

**CDM-EB89-AA-A08**

## Concept note

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# Proposal on top-down methodological work for the transport sector

Version 01.0



**United Nations**  
Framework Convention on  
Climate Change

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## **1. Procedural background**

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred as the Board) at its eighty-first meeting (EB 81) agreed to include the “Top down development of methodologies/standardized baselines and tools (including an initial concept note covering, inter alia: cities and rural electrification, aviation, agriculture and international financing institutions),” as part of the 2016 Management Plan (MAP 2016).
2. Subsequently at EB 82, the Board considered the project concept note on the development of new methodologies to broaden the applicability of the CDM and adopted the work plan for this project, as contained in document CDM-EB82-A07-INFO. The Board agreed on the development of methodologies in the areas of aviation, renewable energy, electrification and household energy supply. With regard to methodologies for cities, transport, biofuels and agriculture, the Board requested the secretariat to prepare concept notes on each specific area for its consideration before the development of the methodologies.
3. In response to the above mandate, a concept note was developed by the Secretariat in consultation with the Methodologies Panel (MP) and the Small-Scale Working Group (SSC WG). It explored the methodological options for developing highly usable, broadly applicable methodologies for the transport sector. The concept note (CDM-EB86-AA-A12) was considered at EB 86.
4. Based on the consideration of the concept note at EB 86, the Board requested the MP, the SSC WG, and the Secretariat to jointly prepare a proposal on the development of specific methodologies including resource estimates, taking into account, inter alia, the potential demand for such methodologies. In the context of the measures mentioned in the concept note, the Board noted that for project types including modal shift, avoided travel in personal cars, use of the Global Positioning Systems (GPS), and shortening of travel routes, there may be issues to consider related to leakage, signal-to-noise ratio, rebound effects, and suitability of empirical baselines; which may limit the possibility to develop a viable CDM methodology for these project types.
5. This work relates to the activity ‘Development of new methodologies to broaden the applicability of the CDM’ under Objective 1(c): ‘Develop simplified and user-friendly standards and procedures that increase efficiency and ensure environmental integrity’ with a resource allocation as referred to in table 4 on page 15 of the CDM two-year business plan 2016–2017 and management plan 2016 (EB87, annex 1).

## **2. Purpose**

6. The purpose of this concept note is to define concrete proposals for top-down methodological work for the transport sector and justify the relevance of these proposals.

## **3. Key issues and proposed solutions**

### **3.1. Contents and method of analysis**

7. The Board requested the MP, the SSC WG, and the Secretariat to prepare a proposal for work on top-down methodology development for the transport sector. In order to

prioritize the focus of efforts of these groups, it is important to consider where these efforts could be applied most productively.

8. Keeping this in mind, this concept note considers that work should be prioritized based on three criteria:
  - (a) Where demand for the methodology exists; and
  - (b) Where it is viable to apply the CDM; and
  - (c) Where opportunities exist for collaboration with other climate change mitigation platforms.
9. This concept note first analyses each of the criteria listed above to provide the basis for assigning priority to different potential top-down methodological work areas. Second, it considers each of the proposals for methodological work suggested in the previous concept note (CDM-EB86-AA-A12) in the light of the three criteria. Finally, it proposes a list of specific top-down methodological work tasks to be undertaken.

## **3.2. Criteria for prioritization**

### **3.2.1. Criteria I: Potential demand for methodology work**

10. To gauge where demand exists, existing and proposed projects in the transport sector which will reduce emissions and receive climate finance or have already received such financing were reviewed. Projects from the following sources were considered:
  - (a) CDM projects registered or under validation in the CDM pipeline;
  - (b) New proposed CDM methodologies;
  - (c) Projects in the nationally appropriate mitigation actions (NAMA) Registry;
  - (d) Global Environmental Facility (GEF) transport projects in the focal area “climate change”;
  - (e) Mitigation measures proposed in the submitted INDCs.
11. Because there are only few new submissions in the CDM project and methodology pipelines at present, the NAMA Registry and GEF project database were also considered since these are other platforms for emission reduction projects in search of climate finance. In some cases, for example some projects in the NAMA Registry, the projects may even be seeking results-based finance, which is quite similar to the CDM approach.
12. Table 1 below shows the results of this review in terms of the types of project activities that have been proposed and/or funded. Many projects had multiple components; in the NAMA pipeline, the projects combined, on average, two components. In the table, each component was scored once.

**Table 1. Proposed and existing transport sector emission reduction project activities**

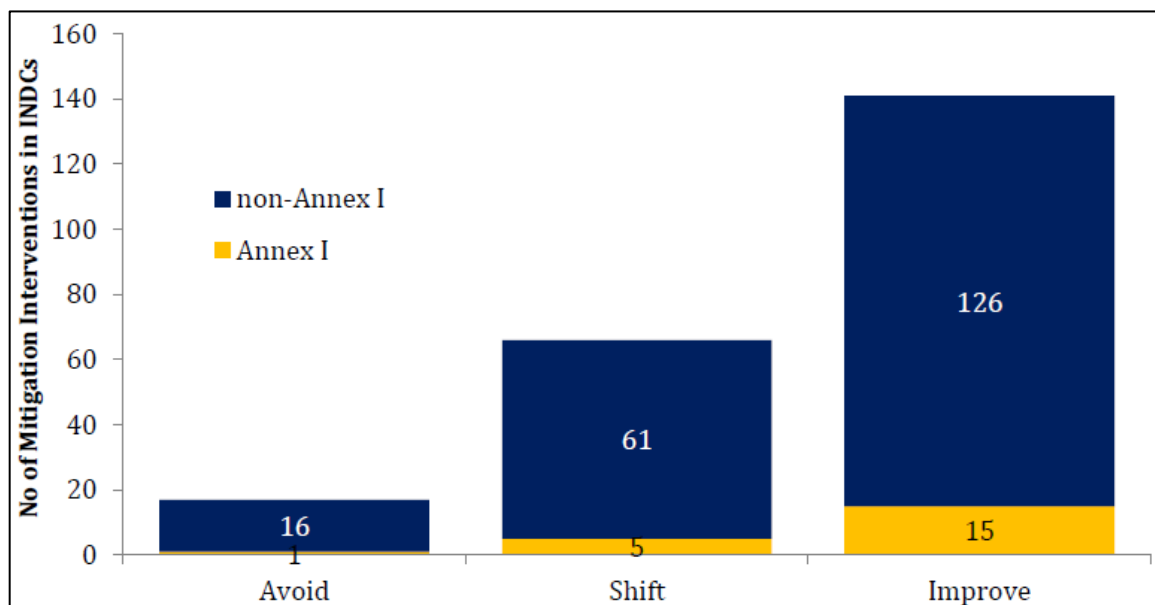
Project Types	NAMAs	Registered CDM Projects	GEF transport	Proposed CDM Methodologies	TOTAL
Fuel Switch	1	4 (1)	1	-	7
Improve riding quality of existing roads	1	-	1	-	2
Improved freight logistics	1	-	-	-	1
Improved transit logistics	2	-	8	-	10
Interurban modal switch	2	-	-	-	2
Modal switch for freight	3	2 (1)	-	-	6
New Mass Rapid Transit System (MRTS)	5	20 (2)	10	-	37
Non-motorized transport (NMT)	6	1 (1)	9	-	17
Parking policies	2	-	-	-	2
Smart traffic systems	1	-	1	-	2
Transit-oriented development (TOD)	4	-	9	-	13
Urban passenger modal shift	-	-	3	-	3
Vehicle efficiency	8	2	7	1	18
Zero and low emissions buses	1	2	5	-	8
Zero and low emissions cars	1	7 (1)	1	-	10
Unknown	-	-	14	-	14

