DFID, GIZ, Habitat, SLoCaT

Development of a Post 2015 Results Framework on Sustainable Transport

Progress Report 1

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Prepared by

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The views in this report are those of the authors and they do not necessarily reflect the views of DFID, GIZ, UN-Habitat or SLoCaT.

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Table of Contents

Acronyms and Abbreviations

µg	microgram
ADB	Asian Development Bank
BRT	Bus-rapid transit
DFID	Department for International Development, UK (UKaid)
EURIST	European Institute for Sustainable Transport
FAO	Food and Agriculture Organisation of the United Nations
FIA	FIA Foundation is a road safety charity started by Fédération Internationale de l'Automobile (FIA)
GDP	Gross Domestic Product
GFEI	Global Fuel Economy Initiative
GHG	Greenhouse gas
GIS	Geographic information system
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German bilateral aid agency)
GmbH	Gesellschaft mit beschränkter Haftung (limited company)
GRSF	Global Road Safety Facility
GtCO2e	Gigatonnes (billion metric tonnes) of CO_2 equivalent
ICCT	International Council on Clean Transportation
ICT	Information and communications technology
IDA	International Development Association (World Bank)
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IFRTD	International Forum for Rural Transport and Development
IHE	Department of Interventions for Healthy Environments (WHO)
IRAP	International Road Assessment Program
IRF	International Road Federation
IASS	Institute for Advanced Sustainability Studies, Potsdam, Germany
ITF	International Transport Forum (OECD)
ITS	Institute of Transport Studies, Leeds, UK
LPI	Logistics Performance Index
M	million
MDG	Millenium development goal
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
ODI	Overseas Development Institute, UK
op. cit	opere citato 'see previous citation of this work'
OWG	Open Working Group (of United Nations)
PDR	People's Democratic Republic (Lao)
PHE	Department of Protection of the Human Environments (WHO)
PM	particulate matter
RAI	Rural Access Index
SDG	Sustainable development goal
SLoCaT	Partnership on Sustainable Low Carbon Transport
SMART	Specific, Measurable, Achievable, Relevant and Time bound
SSATP	Sub-Saharan Africa Transport Policy Program
SUV	Sports utility vehicle (4-wheel drive station wagon)
ToR	Terms of Reference
TRL	Transport Research Laboratory, UK
TST	Technical support team (UN)
UATP	African Association of Public Transport
UITP	International Association of Public Transport
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNEP	United Nations Environment Program
UN-Habitat	United Nations Human Settlement Program
VTPI	Victoria Transport Policy Institute, Canada
WHO	World Health Organisation

1. Introduction

1.1 Background

Sustainable Transport was identified as one of 26 cross-cutting thematic areas and cross-sectoral issues in the "The Future We Want", the outcome document of the 2012 United Nations Conference on Sustainable Development (Rio+20). The Open Working Group on Sustainable Development Goals (SDGs) was established by the UN General Assembly in 2013 to develop appropriate SDGs using an inclusive and transparent process that is open to all stakeholders. The next session of the OWG will be held during January 6-10, 2014. To advance the case for the integration of sustainable transport in the goal framework of the post 2015 development agenda requires the translation of the Rio+20 consensus on the importance of sustainable transport for achieving sustainable development. Concrete proposals for a Results Framework for Sustainable Transport with suggested targets, indicators and a monitoring framework is required.

The Partnership on Sustainable Low Carbon Transport (SLoCaT[1]) is advocating the adoption of a Sustainable Development Goal (SDG) on sustainable transport:

Universal Access to Clean, Safe, Healthy[2] and Affordable Transport for All

Five targets[3] are proposed to assist in realising the proposed goal: (i) urban access; (ii) rural access; (iii) road safety; (iv) air pollution and human health; and (v) greenhouse gas emissions. Collectively, these targets cover the main dimensions of sustainable land transport.

1.2 Objective

The current project aims to develop a credible Results Framework for Sustainable Transport that confirms the goal statement, sets targets and the means to measure them and provides the basis for monitoring progress in the implementation of the proposed SDG building from the work done by SLoCaT, UNEP and others. The Results Framework focuses on land transport and cover both passenger and freight transport[4].

1.3 Administrative Arrangements

Providing financial and technical support for this project are:

- **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH** – with primary focus on management of the overall technical work and associated consultative process including specialised inputs on environment, safety and security; and
- **UN-Habitat with DFID support** – with emphasis on urban and rural access and freight. DFID will also provide resources for conducting parallel work on poverty and transport.

They are coordinating the SLoCaT partnership on the implementation of the proposed project. Cornie Huizenga, Joint Convener, SLoCaT is providing guidance to the two consultants who have been engaged to perform the main technical inputs. The two consultants are: (i) Philip Sayeg,

[1] The Partnership on Sustainable Low Carbon Transport (SLoCaT) is a multi-stakeholder partnership of over 80 organizations including UN organizations, multilateral and bilateral development organizations, NGOs and foundations, academia and the business Sector. See: [www.slocat.net]. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and UN-Habitat (with funding provided by the Department for International Development, UK) are supporting this work.

[2] The word 'healthy' has been added as described in Section 3.

[3] Previously referred to as three targets: (i) access; (ii) road safety; and (iii) environment (air pollution and GHG emissions).

[4] The draft results framework produced by the project was circulated for comment on 14 December 2013.

sustainable transport consultant and Team Leader engaged by GIZ; and (ii) Paul Starkey, sustainable transport and access consultant engaged by UN-Habitat (with DFID support).

The consultants are working as an integrated team with the GIZ consultant nominated as the Team Leader.[5] The two consultants are preparing common deliverables. Further details of the precise allocation of responsibilities between the consultants are provided in Annex H.

A steering committee has been formed with Professor Tony May of the Institute of Transport Studies (ITS), Leeds University, as chair. The steering committee (the proposed membership and ToR are available upon request) is providing a technical review of key deliverables. Stakeholder consultation is being facilitated by the Secretariat of the SLoCaT Partnership.

1.4 Approach for Preparing a Draft SDG for Transport and Results Framework

As identified in the ToR for this project, and elaborated in the Inception Report (November 2013), the approach to the project is following a dual track. On the one hand there is a clear sequence of technical tasks being pursued as follows:

- Task A: Validate proposed SDG;
- Task B1: Validate proposed targets;
- Task B2: Recommend indicators and proxy indicators;
- Task C: Specify ambition levels of proposed targets and indicators;
- Task D1: Assess the desirability and feasibility of country cluster classification for targets;
- Task D2: Establish and document baseline data requirements and availability; and
- Task E: Present and report Results Framework (output).

However, extensive consultation with over 30 key stakeholder groups identified in Annex B for the five targets has been undertaken to inform analysis and preparation of the draft results framework. The work built on recent conceptual work by SLoCaT, the High Level Panel[6] and the efforts of other organisations to develop goals or targets that impact on transport. The work has also tried to maintain consistency, where practicable, with the issues brief of the UN-Technical Support Team[7] that was prepared by UNEP on behalf of the UN agencies.

1.5 Why an SDG for Transport is Important?

Having a dedicated SDG would generate co-benefits for other targets greater than could be achieved by treating transport as part of those targets. Transport has many dimensions and the policies, strategies, and measures needed to address these dimensions sit mainly in the transport

[5] Sayeg was contracted by GIZ to provide 31 days of input and Starkey by UN-Habitat for 35 days.

[6] High Level Panel of Eminent Persons on the post-2015 Development Agenda; the Sustainable Development Solutions Network (http://unsdsn.org/) putting forward the need for an urban SDG; the report on perspectives from UN Global Compact participants where transport infrastructure is seen as a necessary part of the enabling environment for poverty eradication and other higher goals; the Overseas Development Institute's web hub of information of what should follow the MDGs post 2015 (http://post2015.org/) and the 'My World' consultation; and IASS POLICY BRIEF 3/2013, Establishing a Sustainable Development Goal on Cities, prepared by the Institute for Advanced Sustainability Studies (IASS) e. V. Potsdam, Germany, December 2013. Annex A summarises proposed goals and relevant targets of the UN-Technical Support Team, Institute for Advanced Sustainability Studies and Overseas Development Institute.

[7] UN-Technical Support Team co-chaired by UN-Department of Economic and Social Affairs and United Nations Development Program. UNEP led preparation of the Issues Brief on behalf of all UN Agencies as their input to the January meeting of the OWG which was prepared in consultation with a small range of outside groups including SLoCaT. This includes draft targets, indicators and ambition levels.

sector. Transport agencies plan and provide transport infrastructure and services. They contribute to the setting of new vehicle standards but directly licence vehicles and drivers, regulate safety and emissions of in-use vehicles and implement remedial measures to improve transport safety and security. Finance agencies set taxes and fees on transport in consultation with transport sector agencies.

Dividing transport amongst other targets involving other sectors risks insufficient and incomplete action on transport since these sectors cannot directly implement measures to enhance transport's positive impacts (e.g. improved access) and mitigate its negative impacts (emissions and serious injuries and fatalities).

A dedicated transport Sustainable Development Goal (SDG) would assist to marshal appropriate finance and resources to accelerate the introduction of more sustainable transport infrastructure and services in rural and urban areas. It would increase the potential to comprehensively enhance access to education and jobs, reduce poverty and enhance economic productivity and provide a healthier environment.

1.6 Purpose of this Progress Report

This Progress Report[8] sets out:

- Key work accomplishments to date.
- Current thoughts on validation of the proposed SDG for transport (as proposed originally by the SLoCaT Concept Paper).
- Current assessments of targets: (i) outcomes of discussions with stakeholders on the proposed targets; (ii) updated assessments of technical dimensions of targets; and (iii) discussion on options for formulation of targets, their indicators, achievement levels and the relevant baseline.
- Assessment of a country cluster classification system for targets.
- Updated work program – next steps.

2. Key Work Accomplishments to Date

Since submission of the Inception Report in mid-November, the following work has been undertaken:

- Consultations with the stakeholders listed in Annex B including participation by Paul Starkey in the SSATP Africa Transport Policy Forum held in Senegal, December 10-11, 2013.
- Completion of review of the main relevant documents on other proposals for SDGs plus other technical reports prepared by stakeholders or other researchers. These will be referred to in the detailed four page write-ups of each target to be contained in Progress Report 2. A summary of these write-ups as they stand today is provided in Annex F.
- Further thoughts on the formulation of an SDG for transport – further details in Section 3 and Annex E and review of current systems of classifying countries and regions by income or geography (refer Annex D).

[8] Due to the short lead time available for preparation of the key deliverables it is assumed that any comments on the Progress Report 1 be taken account of in the consultant's subsequent work and would not lead to a revision. The same approach is necessarily required for Progress Report 2.

- Completion of a draft proposal[9] for an SDG for transport, targets and results framework (circulated 14 December) and after incorporation of comments received by 19 December, to be submitted in brief to the Open Working Group by 23 December.

3. Progress on Scoping of an Appropriate SDG

The formulation of the draft SDG proposal collectively represents the economic, social and environmental dimensions of sustainable land transport. Two potential omissions were identified during consultations. World Health Organisation's Department of Protection of the Human Environment pointed out that it would be desirable to recognise the link between physical fitness, human health and transport. Provision of transport that was 'healthy' was considered a key driver of community well-being. It was therefore concluded that the proposed goal statement should include the word 'healthy'. However, the promotion of physical fitness and community health is a broader subject than transport. A valid approach within transport is to facilitate clean air, safe transport and facilitate opportunities for physical activity. Further details are contained in Annex E.

Duration the consultation process, Andreas Kopp, Lead Economist at the World Bank, pointed out transport's enabling role for economic growth and the likely strong positive impact on the achievement of MDGs (and hence SDGs in future). He considers that SDG should be formulated in a way that captures the potential developmental aspect of transport. This might be done by formulating a statement that elaborates on the link between improved access for persons and commercial/business travel and economic development. Kopp also points out that it would help to emphasise the role of transport including freight transport for sustainable development. A possible means of addressing these concerns within the current scope of the proposed SDG and results framework is presented in Annex E.

