

Accelerating India's EV charging infrastructure roll-out



through digital innovation and international collaboration



Agenda

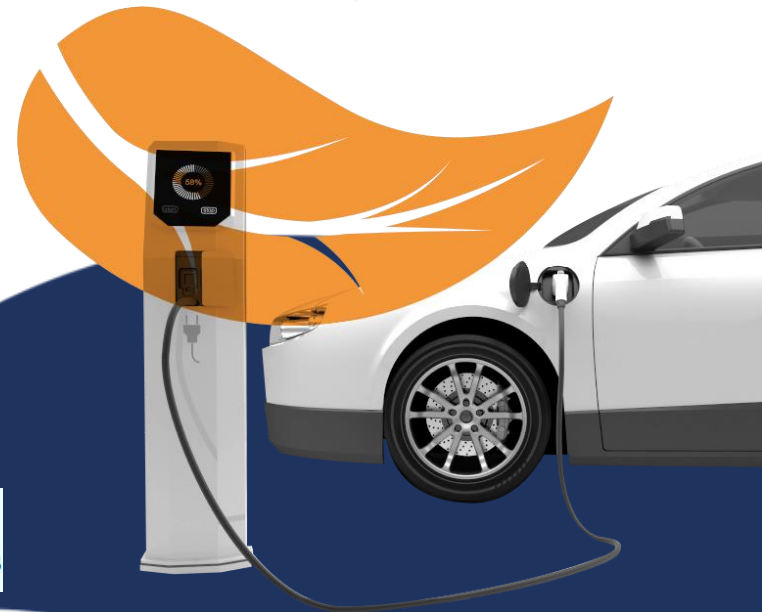


- Keynote & context setting
- Presentation on the Innovating for Transport and Energy Systems (ITES) initiative, how ITES is supporting applied and digitised solutions, and how stakeholders can get involved
- Panel discussion
- Question & answer
- Closing remarks

Keynote & context setting



Professor Ashish Verma



Innovating for Transport and Energy Systems



Andrew Stokes

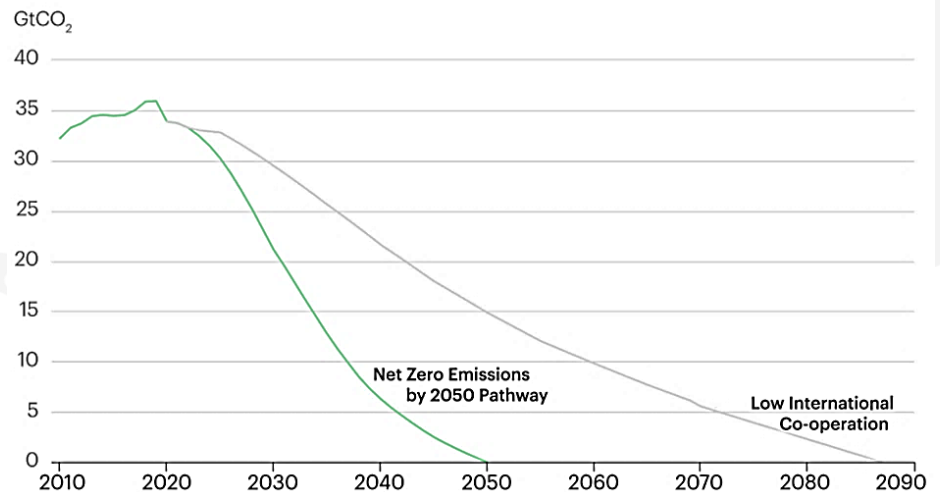


International collaboration is key to reduce emissions

The Net Zero pathway **relies on unprecedented international collaboration**, especially on **innovation** and **investment**.

This is not simply a matter of governments and companies seeking to bring their emissions to Net Zero – it means tackling global challenges through **co-ordinated action**.

Global energy-related CO₂ emissions in the net zero pathway and Low International Co-operation Case



Note: Gt = billion tonnes.