Note: The number between brackets represents the projects still in validation.

Sources: In addition to UNFCCC sources, publicly available information from UNEP-DTU Partnership and Global Environmental Facility were used

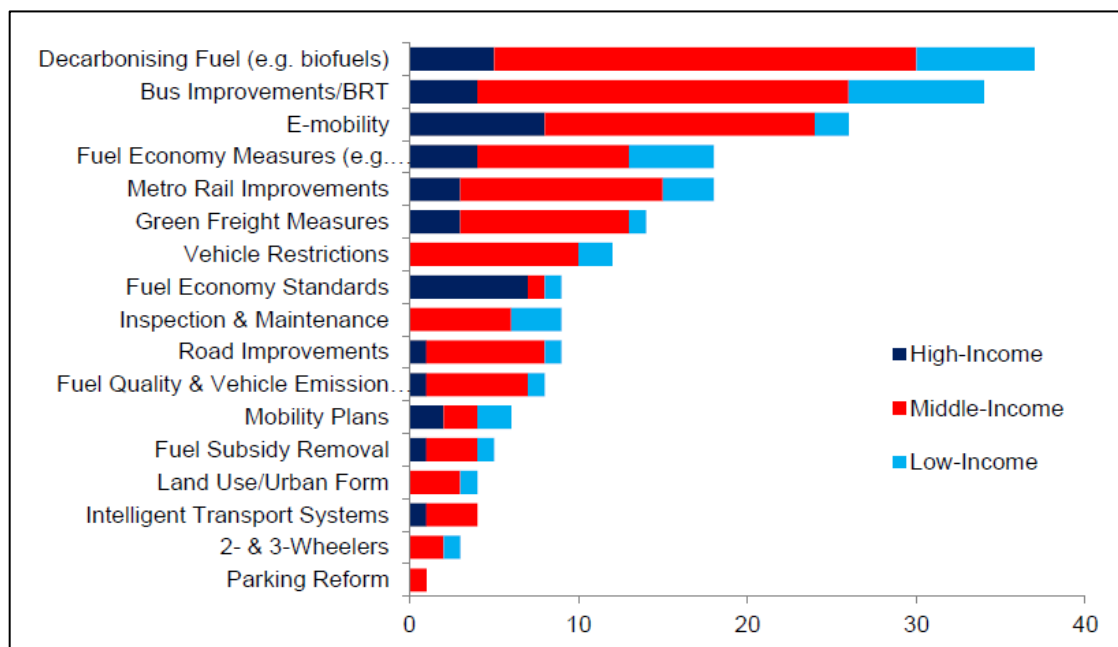
13. As shown in Table 1, the project types for which the most projects have been proposed or undertaken are new mass rapid transit systems (MRTS), vehicle efficiency, non-motorized transport (NMT), transit-oriented development (TOD), and improved transit logistics. From this review of mitigation transport projects seeking climate finance, the conclusion was that these five areas would have the most demand for emission reduction baseline and monitoring methodologies in transport.
14. From the 133 INDCs submitted by November 2015, 77 per cent identify the transport sector as a mitigation source and 61 per cent have proposed mitigation measures. Most of the measures are “improving strategies”, meaning increasing vehicle energy efficiency and decarbonizing energy sources. **Error! Reference source not found.** below illustrates the types of mitigation strategies indicated in the INDCs, following the Avoid, Shift, and Improve typology.

**Figure 1. Typology of transport mitigation interventions in intended nationally determined contributions**



Source: SLoCaT Partnership; *Intended Nationally-Determined Contributions (INDCs) Offer Opportunities for Ambitious Action on Transport and Climate Change*; November/2015

15. Figure 2 below illustrates that the mitigation strategies of Parties not included in Annex I to the Convention (non-Annex I Parties) (middle and low-income Parties) are focused on the decarbonisation of fuels (e.g. use of biofuels), bus rapid transit systems (BRTs), metro rail improvements and vehicle restrictions. Please note that “e-mobility” indicates electric vehicles / electrified transport.

**Figure 2. Typology of transport mitigation strategies in intended nationally determined contributions**

Source: SLoCaT Partnership; *Intended Nationally-Determined Contributions (INDCs) Offer Opportunities for Ambitious Action on Transport and Climate Change*; November/2015

16. Table 2 below illustrates the types of measures proposed in the INDCs, based on the types of projects listed in Table 1:

**Table 2. Types of measures proposed by the intended nationally determined contributions submitted by November 2015**

Project Types	INDCs
1. Fuel Switch	37
2. Improve riding quality of existing roads	18
3. Improved freight logistics	0
4. Improved transit logistics	0
5. Interurban modal switch	34
6. Modal switch for freight	0
7. New Mass Rapid Transit System (MRTS)	34
8. Non-motorized transport (NMT)	13
9. Parking policies	1
10. Smart traffic systems	8
11. Transit-oriented development (TOD)	11
12. Urban passenger modal shift	34
13. Vehicle efficiency	18
14. Zero and low emissions buses	13
15. Zero and low emissions cars	13

Source: Adapted from SLoCaT Partnership; *Intended Nationally-Determined Contributions (INDCs) Offer Opportunities for Ambitious Action on Transport and Climate Change*; November/2015

17. Non-state actors also play an important role in contributing to transport mitigation actions, with commitments such as the International Civil Aviation Organization/Air Transport Action Group Climate Action in Aviation, the Global Green Freight Action Plans, and the Airport Carbon Accreditation Initiative. Additionally, the CEOs of the global light and heavy duty automotive industry made a public commitment to decarbonize automotive transport, prioritizing research and development efforts to increase the fuel efficiency of the internal combustion engine, advocating for policies that place value on greenhouse gas (GHG) reduction and harnessing the potential of new technologies.
18. Although the proposal in this concept note will be to prioritize the areas mentioned in paragraph 0 for top-down work, since the work funded by the CDM should focus on areas of widespread interest, the MP and SSC WG welcome methodology development for other types of transport projects, and encourage designated national authorities (DNAs) and individual project developers to submit proposals and/or communicate interest.