4. Progress on Definition of Targets

As can be seen from the draft "Sustainable Development Goal for Sustainable Transport and Associated Results Framework" that was circulated for comment on 14 December 2013 extensive progress has been made.

The purpose of this section of the progress report is to summarise the thinking behind formulation of targets contained in the draft results framework, proposed achievement and ambition levels, proposed indicators, regional/ income differentiation (if possible at this stage), the choice of a baseline and practicality of measurement and verification, and current real world programs that if scaled-up offer the means of implementation (assuming sufficient funding is provided). More extensive descriptions of the technical aspects of targets, and our thinking, are being prepared for inclusion in Progress Report 2 with summaries of these documents as they stand contained in Annex F.

4.1 Urban Access

Significance. With over half the world's population living in cities and towns, provision of good urban access is vital. Through enabling efficient, safe and affordable transport services, transport contributes directly to poverty reduction by assisting low income people to access jobs and services and conduct their income earning activities safely, affordably and conveniently. Enhanced accessibility of people to jobs, education and health services in urban and rural areas is facilitated

[9] This separate document was not envisaged in the Inception Report for this project and this was an oversight by all.

by transport efficiency improvements that reduce travel time and money costs of travel. Firms also benefit from enhanced accessibility through improved productivity and access to a wider pool of labour that can result in expanded production, new investment and creation of new jobs.

Good urban access is facilitated by use of sustainable transport modes, mainly efficient public transport or non-motorised transport (mainly walking and cycling), with appropriate infrastructure provision.

Implications for the results framework. The proposed target is to increase the proportion of urban people that have access to employment, education, health and community services using safe, convenient and affordable sustainable transport (target for 2030: 80%). This wording encapsulates the function of good transport in providing access to employment and services as well as incorporating safety convenience and affordability. The current wording does not mention timeliness but this may be considered as being covered by convenience (and travel time is one of the indicators). Most stakeholders agree that urban transport requires indicators relating to several dimensions[10]. The World Bank has developed a provisional six-point star assessment[11] encapsulating travel time, safety, emissions, affordability, mode share and public transport supply (route length or fleet). This is considered too complex for measuring the current targets but subsequent harmonisation of some statistics may be possible.

Implications for measurement and verification. Most stakeholders agree that indicator data for urban access can be quite easily and inexpensively be collected by stratified sample surveys. Urban and suburban inhabitants (disaggregated for economic class, gender, type of user e.g. school-children and disadvantage) can provide the required information on their modes of transport, fares and travel time. Annual surveys can be arranged by the urban authorities with information collated by national transport authorities. Some cities have comprehensive databases that include transport statistics. The Global City Indicators Program[12] database has some transport statistics but they do not match well the urban access indicators and only a small proportion of the world's cities are included. Several stakeholders, including the World Bank, felt that new simple transport databases could be produced by urban authorities (with subsequent harmonisation with other databases to be a future possibility). While using headline indicators from the poorest quintile would have merit (emphasising 'leave no one behind') it reduces the simplicity of the target for global use. In the draft SDG results framework it is proposed that to understand pro-poor progress, data from lowest quintile should be monitored and published.

4.2 Rural Access

Significance. The High Level panel noted that transport was crucial for job creation, sustainable livelihoods and economic growth. Rural people are generally further from services, employment and markets. In 2030, 3 billion people[13] will still be living in rural areas. There is a need increase or improve 'all-season'[14] road networks to provide access to more settlements. Many rural people depend entirely on passenger and freight transport services to reach markets, employment and medical facilities. Transport services are often infrequent and expensive, with a downward spiral

[10] Bongardt D, Schmid D, Huizenga C and Litman T 2011. Sustainable Transport Evaluation. Sustainable Urban Transport Technical Document 7, GIZ, Eschborn, Germany. 42p. http://www.sutp.org/en-dn-tp
Litman, T, 2011. Developing indicators for comprehensive and sustainable transport planning. Victoria Transport Policy Institute, Canada. 14p. http://www.vtpi.org/sus_tran_ind.pdf

[11] World Bank Transport Anchor, 2010. Urban accessibility / mobility index. Feasibility Stage Report. Report 69933. World Bank, Washington DC, USA. 29p. Available from: http://documents.worldbank.org/curated/en /2010/06/16377387/urban-accessibility-mobility-index-feasibility-stage-report

[12] http://www.cityindicators.org/

[13] UN-DESA estimates 60% of projected 8.3 billion world population will be urban in 2030 and the rural population will be about 3.3 billion then. Source: http://esa.un.org/unup/CD-ROM/Urban-Rural-Population.htm

[14] Defined in Annex F.

of neglect. With participatory planning and monitoring, profitable services can be developed that create upward spirals of production, growth, employment and mobility. Village-based people including women can become productive entrepreneurs once reliable services to market towns are established. In richer countries, participatory planning can ensure that transport services, including para-transit systems, are appropriate to the actual demand and 'leave no one behind'.

The vital importance of rural transport services has been stressed by all stakeholders concerned with rural transport in developing countries, where transport services are often very inadequate. There is very little proactive planning of rural transport services. In some countries, motorcycle taxis are changing the nature of rural transport services. The parameters of appropriate transport services are defined by local circumstances. Rural access lacks a lead international organisation to champion, promote and monitor improved rural access.

Implications for the results framework. The proposed target involves increasing the proportion of rural populations that have appropriate access to markets, employment, education, health and community services using safe, convenient and affordable sustainable transport (target: 80% by 2030). The indicators include "proximity to appropriate infrastructure" and "the provision of appropriate transport services". Differences between counties (and country clusters) are very marked. In some developing countries there are many communities living more than four hour's walk from a road. People reaching the road then depend on transport services (passenger and freight) to go to their destination markets and services. In the richer European countries, most communities are connected to the road network and many people own motorised means of transport for their own mobility.

Implications for measurement and verification. There appear to be few, if any, reliable statistics relating to rural transport at national or international level. The lack of such data reinforces the need for some international 'champion' organisations to help countries develop effective planning and monitoring systems aimed at improving rural transport infrastructure and transport services. Developed in 2004-2006, the World Bank's Rural Access Index[15] (RAI) is based on the proportion of the rural population within 2 km (about 30 minutes' walk) of an all-season road. As an IDA indicator, it is mandatory for recipient countries and it will form part of one of the rural indicators. However, few countries have collected relevant data from demographic surveys or used the index for planning. The RAI can also be estimated using GIS and satellite images. The Asia Development Bank is developing project-related indicators (Star: Sustainable Transport Appraisal Rating, in preparation) and IFRTD has initial indicators for transport services for individual roads[16]. The IFRTD indicators include small and medium freight services. There are not yet any widely-accepted district or national-level indicators for rural transport services. These will need to be developed. In the meantime, proxy indicators for transport services can be based on travel time to access significant health services (for emergency treatment if possible) and travel time to access significant local markets/major shopping facilities. These proxy indicators are valuable but do not provide information on affordability or reliability.

4.3 Road Safety

Significance. Globally, the World Health Organisation (WHO) estimates that 1.24 million people died on roads in 2012[17.] Up to 50 million people are injured, many seriously. Death and injury

[15] Roberts P, Shyam K C and Rastogi C, 2006. Rural access index: a key development indicator. Transport Sector Board Transport Papers Tp-10. Washington DC. World Bank. 49p. Available at: http://www.worldbank.org/transport/transportresults/headline/rural-access/tp-10-final.pdf

[16] Starkey P, Njenga P, Kemtsop G, Willilo S, Opiyo R and Hine J, 2013. *Rural transport services indicators: Final Report, August 2013*. International Forum for Rural Transport and Development (IFRTD), London, UK for Crown Agents, Sutton, UK. 158p. Available at: http://www.ruraltransport.info/RTSi/resources/project_outputs.php

[17] WHO (2013,) "Global Status Report on Road Safety 2013 – Supporting a Decade of Action," page 4.

sustained in using roads is estimated to be the eighth leading cause of death globally and forecast to rise to fifth leading cause by 2030[18]. It is also a leading cause of injury and disability and premature death.[19] In low and middle-income countries road traffic deaths and injuries are estimated to cause economic losses as much as US$1,000 billion per year, or roughly between 2% and 5% of GDP, and strain health care systems[20]. Road crashes kill on the same scale as AIDS, tuberculosis and malaria combined.[21] Against growing traffic activity current road safety initiatives are expected to dramatically cut road deaths and injuries but even with these measures in place, more than 500,000 lives will continue to be lost each year.

The Global Plan prepared by the UN Road Safety Collaboration[22] underpinning the Decade of Action for Road Safety (2011-2020) proposed five pillars of activity to address the road safety challenge: (i) road safety management; (ii) safer roads and mobility; (iii) safer vehicles; (iv) safer road users and (v) improved post-crash response and hospital care. In recognition of the importance of road safety, the UN Secretary General Ban Ki-moon has recommended a post 2015 focus on "reducing the burden of road accidents."

Implications for the results framework. The key stakeholders are all members of the UN Road Safety Collaboration that prepared the Global Plan and are instrumental in implementation of the 'Decade of Action on Road Safety.' The goal aims to "reduce and stabilise the increasing trend in road fatalities" that is expected to reduce the forecast 2020 level of road deaths by 50%, from 1.9 million to fewer than one million a year (compared to 2010). The goal (and targets) are robust and widely accepted. Consequently, the approach taken by the consultants for this Results Framework project was to enlist the Collaboration's assistance (via WHO) in preparing the relevant part of the results framework. A detailed template was provided by the consulting team. The International Road Assessment Program (IRAP) staff prepared the process indicators differentiated by country income. At the present time, according to WHO and IRAP the achievement levels are realistic but there is some discussion within the Collaboration's members as to whether more ambitious achievement levels should be established.

Implications for measurement and verification. WHO prepare a status report on implementation of the 'Decade of Action on Road Safety.' Two have been prepared to date: 2010 (for 2007) and 2013 (for 2010). They are expected to be updated every two to three years. WHO apply a standardised methodology for systematically collecting data in each country, coordinated by a National Data Coordinator. This approach overcomes many of the previous problems with underreporting of road crash data and comparability between countries.

4.4 Air Pollution and Health

Significance. WHO has identified ambient (outdoor) air pollution as one of the top global risk factors for premature death, responsible for more than 3.2 million early deaths in 2010.[23] Worldwide, urban air pollution is estimated to cause about 9% of the lung cancer deaths, 5% of

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[18] Ibid. page vii.

[19] Institute for Health Metrics and Evaluation (2013), "The Global Burden of Disease: generating evidence, guiding policy." Seattle, WA, USA, page 12.

[20] World Bank (2013), "Global Road Safety Overview." refer [http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTOPGLOROASAF/0,,contentMDK:23282682~menuPK:2582239~pagePK:64168445~piPK:64168309~theSitePK:2582213,00.html] accessed 19 November.

[21] International Road Assessment Program (2013), 'Safe Roads for All."

[22] Currently there are 70 members including United Nations and associated agencies, governments, MDBs. Foundations, academic institutes, nongovernmental organisations and private companies.

[23] Lim,S et al. (2010). A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and Risk Factor Clusters in 21 Regions, 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." The Lancet 380, no. 9859 (December 15): pages 2224–60.

cardiopulmonary deaths and about 1% of respiratory infection deaths.[24] Transport-related air pollution is often expressed through particulate matter pollution, an environmental health problem that affects people worldwide, but middle-income countries disproportionately experience this burden. Air pollution is estimated to have economic losses equivalent to about 2% of GDP[25]. Health damage may contribute up to 70% of these economic losses[26].

Implications for the results framework. The proposed target in the draft results framework was expressed as 'reduce mortality and morbidity from transport-related air pollution. Target 50% by 2030 compared to 2010". The indicator was expressed as "apportioned mortality and morbidity due to 'chronic obstructive pulmonary disease'. It would be desirable to specify the reduction in mortality and morbidity as absolute numbers of avoided deaths and serious cases of chronic obstructive pulmonary disease. This type of wording would more clearly indicate the impact of improved air quality than other formulations on air quality (refer discussion on process indicators). Attribution to transport emissions depends on the extent to which it is possible to separate the effect of indoor versus outdoor air pollution on respiratory disease and transport's contribution versus other sectors.

