



# CHENNAI METRO RAIL LIMITED

# ENVIRONMENT

*Chennai Metro's Environment news, views and announcements.*



## MD's MESSAGE

Thiru. M A Siddique  
Managing Director, CMRL

Our world is undergoing significant changes, and it is evident that environmental sustainability is no longer just a choice but a necessity. As stewards of our shared planet, we have a responsibility to prioritize and implement practices that reduce our ecological footprint. I am proud to announce that CMRL is taking substantial strides towards a more sustainable future through the exploration and integration of alternative energy sources.

Innovation has always been a cornerstone of our organization's success, and it is imperative that we harness this spirit to find innovative solutions for our energy needs. Whether it be solar, wind, or other renewable sources, we are committed to exploring and investing in technologies that align with our values and contribute to a cleaner, more sustainable world.

I encourage each and every one of you to embrace this commitment to the environment in your respective roles. Let us foster a culture of innovation, where ideas are not only welcomed but actively sought after. Together, we can explore new technologies, processes, and initiatives that will not only benefit our organization but also make a positive impact on the environment.

As we embark on this journey towards a more sustainable future, let us remain steadfast in our dedication to excellence. Our efforts today will not only shape the future of CMRL but will also play a vital role in preserving the planet for generations to come.

Thank you for your continued dedication and hard work. Together, we can make a meaningful difference.

I also want to express my deepest appreciation for the exceptional work done by the Chief Advisor (Environment) and his Team in publishing this newsletter. The newsletter beautifully encapsulates the importance of sustainable practices and highlights the strides that CMRL is making towards a greener future. The dedication and commitment in spreading awareness about environmental issues within our organization and beyond have not gone unnoticed. Thank you for being such invaluable members of our CMRL team and for continually inspiring us to strive for environmental excellence. Keep up the fantastic work!

## FROM THE PEN OF DIRECTOR - PROJECTS

The CMRL has always demonstrated an outstanding dedication to environmental stewardship in promoting green buildings have been instrumental in shaping a more sustainable future for Chennai and its residents. As we move forward, I wanted to take a moment to reaffirm our commitment to advancing green building initiatives across all facets of our operations.

The green buildings not only do they contribute to the preservation of our planet's natural resources, but they also enhance the health and well-being of our communities, reduce operational costs, and position CMRL as a leader in sustainable urban development.

I am proud to highlight some of the key achievements and ongoing initiatives in our pursuit of green building excellence: From the design to the operation phase, we prioritize sustainable design principles in all our projects. By optimizing energy efficiency, minimizing waste, and maximizing resource utilization, we ensure that our infrastructure aligns with the highest standards of environmental performance.

Our commitment to sustainability has been recognized through various certifications and accolades, including IGBC certification for several metro stations and depots.

Thiru. Archunan T  
Director - Projects



Looking ahead, I encourage each and every one of you to continue championing sustainability in your respective roles. Whether you are involved in planning, design, construction, or operations, your contributions play a crucial role in advancing our green building agenda and shaping a more sustainable future for city of Chennai.

I am confident that we will continue to lead the way in promoting green building practices and setting new benchmarks for environmental excellence at CMRL.

Finally, I compliment the efforts of Chief Advisor (Environment) and his team in developing this newsletter and disseminating the knowledge throughout the organization and beyond.

## MESSAGE OF CHIEF ADVISOR ENVIRONMENT



Dr. Rajeev K Srivastava  
Chief Advisor (Environment)

Over the years, our dedicated team has been instrumental in implementing and overseeing the successful execution of tree plantation projects across various locations in Chennai. Even in tougher times like cyclone Michaung, we continued to monitor the growth of compensatory plantations and transplanted trees, and ensured its survival at the maximum.

I am proud to report that through our collective efforts, CMRL has made significant steps in fulfilling our commitment to environmental conservation and sustainability. Our compensatory tree plantation efforts have yielded a multitude of benefits, both for the environment and the communities we serve.

Our tree plantation projects have helped in restoring and enhancing green cover in areas impacted by our infrastructure development activities. By planting a diverse range of native tree species, we contribute to

the preservation of biodiversity and the creation of healthy ecosystems. This will not only help homo sapiens but also other living creatures in the landscape.

