/Scientific Community.
- Reduce dependence on fossil fuel.
- Identify subject matter experts, engage and leverage from their domain knowledge and best practices in vogue.

Focus Areas



Merino leadership strongly believes that the environment encircles the social and economic well-being. So, the factors sustaining environment have profound impact on business and society. This has inspired Merino group to follow the policy of environment first.

Eco system and Partners/Associations

These include:

- Central and State level Pollution Control Boards (CPCB, GPCB, UPPCB,TNPCB)
- Commission for Air Quality Management for NCR (CAQM)
- International Standards Organisation (ISO)
- Confederation of Indian Industry (CII)
- Federation of Indian Chambers and Commerce (FICCI)
- Indian Agricultural Research Institute (IARI)
- National Bamboo Mission (NBM)
- Visvesvaraya National Institute of Technology (VNIT, Nagpur)
- Indian Federation of Green Energy (IFGE)

For the year under review, Merino consolidated its relationship with Visvesvaraya National Institute of Technology (VNIT, Nagpur) to assist and complement Merino's in-house expertise and experience in multiple areas that include:

- To assess carbon footprint for third party verification and accreditation as per ISO standards.
- Creating products of higher economic value out of any process wastes.
- Management of soil health.
- Developing approaches for circular agriculture.

Achievements and progress

I. Energy

Approach

Merino has formulated a three-pronged approach for effective energy management.

1. Energy Source: Focused approach for the energy source that fulfils our objectives of ecological sustenance and indigenous availability. Here major focus is on in-house energy production by using biogenic fuel like saw dust, rice husk & co-generation biogas ; and on solar system.

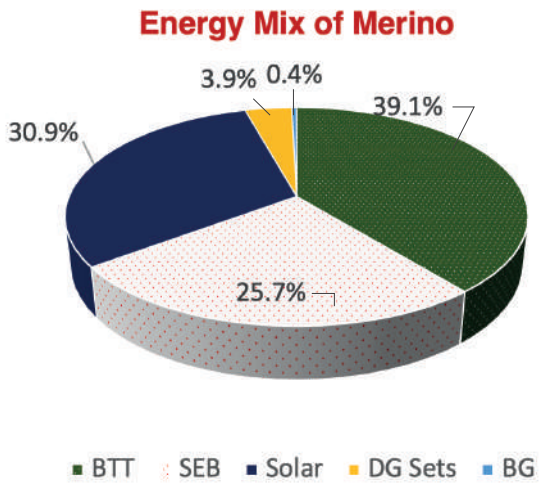
2. Efficiency: Constant efficiency upgradation through upgraded electrical tools, appliances, machineries or improved technology in operations, utilities, and lighting systems.

3. Conservation: Promoting an environmentally friendly work culture & direct savings or reduced consumption of energy through provision of natural light in all establishments, saving electricity through automation and humane responsibilities.

1.1 Performance in FY2021-22

Renewable sources constitute around 70% of total energy requirements in Merino.

Constant engagement is the key attribute of sustainable practices. Merino now fulfils 70% of its total energy requirement from renewable and green sources through its years of proactive efforts. Merino Industries have biomass-based turbines technology (BTT) and biogas (BG) that contribute to 39.4% of the total energy requirement and solar power (Solar) accounts for 31%.



Source: Energy Database of Merino industries 2021-22

Merino has both conventional sources of energy like fossil-based Diesel-Generators (DG Sets), State Electricity Boards (SEBs) and renewable /alternate energy resources namely, Solar, Biomass based turbines (TG) and Biogas plants (BG). However, over time the group has increased the focus to fulfil most of the energy demand from renewable sources i.e., from biomass and solar.

1.2 Solar is preferred choice for power at Merino

Rooftop Solar in Hapur Unit-1

Ground mounted Solar by MIL Rohad in Budak

Rooftop Solar, Dahej

Solar power is the key to clean energy in future. We have constantly emphasized on this by implementing installations of various solar systems/plants to power the group's growing power requirement.

Rooftop Solar, Rohad

Rooftop Solar , Hapur

We have installed around 9.43 MW solar system/plants that help generate 12.4 million kWh units of electrical energy during 2021-22 for production, utilities, and lighting needs of four factories of Merino. This makes up for around 31% of the total energy requirement of all plants of the group.

