Comments Revision AM0031

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1. General Comment

At the meetings realized in Bonn Spring 2011 the UNFCCC claimed as objective to enable a more widespread participation of transport in the CDM. Transport represents 1/3 of global GHG energy related emissions and is the fastest growing sector, this even more in DCs. Its representation at the CDM is however marginal.

Major obstacles identified during these meetings as well as already previously in numerous articles published are:

1. High methodological complexity
2. High and often unjustified monitoring requirements
3. Additionality barrier

The reformulation of ACM0016 and AM0031 has removed some albeit not all obstacles concerning the first two points. In the issue of additionality a completely unworkable, unjustified and non-applicable approach is proposed by the MP. If this approach to additionality is approved (for AM0031 and for ACM0016) then virtually no public transport projects will be eligible for the CDM. Not one of the transport projects currently registered, in registration or in validation would pass this barrier. Also if we translate this barrier to most other project types and sectors the same would occur. In short the MethPanel has suggested something which effectively eliminates transport from the CDM and would also eliminate most other sectors if the same approach would be applied. We are convinced that this is not the intention of the Executive Board of the CDM and thus suggest:

1. Approve the revisions of AM0031 and ACM0016 concerning all points EXCEPT additionality. A quick approval of these changes reduces a major obstacle and pushes transport projects forward without losing time.

2. Review workable and acceptable methodological approaches for additionality for transport projects.

2. Additionality

The following major reasons show why this approach is not workable nor justified.

2.1. LDC Exclusion

This is OK. However this has never been a major barrier as there is not 1 BRT or MRTS in a LDC and all could use 1st of its kind. Also ACM0016 with a finance approach would not be a problem for a MRTS in LDCs as they have even more finance problems than in other countries. MRTS are basically planned to be made in non-LDCs and thus the meth should focus on the actual market and not on a wishful market.

Conclusion: OK, but it resolves no problem faced in the real world.

2.1. Step 1

The approach is understandable.

What we do not agree upon is why only the first 3 CDM projects are excluded. No other sector has such an approach. Why is this not applied in renewable energy projects? Does the UNFCCC favour intrinsically other project types or why do you put such a limitation in the transport sector and thus obviously put up a higher barrier in the transport sector than in ANY other sector? The EB has put up as objective to foster more CDM transport projects and the MethPanel introduces additional and new requirements which put up barriers faced by no other project type. This is inconsistent.

2.2. Step 2

Following points need change:

1. This step should refer ONLY to the city where the project is made. If other cities have a percentage of x% of BRT in public transit this is irrelevant. The issue is if the project city has a BRT and if in the project city the existing BRT line surpasses the threshold level. As written in the meth this is unclear. The wording should be: “Does the operating BRT system in the project city surpass x% of public transit trips realized”. Other cities are not relevant for this part as the question to be asked is if the BRT is already used in the project city in a significant manner.

2. Public transit trips: The term public transit has to be re-defined. According to the section below this does not include taxis or motorized rickshaws, tuck-tucks etc. We recommend to include collective taxis as well as rickshaws as public transit means, as they are non-individual modes of transit. Many cities in developing countries rely much more on such modes of transit than “city buses”. Also drawing the line between collective taxis and buses can be very difficult e.g. in many countries so-called collective taxis are very common (e.g. South Africa, Tunis, Bolivia, Peru just to name a few). In Bolivia for example the public transport means listed by the MethPanel represent less than 10% of motorized public transit as virtually 100% of public transit is realized

by collective taxis and by minibus-taxi service. The methodology is for application in Developing Countries. Therefore terms used should be in accordance with the reality in these countries. We suggest therefore as Public transport categories:

- Rail-based urban transit including inter alia LRT, metro, trams, urban rail
- Bus and minibus based services including BRT, conventional buses, minibuses (formal and informal)
- Motorized rickshaws
- Collective taxis in their different versions as used in many countries

BRT trips realized on CDM projects in the respective city (already existing BRT system which has been published for GSC at the CDM[1]) are excluded from the calculation.