*On average, a tree absorbs 22 Kg of CO<sub>2</sub> per year whereas it produces 11 Kg of O<sub>2</sub> per year.*

Trees are nature's carbon sinks, absorbing carbon dioxide from the atmosphere and storing it in their biomass. Through our tree plantation efforts, we actively contribute to carbon sequestration, thereby mitigating the impacts of climate change and reducing our carbon footprint.

Trees play a crucial role in improving air quality by filtering out pollutants and particulate matter from the air. By planting trees in urban areas and along transportation corridors, we help in reducing air pollution levels and create cleaner, healthier environments for communities.

As we continue to expand our efforts in environmental conservation, let us remain rock-solid in our commitment to making a positive impact on our surroundings and creating a more sustainable future for the societies living around.

# CityTree: Exploring Innovations in Air Quality Management

Saravana Kumar R, Manager (Env), CMRL

Air pollution stands as a silent yet pervasive threat, claiming seven million lives annually and ranking as the foremost environmental health risk, according to the World Health Organization. The issue is particularly acute in urban areas, where over 80% of residents in monitored regions contend with air quality surpassing WHO limits. With the urban population projected to reach two-thirds of the global total by 2050, urgent action to cleanse city air is imperative.



While planting trees has long been a proven method to mitigate air pollutants by capturing and absorbing harmful particulates through their leaves, it's not always a feasible solution. This is where the "CityTree" emerges as a compelling alternative. Functioning as a mobile installation, the CityTree has appeared in cities worldwide, including Oslo, Paris, Brussels, and Hong Kong. This innovative solution actively removes pollutants from the air, offering a dynamic and flexible approach to combating urban air pollution where traditional tree planting may not be viable.

The concept of a "CityTree" often refers to innovative urban greenery and environmental solutions aimed at improving air quality and mitigating the effects of pollution in urban areas. One notable example is the "CityTree," an innovative technology designed to function as a mobile air pollution filter.

## Mobile Air Purification:

The CityTree is a mobile installation featuring vertical panels of moss that act as a natural air filter. These moss panels are capable of capturing and absorbing particulate matter and Nitrogen dioxide, ozone gases and certain pollutants from the surrounding air.

## Moss as a Natural Filter:

Moss has a high surface area, which makes it effective at trapping and filtering pollutants such as nitrogen dioxide and particulate matter. It also absorbs CO<sub>2</sub>, contributing to the overall improvement of air quality.

## Internet of Things (IoT) Integration:

CityTree installations are often equipped with sensors

and Internet of Things (IoT) technology. These sensors monitor air quality, weather conditions, and the performance of the moss panels. The data collected can be analyzed to assess the impact of the CityTree on local air quality.

## Modular and Mobile Design:

CityTree structures are modular and mobile, allowing them to be easily transported and placed in different urban locations as needed. This flexibility enables cities to target specific areas with high pollution levels or events that require temporary air quality improvement.



## Smart City Initiatives:

The concept aligns with broader smart city initiatives, leveraging technology to enhance urban living conditions. CityTrees contribute to the creation of more sustainable and healthier urban environments by addressing air pollution issues.

Beyond its functional aspect, the CityTree concept often includes elements of public awareness and engagement. These installations can serve as educational tools, raising awareness about air quality issues and the importance of green initiatives in urban planning.

While CityTree is a specific example, the broader concept of a "city tree" encompasses various urban greening strategies, including the strategic planting of trees and the incorporation of green spaces in city planning to promote environmental sustainability and improve the quality of life for urban residents.

Do you Know!!

## Solar energy is almost 200 years old

Solar energy is far from a modern-day invention. In 1839, Alexandre Edmond Becquerel discovered the 'photovoltaic effect' wherein electricity is generated from direct sunlight, otherwise known as solar energy. In 1941, Russel Ohl invented the solar cell. NASA was the first to adopt solar technology in the 1950s, using it aboard the satellite Vanguard (now the oldest satellite in orbit).