Merino has installed 1.98 MW solar system (rooftop) in manufacturing unit at Rohad plant and another 5.5 MW ground mounted solar system with tracker in Budak, Hissar (Haryana). These together take care of 89% of the energy needs of MIL Rohad factory.

1.3 Energy Intensity

Energy Intensity, defined by energy requirements (Giga Joules) per crores of revenue has been decreasing with every passing year. This reflects our commitment to align with resource conservation and reduce carbon footprint, accelerating economic growth.

	Energy Intensity: GJ/ INR Crores of Revenue
FY2019	1.58
FY2020	1.12
FY2021	1.00
FY2022	0.99

1.4 Key initiatives taken for energy conservation during 2021-22

- Replacement of inefficient motors with IE3 motors and conventional fans with BLDC Fans at various locations for energy conservation.
- Replacement of aluminum blades in Cooling Tower Fans with light-weight FRP blades, automation for Heating Cooling System. Old Loader Units have been replaced by New Loader Units and installations of new Energy efficient LED Lamps as luminaries across the factories have helped to conserve the energy.
- Installations of Vertical Order Picker and Laminate Racking system at sorting section, to minimize the material movement in factory premises, thereby reducing the total energy consumption by different material handling equipment.
- Energy Efficient HVAC systems in press and dryer section in place of split AC to reduce electricity consumptions.
- Incinerator with heat recovery system to be incorporated with thermic fluid heater and the waste heat to be used in 35 Lkcal/Hr. Thermic fluid heater thus reduces the consumption of fuel by 5000 Kg/Day.
- Peel Cutting Blade assembly has been replaced by Ni-chrome wire assembly for that would save energy upto 1763 KWH/month.
- Old Loader Unit has been replaced by New Loader Unit, increasing productivity and saving upto 429 Kwh/Year.
- Placing the 4MT Vertical Order Picker and Laminate Racking system at sorting section, to minimize the material movement in factory premises, thereby reducing the total energy consumption by different material handling equipment.

1.5 SDG impact through Merino's Energy Management

[1:35 pm] Swechchha Roy
Merino Industries have committed to contribute to the Sustainable Development Goals (SDGs) under United Nations' Government of India's mission by direct positive interventions. MIL Energy Management, in terms of procurement of renewable fuels, conservation and efficiency gains are some of the direct positive interventions. It is helping under following SDGs :

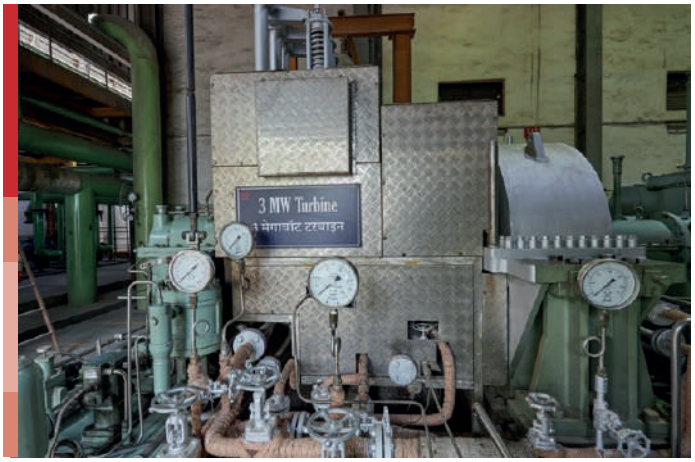
- Livelihood,
- Affordable & Clean Energy,
- Responsible Consumption and Production
- Climate Change

Biomass has emerged as an important fuel source in the fight against climate change. It is amongst the lowest carbon intensity fuel among fuel-based technology for production of heat and power. In fact, energy experts agree that when one combines the economic and environmental character of energy sources, biomass tops the list as one of the best energy sources.

Combustible agricultural materials such as rice husk and biomass like sawdust are used to generate heat in furnaces. This heat produces steam and power through turbines. This has created substantial value as energy harnessed from biomass is inexpensive, compared to coal and oil, costing about 33% less than fossil fuels.

This not only helps in reducing carbon footprint but also creates sustainable livelihood options for people who manage these wastes in around 100 KM perimeter of the Merino Factory in Hapur (Uttar Pradesh) & Rohad (Haryana).