From IEA, 2022: <https://www.iea.org/data-and-statistics/charts/global-energy-related-co2-emissions-in-the-net-zero-pathway-and-low-international-cooperation-case-2010-2090>

Global transport challenges



1 billion

Increase in
global population
since 2010



43%

Increase in
primary global
energy demand
since 2000



400m

Global increase in
vehicles from
2011-2019



11.7%

Share of deaths
attributed to air
pollution in 2019



7.3

Number of people
per registered car,
down from 13 in
2000



16%

Percentage of
global carbon
emissions caused
by transport



95%

Of road transport
is powered by
fossil fuels



2 billion

People will
move to cities
from rural areas
by 2050



5x

Projected
increase in urban
land cover by
2050

Introduction to ITES



Clean transport is one of the toughest challenges on the road to Net Zero. The fastest growing source of emissions, transport accounts for a significant proportion of global greenhouse gas emissions, second only to the power sector.

- Led by **Energy Systems Catapult (ESC)** and **the Indian Institute of Science (IISc), Innovating for Transport and Energy Systems (ITES)** is a vital, visionary UK-India initiative to turbocharge transport decarbonisation.
- ITES has been launched as part of a landmark **MoU between both UK and Indian governments** agreed in spring 2023 to deepen collaboration in science and technology, and to drive sustainable growth.
- ITES will harness a rich UK-India history of research and innovation to deliver cleaner roads, seas, and cities for people and the planet.
- With unique backing, collaboration and real-world projects, the initiative will **support UK-India industry, start-ups/innovators, and service providers to lead the clean transport transition**, turning homegrown innovations into world-first solutions.



Shape India's transport future as part of a flagship Net Zero initiative



Join an influential cross-sector collaborative initiative



Support UK & India industry & innovators

ITES impact



Flagship Net Zero innovation
bringing impactful innovations
to both nations



Unique network
convening the best of UK-India
industry, innovators,
policymakers and investors



**Helping innovators to test,
fund & grow** with high impact
pilots, go-to-market support and
access to investment



Unlocking complex challenges
adopting a whole systems
approach to trial tech and
identify solutions that work for
businesses and consumers



Market-led and practical
Working together with the
private sector to solve high-
priority, practical problems

What makes ITES unique?



Whole systems approach

ITES adopts a unique perspective across the whole transport and energy system to find solutions faster. Our whole systems approach considers technology; infrastructure; awareness; government support; policy; business models; supply chain; manufacturing, etc.



Practical, applied solutions

Working directly with a wide range of stakeholders to understand challenges, increase understanding and visibility; and demonstrate and scale practical and applied solutions.

Programme overview



Understanding
the challenges
and existing/
emerging
innovations.

This helps to
create an
innovation
roadmap for
key challenges



**Research, R&D
sprints, and
demonstration
and pilot
projects**

to develop
applied
solutions and
scale those that
are close to
market



**Innovative
solutions**
developed in
line with market
needs and
trialled in real-
life market
settings



Evidence to
inform the
sector and
policy and
**innovative
products and
solutions** ready
to enter the
market

Focus sectors



ITES launched an open call for innovators with technology in the following areas:

Focus sectors



ITES launched an open call for innovators with technology in the following areas:

Micro
mobility

Battery
recycling

Smart
charging

Shared
mobility

Grid stability

Charging
solutions

Microgrids

Battery
swapping

EV fleet
management

Consumer
engagement

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Smart
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Battery
swapping

EV fleet
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Consumer
engagement

Several of these technology areas rely heavily on robust and reliable digitisation to bring the most benefit to the transition to a future Net Zero transport and energy system.

Previous work: using data and digital modelling to support infrastructure decisions



Challenge:

Develop a tool that helps stakeholders in Bengaluru, India to better plan for the infrastructural requirements of electric vehicles charging

Solution:

Energy Systems Catapult and **IISc**, along with partners, developed a model that utilises user behaviour and electricity network capacity information to optimise location selection for charge points in Bengaluru.



