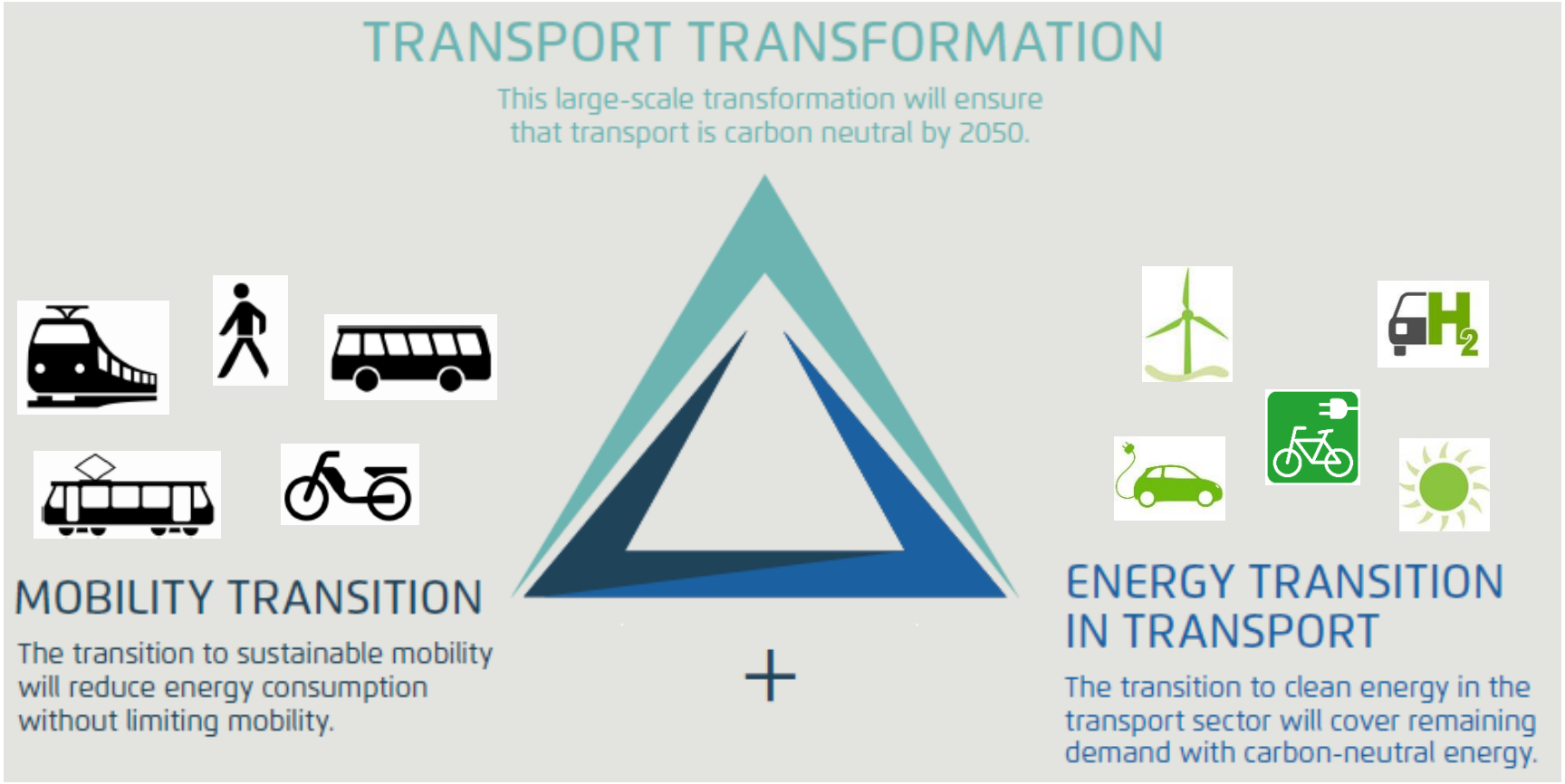
E-Mobility and vRE


Northeast Electric Mobility Conclave
30 October 2019, Guwahati

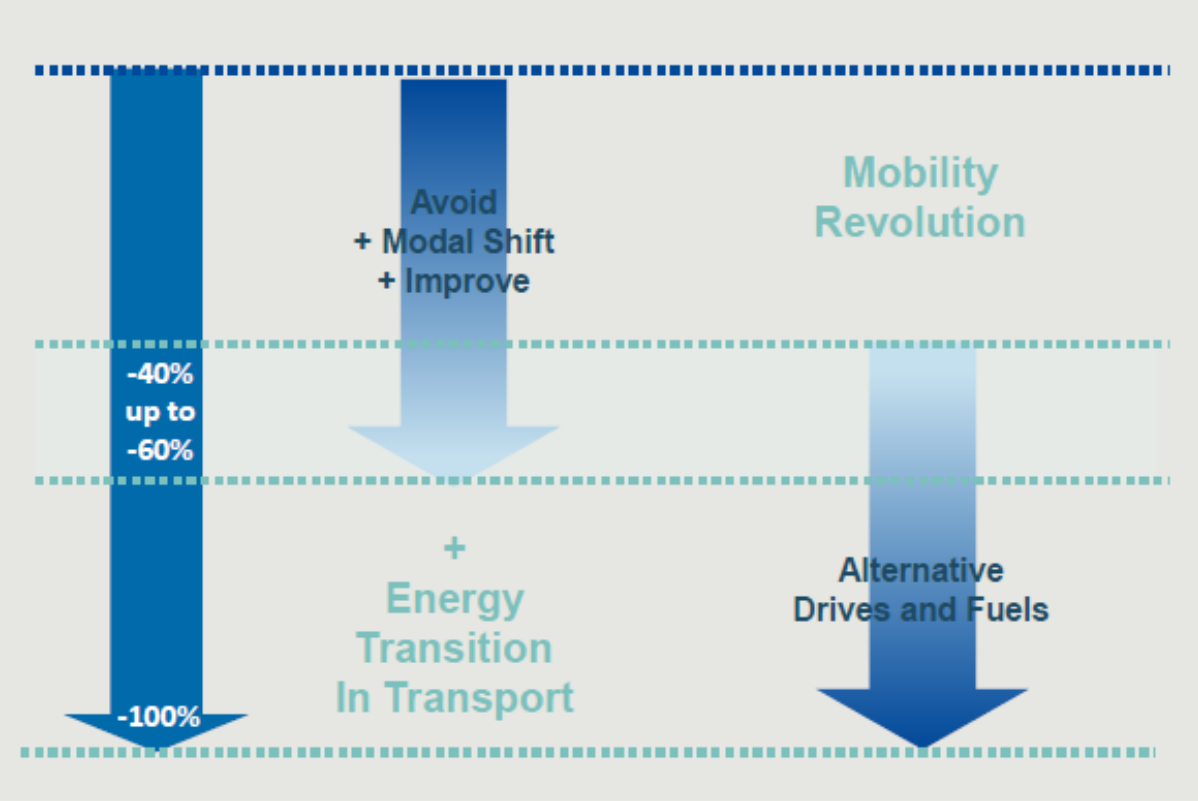
Indradip Mitra
GIZ GmbH