Implications for measurement and verification. At the time of writing the Inception Report, it was felt that such a formulation of a proposed target may not be directly measurable. Advice of Carlos Dora (WHO) indicates that the proposed target formulation and other similar formulations would be measurable on a consistent basis in the very short term with adequate funding support. Using on ground measurements coupled with satellite imagery and standardised source apportionment methods, the World Health Organisation will soon be in a position to provide baseline measurements and monitor achievement for air pollution and exposed populations. In addition, through its existing channels WHO is understood to be able to obtain epidemiological information on air pollution related respiratory disease. The achievement level for the proposed target needs to be further verified by WHO. Baseline measurements, and differentiation by regions and incomes, cannot be established immediately. Air pollution from motor vehicles at regional and global level is modelled by the International Council on Clean Transportation (ICCT).

4.5 GHG Emissions

Significance. Global greenhouse gas (GHG) emissions[27] are growing and projected to cause an increase in average temperatures of 2 to 4°C by 2100 without strong intervention. The Intergovernmental Panel on Climate Change calls for a 50% cut in GHG emissions by 2050. Transport contributes 23% of global GHG emissions and accounts for 19% of energy use today[28]. Land transport represents 70% of transport related energy use and GHG emissions that are projected to rise by nearly 50% by 2030 and by more than 80% by 2050. Contributing to emissions are the global stock of one billion vehicles that are projected to double or even triple by 2050.[29]

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[24] WHO (2013), "Mortality and Burden of Disease of Outdoor Air Pollution." Refer web site [http://www.who.int/gho/phe/outdoor_air_pollution/burden_text/en/index.html] accessed 15 November.

[25] World Bank (2006), "Vulnerability to Air Pollution in Latin America and the Caribbean Region," Sustainable Development Working Paper No. 28, the World Bank Latin America and the Caribbean Region Environmentally and Socially Sustainable Development Department. Page vii.

[26] Ibid. Page vii.

[27] The key greenhouse gas emissions are carbon dioxide (CO2), methane and nitrous oxide. Black carbon is a major component of fine particulate matter and is formed by the incomplete combustion of fossil fuels, biofuels, and biomass. Transport is estimated to represent 19% of global black carbon emissions but by comparison in the United States of America, the percentage is 52.3%, reflecting the high degree of motorisation of the US compared to the balance of the world on average. US EPA (2013), "what is black carbon?" refer [http://epa.gov/blackcarbon/basic.html] accessed 21 November.

[28] International Energy Agency (2012), "Transport, Energy and CO2: Moving toward Sustainability." Page 29.

[29] Ibid. page 55.

UNEP's "Bridging the Emissions Gap[30]", citing analysis of the International Council on Clean Transportation, indicates there is potential and need to reduce emissions from the land transportation sector by about 1.6 GtCO2e.

Implications for the results framework. Two main types of target were considered: (i) an absolute GHG reduction; or (ii) a GHG intensity formulation. The draft results framework opted for the following absolute target "Realise least-cost transportation GHG mitigation potential consistent with a 2-degree warming scenario, achieving at least 1.6 to 2.5 GtCO2e reduction by 2030." This formulation presses the case for action and permits different countries and regions, and technologies and solutions, to contribute as needed. An alternative GHG intensity type formulation was considered. It might be formulated as follows: "Halve the GHG intensity from transport per unit of economic output" but was not considered as strong. Developed countries consume most of the global land transport-related energy. Low and middle income countries have many impediments to improving their vehicles and transport systems. But they can be overcome with time. The rate and level of achievement of a targeted improvement in energy and fuel efficiency by 2030 should vary by regional and country circumstance and associated differentiated responsibilities. But it is premature to attempt to specify what differentiation is required as it would tend to pre-judge the outcomes of future climate talks.

Implications for measurement and verification Technical modelling and monitoring by the International Energy Agency would be needed to: (i) set a baseline for 2010; and (ii) verify the achievement and ambition levels for 2030 and 2050 respectively (along with how they measures vary with assumptions on economic growth thus producing some uncertainty in specification of the achievement level).

5. Next Steps

Next steps are:

- Revise the draft proposal for a "SDG for transport, targets and results framework" based on comments received by the cut-off date of close of business on 19th December 2013.
- Participate in: (i) the UN General Assembly's Open Working Group (OWG) meeting on Sustainable Transport, 7 January 2014, New York, USA; (ii) consultation meetings on 8 January in New York and January 15 in Washington DC; and (iv) the conference 'Transforming Transportation'' organised by EMBARQ[31], on 16-17 January 2014, in Washington DC.
- Draft a two page document for the Steering Committee who are convening in the week starting January 20, following the OWG meeting and consultations and after consideration of feedback on Progress Report 1, on a suggested direction for refinement of the results framework.
- Prepare Progress Report 2 by 29th January 2014 setting out: (i) expected changes to the proposal for the SDG for transport, targets and results framework; (ii) how comments on progress report 1 were accommodated in the results framework and progress report 2, (iii) implications for level of resources needed to complete the work versus that budgeted; and (iv) associated changes to the work plan between February and June 2014.

[30] UNEP (2013). "The Emissions Gap Report 2013: A UNEP Synthesis Report": November. It explains to decision-makers and stakeholders the range of potential options available to close the emissions gap in 2020. Chapter 3.

[31] The WRI Centre for Sustainable Transport.

- A Final Report by 16th June 2014 setting out the outcomes of the programme: a developed and consensus-driven results framework (proposed goal, targets and indicators); an update on the status of transport in discussions on post-2015; an objective description of how the work carried out with DFID and GIZ funding contributed to this outcome; and next steps.

Annex A: Summary of Representative Other Proposals for a Transport SDG and Targets

Table A.1: Summary of the Other Proposals for Targets

TST Issues Brief on sustainable Transport	ODI Working Paper	SDG on Cities Policy Brief
No SDG proposed	**Proposed SDG:** Realise universal access to sustainable transport mobility.	**Proposed urban SDG:** Inclusive, Connected and Resilient Cities (relevant targets to transport set out below).
Proposed mass transit SDG target: double the number of urban citizens that have access to integrated mass transit systems by 2030. The following is also stated "a similar target could be developed for access to all weather roads for rural populations."	**Access target:** The number of the urban and rural poor for whom transport accessibility problems severely restrict access to employment and essential services is eradicated by 2030. Double the share of public transport users by 2030.	**Relevant targets:** Increase the share of access to public space and services (relevant indicator: % of citizens living within 300 m from public open areas (headline indicator); … from public transport stops; … from medical service units) Reduce* travel time (relevant indicator: average trip time per capita [disaggregated by income group, area of residence] Limit* the use of private vehicles (% of passenger-km travelled by motorised private transport or number of two-wheel motorized vehicles per capita
Proposed health and road safety SDG target: to reduce road fatalities by half by 2030.	**Road safety target:** The proportion of victims from traffic-related accidents is cut by half by 2030 compared to 2010.	**Spatial urban inequality**: maintain or increase the rate of green areas.
Proposed air quality and health SDG target: bring urban air pollution within WHO limits for an additional 1.5 billion urban residents by 2030	**GHG emissions:** Reduce greenhouse gas emissions from passenger and freight transport by 40% by 2030, compared to 1990 levels.	
Proposed energy and climate SDG target: double the efficiency of the global fleet, in 2030 for all new vehicles and by 2050 for the complete global fleet.		

Annex B: Key Stakeholder Reference Groups

The preparation of the proposal for a sustainable development goal for transport and draft results framework has involved extensive consultation with the leading groups that have a stake in the dimensions of transport covered by each target as shown in the table below.

Our team sought out these stakeholders and have sought to incorporate their viewpoints in a coherent case for a dedicated SDG for transport and the results framework. In the case of safety, air pollution and health, and GHG emissions, where the leading global stakeholders already had ongoing programs, we enlisted their assistance to actively shape the goal statement and results framework.

Target	**Stakeholder**
Access (Urban/Rural)	Yssoufou Cisse, Projects Manager, **African Association of Public Transport (UATP).** International federation affiliated to UITP.
	Ko Sakamoto, Transport Economist, Sustainable Infrastructure Division, Regional and Sustainable Development Department, **Asian Development Bank**
	Priyanthi Fernando, Executive Director, **Centre for Poverty Analysis, Sri Lanka.** Poverty-focussed think tank.
	Elisabeth Jones, Senior Infrastructure Adviser, **Department for International Development** (**DFID**), UK: bilateral development agency
	Carlos Felipe Pardo, Director Ejecutivo, **Despacio**, Colombia. Urban transport consultancy.
	Manfred Breithaupt, Senior Transport Adviser; Mathias Merforth, Transport and Mobility, **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ**), Germany: international cooperation agency
	Matthias Nuessgen, Strategy Manager, **European Institute for Sustainable Transport (EURIST).** Transport-related NGO
	John Hine, Transport Economist and Consultant, UK
	Jerome Pourbaix, Senior Transport Economist; Philip Turner, Sustainable Development Manager, **International Association of Public Transport (UITP)**
	Peter Njenga. Executive Director; Nite Tanzarn, Independent Consultant, **International Forum for Rural Transport and Development (IFRTD).** South-based network
	James Docherty, **Overseas Development Institute, UK.** Think tank and research organisation
	Dr Dieter Schwela, Senior Research Associate and Consultant on Urban Transport, **Stockholm Environment Institute**
	Jean-Noel Guillossou, Program Manager and Camilla Lema, Senior Transport Specialist, **Sub-Saharan Africa Transport Policy Program (SSATP):** partnership of 36 nations on transport in Africa, managed by World Bank
	Heather Allen, Programme Director Sustainable Transport, **Transport Research Laboratory (TRL).** Transport research and consultancy organisation
	Rob Jong, Head, Transport Unit, Division of Technology Industry and Economics (**United Nations Environment Program (UNEP):** UN Agency for environment.

Target	Stakeholder
	Jeff Turner, Urban Transport Consultant contracted by **UN-Habitat**
	Marc H. Juhel, Sector Manager, Transport Division; Simon Ellis, Senior Transport Economist, South Asia Region; Virginia Tanase, Sr Transport Specialist; Andreas Kopp, Lead Transport Economist, Energy, Transport and Water Department; Roger Gorham, Transport Economist, **World Bank:** International Financial Institution
	Todd Litman, Founder and Executive Director of the **Victoria Transport Policy Institute**, Canada
Road Safety	
	Saul Billingsley, Acting Director General, **FIA Foundation**, UK
	Rob McInerney, CEO, **International Road Assessment Programme (iRAP**), UK
	Alan Ross, road safety specialist/ **steering committee member**
	Tawia Addo-Ashong, Program Coordinator, Global Rad Safety Facility, Transport, Water, Information & Communication Technologies Department, The **World Bank** Group, Washington DC, USA
	Tami Toroyant and Margie Peden, **World Health Organisation**, Geneva, Switzerland
	Charles Melhuish, **Independent Consultant**, Philippines
Environment and Human Health	
	Sheila Watson, Director of Environment, **FIA Foundation,** UK and Executive Secretary to the Global Fuel Economy Initiative
	Bjarne Pedersen, Executive Director and Alvin Mejia, Manager of the Low Emissions Urban Development Program, **Clean Air Asia**
	Rob de Jong, **Partnership on Clean Fuels, UNEP**, Nairobi
	Cristiano Façanha, **International Council on Clean Transportation**, San Francisco, USA
	John Dulac, **International Energy Agency**, Paris, France
	Carlos Dora, Coordinator, Interventions for Healthy Environments (IHE) Department of Protection of the Human Environment (PHE), **World Health Organisation**, Geneva, Switzerland
	Michael Replogle, Managing Director for Policy and Founder, **Institute for Transportation and Development Policy,** New York, USA
	Lew Fulton, co-director NextSTEPS, **Institute of Transportation Studies at UC Davis (ITS-Davis)**, California, USA
General approach	Derk de Haan, **Agentschap NL / NL Agency**, Netherlands

Annex C: Appreciation of Current Terms

There are several key terms that need to be clarified to ensure a common understanding. The consultants' present understanding of key terms is as follows:

Goal. A goal is a desired positively worded result or achievement toward which effort should be directed. Some logical frameworks, including those used by DFID and the Asian Development Bank (ADB), use the word 'impact' instead of goal. A goal can be aspirational, usually has a long-term horizon and generally has several processes that can contribute towards it.