Rice husk and saw dusts, being the green fuel is our key fuel source at the Merino manufacturing units. Merino has harnessed 15.8 million kWh of electrical energy annually from biomass during 2021-22. The power generated through the biomass turbines accounted for around 72 percent of total energy require- ment of the two manufacturing units in Hapur. Merino has harnessed 15.8 million kWh of electrical energy annually from biomass during 2021-22.



Biomass Based Turbine, Hapur

Biomass Based Steam Power System, Rohad

Biogas System, Hapur

Green Fuel Storage

We understand the source of energy, gain in efficiencies and conservation practices ultimately determine and help us reduce our carbon footprint. The use of biomass and solar energy as fuel sources has been immensely helpful towards that goal. It has ensured Merino to have low carbon footprint in product manufacturing. The study conducted by Visvesvaraya National Institute of Technology (VNIT), Nagpur for assessment of carbon and water footprint of industrial activities of Merino in Hapur using ISO 14044:2006 methodology for Life Cycle Assessment (LCA) & compliance to ISO 14064:2006 for Green House Gas (GHG) evaluation, shows that 4.34 kg CO2 equivalent to per laminate sheet production or 1.55 is the value of Global Warming Potential (GWP) intensity per KG of laminates production by Merino Industries and 1.05 kg CO2 equivalent to per kilogram of potato flakes production are GHG emissions in Hapur production facilities.

1.6 GHG Emissions Intensity

The continuous decline in GHG emission intensity with every passing year shows the commitment of the group to contain the carbon footprint along with the economic growth.

	tCO2e/ INR Crore of Revenue
FY2019	6.89
FY2020	5.51
FY2021	4.63
FY2022	3.27

II. Water

Approach

Merino Industries follows the 5R approach, that are, Reduce, Recycle, Reuse, Replenish and Restore for water management. Ground water is the dominant source of water supply in the Merino establishments other than Dahej. A holistic approach had been undertaken for water management in and around the manufacturing units with focus on conservation of ground water in addition to recycle/reuse and replenishments/restorations. These constructive efforts can be classified into three key actionable:

1) Focused practices to reduce water consumption,
2) Recycle and reuse of water,
3) Replenishing and restoration of water sources.

II.1 Water Conservation/Reduced Water Consumption

Saving water is the call of the hour. Maximize the use of every drop of water and save every drop wherever possible is the twin concept that Merino has adopted across all operations at manufacturing units across India.

We have installed 200 and 250 CHM Adiabatic Cooling Towers. Replacing the conventional cooling tower with the upgraded Adiabatic Cooling Tower has helped us in saving more than 30,000 KL annually in Hapur factory. Our flash steam recovery system further helps us to save around 15 per cent of water used in steams.

All the manufacturing units of our group have moderated water consumption per unit of laminate produced. This is possible through increase in water efficiency by use of upgraded technology and tools to optimize water use.

II.1.2 Key initiatives taken during 2021-22

- Incorporation of 111 TR Air cool chiller for cooling zone of all the Impregnator would reduce water consumption for Evaporator.
- 3.5 klph ETP installed to clean industry effluent and reduce the use of fresh water for gardening by 30KLD in Dahej factory.
- Storage and reusing solar cleaning water system has reduced the usage of raw water used for cleaning by 20KL/month.

II.2 Recycle and Reuse of water through ETP and STP

Another key aspect of our water management efforts is recycling of waste and unused water discharged from our manufacturing units. This is diligently implemented at all our manufacturing facilities using ETPs (Effluent Treatment Plants) and STPs (Sewerage Treatment Plants). The capacity of ETP and STP is 250 and 70 KLD respectively in Hapur plants. These are helping to treat and recycle over 100,000 KL of water annually in the Hapur premises.

RO plant for water filtration & recycling in MIL, Hapur

The Rohad plant has installed ETP and STP of 50 and 100 KL per day capacity, respectively. It helps to make over 50,000 KL of reusable water annually from waste/used water in the premises. Similarly, with the use of STPs in the manufacturing premises of Hosur and Dahej, the company reuses over 10,000 KL of water annually.

II.3. Replenishing and restoration of water sources: marching towards Zero Liquid Discharge (ZLD) and double recharge.