E-mobility is one of several pieces towards decarbonization



Source: Agora Verkehrswende

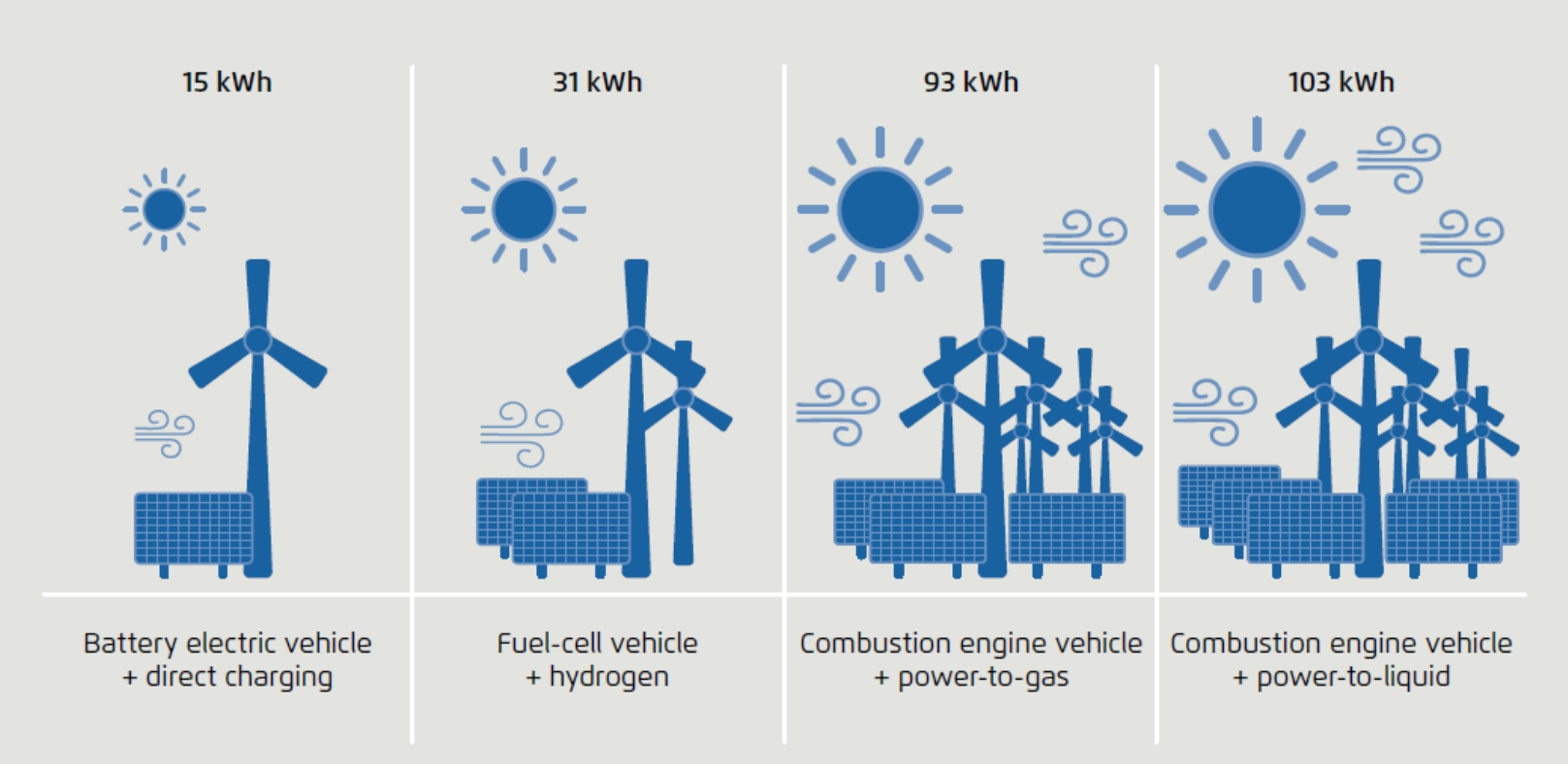
It requires both mobility transition and energy transition in transport