### **3.2.2. Criteria II: Viability of CDM project**

19. When considering this criterion, the characteristics of the CDM and of the mandate for this work were taken into account. With respect to the mandate from the Board, although there is no explicit time frame specified by the Board, an implicit time frame of a maximum of two years was assumed for developing or revising methodologies as part of this work while acknowledging that some improvements could be accomplished in a much shorter timeframe. Therefore, any topic that may require more than two years to be finalized is outside the scope of this work. Furthermore, the CDM must ensure that emission reductions are real, measurable and verifiable, and accurately reflect what has occurred within the project boundary. Also, policies and transfer of know-how<sup>1</sup> on a stand-alone basis cannot be considered as a CDM project activity in accordance with the CDM modalities and procedures. Thus, any project type that does not or may not comply with these requirements is excluded as the MP and the SSC WG considered that there is no explicit mandate from the Board to work in these areas at this point in time.

### **3.2.3. Criteria III: Opportunities for collaboration**

20. The work under this mandate would benefit from outside expertise and experience garnered from other efforts to quantify emission reductions in the transport sector. As discussed in more detail in the previous concept note (CDM-EB86-AA-A12), there are several organizations working on quantifying emission reductions from transport projects. Some examples are the United Nations Environment Programme (UNEP)-GEF with the Transportation Emissions Evaluation Model for Projects (TEEMP) project, the Institute for Transportation and Development Policy (ITDP), the World Bank's Carbon Partnership Facility and its focus on low carbon cities, the World Bank's new Transformative Carbon Asset Facility, harmonized GHG accounting in transport by International Finance Institutions (IFIs)<sup>2</sup>, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) TRANSfer programme, the Partnership on Sustainable Low

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<sup>1</sup> See decision 7/CMP.1, paragraph 20 and EB 23 meeting report, paragraph 80.

<sup>2</sup> IFIs such as World Bank, International Finance Corporation, Asian Development Bank, Green Climate Fund, the GEF and others.



Carbon Transport (SLoCaT), Transport & Environment<sup>3</sup> and the NAMA Facility with the KfW Development Bank. The following analysis prioritizes project measures and specific types that are of interest to one or more of these organizations and where collaboration is assumed to be more likely.

### 3.3. Summary of public inputs

21. Stakeholders were invited to provide their input including but not limited to issues, and initial proposals indicated in the concept note. The call for inputs from stakeholders was open from 17 December 2015 to 27 January 2016, 24:00 GMT.
22. In total, one public submission was received from stakeholders. The Secretariat, the Meth Panel at its sixty-ninth meeting and the SSC WG at its fiftieth meeting thanked the authors of the submission for the useful suggestions made.

**Table 3. Summary of public inputs**

Person	Organisation	Relevant comments
Eric Keogh	IGES – Impact Global Emission Solutions	• Presentation of MRV and vehicle emission reduction technologies

### 3.4. Review of the proposals from the concept note CDM-EB86-AA-A12

23. In this section, each of the proposals for areas of work from the concept note CDM-EB86-AA-A12 was reviewed and analysed to determine which to prioritize as part of the current mandate, taking into account the criteria described in items 3.2.1, 3.2.2 and 3.2.3.

**Table 4. Summary of the review of proposals in the concept note CDM-EB86-AA-A12**

Title	CDM-EB86-AA-A12 paragraph number	Outcome
New methodology for TOD infrastructure and planning	29 (a) (i) (a)	Develop a scoping note to discuss measures that may be eligible under the CDM and how to attribute responsibility for the emission reductions achieved for each of the measures. For detailed assessment, please refer to paragraph 24(a).
Infrastructure and planning for carbon-neutral modes, especially bicycles	29(a) (i) (b) and (d)	To develop a new methodology. For detailed assessment, please refer to paragraph 24(b).
New roadway infrastructure and operation	29 (a) (i) (c)	No further action. For detailed assessment, please refer to paragraph 24(c).
Fuel Switch	29 (a) (ii) (a)	No further action. For detailed assessment, please refer to paragraph 24(d)

<sup>3</sup> <http://www.transportenvironment.org>

<b>Title</b>	<b>CDM-EB86-AA-A12 paragraph number</b>	<b>Outcome</b>
New methods of goods delivered in cities	29 (a) (ii) (b)	No further action. For detailed assessment, please refer to paragraph 24(e)
Use of GPS that saves travel time	29 (a) (iii) (a)	No further action. For detailed assessment, please refer to paragraph 24(f)
Design smart traffic systems	29 (a) (iii) (b)	Included in the proposal made under paragraph 24(k) below.
Improve riding quality of existing roads	29 (a) (iv) (a)	No further action. For detailed assessment, please refer to paragraph 24(h)
Enhancement of use of non-motorized modes	29 (a) (iv) (b)	To develop a new methodology. For detailed assessment, please refer to paragraph 24(i)
Car-pooling using electronic platforms	29 (a) (iv) (c)	No further action. For detailed assessment, please refer to paragraph 24(j)
Optimize the use of alternative modes of transport	29 (a) (iv) (d)	To develop a new methodology. For detailed assessment, please refer to paragraph 24(k)
Various measures to limit the use of personal cars	29 (a) (v)	To be discussed under the TOD scoping note. For detailed assessment, please refer to paragraph 24(l)
New broadly applicable methodology	29 (b)	To prioritize methodological work to facilitate the combination of different activities in transport. For detailed assessment, please refer to paragraph 24(m)
Removing or lightening data-intensive requirements	29 (c)	To undertake improvements of the existing methodologies (for example through the inclusion of non-binding best practice examples). For detailed assessment, please refer to paragraph 24(n)
Use of technologies like GPS for vehicle tracking to monitor project activity levels	29 (c) (ii)	No further action for a new methodology. To consider during the review of existing methodologies. For detailed assessment, please refer to paragraph 24(o)
Modeling approaches	29 (d)	No further action. For detailed assessment, please refer to paragraph 24(p)
Quantitative approaches for additionality	29 (e)	No further action. For detailed assessment, please refer to paragraph 24(q)