Merino has taken several initiatives to replenish and restore the ground water by setting up rainwater harvest systems at all establishments of the group. The rainwater harvest system is an effective way to naturally restore and replenish the ground water tables. Merino has installed rainwater harvest system with reservoir capacity of over 1,00,000 liters at Hosur.

The Raghunathpur pond by Merino for ground-water table recharge through rainwater

The Achheja Gaon pond by Merino for ground-water recharger

The group has built reservoirs and installed ground water recharge system in and around the factory premises. Three such ponds have been developed to recharge ground water at Hapur and one in Rohad. These are effective to restore over 8,00,000 KL of water cumulatively in a year.

The Achheja Gaon pond by Merino for ground-water recharge

Constant engagement and a holistic water conservation plan means that Merino is on track to achieve its twin goals of zero discharge system and double recharge (recharging double of what we consume in our premises).

II.4 Water Intensity and stewardship

The continuous decline in water intensity with every passing year, shows the commitment of the Merino leadership to reduce the water intake but same time expand the economic growth.

	Water Intensity: KL/ INR lac of Revenue
FY2019	4.2
FY2020	2.9
FY2021	3.0
FY2022	2.4

Source : Water Databank of MIL

II.5 Water neutrality

Merino is progressing towards achieving water neutrality by:

(1) Reducing water use by making the new build as water efficient as possible.
(2) Installing water reuse systems, such as rainwater harvesting or grey water recycling.
(3) Offsetting any remaining demand in the existing establishments local area by putting natural reservoirs like ponds.

Almost 70% of water neutrality was achieved by Merino by 31st of March 2022.

II.6 SDG impact through Water Management of Merino

MIL Water Management by focusedpractices to reduce water consumption, recycle and reuse of water and replenishing and restoration of water sources is helping under following SDGs:

zzvvvIII. Waste Management with the principle of circular economy

Approach

Recycle and creating positive value out of wastes.

A close look at nature reveals that nothing goes to waste. Incorporating this philosophy, Merino has focused on reducing waste generation and further reusing these wastes through adoption of innovative ways to create value. Updating to technologically

advanced machineries and implementation of raw material conservation practices has brought about a paradigm shift in waste management as the company moves steadily towards its long-term goal of zero waste. In fact, Merino is working to have Waste Recycle Positive Status, meaning, '**creating positive value out of wastes'**.

Merino industries have adopted many innovative methods to reuse wastes. To start with, there is a system in place to collect all wastes and segregate into various categories like hazardous (non-recyclable), non-hazardous (recyclable), organic, non-organic, liquid and solid. This helps to properly plan the reuse of recyclable wastes and carefully dispose the hazardous ones.

III.1 Wastes Management- Wastes Recycled or Reused by Merino

Wastes Management- Wastes Recycled or Reused

	Wastes Type	Source	Disposal Method	Treatment & Reuse	Units	2020-21	2021-22
A	**Non-Hazardous**						
A.1	Paper Wastes	Storage/Defect /Process	Recyclers	Sells in secondary market	MT	1,529.6	1,621.8
A.2	Solid Scrapes (process wastes) Steel, Aluminum, Plastic, Bopp, Wooden waste etc	Storage/Defect /Process	Recyclers	Sells in secondary market	MT	3,966.1	4,747.8
A.3	Chemical Bags	Storage	PCB Approved Vendor	Sells in secondary market	MT	6.4	5.9
A.4	Plywood Wastes	Cutting	Incinerator	Complete combustion for energy	MT	264.0	251.8
A.5	Slurry/Sludge	STP	Dry Cake/Solid	Horticulture & landfill	MT	5,804.2	5,459.8
A.6	Waste Water /Distillate	Rejected from 3rd RO	Evaporation	Evaporation through incinerator	KL	8,077.3	8,102.6
B	**Hazardous**						
B1	Used/old oil	DG Sets/Vehicles	Authorized Recyclers	Sells	KL	20.1	18.1
B3	Laminates Sandin /trimming wastes	Sanding/ Cutting process	Incinerator	Complete combustion for energy	MT	5,152.2	5,361.9
B4	Wastepaper containing resin	Dryer/Press	Incinerator	Complete combustion for energy	MT	97.1	123.4
B5	Fly ash	HWG, TFH & Incinerator ash	Landfilling and brick making	Bricks for internal roads /premises	MT	5,999.9	6,019.6