Target is a specific measurable outcome. DFID considers that targets should be Specific, Measurable, Achievable, Relevant and Time bound (ie, 'SMART'). DFID and ADB use the term outcome in their logical frameworks (the word 'purpose' was used in this context before). The 'Sustainable Energy 4 All initiative[1]' has used the term 'objective' for the three subcomponents of its goal and these are formulated in similar ways to its goal.

Indicator is a means of measuring progress towards the target. One target can have several different indicators that each measure different parameters that are directly related to the target. Indicators should be relevant, valid, reliable, sensitive, measurable, ethical, appropriate, transparent, interpretable, actionable and be based on cost-effective data[2]. Indicators can directly measure progress towards the target, or can be '**proxy indicators'** that measure something else that is closely related to achieving the target.

Baseline level is the value of the target as measured by the relevant indicators at the start of the timeline (the baseline condition).

Ambition level is the anticipated the value of the target as measured by the relevant indicators at the end of the timeline (e.g. 2030). The **achievement level** can be used to describe the ambition level, but it could mean the progress achieved to date towards that ambition. To avoid ambiguity, the term achievement level will be avoided.

Long term vision is the aspiration for a higher value of the target beyond the timeline (e.g. post 2030).

Universal access is an aspiration that all members of society irrespective of age, gender, ethnicity, income and physical abilities should have equality of access to the transport system itself as well as the opportunities such as jobs, education and health services that are facilitated by transport infrastructure and services. '**Universal design'** in the provision of transport infrastructure and services to ensure older persons, people with disabilities and people travelling with small children and vulnerable people are not excluded by physical barriers or dangers. '**Universal access'** can be used in a relatively 'narrow' sense, in relation to transport infrastructure and services that comply with good 'universal design'[3]. However, in the Goal 8c of the High Level Panel of Eminent Persons and in the SLoCaT-supported Sustainable Development Goal, **'universal access'** is used in a wider sense of equitable access by all people in society, irrespective of background and current status.

[1] The Sustainable Energy 4 All initiative, which has developed a detailed global tracking mechanism for the three objectives it is promoting: universal access to energy; greater energy efficiency; and increased use of renewables (http://www.sustainableenergyforall.org/tracking-progress) (accessed 26 October 2013).

[2] Gudmundsson H (2010). Criteria and Methods for Indicator Assessment and Selection. Background report for Chapter 4 in *COST Action 356 Scientific Report*. Brussels. European Cooperation in Science and Technology (COST). Available from: [http://cost356.inrets.fr/pub/reference/reports/C356_2.2_report_criteria_HG_220410.pdf].

[3] See 1993 United Nations Standard Rules on the Equalization of Opportunities with Persons with Disabilities and the AusAID (2013), Accessibility Design Guide: Universal design principles for Australia's aid program.

The World Bank[4] stated "the availability of transport services for the poor, women, persons with disability and the elderly . . . requires the removal of institutional and physical barriers and the enhancement of incentives to increase the accessibility of diverse individuals and groups to transport opportunities". '**Universal access for all**' may appear to be a tautology requiring further consideration, but it may have validity in reinforcing the inclusiveness of the goal.

Inclusive transport is a means to ensure universal access. It is a term widely used by ADB, DFID, GIZ and World Bank and other agencies, and a recent ADB document[5] stated that socially inclusive transport needs to: (i) "maximize **employment and income opportunities**, especially for the poor, excluded and vulnerable; (ii) provide **access to basic social services and facilities** (education, health, markets, leisure etc.); (iii) ensure **affordability** of transport services; (iv) ensure **inclusive physical design** of infrastructure and vehicles; (v) promote **community cohesion and liveability**"; and by (vi) **minimizing potential negative impacts** (safety, human trafficking, communicable diseases, health) of transport services on people, especially on the most vulnerable members of society; resettlement, exposure to noise, vibration and air pollution). Hence it is assumed 'inclusive access' that has the same meaning as 'universal access.'

Concern about sustainability has led to use of concepts such as **sustainable transport** and **green transport**. While there are a variety of definitions of **sustainable transport**[6] is assumed here to provide access to jobs and important community services while having the features of inclusive transport above and at the same time the transport services should demonstrate: (i) efficient use of resources during implementation and operation; (ii) resilience to climate risk; (iv) financial sustainability; and (iv) institutional sustainability. Green transport is assumed to be identical to sustainable transport since for transport to be considered sustainable it needs to incorporate green concerns[7]. The concepts are generally used in a relative rather than an absolute sense: the aim is for progressively greater sustainability within transport systems.

The term **clean transport** implies minimal vehicle exhaust (e.g. particulate matter) and greenhouse gas emissions. This term is also very often used in a relative sense, with 'cleaner transport' having fewer negative impacts on the environment than previous transport types (e.g. advanced Euro 5 diesel buses compared to pre-Euro buses). Non-motorised transport such as cycling and walking do not emit harmful emissions.

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[4] http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTSR/0,,contentMDK:20238928~menuPK:1328314~pagePK:210058~piPK:210062~theSitePK:463716,00.html (accessed 23 October 2013). http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTSR/0,,contentMDK:20238928~menuPK:1328314~pagePK:210058~piPK:210062~theSitePK:463716,00.html (accessed 23 October 2013).

[5] ADB (2012). Social Objectives paper (draft) prepared as part of the proposed Sustainable Transport Appraisal Framework.

[6] A very similar definition was put forward by Sustainable Transportation (CST) (2005): Defining Sustainable Transportation. Prepared for Transport Canada. Available online at: [http://cst.uwinnipeg.ca/documents/Defining_Sustainable_2005.pdf] that was adopted by Daniel Bongardt, Dominik Schmid, Cornie Huizenga and Todd Litman (2011), Sustainable Transport Evaluation: Developing Practical Tools for Evaluation in the Context of the CSD Process, Commission on Sustainable Development, United Nations Department of Economic And Social Affairs. [http://www.sutp.org/component/phocadownload/category/68-td7?download=137:td-ste-en]. This same reference recognises a standard definition of sustainable transport is needed.

[7] World Bank (2013), Thailand - Green Transport Policy Directions for Improved Freight and Passenger Travel Outcomes, with Lower Energy Use and Emissions. Report no. 80237. Pages 7-8.

Annex D: Country Cluster Classification Rationale and Indicative Structure

The UN System Task Team on the Post-2015 UN Development Agenda[8] recognised "…that is not necessary that each country fully obtains global targets in order for the world to obtain them." Further the same report recognises that "progress in human development has been uneven[9]" and that implementation of the post 2015 agenda "…depends critically on effective governance capacities at national, local and municipal levels…"[10]

The current Millennium Development Goals (MDGs) are not differentiated by geographic region. But progress towards their achievement is reported for eight regions: (i) Sub-Saharan Africa; (ii) Southern Asia; (iii) Southern Asia (excluding India); (iv) South Eastern Asia; (v) Eastern Asia (China only); (vi) Latin America and the Caribbean; (vii) Western Asia; and (viii) Northern Africa. Progress is also partially aggregated into developing regions with and without China[11].

Rationale for differentiation. Recognition of the wide variation in incomes, growth rates, technical capacity and data resources among nations and regions is important because is quite clear that different rates of progress in achievement of targets is inevitable. It is also appears that the formulation of a robust suite of globally-applicable targets and indicators may have to be tailored to the situation in the countries with the largest populations which are often the poorest.

Low income cities, countries and regions usually perform poorly with respect to the very 'local' targets of access, safety and air pollution. Urban and often rural traffic congestion is widespread in most major cities in low and middle income countries. Travel times to markets and jobs tend to be long. Vehicle fleets are often old, polluting, and fuel-inefficient. Fatalities by vehicle and other users of the road (pedestrians and non motorised transport), vendors etc. are usually high in cities since traffic management is poor and population densities high. On major rural roads (highways or other), fatalities are also high for several reasons including high speed, poor facilities, inadequate traffic management, the very wide mix of vehicle including NMT and animals using roadways, and low compliance with the road rules which themselves may need revision.

Consequently, it is likely that baseline measures of the quality of the access, safety and air pollution would be poor in low and many middle income countries (including their cities and rural areas). Wide differences amongst countries and regions are likely. By contrast, wealthier, developed nations would usually exhibit adequate urban and rural access for the majority of the population, have relatively good air on average and low road related fatality rates compared to low income countries.

Given that these three target areas affect local populations directly relatively ambitious improvement should be striven for over coming decades in low and middle income countries. With greenhouse gas emissions, the situation is clearly different. The developed nations are the main contributor to (global) greenhouse gas emissions, while most small poorer nations often produce small amounts of greenhouse gas per unit of transport output because of: (i) low levels of trip making; (ii) low use of private vehicles for trips that are made; and (iii) and the presence of dense, mixed land use in cities facilitating short trips that are amenable to travel by non-motorised means. Here, developed nations as a whole would perform poorly with respect to GHG emissions in the baseline and should be expected to achieve significant reductions in future.

[8] UN System Task Team on the Post-2015 UN Development Agenda (2012) op. cit. para 103, page 35.

[9] Ibid, para 30, page 11.

[10] Ibid, para 92, page 32.

[11] United Nations (2031), Millennium Development Goals Report 2013.

Current and potential classification systems. From the perspective of transport two means of classifying countries (and their cities and rural areas) and regions can be identified: (i) country and regional income classification systems currently used by the United Nations; World Bank Group; World Health Organisation (WHO); International Energy Agency; and (ii) a new possible alternative system.

Of the former, six existing related but different country and income or development status classification systems of relevance have been identified as shown in Table 1. It has been suggested that for the transport sector that perhaps classifying countries and geographic groups (i.e. regions) on the basis of the level of motorisation and rate of growth may be of value.

As shown in Table D.1, the World Bank and United Nations adopt the same definitions of country income although the classification may be expressed in terms of levels of development. Where income or development status is reported in existing classification systems they all use the World Bank/ UN system that are based on standardised surveys that have been in existence for several decades and are used for global reporting of a vast array of indicators annually.

Motorisation data[12] are reported in the 2013 UN-Habitat publication: "Planning and Design for Sustainable Urban Mobility." However, the data are incomplete for some countries. The data are however similar to statistics compiled by the World Health Organisation for 2010[13] based on in-country collection of vehicle registration data in 200 countries. IEA and ICCT use a similar data base with source data on vehicle registrations purchased from a private firm to which IEA adds assumed detail on vehicle technology and emissions characteristics.

However, use of motor vehicle registration data as measure of 'development level' are not likely as comparable between countries as data on national incomes using the World Bank/ UN system. National systems of registering and accounting for vehicles in many low income countries are paper-based and not up to date or complete. In middle income countries vehicle registration systems may be computerised but not necessarily reliable. A common problem is the treatment of older vehicles that are actually out of use but have not been deleted from the register of vehicles. This is the case in Lao PDR and Cambodia today. It was also the case in Thailand until 2007, when the system of accounting for vehicles was changed. For example, World Bank (2009)[14] found that a significant discrepancy was found in the databases of 'registered' vehicles which "…considerably overstated the number of vehicles actually being used on the road in Bangkok. This is because vehicles which were retired, transferred or scrapped were not fully deleted from the data base. For trucks and buses the discrepancy between registered vehicles and estimated in-use vehicles was high – registered fleets were estimated to be around 25% higher than the estimated in-use fleet. The discrepancy for cars and motorcycles which have shorter lives than buses and trucks was higher than for trucks and buses".

Further high motorisation meaning availability of vehicles is widespread with high rates of per capita ownership are strongly correlated with high and upper middle income levels. But in these countries growth rates per capita tend to be low. In contrast poorer nations tend to exhibit low levels to motorisation but high rates of growth in vehicle ownership per capita (often in excess of 10% per annum).

[12] Passenger cars and other vehicles expressed as the number per 1,000 population for 1999-2001 and 2006-2010 (i.e. imprecisely defined by time).