3. The benchmark of 5% is too low for common practice. The common practice test as approved by the EB uses as benchmark 20%. Why in transport 5%? We suggest more consistency and that the benchmark be the same namely 20% i.e. the project is non-additional under step 2 if in the project city more than 20% of public transit trips are realized on a BRT prior project starting date.

2.3. Step 3

Step 3 is the major problem and completely unworkable and out of reality.

Following are the major points:

1. Ex-ante the amount of emission reductions of a BRT or a MRTS can only be estimated very grossly if the system is not yet operational. This is true due to the fact that ERs depend on 2 core aspects:
   a) The amount of passengers on the system. FSRs exist to project passengers on public transit systems. However reality is often far off the projections. See e.g. registered CDM project TransMilenio. Actual passenger numbers are often 50% lower than projections. Thus actual CERs issued are also much lower. EB 48 Annex 66 will require thus each year a PDD revision plus a new proof of additionality (of course also operational costs are lower if less passengers but not proportional; huge questions would arise how much latter are varied)
   b) The mode switch to be experienced by the project is very difficult to predict. Mode switch is not of interest of the project in its technical planning itself and is thus not studied in a FSR (it does not matter if passengers come from taxis, cars or buses for the project in absence of CDM). Mode switch varies greatly from project to project and from city to city due to aspects such as project attractiveness in terms of connectivity, time saving, convenience, convenience and usage of conventional baseline means, relative pricing behaviour, willingness-to-pay etc etc. In one Chinese city e.g. mode shift from taxis has been >20% and in another <5%. This of course leads to strong changes in ER. Ex-ante ER calculations are based on experience of other cities as ex-ante surveys of a non-existing BRT cannot be made… Thus actual ERs can vary substantially (+- 50%) from projections. If additionality is based on CER revenues then such projections become a core discussion point during

[1] The text of the MethPanel in this section should be in step 1. The text concerning CDM projects in step 2 refers to the project city only. The project city might already have e.g. 1 BRT line as a CDM project and wants to expand the BRT system as a new CDM project.

validation and the validity of taking surveys from other cities and also which cities shall be included becomes far more questioned than today. The core point is however that during verification this point will be observed continuously as lower or higher CER issuance will be related directly to additionality determination. This will provoke in most if not all projects annual revisions based on EB 48 Annex 66 which will question additionality each year. Putting an approach in MRTS projects where additionality is based on CER revenues will thus in practice mean that additionality is proven again each and every year with the corresponding huge uncertainty of a project if it will receive or not CER revenues with the result that no project developer will be interested in pre-financing transaction costs of such projects. The problem is NOT the fixing of a CER price where market rates can be used but the IMPOSSIBILITY of making precise ex-ante projections of mode shift of a non-existing system. Public transport projects thus will always suffer a much higher variation between projections and actual ERs than other project types where ex-ante calculations are based on technical or observable parameters.

2. The definition of operational costs. The cost list by the Meth Panel is not workable:
   a) FSRs use, depending on countries, different costing groups
   b) Details are given in the MP list which are not made in 99% of projects in practice e.g. tyres
   c) Most BRTs operate on a private-public scheme. Private operators of buses are e.g. paid per km based on an international bidding process. Therefore cost details are not necessarily available and cost structuring is very much project dependent and very different from project to project
   d) BRTs are not only buses. Costs such as stations, marketing, fare recovery service, system management or BRT traffic management are not listed by the MP. Often these are also outsourced. Transmilenio has e.g. private companies for fare management (paid on a per revenue %), operation companies buses paid per km driven, station system companies paid per passenger and a communication/traffic management system paid per % revenue.
   e) How are feeder costs included if at all? Some BRTs use the existing baseline service and re-structure it without additional or only marginal additional costs (example BRT CQ registered by the CDM). Others add new services or contract new services e.g. by private contractors and pay them but these also had previous costs thus the system in fact only provokes an additional cost which is however difficult to identify as previous costs were not paid by the BRT system but was based on a completely different system approach of individual bus owners covering their cost with their passengers (e.g. example Transmilenio)

   Summarized: BRTs are very different from city to city, with very different organizational schemes and paying measures. Also it is very difficult to determine what are operational costs of the system and the core issue would be which are additional costs of the system in relation to the baseline which are not expressed in the FSR and difficult to determine. Thus we do not see how the concept of operational cost can be unified for a methodology to match actual projects and to make it acceptable for validation.

