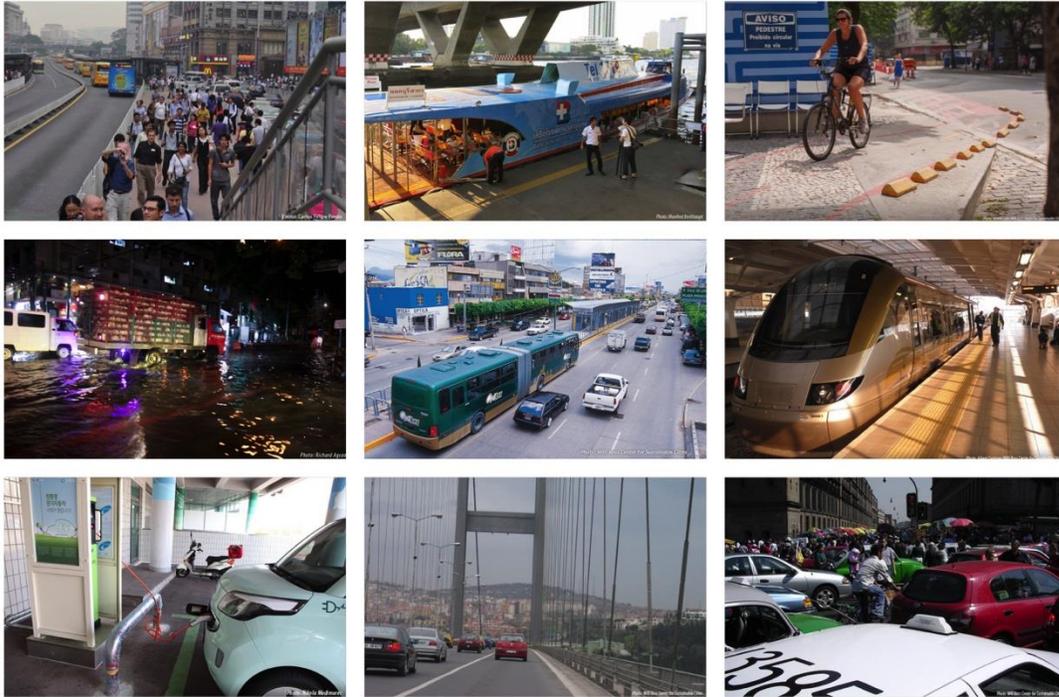


Transport GHG Emissions Databases, Analyses & Reports



Methodological Note
Version 27 July 2015

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Introduction

Maximizing national mitigation ambitions requires optimizing contributions from the transport sector. A recent SLoCaT [analysis](#) reveals that the transport sector is the largest energy consuming sector in 40% of countries worldwide, and in most remaining countries, transport is the second largest energy consuming sector. Transport, with an average annual growth rate of 2.0% from 1990-2012, is among the fastest growing sectors of CO₂ emissions from fuel combustion. Thus, any attempt at limiting global average temperature rise to less than 2°C without including the transport sector is infeasible.

Intended Nationally Determined Contributions (INDCs) are poised to play an integral role in the negotiations leading up to COP21. INDCs are intended to communicate country targets and strategies to reduce carbon emissions for the post-2020 period, and each country faces a unique set of circumstances influencing reduction strategies, including socio-economic development patterns, historic emission trajectories, and varying financing requirements. Since INDCs represent a bottom-up, nationally-determined process, they have the potential to drive progress in countries, especially in the global south, that are shaping emerging climate policies. INDCs may also give new life to NAMAs, by making them a critical short-term element to prepare for post-2020 mitigation strategies. Starting in 2016, countries will have to operationalize the transport components of their INDCs, and thus will need a robust set of data, tools, and analysis to ensure that INDC targets are ultimately realized.

To respond to this need, the PPMC is creating a knowledge base to assist both internal and external partners (e.g. national ministries and international supporting entities) in defining transport targets and implementing mitigation strategies. This knowledge base is captured in a set of [knowledge products](#) that are designed to add value to existing UNFCCC reporting protocols by emphasizing transport-specific elements and incorporating expertise from funding agencies and research institutions.

The proposed knowledge base is divided into two primary areas: Transport Greenhouse Gas (GHG) Emissions-Related Databases, and Transport Greenhouse Gas (GHG) Emissions Analysis and Reports, each of which are to be composed of a number of existing and forthcoming knowledge products. These knowledge products can be utilized individually or in combination to help achieve national transport mitigation objectives:

A. Transport Greenhouse Gas (GHG) Emissions-Related Databases

[1. Overview of Transport in National Communications and Biennial Update Reports](#) - This product contains databases of National Communications (NCs) and Biennial Update Reports (BURs) from a wide range of Annex I and non-Annex I countries (including historic and projected transport emissions as a share of economy-wide emissions. Information is collected directly from NCs and BURs, and includes transport emissions baselines, historic and projected growth disaggregated by passenger and freight activity, noting any economy-wide or transport-specific emissions targets and any transport sector related mitigation policies identified within NCs.