Engaged with consumers to understand vehicle choice travel and charging behaviour



Analysed electricity network data to assess capacity constraints



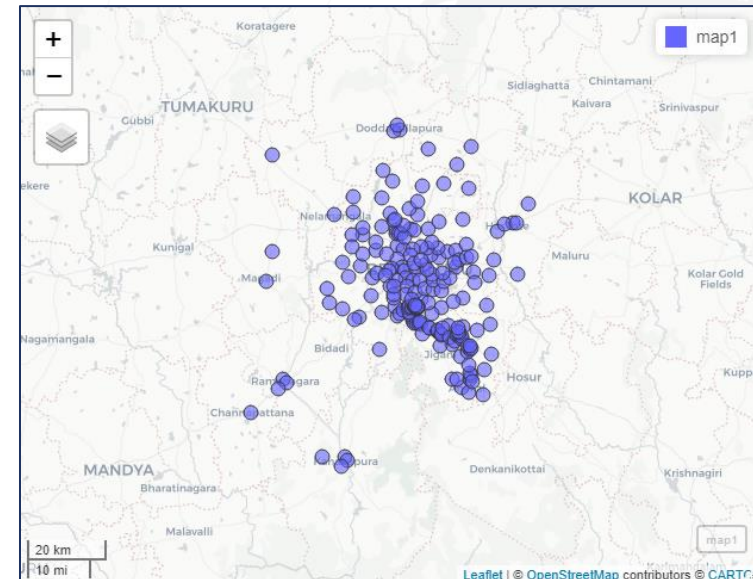
Created a model spanning MATLAB and python which mapped the optimal distribution charge points based on the density of travel, the length of travel and the status on the local grid

Previous work: using data and digital modelling to support infrastructure decisions

Findings:

The project team engaged with local stakeholders to define the use cases for the model:

- This tool can aid stakeholders in identifying optimal locations for charging stations
- The model will help stakeholders in understanding user preferred locations of charging
- This tool can help BESCOM in analysing the grid impacts and the locations where the capacity of the grid needs to be upgraded
- Digital solutions offer strong potential for increased awareness and evidence-based decision making around net zero transport infrastructure



Engaging with ITES



Benefits of collaborating with ITES



Access to innovators

ESC and IISc each have a wide international network of quality innovators that can, and will, contribute to projects. Their focus **includes alternative energy sources, battery management, battery recycling, charging solutions, grid stability & energy storage** among others.



Thought & sector leadership

Be recognised as a thought leader and catalyst for change in transport and energy decarbonisation. **Support of an ITES project is an impactful demonstration of a commitment to sustainability.**