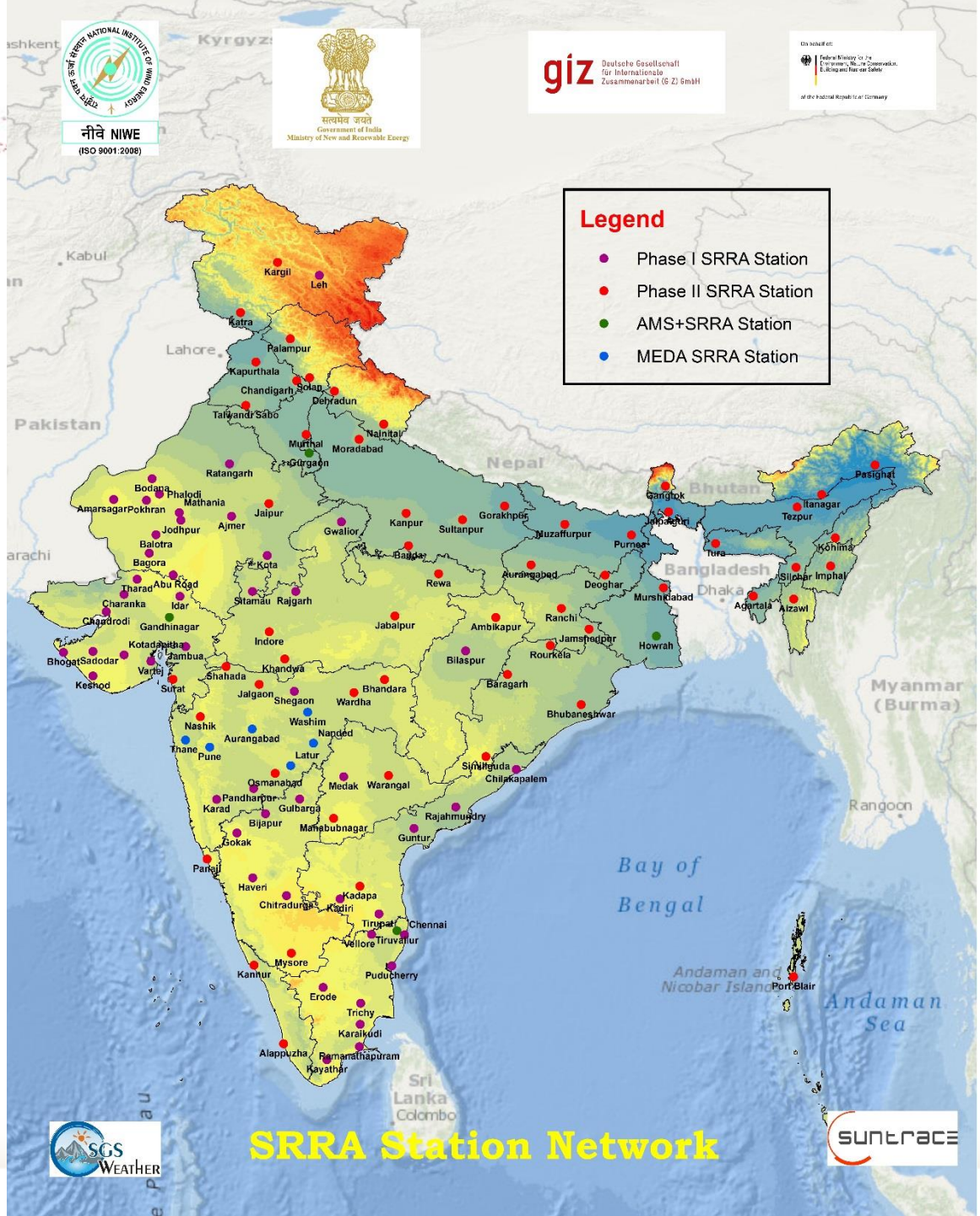
GHG reductions by more than 60% can only be reached with the energy transition in transport