Current Status: A draft version of this database containing data for more than 30 countries is currently available at the following [link](#). Planned output is a database of

transport components of NCs and BURs for 100+ countries which constitute a set of broad categories of transport development and travel activity, which are to be summarized with graphical data to provide a snapshot of key trends. Improvements in transport sector reporting within successive NCs over the past decade will also be described.

2. [Transport INDC Database](#) - In addition to the NCs and BURs, the analysis contains a distinct database of INDCs submitted to date as seen through the lens of the transport sector, including relevant information on economy-wide and transport-specific mitigation targets, as well as enumerating proposed interventions to yield emissions reductions in the transport sector. While INDCs submitted to date by countries such as Gabon, Morocco, and Ethiopia make explicit reference to transport targets, they do not reflect the full mitigation potential of the transport sector; thus, this analysis can help individual countries focus attention on needed areas of improvement to strengthen transport sector strategies in the context of INDCs.

Current Status: A draft version of this database containing data for more than 15 countries is currently available at the following [link](#). Planned output includes a database of all submitted INDCs on an ongoing basis, with all INDCs submitted by the end of September to be included in the COP21 post-2020 analysis.

3. [Transport Emissions Projections Databases](#)

Databases for projected and potential emissions are divided into two parts: a projected business-as-usual (BAU) database, and a mitigation potential database.

3a. [Transport Sector Business-as-usual \(BAU\) Projections](#) - This product contains a range of estimated transport emission baselines for business-as-usual (BAU) scenarios for different countries. These baselines, in combination with official forecasts in NCs, BURs and INDCs, will give countries a more comprehensive view of variation among mitigation potential studies, and will facilitate tracking of emission targets and intensify data, capacity, policy and investment interventions where required.

3b. [Overview of Transport Mitigation Potential Studies](#) - This product contains a database of mitigation potential studies to assess opportunities to reduce the future growth in transport emissions relative to business-as-usual (BAU) baselines (as established under the product described previously). These studies include projections of transport sector mitigation potential (supported by specific low-carbon transport mitigation strategies), which are crucially broken down by sub-sector (e.g. road, railways, waterways, aviation) to help to identify areas that require the greatest degree of intervention to meet transport emission targets.

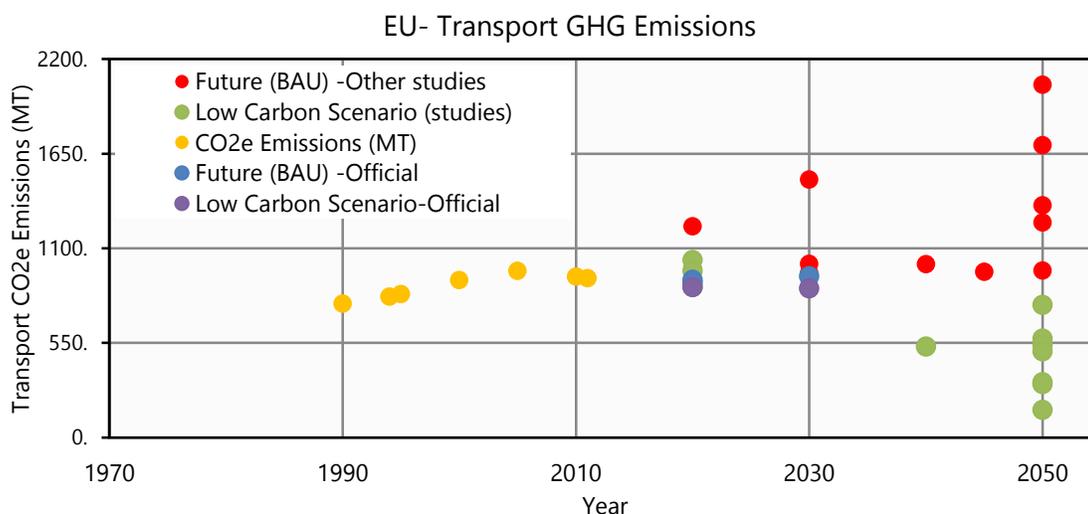
This product therefore describes a range of potential transport mitigation pathways to help inform the development of country INDCs in combination with intended reductions from other sectors. The studies are derived through the modeling efforts by government agencies, development banks, academic institutions, and other research organizations, as selected by criteria including accessibility, comprehensiveness, consistency of approach, relevance and transparency. Efforts will be made to include at least three such mitigation studies per country to better inform the mitigation potential impact of

various strategies. This study will also provide insights on specific avoid-shift-improve strategies proposed by studies across different countries. Where no country-specific mitigation potential studies exist, potential reductions will be estimated by downscaling global and/or regional projections, and/or estimating mitigation potential based on the studies of comparable countries.