- Combustible process wastes from manufac turing like residue of paper materials, laminates, panel products etc., are used in furnaces to generate heat used for drying the biomass (key source of energy at Merino).
- Ash generated from boilers and incinerators along with ash from NTPC power plant is used for manufacturing bricks and tiles. These are used for internal pavements inside the premises.
- Organic wastes from processes and canteens as well are converted into manures through bio-conversion processes like use of bacteria or other micro-organ isms. The manures obtained from organic wastes are used for plants/plantations in Merino establishments.

III.2. Treatment and reuse of wastes of potato flakes plant in Merino Industries

The potato flakes plant (PFP) is no different from the other facilities in waste management implementation. Wastes produced in different forms like liquids, semi solids are properly segregated, treated and reused. Liquid waste and sludge is processed in the effluent treatment plant (ETP). In ETP, the waste goes through USABR anaerobic decomposition process to produce biogases which are then channeled for electricity generation or is used for cooking purpose directly. This is further treated with aerobic decomposition process. Post this treatment, the released water is used for plantation, washing potatoes and flushing systems. Thus, this whole process helps in recycling of water and energy generation.

The decomposed (mineralized) slurry from the biogas plants is used as fertilizer in gardens, crops or plantation fields. Solid waste from potato peels and unused potatoes is collected and converted into compost. This compost is an effective manure for enrichment of soil in agricultural land. The annual production of compost from the potato flakes plant is around 50 metric tons.

II.3. Replenishing and restoration of water sources: marching towards Zero Liquid Discharge (ZLD) and double recharge.

Merino has taken several initiatives to replenish and restore the ground water by setting up rainwater harvest systems at all establishments of the group. It is an effective way to naturally restore and replenish the ground water tables. Merino has installed rainwater harvest system with reservoir capacity of over 1,00,000 liters at Hosur.

Bio compost and Biogas unit, Hapur

III.3.1 Valuable chemicals from potato peel

The VEGIT plant of Merino produces a myriad of potato ready mix products which generates a significant amount of peel waste. A novel process developed by VNIT uses the potato peel waste (PPW) to make valuable products. A green method is devised to separate clean peel and residual starch slurry. The peel is used to extract valuable products like polyphenols and dietary fibers thus creating wealth from waste. The starch slurry is used to generate energy by anaerobic digestion, resulting in ZERO waste.

III.3.2 Valuable chemicals from citrus peel

In order to create an additional source of revenue for the farmers, roadside fruit juice vendors, VNIT Nagpur and Merino Industries Limited (Hapur UP) have jointly developed and demonstrated waste citrus bio refinery.

A bio refinery is analogous to a petroleum refinery. Unlike crude oil, biomass, in present case waste oranges are converted into bio-products pectin, fibres, essential oil, cellulose etc.

The project is funded by SEED Division of Department of Science and Technology GOI (DST/SSTP/ 2018/76) while Merino is the industrial partner for scale up studies.

III.3.3 Valuable chemicals from pomegranate peel

In order to create valuable products from pomegranate peels VNIT Nagpur and Merino Industries Limited (Hapur UP) have jointly developed and demonstrated waste pomegranate peel utilization unit. Ellegic acid is extracted from the waste peel.

III.4. Patent for Unique microbial consortium for rapid degradation of agricultural waste

MIL in close working with VNIT academy faculty have received the Patent on Inoculant for rapid degradation of agricultural waste and method of use in 2021.

This is about inventing the unique microbial consortium for rapid degradation of agricultural waste with C/N more than 50. Microbial consortium multiplies rapidly in an indigenous media formulation and is capable of degrading lignin, cellulose and hemicellulose. It reduces the overall C/ N ratio to 12-14 within two weeks. This microbial consortium is useful for degradation of agri residue like paddy straw, sugarcane trash, bamboo cotton stalk and any other biomass with C/N more than 50.

Based on this technology, MIL is producing 1.5 ton per day soil nutrient based on digested paddy straw. The soil nutrient meets the FCO standards, rich with Organic carbon (more than 14%) and nutrients (sentient and insentient).

