

Heat Wave Workshop

About

- Workshop regarding expected extreme heat wave during coming summer in 2024
- To prepare for the mitigation of the adverse impact on public health, safety and livelihood of vulnerable population of our society.

Objective

- Share the experience and lessons learnt
- Prepare sustainable long term mitigation measures
- Future course of action for heat wave management.

NHAI /MoRTH Initiative

- Constant touch with the Met Office regarding the weather conditions and in case of extreme heat warnings from IMD, warning and advisories are issued.
- During these periods necessary arrangements like
 - Planning of works: no work in the day time, Heat generating works are avoided in this period like laying of DBM/BC etc.
 - Proper arrangement of sheds, medical facilities.

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Steps taken by MORTH to ensure environmental sustainability while constructing the National Highways (NHs)

1. Ministry of Road Transport & Highways (MoRTH) conducted a study through The Energy and Resources Institute to estimate **carbon emissions from NHs sector** and make interventions for **climate resilient highway infrastructure**.
2. NHAI published the **first Sustainability Report** as per Global Reporting Initiative (GRI) norms, which captures the initiatives of NHAI for protecting and conserving the environment.
3. MoRTH has issued the guidelines on **use of new / alternate materials and technology in construction** of National Highways.

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4. Promotion of use of Green Technologies like:

- Steel slag in base & sub-base layer
- Cement treated sub base
- Reclaimed asphalt
- Inert material for landfill
- Industrial Waste (Phosphor-gypsum)
- Construction & Demolition waste
- Alternate material like stones, gravels and municipal waste
- Waste Plastic

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5. Embankment Construction:

- Ministry issued guidelines to use fly ash in road & flyover embankment construction on NH dated 18.4.2022
- Eastern Peripheral Expressway utilized about 1.2 Cr cubic meter of fly-ash generated from thermal plants of Dadri, Badarpur, Pali and Panipat.

6. Steel Slag in road Construction:

- NHA started using Steel Slag derived aggregates on trial basis:
 - **1 km** stretch of **Panvel-Indapur section** of NH-66 near Mumbai
 - **44 km** stretch of **4-Lane Ranchi-Jamshedpur Corridor**

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7. Municipal Waste in Road Construction:

- Segregation, Processing and Grading of Material done by Municipal Corporation
- About **7 Lakh Tons** of solid waste material has been utilized in construction of **Urban Extension Road (UER- II)**
- Reduction in height of waste material by 12 to 18 meter observed Ghazipur dump yard
- About **6 Lakh Tons** of solid waste material has been utilized in construction of **Link of Delhi-Mumbai Expressway** and other highway projects
- **11.5 Lakh Tons** of Municipal waste utilized in the construction of embankment of the **Ahmedabad– Dholera Expressway**

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8. PLASTIC WASTE IN ROAD CONSTRUCTION

- Plastic roads consists of 6-8% plastic and 92-94% bitumen
- 853.75 km of road constructed using plastic waste
- Plastic waste used in construction of NH in 11 states including Karnataka, Madhya Pradesh, Rajasthan, Assam, UP, Jharkhand, Andhra Pradesh, Delhi, Bihar, Telangana, Gujarat, Maharashtra in NH Projects

9. Use of **renewable energy** by installing the solar panels on the roof of the toll plaza and vacant place of Highways; Solar Blinkers along the highway

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10. As per MoEF&CC Study “*An Assessment of Avoided CO₂ Emissions During Construction, Maintenance and Operation of National Highways*”, the saving of natural resources and carbon sequestration from 20 stretches/corridors is as under:

- Overall consumption of fuel due to the operation of all these stretches over a 20-year period is expected to be **19% lower** with respect to the BAU situation (a situation when the NH were either not present or were narrower than the present)
- Over the same period, CO₂ emissions on these stretches is expected to be **25.19 million tonnes lower**.

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11. Green National Highway Corridors Project (GNHCP):

- Agreement between the Government of India and the World Bank
- 781 km in the states of Himachal Pradesh, Rajasthan, Uttar Pradesh and Andhra Pradesh.

Objective:

- To demonstrate safe and green highway keeping in view climate resilience
- Use of green technologies, using cement treated sub base/reclaimed asphalt pavement, use of local/ marginal material such as lime, fly ash, waste plastic, bio-engineering measures for slope protection such as hydro seeding, coco/jute fibre etc.

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12. Plantation:

- Trees are a natural cooler. Keeps the NH and its surrounding green and cool (2-3 degree less)
- Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, launched by MoRTH in 2015. Plantation and transplantation targets achieved:
 - Total **393.5 lakh plants** planted since 2016 on available RoW.
 - Total **64,466** mature trees transplanted
 - Avenue plantation and compensatory afforestation done post construction of the highways can sequester **584.27 thousand tonne of CO₂** in 20 years

Materials

S.No.	NAME OF MATERIAL	LENGTH/QUANTITY USED
1	Fly-Ash	246 Lakh Metric Ton
2	Waste Plastic	854 Km
3	Rubberized Bitumen	85,000 Metric Ton
4	Polymer Modified Bitumen	50,538 Metric Ton
5	Steel Slag	21.50 Lakh Metric Ton
6	Soil Stabilizer	1,776 Metric Ton
7	Silica Fume	1,231 Metric Ton
8	Ground Granulated Blast Furnace Slag in Cement	6.60 Lakh Metric Ton
9	Geo-composite, Geo-synthetics	85 Lakh Square Meter
10	Recycled Asphalt Pavement	584 Km
11	Fibre Reinforced Concrete (FRC)	27.40 Km
12	Fibre in Pavement Quality Concrete (PQC)	359 Km
13	Coir Fibre	4.48 Km
14	Cement Treated Base & Sub-base	2,465 Km
15	Micro-surfacing	595 Km
16	Slope stabilization using geo-grid	190 Km
17	Rain Water Harvesting System	2,995 Nos