Current Status: A draft version of this database containing data for more than 25 countries is currently available at the following [link](#). Planned output is a database of mitigation studies for an estimated 50+ countries.

4. National-Level Transport Emissions Factsheets - This product contains a synthesis of the various components described in the previous two knowledge products, which includes historical and future BAU growth trajectories in the transport sector based on NCs and BURs; a range of available transport sector mitigation potential studies derived from modeling efforts by government agencies, development banks, and other research organizations; and a graphical presentation of alternate emissions scenarios in the transport sector, which can help in determining an appropriate degree of mitigation ambition for transport sector reductions to be reflected in economy-wide INDCs, based on ranges determined by historic trends and assessed mitigation potential. For countries that have already submitted an INDC, the country factsheets would identify how mitigation targets could be improved, and for those that have yet to make a submission, country factsheets could be used to strengthen the discussion of the transport sector during INDC development by using economy-wide reduction targets to interpolate required reductions from the transport sector.

Sample information contained in the national transport emissions fact sheets is illustrated a summary graph of key transport trends for the European Union, which shows that official low-carbon targets for 2020 and 2030 improve slightly upon historic trends and BAU projections, but that mitigation ambition in the transport sector falls far short of projected long-term mitigation potential (based on 2050 projections):



To capture a more comprehensive picture of transport sector emissions at a global scale, there is a need to expand this knowledge base to a representative set of countries over the period 1990 to 2030 (and up to 2050, where applicable). The first phase of the

analysis will involve creating 'Level 1' fact sheets for an initial mix of about 50 developed and developing countries for which detailed targets and projection data are available (e.g. United States, China, the European Union, Japan, India, Russia, Mexico, among others) that would account for a combined total of about 80% of global transport sector emissions. In subsequent phases (and as additional INDCs are submitted), this initial set of countries is expected to be scaled up to 100+ countries in the run-up to Paris, which will involve creating simplified 'Level 2' fact sheets for those countries for which detailed targets and projection data are not available, and therefore must be estimated based on available data.

These individual fact sheets will be synthesized into a summary analysis of pre- and post-2020 mitigation potential that will allow an at-a-glance comparison of key trends among countries and regions, to help individual Parties define and assess targets in a broader context. In addition, this summary analysis will serve to quantify aggregate contributions from the transport sector relative to maintaining global average temperatures within a 2 degree Celsius target, and thus can be used to raise ambition in subsequent reevaluation periods for transport-specific and economy-wide INDC targets.

Current Status: A draft version of this database containing data for more than 10 countries is currently available at the following [link](#).

5. Transport GHG Methodology Assessment Database - Measuring CO₂ in transport projects and programs is essential to drive mitigation action, through comparison of potential contributions of low carbon transport infrastructure and services to more carbon-intensive investments. Since it is difficult to quantify positive impacts of complex transport systems relative to fixed energy infrastructure, sustainable transport has traditionally received less attention in climate finance than other sectors. The SLoCaT Partnership has compiled a detailed qualitative assessment of 64 transport greenhouse gas (GHG) emission methodologies and tools, which cover a range of transport subsectors and include both passenger and freight methodologies. The number and scope of methodologies indicate that there is a wealth of tools to analyze transport interventions for positive impacts and help drive action on climate change.

The SLoCaT analysis demonstrates that GHG methodologies developed to date cover all major transport subsectors to facilitate the provision of needed sustainable transport infrastructure and services. While more than 80% of methodologies reviewed are related to the roadway sector, a significant percentage of methodologies consider other transport modes including railways (42%), waterways (28%) and aviation (19%). In addition, there is a growing body of freight-related methodologies, with nearly two thirds of methodologies applicable to freight, and more than 90% of waterway methodologies oriented to freight, due to the rapid growth of shipping activity. Finally, roughly one-quarter to one-third of methodologies also can be used to assess co-benefits of proposed measures, an important contribution since the application of co-benefits to climate finance supported transport projects has been limited to date.

Current Status: A working version of this database containing data for 64 methodologies and tools is currently available at the following [link](#). These methodologies are to be expanded in coming months with the compilation and analysis of additional methodologies.

B. Transport GHG Emissions Comprehensive Reports

The database projects described in the following section will support the development of an ongoing series of comprehensive reports and concise analyses of transport GHG emissions. Two main reports will be developed in the run-up to COP21, which will provide a comprehensive picture of transport sector emissions trends and potential in various countries for the pre- and post-2020 periods.

1. Report on Pre-2020 Transport Emissions Projections and Potential

The first report will highlight pre-2020 transport emission projections and mitigation options. The main objective of the pre-2020 analysis is to investigate if countries which have established 2020 economy-wide greenhouse gas (GHG) emission targets would be able to attain a proportional share of those reductions within the transport sector (and furthermore, how mitigation efforts compare among other countries and with other sectors).