3. Diversity of problems for BRTs. The implementation of a BRT/MRTS faces numerous problems which are dependent on the specific project. Some face problems of investment (e.g. BRT Chongqing where CDM finances a considerable part of additional investment faced by a BRT lane), access to finance (e.g. Guatemala BRT where CDM serves as financial guarantee), risk of a

deficit (e.g. various MRTS worldwide such as Delhi Metro, BRTs in Colombia etc). One benchmark over all MRTS is thus misleading

4. Benchmark parameter: as every manager or economist knows: the cost or the income is not the issue of a business but the profit/loss. You can have huge costs and no problems if your income is more than your cost. Typically MRTs/BTs transport a huge amount of passengers per day and therefore have a huge income and huge costs. Many BRTs transport per day more than 1 million passengers and thus have annual incomes and operational costs of 150 and more million USD (Metro Delhi has operational costs of 400 million USD per annum…). The investment cost in most cases is subsidized at least partially by the government and is thus not or only partially repaid. The problem is not the cost magnitude but that operational costs and operational income are often unbalanced i.e. that the project is making an operational deficit. In many projects the risk of a deficit is also the effective barrier. This risk is due to often experienced large cost overruns but just as well to wrong passenger projections. This risk is much more prone to mass transit systems than to other project types, is difficult to quantify ex-ante but it is to our experience the major barrier for the political approval of projects. See the revealing article of Flyvberg of the risks of such projects (B Flyvbjerg, Cost Overruns and Demand Shortfalls in Urban Rail and Other Infrastructure, Transportation Planning and Technology, February 2007 Vol. 30, No. 1, pp. 9-30). CDM can reduce this risk. The exact magnitude of CDM finance must not be known – also the exact magnitude of the risk is unknown. Knowing however that the project will have an independent (from fare box revenue) and additional income source is a strong argument towards approving a project. Thus CDM has an important role and for the sake of having a calculated number based on maths the UNFCCC is closing the door for transport.

5. Benchmark level 30%: The benchmark level of 30% is absolutely arbitrary and will not be achieved by any project. Typical BRTs or MRTS have **annual** operational costs which are 20-50% of the original investment. Data from all registered CDM public transport projects:
   a) BRT Chongqing China: Annual operational cost 27 million RMB; investment BRT 72 million RMB Operational cost as percentage of total investment: 38%
   b) BRT Zhengzhou China: Annual operational cost 105 million RMB; investment BRT 260 million RMB Operational cost as percentage of total investment: 40%
   c) BRT Edomex Mexico: Annual operational cost 1,717 million MXN; investment BRT 3,719 million MXN Operational cost as percentage of total investment: 46%
   d) BRT TransMilenio Bogota: Annual operational cost 751 billion CP; investment BRT 2,290 billion CP Operational cost as percentage of total investment: 33%
   e) Metro Delhi India: Annual operational cost 15,205 million INR; investment Metro 81,180 million INR Operational cost as percentage of total investment: 19%

   Taking the relation operational cost to investment of 20-50% (see above) and the benchmark of 30% of operational cost we can reformulate or translate the benchmark of 30% of operational cost a benchmark of 6-15% of investment (this to make it comparable with other project types.). The benchmark suggested by the MethPanel is therefore that **ANNUAL** (not cumulative) CDM INCOME COVERS around 6-15% of the total investment. This means the project can be financed by CDM alone within less than 10 years. In typical hydro-projects registered by the UNFCCC **annual** CER income covers 1-4% of the total investment, in wind plants even less. In solar energy

plants the annual income of CER is <<1%. For transport projects the MP however wants that CDM contributes for 6-15% or 2-5x more than for other project types. Why???

Clearly the benchmark level is not only arbitrary but wide outside reality. Also as shown using a similar approach to renewable energy would mean that NO project would have passed this threshold. We do not know of any registered CDM renewable energy project where the CDM annual (not total) CDM income is 15% of the total investment. If this would be the case CDM alone could finance any project….