[13] WHO (2013). "Global Status Report on Road Safety 2013 – Supporting a Decade of Action."

[14] World Bank (2009), (draft) Developing Integrated Emissions Strategies for Existing Land Transport (DIESEL) Bangkok, Thailand, June.

Implications for a classification system for transport. Viewing transport alone would suggest that the World Bank/UN's classification system for income or development level[15] offers a readily useable classification system to differentiate achievement levels by target which has been argued to have merit. It would be superior to that which might be developed using motorisation data. Further, a classification system based on income offers consistency with other relevant data collection and indicator reporting (refer Table D.1).

Despite the six existing sources (refer Table D.1) largely using a common income classification for reporting purposes five different geographic grouping systems are used. It would be premature to suggest a suitable system for geographical grouping but country level data could be readily aggregated for reporting purposes. The concept of different geographical groupings classified by income level would offer the advantage that it would highlight observed differences in baseline data quality and technical capacity to collect data and monitor progress. Such a system should also assist future prioritisation of external efforts to provide technical assistance to support improvement. The indicative structure of a potentially useful classification system is shown in Table D.2 below.

Table D.1: Current Country Classification Systems

Agency	Example/ purpose	Country Development Status	Data availability	Country Groupings	Types of Relevant Data
United Nations	Millennium De-velopment Goals (MDGs)	Not used	An aggregate target by goal but no differ-entiation of targets. However, progress towards achievement is of targets is reported by country and country groups	Eight regions: (i) Sub-Saharan Africa; (ii) Southern Asia; (iii) Southern Asia (excluding India); (iv) South Eastern Asia; (v) Eastern Asia (China only); (vi) Latin America and the Caribbean; (vii) Western Asia; and (viii) Northern Africa and is also partially aggregated into developing regions with and without China.	Progress towards achievement of MGD goals

[15]It is highly unlikely anything but a simple system will work in the context of real-world measurement of targets and indicators so a classification based on three levels: low; middle and high income as used for World Development Indicators) would appear to have merit.

Agency	Example/ purpose	Country Development Status	Data availability	Country Groupings	Types of Relevant Data
United Nations	• UN-Habitat: Planning and Design for Sustainable Urban Mobility' of the United Nations Human Settlement Program (2013) • UN Department of Economics and Social Affairs: World Population Prospects (2011)	• Developed (or more developed) • Developing (less developed) • Least developed (Appears to correspond to 3 income levels below)	Country and country groups but no aggregate or differentiate targets	Six regions: (i) Africa (5 sub-groups); (ii) Asia (4 sub-groups); (iii) Europe (4 sub-groups); (iv) Latin America and the Caribbean (3 sub-groups); (v) North America: and (vi) Oceania	Population and economic data, access to water and sanitation, lengths of roads, railways, fuel prices, vehicle fleets (4 types) (incomplete), traffic-related fatalities
World Bank	World Development Indicators	World Bank's three income levels (using (using Gross National Income per capita): • Low-income: SD1,005 or less • Middle-income: SD1,006 to USD12,275 (3 sub-levels) • High-income: USD 12,276	No aggregated or differentiated goals or targets. Relevant data reported for country and country groups	Six regions: (i) East Asia and the Pacific; (ii) Europe and Central Asia; (iii) Latin America and the Caribbean; (iv) Middle East and North Africa; (v) South Asia; and (vi) Sub-Saharan Africa.	Same as above
World Bank	The Little Green Data Book 2013		Country and country groups	As above	Sub-set of above indicators, plus variety of environmental indicators including an estimate of exposure of each countries urban population exposed to air pollution (all sources) - 'urban population weighted average expressed

Agency	Example/ purpose	Country Development Status	Data availability	Country Groupings	Types of Relevant Data
					as µg per cubic metre' high income.
World Health Organisation	Global Status Report on Road Safety 2013 – Supporting a Decade of Action	WHO (2013) use low, middle income and high income categories same as World Bank	Country and country groups	Six regions: (i) East Asia and the Pacific; (ii) Europe and Central Asia; (iii) Latin America and the Caribbean; (iv) Middle East and North Africa; (v) South Asia; and (vi) Sub-Saharan Africa	Vehicle fleet data collected for 2007 and 2010 by country and grouping (2010 data different to that for UN which is presented incompletely for a period representative of 2006-2010. Contains official and adjusted fatality data for 5 types of road user. Provides country level data on state of traffic laws and their enforcement and post-crash care systems and information on progress by comparison with 2007
International Energy Agency (IEA)	World Energy Outlook	Not stated	Reported by country groups but understood to be based on country level analysis	Divided by OECD and non OECD members and groups: (i) <u>OECD members:</u> Americas with United States also separately reported; Europe; Asia Oceania, Japan; and (ii) <u>Non-OECD:</u>	Energy usage by fuel source and sector for power generation and for transport and building. GHG estimates similarly available for 1990, 2010 and projections to 2035.

Agency	Example/ purpose	Country Development Status	Data availability	Country Groupings	Types of Relevant Data
				Eastern Europe/ Eurasia; with Russia also separately reported; Asia with China and India separately re-ported; Middle East; Africa, Latin America with Brazil which is also separately re-ported	

Table D.2: Indicative Structure of a Country Classification System

Income/ classification	Region	Country	Baseline / 2030 achievement	Targets				
				Access		Environment		Safety
				Urban	Rural	Air Quality	GHG	
Low			Actual Baseline/ achievement level differentiated by region and target	Indicators same vertically	Indicators same vertically	Indicators same vertically	Indicators same vertically	Indicators same vertically
Middle			As above	As above	As above	As above	As above	As above
High			As above	As above	As above	As above	As above	As above
Prioritisation of external assistance for capacity building support based on need and significance								

Annex E: Validation of Proposed SDG

Work on validation is following two tracks; first, that of a dedicated SDG for transport and second, where transport may require to be integrated in a (limited) number of other goals. In support of this the consultants are monitoring the overall discussion on SDGs. The current discussion assumes that the case for transport will be successful and accordingly a separate goal is assumed in this document.

The Partnership on Sustainable Low Carbon Transport (SLoCaT) has been advocating the adoption of a Sustainable Development Goal (SDG) on sustainable transport: **'Universal Access to Clean, Safe and Affordable Transport for All'**. This formulation of a goal statement builds on wording in targets 7d. and 8c. of the UN Secretary General's High Level Panel of Eminent Persons on the Post-2015 Development Agenda.[1] Refer Box E.1. Transport targets are included under two of the proposed 12 goals (see Box E.1).

Box E.1: The High Level Panel of Eminent Persons on the Post-2015 Development Agenda: inclusion of transport in the suggested goal framework

Goal 7. Secure Sustainable Energy

- Target 7c. Double the global rate of improvement in energy efficiency in buildings, industry, agriculture, and transport
- Target 7d. Phase out harmful and inefficient fossil fuel subsidies that encourage wasteful consumption

Goal 8. Create Jobs, Sustainable Livelihoods, and Equitable Growth

8c. Strengthen productive capacity by providing universal access to financial services and infrastructure, such as transportation and ICT

Under Goal 6 "Improve agriculture systems and raise rural prosperity" target 6c. put forward by the Sustainable Development Solutions Network,[2] building on work of the High Level Panel, access in rural areas is recognised as important. It states:

Target 6c. Ensure universal access in rural areas to basic resources and infrastructure services (land, water, sanitation, modern energy, transport, mobile and broadband communication, agricultural inputs, and advisory services).

The work built on recent conceptual work by SLoCaT, as well as the UN-Technical Support Team,[3] and the efforts of others.[4] The UN-Technical Support Team did not propose an SDG for transport

[1] High Level Panel of Eminent Persons on the Post-2015 Development Agenda (2013), A New Global Partnership: Eradicate Poverty and Transform Economies Through Sustainable Development.

[2] Sustainable Development Solutions Network 2013, Action Agenda for Sustainable Development, Prepared for the UN Secretary General, June.

[3] UN-Technical Support Team co-chaired by UN-Department of Economic and Social Affairs and United Nations Development Program. UNEP led preparation of the Issues Brief on behalf of all UN Agencies as their input to the January meeting of the OWG which was prepared in consultation with a small range of outside groups including SLoCaT. This includes draft targets, indicators and ambition levels.

[4] High Level Panel of Eminent Persons on the post-2015 Development Agenda; the Sustainable Development Solutions Network (http://unsdsn.org/) putting forward the need for an urban SDG; the report on perspectives from UN Global Compact participants where transport infrastructure is seen as a necessary part of the enabling environment for poverty eradication and other higher goals; the Overseas Development Institute's web hub of information of what should follow the MDGs post 2015 (http://post2015.org/) and the 'My World' consultation; and IASS POLICY BRIEF 3/2013, Establishing a Sustainable Development Goal on Cities, prepared by the Institute for Advanced Sustainability

but their proposed targets covering improved public transport in urban areas, reductions in on-road fatalities, improvements in air quality and energy efficiency of transport, and reductions in associated greenhouse gas emissions are consistent with the SLoCaT formulation. Further, the UN-Technical Support Team state that "Transport is a key driver for poverty reduction and social inclusion" that appears to be consistent with proposed SloCaT draft SDG of 'universal transport based on the discussion below. ODI proposed the following SDG for transport "Realise universal access to sustainable transport mobility"[5] and it includes targets for rural and urban access, road safety and GHG emissions that are comparable to the formulations proposed by UN-Technical Support Team for safety and GHG emissions (refer Annex A). Comprehensive proposals for a transport SDG do not appear to have been made by others to date.

The Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany propose an urban SDG: "Inclusive, Connected and Resilient Cities" with targets addressing access and spatial urban inequality. The access target address "access to public space and services" with indicators including "% of citizens living within 300m from public transport stops; and from medical service units" (refer Annex A).

Universal access is an aspiration that all members of society irrespective of age, gender, ethnicity, income and physical abilities should have equality of access to the transport system itself as well as the opportunities such as jobs, education and health services that are facilitated by transport infrastructure and services. '**Universal design'** in the provision of transport infrastructure and services to ensure older persons, people with disabilities and people travelling with small children and vulnerable people are not excluded by physical barriers or dangers. '**Universal access'** can be used in a relatively 'narrow' sense, in relation to transport infrastructure and services that comply with good 'universal design'[6]. However, in the Goal 8c of the High Level Panel of Eminent Persons and in the SLoCaT-supported Sustainable Development Goal, **'universal access'** is used in a wider sense of equitable access by all people in society, irrespective of background and current status. The World Bank[7] stated "the availability of transport services for the poor, women, persons with disability and the elderly . . . requires the removal of institutional and physical barriers and the enhancement of incentives to increase the accessibility of diverse individuals and groups to transport opportunities". '**Universal access for all**' may appear to be a tautology requiring further consideration, but it may have validity in reinforcing the inclusiveness of the goal.

'Inclusive transport' is a means to ensure 'universal access'. The former is a term widely used by IFIs, bilateral development agencies, and many national governments and other organisations.[8] A recent ADB document[9] stated that socially inclusive transport needs to: (i) "maximize **employment and income opportunities**, especially for the poor, excluded and vulnerable; (ii)

Studies (IASS) e. V. Potsdam, Germany, December 2013. Annex A summarises proposed goals and relevant targets of the UN-Technical Support Team, Institute for Advanced Sustainability Studies and Overseas Development Institute.

[5] Overseas Development Institute 2013, The Post-2015 Delivery of Universal and Sustainable Access to Infrastructure Services. Working Paper. June.

[6] See 1993 United Nations Standard Rules on the Equalization of Opportunities with Persons with Disabilities and the AusAID (2013), Accessibility Design Guide: Universal design principles for Australia's aid program.

[7] http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTSR/0,,contentMDK:20238928~menuPK:1328314~pagePK:210058~piPK:210062~theSitePK:463716,00.html (accessed 23 October 2013). http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTSR/0,,contentMDK:20238928~menuPK:1328314~pagePK:210058~piPK:210062~theSitePK:463716,00.html (accessed 23 October 2013).