Nearly 55 countries have established 2020 economy-wide mitigation targets to date. Transport sector emission targets would be calculated using established economy-wide targets translated to the transport sector by using the current transport sector share within economy-wide emissions and proportionately allocating the national target to the transport sector. This analysis would provide a discussion on levels of ambition among Annex I and non-Annex I countries.

Emission targets would be compared with current emissions, BAU growth at 2020 and low carbon scenario in 2020. For the majority of countries, the emission gap at 2020 is very high when compared with low carbon scenario. For example, current transport emissions in China (2012) is 25% below their 2020 target. However, even under the low carbon scenario, the emissions are set to grow 35% higher than the 2020 targets. Estimates suggest that Spain, USA, Canada and Portugal could achieve their 2020 transport emissions targets. The cumulative gap in transport emissions in 2020 would be derived by comparing the growth in emissions under, respectively, BAU, low carbon scenario, and a 2020 target scenario. For example, preliminary estimates suggest that the cumulative transport sector gap between low carbon and established emission target scenarios between 2012 to 2020 could be as high as 950 MT and 530 MT in China and EU, respectively.

Current Status: This research is currently underway, with the pre-2020 report is expected to scale-up insights from 40-60 countries (with mitigation data, see Annex I) to 100+ countries (without mitigation data) using projection methodologies. A rough draft of the pre-2020 report is targeted for the end of August 2015.

2. Report on Post-2020 Transport Emissions Ambition in INDCs

The second report will provide transport projections and mitigation options till 2030. The official INDC targets will be compared with mitigation options to derive recommendations for the transport sector. The report will highlight possible mitigation options through comparison across various countries. This benchmarking analysis would allow countries to compare transport mitigation efforts through different avoid-shift-improve strategies. General trends derived from this analysis can help development agencies identify policy

gaps and identify countries, which need additional assistance.

Current Status: This research is currently underway, with projections (for both BAU and low carbon scenarios) for remaining countries and summary analysis of post-2020 data would be carried out in September (pending submission of 2030 targets for 50+ countries during this timeframe), with a draft of the final report targeted for mid-October 2015 for limited circulation and review, and a final report (including both pre- and post-2020 analyses) targeted for publication and release by mid-November 2015.

3. Analysis of Regional Transport Emissions Trends - In addition, the SLoCaT Partnership proposes to create a series of regional break-out reports, to help categorize common and divergent trends among a group of countries united by geography and other regional factors. This process would build upon a [recent report](#), which summarizes emission trends and explores case studies that demonstrate the mitigation potential of the transport sector in a number of Latin American and Caribbean (LAC) countries. This assessment notes that mitigation potential is often not fully incorporated in business-as-usual (BAU) scenarios presented in respective NCs, nor reflected in levels of ambition in emerging INDCs, and thus concludes that the usefulness of national reporting as a policy tool to drive mitigation in the transport sector has had limited impact to date. The existing LAC report can be used as a basis to create potential reports for the Asia and Africa regions in the run-up to COP21.

Current Status: A report on regional transport emissions trends in LAC countries has been completed and has been posted at the following [link](#). Other potential regional reports are forthcoming.

C. Transport GHG Emissions Research Briefs

In addition to more comprehensive reports on transport GHG emissions, SLoCaT is producing a series of more concise analyses for transport emissions trends, which include the following:

1. Analysis of Global Transport Emissions Trends - Tracking emissions trends in the transport sector (in the context of economy-wide emissions) is an essential step in defining possible transport components of INDCs, and in helping to determine required contributions from transport to establish and achieve national and global mitigation targets. Yet, tracking global averages is of limited use to countries who are developing their INDCs; therefore we must have a clearer understanding of transport emissions trends and differentiation at national levels to take effective actions to reduce global transport sector emissions.

To inform the discussion on transport's contribution to CO₂ emissions and transport's potential role in mitigation, the SLoCaT Partnership has developed an analysis to illustrate national and regional transport emissions trends in three areas: (1) transport sector share of emissions relative to total emissions from fuel combustion, (2) growth of transport sector emissions, and (3) absolute and per-capita emissions from transport, as normalized by a number of key variables. A key observation of the analysis is the large differentiation among transport emissions trends in individual regions and countries,

underscoring the need to take a heterogeneous approach to tackling transport sector emissions worldwide.

Current Status: This report is complete and has been posted at the following [link](#).

[2. Analysis of Transport in World Energy Outlook 2015 Special Report - SLoCaT](#) Partnership has produced an analysis which summarizes some of the key observations offered by IEA and their implications for the transport sector.

The transport sector grew more intensively when compared with other sectors over the last two decades. However, over 2013 to 2030, in OECD countries, the transport sector has the potential to provide the highest intensity of reductions. Under IEA's 'INDC scenario,' energy consumption annual growth needs to be reduced by 50% of 1990-2013 growth, while under the more ambitious '450 scenario,' IEA proposes to further reduce the transport energy consumption growth by 40% over 2013-2030. IEA estimates that majority of these reductions could be possible with existing technologies and with no additional cost to the society.