Summarized: The level of the benchmark is far off reality, far off what CDM can contribute and, making a relation to typical investment costs, is also a benchmark NO renewable energy project could achieve.

Summarized Step 3 is a no-go and not workable nor achievable as the parameter itself (operational cost) is non adequate (expected deficit or risk would be much more adequate parameters), the level of the benchmark is exorbitant and the MP is demanding from transport projects a CDM contribution 2-5times higher than what is demanded for from other project types. Also the parameter is non appropriate due to the intrinsic problems of determining in BRT/MRTS projects ex-ante CER amounts which cannot be done in an exact manner thus creating huge future uncertainty of project additionality and continuous additionality reviews during the crediting period.

2.4. Alternative Proposal

One of the obstacles faced by CDM transport project is additiionality and the current approach. If the objective of the UNFCCC actually is to promote more public transit projects then a simpler and achievable process should be found. The UNFCCC has made such simplifications already for LDCs in many project types. For public transport projects (AM0031 and ACM0016) we suggest a two-fold approach from which the PP can choose:

1. Use of the approach as determined in ACM0016 in the currently valid version (finance assessment including risk)

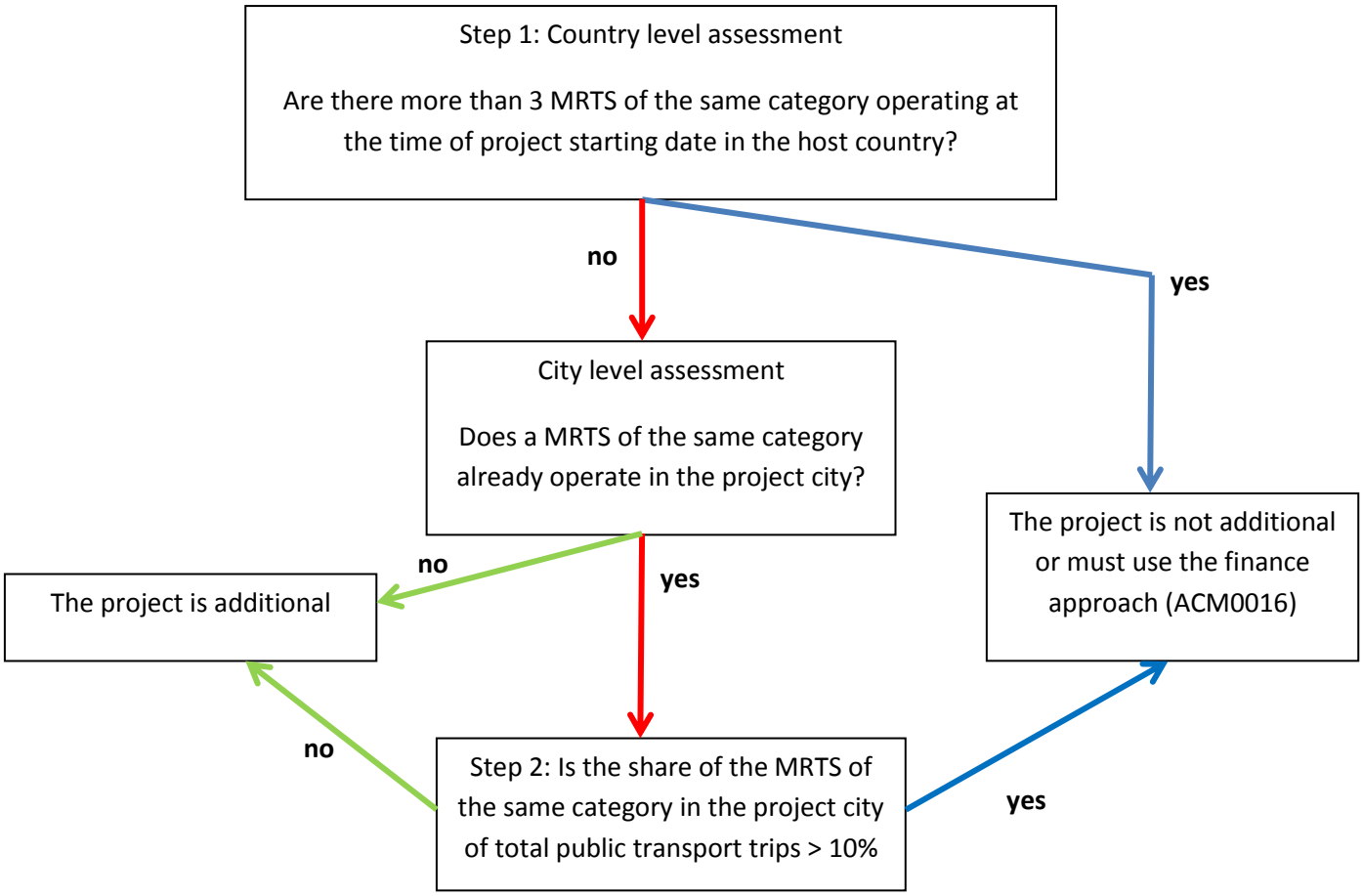
Or

2. Use of an alternative approach

The alternative approach uses basically Step 1 and Step 2 as defined by the MP. If the project fulfils these two steps it is deemed as additional. In fact this approach is very similar to the recently approved guidelines “first of its kind”. Projects would be additional if there are less than 3 BRTs/MRTS in the host country and if in the project city the BRT/MRTs has less than 10%[2] of the public transport trips. These projects would be considered like “first of its kind” and thus be automatically additional. Other projects especially in larger countries could follow the path as currently described in ACM0016.

[2] We have taken 10% ad not 20% as this is for first of its kin and not for common practice

Alternative Additionality Approach:



Explanations:

Step 1: excludes CDM projects for which GSC has started

Step 2: excludes CDM projects for which GSC has started; step 2 is only made for the project city i.e. the city in which the project shall be established.

MRTS include following separate categories:

- Metro including Monorails and LRTs with a capacity phd[3] > 20,000
- Sub-urban rail
- Tram and LRTs with a capacity phd < 20,000[4]
- BRT

[3] passenger per hour direction