# Clean Development Mechanism

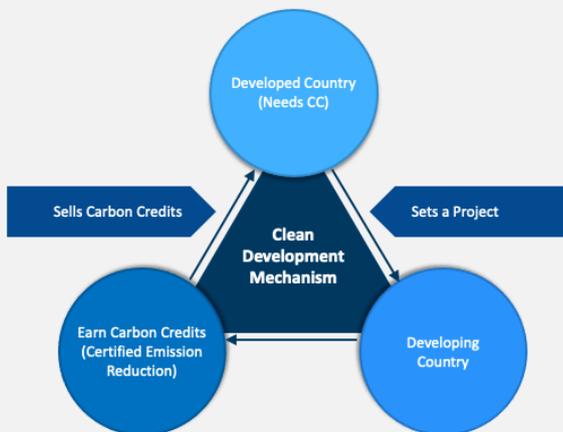
## Transforming Metro Rail Projects

Vinoth Kumar, AM (Env), CMRL

In our continuous journey towards a sustainable future, it is crucial to explore and embrace innovative solutions that address the dual challenge of economic development and environmental preservation. One such powerful instrument in the realm of sustainable development is the Clean Development Mechanism (CDM). Let's delve into the significance of CDM and how it plays a pivotal role in shaping a cleaner and greener world.

### Understanding Clean Development Mechanism:

In 1950, the world emitted 6 billion tonnes of CO<sub>2</sub>, which rose to 22 billion tonnes during the 1990s, and currently, the emissions stand at 34 billion tonnes per annum. The consequences of such higher emissions are evident, with the world witnessing the surge of weather and climate change-related disasters. To prevent such rapid growth in Greenhouse gas (GHG) emissions, Kyoto Protocol was agreed upon in 1997 (came into force in 2005), under which the industrialized nations pledged to cut down their emissions by implementing Clean Development Mechanism (CDM).



### How Does CDM Work?

*The CDM is defined under Article 12 of this protocol, where countries with reduction targets can set up emission reduction projects in developing countries.*

This provides them with saleable Certified Emission Reduction (CER) credits. These CERs can be counted towards their target reductions and can be traded in the international market, and each CER represents one ton of CO<sub>2</sub>.

### Clean Development Mechanism in Metro Rail:

**Emission Reduction:** Metro Rail projects significantly contribute to the reduction of greenhouse gas emissions by promoting mass transit systems powered by electricity. CDM supports these projects by incentivizing the adoption of clean and efficient technologies, such as regenerative braking systems

and energy-efficient train designs, resulting in substantial carbon footprint reduction.

**Renewable Energy Integration:** To further enhance the environmental impact of Metro Rail projects, CDM encourages the integration of renewable energy sources. Many modern metro systems are powered by electricity generated from renewable sources like solar and wind, ensuring a sustainable and low-carbon energy supply.

**Urban Planning and Sustainable Development:** CDM emphasizes holistic urban planning and sustainable development, aligning with Metro Rail projects' goals to enhance connectivity and accessibility in cities. By promoting transit-oriented development, CDM ensures that metro stations become hubs for mixed-use developments, reducing the need for long commutes and fostering sustainable communities.

### Success stories:

Numerous successful CDM projects around the world showcase the program's potential impact. The Delhi Metro is a shining example of CDM's impact on metro rail projects. With an extensive network covering the National Capital Region, the Delhi Metro has embraced energy-efficient technologies and solar power integration, resulting in a significant reduction in carbon emissions.

As of March 2022, a total of 7846 CDM projects are registered across the world. Out of this, India has bagged more than 21% of the projects, only next to China. The state-wise distribution of the approved projects in India shows that Tamilnadu is leading the way by earning 7.1 million CERs as of 2022.

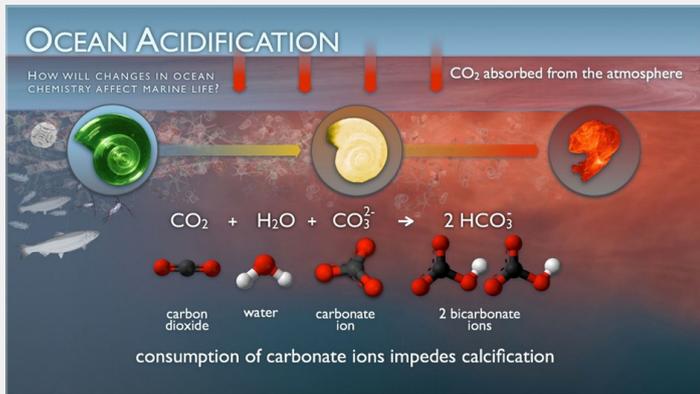
### Challenges and Future Prospects:

While the integration of CDM into Metro Rail projects has shown promising results, challenges persist. These include financial barriers, complex project approval processes, and the need for continuous innovation in green technologies. However, these challenges present opportunities for collaboration, innovation, and the creation of scalable models for sustainable urban transportation.