The analysis concludes that with INDCs and national energy policies and plans proposed so far, the world's estimated remaining carbon budget consistent with a 50% chance of keeping the rise in temperature below 2 °C is consumed by around 2040 – eight months later than is projected in the absence of INDCs. Therefore, all countries need to submit ambitious INDCs for COP21 and enhance priorities and investments on energy efficiency to peak global transport emissions by 2020, as any attempt at limiting global average temperature rise to less than 2°C without significant mitigation contributions from the transport sector is infeasible.

Current Status: This report is complete and has been posted at the following [link](#).

[3. Analysis of Transport in Global Climate Legislation Study](#)

A study by the [London School of Economics \(LSE\) and Grantham institute on climate change and the environment](#) was published in June 2015 with the objective of compiling climate change-relevant legislation in the world in one easily accessible database for legislators, researchers and policy-makers. The 2015 [Global Climate Legislation study](#) edition covers 98 countries plus the EU, up from 66 countries in 2014, which together account for 93% of global greenhouse gas emissions. The [Partnership on Sustainable, Low Carbon Transport \(SLoCaT\)](#) has conducted an analysis of the transport attributes of the study and has created [a database](#) focusing on the relevant transport legislation and their corresponding emissions targets. Of the 98 countries represented in the study, SLoCaT found a promising list of 47 transport-related policies.

The transport legislation database shows that transport-specific policies are broad in scope, ranging from direct policies relating to biofuel concentrations in fossil transportation fuels to overarching policies concerning peak hour traffic control (e.g. [Singapore's policy to promote public transport at peak hours](#)). Few countries had adopted policies before the Kyoto Protocol, and the majority of progressive policies were created in the last ten years. The time frames of these targets also range from short-term to long-term (e.g. the [National Climate Change Strategy in Vietnam](#) envisages a complete domestic and international system to meet societal needs by 2050, and

[Argentina's 2006 legislation](#) ensures all vehicles must use at least 5% bio-fuel by 2010).

Current Status: For SLoCaT Partnership's database on Transport Legislation, [please download the Excel document](#). For the full text of the LSE-Study please click [here](#).

D. Transport Emissions Analysis Review Panel

To guide the SLoCaT Partnership in its ongoing work on transport sector GHG analysis, is intended to establish a review panel of external experts, to be potentially composed of researchers from IEA, UC-Davis, ITF, ICCT and others. Initial functions envisioned for this committee include the following:

- Review SLoCaT methodological approaches (see Annex I)
- Review data quality and integrity to ensure that analysis yields ambitious and achievable targets
- Recommend additional mitigation studies for inclusion in overall analysis
- Review draft and final pre- and post-2020 transport emissions reports
- Recommend how SLoCaT databases and analyses can be integrated into other larger, economy-wide analyses conducted by organizations including the above

The review panel can also play a role in recommending research directions after COP21; potential efforts in this area could include the following:

- Incorporate disaggregated data indicators (e.g. activity, motorization, road lane-km etc.) at the country level. This could be of significant value for organizations such as IEA, which conduct global studies based on aggregated data and not on disaggregated country data.
- Replicate country fact sheets to conduct a similar analysis for 50-60 cities (based on existing mitigation potential studies) to allow better insight on how low carbon mitigation efforts could be scaled up at the municipal level (based on recommendations of the review panel)

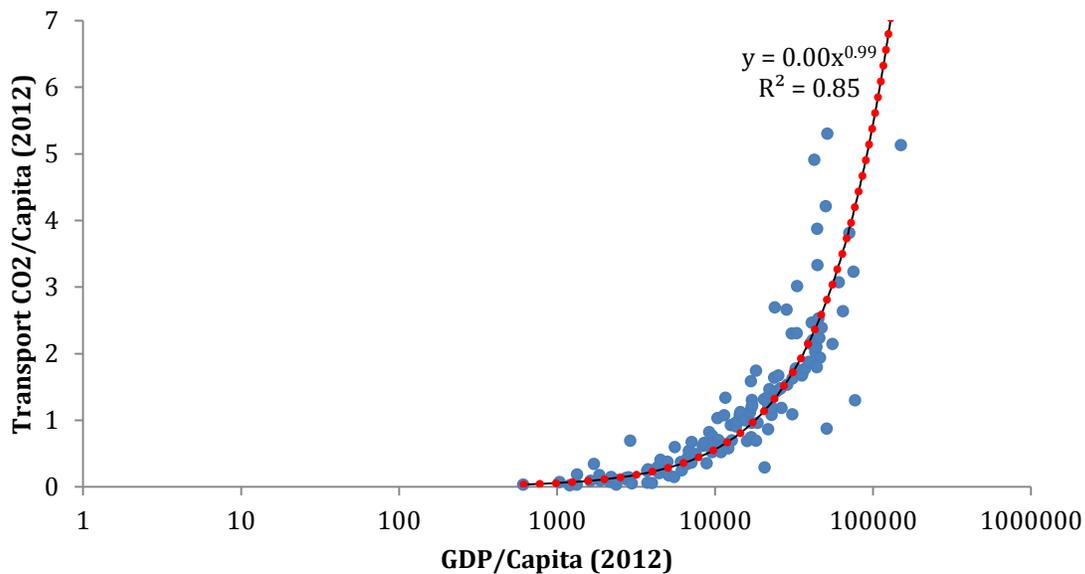
E. Transport Emissions Knowledge Products Data Center