III.5 Novel agriculture practice

The biomass ash produced by burning of rice husk and saw dust in a cogeneration unit is rich with potash and phosphorus. VNIT has developed a unique microbial consortia to regulate pH, EC of the bioash and make P and K bio available. Merino is conducting extensive field trials on use of biomass ash treated with this microbial culture. Preliminary trend of results convey replacement of 25% chemical fertiliser by biomass ash (1t/acre).

III.6 A model small dairy farm

A systems thinking approach is used by VNIT to identify the variables influencing a SDF and develop a general framework – RAMHI (resources, alternate revenue, manpower, herd and infrastructure) comprising endogenous and exogenous variables. A representative SDF as a case study was developed at Merino where RAMHI was implemented. Implementation of RAMHI gradually improves the economic benefits of a SDF. The key performing indicators like average milk produced/day, milk revenue/fodder cost, number of successful artificial insemination (AI) of herd/number of AI of herd, milking cow/dry cow, and milking cow/total cow, increased substantially in three successive years. This model is replicable at different parts of the country.

IV. Care for emission and air quality

Approach

Merino diligently strives to maintain lower emission than stipulated under manufacturing activities to bring about a positive and real change.

- Wet scrubbers installed in our lamination plants at Hapur, Rohad and Dahej help to contain the air pollutants. These are in addition to electrostatic precipitators and bag filters in manufacturing units to control emission.

- The chillers in the production units for process and comfort cooling operate on the latest technology and are more environmentally friendly than the conventional cooling system.

- Selected natural plants known for natural air purifying attributes are being placed inside and outside of work-stations.

Air quality monitoring in Hapur factory

Natural plants as air purifier in factory work-stations

An important aspect of industrial emission are ozone depleting gases (ODG) that get released in the atmosphere. At Merino, we have addressed to mitigate this through proper knowledge, training and technological upgradation.

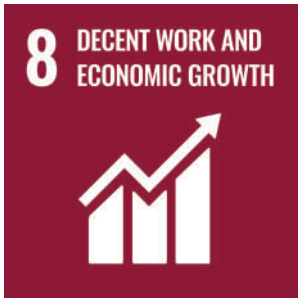
Chlorinated Fluorocarbon (CFC) refrigerants have been replaced by the technologically advanced hydrofluorocarbons (eg R-410A) refrigerant in over 400 tons of refrigeration (TR) systems annually. This has helped to mitigate equivalent amount of ODG from the environment. Merino's plants at Rohad, Hosur and Dahej have complete refrigeration facilities based on Non-CFC refrigerants.

Based on our sustainable practices, waste at our facilities is directly converted into useful gases and composts without greenhouse gas emission into the environment. This has significantly improved the air quality in and around our establishments. Further use of biomass and solar energy as fuel sources have helped in lowering carbon footprints.

The transformation of biomass (and its embodied "biogenic" carbon) into products has brought about effective carbon sequestration as these products effectively stores CO2 over a period. Thus, the use of biomass contributes to reduction of CO2 level in the atmosphere and addresses the key issue of global warming.

IV.2 SDG impact through Air Emissions Control and care for quality air

MIL Air emissions and quality focused practices have helped to maintain the particulate matters below the outside ambiences at factory premises. It is helping under following SDGs :



Care for air quality in factory ambiences and work-stations in addition to control emissions by making investments in upgraded technology, equipment and real time basis monitoring system have helped Merino directly show the commitment for relevant Sustainable Development Goals.

Approach

Actions for soil conservation, improvements in soil health, plantations and resilient agriculture.

V.1. Soil care by enriching soils with natural composts/manures

The need of the hour is to bring improvements in soil health using organic inputs. Taking a constructive step towards soil biological health and its conservation, Merino is engaged in enriching carbon content of soil using bio manures and desired soil health management practice. The group produces quality vermicompost to the tune of 200,000 kg annually. The vermicompost besides enriching soil health also minimizes dependence on the chemical fertilizers on around 80 hectare of farming lands.

Therefore, the development of soil crop/soil specific and cost-effective organic manure customized with major and micro-nutrients and bio agents/catalysts are under progress by Merino in collaboration with VNIT. This shall be as per the quality standards defined under FCO, Govt of India for improving and sustaining physical, chemical and biological health of soil.