### Conclusion:

In our journey towards sustainable urban development, Metro Rail projects infused with Clean Development Mechanism are a driving force for positive change. Let us celebrate the success stories, address the challenges, and collectively steer towards a future where our cities thrive on efficient, clean, and green transportation networks. Together, we ride the green wave towards a sustainable and eco-friendly urban landscape.

we turn our focus to a crucial environmental issue that demands our attention: Ocean Acidification. This process, triggered by the absorption of carbon dioxide (CO<sub>2</sub>) from the atmosphere into the world's oceans, is quietly reshaping marine ecosystems and posing a significant threat to their delicate balance.



Source: NOAA (National Oceanic and Atmospheric Administration)

## Understanding Ocean Acidification:

Ocean acidification stems from human activities, primarily the burning of fossil fuels. As we release CO<sub>2</sub> into the atmosphere through activities like burning coal and oil, a substantial amount is absorbed by the oceans. This absorption sets off a chemical reaction that results in a decrease in the ocean's pH levels (Potential of Hydrogen), making it more acidic.

## Cause of Ocean acidification:

The primary cause of ocean acidification is the release of high H<sup>+</sup> ions into the ocean. The H<sup>+</sup> ions are released after the reaction of carbon dioxide and water. The increase of the CO<sub>2</sub> in the atmosphere is majorly caused by:

- ◆ The burning of fossil fuels
- ◆ Increase in the concentration of carbon dioxide in the oceans.
- ◆ The industrial revolution led to an increase in pollution.
- ◆ Increase in the concentration of carbon dioxide in the atmosphere.
- ◆ The loss of biodiversity
- ◆ Increase in the concentration of hydrogen ions due to the chemical reaction.
- ◆ Lack of eco-friendly laws and regulations

## Effects of Ocean Acidification:

Ocean acidification is considered a cause of worry because it directly impacts the ocean ecosystem.

## Impacts on Marine Life:

The repercussions of ocean acidification are profound. Marine organisms, including corals, mollusks, and certain plankton species, face

challenges in building and maintaining their protective structures. The increased acidity hampers their ability to form skeletons and shells, affecting growth, development, and overall survival.

The pteropod, or "sea butterfly," is a tiny sea snail about the size of a small pea. Pteropods are an important part of many food webs and eaten by organisms ranging in size from tiny krill to whales. When pteropod shells were placed in sea water with pH and carbonate levels projected for the year 2100, the shells slowly dissolved after 45 days. Researchers have already discovered severe levels of pteropod shell dissolution in the Southern Ocean, which encircles Antarctica.

## Coral Reefs in Peril:

Coral reefs, often referred to as the rainforests of the sea, are particularly vulnerable. The heightened acidity interferes with the ability of corals to form their calcium carbonate skeletons, making them more susceptible to damage. The potential loss of these crucial ecosystems is a concerning prospect.

## Cascading Effects on Fisheries:

Ocean acidification has far-reaching consequences, extending beyond individual species to disrupt entire marine food webs. Changes in the behavior, development, and physiology of fish species can impact the abundance and distribution of fish stocks, with potential ramifications for fisheries and the communities that depend on them.

## A Call to Action:

Addressing ocean acidification necessitates a comprehensive approach. Reduction of carbon emissions through sustainable practices and a transition to renewable energy sources is imperative. Simultaneously, efforts to build resilient marine ecosystems through conservation and restoration initiatives play a pivotal role. As a responsible tenants of our planet, we have the power to effect positive change. By raising awareness, advocating for sustainable practices, and supporting initiatives aimed at combating ocean acidification, we can contribute to a healthier, more balanced future for our oceans.