24. Below is a detailed assessment on each of the proposals listed in the table above:

- (a) *New methodology for TOD infrastructure and planning:* This project type is quite common at the moment (see Table 1), and demand for TOD methodologies is considered to be high. Also, other organizations are working in this area, such as the NAMA Facility, which includes NAMAs such as the Colombia TOD NAMA and, purportedly, the World Bank with its new Transformative Carbon Asset Facility. This means there will likely be opportunities for collaboration on a TOD methodology. However, the extent to which emission reductions from a TOD project are measurable and verifiable is still unknown, however real they may be. Generally, a TOD project implements (1) measures like urban design to improve walkability, bicycle friendliness, transit access, and compactness; and (2) policies to promote mixed land use and diverse income levels. The impacts of TOD regarding climate change mitigation are mainly reductions in the use of private motorized transport. Given the diffuse nature of the measures, and that the areas of impact of such projects may be influenced by many factors outside the project itself, difficulties are foreseen in attributing causal relationships to the effects that can be measured, for example, difficulty attributing emission reductions due to changes in private vehicle passenger kilometres to the implementation of one or several of the measures mentioned previously. Appendix 4 presents a short analysis of the TOD NAMA in Colombia, with a description of the main goal, the determination of the business-as-usual (BAU) scenario and the measurement, reporting and verification (MRV) approach. For these reasons, the proposal is to start with a scoping note to analyse the possibility of developing a new CDM methodology for TOD. This note would include discussion on the eligible measures which constitute a TOD, how to estimate and measure the baseline and project emissions, who will have the ownership of the credits (the local government that proposes urban improvement policies and/or implement mobility measures or companies/individuals that will invest in the construction of buildings, houses and commerce) and how to attribute responsibility for the emission reductions achieved for each of the measures that constitute a TOD;
- (b) *Infrastructure and planning for carbon-neutral modes especially bicycles:* As shown in Table 1, many projects for non-motorized transport are identified, so there is likely to be demand for methodology work in this area. In fact, a study by ITDP concludes that the implementation of policies and infrastructure to support the usage of bicycles and electric bicycles (e-bikes) can represent a cut of 2 Gt of CO<sub>2</sub> emissions by 2050, from a BAU scenario of 4 Gt in 2050. In addition, several other organizations are working in this area, for example, UNEP-GEF, the World Bank, and GIZ TRANSfer, which presents an opportunity for collaboration, for example, UNEP-GEF, the World Bank, and GIZ TRANSfer. Furthermore, it is observed that emission reductions from, for example, an NMT infrastructure project could be measured and verified in a way that is somewhat similar to other infrastructure projects promoting modal shift. Given that this project type satisfies all three criteria, new methodology work in this area should be prioritized;
- (c) *New roadway infrastructure and operation:* Given the results of the review shown in Table 1, it is observed that there is no significant demand for a methodology for this project type at present. In addition, rebound effect may be a major issue;
- (d) *Fuel switch:* There is no significant demand for work to develop new methodologies for this project type at present, based on the results presented in

Table 1. Also there already are four approved CDM methodologies for this project type (AMS-III.T, AMS-III.AK, AM0089 and ACM0017);

- (e) *New methods of goods delivered in cities:* Deliveries using different types of transport (such as drones, electric lorries and other types of fleets) are still in initial stages, with very few and isolated initiatives. In addition, the use of electric lorries for deliveries in cities is already covered in methodology AMS-III.C. Therefore, at present, there is no observed demand for methodology work for this project type. However, the MP and the SSC WG will closely follow the development of these innovative transport methods since they are expected to be increasingly utilized within the next few years;
- (f) *Use of GPS that saves travel time:* There is no observed demand for methodological work is observed for this project type at present. Also, it may prove difficult to demonstrate real and measurable emission reductions related to the defined baseline and potential rebound effects;
- (g) *Design smart traffic systems:* As determined in the analysis of transport projects on the basis of “demand Criteria” in paragraph 3.2.1, there is limited interest in smart traffic systems per se; however, with respect to transit logistics, some interest was observed, and this is addressed in paragraph 24(k) below;
- (h) *Improve riding quality of existing roads:* There is no observed demand for methodological work for this project type at present in the GEF, NAMA, and CDM pipelines. Also, rebound effects may present a challenge in realizing emission reductions;
- (i) *Enhancement of use of non-motorized modes:* As discussed in paragraph 23(b) above, this area is considered a priority due to existing demand, opportunities for collaboration and feasibility under the CDM;
- (j) *Car-pooling using electronic platforms:* No demand for methodological work is observed for this project type at present, although the existence of the electronic platform would simplify the monitoring of such projects. The Voluntary Carbon Standard has approved a methodology for car-pooling using electronic platforms, however no projects have applied it so far;
- (k) *Optimize the use of alternative modes of transport:* There is no observed demand for methodological work for this project type at present, but there are many project proposals to “smarten” the operation of public transport (10 improved transit logistics measures, as indicated in Table 1). Several projects propose traffic management measures, improved programming of transit routes, implementation of systems for urban transport management and so forth, all of which can be grouped under improvement of the operation of public transportation. Currently, there are no methodologies available for this project type. Measuring and verifying emission reductions from operation improvements in public transport should be possible, given that a single operator may be responsible for vehicles and their fuel use, and detailed historical data about the operation of transport may be available. On the other hand, defining the baseline scenario for this type of projects may be a challenge as a dynamic approach would probably be needed. Finally, while it is not known if other organizations are working on methodologies for this project type, the level of demand and the feasibility to apply the CDM suggest this could be an area of work to prioritize. In

addition, smart traffic systems are mentioned as mitigation strategies by different INDCs;

- (l) *Various measures to limit the use of personal cars:* After reviewing transport projects, no demand was observed for methodology work in this area. Limiting the use of personal cars can only be envisaged if alternative travels means are provided, which means that it may not work as a stand-alone methodology. Nevertheless, it could be part of a TOD approach or combined with a methodology for public transportation development or improvement, and it will be considered in this context;
- (m) *New broadly applicable methodology:* A broadly applicable methodology could mean either of two things: (a) one methodology that covers any one of several different project activities, similar to an approved consolidated methodology; or, (b) one methodology that covers combinations of different, related project activities, similar to the result of combining different CDM methodologies in other sectors, for example biogas methane capture plus renewable energy generation plus feedstock switch. With respect to the first type of broadly applicable methodology, the experience of the MP suggests that consolidating often leads to long, complex methodologies that are more difficult for project proponents to apply than a more focused methodology. For this reason, top-down methodological work for this type of methodology is not considered a priority under this mandate. On the other hand, in seeking to develop one broadly applicable methodology that covers a variety of related measures, it may be difficult for the MP, SSC WG and secretariat to predict the individual measures that would be combined in real life scenarios, so as to make a broadly applicable methodology to cover the correct combinations. The projects from the NAMA Registry and the GEF pipeline show that there are many ways to combine activities in the transport sector, especially in urban mobility. There is a real possibility that in the effort to develop a broadly applicable methodology, the MP, SSC WG and secretariat could dedicate significant effort to developing a methodology for one expected combination, only to find that real projects wish to apply different combinations of activities. It may be preferable to use a modular approach, permitting project proponents to combine methodologies in line with real projects. Along these lines, it is observed in the NAMA Registry that projects combine an average of two project types, but as many as five. Similarly, in the GEF pipeline, nearly a third of projects involve combinations of two or more activities. However, among registered CDM projects in the transport sector, none applies a combination of methodologies. For this reason, it is proposed to prioritize methodological work to facilitate the combination of different activities in transport CDM projects, using the existing modality of combinations of methodologies in a single project. A broader methodology applying a benchmark-type approach at the city level may also be explored, although data availability would be a critical issue. This last idea can be explored in the scoping note on TOD discussed in above, since such an approach might be useful for determining emission reductions from transit-oriented development;
- (n) *Improve existing CDM methodologies by removing or lightening data-intensive requirements:* The two areas of inferred methodological demand (see Table 1), which are well covered by existing CDM methodologies, are new MRTS (three methodologies) and vehicle efficiency (five approved methodologies and one new submission currently under consideration, all small-scale). Therefore, these are