Source: Agora Verkehrswende

Amount of renewable energy required for various powertrain and fuel combinations (per 100 km)



Source: Agora Verkehrswende, based on calculations by DLR, Ifeu, LBST, DFZ (2015)


Legend
Phase I SRRA Station
Phase II SRRA Station
AMS+SRRA Station
MEDA SRRA Station
Kargil
Leh
Katra
Palampur
Kapurthala
Chandigarh
Solan
Dehradun
Talwandi Sabo
Murthal
Moradabad
Nainital
Gurgaon
Ratangarh
Bodana
Phalodi
Mathania
Amarsagar
Pokhran
Jaipur
Ajmer
Jodhpur
Balotra
Bagora
Kota
Tharad
Abu Road
Sitamau
Rajgarh
Charanka
Idar
Chaadrodi
Gandhinagar
Kotadapitha
Jambua
Bhogat
Sadodar
Varthi
Keshod
Surat
Indore
Khandwa
Shahada
Jalgaon
Shegaon
Bhandara
Wardha
Washim
Nashik
Aurangabad
Nanded
Thane
Pune
Latur
Osmanabad
Medak
Warangal
Pandharpur
Karad
Gulbarga
Bijapur
Mahabubnagar
Gokak
Parelj
Haveri
Chitradurga
Kadapa
Kadiri
Tirupati
Chennai
Vellore
Tiruvallur
Mysore
Kanhur
Puducherry
Erode
Trichy
Karaikudi
Alappuzha
Ramanathapuram
Kayathar
Kanpur
Gwalior
Sultanpur
Gorakhpur
Banda
Rewa
Jabalpur
Ambikapur
Bilaspur
Baragarh
Rourkela
Jamshedpur
Ranchi
Muzaffurpur
Purnea
Aurangabad
Deoghar
Murshidabad
Howrah
Bhubaneshwar
Sinhlguda
Chilakapalem
Rajahmundry
Guntur
Gangtok
Jalpaiguri
Tura
Dhaka
Agartala
Aizawl
Sibsar
Imphal
Kohima
Tezpur
Itanagar
Pasighat
Port Blair
Kabul
Lahore
Pakistan
Nepal
Bhutan
Bangladesh
Myanmar (Burma)
Rangoon
Bay of Bengal
Andaman and Nicobar Islands
Andaman Sea
Sri Lanka
Colombo
SRRA Station Network

Station layout of the standard SRRA stations

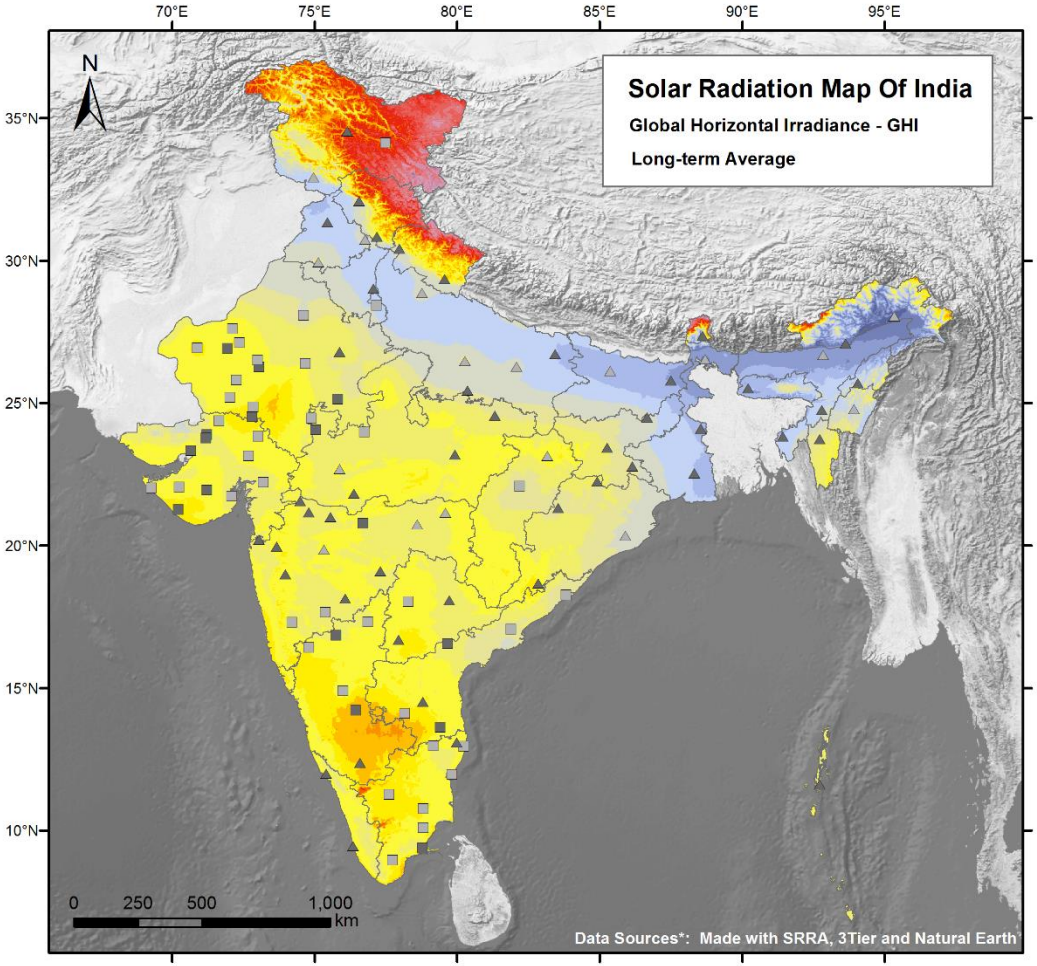
- Pyrheliometer (ISO 1st class)
- Pyranometers (ISO 2nd std.)
- temperature
- humidity
- pressure
- rain
- wind