Do you Know!!

## Romans used geothermal energy to heat their homes

The use of geothermal energy can be traced back to the Romans, who designed buildings that encouraged warm air to move under floors and inside walls to heat their homes. And of course, Romans took advantage of direct geothermal energy, building communal baths on location at hot springs across Italy.

# Rainwater Harvesting in Metro Rail Construction

## Green Ride for India

Jayaprasand, *Natural Env. Specialist, NKAB*

As India's metro rail network expands, so does the need for sustainable water management solutions. Rainwater harvesting (RWH) emerges as a powerful tool in this context, offering a win-win scenario for metro projects, the environment, and urban populations.

### Benefits of RWH in Metro Rail Construction:

**Reduced Reliance on Municipal Water:** Metro stations and depots consume considerable water for toilets, landscaping, and maintenance. RWH can significantly reduce dependence on municipal water, easing strain on limited water resources.

**Flood mitigation:** Large paved areas at metro stations and viaducts can lead to flash floods during heavy rains. RWH systems capture and direct runoff, reducing flooding risks and protecting surrounding infrastructure.

**Groundwater recharge:** By infiltrating harvested rainwater into the ground, metro projects can contribute to replenishing depleting groundwater aquifers, especially crucial in urban areas.

**Cost-efficiency:** Long-term savings in water bills and reduced reliance on external infrastructure make RWH a cost-effective investment, contributing to project sustainability.

**Improved air quality:** Trees and plants watered with harvested rainwater act as natural air purifiers, enhancing the environment around metro stations and promoting a healthier commute for passengers.

### RWH Techniques for Metro Rail Projects:

- ◆ **Station Rooftops:** Large station roofs offer ample surface area for extensive RWH systems with gutters, downpipes, and storage tanks.
- ◆ **Viaduct Surfaces:** Sloped viaduct structures can be designed with channels and drains to collect runoff and direct it to underground storage tanks.
- ◆ **Depot Rainwater Utilization:** Water harvested at depots can be treated and reused for washing trains, landscaping, and non-potable purposes within the facility.

### Challenges and Considerations:

- ◆ **Space Constraints:** Integrating RWH systems within existing urban landscapes requires careful planning to optimize space utilization for storage tanks and filtration units.

- ◆ **Initial Investment:** Implementing comprehensive RWH solutions involves upfront costs, requiring government or project-specific incentives to encourage widespread adoption.
- ◆ **Maintenance Requirements:** Regular upkeep of gutters, filters, and storage tanks is essential for efficient system operation and long-term water quality.



Concept Diagram - Rain Water Harvesting in Metro Via-

### The Way Forward:

Making RWH a standard practice in metro rail construction requires multi-pronged efforts:

- **Policy and Regulation:** Government policies mandating RWH in metro projects and subsidies for infrastructure development can drive widespread adoption.
- **Technological Innovations:** Research and development of cost-effective, space-efficient RWH technologies specifically suited for metro projects can address existing challenges.
- **Public Awareness:** Raising awareness among policymakers, developers, and the public about the benefits of RWH can garner support and encourage its integration into future metro projects.

By embracing RWH, India's metro rail network can become a pioneer in sustainable urban development. Let's harness the power of every raindrop to ensure a greener, water-secure future for India's vibrant cities.

The marine pollution and conservation has gained importance and limelight in recent times due to recurring cases of oil spillages. The majority of oil pollution in the oceans comes from land, runoff and waste from cities, industry and rivers carries oil into the ocean. Ships cause about a third of the oil pollution in the oceans when they wash out their tanks or dump their bilge water. The kind of oil spill we usually think about is the accidental or intentional release of petroleum products into the environment as result of human activity (drilling, manufacturing, storing, transporting, waste management), that floats on the surface of water bodies as a discrete mass and is carried by the wind, currents and tides. They have destructive effects on coastal ecosystems.



## Impact on Marine Life:

Oil spills have a devastating and long-term impact on waterways and coastal areas around the world. Seabirds are frequently affected by offshore oil spills. Spills can severely harm turtle eggs and damage fish larvae, causing deformities. Shellfish and corals are particularly at risk since they cannot escape the runaway slick. Oil spills are also responsible for tainting algae, which perform a vital role in water ecosystems. When these creatures lack their insulating and water repellent capabilities, then the chances of these creatures surviving the cold water and dying of hypothermia largely increase exposing them to significant threat.