[8] They include major International Financial Institutions (IFIs) such as World Bank, Asian Development Bank, the UN family of agencies, and key bilateral development agencies such as DFID, GIZ and Australia's Aid Program under the Department of Foreign Affairs and Trade Formerly AusAID and many other NGOs as well as national governments.

[9] ADB (2012). Social Objectives paper (draft) prepared as part of the proposed Sustainable Transport Appraisal Framework.

provide **access to basic social services and facilities** (education, health, markets, leisure etc.); (iii) ensure **affordability** of transport services; (iv) ensure **inclusive physical design** of infrastructure and vehicles; (v) promote **community cohesion and liveability"**; and by (vi) **minimising potential negative impacts** (safety, human trafficking, communicable diseases, health) of transport services on people, especially on the most vulnerable members of society; resettlement, exposure to noise, vibration and air pollution). Hence it is assumed 'inclusive access' that has the same meaning as 'universal access' in the equivalent context.

Transport and physical fitness. In discussions with the World Health Organisation, the link between physical fitness, human health and transport was brought up. Provision of transport that was 'healthy' was considered a key driver of community well-being. Facilitation of walking, other non motorised modes and adequate public transport were considered to be important. Provision of green space in urban areas which extends beyond transport was considered important for improved liveability. It is recognised that in many low income countries, large numbers of people must walk long distances to access the basic necessities of life in hostile environments with poor air and traffic conflicts. Further, physical fitness and health are strongly related to the health sector, and possibly the urban sector, as much as to transport. It was considered transport can best make a contribution to improved opportunities for physical fitness by cutting emissions, contributing to improved city forms with adequate green space, and providing sustainable transport modes to facilitate more physical activity in a clean and pleasant environment. It was concluded that the proposed goal statement should include the word 'healthy'.

Recognising transport's role in economic development. Duration the consultation process, World Bank's Andreas Kopp, pointed out transport's enabling role for economic growth and the likely strong positive impact on the achievement of MDGs (and hence SDGs in future). He argues that most of the progress in achieving the MDGs has been not the consequence of direct intervention but the indirect consequence of economic growth. Formulation of physical targets for access may diminish transport's potential role in enabling economic growth through access to markets and increasing productivity of individuals, firms and industry. Physical targets that focus on end use by transport users may communicate to a large audience and achieve political mobilisation. But associated infrastructure and services may be underutilised by the poor because of congestion or because they have limited access to the formal job market. Desirably the results framework, should be formulated in a way that captures the potential developmental aspect of transport.

Within the scope of the current urban and access targets, an entry point to adequately treating the potential economic contribution of transport is to recognise the how improvements in access benefits individuals, businesses and the economy. The proposed SDG wording says "…for All."

For the purposes of this progress report only, to illustrate these relationships, the following diagram indicates how the direct impacts of transport may translate into economic benefits for society. (This diagram does not refer to important aspects such as equity for vulnerable users and the poor etc., or the mitigation of negative impacts but clearly these are important).

Figure E.1: From Direct Transport Impacts to Economic Benefits (draft concept)

Logical Flow	Hierarchy of Impacts of Transport from Direct Impact to Economic Benefits	Sample indicators	Quantified Benefits (as in economic evaluation)
	Direct Impact ----------	----------→	**Transport User Benefits**
⇩	• Travel times (pax/ freight) • Vehicle operating costs • Reliability • Quality	• Travel times • Vehicle operating cost • Revenues of transport operators	• Δ consumer surplus + Δ producer surplus Or • Δ Willingness to Pay + Δ resource costs of transport provision
	Enhanced accessibility --------	----------→	**Benefits of accessibility improvement on land use** (after Neuberger[10])
⇩	• Health centres • Schools, universities • Markets • Residential areas • Employment centres	• % of persons with access to Y by income group • Theoretical measures of accessibility	• As above
	Development Benefits	----------→	**Broader measures of economic benefit**
⇩	• Efficient services • Productivity gains • Enhanced employment catchment • Agglomeration economies leading to productivity gains	• Business input costs • Business margins • Worker output	• Part captured by transport user benefit quantification and part by Wider Economic Impact Concepts[11]
	Economic Benefits	----------→	**Broader measures of economic benefit**
⇩	• Growth in jobs • Growth in GDP • Increased investment	• Growth in jobs • Growth in GDP	• As above
	Lagged Effects	----------→	**Broader measures of economic benefit**
⇩	• New investment in more accessible areas • Move to more productive jobs and locations	• Growth in jobs • Growth in GDP	• As above

Source: Team

[10] H. Neuberger (1971), "User Benefit in the Evaluation of Transport, Journal of Transport Economics and Policy", Vol. 5, Pages 63-66.

[11] Department for Transport (2008). "The Additionality of Wider Economic Benefits in Transport Appraisal". 1 April. Accessed at [http://www.dft.gov.uk/publications/the-additionality-of-wider-economic-benefits-in-transport-appraisal/].

Annex F: Summaries of Technical Aspects of Proposed Targets

F.1 Urban Access

Significance. With over half the world's population living in cities and towns, good urban access is vital for the economic growth of efficient cities. Good urban access enables people to reach jobs, social services and opportunities using sustainable transport that requires a reasonable proportion of their time and financial resources. Sustainable transport is efficient public transport or non-motorised transport (mainly walking and cycling) with appropriate infrastructure provision. In cities with badly congested transport, people waste much time in travelling that is neither productive nor enhancing family lives. Economic growth is constrained as people and economic opportunities are effectively separated by distance and time. Better integrated transport in cities will reduce journey times and decrease the economic fragmentation of cities, generating valuable time savings promoting growth and more fulfilled lives.

To improve the situation in all urban settlements, it will be necessary to combine integrated transport with spatial planning, inter-connected public transit and safe pedestrian infrastructure and cycle-ways. The proposed target is to increase the proportion of urban people that have access to employment, education, health and community services using safe, convenient and affordable sustainable transport (target for 2030: 80%). This wording encapsulates the function of good transport in providing access to employment and services as well as incorporating safety convenience and affordability. The current wording does not mention timeliness but this may be considered as being covered by convenience (and travel time is one of the indicators).

Many stakeholders contacted considered that 'modal shift' to sustainable transport was a key target. However, current levels of sustainable transport vary greatly between cities (eg, Moscow with 80% public transport use and some US towns with little public transport). Private car use is predicted to increase in many developing cities. Achievable targets will be set in relation to existing patterns and by country clusters. Travel time and travel cost are key indicators, but both may need to be interpreted in relation to other factors such as housing costs that determine how far people travel. Indicators[1] developed for UN-Habitat stressed the importance of measuring affordability for the lowest income quintile. The Eminent Persons Group[2] stressed the importance of 'leaving no one behind', so this quintile needs to be monitored to help prevent this.

Current improvement programmes. Major improvements in urban transport come from effective spatial planning (location of businesses, residential areas, services and public spaces), integrated transport planning, public transit systems of various capacities and the provision of quality pedestrian and bicycle facilities[3]. Most urban programmes aim to reduce private car use or limit growth. Car use can be discouraged by high fuel prices, parking and congestion charges. IASS Potsdam[4] suggested an SDG target could be 'limiting the use of private vehicles'. This is a very sensitive issue in many countries. It is more acceptable to increase the proportion of people travelling on sustainable transport (which has the same effect). In large cities, high capacity (and high capital cost) public transport includes suburban rail, metros, light rail and trams. Bus-rapid transit (BRT) systems have dedicated infrastructure but are much cheaper. These are increasingly

[1] Turner J and Adzigbey M, 2012. Sustainable urban development priorities: development of an urban poor accessibility assessment tool. Final Report for UN-HABITAT, Nairobi, Kenya. 16p.

[2] UN, 2013. A new global partnership: eradicate poverty and transform economies through sustainable development. Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda. UN, New York. 81p.

[3] UN Habitat 2013. Planning and design for sustainable urban mobility: Global Report on Human Settlements. UN-Habitat, Nairobi, Kenya 348p. http://www.unhabitat.org/content.asp?catid=555&typeid=19&cid=12336

[4] Adriana Lagos A, Mariño J and Rivera M 2013. Establishing a sustainable development goal on cities. IASS Policy Brief 3/2013 (draft). Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany. 10p.

popular and were cited in the UN brief to the OWG[5]. Dedicated bus lanes, with conventional bus and minibus systems are much cheaper but have lower capacity. All public transit systems should be integrated in terms of pedestrian and bicycle facilities, including non-obstructed pavements, cycle ways and cycle parking. Integrated ticketing benefits operators and travellers.

Measurement and verification. Most stakeholders agree that urban transport requires indicators relating to several dimensions[6]. The World Bank has developed a provisional six-point star assessment[7] encapsulating travel time, safety, emissions, affordability, mode share and public transport supply (route length or fleet). This is considered too complex for measuring the current targets but subsequent harmonisation of some statistics may be possible. Most stakeholders agree that indicator data for urban access can be quite easily and inexpensively be collected by stratified sample surveys. Urban and suburban inhabitants (disaggregated for economic class, gender, school-children and disadvantage) can provide the required information on their modes of transport, fares and travel time. Annual surveys can be arranged by the urban authorities with information collated by national transport authorities. Some cities have comprehensive databases that include transport statistics. The Global City Indicators Program[8] database has some transport statistics but they do not match well the urban access indicators and only a small proportion of the world's cities are included. Several stakeholders, including the World Bank, felt that new simple transport databases could be produced by urban authorities (with subsequent harmonisation with other databases to be a future possibility). While using headline indicators from the poorest quintile would have merit (emphasising 'leave no one behind') it reduces the simplicity of the target for global use. In the draft SDG results framework it is proposed that to understand pro-poor progress, data from lowest quintile should be monitored and published.

Implications for the results framework. Urban access data will come from household surveys. Within the overall framework, city-specific baselines and realistic targets will have to be set within countries, depending on local circumstances. Baseline levels will be the 2013 situation (or best available data prior to that). It is proposed that cities and towns develop (or improve) integrated transport systems, with affordable public transport, cycle-ways and pedestrian facilities. This will require appropriate land-use and transport planning to ensure efficient networks, appropriate investments and safe transport. This will require building institutional capacity. One or more international 'champion' organisations should help to harmonise data-collection systems, facilitate capacity building and encourage appropriate investments.

F.2 Rural Access

Significance. The High Level panel noted that transport was crucial for job creation, sustainable livelihoods and economic growth. Rural people are generally further from services, employment and markets. In 2030, 3 billion people[9] will still be living in rural areas. There is a need increase or improve all-season road networks to provide access to more settlements. Many rural people depend entirely on passenger and freight transport services to reach markets, employment and medical facilities. Transport services are often infrequent and expensive, with a downward spiral

[5] OWG issues brief on sustainable transport. Document prepared by UNEP on behalf of United Nations for the Open Working Group. Version dated 11 Nov 2013

[6] Bongardt D, Schmid D, Huizenga C and Litman T 2011. Sustainable Transport Evaluation. Sustainable Urban Transport Technical Document 7, GIZ, Eschborn, Germany. 42p. http://www.sutp.org/en-dn-tp
Litman, T, 2011. Developing indicators for comprehensive and sustainable transport planning. Victoria Transport Policy Institute, Canada. 14p. http://www.vtpi.org/sus_tran_ind.pdf

[7] World Bank Transport Anchor, 2010. Urban accessibility / mobility index. Feasibility Stage Report. Report 69933. World Bank, Washington DC, USA. 29p. Available from: http://documents.worldbank.org/curated/en /2010/06/16377387/urban-accessibility-mobility-index-feasibility-stage-report

[8] http://www.cityindicators.org/

[9] UN-DESA estimates 60% of projected 8.3 billion world population will be urban in 2030 and the rural population will be about 3.3 billion then. Source: http://esa.un.org/unup/CD-ROM/Urban-Rural-Population.htm

of neglect. With participatory planning and monitoring, profitable services can be developed that create upward spirals of production, growth, employment and mobility. Village-based women can become productive entrepreneurs once reliable services to market towns are established. In richer countries, participatory planning can ensure that transport services, including para-transit systems, are appropriate to the actual demand and 'leave no one behind'.

