

Review of Transportation Relevant UN SDG targets and their association with Sustainable Transport Indicators



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Introduction



- **Sustainable Transportation:** Satisfying current transport and mobility needs without compromising the ability of future generations to meet these needs (WCED, 1987).
- Traditional development strategies have **degraded** the resources to a huge extent.
- United Nations (UN) in Sep 2015 prepared **17 Sustainable Development Goals (SDGs)** to be achieved by all the UN member states by 2030.
- These **17 goals** were measured with **169 targets**.

Introduction



SUSTAINABLE DEVELOPMENT GOALS



 **SUSTAINABLE DEVELOPMENT GOALS**

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	



Motivation



- There is no transport-related SDG, but out of 169 targets, some targets are relevant to transport.
- Studies have used **few** of these transport-related targets.
- Need to identify transportation-relevant UN SDG targets **exhaustively**.
- Help future studies to utilize all such targets.

Objectives



- Study highlights **the direct and indirect relevance of UN SDG targets with transportation.**
- Provides an overview of Sustainable Transport Indicators (**STIs**) and identify **their suitability** using a **SMART criteria-based approach.**
- Identify the suitable **STIs for direct-transport relevant SDG targets.**
- Reviews major **Indian transport policies** since the time of independence.

ITDP (Institute for Transportation & Development Policy) 2015

- Identified seven SDGs (2, 3, 7, 9, 11, 12 and 13) and **fifteen targets** (targets 2.3, 2.a, 3.6, 3.9, 7.3, 7.a, 9.1, 9.4, 9.a, 11.2, 11.6, 11.7, 11.a, 12.c, and 13.2) relevant to sustainable transport.

UN-Habitat et al. (2015)

- Identified targets of eight SDGs (2, 3, 6, 7, 9, 11, 12, and 13) with direct or indirect relevancy to transportation. **Five** UN SDG targets 3.6, 7.3, 9.1, 11.2, and 12.c were identified as direct transport targets, and 2.3, 3.9, 6.1, 11.6, 12.3, and 13.1 as indirect transport targets.

Gudmundsson and Regmi (2017)

- Addressed six SDGs (goals 3, 7, 9, 11, 12, and 13) and **seven targets** (targets 3.6, 7.3, 11.2, 11.6, 12.c, 13.2) as relevant to transportation

Related Works (Gudmundsson and Regmi 2017)



Sustainable Development Goals	Targets
3. Ensure healthy lives and promote well-being for all at all ages (Road Safety)	3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents
7. Ensure access to affordable, reliable, sustainable and modern energy for all (Energy efficiency)	7.3 By 2030, double the global rate of improvement in energy efficiency (*)
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure)	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
11. Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable (urban) transport for all)	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management (*)
12. Ensure sustainable consumption and production patterns (Fuel subsidies)	12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist (*)
13. Take urgent action to combat climate change and its impacts (Climate Action)	13.2 Integrate climate change measures into national policies, strategies and planning (*)

Overview of transport relevant UN SDG Targets



- These studies have missed many UN SDG targets related to transport.
- Such as target 1.4 which addresses '**access to basic services**'; targets 4.2, 4.3, 4.5 address '**access to education centers**'.
- A **suitable criteria is needed** to identify transport relevant SDG targets **comprehensively**.

Overview of transport relevant UN SDG Targets

Criteria:

Shortlist targets where transportation systems planning and engineering impact the fulfilment of the target.

For the shortlisted targets **check whether this impact affects target achievement directly or indirectly.**

Direct transport-related targets **address dimensions of transport explicitly.**

Indirect transport-related targets **address other domains where transportation plays an important role.**