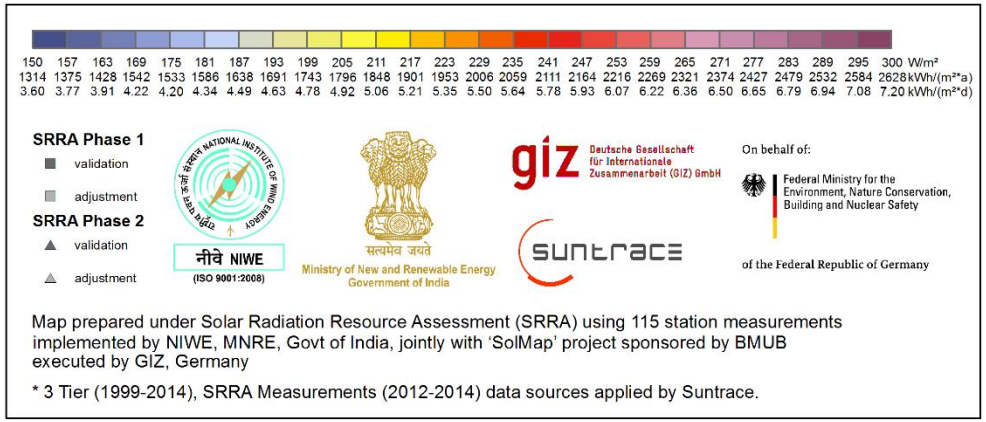
1 min averages

fully autonomous

data transfer via GSM/GPRS

Example: **SRRA station at Sadodar**





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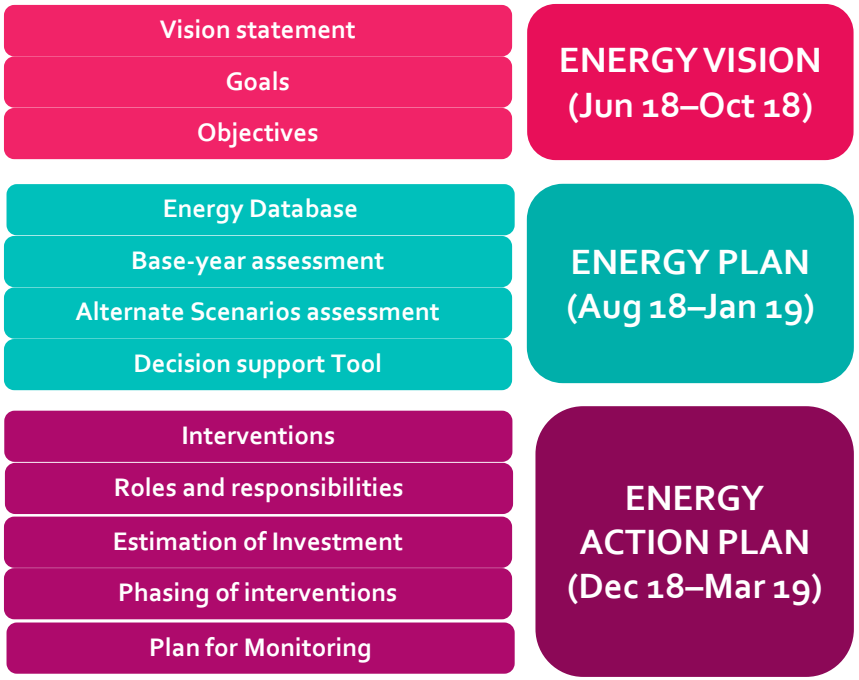
Solar Radiation GHI in kWh/m2 /year (derived from 16 years data)
Guwahati: 1526
Silchar: 1617

Assam Energy Action Plan aims to assist Government of Assam in developing and operationalizing an Energy Action Plan

This assignment is being carried out with the following objectives:

- ✓ Develop and define the long-term Energy Vision for the state
- ✓ Identify key Goals and Objectives to contextualize the Energy Vision
- ✓ Develop an Energy Plan and an Energy Action Plan to meet the Goals and Objectives
- ✓ Engage with stakeholders throughout the planning process to ensure local ownership
- ✓ Build local capacity for doing future Energy Planning and Modeling