two project types where it would be relevant to try to improve the existing methodologies to make them more efficient while safeguarding the environmental integrity, for example through the inclusion of non-binding best practice examples, similar to the work done for ACM0001, AMS-III.H, and AMS-III.D. In the review of the methodologies for new MRTS, it also would be necessary to examine the tool, *“Baseline emissions for modal shift measures in urban passenger transport”*. In addition, it is interesting to note that in the NAMA Registry and GEF pipeline, many of the transport projects submitted by least developed countries (LDCs) include either vehicle efficiency improvements or new MRTS. Two-thirds of the transport NAMAs by LDCs in the NAMA Registry includes these components and half of the projects by LDCs in the GEF pipeline do as well. In other words, top-down methodology work in this area may be particularly beneficial for LDCs;

- (o) *Where possible, use of technologies like GPS for vehicle tracking to monitor project activity levels:* The review of demand did not reveal this as a priority area. Nevertheless, considering that this type of technology may permit the simplification or automation of monitoring requirements, this concept could be considered during any review of existing CDM methodologies or during the development of new top-down transport methodologies;
- (p) *Modelling approaches may be explored for all of the options above:* During the review of the possibility to apply modelling, it was observed that for modelling transport pollution, such as particulates, modelling approaches are sometimes used to determine emissions levels, whereby a model is fed with limited observed data and the model extrapolates to, for example, total pollution at the city or corridor level. This type of procedure could be applied to estimate greenhouse gas emissions. In a sense, it is a question of whether the output of a trained/calibrated model could be considered as the real, measured outcome of a project. At the same time, it is noted that the application of models for the monitoring of CDM transport projects would require the application of transport macro-simulation models, which, to knowledge, are privately developed and owned and expensive to acquire (for example, TRANSyT or PTV Group Visum). Requiring the use of such models may not be consistent with the goals of the CDM. At the same time, such models are often applied anyway in the context of large transport infrastructure projects in big cities, so this could be offered as an option for the development of the baseline scenario for public transportation projects. Therefore, the conclusion is that it is not a priority for the current mandate to dedicate efforts to expand the application of models. It could nevertheless be envisaged as part of the task of improving MRTS methodologies discussed in paragraph 24(n);
- (q) *Quantitative approaches should be further explored for additionality:* The MP notes that over the past three years, the group has dedicated significant time to exploring quantitative approaches for additionality for new MRTS, resulting in the recent revision of three CDM methodologies. Furthermore, it is not clear that the demonstration of additionality is a barrier for other types of transport projects. For these reasons and considering that there are existing mandates and ongoing work to improve the requirements on additionality, this is not considered a priority area for work under this mandate.

### 3.5. Proposed areas of top-down methodological work for the transport sector

25. Based on the review of proposed areas of work in section 3.4, the following areas of work for the MP, SSC WG and secretariat are proposed:
- (a) Develop a new top-down methodology for non-motorized transportation. This task would first involve an investigation of the characteristics of such projects, then the definition of the exact scope of the new methodology, and finally the preparation of the methodology;
  - (b) Develop a new top-down methodology for improved operation of public transportation. This could encompass components including smart traffic systems and other systems mentioned in paragraphs 24(g) and 24(k). The task would first involve an investigation of the characteristics of such projects, leading to a definition of the exact scope of the new methodology, and finally the preparation of the methodology;
  - (c) Work to facilitate the combination of transport methodologies. This task would involve analysing the possibilities for combining existing CDM transport methodologies by, determining acceptable combinations, and preparing a recommendation to the Board including either specific combinations to permit or guidelines for combining transport methodologies, depending upon the results of the first two steps;
  - (d) Improve existing vehicle efficiency methodologies. This task would start with a holistic review of the five existing methodologies and would seek to identify which requirements are data- or otherwise resource-intensive. It would investigate how these could be removed or alleviated, or where there is a possibility to substitute alternative methods, perhaps by applying new technologies such as GPS vehicle tracking. Based on this step, draft revised methodologies would be proposed for the consideration of the Board;
  - (e) Improve existing MRTS methodologies. This task would begin with a holistic review of the three existing methodologies and would seek to identify which requirements are data- or otherwise resource-intensive. It would investigate how these could be removed or alleviated, or where there is a possibility to substitute alternative methods, perhaps by applying new technologies such as GPS vehicle tracking or modelling approaches. Based on this step, draft revised methodologies would be prepared for the consideration by the Board. The aim is to focus on areas that have not been addressed in the revisions of the past four years (e.g. electric BRT systems, GPS) and to check for consistency;
  - (f) Prepare a scoping note for TOD projects. This task would involve an assessment of eligible measures constitute a TOD, how to estimate and measure the baseline and project emissions, who will have the ownership of the credits (local government that proposes urban improvement policies and/or implements mobility measures or companies/individuals that will invest in the construction of buildings, houses and commerce) and how to attribute responsibility for the emission reductions achieved for each of the measures that constitute a TOD. At the end of this exercise, the results would be communicated to the Board with a recommendation as to whether to proceed with the development of a new top-down methodology.

26. Items in paragraphs 25 (c) to 25 (f) would require a lower level of effort as compared to items in paragraph 25 (a) and 25 (b), and it may be feasible to deliver them during the last two quarters of 2016 if the Board were to approve the above plan. Considering that the Board has prioritised the work of the Secretariat in the area of project registration and issuance to clear any backlogs and taking into account the limited number of meetings of the MP and the SSC WG remaining in the year, the items in paragraph 25(a) and 25 (b) are likely to extend to 2017 although substantial progress could be achieved during the year.
27. Subject to approval by the Board of the work plan, it is proposed that the work is undertaken in collaboration with stakeholders such as UNEP-GEF, SLoCaT, ITDP, the World Bank, IFIs, the GIZ TRANSfer programme, Transport & Environment and NAMA Facility.