Overall, the ecofriendly farming practices at Merino help in achieving the carbon sequestration of around 16,000 kilo tons of CO2 equivalent annually, sustaining the soil health.

Vermicompost beds under bamboo forestry of Merino

Vermicomposts by Merino

V.2. Green cover, afforestation/agroforestry by Merino

We know we depend on trees/plants for our survival, from the air we breathe to the wood we use. Besides providing habitats for animals and livelihoods for humans, they also offer watershed protection, prevent soil erosion and mitigate climate change.

A clean & green lane inside the factory

Soil covers with grasses or greenery, Rohad

Hapur

Green cover, Dahej

- Merino has brought afforestation and the expansion of agroforestry on the centerstage of its green dive activities.
- All establishments of Merino are taking targets to increase green cover inside and outside its premises. In 2021-22, over 10,000 saplings are placed into its premises across India.
- Under its agroforestry drive, more than 2000 poplar trees and bamboos are grown across 5 acres of land.
- These green activities like plantations, farming and agroforestry do the carbon sink or carbon sequestration. Together around 14,000 tons of CO2 equivalent GHG has been effectively removed annually through Merino's green initiatives.

Biodiversity with green covers, Hapur

Rohad

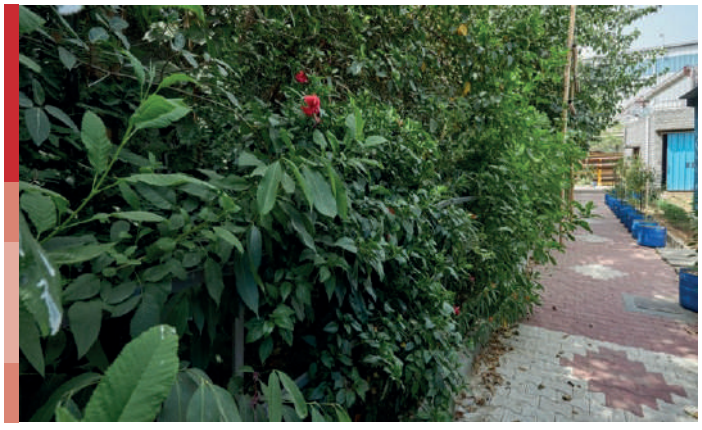
Sapling for farmers, Halol

Nursery and aeroponics to distribute sapling, Hapur

V.2.1 Miyawaki in Merino

Merino has taken many positive initiatives towards afforestation inside all its establishments. Adoption of 'Miyawaki Method' to grow forests at fast pace inside the manufacturing campus in Hapur is one of such endeavors.

Miyawaki forest between two blocks, Hapur



Miyawaki forest along factory shades

V.3. Sustainable Agriculture

Sustainable farming and soil conservation form the ethos of our agricultural division at Merino. Leveraging the domain knowledge of national agricultural institutes like ICAR and State University experts, we have implemented a host of projects to develop SAP (Standardized Agronomic Practices) for our catchment area.

The primary goal of these initiatives has been to promote locally adaptable farm practices, need based usage of agricultural inputs to sustain soil health and crop ecology and to increase income of huge number of farmers associated with Merino group.

Agricultural fields and factory of Merino, Hapurr

V.5 SDG impact of Soil and Green Cover Initiatives

MIL focused approach and drives for producing and using organic manures, planation drives, practices of resilient agriculture and partnership with farmers for non-chemical agroforestry are helping under following SDGs:

Merino firmly believes that essentially, all life depends upon the soil. There can be no life without soil and no soil without life; they have evolved together. Positive intervention through promoting the organic manures, green covers, resilient agricultural practices and tree plantations are key steps to achieve the soil conservation and soil health and hence, contributing to SDGs.

Aspirations and the Journey ahead

These include:

1. Become a net zero (Scope 1 and 2) organisation by 2025.
2. Over 25 lakhs to 100 lakhs of sapling under Agro-forestry model to be planted every year in collaboration of farmers under Merino Green Drive.
3. Achieve ZLD at all the units within 2 yrs.
4. Increase overall renewable energy contribution to 80% (from current 70%) in one year.
5. IOT enablement of measurement and monitoring of resource consumption at all locations by 2025.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