3 Main Components



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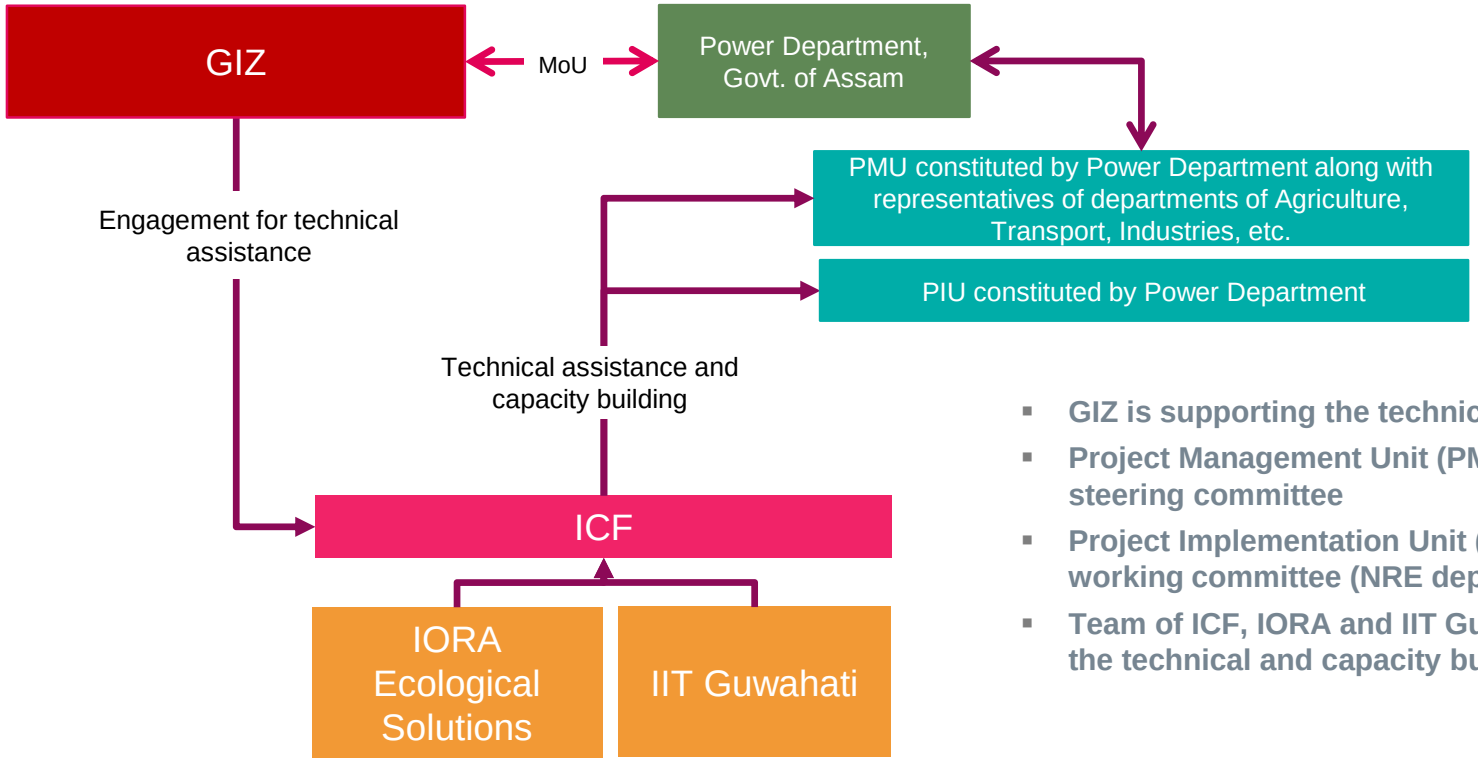
Project Management Structure involves Government of Assam at both the strategic steering level (through PMU) and operational steering (through PIU)



- GIZ is supporting the technical assistance
- Project Management Unit (PMU) is the project steering committee
- Project Implementation Unit (PIU) is the project working committee (NRE department, APDCL)
- Team of ICF, IORA and IIT Guwahati will provide the technical and capacity building assistance

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Target for demand sectors …from EAP

Parameter	Unit	Baseline (2015)	Target for 2030
Cooking sector			
Number of households using improved cook stoves (as % of total number of households)	Million	0 (0%)	1.25 (13%)
Number of households using LPG cook stoves (as % of total number of households)	Million	2.3 (33%)	4.9 (51%)
Number of households using PNG connections (as % of total number of households)	Million	0 (0.5%)	1.4 (15%)
Number of households using electricity for cooking (as % of total number of households)	Million	0 (0%)	1.45 (15%)
Transport sector			
Parameter 5: Number of electric buses (as % of total number of buses)	Thousand	0 (0%)	8 (50%)
Parameter 6: Number of electric two-wheelers (as % of total number of two-wheelers)	Thousand	0 (0%)	1,000 (53%)
Parameter 7: Number of electric three-wheelers (as percentage of total number of two-wheelers)	Thousand	0 (0%)	20 (20%)