[4] The distinction with phd has been made due to unclear definitions of LRTs. In some countries LRTs are idem to metros while in other countries they are idem to trams. Metros are clearly transport means with a very large passenger transporting capacity and trams are clearly a rail-based transport mean with a relatively low capacity in general 1-5,000 phd. LRTs are in between and depend very much on their design. In some countries LRTs are identical to trams whilst in others they have carrying capacities of up to 40,000 phd and are in fact very similar to heavy duty metros (the term metro is thereby not used due to the fact that LRTs are used more in the urban-suburban context with a longer average distance between stations).

Step 1 and step 2 are made for the MRTS category of the project i.e. if the project is a BRT step 1 is made for BRTs only and step 2 also for BRT only. This due to the fact that the different categories represent distinct different technologies.

Public transport includes:

- All MRTS systems
- Conventional bus services including informal bus, minibus and microbus service
- Motorized rickshaws
- Collective taxis or transport units of the host city working as public transport unit

3. Baseline/Project/Leakage

3.1. Identification Baseline Scenario

Page 7

Project proponents shall demonstrate, through the analysis of alternatives, that the baseline scenario is the continuation of the use of current modes of transport ~~and that the existing transport system is sufficient to meet the transportation demand that will be met by the project system~~. ~~In this analysis, project proponents shall identify all options available that meet the same transportation demand as the project system.~~

We suggest to eliminate the tracked part.

Reason: The baseline is a mixture of systems including buses, cars, taxi, NMT, motorcycle etc. Transport demand can ALWAYS be met through mixture of these systems. In practice people always find a way to move. If some roads are clogged all cities have alternative roads which can be used. Thus the side-sentence is not required. Its inclusion does however create a problem as the validator will want to check this condition. In practice there is NO means to determine the potential supply of transport of cars in a city nor of buses which do not operate on a bus-only lane. Theoretical capacities of individual roads can be calculated – however bus routes can and are easily changed, people can use with their car, taxis and motorcycles alternate routes etc. Also if conventional buses are e.g. stuck too much in traffic people can use more motorcycles. Thus a transport supply potential of all available transport modes is **impossible** to determine. Therefore based on the reason that in practice this side-condition is always fulfilled and due to the impossibility to actually calculate city-wide supply potentials of transit we strongly advocate to eliminate the above highlighted section.