## Damages to Wildlife:

Oil spills in the ocean have tremendous potential to create serious harm to wildlife other than sea creatures, reptiles and amphibians. Wildlife will grow vulnerable to the toxic effects of oil spills including deterioration and smothering thermal insulation plus significant damage to reproductive behaviors and systems.

Apart from that, there could be significant ecological effects in the long run including the damage to the marine organic substrate, which will go a long way in interrupting the food chain that may lead to the change or disappearance of some populations of species.



## Methods of Reclamation:

The cleanup and recovery of oil spills largely depend on the type and characteristics of the environment that is involved. For instance, the activities could depend on whether the area affected is an open ocean, wetland or the coastal region. Some of the measures to control the pollution could include removal of the oil spills through

1. In situ combustion or containment.
2. Manual clean up
3. Using Dispersants
4. Skimmers
5. Dispersion into smaller droplets that will enable the limitation of immediate damage.
6. Normal weathering processes.
7. Assisted and natural biodegradation.

It is imperative to note that oil spill counter measures for the process of cleaning up and removing oil spills are generally applied based on interrelated factors like health risks, ecological protection, and socioeconomic reasons.

## Conclusion

Although oil spills cause enormous amounts of damage to ocean and coastal ecosystems, the human populations that depend on them for subsistence, employment, and commerce. Even as the world advances technologically, we as humans still considerably rely on oil as one of our main energy sources. Rapid utilization of this non-renewable resource, we constantly search for new oil drilling sites; the world's oil economy functions by means of importing and exporting mass oil quantities internationally. Unfortunately, accidents do happen and spills reoccur more frequently than we would like. Oil spills can be partially controlled by chemical dispersion, combustion, mechanical containment and adsorption. So, we should accept responsibility for repair of damage to environment through human intervention and carefully targeted clean-up activities.

# Solar Panel Installation in Metro Rail Station

Selvendiran K, Sr. Manager (Env), NKAB

As India's metro rail network expands, so does need to reduce the carbon footprint truly renewable energy source. Significantly reduces High electric energy consumption by metro. Improves your energy security and independence.

## Benefits of Solar Panel Installation in Metro:

### Reduce the carbon footprint:

Solar energy is clean. It creates no carbon emissions or other heat-trapping "greenhouse" gases. It avoids the environmental damage associated with mining or drilling for fossil fuels. Furthermore, solar energy also uses little to no water, unlike power plants that generate electricity using steam turbines.

## Advantages of Solar Energy

- ◆ Solar energy is clean & green energy
- ◆ Not dependent on other sources of Energy
- ◆ Non-maintenance
- ◆ Safer than Other
- ◆ Renewable Energy
- ◆ Electricity Bill Reduction
- ◆ Maximum Usage
- ◆ Technology Development



### Roof Space:

Generally, every square foot of roof space has the potential to generate about 15 watts of solar energy.

### Cost-efficiency:

The advantages of grid-connected roof top solar power systems are simple structure, easy installation, low investment and maintenance costs, and high durability. Reduce the burden on the national grid during the daytime, peak hours and in the hot season. Profits from selling surplus electricity to the national grid.

### Installation charges:

1kW Solar System Price is approx. Rs. 65,000 to Rs. 1,05,000 in India. This pricing could be vary on solar system type: on grid solar system, off grid solar system and hybrid solar system. 1kW Off-Grid Solar system comes with a single battery or double battery.

## Solar panel Techniques for Metro Rail Projects:

**Station Rooftops Entry Exit & Parking area:** Large station roofs surface and parking areas area for installing solar panel to produce energy.

**Depot:** Larger space available in Depot roof top area to fix the solar panel to produce energy.



## Challenges and Considerations:

Why Is Solar Energy Storage So Difficult? Unlike fossil fuels and other energy sources, solar energy production is less predictable. It can fluctuate seasonally and even hour to hour as local weather changes.