EV-Key takeaways for Assam (1/2)

Strategies

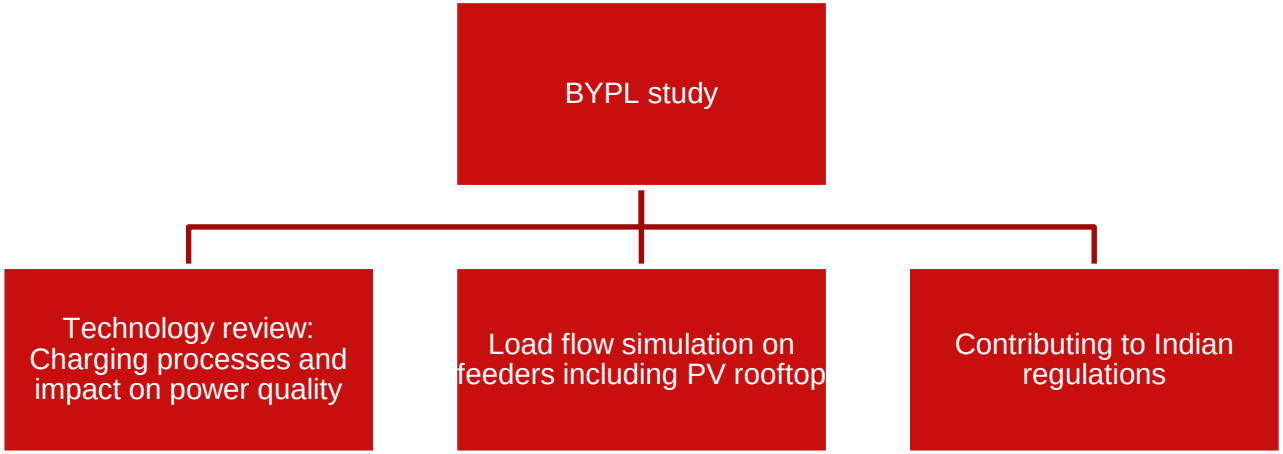
- To benefit from the Recently announced FAME II, which has no state wise allocation; state need to act swiftly, to overcome the competition from other states
- Need to focus on 2Ws and 3Ws segments; By providing purchase incentives only to the buyers of 2Ws and 3Ws in Delhi and only 3Ws in Kerala; they have laid special focus on these vehicle segments which have ease of implementing advantage
- To encourage electric boats and ferries to make best use of the strong Inland water ways network; Kerala which have similar advantage has targeted for inducting 100 electric ferries by 2020
- Identify the cities for the initial rollout, which helps in focussed effort creating a visible impact of EVs in the cities; majority of the state policies (Karnataka, Andhra Pradesh, Maharashtra, Kerala, Uttar Pradesh) have identified the cities for the initial rollout
- Attracting the manufacturers of EVs and its components in the state by providing manufacturing incentives which also provides employment opportunities for the local youth

EV- Key takeaways for Assam (2/2)

Action Items

- Formulating State level inter–departmental steering committee which can coordinate among the various departments like Transport, Roads and Buildings, Power / Energy, Finance / Revenue, Planning , Industries, Urban Development, Skill Development; to accelerate the EV adoption.
- Appointing the Nodal Agency to coordinate the rollout of EV charging Infrastructure and set the ceiling for the service charges. The Nodal Agency in Assam could be APDCL.
- The steering committee and the Nodal Agency will evaluate providing incentives to set up charging stations in the initial years which will pave way for scale up. This approach was prime focus of all the other state policies.
- Carryout studies to assess the Impact on distribution network (~150 kW* connected load) due to the EV load growth, and take the reinforcement measures.
- Creating and notifying a separate tariff category for EV charging, in line with the Ministry of Power guidelines
- Building Bye-laws of the state need to be amended in line to the MoUD's model guidelines, to include EV charging infrastructure in all types of buildings. Delhi has laid down these guidelines in the EV policy document
- Assam needs to amend the open access regulations, to facilitate the charging stations to source power from renewable plants; Delhi has allowed open access to charging service providers, if the aggregated demand is greater than 1MW

Impact assessment of large scale integration of Electric Vehicle Charging infrastructure in the electricity distribution system



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NDC Transport Initiative for Asia