SLoCaT is in the process of creating a central repository of the various knowledge products on transport GHG emission for easy review and access. Over time, the various knowledge products described above may be linked through a dynamically-updated database, to support post-2020 refinement and implementation of transport sector components of INDCs. The timeline of this proposed shift to a more powerful data platform will depend upon sufficient funding and the identification of a host organization willing and able to host and maintain such a database.

Annex I: Projection and Mitigation Methodology

BAU forecasting and mitigation potential analyses within the transport sector are not available for all countries across the globe. In order to provide indicative estimates to fill data gaps, we use insights from countries with existing estimates on BAU projections and low carbon scenarios for 2020 and 2030 and interpolate this growth using assumptions and sketch calculations. These sketch projections for BAU and low carbon scenario would be carried out using the following approaches:

1. *BAU projections* for countries with limited data can be carried out using one of three different approaches.
 - The first approach is to extend historic growth between 1990 and 2010 to the years 2020 and 2030, using annual growth rates from 1990 and 2010.
 - The second approach is to use a regression of transport CO₂/capita and GDP/capita for all countries in 2010, which would allow calculation of transport CO₂/capita for 2020 and 2030 using existing GDP/capita projections for these years (see below figure).
 - The third approach involves translating 2020 and 2030 projections from different regions to individual countries.



Based on results from these three different approaches compared to countries with detailed projection and mitigation data, either a subset or an average of the three approaches is used for forecasting transport emissions for countries without data¹. The following table summarizes projections using the first two approaches for countries with detailed data, with the results showing that a majority of estimates are within an acceptable range.

¹ The BAU projection approach is to be determined after expanding the sample to about 50-60 countries with detailed data.

Country	2020 (Minimum)	2020	2020 (Maximum)	2030 (Minimum)	2030	2030 (Maximum)	Growth Rates		Regression	
							2020	2030	2020	2030
Canada		223			252		217	252	108	158
EU	900	1007	1228	936	1101	1500	1026	1125		
Mexico		220		252	286	347	219	290	160	280
Australia	94	101	105	105	115	115	98	115	79	127
Brazil	200	204	207	214	265	280	238	342	220	321
Argentina	50	54	59		72		50	62	58	69
Chile	29	35	45	51	60	69	31	47	30	50
China	963	967	972	1146	1501	2600	997	1935	1548	2974
Colombia	31	36	40	39	47	55	26	32	51	90
Costa Rica		5			6		6	7	6	10
Norway	18	25	31	18	27	35	18	21	22	32
Portugal	19	20	48	20	21	51	25	35	19	25
South Korea	123	116	132	132	132	228	131	203	129	223
Russia	207	223	255	186	243	332	187	152	217	270
Spain	95	106	128	111	126	134	116	147	114	165
Switzerland	15	17	19	11	14	29	17	18	30	48
US	1516	1619	1805	1223	1521	1727	1917	2084	1251	1927
Vietnam	49	56	60	46	93	119	88	246	45	92
India	239	400	571	460	794	1218	219	298	729	1701
Japan	190	210	229	165	204	245	234	241	306	318
New Zealand	15	17	20	15	18	23	18	22	12	18
Austria	20	23	25	21	23	24	28	36	25	35
Singapore	8	10	11	8	10	12	9	12	32	58
Belgium	20	24	27	21	24	27	31	35	31	43
Bulgaria	13	13	14	8	15	20	9	9	9	12

2. For forecasting average *low carbon scenarios* for countries without any data, two possible approaches can be used.

- First, the transport emissions growth in low carbon scenario can be extrapolated based on average mitigation potential for 2020 and 2030 for countries with detailed data. An average mitigation share can be calculated for countries with detailed data by categorizing them into Annex-I and Non-Annex countries, and low carbon transport scenario emissions in 2020 and 2030 can be computed for countries without detailed data. Average mitigation values for 2020 and 2030 are shown in the following table, based on an initial analysis of 25 countries.

Country	Mitigation at 2020	Mitigation at 2030
Annex-I	-13%	-10%
Non-Annex	-22%	-27%

The following table shows the comparison of low carbon mitigation values computed using average low carbon mitigation share for the years 2020 and 2030; the results show that for the majority of countries, the estimates are within an acceptable range.