**Initial Investment:** The per-watt price for solar panels typically falls within the range of Rs. 75,000 to Rs. 85,000. On average, you can expect to invest anywhere from Rs. 75,000 to Rs. 85,000 for a 1kW solar panel price in India, Rs. 1,50,000 to Rs. 1,70,000 for a 2kW solar panel price in India, Rs. 1,89,000 to Rs. 2,15,000 for a 3kW solar panel price in India.

**Payback period:** The average residential solar payback period is about 8.3 years, but it varies by location and property and is typically between 6 and 10 years. This is the timeframe it takes for someone to recoup their initial solar panel investment through electric bill savings and possible solar incentives.

**Maintenance Requirements:** It is generally recommended that you perform solar panel cleaning between two and four times per year. While that might seem like a lot, the good news is that this doesn't require much work. All you really need is a leaf blower or a quick spray with a garden hose, and your panels will be clean and in top condition.

India's metro rail network can become a pioneer in sustainable urban development. Solar energy is a clean, pollution free and renewable source of energy. Development of this source of energy requires an accurate detailed long-term knowledge of the potential considering seasonal variations.

# Post 'Michaung' Measures & the Survival of Compensatory Plantation



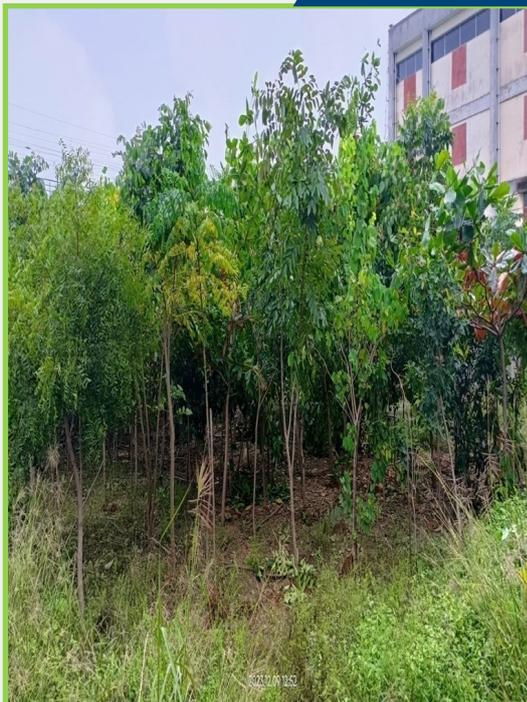
In tougher times such as Cyclone Michaung, CMRL's Environment team acted swiftly in guiding the contractors and consultants for rectification of damaged plantations. Chief Advisor and Environmental Specialist visited the critical sites and reviewed the extent of damages and rectification works.

## Impacts of Cyclone



Plantations were partially broken and bent due to the cyclone "Michaung". The damaged plantations were identified and water stagnation was cleared off from the site.

## Rectification Works



The damaged and bent plantations were straightened and provided with additional supports (i.e., wooden sticks) within couple of days after cyclone.

This prompt actions ensured an impressive survival rate of compensatory plantations up to 92% amidst the adversities of the cyclone Michaung.

# Recognitions



## The Green world Award (Silver)

CMRL has been awarded with the Silver Award in the prestigious Green World Awards 2023 at Miami, USA, in recognition of its initiatives to cut down on energy use, carbon emissions and solar energy usage.

*[In the pic] Thiru. M A Siddique (MD CMRL), Thiru. T Archunan (DP CMRL) and Dr. Rajeev Srivastava CA(E) with celebrating the moment with the Green world Award.*

## The Green Champion Award

CMRL has been conferred the Green Champion Award, one of the highest honors bestowed by the Indian Green Building Council (IGBC) for leading the green MRTS movement in India.

*[In the Pic] On 24th Nov. 2023, Thiru. T Archunan, (DP CMRL) receives the Green Champion Award on behalf of CMRL.*



Chennai Metro Rail Limited (CMRL) bags the prestigious Gold award in the **Green Apple Awards 2023** for its spectacular achievements in Carbon Reduction, presented by the Green Organization in London, United Kingdom, **on November 20, 2023.**

*[in the pic]*

*Dr. Rajeev Srivastava Chief Advisor (Environment) receives the Green Apple Award on behalf of CMRL.*

## The Green Apple Award (Gold)