Market development

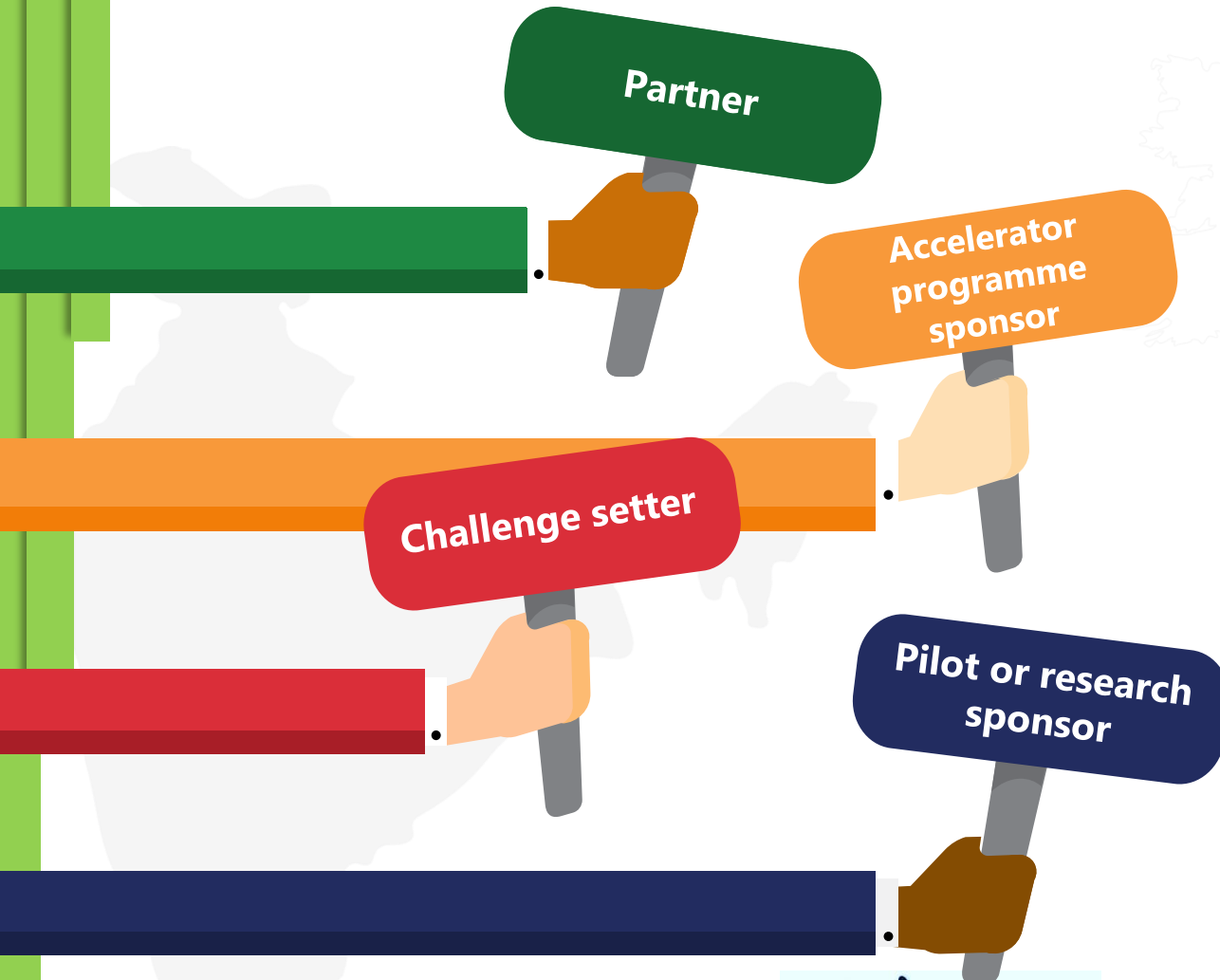
The ITES network will **help navigate local partnerships, manage complex projects, engage stakeholders and support market entry** for new business models and technologies.



Collaboration & networking

Sponsors can effectively forge **cross-sectoral relationships and build partnerships** that extend beyond the initiative. Significant opportunities for JVs, knowledge exchange, and business growth.