The proposed target involves increasing the proportion of rural populations that have appropriate access to markets, employment, education, health and community services using safe, convenient and affordable sustainable transport (target: 80% by 2030). The indicators include proximity to appropriate infrastructure and the provision of appropriate transport services. Differences between counties (and country clusters) are very marked. In some developing countries there are many communities living more than four hour's walk from a road. People reaching the road then depend on transport services (passenger and freight) to go to their destination markets and services. In the richer European countries, most communities are connected to the road network and many people own motorised means of transport for their own mobility.

There appear to be few, if any, reliable statistics relating to rural transport at national or international level. The lack of such data reinforces the need for some international 'champion' organisations to help countries develop effective planning and monitoring systems aimed at improving rural transport infrastructure and transport services.

Developed in 2004-2006, the World Bank's Rural Access Index[10] (RAI) is based on the proportion of the rural population within 2 km (about 30 minutes' walk) of an all-season road. As an IDA indicator, it is mandatory for recipient countries and it will form part of one of the rural indicators. However, few countries have collected relevant data from demographic surveys or used the index for planning. The RAI can also be estimated using GIS and satellite images. There has been some confusion of terminology. The original 'all-season' phrase was used to imply roads that are passable all months of the year, although some interruptions during inclement weather (eg, heavy rain) are allowed. In several subsequent documents the term 'all-season' was replaced by 'all-weather' and this definition is used on the current World Bank website[11]. 'All-weather' roads are much more costly than 'all-season' roads. It is therefore suggested the terminology used is 'year-round access' which provides developing countries with more affordable investment options.

The vital importance of rural transport services has been stressed by all stakeholders concerned with rural transport in developing countries, where transport services are often woefully inadequate. There is very little proactive planning of rural transport services. In some countries, motorcycle taxis are changing the nature of rural transport services. These services may be called by mobile phone and may be willing to carry goods and people to villages away from the roads. However, motorcycle taxis create issues relating to regulation and safety and in many countries they are not permitted. The parameters of appropriate transport services will be locally defined.

Several stakeholders have noted the great importance in some countries of water-based rural access. This current initiative is concentrating on road transport that is more important worldwide. However, it should be made clear in the preamble to the results framework that comparable rural access targets and indicators should be developed for water-based transport.

Current improvement programmes. Current rural access programmes focus on maintenance of rural roads, rehabilitation and some new construction. Although roads are valuable assets, many countries have not been adequately maintaining rural roads. While the development of road

[10] Roberts P, Shyam K C and Rastogi C, 2006. Rural access index: a key development indicator. Transport Sector Board Transport Papers Tp-10. Washington DC. World Bank. 49p. Available at: http://www.worldbank.org/transport/transportresults/headline/rural-access/tp-10-final.pdf

[11] http://www.worldbank.org/transport/transportresults/headline/rural-access.html

funds has improved national and regional roads, responsibility for many rural roads has been assigned to decentralised local authorities with insufficient funding. This is compounded by aspirations for expensive (and high-carbon) sealed roads. Where funds are limited, properly shaped, drained and maintained earth roads can provide year-round access. Cobble-stone sections can provide rural employment and long-lasting rural roads[12]. There are construction techniques and surface seals that are cheaper and more ecologically appropriate than bitumen for low-volume, rural roads[13]. The Government of India with World Bank support has been piloting the use of the Rural Access Index (RAI) in road construction and maintenance contracts, with disbursements linked to improvements in the RAI. In general, the technologies for maintaining rural roads are straightforward, but it requires political commitment to ensure funding.

National authorities responsible for transport services tend to be under-resourced and concentrate on urban and inter-urban transport and administrative responsibilities relating to licensing. There are few pro-active programmes to improve rural transport services, and so these will be encouraged and facilitated with capacity building as part of the enabling measures.

Measurement and verification. The Asia Development Bank is developing project-related indicators (Star: Sustainable Transport Appraisal Rating, in preparation) and IFRTD has initial transport services indicators for individual roads[14]. The IFRTD indicators include small and medium freight services. There are not yet any widely-accepted district- or national-level indicators for rural transport services. These will need to be developed. In the meantime, proxy indicators for transport services can be based on travel time to access significant health services [for emergency treatment if possible] and travel time to access significant local markets/major shopping facilities. These proxy indicators are valuable but do not provide information on affordability or reliability.

Implications for the results framework. It has been clear from stakeholder discussions that rural access lacks a lead international organisation to champion, promote and monitor improved rural access. The World Bank, ADB and IFRTD have been working on rural access issues, as have FAO and IFAD, but none has become a clear champion, providing international leadership to promote rural access in the SDGs. It will be necessary to identify one or more 'rural access' champion organisation willing and able to facilitate the development and deployment of national and international databases, and associated data gathering, relating to rural access parameters. The champion organisation should help to build capacity in rural transport planning and participatory processes within national authorities responsible for planning and regulating rural transport services. It is proposed such capacity enhancement will involve at least 100 countries by 2025. National governments will also have to commit resources for rural road maintenance, rural road construction and to facilitating efficient and effective rural transport services.

F.3 Road Safety

Significance. Globally, the World Health Organisation (WHO) estimates that 1.24 million people died on roads in 2012[15]. Up to 50 million people are injured, many seriously. Death and injury sustained in using roads is estimated to be the eighth leading cause of death globally and forecast to rise to fifth leading cause by 2030[16]. It is also a leading cause of injury and disability and

[12] Starkey P, Tumbahangfe A and Sharm S 2013. *Building roads and improving livelihoods in Nepal*: External review of the District Roads Support Programme (DRSP). Swiss Agency for Development and Cooperation (SDC), Kathmandu, Nepal. 82p. http://drsp.squarespace.com/storage/DRSP-Review-FinalReport.pdf

[13] http://r4d.dfid.gov.uk/pdf/outputs/AfCap/AFCAP-GEN-099-Rural-Road-Surfacing-and-Pavements-Guideline.pdf http://siteresources.worldbank.org/EXTRURALT/Resources/515369-1264605855368/eco_roads.pdf

[14] Starkey P, Njenga P, Kemtsop G, Willilo S, Opiyo R and Hine J, 2013. *Rural transport services indicators: Final Report, August 2013*. International Forum for Rural Transport and Development (IFRTD), London, UK for Crown Agents, Sutton, UK. 158p. Available at: http://www.ruraltransport.info/RTSi/resources/project_outputs.php

[15] WHO (2013,) "Global Status Report on Road Safety 2013 – Supporting a Decade of Action," page 4.

[16] Ibid. page vii.

premature death.[17] In low and middle-income countries road traffic deaths and injuries are estimated to cause economic losses as much as US$1,000 billion per year, or roughly between 2% and 5% of GDP, and strain health care systems[18]. Road crashes kill on the same scale as AIDS, tuberculosis and malaria combined.[19]

Current improvement programs. The Global Plan prepared by the UN Road Safety Collaboration[20] underpinning the Decade of Action for Road Safety (2011-2020) proposed five pillars of activity to address the road safety challenge: (i) road safety management – strengthen institutional capacity to further national road safety efforts; (ii) safer roads and mobility – designing roads to be safer, slower and to cater for all road users including pedestrians and other non motorised users; (iii) safer vehicles – by encouraging harmonisation of relevant global standards and mechanisms to accelerate the uptake of new technologies which impact on safety; (iv) safer road users – developing comprehensive programmes to improve road user behaviour; and (v) improved post-crash response and hospital care.

Against growing traffic activity current road safety initiatives are expected to dramatically cut road deaths and injuries but even with these measures in place, more than 500,000 lives will continue to be lost each year. In recognition of the importance of road safety, the UN Secretary General Ban Ki-moon has recommended a post 2015 focus on "reducing the burden of road accidents."

Funding to support the decade of action has depended on variety of individual sources including: the road safety fund established by the FIA Foundation, the Global Road Safety Facility established by the World Bank, programs of the MDB's, and Bloomberg Philanthropies which at USD125million overshadows the other sources. More secure funding is needed to implement road safety actions at the needed level on a sustained basis to 2030.

Measurement and verification. WHO prepare a status report on implementation of the 'Decade of Action on Road Safety.' Two have been prepared to date: 2010 (for 2007) and 2013 (for 2010). They are expected to be updated every two to three years. WHO apply a standardised methodology for systematically collecting data in each country, coordinated by a National Data Coordinator. This approach overcomes many of the problems with underreporting of road crash data and comparability between countries.

Implications for the results framework. The key stakeholders are all members of the UN Road Safety Collaboration that prepared the Global Plan and are instrumental in implementation of the 'Decade of Action on Road Safety.' The goal aims to "reduce and stabilise the increasing trend in road fatalities" that is expected to reduce the forecast 2020 level of road deaths by 50%, from 1.9 million to fewer than one million a year (compared to 2010). The goal (and targets) are robust and widely accepted. Consequently, the approach taken by the consultants for this Results Framework project was to enlist the Collaboration's assistance (via WHO) in preparing the relevant part of the results framework. A detailed template was provided by the consulting team. The International Road Assessment Program (IRAP) staff prepared the process indicators differentiated by country income. At the present time, according to WHO and IRAP the achievement levels are realistic but

[17] Institute for Health Metrics and Evaluation (2013), "The Global Burden of Disease: generating evidence, guiding policy." Seattle, WA, USA, page 12.

[18] World Bank (2013), "Global Road Safety Overview." refer [http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTOPGLOROASAF/0,,contentMDK:23282682~menuPK:2582239~pagePK:64168445~piPK:64168309~theSitePK:2582213,00.html] accessed 19 November.

[19] International Road Assessment Program (2013), 'Safe Roads for All."

[20] Currently there are 70 members including United Nations and associated agencies, governments, MDBs. Foundations, academic institutes, nongovernmental organisations and private companies.

there is some discussion within the Collaboration's members as to whether more ambitious achievement levels should be established.

F.4 Air Pollution and Health

Significance. WHO has identified ambient (outdoor) air pollution as one of the top global risk factors for premature death, responsible for more than 3.2 million early deaths in 2010.[21] Worldwide, urban air pollution is estimated to cause about 9% of the lung cancer deaths, 5% of cardiopulmonary deaths and about 1% of respiratory infection deaths.[22] Transport-related air pollution is often expressed through particulate matter pollution, an environmental health problem that affects people worldwide, but middle-income countries disproportionately experience this burden.

Air pollution is estimated to have economic losses equivalent to about 2% of GDP[23]. Health damage may contribute up to 70% of these economic losses[24]. Other adverse impacts included reduced visibility, material damage, crop losses and soiling. Because the extent and severity of health damage caused by air pollution depends on the extent of human exposure, air pollution is primarily an urban issue.

However, unpaved roads in rural and urban areas generate significant quantities of fine particulate matter. Populations with long term and repeated exposure to road dust from unpaved roads in rural areas are expected to be at significant risk although this risk has not been routinely quantified to date. A recent estimate is that 1.5 to 2.0 million people, mainly women and children, die prematurely each year from exposure to road dust in low-income countries.[25] Road dust cannot be treated comprehensively within the results framework. However, appropriate specification of proposed implementation and enabling measures could refer to the sealing of roads to minimise road dust (and hence also providing all weather access but there is a cost implication), and road location to minimise impacts of dust and vehicles on rural and other communities.

Current technical solutions. A recent report released by the International Council for Clean Transportation (ICCT) shows that technologies are available to decouple particulate matter emissions and other pollutants from vehicle activity[26]. Using of existing technologies such as selective catalytic reduction can produce a 75% reduction in fine particulate emissions while diesel particulate filters can reduce particulate matter by an additional 90%. Ultra low sulphur diesel fuel is needed to support use of the technologies as well as capacity in compliance testing[27]. The use of these emission reduction measures is embodied in the Euro series (or equivalent) emission standards for light duty gasoline and heavy duty diesel vehicles[28]. The study found that

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[21] Lim,S et al. (2010). A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and Risk Factor Clusters in 21 Regions, 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." The Lancet 380, no. 9859 (December 15): pages 2224–60.

[22] WHO (2013), "Mortality and Burden of Disease of Outdoor Air Pollution." Refer web site [http://www.who.int/gho/phe/outdoor_air_pollution/burden_text/en/index.html] accessed 15 November.