3.2. Determination of Baseline Emissions

1. We suggest to copy ACM0016 for determination of emissions from fuel usage. ACM0016 is not only clearer but is also idem to formulaes and parameters used in other sectors and project types. Thus we suggest to replace the following sections with the approach as in ACM0016:

a. Determine emissions per km for vehicle categories p.13/14 incl. formula 1
b. Determine project emissions in alternative A following the formula as in ACM0016 replacing formulaes 8 and 9 p. 21/22

2. Prior formula 3 page 15 we suggest to include the following sentence: "this formula is used in case fuel consumption data is based on SFC values through sample or literature. If the fuel consumption of buses is based on total fuel consumed by the baseline bus system or by a major bus operator no differentiation between bus size must be made and the following formula can be used:

$$EF_{P,Z} = \frac{\sum_x FC_x \times NCV_x \times EF_x \times IR}{P_Z}$$

The formula expresses the total emissions caused by the baseline bus system divided by total passengers transported. Z would refer to the total baseline bus system. The same formula can be used if data for total fuel consumed and total passengers is available from one or various major large bus corporations. Total fuel consumed and passengers must coincide (same data year and same scope e.g. total city or bus company)

3. We suggest to include 3 alternatives for fuel consumption (also ACM0016) (page 14)
   - Fuel records of companies (taxis and buses). Many cities especially in Asia have well organized bus and taxi companies which keep such records. This is the best alternative as reliable and real data is taken not based on a sample
   - Sample as in the meth. The procedure should be in accordance with ACM0016.
   - National or international literature as in the meth

4. We suggest to eliminate the section of change of trip distance in section 4 page 17 incl. elimination of formula 4. This section was originally included as the MP during approval of AM0031 feared that users of BRT have a different average trip distance on cars/taxis/motorcycles than the average baseline user of these modes. In practice this never substianted argument (neither on theoretical nor on practical grounds) has proven to be wrong. As cities grow average trip distances tend to increase and thus monitoring this trip distance while taking the result ONLY if the trip distance gets lower than in the baseline (conservative approach) is unnecessary. To achieve a 95% confidence level while having to register such distances for a relatively small user share (1-10% of all users) makes the survey much, much more costly due to the fact that the survey sample size needs to be triple or more of what it would need to be if this question were not included.

5. We suggest to change the determination of the fuel type used and use the approach as in ACM0016. It is much more trustworthy to use official or national statistics for fuel type consumed than using the survey of BRT passengers. Also as mentioned in the point above this makes the survey much more costly as we need to have a much higher sample number to get a 95% confidence level (the sample size is much higher with 2nd order questions which are only responded to by a part of a sample e.g. users of cars. If users of cars represent e.g. only 5% of all users and we need a 95% confidence level on the average trip distance of car users we require a much, much higher sample than if this question is not asked.)

3.3. Leakage

Congestion leakage: the logic for not monitoring if the road space is not reduced whilst monitoring if the road space is reduced is not given.

If the road space is NOT reduced we have a rebound effect (less congestion provokes additional trips) and thus leakage. At the same time we have a speed effect which goes in the opposite direction and which in most cases will cancel out the rebound effect.

If the road space is reduced the rebound effect and the speed effect are unclear as congestion is NOT necessarily reduced and in fact in most cases congestion is reduced even if road space is quit due to not having anymore buses on the mixed traffic road and through less slow-moving or stopping obstacles on the road (segregation of traffic modes with different average speeds has a positive impact on speed/congestion). Important is the fact that the rebound and the speed effect act in opposite directions.