Ways to engage



Ways to engage



Partner

Strategic partner

Engage and support ITES to help to steer its work and maximise its impact

Accelerator
programme
sponsor

Accelerator programme sponsor

Work with ITES to launch challenges / an SME accelerator programme

Challenge setter

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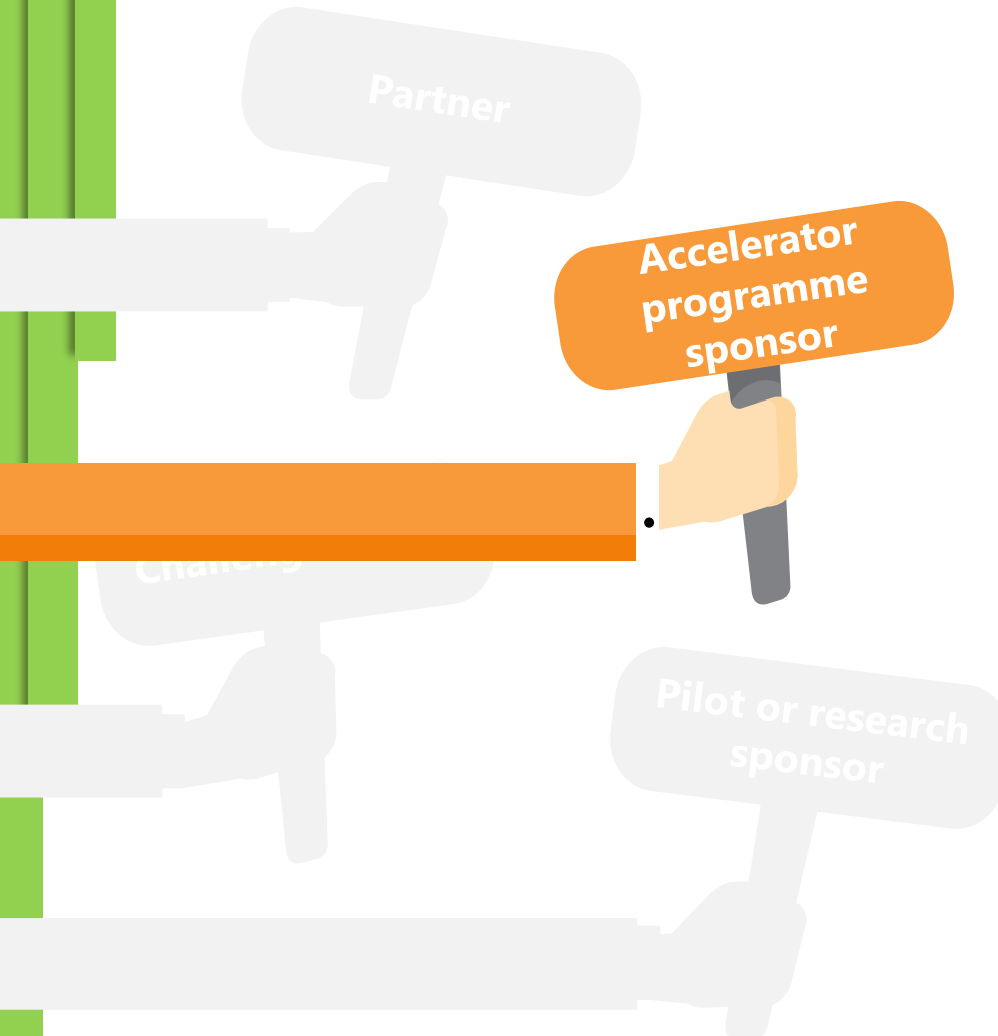
Articulate a challenge for your organisation and support innovative pilots to explore solutions