	From Low carbon Studies						Using Average Mitigation	
	2020 (Max)	2020 (Avg)	2020 (Min)	2030 (Max)	2030 (Avg)	2030 (Min)	2020	2030
Canada		176			164		194	197
EU	829	893	1031	677	772	867	876	859
Mexico		200			190		198	209
Australia		92		83	85	88	88	90
Brazil		190		142	175	210	183	193
Argentina	20	52	56	46	55	65	49	53
Chile	25	33	42	30	43	54	32	44
China	923	925	927	950	1067	1400	870	1096
Colombia	28	32	36	33	41	49	32	34
Costa Rica		4			4		5	4
Norway	14	19	26	7	17	28	21	21
Portugal	15	17	18	15	16	17	17	16
Republic of Korea	98	100	101	96	115	134	104	96
Russia	181	191	202	159	199	252	194	190
Spain	88	95	107	98	101	108	92	98
Switzerland	13	16	22	10	12	21	15	11
US	1498	1600	1702	1033	1311	1627	1409	1186
Vietnam	51	53	54	32	59	88	50	68
India	230	315	436	393	669	868	360	580
Japan	162	180	192	129	144	162	183	159
New Zealand	15	16	17	15	15	17	14	14
Austria	16	19	21	16	20	21	20	18
Singapore	6	8	10	5	6	7	9	7
Belgium	18	21	24	12	18	23	21	19
Bulgaria	11	12	12	7	13	18	12	11

- A second approach for projecting low carbon transport scenario is to translate the regional mitigation share for 2020 and 2030 from different sources to individual countries.

Either one of these two approaches can be used for forecasting emissions from transport sector, based on the results of each approach compared to countries with detailed data.

The following table shows known data availability for countries to be considered in this analysis:

Sl.No	Country	National Communication	BR/BJUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
1	Albania	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
2	Algeria	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
3	Angola	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
4	Antigua and Barbuda	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
5	Argentina	✓	✓	Detailed	Detailed	Grade I	Detailed data available
6	Armenia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
7	Australia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
8	Austria	✓	✓	Detailed	Detailed	Grade I	Detailed data available
9	Azerbaijan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
10	Bahrain	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
11	Bangladesh	✓	✓	Detailed	Detailed	Grade I	Detailed data available
12	Belarus	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
13	Belgium	✓	✓	Detailed	Detailed	Grade I	Detailed data available
14	Benin	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
15	Bolivia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
16	Bosnia and Herzegovina	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
17	Botswana	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
18	Brazil	✓	✓	Detailed	Detailed	Grade I	Detailed data available
19	Brunei Darussalam	✓	✓	Detailed	Detailed	Grade I	Detailed data available
20	Bulgaria	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
21	Cambodia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
22	Cameroon	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
23	Canada	✓	✓	Detailed	Detailed	Grade I	Detailed data available
24	Chile	✓	✓	Detailed	Detailed	Grade I	Detailed data available
25	China	✓	✓	Detailed	Detailed	Grade I	Detailed data available
26	Colombia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
27	Congo	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
28	Costa Rica	✓	✓	Detailed	Detailed	Grade I	Detailed data available

Sl.No	Country	National Communication	BR/BJUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
29	Côte d'Ivoire	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
30	Croatia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
31	Cuba	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
32	Cyprus	✓	✓	Detailed	Detailed	Grade I	Detailed data available
33	Czech Republic	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
34	Dem. People's Republic of Korea	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
35	Democratic Republic of Congo	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
36	Denmark	✓	✓	Detailed	Detailed	Grade I	Detailed data available
37	Dominica	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
38	Dominican Republic	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
39	Ecuador	✓	✓	Detailed	Detailed	Grade I	Detailed data available
40	Egypt	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
41	El Salvador	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
42	Eritrea	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
43	Estonia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
44	Ethiopia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
45	EU	✓	✓	Detailed	Detailed	Grade I	Detailed data available
46	Finland	✓	✓	Detailed	Detailed	Grade I	Detailed data available
47	France	✓	✓	Detailed	Detailed	Grade I	Detailed data available
48	FYR of Macedonia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
49	Gabon	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
50	Georgia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
51	Germany	✓	✓	Detailed	Detailed	Grade I	Detailed data available
52	Ghana	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
53	Gibraltar	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
54	Greece	✓	✓	Detailed	Detailed	Grade I	Detailed data available
55	Guatemala	✓	✓	Sketch	Sketch	Grade II	Detailed data not available