Overview of transport relevant UN SDG Targets



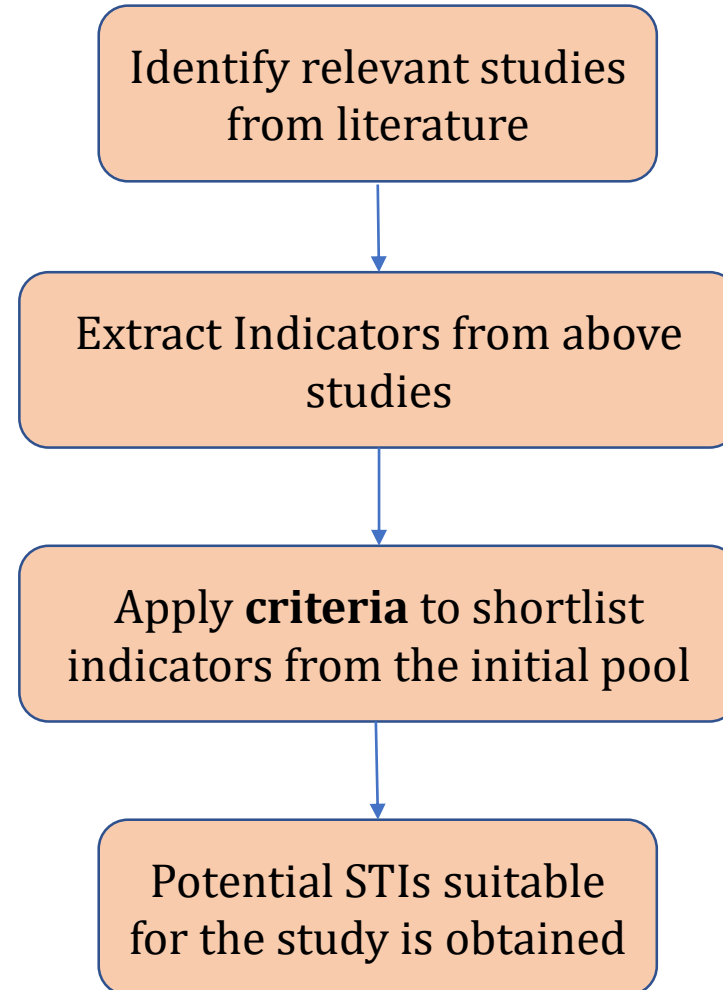
Result:

- **27 (direct) and 24 (indirect)** transport-related targets were identified.

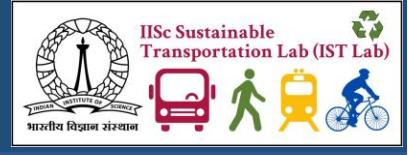
Examples:

- Targets addressing **accessibility** such as access to basic services (1.4, 11.1), education centers (4.2, 4.3, 4.5), safe drinking water (6.1), public spaces (11.7), and safe, affordable, accessible, sustainable transport for all (11.2). [**Direct transport-related targets**]
- Targets 3.9, 14.1, and 11.6 address reduction in air, water, soil, and marine pollution and environmental impact of cities. [**Indirect transport-related targets**]

Identifying STIs



Identifying STIs



- List of 8 studies with scale, number of sustainable transport dimensions, themes, and indicators.

S. No.	Authors (Year)	Scale	# Sustainable Transport Dimensions/ Pillars	# Transportation Themes/ Subdivisions	# Sustainable Transport Indicators
1	Nathan and Reddy (2011)	Urban	3	0	54
2	UNCRD & CAI-Asia (2011)	National	0	19	74
3	Haghshenas and Vaziri (2012)	Urban	3	0	9
4	Zheng et al. (2013)	National	3	19	22
5	Shiau et al. (2015)	National	4	0	19
6	Mahdinia et al. (2018)	National	3	9	89
7	Zope et al. (2019)	Urban	3	8	8
8	Illahi and Mir (2022)	National	3	10	116

Total indicators = 391

Identifying STIs- "SMART" Criteria



- To select suitable indicators from a large pool of indicators, a widely used approach known as the “**SMART**” criteria has been used.
- Used to identify goals and objectives for better results in a project.
- However the method can also be applied for indicator selection.