Overall citywide congestion leakage (includes rebound and speed) is only marginally influenced by a MRTS (data has been provided to the UNFCCC). Citywide speed measurements are extremely difficult and methodologically unclear (how to weight measurements on specific roads and how to weight different times of the day). Citywide speed as well as traffic measurements are also extremely costly. We have just measured for affected roads last week in Buenos Aires speed and traffic movement (and this on just 6 roads – all urban highways) with a cost of 60,000 USD. Citywide measurements can easily cost hundreds of thousands of USD. Doing this 3 times is exorbitant especially if available data suggest an extremely marginal and in all cases positive effect i.e. no leakage which reduces ER has been the case in no country. Instead of reducing monitoring complexity the MP is now increasing the complexity and costs. Obviously we are a bit confused and wonder what the intention is.

We strongly suggest to eliminate completely this leakage as being irrelevant or marginal and with a very high probability negative i.e. reducing emissions even more due to the fact that the speed effect (lower emissions with higher speed) will override the rebound impact. Remember that a core objective of BRTs and MRTS is always reduction of congestion through traffic segregation, less buses and mode shift and thus congestion will reduce on roads and therefore the speed effect will be positive and larger than the rebound effect i.e. the leakage will increase and not reduce ERs and therefore its elimination is conservative.

By the way the entire section would need to be revised as the Corinair formulaes are outdated (new ones are available but far more complex and need information on Euro category, speed, engine size and fuel type), speed needs to be differentiated between moving and average speed (rebound requires average speed and speed effect requires moving speed), the text under congestion impact p.25 yellow marked has factual errors (see above), and formula 17 should replace D with 365 to be more practical.

3.4. Crediting Period

We expect the MP to justify why public transport projects have as max a 10-year crediting period while other project types have up to 21 years. Seemingly the UNFCCC or at least the MP prefers HFC

and N_2O projects and has a negative approach towards transport projects. This political viewpoint should be clearly communicated as to our understanding many Parties prefer projects with a sustainable development impact.

4. Monitoring

4.1. Parameters Not Monitored

1. We suggest to make this compatible to ACM0016 using the same parameters and units (see also section 3.2; e.g. SFC)

2. The parameter P_y "passengers transported by the project" is erroneously under parameters **not** monitored. This is of curse a monitored parameter. (P_i i.e. passengers of transport baseline modes is not monitored)

3. TR_C is often also calculated. The calculation procedure is average distance driven per car per annum / average trip distance per trip = annual number of trips. The average trip distance on cars is based on literature or surveys. The BRT survey also asks this number.

4. NCV_{NG} is under section not monitored and should be under section monitored (it even states as monitoring frequency annual)

5. Page 36 Project emissions if based on a sample. It is NOT that data below the 95% confidence level are excluded. The correct wording and approach is that the upper 95 confidence level is taken for project emissions if latter are based on a sample (consistent with baseline emission determination if based on a sample and consistent with ACM0016)

4.2. Survey

We suggest to copy the entire survey section from ACM0016. This is more elaborate, more precise and statistically of better quality. This refers also to the survey frequency.

4.3. Others Monitoring

We suggest to eliminate the entire section "monitoring procedures" p. 34/35, data and parameters project/baseline and leakage emission p. 35 to 47 and copy all these elements from ACM0016

4.4. Parameters Monitored

1. TD_i This is a confusion with ACM0016. TD in AM0031 is determined through the annual survey and not through O-D and also not through other data sources. The ONLY source is the passenger survey which identifies the trip origin and the trip destination for passengers using carts, taxis or motorcycles. It is only required for these categories, not however for bus or rail

or NMT users. TD is used for formula 4 page 17 where it is specified that this is ONLY for cars/taxis/motorcycles. The context is that potentially trip distances of BRT users which would otherwise have used cars/taxis/motorcycles might be lower than the average trip distance of car/taxi/motorcycle user. For buses this was never a logical case and thus this category is not included.

2. S_i share of passengers per mode. The total amount of passengers can be controlled against ticket sales. The share of passengers per mode cannot be controlled through ticket sales. QA is the survey design. The monitoring frequency is also not indicated.
3. $P_{i,y.}$ $P_{i,y}$ is in fact calculated based on P_y multiplied with S_i. This should be expressed. The monitored parameter is P_y which is project passengers. Latter can be checked against ticket sales.