[23] World Bank (2006), "Vulnerability to Air Pollution in Latin America and the Caribbean Region," Sustainable Development Working Paper No. 28, the World Bank Latin America and the Caribbean Region Environmentally and Socially Sustainable Development Department. Page vii.

[24] Ibid. Page vii.

[25] T. Greening (2011), "Quantifying the Impacts of Vehicle Generated Dust". Prepared for World Bank with support of UK's Department for International Development.

[26] ICCT (2013), "The Impact of Stringent Fuel and Vehicle Standards on Premature Mortality and Emissions." ICCT's Global Transportation Health and Climate Roadmap Series. October.

[27] Ibid. Page 3, Figure S-3.

[28] Refer [http://europa.eu/legislation_summaries/environment/air_pollution/l28186_en.htm] accessed 16 December 2013.

advancing to Euro 6 or equivalent standards by 2030 in China, India, Latin America, non-EU Europe, Russia, and the Asia-Pacific and Euro 5 in the Middle East and Africa much lower limits on vehicle emissions would reduce premature deaths by more than 210,000 in 2030 (equivalent to a 75%) and would save a cumulative 25 million years of life by 2030.

Other solutions are also needed. Several stakeholders[29] considered that while introduction of emission controls is feasible the above cited study may be too optimistic in regards to the actual rate of retirement of the large stock of existing pre Euro and early Euro series vehicles particularly in low income countries. Further, measures to increase the share of trips by public transport and other sustainable development modes and reduce unnecessary travel by personal vehicles and goods transport were considered to be important (addressed under target of GHG emissions). Recognition of the relationship of transport to physical fitness, human health and community well-being was also emphasised as discussed in Section 3.

Implications for the results framework. The proposed target in the draft results framework was expressed as 'reduce mortality and morbidity from transport-related air pollution. Target 50% by 2030 compared to 2010". The indicator was expressed as "apportioned mortality and morbidity due to 'chronic obstructive pulmonary disease'. It would be desirable to specify the reduction in mortality and morbidity as absolute numbers of avoided deaths and serious cases of chronic obstructive pulmonary disease. This type of wording would more clearly indicate the impact of improved air quality than other formulations on air quality (refer discussion on process indicators). Attribution to transport emissions depends on the extent to which it is possible to separate the effect of indoor versus outdoor air pollution on respiratory disease and transport's contribution versus other sectors. The credibility of the current formulation of the target and depends on whether reasonable and consistent estimates can be made of the extent of chronic obstructive pulmonary disease attributable to transport.

An alternative approach choice for the target formulation[30] is: "to reduce transport related air pollution to levels that are safe for public health (recommended in the WHO air quality guidelines)"

At present, the draft results framework proposes something similar for a process indicator: "all cities with more than 1M persons have air quality meeting WHO standards by 2030 (for PM2.5) – a proxy for air quality in all cities". This formulation may be easier to measure as it is restricted to larger cities. In the end the choice depends on what is feasible and here further detailed advice from WHO is required.

It is noted that the UN-Technical Support Team (Annex A) propose a target of: "bring urban air pollution within WHO limits for an additional 1.5 billion urban residents by 2030." This formulation communicates well. At the time of writing the Inception Report, it was felt that this proposed target may not be measurable. But given the recent advice of WHO on measurement and verification (refer below), this indicator may well be reliably able to be quantified in the near future. The most appropriate target or process indicator is one that: (i) communicates impact well; and (ii) whether it is actually measurable on a consistent basis.

Measurement and verification. Advice of Carlos Dora (WHO) indicates that all the above formulations are measurable in the very short term with adequate funding support. Using on ground measurements coupled with satellite imagery and standardised source apportionment methods, the World Health Organisation will soon be in a position to provide baseline measurements and monitor achievement for air pollution and exposed populations. In addition,

[29] For example, SLoCaT and World Health Organisation's Department of Protection of the Human Environment. Similar views were expressed by ITDP in relation to technology's ability to reduce GHG emissions.

[30] As suggested by Carlos Dora (WHO) on 16 December 2013.

through its existing channels it can obtain epidemiological information on air pollution related respiratory disease. Appropriate funding support would be needed. Air pollution from motor vehicles at regional and global level is modelled by the International Energy Agency (IEA) and the International Council on Clean Transportation (ICCT) using analytical models that include historical and projected data on land transport vehicle fleets, and their fuel, technology and emission characteristics, plus rail, aviation and shipping.

Setting of baselines, achievement levels and regional/ income differentiation. The achievement level for the proposed target needs to be further verified by WHO. Baseline measurements, and differentiation by regions and incomes, cannot be established immediately. This work depends on scaling up WHO's proposed system of measurement, source apportionment and epidemiological information.

F.5 GHG Emissions

Significance. Global greenhouse gas (GHG) emissions[31] are growing and projected to cause an increase in average temperatures of 2 to 4°C by 2100 without strong intervention. The Intergovernmental Panel on Climate Change calls for a 50% cut in GHG emissions by 2050. Transport contributes 23% of global GHG emissions and accounts for 19% of energy use today[32]. Land transport represents 70% of transport related energy use and GHG emissions that are projected to rise by nearly 50% by 2030 and by more than 80% by 2050. Contributing to emissions are the global stock of one billion vehicles that are projected to double or even triple by 2050.[33]

UNEP's "Bridging the Emissions Gap[34]", citing analysis of the International Council on Clean Transportation, indicates there is potential and need to reduce emissions from the transportation sector by about 1.6 GtCO2e (excluding aviation and shipping) by 2020 distributed as follows: (i) on-road, 0.4 GtCO2e; (ii) biofuels, 0.15 GtCO2e; (iii) modal shift, 0.8 GtCO2e; and (iv) travel activity reduction, 0.25 GtCO2e. Higher reductions before 2020 would reduce later climate risks.

Current technical solutions. Energy saving fuel economy improvements that make use of existing technologies can provide nearly half of the needed reduction in GHG emissions by 2050[35] to contain warming to the 2 degree rise scenario. By 2030, fuel economy improvement are assessed as being able to achieve a 50% reduction in fuel use per kilometre for new cars by 2030 in line with targets of the Global Fuel Economy Initiative (GFEI) and projections of the International Energy Agency. Strong shifts to non-petroleum fuels would also be needed particularly after 2030. Beyond that strong growth in plug-in electric vehicles and other very low-carbon fuel vehicles will be needed to continue to decarbonise light-duty vehicles (cars, SUVs, etc.) and reduce oil use[36].

Other solutions. Behavioural change through travel demand management, and mode shift through improvements in public transport, and NMT systems, would also be required to effect a

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[31] The key greenhouse gas emissions are carbon dioxide (CO2), methane and nitrous oxide. Black carbon is a major component of fine particulate matter and is formed by the incomplete combustion of fossil fuels, biofuels, and biomass. Transport is estimated to represent 19% of global black carbon emissions but by comparison in the United States of America, the percentage is 52.3%, reflecting the high degree of motorisation of the US compared to the balance of the world on average. US EPA (2013), "what is black carbon?" refer [http://epa.gov/blackcarbon/basic.html] accessed 21 November.

[32] International Energy Agency (2012), "Transport, Energy and CO2: Moving toward Sustainability." Page 29.

[33] Ibid. page 55.

[34] UNEP (2013). "The Emissions Gap Report 2013: A UNEP Synthesis Report": November. It explains to decision-makers and stakeholders the range of potential options available to close the emissions gap in 2020. Chapter 3.

[35] These energy efficiency measures go beyond the 30% improvement in efficiency of new vehicles in the baseline.

[36] Fulton, L (2013), "How vehicle fuel economy improvements can save $2 trillion and help fund a long-term transition to plug-in vehicles." Working Paper 9. Prepared by UC Davis Institute of Transport Studies for Global Fuel Economy Initiative. Pages 2-3.

significant switch to more carbon-efficient modes. Better land use planning to avoid or reduce the need for travel is also needed.[37] The design of transport infrastructure and services can also enhance the resilience and recovery of communities at times of severe natural events aiding evacuation and also emergency response.

Implications for the results framework. GHG emissions are highly correlated with liquid fuel use which is the main motive source for land transport today. Conceptually, a target could be expressed in the following ways: (i) normalised energy use/GHG emissions (e.g. per 100,000 population); (ii) energy/ GHG intensity per unit of GDP (or other output); (iii) cumulative reduction by 2030; (iv) absolute energy/GHG emissions; and (v) rate of improvement in efficiency. The target would be set to be achieved by 2030 but in view of analysis of the Intergovernmental Panel on Climate Change on limiting global temperature rises, 2050 would make a suitable year for an ambition level.

Developed countries consume most of the global land transport-related energy. Low and middle income countries have many impediments to improving their vehicles and transport systems. But they can with time be overcome. The rate and level of achievement of a targeted improvement in energy and fuel efficiency by 2030 should vary by regional and country circumstance and associated differentiated responsibilities. But it is premature to attempt to specify what differentiation is required as it would tend to pre-judge the outcomes of future climate talks.

The two main types of target were therefore considered: (i) an absolute GHG reduction; or (ii) a GHG intensity type formulation. The draft results framework opted for the following absolute target "Realise least-cost transportation GHG mitigation potential consistent with a 2-degree warming scenario, achieving at least 1.6 to 2.5 GtCO2e reduction by 2030." This formulation presses the case for action and permits different countries and regions, and technologies and solutions, to contribute as needed. An alternative GHG intensity type formulation was considered. It might be formulated as follows: "Halve the GHG intensity from transport per unit of economic output." As for the absolute formulation, technical modelling and monitoring by the International Energy Agency would be needed to: (i) set a baseline for 2010; and (ii) verify the achievement and ambition levels for 2030 and 2050 respectively (along with how they measures vary with assumptions on economic growth thus producing some uncertainty in specification of the achievement level).

It was considered there could be merit in linking GHG emissions and energy use as it would lend itself to integration with a possible SDG for energy efficiency (as indicated by the proposed goal of doubling the global rate of improvement in energy efficiency targeted by the 'Sustainable Energy for All' initiative launched by the United Nations Secretary-General and guided by his High Level Group to make sustainable energy for all a reality by 2030).

[37] Ibid.

Annex G: Allocation of Responsibilities Between Consultants

Table G.1: Allocation of Responsibilities between the Consultants

Task	Responsible consultant	What report?	SLoCaT Inputs
Task A: Validate Proposed SDG	Sayeg (with Starkey contribution)	Progress report 2 (in draft)	Stakeholder, facilitation, technical guidance
Task B1: Validate Proposed Targets	Sayeg for safety and environment Starkey for urban and rural passenger access and freight transport	Progress report 1	Ditto
Task B2 Proxy Indicators	Sayeg for safety and environment Starkey for urban and rural passenger access and freight transport	Progress report 1	Ditto
Task C: Specify Ambition Levels of Targets and Indicators	Sayeg for safety and environment Starkey for urban and rural passenger access and freight transport	Progress report 2	Ditto
Task D1: Developing a Country Cluster Classification	Sayeg (with Starkey contribution)	Progress report 1	Ditto
Task D2: Establish Baseline Data Requirements/Availability	Sayeg for safety and environment Starkey for urban and rural passenger access and freight transport	Progress report 2	Ditto
Task E: Results Framework (Output)	Sayeg for safety and environment and overall harmonisation/ integration Starkey for urban and rural passenger access and freight transport	Progress report 2 (in draft)	Ditto
Reporting	Sayeg (with Starkey contribution)	Refer Section 3.2.	Review and input as necessary

Table G.2: Expected and Actual Progressive Schedule of Consultants' Inputs

Report	Scheduled		Actual	
	Sayeg	Starkey	Sayeg	Starkey
Inception Report	4 days	4 days	6 days	6 days
Progress report 1 including initial stakeholder consultation and draft results framework	14 days	14 days	17 days	14 days
Progress report 2 (including travel to New York etc. and consultation with OWG)	8 days	8 days	na	na
Final Report	5 days	9 days	na	na
Total	31 days	36 days	31 days	35 days