Specific

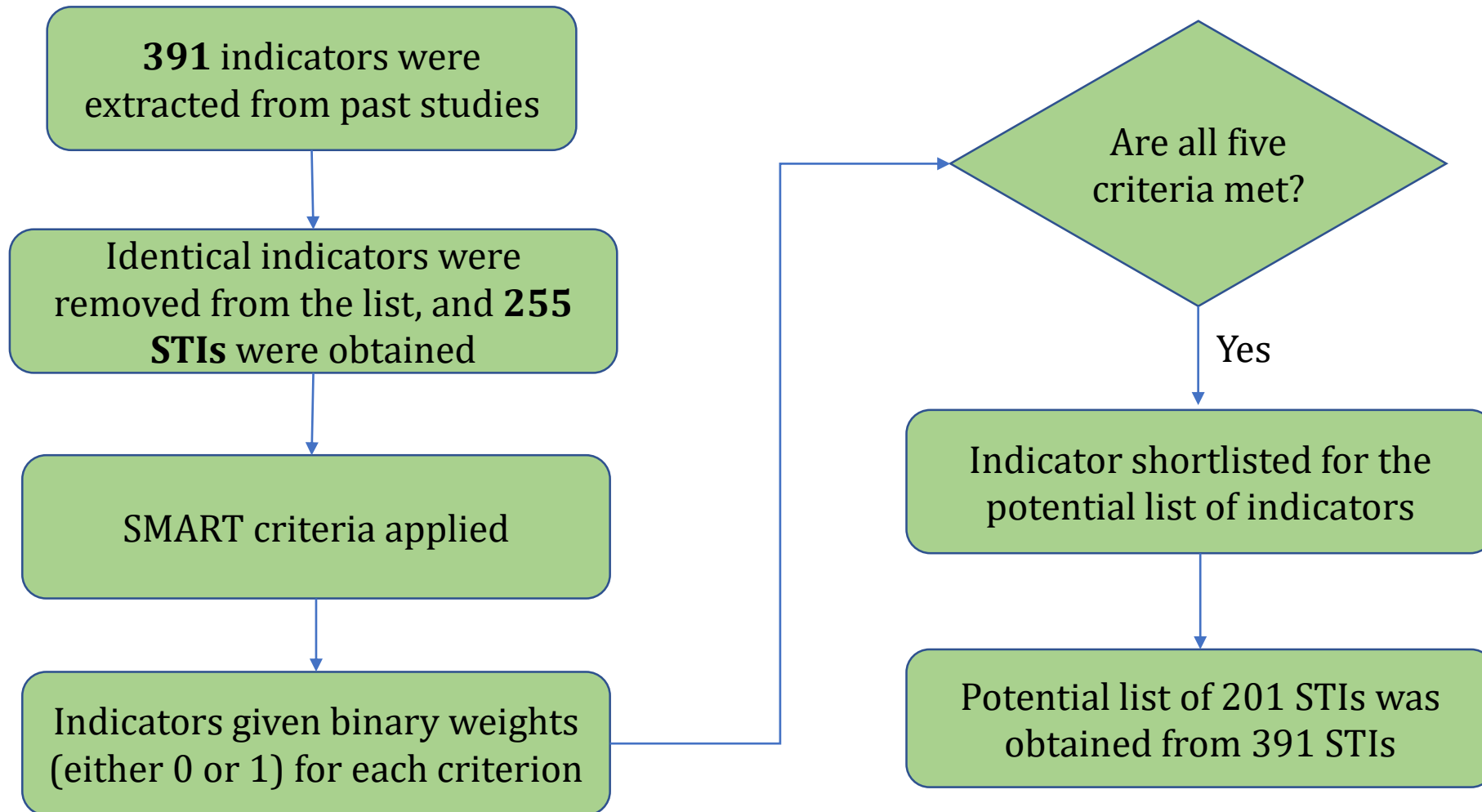
Measurable

Attainable

Relevant

Timely

Identifying STIs



Association of STIs with UN SDG Targets



- To make the SDG targets **operational** and have associated indicators for each target.
- Segregated the STIs under **different keywords** like access, fatalities, emissions, energy, expenditure, funds/revenues, GHG emissions, income, trips, etc, **based on the information conveyed by the STIs**.
- Keywords were matched with scope of the identified 27 direct-relevant SDG targets.
- A comprehensive list of STIs associated with these 27 targets was obtained.
- For example, **11.2 target** comprised of the safety, and accessibility of the transportation systems, so the number of unsafe driving cases registered, and % of population with access to transit, etc, were identified STIs with keywords fatalities, and access, respectively.