Sl.No	Country	National Communication	BR/BJUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
56	Haiti	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
57	Honduras	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
58	Hungary	✓	✓	Detailed	Detailed	Grade I	Detailed data available
59	Iceland	✓	✓	Detailed	Detailed	Grade I	Detailed data available
60	India	✓	✓	Detailed	Detailed	Grade I	Detailed data available
61	Indonesia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
62	Iraq	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
63	Ireland	✓	✓	Detailed	Detailed	Grade I	Detailed data available
64	Islamic Republic of Iran	✓	✓	Detailed	Detailed	Grade I	Detailed data available
65	Israel	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
66	Italy	✓	✓	Detailed	Detailed	Grade I	Detailed data available
67	Jamaica	✓	✓	Detailed	Detailed	Grade I	Detailed data available
68	Japan	✓	✓	Detailed	Detailed	Grade I	Detailed data available
69	Jordan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
70	Kazakhstan	✓	✓	Detailed	Detailed	Grade I	Detailed data available
71	Kenya	✓	✓	Detailed	Detailed	Grade I	Detailed data available
72	Kosovo	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
73	Kuwait	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
74	Kyrgyzstan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
75	Laos	✓	✓				
76	Latvia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
77	Lebanon	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
78	Libya	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
79	Liechtenstein	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
80	Lithuania	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
81	Luxembourg	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
82	Malaysia	✓	✓	Detailed	Detailed	Grade I	Detailed data available
83	Malta	✓	✓	Sketch	Sketch	Grade II	Detailed data not available

Sl.No	Country	National Communication	BR/BJUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
84	Marshall Islands	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
85	Mauritius	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
86	Mexico	✓	✓	Detailed	Detailed	Grade I	Detailed data available
87	Monaco	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
88	Mongolia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
89	Montenegro	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
90	Morocco	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
91	Mozambique	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
92	Myanmar	✓	✓	Detailed	Detailed	Grade I	Detailed data available
93	Namibia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
94	Nepal	✓	✓	Detailed	Detailed	Grade I	Detailed data available
95	Netherlands	✓	✓	Detailed	Detailed	Grade I	Detailed data available
96	Netherlands Antilles	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
97	New Zealand	✓	✓	Detailed	Detailed	Grade I	Detailed data available
98	Nicaragua	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
99	Nigeria	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
100	Norway	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
101	Oman	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
102	Pakistan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
103	Panama	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
104	Paraguay	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
105	Peru	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
106	Philippines	✓	✓	Detailed	Detailed	Grade I	Detailed data available
107	Poland	✓	✓	Detailed	Detailed	Grade I	Detailed data available
108	Portugal	✓	✓	Detailed	Detailed	Grade I	Detailed data available
109	Qatar	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
110	Republic of Korea	✓	✓	Detailed	Detailed	Grade I	Detailed data available

Sl.No	Country	National Communication	BR/BJUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
111	Republic of Moldova	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
112	Romania	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
113	Russian Federation	✓	✓	Detailed	Detailed	Grade I	Detailed data available
114	Saudi Arabia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
115	Senegal	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
116	Serbia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
117	Singapore	✓	✓	Detailed	Detailed	Grade I	Detailed data available
118	Slovak Republic	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
119	Slovakia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
120	Slovenia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
121	South Africa	✓	✓	Detailed	Detailed	Grade I	Detailed data available
122	Spain	✓	✓	Detailed	Detailed	Grade I	Detailed data available
123	Sri Lanka	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
124	Sudan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
125	Sweden	✓	✓	Detailed	Detailed	Grade I	Detailed data available
126	Switzerland	✓	✓	Detailed	Detailed	Grade I	Detailed data available
127	Syrian Arab Republic	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
128	Tajikistan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
129	Thailand	✓	✓	Detailed	Detailed	Grade I	Detailed data available
130	Togo	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
131	Trinidad and Tobago	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
132	Tunisia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
133	Turkey	✓	✓	Detailed	Detailed	Grade I	Detailed data available
134	Turkmenistan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
135	Ukraine	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
136	United Arab Emirates	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
137	United Kingdom	✓	✓	Detailed	Detailed	Grade I	Detailed data available

Sl.No	Country	National Communication	BR/ BUR	Forecasting*	Mitigation Potential*	Country Factsheet*	Remarks
138	United Republic of Tanzania	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
139	United States	✓	✓	Detailed	Detailed	Grade I	Detailed data available
140	Uruguay	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
141	Uzbekistan	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
142	Venezuela	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
143	Vietnam	✓	✓	Detailed	Detailed	Grade I	Detailed data available
144	Yemen	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
145	Zambia	✓	✓	Sketch	Sketch	Grade II	Detailed data not available
146	Zimbabwe	✓	✓	Sketch	Sketch	Grade II	Detailed data not available

**Note: In the above table, 'Grade-I' factsheets are to be generated for countries with full data availability, which will provide a detailed overview of historic emission trends and future projections for BAU and low carbon scenarios. If detailed data on forecasting BAU and low carbon scenarios does not exist for a particular country, a 'Grade-II' factsheets (offering more limited insights) are to be produced using data and insights from comparable countries with data to roughly estimate 2020 and 2030 BAU projections and mitigation potential values.*