Pilot or research
sponsor

Pilot or research sponsor

Host a pilot or research project with high-impact potential

Ways to engage



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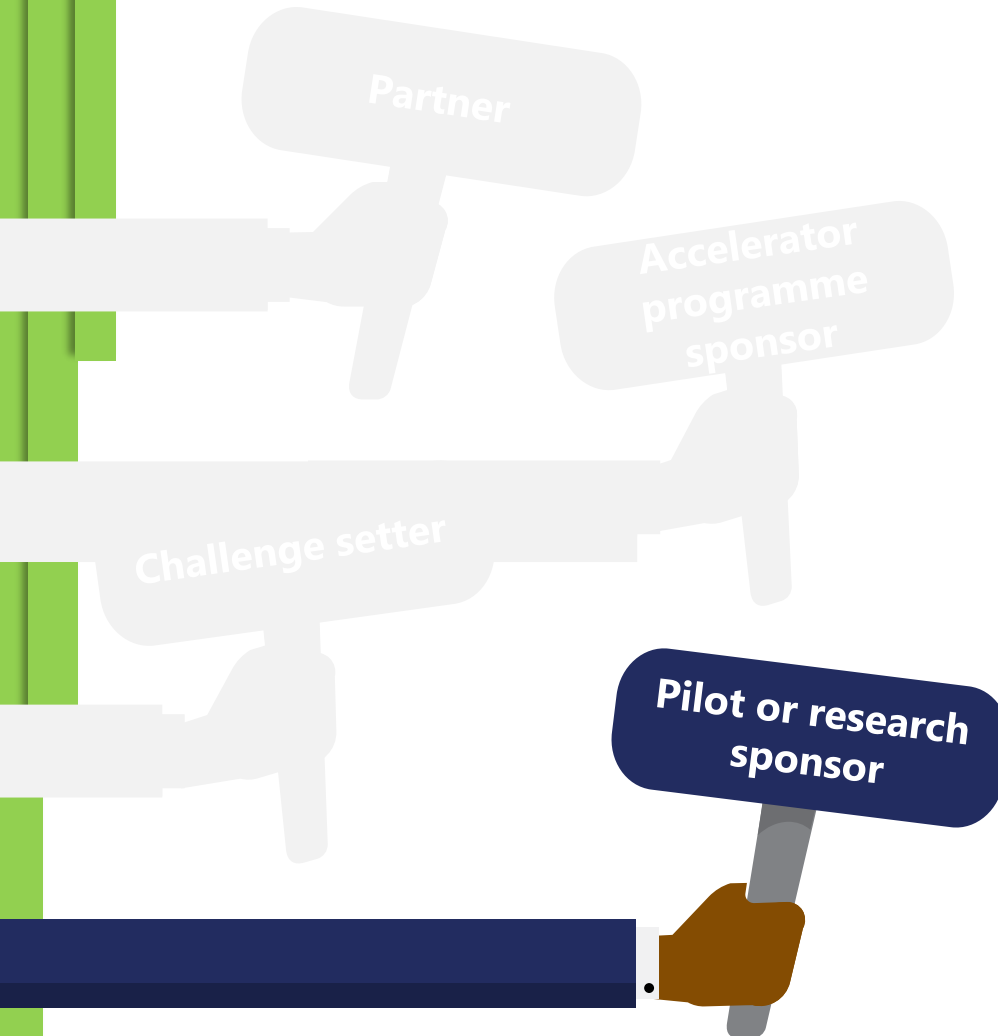
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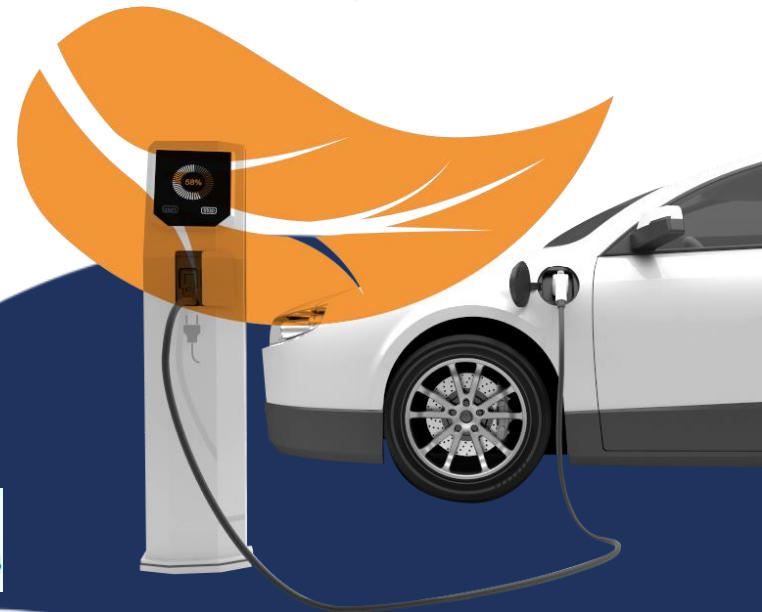
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Stay in touch



Email us:

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Thank you



Department for
Science, Innovation
& Technology



Innovate
UK



CATAPULT
Energy Systems