Review of Indian Transport Policies

Post-Independence Era

- Five-Year Plans (FYPs)
- Metro Railways (Construction of Works), 1978 Act and Amendment Act in 1982
- The Air (Prevention and Control of Pollution) Act, 1981
- The Environment (Protection) Act, 1986
- The Motor Vehicles Act, 1988
- Integrated Transport Policy, 2001
- National Auto Fuel Policy, 2003
- Jawaharlal Nehru Urban Renewal Mission (JNNURM), 2005
- National Urban Transport Policy (NUTP), 2006
- National Road Safety Policy, 2010

1951-2012

2013-2015

- National Electric Mobility Mission Plan (NEMMP), 2013
- Draft NUTP, 2014
- Smart Cities Mission (SCM), 2015
- SDGs 1, 2, 3, 6, 8, 9, 10, 11, 13, 14, 15, and 16 were identified as potential goals to be fulfilled through blue-green infrastructure plan in the SCM.
- SDG 11 is the goal which directly links with the SCM and the transportation sector.

2016-2022

- Green Urban Mobility Scheme, 2017
- National E-Mobility Programme, 2018
- National Policy on Transit-Oriented Development, 2017
- These policies seem to be directly linked with SDGs. It has also been observed that CMPs and CDPs do not address the UN SDGs and there is a lack of guidelines to follow for specific targets related to urban transport planning and management.
- National Urban Policy Framework (NUPF), 2020 emphasizes sustainable transportation without any incorporation of SDG targets.

Conclusion

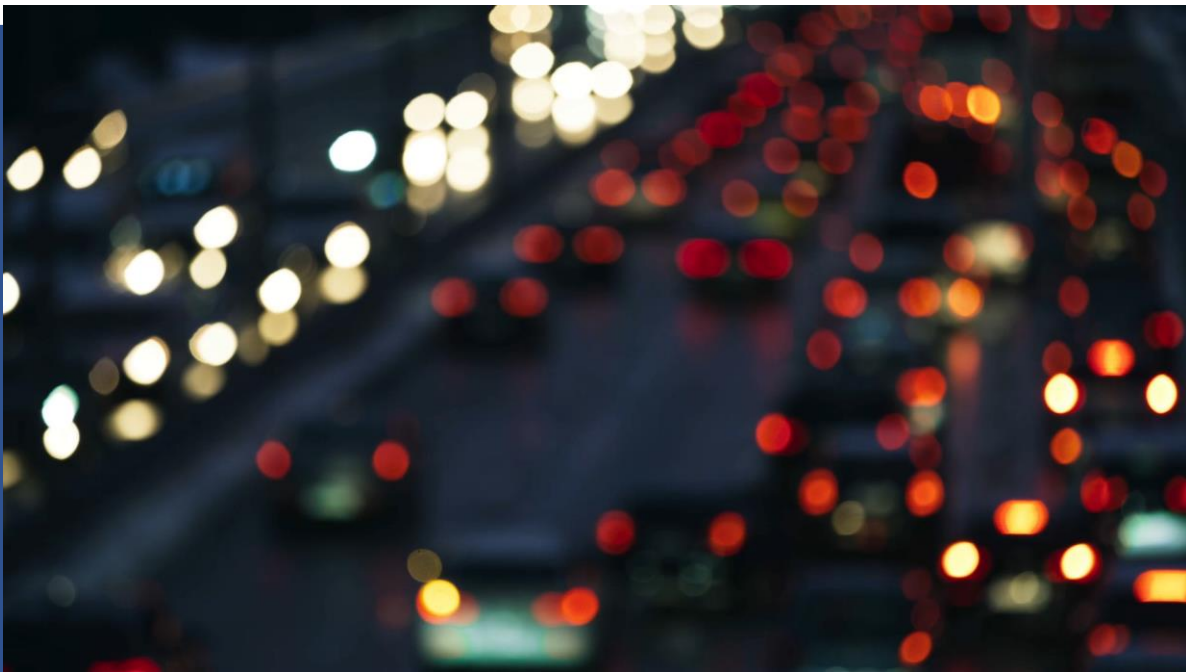


- This study provides a potential list of 201 STIs from 391, using it to make SDG targets operational.
- Associated STIs were found for the 27 SDG targets directly related to transportation for which data availability and feasibility can be checked to find their relevance with the Indian Transport Policies.
- This would help the policy makers to review their policies and create specific action plans for achieving SDG 2030 Agenda.
- This work can be further be extended to prepare comprehensive policy framework incorporating various SDG target.

Conclusion



- National policies can identify the most important and relevant indicators from this list and incorporate them for further improvement at sub-levels of governance.
- State and local area policies can utilize this list to improve their database.
- For indirectly relevant UN SDG targets, similar approach can be considered.



THANK YOU



12/7/2022