#### **4. Impacts**

28. The tasks proposed in paragraphs 25(a), 25(b) and 25(c) would expand the types of transport projects that can be developed using the CDM to include project types currently popular among entities developing transportation projects for emission reductions.
29. The tasks proposed in paragraphs 25(d) and 25(e) would increase the efficiency of existing methodologies while safeguarding environmental integrity by providing improved CDM tools for recurring project types that are also of interest to LDCs, potentially expanding the application of CDM to these countries.

#### **5. Subsequent work and timelines**

30. The above work would be undertaken jointly by the MP and the SSC WG and the Secretariat as part of the 2016 MAP. The MP will take the lead in finalising the recommendations, and the SSC WG will provide inputs to the MP. However any proposed new or revised small scale methodologies will be annexed to an SSC WG meeting report.

#### **6. Recommendations to the Board**

31. The Secretariat recommends that the Board agree to the proposed areas of top-down methodological work for the transport sector and provide guidance as required i.e.:
- (a) Develop a top-down new methodology for Non-motorized transportation;
  - (b) Develop a top-down new methodology for improved operation of public transportation;
  - (c) Facilitate the combination of transport methodologies;
  - (d) Improve existing vehicle efficiency methodologies;
  - (e) Improve existing MRTS methodologies;
  - (f) Prepare a scoping note for Transit Oriented Development projects;



## Appendix 1. List of transport NAMAs from the NAMA Registry

Country	NAMA ID	Title	Component 1	Component 2	Component 3	Component 4	Component 5
1. Indonesia	NAMA0012	Sustainable Urban Transport Initiative (SUTRI)	Transit-oriented development (TOD)	Non-motorized transport (NMT)	Fuel Switch	Smart traffic systems	Parking policies
2. Serbia	NAMA0029	Rehabilitation of arterial roads in Serbia	Improve riding quality of existing roads				
3. Azerbaijan	NAMA0048	Nationally Appropriate Mitigation Actions for low-carbon end-use sectors in Azerbaijan	Vehicle efficiency				
4. Chile	NAMA0054	Santiago Transport Green Zone (STGZ)	Zero and low emissions cars	Zero and low emissions buses	Zero and low emissions buses	Non-motorized transport (NMT)	
5. Kazakhstan	NAMA0055	Nationally Appropriate Mitigation Actions for Low-carbon Urban Development in Kazakhstan	Transit-oriented development (TOD)				
6. Colombia	NAMA0057	Colombia TOD NAMA	Transit-oriented development (TOD)	Non-motorized transport (NMT)	Non-motorized transport (NMT)	New MRTS	
7. Colombia	NAMA0066	Integrated improvement of Road-based Freight sector in Colombia	Vehicle efficiency	Improved freight logistics	Improved freight logistics		
8. Uganda	NAMA0070	Bus Rapid Transit (BRT) for Kampala	New MRTS	Non-motorized transport (NMT)	Non-motorized transport (NMT)	Parking policies	Improved transit logistics

Country	NAMA ID	Title	Component 1	Component 2	Component 3	Component 4	Component 5
9. Uganda	NAMA0073	Periodic Vehicle Inspection for Emissions and Roadworthiness	Vehicle efficiency				
10. Mexico	NAMA0079	Car Fleet Renewal in Mexico	Vehicle efficiency				
11. Ethiopia	NAMA0086	Ethiopia Railway's – Addis Ababa Light Rail Transit (LRT) Transit Oriented Development (TOD) NAMA	Transit-oriented development (TOD)	New MRTS	Non-motorized transport (NMT)		
12. Ethiopia	NAMA0087	Ethiopia's National Railway Network and Addis Ababa Light Rail Transit (LRT) NAMA	Interurban modal switch	Modal switch for freight			
13. Ethiopia	NAMA0088	Ethiopian Railways – Railway Academy NAMA	Modal switch for freight				
14. Ethiopia	NAMA0089	Ethiopia Railways – Establishment of Climate Vulnerability Infrastructure Investment Framework NAMA	Interurban modal switch	Modal switch for freight			
15. Mexico	NAMA0092	Federal Road Freight Transport NAMA for owner operators and smaller fleet carriers	Vehicle efficiency				

Country	NAMA ID	Title	Component 1	Component 2	Component 3	Component 4	Component 5
16. Rwanda	NAMA0110	Bus Rapid Transit in Kigali (with linkage to non-motorized transport)	New MRTS				
17. Uganda	NAMA0112	Fuel Efficiency in Motor Vehicles	Vehicle efficiency				
18. Uganda	NAMA0116	National Fuel Efficiency Initiative	Vehicle efficiency				
19. Peru	NAMA0130	TRANSPerú—Sustainable Urban Transport NAMA	New MRTS	Non-motorized transport (NMT)	Vehicle efficiency	Improved transit logistics	

Source: UNEP-DTU NAMA Pipeline <<http://www.namapipeline.org/Publications/NAMAPipeline.xlsx>>

## Appendix 2. List of Global Environment Facility projects (focal area: climate change; keywords: transport, transit and/or mobility)

Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
1. Brazil	6	Hydrogen Fuel Cell Buses for Urban Transport	Project Completion	Zero and low emissions buses		
2. Pakistan	391	Fuel Efficiency in the Road Transport Sector	Project Closure	Vehicle efficiency		
3. Iran	572	Teheran Transport Emissions Reduction	Project Closure	Vehicle efficiency		
4. Philippines	785	Metro Manila Urban Transport Integration Project - Marikina Bikeways Project Component	Project Closure	Non-motorized transport (NMT)		
5. Peru	1081	Lima Urban Transport	Project Closure	Non-motorized transport (NMT)	New MRTS	Transit-oriented development (TOD)
6. Mexico	1155	Introduction of Climate Friendly Measures in Transport	Project Closure	Fuel Switch	New MRTS	Zero and low emissions buses
7. Chile	1349	Sustainable Transport and Air Quality for Santiago	Project Completion	Non-motorized transport (NMT)	New MRTS	Transit-oriented development (TOD)
8. Botswana	2014	Incorporating Non-Motorized (NMT) Transport Facilities in the City of Gaborone	Project Completion	Non-motorized transport (NMT)		

Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
9. Vietnam	2368	Hanoi Urban Transport Development	Under Implementation	New MRTS		
10. Venezuela	2427	Promotion of Environmentally Sustainable Transport in the City of Valencia	Under Implementation	Non-motorized transport (NMT)		
11. Ghana	2596	Ghana Urban Transport	Under Implementation	Improved transit logistics	New MRTS	
12. South Africa	2604	Sustainable Public Transport and Sport: A 2010 Opportunity	Project Completion	Vehicle efficiency		
13. China	2609	GEF-World Bank-China Urban Transport Partnership Program (CUTPP)	Under Implementation	Improved transit logistics	New MRTS	Transit-oriented development (TOD)
14. Egypt	2776	Sustainable Transport	Under Implementation	Unknown		
15. Nicaragua	2801	Promotion of Environmentally Sustainable Transport in Metropolitan Managua	Under Implementation	Non-motorized transport (NMT)	Urban passenger modal shift	
16. Burkina Faso	2876	SPWA-CC: Ouagadougou Transport Modal Shift	Under Implementation	New MRTS		
17. Tajikistan	3027	Support to Sustainable Transport Management in Dushanbe	Under Implementation	Improved transit logistics		
18. India	3241	Sustainable Urban Transport Project	Under Implementation	Unknown		

Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
19. Pakistan	3539	Pakistan Sustainable Transport Project	Under Implementation	Unknown		
20. Serbia	3759	Support to Sustainable Transportation System in the City of Belgrade	Under Implementation	Urban passenger modal shift		
21. Nigeria	3827	SPWA-CC: Nigeria Urban Transport	Under Implementation	Improved transit logistics	Urban passenger modal shift	
22. Russian Federation	4008	Reducing GHG Emissions from Road Transport in Russia's Medium-sized Cities	IA Approved	Transit-oriented development (TOD)	Zero and low emissions buses	
23. Kazakhstan	4013	Sustainable Transport in the City Of Almaty	Under Implementation	Smart traffic systems	Improved transit logistics	
24. Nepal	4130	Kathmandu Sustainable Urban Transport (SUT) Project	Under Implementation	Unknown		
25. China	4156	Eco-Transport in City Clusters: Model Development & Pilots	IA Approved	Unknown		
26. Thailand	4210	Sustainable Urban Transport in Chiang Mai	Project Completion	Non-motorized transport (NMT)	Transit-oriented development (TOD)	
27. Bangladesh	4931	ASTUD: Greater Dhaka Sustainable Urban Transport Corridor Project	IA Approved	New MRTS		
28. Mongolia	5055	ASTUD: Mongolia Urban Transport Development Investment Program	IA Approved	Unknown		

Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
29. Russian Federation	5396	National Urban Transport Improvement Project	Council Approved	Unknown		
30. Georgia	5468	Green Cities: Integrated Sustainable Transport in the City of Batumi and the Achara Region	CEO Approved	Improved transit logistics		
31. China	5582	ASTUD: Jiangxi Ji'an Sustainable Urban Transport Project	CEO Endorsed	Unknown		
32. Philippines	5717	Promotion of Low Carbon Urban Transport Systems in the Philippines	Council Approved	Zero and low emissions buses	Zero and low emissions cars	
33. South Africa	5737	Energy Efficient Low-carbon Transport	CEO Approved	Vehicle efficiency		
34. Malaysia	5741	Energy Efficient Low-carbon Transport	CEO Approved	Vehicle efficiency		
35. Timor Leste	5773	Upscaling Climate-Proofing in the Transport Sector in Timor-Leste: Sector Wide Approaches	CEO Endorsed	Improve riding quality of existing roads		
36. Lao PDR	9146	Vientiane Sustainable Urban Transport Project	CEO Approved	Unknown		
37. Regional	2178	Promoting Sustainable Transport in Latin America (NESTLAC)	Project Completion	Non-motorized transport (NMT)	New MRTS	Transit-oriented development (TOD)

Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
38. Regional	2767	LAC Regional Sustainable Transport and Air Quality Project	Project Completion	Transit-oriented development (TOD)		
39. Regional	3461	Promoting Sustainable Transport Solutions for East Africa	Under Implementation	Unknown		
40. Regional	4236	GHG Assessment Methodologies in Public Transport	Under Implementation	Unknown		
41. Regional	4638	ASTUD Asian Sustainable Transport and Urban Development Program (PROGRAM)	Council Approved	Transit-oriented development (TOD)		
42. Global	4909	Stabilizing GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Economy Initiative (GFEI)	CEO Endorsed	Vehicle efficiency		
43. Indonesia	2954	Bus Rapid Transit and Pedestrian Improvements in Jakarta	Project Completion	Non-motorized transport (NMT)	Improved transit logistics	
44. Colombia	5199	Demonstration and Assessment of Battery-electric Vehicles for Mass Transit in Colombia	Council Approved	Zero and low emissions buses		



Country	GEF_ID	Project Name	Status	Component 1	Component 2	Component 3
45. Global	1917	Reducing Greenhouse Gas Emissions with Bus Rapid Transit	Project Completion	New MRTS		
46. Regional	9112	The Ten Island Challenge: Derisking the Transition of the Caribbean from Fossil Fuels to Renewables	CEO Approved	Unknown		
47. Slovak Republic	3433	Sustainable Mobility in the City of Bratislava	Project Completion	Unknown		
48. Brazil	4949	Low-Carbon Urban Mobility for Large Cities	CEO Endorsed	Unknown		
49. Costa Rica	5838	Sustainable Urban Mobility Program for San Jose	IA Approved	Transit-oriented development (TOD)	Improved transit logistics	
50. Benin	6974	Improving Mobility in Parakou	CEO Approved	Vehicle efficiency		

Source: Global Environmental Facility

<[https://www.thegef.org/gef/project\\_list?keyword=transport&countryCode=all&focalAreaCode=all&agencyCode=all&projectType=all&fundingSource=all&approvalFYFrom=all&approvalFYTo=all&ltgt=lt&ltgtAmt=&op=Search&form\\_build\\_id=form-VeS\\_bXJEsZBNHK3PAYhFCKhNyVuQZxkgclTM6-QoKAM&form\\_id=prjsearch\\_searchfrm](https://www.thegef.org/gef/project_list?keyword=transport&countryCode=all&focalAreaCode=all&agencyCode=all&projectType=all&fundingSource=all&approvalFYFrom=all&approvalFYTo=all&ltgt=lt&ltgtAmt=&op=Search&form_build_id=form-VeS_bXJEsZBNHK3PAYhFCKhNyVuQZxkgclTM6-QoKAM&form_id=prjsearch_searchfrm)>

### Appendix 3. Clean Development Mechanism projects and programmes of activities registered or under validation in the transport sector

