Travel Clean – Travel Green

Amrita Chatterjee
South Asian Forum for Environment [SAFE]
Institutional Background

- SAFE envisages global partnership and local participation to ensure equity and reciprocity for the bio-rights of commons.
Activity Area: South Asian Forum for Environment

Partners of SAFE
ICIMOD, IWMI, TU
APN, ICIMOD, SDF, IBTF,
UNEP, IWMI, DU
IWMI
APN-GCR

Institutional Background Contd.
### SAFE Interventions & Sustainable Development Goals (Agenda 2030)

<table>
<thead>
<tr>
<th>Sustainable Development Goals</th>
<th>CSA</th>
<th>WASH</th>
<th>SDM</th>
<th>FEF</th>
<th>WETLANDS</th>
<th>RAM</th>
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<th>SSR</th>
<th>CR</th>
<th>CRE</th>
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<td>1. NO POVERTY</td>
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<td>3. Good Health &amp; Well-Being</td>
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<td>4. Quality Education</td>
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<td>6. Clean Water &amp; Sanitation</td>
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<td>8. Decent Work &amp; Economic Growth</td>
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<td>11. Sustainable Cities and Communities</td>
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<td>12. Sustainable Consumption and Production</td>
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<td>13. Climate Action</td>
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<td>14. Life Below Water</td>
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<td>15. Life on Land</td>
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<td>16. Peace and Justice, Strong Institutions</td>
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<td>17. Partnerships for the Goals</td>
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SAFE Interventions & Sustainable Development Goals (Agenda 2030)

- Climate Smart Agriculture (CSA)
- Water, Sanitation & Hygiene (WASH)
- Biodiversity Conservation (AICHI)
- Solid waste management (ISWM)
- Disaster Risk Mitigation (DRM)
- Mangroves for Future (MFF)
- Sustainable Livelihood Education (SLE)
- WETLANDS
  - Wetlands Ecosystem Services
- HAB
  - Urban Vertical Garden
Sustainable Transport...
Our Issues & Concerns
Pollution Footprints

- 57% of air pollution is due to motor vehicles
- Emission of GHGs and SPM (1.1 micron)
- 73.2% vehicles run on diesel or kerosene-mix-oils
- Average age of vehicles in public transport is 14 years
- Every 4th person suffers from respiratory tract diseases and asthma
- Increase in road-noise (peak-hours) is 16.6%
Non-sustainable usage: Many – One Dilemma

• Increasing private automobiles for point-to-point movement is decreasing urban carrying capacity
• Swelling load on rural vehicles for limited public transport options is deteriorating air quality in rural.
Safety and Capacity

- Per capita travel space shrinking in unsustainable public transport. Travel comfort Safety is compromised.
- Road space per unit automobiles is increasing. Habitat health and commuters time is compromised.

### Road Space in Metro Cities

<table>
<thead>
<tr>
<th>Road</th>
<th>Avg Speed</th>
<th>Road length</th>
<th>Cars in more peak</th>
<th>Cars in even peak</th>
<th>Total hours lost</th>
<th>Value of lost time (Rs)</th>
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<tbody>
<tr>
<td>SC Mallick Road</td>
<td>16</td>
<td>4</td>
<td>2678</td>
<td>2487</td>
<td>878.05</td>
<td>166829.95</td>
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<tr>
<td>MG Road</td>
<td>9</td>
<td>3</td>
<td>1507</td>
<td>1599</td>
<td>848.97</td>
<td>16130.49</td>
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<tr>
<td>AIC Bose Road</td>
<td>18</td>
<td>6</td>
<td>1915</td>
<td>1851</td>
<td>803.41</td>
<td>15264.85</td>
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<tr>
<td>CR Avenue</td>
<td>25</td>
<td>4</td>
<td>2028</td>
<td>2112</td>
<td>331.2</td>
<td>6292.80</td>
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<td>Deshpriya Sasmal Rd</td>
<td>15</td>
<td>2</td>
<td>1693</td>
<td>1848</td>
<td>330.49</td>
<td>6279.37</td>
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<td>JL Nehru Road</td>
<td>25</td>
<td>3</td>
<td>2237</td>
<td>2246</td>
<td>268.98</td>
<td>5110.62</td>
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<tr>
<td>RG Kar Road</td>
<td>18</td>
<td>2</td>
<td>1397</td>
<td>1415</td>
<td>199.96</td>
<td>3799.32</td>
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<tr>
<td>Lenin Sarani</td>
<td>20</td>
<td>2</td>
<td>1042</td>
<td>1225</td>
<td>136.02</td>
<td>2584.38</td>
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<tr>
<td>Jalalpur Mohan Ave</td>
<td>20</td>
<td>1</td>
<td>1390</td>
<td>1407</td>
<td>83.91</td>
<td>1594.29</td>
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<tr>
<td>Vivekananda Road</td>
<td>40</td>
<td>1.2</td>
<td>1202</td>
<td>1768</td>
<td>1782</td>
<td>338.58</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>17089</strong></td>
<td><strong>17958</strong></td>
<td><strong>3898.82</strong></td>
<td><strong>74077.66</strong></td>
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</table>

*Study by Centre for Urban Economic Studies, Calcutta University*

- The test was carried out from 9-10am and 6-7pm.
- This means that ₹74,077 is lost in just two hours on 10 Kolkata roads.
- Annual loss on these 10 roads is a whopping ₹7,67 crore.
- The cost of social and environmental impact needs to be calculated.