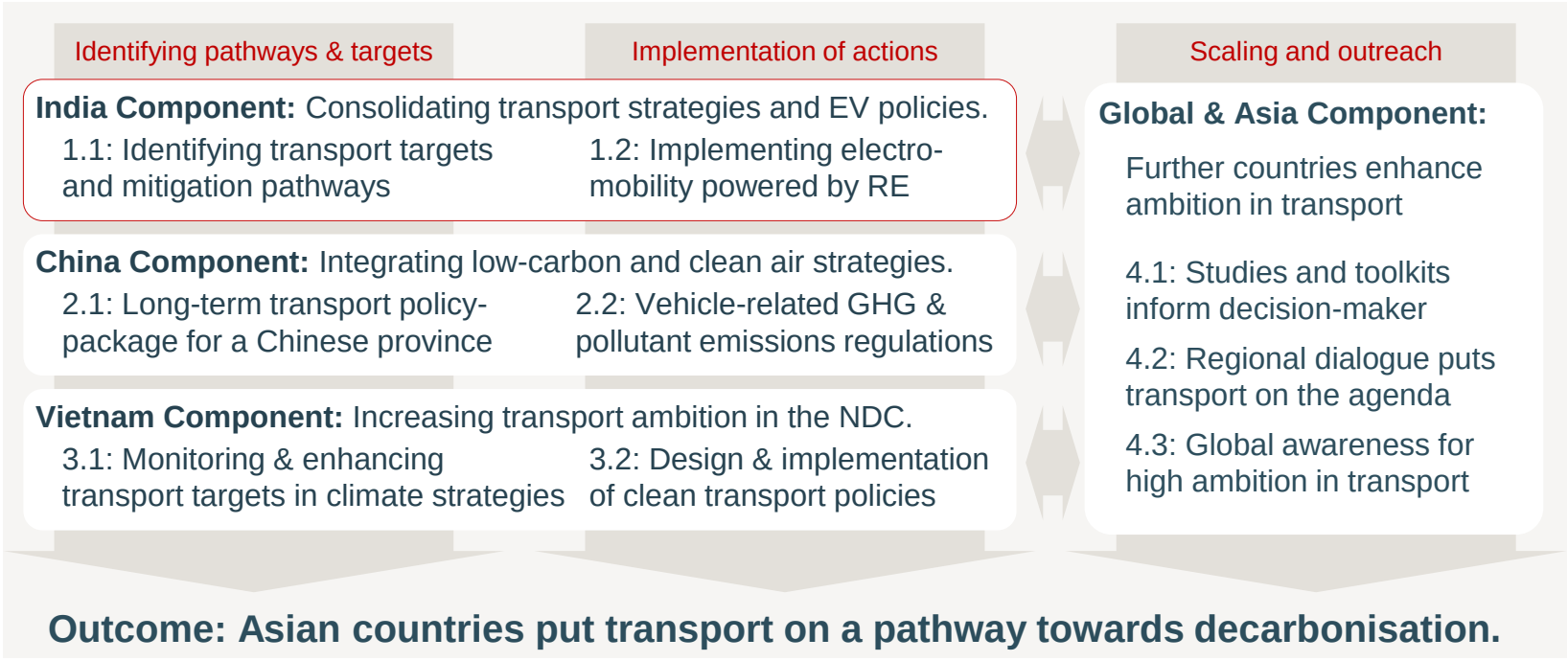
An upcoming regional programme under the International Climate Initiative

On behalf of:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

NDC Transport Initiative for Asia (2019-2024)



India component

WP 1: Integrated decision-making for decarbonizing transport	WP 2: Electromobility powered by renewable energy
Output: Stakeholder engagement structure is established and informed by comprehensive quantitative analysis	Output: Policy and procurement frameworks for EVs & charging infrastructure have been improved
Activities: • Stakeholder dialogue • Data & modelling • Technical support to inform stakeholder dialogue	Activities: • Charging infrastructure uptake • EV supply and demand side policies • EV business models

The consortium

- **GIZ (project coordinator):** Service provider on international cooperation for sustainable development. Track record on global and bi-lateral transport and climate change projects of BMU (e.g. TraCS and TRANSfer).
- **WRI:** Think tank with a track record on climate policy and urban mobility. Hosting the NDC-Partnership. Country offices in India and China with high expertise on urban mobility and electromobility.
- **ITF:** Forum of Ministries of Transport, organising the annual International Transport Forum in Leipzig. Strong modelling expertise. Implementing the decarbonising transport project with activities in India
- **The ICCT:** Think tank focusing on fuel economy policies and energy efficiency of vehicles, incl. electro mobility. Representatives based in China and India. Implementing the IKI-funded soot-free bus project.
- **Agora Verkehrswende:** German think tank organising stakeholder dialogue on transforming transport.
- **REN21:** Global network on renewable energy. Publishing the Global Status Report on Renewable Energy.
- **SLoCaT Partnership:** Partnership of more than 100 transport organisation. Transport focal point of the Marrakech Partnership for Global Climate Action, organising the Transport Day at COPs.

Futuristic themes: Nexus between power supply and e-mobility will be addressed in NDC TIA

- Power Distribution networks must change grid planning and operation: ICT, automation, smart grid, vRE integration
- Load management, DSM, DR
- Using e-vehicle fleet as virtual power plant integrated with vRE, V2G
- Participation in ancillary services for power sector
- Forecasting and scheduling with EV fleet
- Active and optimized charging control for fleet of public charging
- …..

Thank you very much for your attention!

Indradip Mitra

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

E indradip.mitra@giz.de
I www.giz.de