Type of project (PA/CPA)	Project Name	Host Party	Methodology	ERs estimated (CERs/year)	Status
PA	BRT Bogotá, Colombia: TransMilenio Phase II to IV	Colombia	AM0031	246,563	Registered
PA	Installation of Low Green House Gases (GHG) emitting rolling stock cars in metro system	India	AMS-III.C.	41,160	Registered
PA	Cable Cars Metro Medellín, Colombia	Colombia	AMS-III.U	17,290	Registered
PA	BRT Chongqing Lines 1-4, China	China	AM0031	218,067	Registered
PA	Plant-Oil Production for Usage in Vehicles, Paraguay	Paraguay	AMS-III.T	17,188	Registered
PA	Modal Shift from Road to Train for transportation of cars	India	AMS-III.C	23,001	Registered
CPA	Greater Cairo Region Taxi Scrapping and Recycling Project	Egypt	AMC-III.C	20	Registered
PA	BRT Lines 1-5 EDOMEX, Mexico	Mexico	ACM0016	145,863	Registered
PA	BRT Zhengzhou, China	China	AM0031	204,715	Registered
PA	Metro Delhi, India	India	ACM0016	529,043	Registered
PA	BRT MetrobusInsurgentes, Mexico	Mexico	ACM0016	46,544	Registered
PA	Mumbai Metro One, India	India	ACM0016	195,547	Registered
PA	BRT Transmetro Barranquilla, Colombia	Colombia	AM0031	55,828	Registered
PA	BRT Macrobus Guadalajara, Mexico	Mexico	AM0031	54,365	Registered
PA	MIO Cali, Colombia	Colombia	AM0031	242,187	Registered
PA	BRT Metroplus Medellín, Colombia	Colombia	AM0031	123,479	Registered
PA	Bus Rapid Transit (BRT) in Guatemala City	Guatemala	AM0031	536,148	Registered
PA	Lanzhou Bus Rapid Transit (BRT) Project	China	AM0031	12,621	Registered
PA	MEGABUS, Pereira, Colombia	Colombia	AM0031	33,956	Registered
PA	Metro Line 12, Mexico City	Mexico	ACM0016	136,983	Registered
PA	BRT Metrobus 2-13, Mexico	Mexico	ACM0016	134,601	Registered
PA	EKO electric vehicles, India	India	AMS-III.C	24,563	Registered
PA	Hero Electric Vehicles, India	India	AMS-III.C	37,647	Registered

Type of project (PA/CPA)	Project Name	Host Party	Methodology	ERs estimated (CERs/year)	Status
PA	Nittsu Fuel Efficiency Improvement with Digital Tachograph Systems on Road Freight Transportation CDM Project in Malaysia	Malaysia	AMS-III.AT	239	Registered
PA	Electrotherm Electric Vehicles, India	India	AMS-III.C	36,175	Registered
PA	Lohia Auto Industries Electric Vehicles, India	India	AMS-III.C	25,518	Registered
PA	Mode-shift of passengers from private vehicles to MRTS for Gurgaon metro	India	ACM0016	105,863	Registered
PA	LRT System in Tunis	Tunisia	ACM0016	29,193	Registered
CPA	"LNG Bus Promoting Programme in Guangdong Province"-CPA1	China	AMS-III.AY	3,346	Registered
PA	Demonstration project for annual production 4, 000, 000 m3 biogas from organic waste in Anyang City	China	AMS-III.AQ	50,739	Registered
PA	Guiyang MRTS Line I Project	China	ACM0016	335,188	Registered
PA	Shandong Province Jinjiang Biodiesel Production Project	China	ACM0017	122,495	Registered
CPA	Greater Cairo Region Taxi Scrapping and Recycling Project (22 April 2009 to 30 November 2010)	Egypt	AMC-III.C	14,422	Registered
CPA	Greater Cairo Region Taxi Scrapping and Recycling Project (01 December 2010 to 29 November 2012)	Egypt	AMC-III.C	6,804	Registered
CPA	Green Vessel Project (2OSV 4331142-1)	Malaysia	AMS-III.S	2,917	Registered
CPA	Railway Project West Aconcagua River to Quilicura	Chile	AM0090	5,671	Registered
CPA	CPA001: Delhi Metro under MRTS PoA	India	ACM0016	637,440	Registered
PA	Landfill Closure and Gas capture CDM project by GAIL at Ghazipur, India	India	AMS-III.AQ	9,337	Registered
PA	BRT Metrobus-Q, Ecuador	Ecuador	AM0031	119,733	Validation
PA	Hebei Longhai Bio-tech Co., Ltd. Biodiesel Production Project	China	ACM0017	105,043	Validation
PA	Greenhouse Gas Emission Reduction through rail based mass rapid transit system – Mumbai Metro Transport Private Limited	India	ACM0016	556,944	Validation

Type of project (PA/CPA)	Project Name	Host Party	Methodology	ERs estimated (CERs/year)	Status
PA	Mode-Shift of Goods from Shree Cement Plant, India	India	AM0090	8,452	Validation
CPA	Quezon City Electric Tricycle Project	Philippines	AMS-III.S	11,111	Validation
CPA	Lagos Cable Propelled Transit Project	Nigeria	AMS-III.S	29,096	Validation

Sources: UNFCCC CDM Pipeline

## **Appendix 4. NAMA on Transit Oriented Development in Colombia – business-as-usual scenario, measurement, reporting and verification and methodological options<sup>1</sup>**

1. The aim of the nationally appropriate mitigation action (NAMA) is to reverse the trend of new development in city outskirts and the abandonment or underutilization of land in central city areas by promoting more compact transit-oriented mixed-use neighbourhoods.
2. The business-as-usual scenario was sourced from Colombia's Low Carbon Development Strategy (CLCDS), where the emissions from the transport sector will be 65 Mt/year by 2040, due to an increase in motorization (rates are expected to increase from 70 to 320 light duty vehicles and from 77 to 250 motorcycles per 1,000 inhabitants over the next 30 years).
3. NAMA actions will focus on (i) the development of policies, (ii) capacity-building for planning, feasibility and design activities, and (iii) financial assistance for the building of the infra-structure.
4. The boundaries for the MRV systems were set at the neighbourhood level and the following metrics were adopted: (1) relationship between the activities and TOD; (2) between TOD and vehicle kilometres travelled (VKT); and (3) between VKT and GHG.
5. To determine the difference from the BAU scenario (given that each neighbourhood has its own characteristics that directly influence trip lengths and rates, motorisation and mode share), the concept of “control neighbourhoods” was adopted, and changes are to be identified between the control and intervention areas over the same period of time, assuming that BAU in the intervention neighbourhoods without the intervention would have been the same as what occurred in the control areas (it is important that the control and intervention neighbourhoods are as similar as possible so their original BAU scenarios match).
6. Findings: (a) an MRV framework can be built by focusing on specific (and critical) points that show where and how the interventions have an effect at different levels, allowing implementers to identify how to increase the performance and how to make more effective interventions; and (b) comparing treated (i.e. or intervention), areas with similar control areas can help us evaluate the effect of an intervention within limited temporal or geographical boundaries.

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<sup>1</sup> **TRANSfer Project**; final report of the *Reference Document on Measurement, Reporting and Verification in the Transport Sector*, February/2016.

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