### How we lose out

- People caught in traffic jams lose productive time.
- Vehicles idling in slow traffic burn more fuel.
- Vehicles create double the pollution than they would in free-flowing traffic.
- This leads to health impacts as Kolkata commuters breathe in more pollution than any other Indian metro.

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Mail: safeinch@gmail.com
Phone: +91 33 24329699

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Gaps in Policy & Implementation

- No policy for introducing electrical vehicles
- No incentives for green fuel / renewable energy
- No mandates for shared travels / pool cars
- No limits in public vehicle registration system
- No efficient vehicular pollution monitoring system
- No improvement in public transportation system
Our Concerns in Sustainable Transport Issue...

• Equitable access to all
• Affordable for all
• Safety for all goers
• Habitat is safe
• New-energy prodigy
Our Achievements in Sustainable Transport
Policy Implications

• Ban on polluting urban Autos – bringing in CNG and Battery-run vehicles in Kolkata
• Rehabilitating the electrical Tram car in Kolkata
• ‘Chakra Satyagraha’ – a mass campaign against blanket ban on cycles in Kolkata
Planning Green Rides with ‘TOTO’
A Heritage Travel with Tram
Chakra Satyagraha
Non-violence on wheels

Why this Cycle Ban?
Takes 5 Times Less Space: De-Congest

Car  Cycle & NMT  Public Trans

Safe & Smart
Kolkata

Health | Air
Money | Joy

CHAKRA SATYAGRAH A

Mail: safeinch@gmail.com
Phone: +91 33 24329699

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Awareness Generation

• First Strategic EIA on transport system in Kolkata published in Green Interpreters (ISSN

• First Emission foot printing of engine-boats in Sundarbans (Reported in TOI dated

• First C40 Smart City Conference with US Consulate in Kolkata on Sustainable Transport

• School awareness campaigns on ‘NO HONKING, NO POLLUTION’

• Side Event in COP21 Paris – on Electrical Cities and Sustainable Transportation
Street Campaigns with School Students
Innovations: ASSIST
Aqua-Solar Systems for Integrated & Sustainable Transport
**SAFE**

**MAIN FLOAT SUPPORTING THE PV MODULE**
- HDPE material
- Inclination Angle: 12°
- Thickness: ~3 mm
- Weight: 9.5 Kg

**SECONDARY FLOAT FOR MAINTENANCE/BUOYANCY**
- HDPE material
- Non-slipping surface
- Thickness: ~3 mm
- Weight: 3.5 Kg

**STANDARD FRAMED 60 CELLS PV MODULE**
- Length: max 1670 mm
- Width: 991 mm ± 3
- Frame thickness: 25~40 mm
- Cable length: 900~1200 mm
- Connector: MC4 compatibility

**CONNECTION PIN**
- Fiberglass + PP material
- Certification NFT 58 000

**RAIL TO FIX THE PV MODULE ON THE FLOATS**
- Aluminium or EPDM rail
- Certificated ISO 3302-1/1996

Mail: safeinch@gmail.com
Phone: +91 33 24329699

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Comparison Floating PV & Overland PV

- Floating solar panels (Blue) having 10.3% more efficient than overland system.

**Fig.: Comparison Graph**
Challenges in Implementation

1. Strengthening Technology for sustainable growth in rural areas
2. Resource convergence for financing innovations in Sust. Transport
3. Incentivizing new energy usage for rural public transport system
4. Awareness on benefits over cost implications in using solar vehicles
Future program for scale and impact: 5Es of Sustainable Transport

- Emission Reduction
- Economic Sustainability
- Ensuring Safety
- Empowerment
- Energy Prodigy
Impacts & Future Programs

Awareness Campaign for Attitude Change
- Educating transport sector stakeholders, owners and dealers
- Action research at science-society interface for commuters

Save Sundarban Habitat with ASSIST
- Technology cooperation for more economic new-energy prodigy
- Elimination of emitting vehicles to save the habitat from pollution
- Awareness drive for safe and smart travel

Sustainable Transport in Climate Smart Cities in India
- Promote clean fuel and green energy in city transport system
- Use science communication for traffic management and road safety
- Advocacy for sustainable transportation, shared travel, car pool
Travel green to travel far with this planet...

Thanks